

# ECR-Interface ZVT-Protocol

manufacturer-independent protocol between  
payment terminals and electronic cash-register systems/vending  
machines


## Commands Bitmaps Error Messages

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### Disclaimer


The following information is based on the current state of knowledge and is provided without guarantee. Modifications and errors excepted.

Revision	13.05
Date	19.11.2012
Status	Release


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04	5.3.2004	<p>Separation of document into two documents Transport-Protocol/Application-Protocol and Commands/Bitmaps/Error-Messages</p> <p>Change Chapter 2.1 Registration:</p> <ul style="list-style-type: none"> <li>- Extension of the Config-byte</li> <li>- Status-byte extended</li> <li>- In Completion the Currency-Code is also 2 byte</li> </ul> <p>Change Chapter 2.2 Authorisation:</p> <ul style="list-style-type: none"> <li>- sequence described in more detail</li> <li>- payment with manual card-data possible</li> <li>- Note for Behaviour for failed transfer of the Status-Information inserted</li> <li>- Note for Behaviour for Filling-Station Systems inserted</li> <li>- Note for Behaviour for incorrect PIN-input inserted</li> </ul> <p>Change Chapter 2.3 Telephonic Authorisation:</p> <ul style="list-style-type: none"> <li>- bitmaps inserted</li> </ul> <p>Change Chapter 2.4 pre-authorisation:</p> <ul style="list-style-type: none"> <li>- bitmaps inserted</li> </ul> <p>Change Chapter 2.5 Reversal:</p> <ul style="list-style-type: none"> <li>- bitmaps inserted</li> <li>- removed BMP 01, 02, 05</li> </ul> <p>Change Chapter 2.6 Partial-Reversal:</p> <ul style="list-style-type: none"> <li>- Removed BMP 19</li> </ul> <p>Change Chapter 2.8 Reversal Pre-Authorisation:</p> <ul style="list-style-type: none"> <li>- Note supplemented</li> </ul> <p>Change Chapter 2.10 Refund:</p> <ul style="list-style-type: none"> <li>- bitmaps inserted</li> <li>- Removed BMP 01, 02, 05</li> </ul> <p>Change Chapter 2.15 Receipt repeat:</p> <ul style="list-style-type: none"> <li>- Service-byte inserted</li> </ul> <p>Change Chapter 2.16 Read Card:</p> <ul style="list-style-type: none"> <li>- if chip should be read but the card has no chip then the PT can read the magnet-stripe and send to the ECR.</li> <li>- BMP FC defined in more detail</li> </ul> <p>Change Chapter 2.18 Abort:</p> <ul style="list-style-type: none"> <li>- the PT sends no Abort after the confirmation (80-00-00)</li> </ul> <p>Change Chapter 3.1.1 Status-Information after Authorisation, Reversal, Prepaid:</p> <ul style="list-style-type: none"> <li>- BMP 3B is padded with 00h</li> </ul>	K. Höflich




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		- error nr. 133 inserted	
06	21.01.2005	Change chapter 2.2 Authorisation: - BMP 22 is padded with 'F' s if even data length  Change chapter 10 description of the BMPs to extend and complete format-details.  Change chapter 7 TLV-container: - editorial changes and improved explanation of TLV-containers	K.Höflich  R.Roos  K.Höflich
07	30.03.2005	Change chapter 2.37 change Baudrate: - new Baudrate included  Change chapter 6.1 additional-data type 1: - the length the goods-data extended to 11  Change chapter 7.4: - tag 01; length 8 byte - Tags added	K.Höflich  K.Höflich  K.Höflich
08	06.06.2005	Change chapter 2.16 Read Card: - error for Description BMP FC corrected  chapter 2.35 OPT-Out-of-Order included  Change chapter 3.1.1 Status-Information after Authorisation, Reversal or Prepaid-Top-Up: - encoding of BMP 3B explained on more detail  Change chapter 7.2.2 Transmission of the TLV-container from PT to the ECR: - Note regarding validity-duration of the BMP06 added Change chapter 6.1.3 goods-data information: - encoding of negative amounts added  Change chapter 7.4 defined data-objects: - tag 0F (order-number) inserted  Change chapter 8 Error-Messages - error-codes the inserted, current error-codes definitions improved  Change chapter 9 Terminal-Status - status-code 193, remedy actions extended	K.Höflich  K. Höflich  K. Höflich  K. Höflich  K. Höflich  K. Höflich  K. Höflich
09	2.12.2005	Change chapter 2.1 Registration: - various changes for the Registration and for Completion New chapter 2.2.11 Storing the transaction in PT  Change chapter 2.4 pre-authorisation: - Extension for reservation - tag 1F06 added	K. Höflich

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		BMP 0B and BMP 3B included	
		<p>Change chapter 2.6 Partial-Reversal:</p> <ul style="list-style-type: none"> <li>- Extensions to booking of a reservation</li> <li>- tag 1F06 added</li> <li>- BMP 0B and BMP 3B included</li> </ul> <p>Change chapter 2.7 Book Total:</p> <ul style="list-style-type: none"> <li>- Extensions to booking of a reservation</li> <li>- tag 1F06 added</li> <li>- BMP 0B and BMP 3B included</li> </ul> <p>Change chapter 2.12 Diagnosis:</p> <ul style="list-style-type: none"> <li>- Diagnosis type included</li> <li>- Error correction for Send Date/Time</li> </ul> <p>Change chapter 2.15 Repeat Receipt:</p> <ul style="list-style-type: none"> <li>- tag receipt-ID included</li> </ul> <p>Change chapter 2.16 Read Card:</p> <ul style="list-style-type: none"> <li>- for cards with chip the magnet-stripe data that the PT read during insertion is sent to the ECR</li> <li>- Extension BMP19</li> <li>- Correction of the Sequence for Read Card</li> </ul> <p>Change chapter 2.17 activate card-reader:</p> <ul style="list-style-type: none"> <li>- Description of behaviour for error added</li> </ul> <p>Change chapter 2.29 select language :</p> <ul style="list-style-type: none"> <li>- language-code „French“ added</li> </ul> <p>Change chapter 2.30 Software-Update:</p> <ul style="list-style-type: none"> <li>- tag order-number added</li> </ul> <p>New command „Read File“ 08 11 (chapter 2.31)</p> <p>New command „Delete File“ 08 12 (chapter 2.32)</p> <p>Change chapter 2.40 change Baudrate (08 40):</p> <ul style="list-style-type: none"> <li>- Baudrate 19.200 Baud added</li> </ul> <p>Change chapter 3.5 Print Lines:</p> <ul style="list-style-type: none"> <li>- TLV-container added (tag 1F07)</li> </ul> <p>Change chapter 3.6 Print Textblock:</p> <ul style="list-style-type: none"> <li>- tag 1F07 added</li> </ul> <p>Change chapter 3.7 Intermediate-Status Information:</p> <ul style="list-style-type: none"> <li>- new Intermediate Status included</li> </ul> <p>New chapter 3.13 Menu-Request</p> <p>Change chapter 7.4 Defined data-objects:</p>	

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		<ul style="list-style-type: none"> <li>- new Tags defined; u.a. Extensions for EMV2000</li> </ul>	
		Change chapter 8 error- codes: <ul style="list-style-type: none"> <li>- error for error- code 221 and 222 corrected</li> </ul> Change chapter 9 Terminal-Status: <ul style="list-style-type: none"> <li>- Status E3 Shutter Closed added</li> <li>- Remedial measures for Status 178 added</li> </ul> New chapter 10 list of ZVT-card-type-IDs Change chapter 10 list of ZVT-card-type-IDs: <ul style="list-style-type: none"> <li>- ZVT-card-type-ID 30 is only meant for Geldkarte, ec-cash Chip counts as ec-card</li> </ul> HEM-card added	
10	24.01.2006	Change chapter 10 list of ZVT-card-type-IDs: <ul style="list-style-type: none"> <li>- 2 cards (Dankort and VISA/Dankort) added</li> </ul>	K.Höflich
11	15.03.2007	Change chapter 3.1.1 Status-Information after Authorisation, Reversal, Pre-Authorisation/Reservation or Prepaid-Top-Up: <ul style="list-style-type: none"> <li>- Note for BMP 22, 3B, 92, BA, AF, 88 and 92 added</li> </ul> Change chapter 2.2 Authorisation: <ul style="list-style-type: none"> <li>- BMP 2D, 23, 24 now sent without Start/End sentinel</li> <li>- BMP 3A added</li> <li>- For Bonus transactions is the inclusion of the Amounts optional.</li> </ul> New chapter 2.3 Account Balance Request New chapter 2.4 Book Tip Change chapter 2.5 Telephonic Authorisation: <ul style="list-style-type: none"> <li>- BMP 3B corrected</li> <li>- BMP 3A added</li> </ul> Change chapter 2.6 Pre-Authorisation/Reservation: <ul style="list-style-type: none"> <li>- Extensions for BMP 0B and 3B</li> </ul> Change chapter 2.7 Partial-Reversal of a Pre-Authorisation/Booking of a Reservation: <ul style="list-style-type: none"> <li>- BMP 3B added</li> </ul> Change chapter 2.9 Book Total: <ul style="list-style-type: none"> <li>- Extension for BMP 0B and 3B</li> </ul> Change chapter 2.12 Refund: <ul style="list-style-type: none"> <li>- Amount is for Bonus-transactions optional</li> </ul> Change chapter 2.25 Display Text with Function-Key Input: <ul style="list-style-type: none"> <li>- key-codes added</li> </ul> Change chapter 2.26 Display Text with Function-Key input	

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		(old Version):	
		<ul style="list-style-type: none"> <li>- key-codes added</li> </ul>	K.Höflich
		Change chapter 3.2 Completion: <ul style="list-style-type: none"> <li>- Parameter for command termination extended</li> </ul>	R.Roos
		Change chapter 7.4.3 Tags: <ul style="list-style-type: none"> <li>- tag 1F0C auto-registration added</li> <li>- tag C1 possible value added</li> </ul>	K.Höflich
		Change chapter 10. list of ZVT-card-type-ID: <ul style="list-style-type: none"> <li>- Mango-card inserted</li> <li>- Payback-card inserted</li> </ul>	R.Roos
		English translation	S. Atherton
12	6.7.2007	New chapter 2.4 Activate Card (06 04)	K.Höflich
		Changes chapter 2.13 Refund (06 31): <ul style="list-style-type: none"> <li>- value '47 4C' added</li> </ul>	
		Changes chapter 2.44 Top-Up Prepaid Cards (06 09): <ul style="list-style-type: none"> <li>- payment type 03 added</li> </ul>	
		Changes chapter 3.1 Status Information (04 0F): <ul style="list-style-type: none"> <li>- extended BMP 8A and BMP 8C</li> </ul>	
		Changes chapter 7.4 Tags: <ul style="list-style-type: none"> <li>- Tag 41 note added</li> <li>- Tag 49 added</li> <li>- Tag C1 optional value added</li> </ul>	
		Changes chapter 10. List of ZVT Card-type IDs: various cards added	
	18.10.2007	Changes chapter 2.24 and 2.25 Display Text (06 E0 and 06 85) <ul style="list-style-type: none"> <li>- Note can be ended prematurely using command „Abort“ (06 B0)</li> </ul>	T.Lilienthal
		Changes chapter 2.26 and 2.27 Display Text with Function Key Input (06 E1 and 06 88) <ul style="list-style-type: none"> <li>- Note can be ended prematurely using command „Abort“ (06 B0)</li> </ul>	
		Changes chapter 2.28 and 2.29 Display Text with Numerical Input (06 E2 und 06 86) <ul style="list-style-type: none"> <li>- Note can be ended prematurely using command „Abort“ (06 B0)</li> </ul>	
		Changes chapter 2.30 und 2.31 PIN-checking for Customer cards (06 E3 und 06 87)	


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		<ul style="list-style-type: none"> <li>Note can be ended prematurely using command „Abort“ (06 B0)</li> </ul>	
	06.11.2007	<p>Changes chapter 3.1.1 Status Information after Authorisation</p> <ul style="list-style-type: none"> <li>Extension of BMP 19 (payment type)</li> </ul> <p>Changes chapter 7.4 defined data-objects and 7.4.6 for Prepaid (TLV Container).</p> <ul style="list-style-type: none"> <li>Tag 83 added</li> </ul> <p>New chapter 3.14 Blocked-List Query to ECR (06 E4)</p> <p>Changes chapter 8 Error Messages</p> <ul style="list-style-type: none"> <li>Error code 6E (card in blocked-list) added</li> </ul>	T.Lilienthal
	14.02.2008	<p>Changes chapter 2.1 Registration (06 00)</p> <ul style="list-style-type: none"> <li>TLV-Tag 26 added to Completion command.</li> </ul> <p>Changes chapter 2.21 command Abort (06 B0)</p> <ul style="list-style-type: none"> <li>Note how and where this command can be used</li> </ul> <p>New chapter 2.45 Print Line on PT.</p> <p>New chapter 2.46 Print Text-Block on PT.</p> <p>Changes chapter 3.6 Print Text-Block (06 D3)</p> <ul style="list-style-type: none"> <li>Note „Print Text-Block on PT“ added.</li> </ul> <p>Changes chapter 7.4 defined data-objects and 7.4.1 Miscellaneous (TLV Container).</p> <ul style="list-style-type: none"> <li>Tag 1F 0D added</li> </ul>	T.Lilienthal
	07.03.2008	<p>Changes chapter 2.21 Abort command (06 B0)</p> <ul style="list-style-type: none"> <li>Note how and where this command can be used</li> </ul> <p>Changes chapter 7.4.1 Miscellaneous</p> <p>Following tags added</p> <ul style="list-style-type: none"> <li>1F 0E „date“</li> <li>1F 0F „time“</li> <li>1F 10 "cardholder authentication"</li> <li>1F 11 "online flag"</li> <li>1F 12 "card-type"</li> <li>2E „time-stamp“</li> <li>2F "payment-type"</li> </ul> <p>Changes chapter 7.4.4 for EMV (debit/credit and DC POS)</p> <ul style="list-style-type: none"> <li>Header extended with „debit/credit and DC POS“</li> <li>Tag 40 extended</li> <li>Tag 46 and 47: note added to tag 66.</li> <li>64 „Receipt Header“ added</li> <li>65 „Receipt Advertising Text“ added</li> <li>66 „Print Data Customer Receipt“ added</li> <li>67 „Print Data Merchant Receipt“ added</li> <li>68 „Print Text Transaction Outcome“ added</li> </ul>	T.Lilienthal



## Commands, Bitmaps, Error Messages


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		69 „Reference Transaction“ added	
		<p>Changes chapter 10 List of ZVT Card-type IDs</p> <ul style="list-style-type: none"> <li>- New Card-type ID „5 girocard“</li> <li>- New Card-type ID „7 EAPS“</li> <li>- New Card-type ID „9 girocard deutsche Lastschrift“</li> <li>- New Card-type ID „11 VISA electron“</li> <li>- New Card-type ID „13 V PAY“</li> <li>- New Card-type ID „202 Payback (without payment function)“</li> <li>- Name Card-type ID „6 Eurocard“ changed to „MasterCard“</li> </ul> <p>Changes chapter 7.4.4 for EMV (debit/credit and DC POS)</p> <ul style="list-style-type: none"> <li>- Tag 47: note to tag 67 corrected</li> </ul>	
12a	04.04.2008	copyright changed	T.Lilienthal
13.01	02.06.2008	<p>Changes chapter 10, list of ZVT Card-type IDs</p> <ul style="list-style-type: none"> <li>New Card-type ID „203 Micromoney“ (Prepaid)</li> <li>New Card-type ID „204 T-Card“ (Prepaid)</li> <li>New Card-type-ID „205 Blau“ (Prepaid)</li> <li>New Card-type-ID „206 BILDMobil“ (Prepaid)</li> <li>New Card-type-ID „207 Congstar“ (Prepaid)</li> <li>New Card-type-ID „208 C3 Bestminutes“ (Prepaid)</li> <li>New Card-type-ID „209 C3 Bestcard“ (Prepaid)</li> <li>New Card-type-ID „210 C3 Callingcard“ (Prepaid)</li> <li>New Card-type-ID „211 EDEKAMOBIL“ (Prepaid)</li> <li>New Card-type-ID „212 XTRA-PIN“ (Prepaid)</li> </ul>	T.Lilienthal
	06.03.2009	<p>8-Bit default character set added and set as default</p> <p>New TLV-tags 1F13-1F18</p> <p>New Card-type-IDs</p> <ul style="list-style-type: none"> <li>"213 Klimacard"</li> <li>"214 ICP-International-Fleet-Card"</li> </ul> <p>New bitmap 2E in status information to read card command</p> <p>New intermediate status codes 0xCB and 0xFF</p> <p>Command 06 E1 optionally responds to card inserts</p> <p>Optional bitmap 8A or TLV tag 41 in payment commands.</p> <p>New commands from ECR to PT</p> <ul style="list-style-type: none"> <li>Tax Free (06 0A)</li> <li>Send Turnover Totals (06 10)</li> <li>Reset Terminal (06 18)</li> <li>Print System Configuration (06 1A)</li> <li>Set/Reset Terminal-ID (06 1B)</li> <li>Send offline Transactions (06 51)</li> <li>Selftest (06 79)</li> <li>Change Password (06 95)</li> </ul> <p>Clarification of the use of tag 09 in container 25 in command</p> <p>Print Text Block (06 D3) to indicate the last block.</p> <p>Clarification of default value for bitmap EA.</p>	R.Roos
13.02	29.01.2010	<p>New key codes for "Display text with Numerical Input" (06 E2, 06 86).</p>	R.Roos

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		Description of "Change Password" (06 1E) corrected. Added tag 2F to "Status-Information" (04 0F). Description of bitmap A0 improved.	
		New ZVT intermediate status code CC – "debit advice not possible, PIN required". Description of ZVT intermediate status code FF corrected. German equivalents to ZVT intermediate status codes added. Reworked description of ZVT intermediate status codes according to DC POS 2.4 requirements. New TLV tags added: 4A - DC POS 2.4 product display. 1F19–card acceptance 1F1A–PAN for card acceptance matching 1F1B–markup in % with 2 decimals 1F1C–card name 1F1D–currency information Type 1F1E–number of decimals 1F20–amount 1F21–ISO currency code 1F22–Inverted rate display unit 1F23–Retrieval ID 1F24–Reference Number 30–card acceptance matching 31–amount information E2-DCC container New FileID for TLV tag 1D 06 "reconciliation data" added. Description of TLV tags 21, 30, 1F04, 1F0C, 1F0D, 1F16 and 1F17 improved. TLV tag 40 extended with request for product display. Description of ZVT error code FF expanded. New Card-type IDs: 21 – "Payeasy" 127 – "AirPlus" 215 – "ICP-Gutscheinkarte" 216 – "ICP-Bonuskarte" 217 – "Austria Card" 218 – "ConCardis Geschenkkarte" 219 – "TeleCash Gutscheinkarte" 220 – "Shell private label credit card" 221 – "ADAC" 222 – "Shell Clubsmart" 223 – "Shell Pre-Paid-Card" 224 – "Shell Master-Card" 225 – "bauMax Zahlkarte" 226 – "Fiat – Lancia – Alfa Servicecard" 227 – "Nissan – Karte" 228 – "ÖBB Vorteilskarte" 229 – "Österreich Ticket" 230 – "Shopin – Karte" 231 – "Tlapa – Karte"	

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		232 – "Discover Card" 233 – "f+f – Karte"	
		234 – "Syrcon"  Added character 'E' to description of bitmap 22, 23 and 24 to optionally mask of numeric digits for PCI-DSS requirements. Added note to 8 bit character set. Clarified structure of BMP 3C (Additional Data) New command to change the serial protocol (08 02) References to Print Textblock command added. Algorithm-ID for BICA cards fixed. DCC information added to Status-Information. Description of Additional Data type 3 corrected. Description of payment type reworked. Required elements of TA7.0 DC POS receipts added Corrected description and use of tlv tag 15 TLV tag 1F10 expanded for combined CVMs Clarified description of Card-type ID 9	
13.03	17.06.2010	New Card-type IDs: 235 – "Citybike Card" 236 – "Postfinance Card" 237 – "DAS" 238 – "IKEA FAMILY Bezahlkarte" 239 – "Ikano Shopping Card" 240 – "InterCard Gutscheinkarte" 241 – "InterCard Kundenkarte" 242 – "M&M-Gutscheinkarte" 243 – "Montrada card" 244 – "CP Customer Card"	R.Roos
	16.09.2010	New language code 03 = Italian for Select Language (08 30) Changes for EuroELV including new TLV tags. Increase Registration to handle different Iso Tables/ character-sets.	U.Liegl
13.04	12.11.2010	New Card-type IDs: 242 – "M&M-Gutscheinkarte" 243 – "Montrada card" 244 – "CP Customer Card"	R.Roos
	03.12.2010	New TLV-Tag 1F2B for trace number (long format) New Card-type ID: 245 – "AmexMembershipReward "	
	26.01.2011	Change chapter 2.13 Refund: - BMP 3B included	
	31.01.2011	Optional BMP 3C for Pre-Authorisation/Reservation (06 22)	R.Roos
	24.02.2011	New Tag 6A for invalid EMV application New Card-type IDs: 246 – "FONIC" 247 – "OTELLO DE" 248 – "SIMYO"	
	10.03.2011	New Card-type IDs: 249 – "Schlecker Smobil" 250 – "Schlecker Zusatzprodukte" 251 – "CHRIST Gutscheinkarte" 252 – "IQ-Card"	R.Roos

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	30.06.2011	Merged Changes from Version 13.03	
	30.06.2011	New Card-type ID: 253 – AVS Gutscheinkarte	K. Höflich
	22.07.2011 24.08.2011	New TLV-Tag 1F2C New Card-type ID: 254 – "Novofleet Card" 15 – "REKA Card"	K.Höflich R.Roos
	16.09.2011	New Card-type IDs: 17 – "Happiness Card" 19 – "Transact Geschenkkarte" 23 – "boncard POINTS" 25 – "boncard PAY" New TLV-Tags 1F2D – 1F34, E3 Extended TLV-Tags 25, 1F04 Extended command PIN-Verification for Customer-Card (06 E3) New command MAC calculation (06 E5)	R.Roos
	04.10.2011	Improved description of tags 14, 25, 27 Removed Track 3 for ELV/OLV Transactions New diagnoses type '05' = EP2 configuration in tag 1B	A. Och/R. Roos
	05.10.2011	New Card-type IDs: 27 – "Klarmobil" 29 – "Mobile World" 31 – "Ukash" 33 – "Wallie"	R.Roos
13.05	27.10.2011	New TLV-Tag 1F34	R.Roos
	29.11.2011	New Card-type ID: 35 – "MyOne"	R.Roos
	13.12.2011	37 – "Gutscheinkarte DOUGLAS Gruppe"	R.Roos
		39 – "ABO Card"	
		41 – "BonusCard"	
		43 – "CCC Commit Card"	
		45 – "DataStandards"	
		47 – "GiftCard"	
		49 – "Jelmoli Card"	
		51 – "J-Geschenkkarte"	
		53 – "Jubin"	
		55 – "ManorCard"	
		57 – "Power Card"	
		59 – "Supercard plus"	
		61 – "SwissBonus Card"	
		63 – "SwissCadeau"	
		65 – "Tetora"	
		67 – "WIRcard"	
		69 – "Postcard"	
	17.01.2012	70 – "lebara" 71 – "Lyca" 72 – "GT Mobile"	R.Roos
	18.01.2012	Renamed algorithm ID 13 to BICA 2 New algorithm ID 14 for DataStandards CH	R.Roos
	23.01.2012	Added new text-IDs for command 04FF:	A.Och

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		-0x28: "currency selection, please wait..." -0x29: "language selection, please wait..." -0x2A: "for loading please insert card"  Extensions for DCPOS 2.5: -Added new description for tag 1F25 (Cashback amount) -Added new tag 1F36 (Tip amount) -Added new tag 1F37 (Receipt information) -Extended description for tag 45 (Receipt-Parameter) according DF25 of DCPOS 2.5 -Added note for BMP19 (chapter Authorization 0601) -Added new command 040D (Input-Request) -Added new tag 1F38 (Input mode) -Added new tag 1F39 (Timeout) -Added new tag 1F3A (Input result) -Added new tag 32 (Input container) -Added new tag 1F3B (Transaction information) -Fixed some typing errors	
	31.01.2012	New cardholder authentication method for tag 1F10 added.	R.Roos
	17.02.2012	Added partial issue of goods in chapter 2.2.6 Added new tag 4B issuer country code Removed card-type IDs 236 and 237 due to duplication with 45 and 69	R.Roos
	09.03.2012	Added tag 1F3A to input request as initial value New ZVT errorcodes 0x7B and 0x7C. New optimal bitmap FA in command 06 0B to PT New value 0B of tag BMP D0 for frei & flott card	R.Roos
	28.03.2012	Chapter 1.3:Allow currency code other than EUR = 978	R.Roos
	04.05.2012	New values for TLV tag 14	R.Roos
	08.05.2012	New TLV tag 1F3E (encrypted cardholder information)	R.Roos
	11.06.2012	Added new text-IDs for command 04FF: -0x2B: "Emergency transaction, please wait" -0x2C: "Application selection, please wait"	R.Roos
	13.06.2012	Add new tag 1F3F (available credit) for Geldkarte, in response for completion	U.Liegl
	27.07.2012	New ZVT errorcode 0xCD for cashback	R.Roos
	08.08.2012	Added status and error code E4/228 to indicate that a terminal activation is required.	H. Bihr
	17.08.2012	Reserved command 0F CA for ChipActivator	R.Roos
	13.09.2012	Added IIN/AID to Card-type ID as known.	R.Roos

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## 1 Definitions

All numerical values, unless otherwise specified, are **hexadecimal**.

### 1.1 Terms and Abbreviations

Term	Definition
APDU	Application Protocol Data Unit (= a complete request or response)
BMP	bitmap, pre-defined data field
CC	Currency Code, 09 78 = Euro
ECR	Electronic Cash Register. System that transmits the amount to the payment terminal. May also be a vending machine.
PS	Personalisation System Host (= Background-system for OPT-Actions)
PT	Payment Terminal
RC	Return-Code
RFU	Reserved for Future Use
TCS	Terminal Configuration Server (= Server that is responsible for software-updates and other maintenance)
TID	terminal-ID, 8 character numerical
Xx	any value/undefined/dependent on the data
ZVT	Zahlungsverkehrsterminal (= Point-Of-Sale Terminal)
<field>	A parameter shown in angled-brackets is a place-holder. The place-holder is explained in the following text
[<field>]	A parameter shown in square-brackets is optional

### 1.2 Password

Some PTs require a password from the ECR to carry out certain functions. The password consists of 6 digits which are packed as 3 byte BCD.

e.g.: password "123456" produces 12 34 56.


### 1.3 Currency Code

The Currency Code (CC) has a length of 2 bytes.

The Currency-Code is checked by the PT as follows to ensure maximum compatibility:

- no CC                                      OK (interpreted as amount in currency ,EUR')
- CC = 09 78                                OK (= ,EUR')
- All other CCs                              OK if PT supports multiple currencies otherwise error

The PT only sends a Currency-Code to the ECR, if the ECR had also sent a Currency-Code in its request.

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## 2 Commands from ECR to PT

### 2.1 Registration (06 00)

Using the command Registration the ECR can set up different configurations on the PT and also control the current status of the PT.

An Authorisation on the PT can also take place without previously registering the PT with the ECR.

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	00	xx	<password><Config-byte>[<CC>[03<service-byte>][06<TLV-container>]]

Data-block:


- <password> 3 byte
- <Config-byte> 1 byte
- <CC> 2 byte optional
- The field „03<service-byte>“ is optional, length 1 byte. If <service-byte> is sent, Currency-Code must also be present.
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Note: as long as the ECR supports TLV-container it is strongly recommended that the ECR sends the list of permitted commands. If <TLV-container> is sent, then <CC> must also be sent.  
Possible tags in TLV-container: tag 10, 11, 12, 14, 1A, 26, 27, 28, 29, 2A, 40, 1F04, 1F05  
The tag 14 allows to configure a different character set to the PT. Only if this tag is echoed in the Completion command, the character set is accepted by the terminal. If no tag is echoed, the standard character set is used. If the same value for tag 14 is echoed, all commands for printing 06 D1, 06 D3, and all commands for displaying text use the selected character set. See definition of tag 27 for details.

Definition of <service-byte>:


Service-byte	Definition
xxxx xxx1	The PT service-menu may not be assigned to PT function-key.
xxxx xxx0	The PT service-menu may be assigned to PT function-key (= default if BMP03 omitted).
xxxx xx1x	The display texts for the Commands Authorisation, Pre-initialisation and Reversal will be displayed in capitals.
xxxx xx0x	The display texts for the Commands Authorisation, Pre-initialisation and Reversal will be displayed in standard font (= default if BMP03 omitted).
Remainder	RFU

Note:

bit 1 (Font-size) has no influence on the font-size for the Commands Text-Display, Text-Display with Function-Key Input, Text-Display with numerical input and Text-display with Customer-card PIN-verification. For these commands font-size is switched via control-character (see relevant chapter).

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The field Service-byte is a bit-field.

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Definition of <Config-byte>:

Config-byte	Definition
0000 000x	RFU
0000 0010	<p>ECR assumes receipt-printout for payment functions (see also "ECR Printing - ECR print-type")</p> <p>0: payment receipt not printed by ECR 1: payment receipt printed by ECR</p> <p>Payment functions are: Payments, Reversal, Refund, Pre-Authorisation, Partial-Reversal, Book Total, Tel. Authorisation, Prepaid Charge-up, Repeat-Receipt</p>
0000 0100	<p>ECR assumes receipt-printout for administration functions (see also "ECR print-type")</p> <p>0: administration receipt not printed by ECR 1: administration receipt printed by ECR</p> <p>Administration functions are: All other functions which are not payment functions.</p>
0000 1000	ECR requires intermediate status-Information. The PT sends no intermediate status-information if not logged-on.
0001 0000	<p>ECR controls payment function</p> <p>0: Amount input on PT possible 1: Amount input on PT not possible</p>
0010 0000	<p>ECR controls administration function</p> <p>0: Start of administration function on PT possible 1: Start of administration function on PT not possible</p>
0100 0000	RFU
1000 0000	<p>ECR print-type (see also "ECR assumes receipt-printout for payment functions" and "ECR assumes receipt-printout for administration functions"):</p> <p>0: ECR compiles receipts itself from the status-information data 1: Receipt-printout via ECR using command *Print Lines" (06D1)</p> <p>This field is only used if the option "ECR assumes receipt-printout for payment functions" and/or "ECR assumes receipt-printout for administration functions" is set.</p> <p>Receipts which are not printed by the ECR must be printed by the PT's own printer.</p>

Note:

The field Config-byte is a bit-field.

If the ECR generates the receipt using the PT-command **Print Lines** (06D1) or **Print Textblock** (06D3) it can inform the PT of its maximum line-width in the request. This is done by sending a TLV-container containing the line-width in tag 12. The PT then delivers the line-width actually used, also in tag 12 of the Completion Command. The PT formats the receipt accordingly, where technically possible. The PT informs the ECR correspondingly which line-width the receipt is actually formatted with. The ECR can then add leading spaces to the print-line, to allow it to be centred when printed on the ECR printer.

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### Examples of receipt-printout over ECR:

Config-byte	Result
0xxx x00x	Receipt-printout on PT
0xxx x11x	Receipt-printout on the ECR, whereby the ECR constructs the receipt itself from the status-information; the PT prints nothing
0xxx x01x	Payment receipt-printout on the ECR, whereby the ECR constructs the receipt itself from the status-information; the PT prints the administration receipts
0xxx x10x	Administration receipt-printout on the ECR, whereby the ECR constructs the receipt itself from the status-information; the PT prints the payment receipts
1xxx x00x	Receipt-printout on PT
1xxx x11x	Receipt-printout on ECR using command "Print Lines" (06D1)
1xxx x01x	Payment receipt-printout on ECR using command "Print Lines" (06D1); the PT prints the administration receipts, provided a printer is integrated in the PT
1xxx x10x	Administration receipt-printout on ECR using command "Print Lines" (06D1); the PT prints the payment receipts, provided a printer is integrated in the PT

Special case: ECR prints payment receipts and no receipts should be printed for administration functions (neither on PT nor on ECR):

In this case config-byte 0xxx x11x or 1xxx x11x is used, whereby the ECR does not execute the administration receipt-printout.

If the Currency-Code is correct the PT answers with:

#### Response of PT:


PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

In error-case (=incorrect CC) the PT answers with:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	1E	xx	6F[<CC>]

Data-block:

The PT only sends a Currency-Code to the ECR, if the ECR had also sent a Currency-Code in its request.

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If the Currency-Code check is positive, the **Completion** takes place whereupon the ECR receives the “master-rights” back:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	xx	[19<status-byte>] [29<TID>] [49<CC>][06<TLV-container>]

Data-block:

- <status-byte>, optional, 1 byte
- <TID>, optional, 4 byte long (BCD packed).
- <CC>, optional, 2 byte
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).

Possible tags in TLV-container: tag 10, 11, 12, 14, 1A, 27, 28, 26

Using tag 26 the PT can communicate its implementation level to the ECR.

Definition of <status-byte>:

Status-byte	Definition
Xxxx xxx1	PT initialisation necessary
Xxxx xx1x	Diagnosis necessary
Xxxx x1xx	OPT-action necessary
Xxxx 1xxx	PT functions in Filling-Station System mode
Xxx1 xxxx	PT functions in Vending-machine mode
xx1x xxxx	RFU
x1xx xxxx	RFU
1xxx xxxx	RFU


Note:

The field status-byte is a bit-field.

## ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

If the ECR generates the receipt using the PT-command **Print Lines** (06D1) or **Print Textblock** (06D3) it can inform the PT of its maximum line-width in the request. This is done by sending a TLV-container containing the line-width in tag 12. The PT then delivers the line-width actually used, also in tag 12 of the Completion Command. The PT formats the receipt accordingly, where technically possible. The PT informs the ECR correspondingly which line-width the receipt is actually formatted with. The ECR can then add leading spaces to the print-line, to allow it to be centred when printed on the ECR printer.

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## 2.2 Authorization (06 01)

This command initiates a payment process and transmits the amount from the ECR to PT. The result of the payment process is reported to the ECR after completion of the booking process.


### Caution:

If the receipt printout shall be carried out by the ECR, this may only send the command to the PT if the ECR printer is ready and enough paper for the receipt is available.

The following is an example of an authorisation sequence. Here are the particular features of the Pre-Authorisation (see also chapter Pre-Authorisation (0622)) detailed.

### Authorisation sequence:

1. Start via call from ECR (amount-transfer, possibly payment-type or card-data)
2. The PT reads the card, if the ECR did not send card-data with the start
3. The PT executes the transaction
4. Depending on the configuration the PT sends Intermediate Status-Information during the transaction to the ECR, so that the ECR knows that the transaction is still running.
5. Release Card
6. The PT sends a Status-Information with the transaction result (successful or not successful)
7. For Vending-Machines:
  - for vending-machines: issue of goods
  - for Filling-Station Systems: Start Filling
8. Response to Status-Information with the following function:
  - for normal PTs: contains transaction result
  - for vending-machines: result of Issue-of-Goods (goods issued or goods not issued)
  - for Filling-Station Systems: Start Filling took place
9. Payment Reversal via PT if the Issue-of-Goods was not successful
10. Receipt-printout (for Filling-Station System the receipt-printout takes place during the partial-reversal)
11. Completion

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### 2.2.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	01	xx	[04<amount>] [49<CC>] [19<payment-type>] [2D<track 1 data>] [0E<expiry-date>] [22<card-number>] [23<track 2 data>] [24<track 3 data>] [01<time-out>] [02<max. status-infos>] [05<pump nr.>] [3A<CVV/CVC>] [3C<additional-data>] [8A<card type>] [06<TLV-container>]


#### Data-block:

- The amount is 6 byte BCD-packed, amount in Euro-cents with leading zeros.  
For bonus-transactions is the field amount optional. In this case the tag E1 with subtag C2 can be sent instead of amount.
- The field „49<CC>“ is optional.
- The field „19<payment-type>“ is optional, length 1 byte.
- The field „0E<expiry-date>“ is optional, 2 byte BCD encoded, format YYMM. Used for payment with manual card-data entry.
- The field „22<card-number>“ is optional, LL-Var BCD encoded. Used for payment with manual card-data entry. If the card-number contains an odd number of digits, it padded with an 'F'.
- The field „2D<track 1 data>“ (without start and end markers) is optional.
- The field „23<track 2 data>“ (without start and end markers) is optional.
- The field „24<track 3 data>“ (without start and end markers) is optional.
  - The field „01<time-out>“ supplies the time in seconds that the PT waits during Issue-of-Goods for a response from the ECR. <time-out> is optional, length 1 byte. The default-value is 30s.
  - The field „02<max. status-infos>“ defines the maximum number of times that ECR may request the result the Issue-of-Goods from the PT via Status-Information. Length 1 byte. If <max. status-infos> is not supplied this value is infinite.
  - The field „05<pump nr.>“ is used for the display (e.g. „Please fill-up, pump 2“) following a successful authorisation on when using a Filling-Station System. <pump nr.> is optional, length 1 byte (Range 00 - FF). If field <pump nr.> is omitted, the PT in the Filling-Station System displays the text without pump number, e.g. „Please fill-up“.
  - The field „3A<CVV/CVC>“ (optional) is used for Mail-Order. 2 byte BCD encoded.
- The field „3C<additional-data>“, is optional, length variable. Depending on the ECR-system and application different additional-data can be transmitted (see chapter Additional-Data).
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible tags in TLV-container: tag 1F04, 1F05, 1F15, 15, 20, 41, 43, E1 (for C1 value '4D 45' or '4D 53' possible), 30, 1F25, 1F36
- For cards which can not identified by the BIN, like CUP, the card type has to be sent with the command. Therefor the BMP 8A or TLV tag 41 is used.
- All other data are ignored by the PT.

#### Background:

If the ECR cannot complete the Issue-of-Goods within time <time-out>, the ECR responds to the PT Status-Information with „84-9C“. In this case the PT waits 2s, then sends Status-Information again. The parameter <max. status-infos> prevents this sequence from running in an infinite-loop.



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Definition of **payment-type**:

pay-ment-type	GiroCard	DC POS related cards	other cards
xxxx xxx1	RFU		
xxxx xx1x	The PT should execute the payment using the data from the previous „Read Card“ command. If no card-data is available, the PT sets the corresponding return-code in the Status-Information.		
xxxx x1xx	Printer ready		
xxxx 1xxx	Tippable transaction (since DCPOS 2.5: ignored for EMV tip/tippable transactions)		
0000 xxxx	ELV or EuroELV, if only EuroELV is supported by PT	Ignored	offline transaction
0001 xxxx	Geldkarte	Ignored	Ignored
0010 xxxx	Online without PIN (OLV or EuroELV, if only EuroELV is supported by PT)	Ignored	online transaction
0011 xxxx	PIN (ec-Cash Magnet or Chip) for TA 5.x and TA 6.0 PTs; Girocard transaction according to TA7.0 rules for TA 7.0 capable PTs	DC POS transaction for DC POS capable PTs. Ignored or refused for non DC POS capable PTs.	PIN based transaction
0100 xxxx	Payment according to PTs decision		

Note:

The field payment-type is a bit-field.


If the payment-type is not specifically defined, for example payment-type = ‚0100xxxx‘, the PT selects the payment-type itself. For an ec-card with chip, selection of „Geldkarte“ is only possible via pre-selection of the payment-type.

If the payment-type selected by the ECR is inhibited in the PT, the PT either responds with an error-message in the Status-Information or ignores the payment type.

If BMP 23 or BMP 24 (=track-data) or BMP 0E and BMP 22 (=manual card-data) are contained in the data for command „Authorisation“, it is attempted to complete the payment using this data, without requesting further insertion of the card.

The PT answers immediately with:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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## 2.2.2 Read Card

If the ECR has not sent any card-data (track-data or manually-entered data), then the PT waits for a card (chip-card or magnet-card) from the customer.

The PT ascertains whether chip or magnet-stripe shall be used for the payment, depending on possible pre-determined payment-type, the card-type, the limits in PT and the merchant procedure-selection whether chip or magnet-stripe shall be used for the payment.

For swipe-reader:

The magnet-stripe is read during swiping of the card. Reading of the chip is not possible.

For chip-reader:

The chip is read after inserting the card. Reading of the magnet-stripe is not possible.

For manual-insertion reader with hybrid-reader function:

If the customer inserts the card in the reader, the PT locks the card (depending on the reader-type). If the PT determines that the payment will be carried out using magnet-stripe, the PT releases the card immediately to allow the magnet-stripe to be read during removal.

For chip-transactions the card remains locked for the whole transaction.

For PTs with manual-insertion readers without locking-function the customer take care that the card is not removed too early from the card-reader.

For motor-insertion reader:

The PT reads chip and magnet-stripe and makes the Technology-Selection (chip or magnet) according to the pre-determined payment-type and/or the limits set in the PT. The card remains in the card-reader.

## 2.2.3 Transaction

After reading the card-data, or manual card-data input, the PT begins with the payment.


If necessary the PT connects online to the host. This takes place, depending on the configuration of the PT and ECR, either via the communications-module of the PT or via a communications-module connected to the ECR (see chapter Transmit Data via Dial-Up (06 D9) and chapter Receive Data via Dial-Up (06 DA)).

## 2.2.4 Intermediate Status-Information

If the ECR requested Intermediate Status-Information during Registration, the PT regularly sends Intermediate Status to the ECR during the transaction.

## 2.2.5 Release Card

If the card is still in the card-reader, the PT releases it.

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### 2.2.6 Status-Information

The PT responds after the payment-procedure with the **Status-Information**:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
04	0F	xx	27<result-code><transaction-data> [06<TLV-container>]

Data-block:

- For <result-code> and <transaction-data> see chapter Status-Information after Authorisation.  
For result-code decimal 55 „PIN incorrect“ the PT can repeat the prompt for PIN, depending on the payment-type, and re-start the payment. In this case the PT sends the commands for Intermediate Status-Information, Dial-Up, line Print and Status-Information once again. Alternatively the PT can also abort the payment with an error-code.
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container). See chapter Status-Information.

### 2.2.7 Issue-of-Goods/Filling

If the ECR is an automatic vending-machine it starts the Issue-of-Goods or enables Filling after receiving <result-code> = „00“.

### 2.2.8 Response to Status-Information

The ECR answers after the Issue-of-Goods, after start of Filling (for pre-authorisation) or if it is a „normal“ ECR immediately with:


**a) ECR Response** following successful Issue-of-Goods (for Vending-Machines), start of Filling (for pre-authorisation) or if not supported, no Issue-of-Goods carried-out (ECRs):

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

alternative:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	00	00	

Both ECR responses have the same meaning: Issue-of-Goods succeeded or Filling started.

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**b) ECR response**, if Issue-of-Goods cannot be completed within the time-out sent as part of the command-Authorisation (see parameters for request „Authorisation (06 01)“) or if the customer has not yet begun filling:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	9C	00	

The response **84-9C-00** implies that the PT shall send the Status-Information again after a wait-time of 2s because the ECR has not yet completed the Issue-of-Goods.

**c) ECR response** for unsuccessful Issue-of-Goods or for Filling not yet started:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	yy (any value, excepting 00 and 9C)	xx	Xx

The response **84-yy-xx-xx** with ,yy‘ as any value (except ,00‘ or ,9C‘) implies that the **Issue-of-Goods** was not successful or Filling was not yet started. In this case the PT reverses the payment.

**Note:**

- If the ECR sends **84-9C-00** so often, that <max. status-infos> (see parameters for request „Authorisation (06 01)“) is exceeded (= <max. status-infos> + 1), the PT reverses the payment and afterwards sends a Status-Information with error-message **04-0F-03-27-6C**.
- If no response from the ECR is received within <time-out> (see parameters for request „Authorisation (06 01)“), then the PT reverses the payment.

**Example of <max. status-infos>:**

For this example a parameter ,3‘ ist passed. The ECR may respond to the Status-Information up to three times with „84-9C-00“. The Issue-of-Goods must be successful (the ECR response to Status-Information is then „80-00-00“ or „84-00-00“) on the fourth Status-Information (= <max. status-infos> + 1). However, if the ECR responds to the fourth request with „84-9C-00“, then the PT carries out a Reversal and afterwards sends the Status-Information **04-0F-02-27-6C**.


**d) ECR response for partial Issue-of-Goods**

CCRC	APRC	Length	Data-Block
84	9D	7	04<amount>

If only a partial Issue-of-Goods was possible the ECR responds with APRC 9D and sends the price of the issued goods back in the data block.

## 2.2.9 Reversal

If the Issue-of-Goods is not successful or Filling was not started PT reverses the payment.

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### 2.2.10 Receipt-Printout

Subsequently the Receipt-Printout takes place – also for failed Authorisations. If the PT function **ECR-Receipt** is activated (= setting in PT, that the ECR assumes the print-function), then the PT transmits the receipt line-by-line to the ECR using „Print Line“-Commands (see chapter Print line (06 D1)) or Print Textblock-Commands (06 D3). There is no Receipt-Printout for a successful pre-authorisation (instead it is done during Partial-Reversal after Filling) – otherwise a Receipt-Printout is only carried out here if pre-authorisation is unsuccessful.

### 2.2.11 Store Transaction in PT

The final storage of the transaction in the PT may only be carried out following the acknowledgement from the ECR! If the ECR sends no acknowledgement or a transmission-error occurs which cannot be solved by repeated sending of Status-Information, the PT must execute an Auto-Reversal. The definitive acknowledgement from the ECR for storage of the transaction is either the response to the Status-Information (if the ECR generates the Receipt itself and the PT therefore sends no receipt) or otherwise the response to the Status-Information AND the responses to all Print line or Print Text-Block commands and not the response to Intermediate Status-Information from card-removal.

If the ECR does not send a response or the PT does not receive the response, then the PT executes an Auto-Reversal, possibly requiring an additional Dial-Up. The Auto-Reversal itself carried out only after the card has been removed.

Afterwards, Auto-Reversal is no longer possible.

### 2.2.12 Completion


If transaction and Issue-of-Goods were successful,(or Filling was started) the PT sends command **Completion** whereupon the ECR is given back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

The ECR closes with Completion.

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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If transaction and/or Issue-of-Goods failed (or Filling was not started), the PT sends command **Abort** whereupon the ECR is given back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
06	1E	xx	<result-code>[<CC>]


Data-block:

- The possible Result-Code are described in chapter Error-Messages.
- The Currency-Code of the PT is only sent with Result-Code 6F. The PT only sends a Currency-Code to the ECR, if the ECR had also sent a Currency-Code in its request.

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

As soon as the PT Status-Information is acknowledged by the ECR the payment is successfully completed. Even if an error occurs during command **Completion**, the payment is judged to be successful and not to be reversed. If in doubt the ECR can attempt to resynchronise using the command **Repeat-Receipt**. A reversal only takes place if the ECR does not acknowledge the Status-Information.

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## 2.3 Account Balance Request (06 03)

This command starts an Account Balance Request on the PT, e.g. for bonus-points. The credit is reported to the ECR in the Status-Information.

### Caution:

If the receipt printout shall be carried out by the ECR, this may only send the command to the PT if the ECR printer is ready and enough paper for the receipt is available.

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	03	xx	[22<card-number>] [0E<expiry-date>] [2D<track 1 data>] [23<track 2 data>] [24<track 3 data>] [06<TLV-container>]


Data-block:

- 22<card-number> see chapter Authorisation (06 01)
- 0E<expiry-date> see chapter Authorisation (06 01)
- 2D<track 1 data> see chapter Authorisation (06 01)
- 23<track 2 data> see chapter Authorisation (06 01)
- 24<track 3 data> see chapter Authorisation (06 01)
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible Tags in TLV-container: tag E1 (for C1 Value '4D 55' possible)
- All further data will be ignored.

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

The further sequence of events is – apart from checking the Issue-of-Goods or Filling – identical to the Authorisation (see chapter Authorisation (06 01)).

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## 2.4 Activate Card (06 04)

This command activates a card. Depending on the card-type, the activation may take place on a host system or offline and details are out of the scope of the ECR-Interface document.

### Caution:

If the receipt printout shall be carried out by the ECR, this may only send the command to the PT if the ECR printer is ready and enough paper for the receipt is available.


ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	04	xx	[04<amount>] [49<CC>] [2D<track 1 data>] [0E<expiry-date>] [22<card-number>] [23<track 2 data>] [24<track 3 data>] [3A<CVV/CVC>] [06<TLV-container>]

### Data-block:

- Amount is 6-byte BCD-packed. The value is in Euro-Cents with leading zeros. Amount is optional, if included the PT may execute a top-up function if necessary. Otherwise top-up is handled via command Refund.
- Field 49 <CC> is optional.
- Field 0E <expiry-date> is optional.
- The field „0E<expiry-date>“ is optional, 2 byte BCD encoded, format YYMM. Used for payment with manual card-data entry.
- The field „22<card-number>“ is optional, LL-Var BCD encoded. Used for payment with manual card-data entry. If the card-number contains an odd number of digits, it padded with an 'F'.
- The field „2D<track 1 data>“ (without start and end markers) is optional.
- The field „23<track 2 data>“ (without start and end markers) is optional.
- The field „24<track 3 data>“ (without start and end markers) is optional.
  - The field „3A<CVV/CVC>“ (optional) is used for Mail-Order. 2 byte BCD encoded.
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container). Possible tags in TLV-container: tag 1F04, 1F05, 15, 20, 41, 43, E1.
- All other data are ignored by the PT.

The further sequence of events is – apart from checking the Issue-of-Goods – identical to the Authorisation (see chapter Authorisation (06 01)).



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## 2.5 Book Tip (06 0C)

This command initiates a tip-booking.

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0C	xx	04<amount> 87<receipt-nr> [49<CC>] [19<payment-type>] [2D<track 1 data>] [0E<expiry-date>] [22<card-number>] [23<track 2 data>] [24<track 3 data>] [3B<AID>] [06<TLV-container>]

Data-block:

- BMP 04 <amount> is the Tip-amount. For coding details see chapter Authorisation.
- BMP 87<receipt-nr> see chapter Status-Information
- 3B<AID> see chapter Status-Information (04 0F)  
3B must be sent for telephonic Tip-booking.
- Remaining bitmaps see chapter Authorisation
- The field „06<TLV-container>“ is optional
- All other data will be ignored by the PT

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## 2.6 Telephonic Authorisation (06 21)

This command initiates a Telephonic Authorisation and transmits the amount from the ECR to PT. The authorisation-number is either sent by the ECR, otherwise it is requested during the payment procedure on the PT.

The result of the payment procedure is reported to the ECR after Completion of the booking procedure.

Telephonic Authorisation is only possible with credit-cards.

### Caution:


If the receipt printout shall be carried out by the ECR, this may only send the command to the PT if the ECR printer is ready and enough paper for the receipt is available.

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	21	xx	<password> 04<amount> [49<CC>] [19<payment-type>] [2D<track 1 data>] [0E<expiry-date>] [22<card-number>] [23<track 2 data>] [24<track 3 data>] [01<time-out>] [02<max. status-infos>] [05<pump nr.>] [3C<additional-data>] [3B<AID>] [3A<CVV/CVC>] [8A<card type>][06<TLV-container>]

Data-block:

- <password> see chapter Password.
- Amount is 6 byte BCD-packed, amount in Cents with leading zeros
- The Currency-Code („49<CC>“) is optional.
- 3B<AID> see chapter Status-Information
- 19<payment-type> see chapter Authorisation (06 01)
- 0E<expiry-date> see chapter Authorisation (06 01)
- 22<card-number> see chapter Authorisation (06 01)
- 2D<track 1 data> see chapter Authorisation (06 01)
- 23<track 2 data> see chapter Authorisation (06 01)
- 24<track 3 data> see chapter Authorisation (06 01)
  - 01<time-out> see chapter Authorisation (06 01)
  - 02<max. status-infos> see chapter Authorisation (06 01)
  - 05<pump nr.> see chapter Authorisation (06 01)
- 3C<additional-data> see chapter additional-data
- 3A<CVV/CVC> see chapter Authorisation (06 01)
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible Tags in TLV-container: tag 20, 41, 43, E1, 1F15
- For cards which can not identified by the BIN, like CUP, the card type has to be sent with the command. Therefor the BMP 8A or TLV tag 41 is used.

For further sequence of events for the transaction see chapter Authorisation (06 01)..

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## 2.7 Pre-Authorisation/Reservation (06 22)

Using the command Pre-Authorisation/Reservation the ECR can request the PT to reserve a certain payment-amount for the sales-process. This is particularly necessary when the final payment-amount is only established after the authorisation (e.g. Service-stations; Hotels). In this case the ECR firstly reserves an amount (= max. possible payment-amount) and then, after the sales-process, releases the unused amount via a Partial-Reversal or Book Total.


### Caution:

If the receipt printout shall be carried out by the ECR, this may only send the command to the PT if the ECR printer is ready and enough paper for the receipt is available.

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	22	xx	04<amount> [49<CC>] [19<payment-type>] [0E<expiry-date> [22<card-number>] [2D<track 1 data>] [23<track 2 data>] [24<track 3 data>] [01<time-out>] [02<max. status-infos>] [05<pump nr.> [0B<trace-number>] [3B<AID>] [3C<additional-data>] [8A<card type> [06<TLV-container>]

### Data-block:

- Amount is 6 byte BCD-packed, amount in Cents with leading zeros, optional (if BMP 04 is not sent, then the PT uses the default amount stored as Pre-Authorisation Amount for that particular card-type).
- Currency-Code („49<CC>“) is optional.
- 19<payment-type> see chapter Authorisation (06 01)
- 0E<expiry-date> see chapter Authorisation (06 01)
- 22<card-number> see chapter Authorisation (06 01)
- 2D<track 1 data> see chapter Authorisation (06 01)
- 23<track 2 data> see chapter Authorisation (06 01)
- 24<track 3 data> see chapter Authorisation (06 01)
  - 01<time-out> see chapter Authorisation (06 01)
  - 02<max. status-infos> see chapter Authorisation (06 01)
- The field „05<pump nr.>“ is used for the display (e.g. „Please fill-up, pump 2“) following a successful authorisation on when using a Filling-Station System. <pump nr.> is optional, length 1 byte (Range 00 - FF). If field <pump nr.> is omitted, the PT in the Filling-Station System displays the text without pump number, e.g. „Please fill-up“
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container). Possible Tags in TLV-container: tag 20, 41, 43, E1, 1F06, 1F15, 15, 1F2B
- 0B<trace-number> see chapter Status-Information (04 0F)  
BMP 0B or TLV tag 1F2B must be sent for a Reservation Extension. See tag 1F06, 1F2B.  
For Telephonic Extensions BMP 0B or TLV tag 1F2B are optional.
- 3B<AID> see chapter Status-Information (04 0F)  
3B must be sent for a Reservation Extension, a Telephonic Reservation or a Telephonic Extension. See tag 1F06.
- The field „3C<additional-data>“, is optional, length variable. Depending on the ECR-system and application different additional-data can be transmitted (see chapter Additional-Data).
- For cards which can not identified by the BIN, like CUP, the card type has to be sent with the command. Therefor the BMP 8A or TLV tag 41 is used.
- All further data will be ignored.

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For further sequence of events for the transaction see chapter Authorisation (06 01).

## 2.8 Reversal (06 30)

This command reverses a payment-procedure and transfers the receipt-number of the transaction to be reversed from the ECR to PT. The result of the reversal-process is sent to the ECR after Completion of the booking-process.

### Caution:

If the receipt printout shall be carried out by the ECR, this may only send the command to the PT if the ECR printer is ready and enough paper for the receipt is available.

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	30	xx	<password> 87<receipt-nr> [04<amount>] [49<CC>] [19<payment-type>] [2D<track 1 data>] [0E<expiry-date>] [22<card-number>] [23<track 2 data>] [24<track 3 data>] [3C<additional-data>] [06<TLV-container>]

Data-block:


- <password> see chapter Password.
- <receipt-nr> is 2 byte long BCD-packed.
- <amount> is 6 byte long BCD-packed, amount of the transaction to be reversed in Cents with leading zeros. „04<amount>“ is optional.
- The <CC> („49<CC>“) is optional.
- 19<payment-type> see chapter Authorisation (06 01)
- 0E<expiry-date> see chapter Authorisation (06 01)
- 22<card-number> see chapter Authorisation (06 01)
- 2D<track 1 data> see chapter Authorisation (06 01)
- 23<track 2 data> see chapter Authorisation (06 01)
- 24<track 3 data> see chapter Authorisation (06 01)
- 3C<additional-data> see chapter additional-data
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).
- All further data will be ignored.

The reversal is only carried-out if a payment with the supplied receipt-number is found in the turnover-storage and amount (optional) as well as card-data (optional) match that payment.

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

The further sequence of events is – apart from checking the Issue-of-Goods or Filling – identical to the Authorisation (see chapter Authorisation (06 01)).

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## 2.9 Partial-Reversal of a Pre-Authorisation/Booking of a Reservation (06 23)

This command executes a Partial-Reversal for a Pre-Authorisation to release the unused amount of the reservation. This command is also used for the Booking of a Reservation.

### Caution:

If the receipt printout shall be carried out by the ECR, this may only send the command to the PT if the ECR printer is ready and enough paper for the receipt is available.


ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	23	xx	[87<receipt-nr>] [04<amount>] [49<CC>] [3C<additional-data>] [0B<trace-number>] [3B<AID>] [06<TLV-container>]

### Data-block:

- 87<receipt-nr> is 2 byte long BCD-packed. <receipt-nr> is only sent for Partial-Reversal.
- 04<amount> is 6 byte long BCD-packed, unused partial-amount of the pre-authorised transaction in Cents with leading zeros. „04<amount>“ is optional, default is 0.
- The <CC> („49<CC>“) is optional.
- The field „3C<additional-data>“ is optional, length variable. (see chapter Additional-Data).
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container). Possible Tags in TLV-container: tag 1F06 (see also chapter Pre-Authorisation/Reservation).
- 0B<trace-number> see chapter Status-Information (04 0F)  
BMP 0B or TLV tag 1F2B must be sent for a Reservation Booking or Reservation Extension or Partial Reversal. See tag 1F06, 1F2B.  
For Telephonic Extensions the BMP 0B or TLV-Tag 1F2B are optional.
- 3B<AID> see chapter Status-Information (04 0F)  
BMP 3B must be sent for a Reservation Booking or Reservation Extension or for a Telephonic Reservation Booking or Telephonic Reservation Extension. See tag 1F06.
- All further data will be ignored.
- The order of the parameters is variable.

The Partial-Reversal is only carried-out if a Pre-Authorisation with the passed receipt number is found in the turnover-records.

The further sequence of events is identical to the Reversal (see chapter Reversal (06 30)).

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## 2.10 Book Total (06 24)

This command executes booking of the total amount for a Pre-Authorisation/Reservation. The portion of the amount from the Pre-Authorisation/Reservation that was used up is booked.

Differences between Partial-Reversal and Book Total:

- Partial-Reversal is valid for ec-Cash and Maestro, Book Total for credit-cards and fleet-cards
- Partial-Reversal transmits the unused Amount, whilst Book Total transmits the used Amount

### Caution:


If the receipt printout shall be carried out by the ECR, this may only send the command to the PT if the ECR printer is ready and enough paper for the receipt is available.

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	24	xx	87<receipt-nr> [04<amount>] [49<CC>] [19<payment-type>] [3C<additional-data>] [0B<trace-number>] [3B <AID>] [8A<card type>] [06<TLV-container>]

Data-block:

- The field „04<amount>“ is optional, length 6 byte BCD-packed, amount in Euro-Cent with leading zeros. See command Authorisation (06 01).
- The field „49<CC>“ is optional. See command Authorisation (06 01).
- The field „19<payment-type>“ is optional, length 1 byte. See command Authorisation (06 01).
- The field „3C<additional-data>“ is optional, length variable. See chapter additional-data.
- The field „87<receipt-nr>“ is 2 byte long BCD-packed.
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container). Possible Tags in TLV-container: tag 1F06, 41, 15 (see also chapter Pre-Authorisation/Reservation).
- 0B<trace-number> see chapter Status-Information (04 0F)  
BMP 0B or TLV tag 1F2B must be sent for a Reservation Booking or Reservation Extension or Partial Reversal. See tag 1F06 1F2B.  
For Telephonic Extensions the BMP 0B or TLV-Tag 1F2B are optional.
- 3B<AID> see chapter Status-Information (04 0F)  
BMP 3B must be sent for a Reservation Booking or Reservation Extension or for a Telephonic Reservation Booking or Telephonic Reservation Extension . See tag 1F06.
- For cards which can not identified by the BIN, like CUP, the card type has to be sent with the command. Therefor the BMP 8A or TLV tag 41 is used.

The further sequence of events is identical to the Partial-Reversal (see chapter Pre-Authorisation Partial-Reversal (06 23)).

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## 2.11 Pre-Authorisation Reversal (06 25)

This command executes a Reversal of a Pre-Authorisation in the case of a Null-Filling.

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	25	xx	87<receipt-nr> [04<amount>] [49<CC>] [19<payment-type>] [06<TLV-container>]


The further sequence of events is – apart from checking the Issue-of-Goods or Filling – identical to the Partial-Reversal (see chapter Pre-Authorisation Partial-Reversal (06 23)).

Data-block:

- The order of the parameters is variable.
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).

### Note:

The command Pre-Authorisation Reversal cannot be carried out with ec-cash and Maestro cards. For these cards types an Auto-Reversal is executed instead.

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## 2.12 Enquire if Pre-Authorisations exist (06 23)

The ECR checks with this command whether the PT contains Pre-Authorisations without an associated Partial-Reversal/Book Total.

### Caution:

This is special-case of the command Partial-Reversal of a Pre-Authorisation/Booking of a Reservation (see chapter Partial-Reversal of a Pre-Authorisation/Booking of a Reservation (06 23)). Also valid for credit-cards and fleet-cards for which typically Book Total instead Partial-Reversal is executed.

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	23	03	87 FFFF

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

The PT terminates the process with:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	04	B8 [87<receipt-nr>] [06<TLV-container>]


### Data-block:

- B8 is the error-code decimal 184.
- <receipt-nr> states receipt-number of the first not-yet reversed pre-authorisation. If no pre-authorisations exist in the PT, <receipt-nr> = 'FFFF'.
- <receipt-nr> 2 byte, BCD-packed.
- Instead of a single receipt-number PT can also transmit a receipt-number list as a TLV-container. However, for this the ECR must have sent a BMP 06 in the triggering command or in the registration. See chapter TLV-container. Possible Tags in TLV-container: tag 23

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	



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## 2.13 Refund (06 31)

This command starts a Refund on the PT. The result of the Refund is reported to the ECR after completion of the Booking-process.

Refund is only possible with credit-cards.

### Caution:

If the receipt printout shall be carried out by the ECR, this may only send the command to the PT if the ECR printer is ready and enough paper for the receipt is available.

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	31	Xx	<password> [04<amount>] [49<CC>] [19<payment-type>] [2D<track 1 data>] [0E<expiry-date>] [22<card-number>] [23<track 2 data>] [24<track 3 data>] [3B <AID>] [3C<additional-data>] [8A<card type>] [06<TLV-container>]


### Data-block:

- <password> see chapter Password.
- <amount> is 6 byte long BCD-packed, amount to be refunded in Cents with leading zeros.  
For bonus-transactions amount is optional. In this case the tag E1 with Subtag C2 can be sent instead of the amount.
- The BMP 3B is used in Refunds after an encashing transaction of bonus-points, using the BMP 3B from the Status-Information (04 0F) of this transaction.
- The <CC> („49<CC>“) is optional.
- 19<payment-type> see chapter Authorisation (06 01)
- 0E<expiry-date> see chapter Authorisation (06 01)
- 22<card-number> see chapter Authorisation (06 01)
- 2D<track 1 data> see chapter Authorisation (06 01)
- 23<track 2 data> see chapter Authorisation (06 01)
- 24<track 3 data> see chapter Authorisation (06 01)
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible Tags in TLV-container: tag 20, 41, 43, E1 (for C1 Values '47 4C' and '4D 57' possible), 30, 15.
- For cards which can not identified by the BIN, like CUP, the card type has to be sent with the command. Therefore the BMP 8A or TLV tag 41 is used.
- All further data will be ignored.

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

The further sequence of events is identical to the Authorisation (see chapter Authorisation (06 01)).

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## 2.14 End-of-Day (06 50)

With this command the ECR induces the PT to transfer the stored turnover to the network operator.

### Caution:

If the receipt printout shall be carried out by the ECR, this may only send the command to the PT if the ECR printer is ready and enough paper for the receipt is available.

### 2.14.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	50	03	<password> [06<TLV-container>]

Data-block:

- <password> see chapter Password.
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	


### 2.14.2 Transaction:

Following the response the PT begins with the transaction.

For this purpose the PT makes an online-connection to the host. This takes place – depending on configuration of the PT and ECR – either over a communication module in the PT or over a communication module connected to the ECR (see chapter Transmit Data via Dial-Up (06 D9) and chapter Receive Data via Dial-Up (06 DA)).

### 2.14.3 Intermediate Status-Information

If the ECR requested Intermediate Status-Information during Registration, the PT regularly sends Intermediate Status to the ECR during preparation of the turnover records in order to re-start the time-outs. Only during the actual data-transfer is no Intermediate Status transmitted.

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### 2.14.4 Status-Information

The PT responds following succesful End-of-Day with the **Status-Information after End-Of-Day / Send Turnover Totals**:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
04	0F	xx	[27<result-code>] [<transaction-data>]

Data-block:

- The result-code is defined in chapter Error-Messages, length 1 byte.
- transaction-data see chapter Status-Information (04 0F).


### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

Following the Status-Information, if the PT function **ECR-Receipt** is activated (= setting in PT, that the ECR assumes the print-function), then the PT transmits the receipt line-by-line to the ECR using „Print Line“ Commands (see chapter Print line (06 D1)). Alternatively the receipt printout is carried out using the „Print Text-Block“ Command (see chapter Print line (06 D3)).

### 2.14.5 Receipt-Printout

After the transaction the Receipt-Printout takes place. If the PT function **ECR-Receipt** is activated (= setting in PT, that the ECR assumes the print-function), then the PT transmits the receipt line-by-line to the ECR using „Print Line“ commands (see chapter Print line (06 D1)). Alternatively the receipt printout is carried out using the „Print Text-Block“ command (see chapter Print line (06 D3)).

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### 2.14.6 Completion

Subsequently the PT terminates the process via **Completion** whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

#### ECR response:


ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

In error-case the PT responds with an **Abort**:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<error-code>

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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## 2.15 Diagnosis (06 70)

With this command the ECR forces the PT to execute a Network-Diagnosis.

### 2.15.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	70	xx	[06<TLV-container>]

Data-block:

- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible Tags in TLV-container: tag 1B

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.15.2 Transaction:

Following the response the PT starts the transaction.


For this purpose the PT makes an online-connection to the host. This takes place – depending on configuration of the PT and ECR – either over a communication module in the PT or over a communication module connected to the ECR (see chapter Transmit Data via Dial-Up (06 D9) and chapter Receive Data via Dial-Up (06 DA)).

### 2.15.3 Intermediate Status-Information

If the ECR requested Intermediate Status-Information during Registration, the PT regularly sends Intermediate Status to the ECR during preparation of the turnover records in order to re-start the time-out. Only during the actual data-transfer is no Intermediate Status transmitted.

### 2.15.4 Transmit Date

If the transaction was successful the PT transmits system-date received from the host on to the ECR (see chapter Set Date and Time in ECR (04 01)).

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### 2.15.5 Receipt-Printout

After the transaction the Receipt-Printout takes place. If the PT function **ECR-Receipt** is activated (= setting in PT, that the ECR assumes the print-function), then the PT transmits the receipt line-by-line to the ECR using „Print Line“ Commands (see chapter Print line (06 D1)) or Print Textblock-Commands (06 D3).

### 2.15.6 Completion

Subsequently the PT terminates the process via **Completion** whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

In error-case the PT responds with an **Abort**:


PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code>

Data-block:

- The result-code is defined in chapter Error-Messages, length 1 byte.

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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## 2.16 Initialisation (06 93)

With this command the ECR forces the PT to execute a Network-Initialisation.

### 2.16.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	93	03	<password>

Data-block:

- <password> see chapter Password.

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.16.2 Transaction:

Following the response the PT begins with the transaction.


For this purpose the PT makes an online-connection to the host. This takes place – depending on configuration of the PT and ECR – either over a communication module in the PT or over a communication module connected to the ECR (see chapter Transmit Data via Dial-Up (06 D9) and chapter Receive Data via Dial-Up (06 DA)).

### 2.16.3 Intermediate Status-Information

If the ECR requested Intermediate Status-Information during Registration, the PT regularly sends Intermediate Status to the ECR during the transaction in order to re-start the time-outs.  
Only during the actual data-transfer is no Intermediate Status transmitted.

### 2.16.4 Receipt-Printout

After the transaction the Receipt-Printout takes place. If the PT function **ECR-Receipt** is activated (= setting in PT, that the ECR assumes the print-function), then the PT transmits the receipt line-by-line to the ECR using „Print Line“ commands (see chapter Print line (06 D1)). Alternatively the receipt printout is carried out using the „Print Text-Block“ command (see chapter Print line (06 D3)).

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### 2.16.5 Completion

Subsequently the PT terminates the process via **Completion** whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

In error-case the PT responds with an **Abort**:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code>


Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	



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## 2.17 Print Turnover Receipts (06 12)

This command serves to print payment-receipts over a certain receipt-number range.

### 2.17.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	12	xx	<password> <from> [<to>]

Data-block:

- <password> see chapter Password.
- <from> receipt-number from where the printing should start. Length 2 byte BCD packed.
- <to> receipt-number from where the printing should end (including this receipt). Optional. If <to> is omitted the PT only prints the receipt given in <from> (analog <from> = <to>). Length 2 byte BCD-packed.

**PT response:**

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.17.2 Receipt-Printout

If the PT function **ECR-Receipt** is activated (= setting in PT, that the ECR assumes the print-function), then the PT transmits the receipt line-by-line to the ECR using „Print Line“ Commands (see chapter Print line (06 D1)). Alternatively the receipt printout is carried out using the „Print Text-Block“ Command (see chapter Print line (06 D3)).


### 2.17.3 Completion

Subsequently the PT terminates the process via **Completion** whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

**ECR response:**

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		

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80	00	00	
----	----	----	--

## 2.18 Repeat Receipt (06 20)

This command serves to repeat printing of the last stored payment-receipts or End-of-Day-receipt.

### 2.18.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	20	03	<password> [03<service-byte>][06<TLV-container>]

Data-block:

- <password> see chapter Password.
- 03<service-byte>, optional length 1 byte; default = ,00‘
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible Tags in TLV-container: tag ,1F 01‘, tag ,1F 02‘, tag ,1F 03‘

Definition of service-byte:

Service-byte	Definition
xxxx xxx1	1: ECR requires Status-Information (as in the original transaction) 0: Do not send Status-Information
xxxx xx1x	1: No print receipt (neither Print line commands sent from PT nor printed on PT itself) 0: Print receipt (either Print line commands sent from PT or printed on PT itself)
Rest	RFU

Note:

The field service-byte is a bit-field.

### PT response:


PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.18.2 Status-Information

Depending on the service-byte the PT sends the Status-Information of the last transaction executed. This ensures that the ECR can resynchronise in case of an inconclusive ending of a transaction.

### 2.18.3 Receipt-Printout

If the PT function **ECR-Receipt** is activated (= setting in PT, that the ECR assumes the print-function), then the PT transmits the receipt line-by-line to the ECR using „Print Line“ Commands (see chapter Print line (06 D1)). Alternatively the receipt printout is carried out using the „Print Text-Block“ Command (see chapter Print line (06 D3)). Alternatively the PT prints the receipt on its own printer.

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#### 2.18.4 Completion

Subsequently the PT terminates the process via Completion whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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## 2.19 Read Card (06 C0)

With this command the PT reads a chip-card/magnet-card and transmits the card-data to the ECR.

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	C0	xx	[<time-out>[19<card-type>]][FC<dialog-control>][06<TLV-container>]]

Data-block:

- <time-out> is the time in seconds, that the PT waits for the card. <time-out> is optional, length 1 byte. <time-out> = ,00' means infinite. If <time-out> is omitted the default-value of the PT is used. This <timeout> overrides the T3 timeout.
- 19<card-type> optional, length 1 byte. If <card-type> is omitted the magnet-stripe will be read. For a motor-insertion reader both chip and magnet-stripe are read.
- FC<dialog-control> optional, length 1 byte.
- If <card-type> is entered then <time-out> must also be entered!
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible Tags in TLV-container: Tag 1F15

Definition of card-type (only for manual-insertion reader relevant):

card-type	Definition
0001 xxxx	chip-card
0010 xxxx	chip-card
0101 xxxx	chip-card and magnet-card
all others	magnet-card

Note:


The field card-type is a bit-field.

Definition of BMP FC dialog-control:

dialog-control	Definition
xxxx xxx1	PT controls display prompts for insertion and removal of the card; default-value
xxxx xxx0	ECR controls display prompts for insertion and removal of the card i.e. the PT does not display ist own text for command Read Card , therefore the ECR must send ist own text via command text to the PT
all others	RFU

Note:

The field dialog-control is a bit-field.

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## PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

Flow for manual-insertion reader:

- If chip is to be read:  
The card remains in the card-reader after reading the chip.  
If the card has no chip the PT can release the card and read the magnet-stripe.
- If magnet-stripe is to be read:  
After card-insertion the PT requests the customer to remove the card, whereby the PT reads magnet-stripe.
- If chip and magnet-stripe are to be read:  
If the card has a chip and the magnet-stripe was already read during insertion, the PT shall also send the magnet-stripe data to the ECR. The card remains in the reader.

Flow for motor-insertion reader:

After card-insertion the PT reads chip and magnet-stripe.

If the ECR requested **Intermediate-Status** from the PT during registration, these commands are sent between PT and ECR. See chapter Print Text-Block (06 D3).

The PT responds after the read-process with the **Status-Information** transferring the card-data. Thereby an implicit master-change to the ECR takes place, i.e. there is no Completion command. A full description can be found in chapter Status-Information.

## Note:


Using the command **Abort** the ECR can release a retained card from the PT without waiting for a release via timeout.

## Caution:

A protocol-conflict can occur if the ECR sends an **Abort** command during transmission of the card-data from the PT. Example: Another customer inserts a card whilst **Partial-Reversal** after a completed Filling-process is taking place.

If the ECR sends an Abort command to the PT whilst the PT is also transmitting data to the ECR (e.g. because a Partial-Reversal has to be executed), both commands (from ECR and PT) result in an error since the required responses from the partner are not correctly answered – at transport-protocol level each partner must send an ACK, and at application-protocol level a 80-00-00, but instead only one command is sent. This results in both messages being repeated twice (which causes further collisions), and the PT falls-back into its basic-state. Therewith is the ECR master again and can repeat the Abort command (to release the card), which the PT will then execute correctly.

**For new implementations the ECR should not send the command Read-Card with infinite time-out, but rather should use command Status-Readout until a card is inserted. Following this the card can be read.**

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## 2.20 Activate Card-Reader (08 50)

With this command the ECR can activate the insertion-mechanism of a motor-insertion on the PT. Only after sending this commands is it possible to insert a card in motor-insertion reader.

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
08	50	xx	[FA<status>]

Data-block:

- FA<status>, optional, length 1 byte. Defines whether the card-reader should be activated or de-activated. Only an activated card-reader will draw-in the card or release the shutter.  
00 = activate card-reader  
FF = de-activate card-reader

The PT responds after successful activation with:

**PT response:**

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	


On unsuccessful activation the PT sends:

**PT response:**

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	xx	00	

xx = corresponding error-code. See chapter Error-Messages.

Following the „80-00-00“, the PT sends no Completion command.

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## 2.21 Abort (06 B0)

With this command the ECR can instruct the PT to abort execution of a command. Additionally, a card which remained in the PT after a Read-Card command will be released or extracted using this command.

The Abort command may only be sent from the ECR when the ECR is the master, or when the command explicitly allows that the ECR can send an Abort command (e.g. in command "Read Card" or the text-display commands).

Depending on the implementation of the PT, transaction steps and other actions within the PT may be aborted if pre-defined states have not been reached.

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	B0	xx	[D2<direction>][FA<status>]

Data-block:

- D2<direction>, determines the direction of card output for a motor-reader, optional, default = „00“, length 1 byte.
- FA<status>, optional, length 1 byte. Defines whether the card-reader should be activated or de-activated which is the default. Only an activated card-reader will draw-in the card or release the shutter. This option can be used to optimize the number of ZVT-commands by omitting the Activate Card-Reader (08 50) command after the Abort (06 B0) command  
00 = activate card-reader  
FF = de-activate card-reader

Definition of direction (only relevant for motor-readers):

Value	Definition
00	card output outwards (direction customer)
01	card output inwards
02	park card (not supported by all motor-readers)

### Note:

For motor-readers which can park the card in a second position, the Abort command without parameter <direction>, or with <direction> not equal to 02 results in the card in the reading-area being rejected and the parked card being transported to the reading-area.


### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

If a card-revision error occurs, the PT responds with:

### PT response:


PT → ECR			
APDU			

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Control-field		Length	Data-block
CCRC	APRC		
84	<result-code>	00	

The result-code is defined in chapter Error-Messages, length 1 byte.



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## 2.22 Log-Off (06 02)

The command **Log-Off** has the following consequences:


- the PT resets the **Registration** config-byte to 86
- the PT may not send any more TLV-containers

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	02	00	

The PT always responds with:

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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## 2.23 Set Date and Time in PT (06 91)

With this command the ECR can set the system-time in the PT.

### 2.23.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	91	0B	<password> AA<date> 0C<time>

Data-block:

- <password> see chapter Password.
- <date> is expected format YYMMDD and <time> in format HHMMSS, each length 3 byte BCD packed.

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	


### 2.23.2 Completion

After setting the new system-time the PT sends a **Completion** command:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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## 2.24 Display Text (06 E0)

With this command the ECR can cause the PT to display a certain text on the PT-display.

This command can be terminated prematurely using the command "Abort" (06 B0).

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	E0	Xx	[F0<display-duration>] [F1<text line 1>] [F2<text line 2>] [F3<text line 3>] [F4<text line 4>] [F5<text line 5>] [F6<text line 6>] [F7<text line 7>] [F8<text line 8>] [F9<beep-tones>]


Data-block:

- <display-data> consists of a number of fields, where each field is prefixed with a bitmap (BMP)

Definition of the fields <display-data>:

Bitmap	Definition
F0	display-duration in seconds, 1byte ( <b>not</b> BCD packed), ,00' means infinite. default-value: ,00'. Overrides T3 timeout
F1	text for line 1
F2	text for line 2
F3	text for line 3
F4	text for line 4
F5	text for line 5
F6	text for line 6
F7	text for line 7
F8	text for line 8
F9	Number of beep-tones, 1byte. default-value: ,00'


- Text-encoding:  
7-bit ASCII ZVT-Character set, e.g. F0 F3 01 23 45 (F0 F3 means 3 byte length, followed by the ASCII-Codes). Character codes > 127 are displayed according to the 8-bit ZVT-Character set (CP437, OEM-US)  
Note: The encoding of the display text in BMP F1-F8 must match to current character set of the PT that can be configured by ECR with tag 14 in Registration command.
- Switch to larger font: each line can be individually switched to a larger font (height +width) via a pre-fix control-character ,14' (ASCII-Code). This reduces the number of lines it is possible to display and also the number of characters per line.  
Each line can be controlled individually. On each line only one font-type can be used.
- The bitmaps are optional.
- The illustrated order is variable
- Omitted text-lines are displayed empty.
- If all text-lines are omitted the display is left off.
- If the ECR sends a new Display-text command or another command which influences the PT display, the PT displays the new text immediately, before the display-duration of the initial command has expired.
- If the ECR sends a command which does not influence the PT display, the PT displays the original text until the display-duration of the initial command has expired.

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**PT response:**

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

A **Completion** command is not sent

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## 2.25 Display Text (old version) (06 85)

With this command the ECR can cause the PT to display a certain text on the PT-display.  
Following an optional time-out, a further text can be displayed.

### Caution:

This command is included to retain downwards-compatibility, for new implementations use 06 E0!

This command can be terminated prematurely using the command "Abort" (06 B0).

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	85	xx	<display-data>

Data-block:

<display-data> consists of a number of fields, the fields are not prefixed with a bitmap

Definition of the fields <display-data>:


Definition
text 1, length variable
display-duration in seconds, optional, 1byte (binary, <b>not</b> BCD packed), ,00' means infinite. default-value: ,05' = 5 seconds, if text 2 is supplied then field display-duration is mandatory
text 2, optional, length variable

- Format of the text-field: <position><text><00>, the text must always be terminated with binary ,00'.  
<position> (BCD encoded) is the start-position on the display, ,00' is the first line (from top) left edge;  
on reaching the right edge a line is automatically wrapped. For 20 characters per line is ,20' the left edge of the second line etc.  
The maximum displayable number of characters = max. number of characters per line \* max. number of lines, additional characters will not be displayed.  
[text-encoding](#): 7-bit ASCII with umlauts. If the ms-bit of a character is set, this generates a beep-tone, alternatively the character BEL (= ,07') can be sent.

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

A Completion command is not sent.

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## 2.26 Display Text with Function-Key Input (06 E1)

With this command the ECR can cause the PT to display a certain text on the PT-display and then to wait for a function-key to be pressed. The code for the function-key is returned to the ECR.

This command can be terminated prematurely using the command "Abort" (06 B0).

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	E1	xx	<display-data>[06<TLV-container>]

Data-block:

- <display-data> see chapter Display Text (06 E0).
- if the ECR sends a new command for which no display on the PT is required, then the PT displays this display-text until the end of the display-duration.
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible Tags in TLV-container: Tag 1F18
- If Tag 1F18 equals to 1 or bitmap F9 in the <display data> equals to 0xFF the PT responds to card inserts also

Textencoding:

7-bit ASCII ZVT-Character set, e.g. F0 F3 01 23 45 (F0 F3 means 3 byte length, followed by the ASCII-Codes). Character codes > 127 are displayed according to the 8-bit ZVT-Character set (CP437, OEM-US)

Note: The encoding of the display text in BMP F1-F8 must match to current character set of the PT that can be configured by ECR with tag 14 in Registration command.

After key-entry or time-out the PT sends the key-code to the ECR.


**PT response:**

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	01	<key-code>

- <key-code>, length 1 byte.


Definition of the fields <key-code>:

Value	Definition
0D	Acceptance-key <OK>
18	Correction-key <C>
1B	Abort-key <STOP>
46	Function-/Info-key <F>, <Info> or <?>
55	Function-key <Up> <+>
44	Function-key <Down> <->
6C	Time-out

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31	Function-key <F1>
32	Function-key <F2>
33	Function-key <F3>
34	Function-key <F4>
DC	Card present

A Completion command is not sent.

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## 2.27 Display Text with Function-Key Input (old version) (06 88)

With this command the ECR can cause the PT to display a certain text on the PT-display and then to wait for a function-key to be pressed. The code for the function-key is returned to the ECR.

### Caution:

This command is included to retain downwards-compatibility, for new implementations use 06 E1!

This command can be terminated prematurely using the command "Abort" (06 B0).

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	88	xx	<display-data>

Data-block:

- <display-data> see chapter Display Text (old Version) (06 85).
- After key-entry or if time-out the display is cleared.
- If the ECR sends a new command for which no display on the PT is required, then the PT displays this display-text until the end the display-duration.

[text-encoding](#): 7-bit ASCII with umlauts. If the ms-bit of a character is set, this generates a beep-tone, alternatively the character BEL (= ,07') can be sent.

After key-entry or time-out the PT sends the key-code to the ECR.

### PT response:


PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	01	<key-code>

- <key-code>, length 1byte.


Definition of the fields <key-code>:

Value	Definition
0D	Acceptance-key <OK>
18	Correction-key <C>
1B	Abort-key <STOP>
46	Function-/Info-key <F>, <Info> or <?>
55	Function-key <Up> <+>
44	Function-key <Down> <->
6C	Time-out
31	Function-key <F1>
32	Function-key <F2>
33	Function-key <F3>
34	Function-key <F4>



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A Completion command is not sent.

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## 2.28 Display text with Numerical Input (06 E2)


With this command the ECR can cause the PT to display a certain text (text1) on the PT-display and then to wait for a numerical-input. The number entered is returned to the ECR. Optionally a second text (text2) may be sent, which is displayed by the PT after input of the first character. If the character is deleted with <C> the PT displays text1 again.

This command can be terminated prematurely using the command "Abort" (06 B0).

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	E2	xx	[F0<display-duration>] [F1<text line 1>] [F2<text line 2>] [F3<text line 3>] [F4<text line 4>] [F5<text line 5>] [F6<text line 6>] [F7<text line 7>] [F8<text line 8>] [F9<beep-tones>] [FB<confirmation>] [E0<min. length>] [E1<text2 line 1>] [E2<text2 line 2>] [E3<text2 line 3>] [E4<text2 line 4>] [E5<text2 line 5>] [E6<text2 line 6>] [E7<text2 line 7>] [E8<text2 line 8>] [E9<max. Length>] [EA<echo>] [EB<MAC>][06<TLV-container>]

Data-block:

bitmap	Definition
F0	display-duration in seconds, 1 byte ( <b>not</b> BCD packed), ,00' means infinite. default-value: ,00'
F1	text1 line 1
F2	text1 line 2
F3	text1 line 3
F4	text1 line 4
F5	text1 line 5
F6	text1 line 6
F7	text1 line 7
F8	text1 line 8
F9	number the beep-tones, 1 byte
FB	confirmation of the input with <OK> required; ,00' = no, otherwise yes, 1byte ; default: yes
E0	min. length of the input; ,00' = input not enforced, 1 byte. default-value: ,00'
E1	text2 line 1
E2	text2 line 2
E3	text2 line 3
E4	text2 line 4
E5	text2 line 5
E6	text2 line 6
E7	text2 line 7
E8	text2 line 8
E9	Max. length of the input, 1 byte. default-value: 20 decimal
EA	echo the input yes/no; ,FF' = echo on, ,00' echo off, otherwise display „*" for each digit; 1 byte. default-value: ,01' = „**"
EB	MAC over text 1 and text 2 (BMPs: F1 - F8 and E1 - E8); 8 byte: <b>mandatory field !</b>

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- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible Tags in TLV-container: 1F35
- Text-encoding:  
7-bit ASCII ZVT-Character set, e.g. F0 F3 01 23 45 (F0 F3 means 3 byte length, followed by the ASCII-Codes). Character codes > 127 are displayed according to the 8-bit ZVT-Character set (CP437, OEM-US)  
Note: The encoding of the display text in BMP F1-F8 and E1-E8 must match to current character set of the PT that can be configured by ECR with tag 14 in Registration command.
- Switch to larger font: each line can be individually switched to a larger font (height +width) via a pre-fix control-character ,14‘ (ASCII-Code). This reduces the number of lines it is possible to display and also the number of characters per line.  
Each line can be controlled individually. On each line only one font-type can be used.

The MAC is a safeguard of the display-text to prevent mis-use of the PT for PIN request. The correct value for each text can be obtained from the hotline.

The bitmaps are optional.

- The illustrated order is variable.
- Text-lines not received are shown empty on the display.
- If all text-lines are missing the display stays off.

#### Note:

Depending on the PT, the line used for numerical input may not contain text. If so, the PT ignores the corresponding BMP.


Following key-input or if time-out the PT transmits the key-code to the ECR.

#### PT response:


PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	xx	<key-codes>

Definition of the fields <key-codes>:

Value	Definition
,xyz‘	ASCII-code of the input in hex-notation
1B	abort-key <STOP>
46	Function-/Info-key <F>, <Info> or <?>
31	Function-key <F1>
32	Function-key <F2>
33	Function-key <F3>
34	Function-key <F4>
6C	time-out

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A **Completion** command is not sent.

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## 2.29 Display Text with Numerical Input (old version) (06 86)

With this command the ECR can cause the PT to display a certain text (text1) on the PT-display and then to wait for a numerical-input. The number entered is returned to the ECR. Optionally a second text (text2) may be sent, which is displayed by the PT after input of the first character. If the character is deleted with <C> the PT displays text1 again.

### Caution:

This command is included to retain downwards-compatibility, for new implementations use 06 E2!

This command can be terminated prematurely using the command "Abort" (06 B0).


ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	86	xx	<display-data>

Data-block:

- <display-data> consists of several:

Definition
max. length of the input, length 1 byte
confirmation required, length 1 byte
confirmation-position, length 2 byte (will be ignored)
start-position for echo of the input, length 1 byte (will be ignored)
text 1, length variable
text 2, length variable
MAC over all previous parameters

- Format of the text-field: <position><text><00>, the text must always be terminated with binary ,00'. <position> (BCD encoded) is the start-position on the display, ,00' is the first line (from top) left edge; on reaching the right edge a line is automatically wrapped. For 20 characters per line is ,20' the left edge of the second line etc.  
The maximum displayable number of characters = max. number of characters per line \* max. number of lines, additional characters will not be displayed.
- [text-encoding](#): 7-bit ASCII with umlauts. If the ms-bit of a character is set, this generates a beep-tone, alternatively the character BEL (= ,07') can be sent.
- The MAC is a safeguard of the display-text to prevent mis-use of the PT for PIN request. The correct value for each text can be obtained from the hotline.
- confirmation = „00“ means confirmation the input with <OK> not required; other value means confirmation of the input with <OK> required.

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Following key-input or if time-out the PT transmits the key-code to the ECR.

**PT response:**


PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	xx	<key-codes>

Definition of the fields <key-codes>:

Value	Definition
,xyz'	ASCII-code of the input in hex-notation
1B	abort-key <STOP>
46	Function-/Info-key <F>, <Info> or <?>
31	Function-key <F1>
32	Function-key <F2>
33	Function-key <F3>
34	Function-key <F4>
6C	time-out

Following the input and its confirmation, or abort or if time-out, the display is cleared.

A Completion command is not sent.

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## 2.30 PIN-Verification for Customer-Card (06 E3)

With this command the PIN-verification for different customer-cards is invoked.

Sequence:

The ECR causes the PT to show a certain text on the display of the PT (text1) and then to wait for a numerical input (customer-card PIN). Afterwards the inputted number is compared to a pre-defined encrypted number from the ECR (encrypted Customer-card-PIN). Optionally a second text (text2) can be supplied which the PT displays after the first digit is inputted. If the digits are deleted <C> the PT displays text1 again.

The inputted digits are shown as ,\*‘.

This command can be terminated prematurely using the command “Abort” (06 B0).


ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	E3	xx	<parameter-list>

Data-block:

- <parameter-list> consists of several fields, whereby each field is preceded by a bitmap

Definition of the fields <parameter-list>:

bitmap	Definition
F0	display-duration in seconds, 1byte ( <b>not</b> BCD packed), ,00‘ means infinite. default-value: ,00‘
F1	text line 1
F2	text line 2
F3	text line 3
F4	text line 4
F5	text line 5
F6	text line 6
F7	text line 7
F8	text line 8
F9	number the beep-tones, 1 byte
FB	confirmation of the input with <OK> required; ,00‘ = no, otherwise yes, 1 byte
E0	Min. length of the input; confirmation required ,00‘ = input not enforced, 1 byte. default-value: ,00‘
E1	text2 line 1
E2	text2 line 2
E3	text2 line 3
E4	text2 line 4
E5	text2 line 5
E6	text2 line 6
E7	text2 line 7
E8	text2 line 8
E9	Max. length of the input, 1 byte. default-value: 20 decimal
EA	echo the input yes/no; ,FF‘ = echo on, ,00‘ echo off, otherwise display „*“ for each digit; 1 byte. default-value: ,00‘ = „*“
D0	algorithm-ID, 1 byte binary
D1	card offset/PIN-data, LLVAR-encoded, binary


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bitmap	Definition
D3	key-position, 1 byte

- [Text-encoding:](#)  
7-bit ASCII ZVT-Character set, e.g. F0 F3 01 23 45 (F0 F3 means 3 byte length, followed by the ASCII-Codes). Character codes > 127 are displayed according to the 8-bit ZVT-Character set (CP437, OEM-US)  
Note: The encoding of the display text in BMP F1-F8 and E1-E8 must match to current character set of the PT that can be configured by ECR with tag 14 in Registration command.
- Switch to larger font: each line can be individually switched to a larger font (height +width) via a pre-fix control-character ,14' (ASCII-Code). This reduces the number of lines it is possible to display and also the number of characters per line.  
Each line can be controlled individually. On each line only one font-type can be used.
- Algorithm-key: depending on the card used, different algorithms are used for calculating the custom-ern-PIN. These are listed below.

algorithm-ID	fleet-card
00	Hectronic
01	Venture Card
02	UTA
03	BICA
04	Proeda
05	Wayne Dresser
06	Shell
07	LeasePlan
08	DKV classic
09	Huth
0A	LOMO
0B	frei & flott
13	BICA 2
14	DataStandards CH
24	ESSO MK2
25	EuroShell
38	BFT
46	DKV Selection Card
56	DEA/DEKRA
57	DUKPT



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**Note:**

Depending on the PT, the line used for numerical input may not contain text. If so, the PT ignores the corresponding BMP.

Following customer-card PIN input the PT compares the entered customer-card PIN with the encoded PIN from the command call.

**Response from PT for valid PIN:**

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	xx	[06<TLV-container>]

The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible Tags in TLV-container: tag 1F31 (**Encrypted PIN**), 1F32 (SMID value)

**Response from PT for invalid PIN:**

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	37	00	

**Response from PT for not successful PIN entry:**

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	xx	xx	06<TLV-container>


The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible Tags in TLV-container: tag 1F16 (**extended error code**)

Possible values for APRC:

0x6C	Abort or timeout
0x85	Key missing

Following the input and its confirmation, or abort or if time-out, the display is cleared.

A Completion command is not sent.

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### 2.31 PIN-Verification for Customer-Card (old version) (06 87)

With this command the PIN-verification for different customer-cards is invoked.

Sequence:

The ECR causes the PT to show a certain text on the display of the PT (text1) and then to wait for a numerical input (customer-card PIN). Afterwards the inputted number is compared to a pre-defined encrypted number from the ECR (encrypted Customer-card-PIN). Optionally a second text (text2) can be supplied which the PT displays after the first digit is inputted. If the digits are deleted <C> the PT displays text1 again. The inputted digits are shown as ,\*‘.

#### Caution:

This command is included to retain downwards-compatibility, for new implementations use 06 E3!


This command can be terminated prematurely using the command “Abort” (06 B0).

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	87	xx	<parameter-list>

Data-block:

- <parameter-list> consists of several fields.

Definition
algorithm-Key, length 1 byte
PIN-length, length 1 byte
confirmation PIN required, length 1 byte, 00 = no; otherwise yes
start-position for echo of the input, length 1 byte (will be ignored)
PIN-request text, length variable; format 00<Text>00
driver-code length, length 1 byte, optional
confirmation driver-code required, length 1 byte, 00 = no; otherwise yes, optional
start-position driver-code for echo the driver-code-Input, length 1 byte (will be ignored), optional
driver-code request text, length variable; format 00<Text>00, optional
cards-specific data for checking the customer-card PIN, length variable (see card-issuer specification)

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- algorithm-key: dependent of the card used(PIN-verification for customer-card)
- format of the text-field: 00<Text>00, the text must always begin and end with binary ,00'.  
[text-encoding](#): 7-bit ASCII with umlauts. If the ms-bit of a character is set, this generates a beep-tone, alternatively the character BEL (= ,07') can be sent.
- <position> (BCD encoded) is the start-position on the display, ,00' is the first line (from top) left edge; on reaching the right edge a line is automatically wrapped. For 20 characters per line is ,20' the left edge of the second line etc.  
The maximum displayable number of characters = max. number of characters per line \* max. number of lines, additional characters will not be displayed.
- driver-code: the fields which relate to the driver-code (driver-code length, confirmation driver-code, start-position driver-code, driver-code request-text), are optional (dependent on the card used). However, if the driver-code has to be requested then all the fields must be present.
- Check-data: the use of check-data is dependent on the card

### Note:

Depending on the PT, the line used for numerical input may not contain text. If so, the PT ignores the corresponding BMP.

Following customer-card PIN input the PT compares the entered customer-card PIN with the encoded PIN from the command call.

### Response from PT for valid PIN:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	xx	<driver-code>

Data-block:

- <driver-code>, optional

### Response from PT for invalid PIN:


PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	37	00	

### Response from PT for abort or time-out:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	6C	00	

Following the input and its confirmation, or abort or if time-out, the display is cleared.

A Completion command is not sent.

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## 2.32 Select Language (08 30)

With this command the ECR selects the language in the PT.

### 2.32.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
08	30	01	<language-number>

Data-block:

- <language-number>, 1 byte

Definition of <language-number>:

language-number	language
00	German (=factory-setting)
01	English
02	French
03	Italian

The chosen language remains set even after an off/on sequence.

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	


### 2.32.2 Completion

Following the language switch the PT sends a **Completion** command:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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## 2.33 Software-Update (08 10)

With this command ECR causes the PT to make a connection to the TCS.

### 2.33.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
08	10	xx	[06<TLV-container>]

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

Data-block:

- 06<TLV-container>, optional  
Using tag 0F (within BMP 06) an assignment-number can be given to the PT, which enables further sequence-control during the call from PT to TCS.

### 2.33.2 Data-Transmission:

For this purpose the PT makes an online-connection to the TCS. This takes place – depending on configuration of the PT and ECR – either over a communication module in the PT or over a communication module connected to the ECR (see chapter Transmit Data via Dial-Up (06 D9) and chapter Receive Data via Dial-Up (06 DA)).


### Note:

If the PT makes the connection to TCS via a communication module in the PT as opposed to a communication module connected to the ECR, the PT sends the Completion command before the update (depending on implementation before or after the successful connection to TCS). This ensures that the ECR is not blocked during the total time of the software-update.

### 2.33.3 Completion

Subsequently the PT terminates the process via Completion whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	xx	27<result-code> 0C<time> AA<date>

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Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.
- Format of <time>: 3 byte BCD, Format HHMMSS.
- Format of <date>: 3 byte BCD, Format YYMMDD.

If the PT switches intermediately into **Transparent-Mode** then no **Completion** command is sent at the end (see chapter Transparent-Mode(06 DD)).

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

In error-case the PT responds with an **Abort**:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code>

Data-block:


- The <result-code> is defined in chapter Error-Messages, length 1 byte.

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### Note:

For error-case <result-code> <> ,00' the ECR can start the sequence once again from the beginning the secure that software-update is successfully carried out.

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## 2.34 Read File (08 11)

With this command the ECR causes the PT to send a file (e.g. the merchant-journal) to the ECR.

### 2.34.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
08	11	xx	06<TLV-container>

Data-block:

- The field „06<TLV-container>“ contains any number (greater than 0) of the tag ,2D‘, each with a tag ,1D‘ and optional tag ,1E‘.

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.34.2 Transmission:


PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
04	0F	xx	[06<TLV-container>]

Data-block:

- The field „06<TLV-container>“ contains any concatenation of tags ,2D‘, each with tags ,1C‘, ,1D‘, optional ,1E‘ and optional ,1F 00‘ (see chapter TLV-container).

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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**ECR response** in error-case:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	xx	00	

xx corresponds to the error-code. The error-codes are defined in chapter Error-Messages.

### 2.34.3 Completion

Subsequently the PT terminates the process via Completion whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	xx	27<result-code>

Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.

**ECR response:**

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

In error-case the PT responds with an **Abort** instead of 060F:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code>

Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.


**ECR response:**

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

**Note:**

- In error-case <result-code> <> ,00' the ECR starts the sequence again from the beginning.



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## 2.35 Delete File (08 12)

With this command the ECR causes the PT to delete a file (e.g. the merchant-journal).

### 2.35.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
08	12	xx	[06<TLV-container>]

Data-block:

- The field „06<TLV-container>“ contains the tags 1D (several).

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	


### 2.35.2 Completion

Subsequently the PT terminates the process via **Completion** whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	xx	27<result-code>

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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In error-case the PT responds with an **Abort** instead of 060F

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code>

Data-block:


- The <result-code> is defined in chapter Error-Messages, length 1 byte.

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### Note:

- In error-case <result-code> <> ,00' the ECR starts the sequence again from the beginning.
- The file will only be deleted if the ECR acknowledges the **Completion** with 80-00.

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## 2.36 Tax Free (06 0A)

Tax Free is the elimination of income tax liability on accumulated investment earnings. By issuing this command, the PT prints a cheque for tax refund through Global Refund for Non-EU-citizens. This cheque needs to be filled out and signed by the merchant and the customer in order to be valid. Since this command needs a printout according to the rules of Global Refund, the function can only be used on PTs fitted with a printer and printing on the PT enabled.

### 2.36.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0A	xx	[04<amount>]

Data-block:

- The amount is 6 byte BCD-packed, amount in Euro-cents with leading zeros.

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	


### 2.36.2 Completion

Subsequently the PT terminates the process via **Completion** whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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In error-case the PT responds with an **Abort** instead of 060F

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code>

Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

## 2.37 Send Turnover Totals (06 10)

With this command the ECR causes the PT to send an overview about the stored transactions.

### 2.37.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	10	03	<password>

Data-block:

- <password> see chapter Password.


### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.37.2 Status-Information

The PT responds with the **Status-Information after End-Of-Day / Send Turnover Totals**:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
04	0F	xx	[27<result-code>] [<transaction-data>]

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Data-block:

- The result-code is defined in chapter Error-Messages, length 1 byte.
- transaction-data see chapter Status-Information after End-Of-Day / Send Turnover Totals (04 0F).

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	


### 2.37.3 Completion

Subsequently the PT terminates the process via **Completion** whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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In error-case the PT responds with an **Abort** instead of 060F

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code>

Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

## 2.38 Reset Terminal (06 18)

With this command the ECR causes the PT to restart.

### 2.38.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	18	00	


### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.38.2 Completion


Subsequently the PT terminates the process via **Completion** whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

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**ECR response:**

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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## 2.39 Print System Configuration (06 1A)

With this command the ECR causes the PT to print it's system information to the print target defined in the Registration command (06 00).

### 2.39.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1A	00	

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.39.2 Receipt-Printout

If the PT function **ECR-Receipt** is activated (= setting in PT, that the ECR assumes the print-function), then the PT transmits the receipt line-by-line to the ECR using „Print Line“ Commands (see chapter Print line (06 D1)). Alternatively the receipt printout is carried out using the „Print Text-Block“ Command (see chapter Print line (06 D3)). Alternatively the PT prints the receipt on its own printer.

### 2.39.3 Completion


Subsequently the PT terminates the process via **Completion** whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	



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## 2.40 Set/Reset Terminal-ID (06 1B)

With this command the ECR causes the PT to set or reset the terminal ID. The command will only be executed, if the turnover storage is empty e.g. after a end of day command.

### 2.40.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1B	xx	<password>[29<terminal ID>]

Data-block:

- <password> see chapter Password.
- If the optional field „29<terminal ID>“ is present the content becomes the new terminal ID.

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	


### 2.40.2 Completion

Subsequently the PT terminates the process via **Completion** whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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In error-case the PT responds with an **Abort** instead of 060F

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code>

Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

## 2.41 Send offline Transactions (06 51)

With this command the ECR causes the PT load off eventually stored offline transactions to the host. It does not imply a end of day command

### 2.41.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	51	03	<password>

Data-block:

- <password> see chapter Password.


### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.41.2 Completion

Subsequently the PT terminates the process via **Completion** whereupon the ECR receives back the “master-rights”:


PT → ECR			
APDU			

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Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

**ECR response:**

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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In error-case the PT responds with an **Abort** instead of 060F

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code>

Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

## 2.42 Selftest (06 79)

With this command the ECR causes the PT start a self test and print it's system information to the print target defined in the Registration command (06 00) .

### 2.42.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	79	00	


### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.42.2 Completion


Subsequently the PT terminates the process via **Completion** whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

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**ECR response:**

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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In error-case the PT responds with an **Abort** instead of 060F

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code>

Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

## 2.43 Change Password (06 95)

With this command the ECR can change the merchant password required for some ZVT commands to the PT (see chapter 1.2 [Password](#)).

### 2.43.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	95	06	<old password> <new password>

Data-block:

- <old password> 3 bytes BCD
- <new password> 3 bytes BCD


### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.43.2 Completion

Subsequently the PT terminates the process via **Completion** whereupon the ECR receives back the “master-rights”:


PT → ECR			
APDU			

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Control-field		Length	Data-block
CLASS	INSTR		
06	0F	xx	27<result-code>

**ECR response:**

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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In error-case the PT responds with an **Abort** instead of 060F

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code>

Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

#### Note:

- In error-case <result-code> <> ,00' the ECR starts the sequence again from the beginning.
- The file will only be deleted if the ECR acknowledges the **Completion** with 80-00.

## 2.44 Start OPT Action (08 20)

With this command the ECR causes the PT to make a connection to the Personalisation-System to start an OPT-action.

### 2.44.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
08	20	00	

#### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	


### 2.44.2 Transaction

Following the response the PT begins with the transaction.

For this purpose the PT makes an online-connection to the PS. This takes place – depending on configuration of the PT and ECR – either over a communication module in the PT or over a communication module connected to the ECR (see chapter Transmit Data via Dial-Up (06 D9) and chapter Receive Data via Dial-Up (06 DA)).

### 2.44.3 Intermediate Status-Information




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If the ECR requested Intermediate Status-Information during Registration, the PT regularly sends Intermediate Status to the ECR in order to re-start the time-outs.

Only during the actual data-transfer is no Intermediate Status transmitted.

#### 2.44.4 Receipt-Printout

After the transaction the Receipt-Printout takes place. If the PT function **ECR-Receipt** is activated (= setting in PT, that the ECR assumes the print-function), then the PT transmits the receipt line-by-line to the ECR using „Print Line“ Commands (see chapter Print line (06 D1)). Alternatively the receipt printout is carried out using the „Print Text-Block“ Command (see chapter Print line (06 D3)).

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### 2.44.5 Completion

Subsequently the PT terminates the process via Completion whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	0A	27<result-code> 0C<time> AA<date>

Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.
- Format of <time>: 3 byte BCD, Format HHMMSS.
- Format of <date>: 3 byte BCD, Format YYMMDD.

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

In error-case the PT responds with an **Abort**:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code>

Data-block:


- The <result-code> is defined in chapter Error-Messages, length 1 byte.

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

#### Note:

In error-case <result-code> <> ,00' the ECR starts the sequence again from the beginning to ensure that the OPT-action is successfully carried out.

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## 2.45 Set OPT Point-in-Time (08 21)

With this command the ECR sets the point-in-time for the next OPT-Action in the PT.

### 2.45.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
08	21	0B	<password> AA<date> 0C<time>

Data-block:

- <password> see chapter Password.
- <date> is expected format YYMMDD and <time> in format HHMMSS, each length 3 byte BCD packed.

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.45.2 Completion


After setting the OPT Point-in-Time the PT sends a **Completion** command:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

If the cannot set the OPT Point-in-Time (e.g. because Pre-Initialisation was not yet executed) the PT responds with command **Abort** instead of **Completion**.

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## 2.46 Start OPT Pre-Initialisation (08 22)

With this command the ECR causes the PT to make a connection to the Personalisation-System to start an OPT Pre-Initialisation.

### 2.46.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
08	22	00	

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.46.2 Transaction:

Following the response the PT begins with the transaction.

For this purpose the PT makes an online-connection to the PS. This takes place – depending on configuration of the PT and ECR – either over a communication module in the PT or over a communication module connected to the ECR (see chapter Transmit Data via Dial-Up (06 D9) and chapter Receive Data via Dial-Up (06 DA)).


### 2.46.3 Intermediate Status-Information

If the ECR requested Intermediate Status-Information during Registration, the PT regularly sends Intermediate Status to the ECR in order to re-start the time-outs.

Only during the actual data-transfer is no Intermediate Status transmitted.

### 2.46.4 Receipt-Printout

After the transaction the Receipt-Printout takes place. If the PT function **ECR-Receipt** is activated (= setting in PT, that the ECR assumes the print-function), then the PT transmits the receipt line-by-line to the ECR using „Print Line“ Commands (see chapter Print line (06 D1)). Alternatively the receipt printout is carried out using the „Print Text-Block“ Command (see chapter Print line (06 D3)).

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### 2.46.5 Completion

Subsequently the PT terminates the process via Completion whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	0A	27<result-code> 0C<time> AA<date>

Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.
- Format of <time>: 3 byte BCD, Format HHMMSS.
- Format of <date>: 3 byte BCD, Format YYMMDD.

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

In error-case the PT responds with an **Abort**:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code>

Data-block:


- The <result-code> is defined in chapter Error-Messages, length 1 byte.

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

#### Note:

In error-case <result-code> <> ,00' the ECR starts the sequence again from the beginning to ensure that the OPT-action is successfully carried out.

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## 2.47 Output OPT-Data (08 23)

With this command the ECR can obtain the stored OPT-data from the PT.

### 2.47.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
08	23	03	<password>

Data-block:

- <password> see chapter Password.

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.47.2 Output of OPT-Data

The PT prints the OPT-Data on the printer. If the PT is configured such that, that OPT-Data should be printed on the ECR then the PT send Print-Line commands.

### 2.47.3 Completion


Following output of the OPT-Data the PT sends a **Completion** command:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

If the PT has no stored OPT-Data then the PT responds with command **Abort** instead of **Completion**.

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## 2.48 OPT Out-of-Order (08 24)

With this command the ECR causes the PT to start OPT-Out-of-Order.

### 2.48.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
08	24	00	

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.48.2 Transaction:

Following the response the PT begins with the transaction.

For this purpose the PT makes an online-connection to the PS. This takes place – depending on configuration of the PT and ECR – either over a communication module in the PT or over a communication module connected to the ECR (see chapter Transmit Data via Dial-Up (06 D9) and chapter Receive Data via Dial-Up (06 DA)).


### 2.48.3 Intermediate Status-Information

If the ECR requested Intermediate Status-Information during Registration, the PT regularly sends Intermediate Status to the ECR in order to re-start the time-outs.

Only during the actual data-transfer is no Intermediate Status transmitted.

### 2.48.4 Receipt-Printout

After the transaction the Receipt-Printout takes place. If the PT function **ECR-Receipt** is activated (= setting in PT, that the ECR assumes the print-function), then the PT transmits the receipt line-by-line to the ECR using „Print Line“ Commands (see chapter Print line (06 D1)). Alternatively the receipt printout is carried out using the „Print Text-Block“ Command (see chapter Print line (06 D3)).

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### 2.48.5 Completion

Subsequently the PT terminates the process via Completion whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	0A	27<result-code>

Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

In error-case the PT responds with an **Abort**:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code>

Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.


#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

#### Note:

In error-case <result-code> <> ,00' the ECR starts the sequence again from the beginning to ensure that the OPT-action is successfully carried out.



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## 2.49 Activate Service-Mode (08 01)

With this command the ECR switch the PT into Service-Mode.  
In Service-Mode the PT displays the configuration-menu.

### 2.49.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
08	01	xx	[<password>[03<service-byte>]]

Data-block:

- <password> see chapter Password.
- The field „03<service-byte>“ is optional, length 1 byte. If <service-byte> is sent then <password> must also be sent.

Definition of <service-byte>:

Service-byte	Definition
xxxx xxx1	The PT service-menu of the PT may not be displayed against the function-key on the PT.
xxxx xxx0	The PT service-menu of the PT may be displayed against the function-key on the PT.
Rest	RFU

Note:

The field Service-byte is a bit-field.

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 2.49.2 Service-Mode


Subsequently the PT shows the menu on its display. The operator can now execute different functions on the PT.

As long as the PT is in Service-Mode it is the Master.

In Service-Mode the PT can send Dial-Up commands, Print-Line commands and Intermediate Status-Information.

#### Caution:

If the PT does not send any command to the ECR within time-out T4 the ECR assumes that the PT no longer functional and will not react to any further commands from the PT. To avoid this, the PT should periodically send Intermediate Status-Information (where necessary with changed T4 value) to the ECR.

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### 2.49.3 End Service-Mode

As soon as the operator leaves the menu, the Service-Mode will be ended.

**Note:**

Following long-lasting events (e.g. software-update) the PT sends the Completion command independently so that a service-technician does not have to remain at the PT until the end of the event.

### 2.49.4 Completion

To terminate the Service-Mode the PT sends a **Completion** command:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	


**ECR response:**

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

The ending of the Service-Mode causes the PT to exit the Service-Menu and the ECR and PT set time-out T4 back to the default value.

**Note:**

If the PT makes the connection to TCS via a communication module in the PT as opposed to a communication module connected to the ECR, the PT sends the Completion command before entering the Service-Mode. This ensures that the ECR is not blocked during the total time of the Service-Mode.

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## 2.50 Status-Enquiry (05 01)

With this command the ECR can request the Status of the PT allow the PT to carry out time-controlled events (e.g. OPT-actions or End-of-Day). To allow time-controlled events on the PT to be executed punctually the ECR should send Status-Enquiries as often as possible (every minute or more frequently).

### 2.50.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
05	01	xx	[<password>[03<service-byte>]]

Data-block:

- <password> see chapter Password.
- The field „03<service-byte>“ is optional, length 1 byte. If <service-byte> is sent then <password> must also be sent.

Definition of <service-byte>:


Service-byte	Definition
xxxx xxx1	The PT service-menu of the PT may not be displayed against the function-key on the PT.
xxxx xxx0	The PT service-menu of the PT may be displayed against the function-key on the PT.
xxxx xx1x	Do NOT send SW-Version in Completion command
xxxx xx0x	Do send SW-Version in Completion command, default if no service-byte sent
All other	RFU

Note:

The field service-byte is a bit-field.

### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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### 2.50.2 Transaction:

If the PT does not wish to start any events it sends a Completion command, otherwise it sends other commands (Dial-Up commands, Print-Line commands and Intermediate Status-Information).

For this purpose the PT makes an online-connection. This takes place – depending on configuration of the PT and ECR – either over a communication module in the PT or over a communication module connected to the ECR (see chapter Transmit Data via Dial-Up (06 D9) and chapter Receive Data via Dial-Up (06 DA)).

Until the Completion command is sent the PT is the Master. If the PT switches intermediately into **Transparent-Mode** then no **Completion** command is sent at the end (see chapter Transparent-Mode(06 DD)).

### 2.50.3 Intermediate Status-Information

If the ECR requested Intermediate Status-Information during Registration, the PT regularly sends Intermediate Status to the ECR in order to re-start the time-outs.

Only during the actual data-transfer is no Intermediate Status transmitted.

### 2.50.4 Receipt-Printout

After the transaction the Receipt-Printout takes place. If the PT function **ECR-Receipt** is activated (= setting in PT, that the ECR assumes the print-function), then the PT transmits the receipt line-by-line to the ECR using „Print Line“ Commands (see chapter Print line (06 D1)). Alternatively the receipt printout is carried out using the „Print Text-Block“ Command (see chapter Print line (06 D3)).

#### Caution:

If the PT does not send any command to the ECR within time-out T4 the ECR assumes that the PT no longer functional and will not react to any further commands from the PT. To avoid this, the PT should periodically send Intermediate Status-Information (where necessary with changed T4 value) to the ECR.


### 2.50.5 Completion

To terminate the **Status-Enquiry** the PT sends a **Completion** command:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	xx	[<SW-version>]<terminal status-code>

Data-block:


- <SW-version>, LLLVAR, software-version of the PT, optional in dependency with the service-byte of the calling commands from the ECR, encoding: 7-bit ASCII with umlauts
- <terminal status-code>, 1byte, see chapter Terminal-Status

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**ECR response:**

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

Following termination of the Status-Enquiry the ECR and PT set time-out T4 back to the default setting.

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## 2.51 Change Baudrate (08 40)

The ECR can change the communication baud rate with this command if a serial connection is used.

### 2.51.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
08	40	01	<baudrate>

- <baudrate>, 1 byte.

Baudrate	Definition
0	9600 Baud
1	19200 Baud
2	RFU
3	RFU
4	RFU
5	RFU
6	57600 Baud
7	115200 Baud

### 2.51.2 Response

If the PT can change the baudrate it responds using the old baudrate:

#### PT response:


PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

Subsequently the baudrate is changed. The PT can accept commands in the new baudrate 2s after sending the response.

If the PT cannot change the baudrate it responds using the old baudrate with:

#### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	7D	00	


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Or – if incorrect baudrate – with:

**PT response:**

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	FD	00	

An explicit Completion does not occur!

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## 2.52 Top-Up Prepaid-Cards (06 09)

With this command the PT is instructed to top-up prepaid-cards.

### Sequence of Prepaid Top-Up:

1. Start via call from ECR
2. The PT checks whether the top-up amount is valid for this prepaid-card
3. The PT reads the card, in case of top-up or card-payment
4. The PT executes the transaction
5. Depending on the configuration the PT sends Intermediate Status-Information during the transaction to the ECR, so that it knows that the transaction is still running
6. Release Card (possibly earlier depending on card-reader /payment-type)
7. The PT sends a Status-Information with the result of the card-payment (successful or not successful)
8. The PT sends a Status-Information with the result of the top-up (successful or not successful)
9. Receipt-Printout
10. Completion of the payment/top-up


### 2.52.1 Start

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	09	xx	<card-type-ID> <payment-type> 04<amount> [49<CC>] [19<payment-type>] [3D<password>][2D<track 1 data>] [23<track 2 data>] [24<track 3 data>][8A<card type>][06<TLV-container>]

Data-block:

- <card-type-ID>; BCD-packed; 2 byte with leading zeros; card-type-ID of the network operators for the prepaid-card to be charged
- <payment-type>; length 1 byte; 01 = top-up via card-payment; 02 = top-up via cash-payment; 03 = top-up via card-payment, card-payment was completed.
- 04<amount>; 6 byte BCD-packed, amount in Euro-Cents with leading zeros
- The field „49<CC>“ is optional
- The field „19<payment-type>“ is optional (ignored for cash-payment); length 1 byte; Definition see command Authorisation (06 01)
- The field 3D<password>; length 3 byte, for cash-payment mandatory-field, for card-payment optional
- The field „2D<track 1 data>“ is optional; if payment-type = 02 the track-data will be ignored.
- The field „23<track 2 data>“ is optional; if payment-type = 02 the track-data will be ignored.
- The field „24<track 3 data>“ is optional; if payment-type = 02 the track-data will be ignored.
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible Tags in TLV-container: Tag 1F15, 41
- For cards which can not identified by the BIN, like CUP, the card type has to be sent with the command. Therefor the BMP 8A or TLV tag 41 is used.



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### 2.52.2 Response

The PT responds with:

#### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

Ans proceeds with the top-up sequence.

### 2.52.3 Check the Top-Up Amount

If the top-up amount is not permissible for this prepaid-card the PT terminates the process with:

#### Command vom PT:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
06	1E	xx	6F [49<CC>] <top-up amounts>

was the ECR with 80-00-00 quittiert.

#### Data-block:

- 6F; error number for invalid top-up amount
- The field „49<CC>“ is optional.
- <top-up amounts> consists of one or several permissible top-up amount; respectively:  
04<amount>, 6 byte BCD-packed, amount in Euro-Cents with leading zeros

### 2.52.4 Read Card


If the ECR transferred no card-data and the top-up should take place via card-payment, the PT waits for a card (chip or magnet-strip) from the customer.

The PT ascertains via the possibly pre-determined payment-type, the card-type, the limits in PT and the procedure-selection of the Merchant whether the magnet-stripe or the chip on the card should be used for the payment (sequence see chapter Authorisation (06 01)).

### 2.52.5 Transaction

Subsequently the PT begins with the transaction (top-up or cash-payment) or the transactions (card-payment and top-up).

For this purpose the PT makes an online-connection to the host. This takes place – depending on configuration of the PT and ECR – either over a communication module in the PT or over a communication module connected to the ECR (see chapter Transmit Data via Dial-Up (06 D9) and chapter Receive Data via Dial-Up (06 DA)).

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### 2.52.6 Intermediate Status-Information

If the ECR requested Intermediate Status-Information during Registration, the PT regularly sends Intermediate Status to the ECR.

### 2.52.7 Release Card

If the card is still in the card-reader, the PT releases it.

### 2.52.8 Status-Information Card-Payment

The PT responds after the payment-procedure with the **Status-Information** for the card-payment (not for top-up via cash-payment):

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
04	0F	xx	27<result-code><transaction-data>

Data-block:

- For <result-code> and <transaction-data> see chapter Status-Information (04 0F).

The ECR response is carried out according to chapter Authorisation.

### 2.52.9 Status-Information Top-Up

The PT responds after the **Top-Up** with the **Status-Information** for the **Top-Up**:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
04	0F	xx	27<result-code><transaction-data>

Data-block:


- For <result-code> and <transaction-data> see chapter Status-Information (04 0F).

The ECR response is carried out according to chapter Authorisation.

### 2.52.10 Receipt-Printout

Subsequently the Receipt-Printout takes place, also if the authorisation failed. If the PT function **ECR-Receipt** is activated (= setting in PT, that the ECR assumes the print-function), then the PT transmits the receipt line-by-line to the ECR using „Print Line“ Commands (see chapter Print line (06 D1)). Alternatively the receipt printout is carried out using the „Print Text-Block“ Command (see chapter Print line (06 D3)).

The Receipt-Printout should not be generated from data of the Status-Information by the ECR itself.

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### 2.52.11 Completion

If card-payment and top-up were successful or for cash-payment the top-up was successful the PT terminates the process via Completion whereupon the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	00	

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

If the card-payment failed or if the top-up process failed for cash-payment the PT sends the command **Abort** whereby the ECR receives back the “master-rights”:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
06	1E	xx	<result-code>[<CC>]

Data-block:

- The possible result-codes are described in chapter Error-Messages.
- The currency-code of the PT is only sent with result-code 6F. The PT only sends a currency-code to the ECR, if the ECR had also sent a currency-code in its request.

#### ECR response:


ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

#### Notes for Top-Up via card-payment:

For Top-Up via card-payment the command Completion only indicates success of the card-payment. Theoretically the card-payment can be successful but the top-up unsuccessful, which nevertheless results in a Completion command and not an Abort. The negative-result of the top-up is then only indicated by the corresponding contents of the Status-information.  
For top-up via card-payment however the command Completion or Abort indicates the result of the top-up.

#### Recommendation:

Splitting of the two sequences in two separate processes – card-payment (command Authorisation) and top-up via cash-payment (separate card-payment). This is also meaningful because the customer often not only the Top-Up but also buys goods at the same time and therefore top-up amount and card-payment amount are not identical.

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### 2.53 Print Line on PT (06 D1)

If data from the ECR are to be printed on a printer integrated in, or connected to the PT, then the command "Print Line" (06 D1) may be used in the reverse direction.

This command may only be sent from the ECR if the function is implemented in the PT.

### 2.54 Print Text-Block on PT (06 D3)

If data from the ECR are to be printed on a printer integrated in, or connected to the PT, then the command "Print Text-Block" (06 D3) may be used in the reverse direction.

This command may only be sent from the ECR if the function is implemented in the PT.

### 2.55 switchProtocol (08 02)

The command switchProtocol has the following consequences:

- the PT disables the ZVT protocol

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
08	02	01	00: switch to T=1, 01: switch to serial IFSF

The PT always responds with:

#### PT response:

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	


### 2.56 MAC calculation (06 E5)

This command can be used to calculate a message access code using DUKPT key stored in pinpad.

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	E5	xx	<parameter-list>,06<TLV-container>

Parameter list contains the following bitmap:

D3	DUKPT key identifier possible values: <ul style="list-style-type: none"> <li>- 1: Swiss server</li> <li>- 2: OASE</li> <li>- 3: Oil company</li> </ul>
----	---

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The field „06<TLV-container>“ length is variable (see chapter TLV-container).

Possible Tags in TLV-container:

TLV container includes the tags

1F32	SMID value If present this field contains the SMID used for PIN check. Terminal shall verify if still the same SMID is active in the pinpad. If field is not present a new SMID shall be created.
1F33	Message data This field contains a hash value (SHA-256, SHA-1) of the message or the message itself. For this data the MAC will be calculated using the key specified by SMID. Data shall be padded according to EMV rules.

**Response from PT for successful MAC calculation:**

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	xx	06<TLV-container>

The field „06<TLV-container>“ length is variable (see chapter TLV-container).

Possible Tags in TLV-container:

1F32	SMID value Used SMID for MAC calculation
1F34	MAC value Calculated MAC

**Response from PT for not successful MAC calculation:**

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	xx	00	

Possible values for APRC:


0x85	Key missing
0xEC	Processing not possible (SMID mismatch)

A Completion command is not sent.

## 2.57 Other Commands

In response to other commands not described in this specification, or not supported by the PT, the PT always reacts with an error-message. That means the PT must not support all the commands specified in this document; the PT must however respond correctly to commands that are unknown to it.


ECR → PT
----------

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APDU			
Control-field		Length	Data-block
CLASS	INSTR		
xx	xx	xx	xx

**PT response:**

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	83	00	

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### 3 Commands from PT to the ECR

If the ECR hands the PT via a command the master-rights, the following commands may be sent from PT to ECR:

#### 3.1 **Status-Information (04 0F)**

Via this command the PT can send Status-Information to the ECR.  
The following status-information is possible:

- **Status-Information after Authorisation, Reversal, Pre-Authorisation/Reservation or Pre-paidTop-Up**
- **Status-Information after Read Card**
- **Status-Information after End-of-Day**

##### 3.1.1 **Status-Information after Authorisation, Reversal, Pre-Authorisation/Reservation, DCC or Pre-paidTop-Up**


PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
04	0F	xx	[27<result-code>] [<transaction-data>] [06<TLV-container>]

Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.
- <transaction-data> consists of several fields, whereby each field is pre-fixed with a bitmap (e.g. 04<amount>0B<trace-number>49<CC>...). The individual data-fields have the following format. The bitmaps are each optional depending on the payment-type. The order of the fields is arbitrary.
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible Tags in TLV-container: 01, 0B, 0C, 13, 14, 15, 20, 21 (Pre-Authorisation), 22 (Authorisation), 2F, 45, 46, 47, 60, 63 (Prepaid Top-Up), E1, 1F08, 1F09, 1F0A, 1F0B, 1F13, 1F14, 1F16, 1F17 (DCC) E2, 1F30 (EPurse).

**Note:**


The PT only sends a Currency-Code to the ECR, if the ECR had also sent a Currency-Code in its request.

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Definition of transaction-data:

BMP number	Name	Format
04	<amount>	6 byte BCD packed (payment-amount or total of the End-of-Day)
0B	<trace>	trace-number, 3 byte BCD, for long trace numbers with more than 6 digits, the bitmap is set to 000000 and TLV tag 1F2B is used instead.
37	<orig. trace>	only for Reversal: Trace-number of the original payment, 3 byte BCD
0C	<time>	3 byte BCD HHMMSS
0D	<date>	2 byte BCD MMDD
0E	<exp. date>	expiry-date, 2 byte BCD in Format YYMM
17	<seq-nr.>	card sequence-number, 2 byte BCD packed (only for ec-cards)
19	<CC/pay- ment-type>	payment-type: 40 = offline 50 = card in terminal checked positively, but no Authorisation carried out 60 = online 70 = PIN-payment (also possible for EMV-processing, i.e. credit cards, ecTrack2, ecEMV online/offline).  If the TLV-container is active, this information can be specified in tag 2F (see chapter TLV-container).
22	<PAN / EF_ID>	PAN for magnet-stripe or EF_ID for ec chip,  LLVAR (2 byte counter [FxFy], data BCD packed, D = separator), e.g. F0 F3 01 23 45 (F0 F3 means 3 bytes follow)  receipt-data of the EF_ID: - card-number: byte 5-9 from EF_ID - expiry-date: byte 11-12 from EF_ID  The transfer of the PAN for girocard transactions (ecTrack2, ecEMV online/offline) is in BCD format (analogous to credit card payments).
29	<terminal-ID>	terminal-ID, 4 byte BCD packed




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BMP number	Name	Format
3B	<AID>	<p>authorisation-attribute. The length of the bitmaps is always 8 byte.</p> <p>contents:</p> <p>1.) ec-cards, bank-customer-card/service-card, Geldkarte (BMP8A = 2 or 30): used-data max. 4 byte binary. The bitmap is filled with leading zeros. Only for ec-Cash magnet-stripe and ec-Cash chip online. For ec-Cash chip offline see BMP 92.</p> <p>2.) Maestro-cards (BMP8A = 46): used-data max. 6 byte ASCII. The bitmap is filled with trailing zeros.</p> <p>3.) Girocard-cards (ectrack2, ecEMV online/offline): 8 byte ASCII padded with trailing zeros.</p> <p>4.) other cards: used-data max. 8 byte ASCII. The bitmap is filled, where possible, with trailing zeros.</p>
49	<CC>	2 byte BCD packed. Value: 09 78 = EUR
4C	<blocked goods-groups>	<p>List of blocked goods-groups</p> <p>LLVAR (2 byte counter [FxFy], data BCD packed),</p>
87	<receipt nr.>	receipt-number, 2 byte BCD packed. Valid only for non-Geldkarte transactions.
8A	<card-type>	<p>card-type (= ZVT card-type ID), 1 byte binary; see chapter ZVT-card-type-ID. Via BMP 8A can only cards within the first 255 card-type-IDs be transferred. For cards ID 256 upwards tag 41 must be used.</p> <p>If the ZVT card-type ID is larger than decimal 255 then BMP 8A should contain 'FF' and tag 41 should be used (see chapter TLV-container), providing the ZVT Card-Type ID is to be sent to the ECR. Alternatively BMP 8A can be omitted.</p>
8C	<card-type ID>	<p>card-type-ID of the network operator; 1 byte binary.</p> <p>If the network operator card-type ID is larger than decimal 255 then BMP 8C should contain 'FF' and tag 49 should be used (see chapter TLV-container), providing the network operator card-type ID is to be sent to the ECR. Alternatively BMP 8C can be omitted.</p>
92	<additional-data ec-Cash with chip offline>	<p>LLLVAR additional-data for ec-Cash with chip offline-payments with certificate, see table "additional-data ec-Cash chip offline".</p> <p>Only for ec-Cash chip offline.</p> <p>Not for girocard (ecTrack2, ecEMV online/offline).</p>
9A	<Geldkarte payment-/ failed-payment records>	LLLVAR payment-record from Geldkarte with certificate according to specification for the ec-card with chip – Version 3.0. 100 bytes binary (103 byte incl. LLLVAR); (only for Geldkarte)

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BMP number	Name	Format
BA	<AIDpar>	AID-parameter, 5 byte binary (only for ec-cards, BMP 8A = 2, 30) Only for ec-Cash magnet-stripe and ec-Cash Chip online (see also BMP AF. Not for girocard (ecTrack2, ecEMV online/offline). For ec-Cash Chip offline see BMP 92.
AF	<EF_Info>	LLLVAR for ec-Cash with Chip Online-payments. Datalength 17 byte (incl. LLLVAR 20 byte) according to specification for the ec-card with Chip – Version 3.0 / 5.2. Nur for ec-Cash chip online (see also BMP BA). For ec-Cash chip off-line see BMP 92. Not for girocard (ecTrack2, ecEMV online/offline).  receipt-data: account-number: byte 1-5 card sequence-number: byte 9-10 BLZ: byte 11-14
2A	<VU-number>	contract-number for credit-cards, 15 byte, ASCII, not null-terminated.
3C	<additional text>	additional text for credit-cards, LLLVAR, ASCII, not null-terminated.
A0	<result-code-AS>	the result-code, the AS is set if the host sends a result-code which can't be encoded in BCD . 1 byte, binary.
88	<turnover-nr.>	analogous to receipt-number, <turnover-nr.> is however valid for all transactions. 3 byte BCD-packed. Not supported by all terminals.
8B	<card-name>	name of the card-type, LLVAR, ASCII, null-terminated. For EMV-applications the product name is entered here. This must be printed on the receipt.
06	<additional-data>	TLV-container; see chapter Defined Data-Objects e.g. lists the forbidden goods-groups

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Definition and structure of **BMP 92** (additional-data ec-Cash with chip offline):

Length	Sub-field
3	LLVAR
17	EF_INFO
24	EF_ID
2	EF_SEQ
2	KID (= log. key-number from reduce_ec) and KV (key-version from reduce_ec) of K <sub>Zert</sub>
8	certificate with K <sub>Zert</sub>

Receipt-data for ec-Cash chip offline:

- BLZ: byte 11-14 from EF\_INFO
- account-number: byte 1-5 from EF\_INFO
- card sequence-number: byte 9-10 from EF\_INFO
- card-number: byte 5-9 from EF\_ID
- expiry-date: byte 11-12 from EF\_ID
- AID-parameter:
- <KID>/<KV>/<byte 15 from EF\_INFO>/<byte 6 from EF\_INFO>/<byte 13-end of EF\_ID>/
- <byte 1-2 from EF\_SEQ>/
- authorisation-attribute: certificate with K<sub>Zert</sub>

Definition and structure of **BMP 9A** (payment-record Geldkarte):

Length	Sub-field
3	LLVAR, always: F1 F0 F0
100	payment-record according to specification Geldkarte 3.0


Definition and structure of **BMP 4C** (blocked goods-groups):

Length	Sub-field
2	LLVAR
3	product-code according to goods-groups-table in PT, BCD encoded with leading zeros
...	...
3	product-code according to goods-groups-table in PT, BCD encoded with leading zeros

Note BMP4C:

If the PT has received goods-groups information from ECR and not all product-codes can be authorised with the used card, the PT sends in BMP 4C a list of the blocked product-codes. The payment is in this case to be completely aborted, i.e. the PT does not execute an authorisation, even for the permitted product-codes.

The individual product-codes are placed in the BMP consecutively, without separators.

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### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

alternative:

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	00	00	

alternative:

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	9C	00	


alternative:

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	yy (any value, excepting 00 and 9C)	xx	xx

### Note:

- The responses 80-00-00 and 84-00-00 are positive acknowledgements of the ECR.
- For vending-machines 80-00-00 and 84-00-00 mean that the **Issue-of-Goods** has succeeded.
- The response 84-9C-00 implies that the PT the should repeat Status-Information after 2s.
- A response 84-yy-xx-xx with ,yy' not equal to ,00' and not equal to ,9C' implies that the **Issue-of-Goods** has not succeeded. If Issue-of-Goods did not succeed the PT reverses the payment.

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### 3.1.2 Status-Information after Read Card:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
04	0F	xx	[27<result-code>] [<cardsdata>] [06<TLV-container>]

Data-block:

- The <result-code> is sent in error-case. Definition of <result-code> in chapter Error-Messages, length 1 byte.
- The individual data-fields within <cardsdata> are marked via the ISO-bitmap position and have the following formats. Each bitmap is optional and the order is arbitrary.
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible tags in TLV-container: tag 21, 61, 62 (and subtags), 1F0B, 1F14, 1F16, 1F17


BMP-number	Notation	Structure
2D	<track 1>	LLVAR unpacked, track 1 data/ card number for ec-card with chip
23	<track 2>	LLVAR BCD packed, track 2 data
24	<track 3>	LLLVAR BCD packed, track 3 data
A7	<EF_ID>	LLVAR structure as in the interface specification for ec-card with chip, Vers. 3.0
2E	<chip data>	LLLVAR binary data from synchronous chip cards

Note:

- If the tracks have an even-length, no padding (e.g. „1F“ or „F0“) is allowed.
- Start- and End-sentinels are not sent.
- If masking of track data is enabled, the character "E" is used.

### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

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### 3.1.3 Status-Information after End-Of-Day / Send Turnover Totals


PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
04	0F	xx	[27<result-code>] [<transaction-data>]

Data-block:

- The <result-code> is defined in chapter Error-Messages, length 1 byte.
- <transaction-data> consists of several fields, whereby each field is prefixed with a bitmap (e.g. 04<amount>0B<trace-number>49<CC>...). The individual data-fields have the following formats. Each bitmap is optional. The order of the fields is arbitrary.

Definition the transaction-data:

BMP number	Notation	Structure
04	<total-amount>	6 byte BCD packed total of the End-of-Day
60	<single amounts>	LLLVAR BCD packed: 2 byte BCD receipt-number start (N4) 2 byte BCD receipt-number end (N4) 1 byte binary number of ec-card 6 byte BCD, total turnover ec-card 1 byte binary number of JCB 6 byte BCD, total turnover JCB 1 byte binary number of Eurocard 6 byte BCD, total turnover Eurocard 1 byte binary number of Amex 6 byte BCD, total turnover Amex 1 byte binary number of VISA 6 byte BCD, total turnover VISA 1 byte binary number of Diners 6 byte BCD, total turnover Diners 1 byte binary number of remaining cards 6 byte BCD, total turnover remaining cards
0B	<trace>	trace-number, 3 byte BCD
0C	<time>	3 byte BCD HHMMSS
0D	<date>	2 byte BCD MMDD
9A	<total-record Geldkarte>	LLLVAR 100 byte (ref. ZKA-Spec 3.0) Note: - only sent if Geldkarte-turnover available

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**Note:**

The PT only sends a Currency-Code (data-field 49) to the ECR, if the ECR had also sent a Currency-Code in its request.

**ECR response:**

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 3.2 Completion (06 0F)

Certain commands must be completed with a separate command:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	0F	xx	[27<result-code>] [0C<time>] [AA<date>][19<status-byte>] [29<TID>] [49<CC>][06<TLV-container>]


Data-block:

- <result-code>, optional, 1 byte is defined in chapter Error-Messages, length .
- <time>, optional, 3 byte BCD, Format HHMMSS.
- <date>, optional, 3 byte BCD, Format YYMMDD.
- <status-byte>, optional, 1byte
- <TID>, optional, 4 byte long (BCD packed).
- <CC>, optional, 2 byte
- <TLV-container> see chapter TLV-container

**ECR response:**

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

Commands which require Completion are explicitly noted within the command description.

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### 3.3 Abort (06 1E)

If a command was not successfully terminated the PT sends command Abort to the ECR.

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	1E	01	<result-code> [06<TLV-container>]

Data-block:

- The result-code is defined in chapter Error-Messages, length 1 byte.
- <TLV-container> see chapter TLV-container

**ECR response:**

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

### 3.4 Set Date and Time in ECR (04 01)

If the PT sends this command to the ECR, the ECR sets its system-time to the value sent in data-block.

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
04	01	08	AA<date> 0C<time>


Data-block:

- <date>, 3 byte BCD YYMMDD
- <time>, 3 byte BCD HHMMSS

**ECR response:**

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	



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### 3.5 Print Line (06 D1)

With this command a printer integrated in or attached to the ECR can be made to print a line from the transferred data. The text contains no CR LF. Empty lines are transferred as print-commands with an empty text-field. The command is only sent from the PT if function ECR-receipt is active on the PT.

If implemented in the PT, this command can be used in the reverse direction to allow data from the ECR to be printed by the PT's printer.

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	D1	xx	<attribute><text> [06<TLV-container>]

Data-block:

- With field <attribute> the PT can control text-formatting, length 1 byte.
- <text> is the text to be printed. If 'FF' is sent as attribute, 1 byte text follows(=number of the lineshifts); if text is missing for this case the line is shifted.
- The field "06<TLV-container>" is optional, the length is variable (see chapter TLV-container). Possible Tags in TLV-container: tag 1F07 (receipt-type) , tag 14 (ISO character set)

Definition of field <attribute>:

Attribute	Definition
1xxx xxxx (not equal to 80)	this is the last line
1000 0000	RFU
01xx nnnn	centred
0x1x nnnn	double width
0xx1 nnnn	double height
0000 nnnn	normal text
0000 0000	normal text


nnnn = right-justified.

attribute „1xxx xxxx“ (not equal to 80) indicates also that a switch between customer-receipt and merchant-receipt takes place, or vice-versa. See also tag 1F04 and 1F07.

attribute „1xxx xxxx“ (not equal to FF and not equal to 80) is required for ECR-systems that first collect all print-lines in a buffer then print them together on a page-printer or for ECRs which use a printer with cutter.

Note:

The field attribute is a bit-field.

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#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

If no printer is connected to the ECR, or the printer is not ready, or the ECR cannot print for any other reason it responds with:

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	CC	00	

### 3.6 Print Text-Block (06 D3)

With this command a printer integrated in or attached to the ECR can be made to print data from the PT. In comparison to the command "Print Lines" the command "Print Text-Block" can send several lines simultaneously. Thereby the throughput is increased. The texts and attributes are transferred as a TLV-container. The text contains no CR LF. Empty lines are created via the tag "text-lines" without further contents.

The command is only used by PT if the ECR requests this command via the list of permitted ZVT-commands or if the PT is configured to use it, otherwise the PT uses the command "Print Lines".


If implemented in the PT, this command can be used in the reverse direction to allow data from the ECR to be printed by the PT's printer.

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	D3	xx	06<TLV-container>

#### Data-block:

- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible Tags in TLV-container: tag 25, 1F07 , tag 14 (ISO character set), 1F37  
The last line of a receipt has to be followed by tag 09 with contents 1xxx xxxx (not equal to 80), to allow the ECR to concatenate several blocks to a single receipt and separate receipts from each other

The further sequence is comparable to that of command "Print lines".

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### 3.7 Send Intermediate-Status to ECR (04 FF)

With this command the ECR can display status-information about the state of the PT. The command is only sent by the PT if the function for registration of the ECR was requested in the config-byte.

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
04	FF	xx	<intermediate-status> [<time-out>] [06<TLV-container>]

Data-block:


- <intermediate-status> is hexadecimal encoded.
- <time-out> in minutes. Sets time-out T4, length 1byte BCD packed. Altering time-out T4 is especially important for lengthy actions on the PT (e.g. software-update).
- The field „06<TLV-container>“ is optional, the length is variable (see chapter TLV-container).  
Possible Tags in TLV-container: tag 24  
If <TLV-container> is sent, then the PT must also send <time-out>.

**ECR response:**


ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

Definition of <intermediate-status>:

value (hexa- decima l)	value (deci mal)	1)	Definition	Bedeutung
00	0		PT is waiting for amount-confirmation	BZT wartet auf Betragbestätigung
01	1	x	please watch PIN-Pad	Bitte Anzeigen auf dem PIN-Pad beachten
02	2	x	please watch PIN-Pad	Bitte Anzeigen auf dem PIN-Pad beachten
03	3	x	not accepted	Vorgang nicht möglich
04	4		PT is waiting for response from FEP	BZT wartet auf Antwort vom FEP
05	5		PT is sending auto-reversal	BZT sendet Autostorno
06	6		PT is sending post-bookings	BZT sendet Nachbuchungen
07	7	x	card not admitted	Karte nicht zugelassen
08	8	x	card unknown / undefined	Karte unbekannt / undefiniert
09	9	x	expired card	Karte verfallen
0A	10	x	insert card	Karte einstecken
0B	11		please remove card!	Bitte Karte entnehmen!
0C	12	x	card not readable	Karte nicht lesbar
0D	13	x	processing error	Vorgang abgebrochen
0E	14	x	please wait...	Vorgang wird bearbeitet bitte warten...
0F	15		PT is commencing an automatic end-of-day batch	BZT leitet einen automatischen Kassenabschluß ein


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value (hexa- decima l)	value (deci mal)	1)	Definition	Bedeutung
10	16	x	invalid card	Karte ungültig
11	17		balance display	Guthabenanzeige
12	18	x	system malfunction	Systemfehler
13	19	x	payment not possible	Zahlung nicht möglich
14	20	x	credit not sufficient	Guthaben nicht ausreichend
15	21	x	incorrect PIN	Geheimzahl falsch
16	22		limit not sufficient	Limit nicht ausreichend
17	23	x	please wait...	Bitte warten...
18	24	x	PIN try limit exceeded	Geheimzahl zu oft falsch
19	25	x	card-data incorrect	Kartendaten falsch
1A	26		service-mode	Servicemodus
1B	27	x	approved. please fill-up	Autorisierung erfolgt. Bitte tanken
1C	28	x	approved. please take goods	Zahlung erfolgt. Bitte Ware entnehmen
1D	29	x	declined	Autorisierung nicht möglich
26	38		PT is waiting for input of the mobile-number	BZT wartet auf Eingabe der Mobilfunknummer
27	39		PT is waiting for repeat of mobile number	BZT wartet auf Wiederholung der Mobilfunknummer
28	40		currency selection, please wait...	Währungsauswahl, bitte warten...
29	41		language selection, please wait...	Sprachauswahl, bitte warten...
2A	42		for loading please insert card	Zum Laden Karte einstecken
2B	43		Emergency transaction, please wait	Offline-Notbetrieb, bitte warten
2C	44		Application selection, please wait	Auswahl Debit/Kredit, bitte warten
41	65		please watch PIN-Pad please remove card!	Bitte Anzeigen auf dem PIN-Pad beachten Bitte Karte entnehmen!
42	66		please watch PIN-Pad please remove card!	Bitte Anzeigen auf dem PIN-Pad beachten Bitte Karte entnehmen!
43	67	x	not accepted, please remove card!	Vorgang nicht möglich Bitte Karte entnehmen!
44	68		PT is waiting for response from FEP please remove card!	BZT wartet auf Antwort vom FEP Bitte Karte entnehmen!
45	69		PT is sending auto-reversal please remove card!	BZT sendet Autostorno Bitte Karte entnehmen!
46	70		PT is sending post-booking please remove card!	BZT sendet Nachbuchungen Bitte Karte entnehmen!
47	71	x	card not admitted please remove card!	Karte nicht zugelassen Bitte Karte entnehmen!
48	72	x	card unknown / undefined please remove card!	Karte unbekannt / undefiniert Bitte Karte entnehmen!
49	73	x	expired card please remove card!	Karte verfallen Bitte Karte entnehmen!
4A	74			
4B	75		please remove card!	Bitte Karte entnehmen!
4C	76	x	card not readable please remove card!	Karte nicht lesbar Bitte Karte entnehmen!
4D	77	x	processing error please remove card!	Vorgang abgebrochen Bitte Karte entnehmen!
4E	78	x	please wait... please remove card!	Vorgang wird bearbeitet bitte warten... Bitte Karte entnehmen!
4F	79		PT is commencing an automatic end-of-day batch please remove card!	BZT leitet einen automatischen Kassenabschluß ein Bitte Karte entnehmen!
50	80	x	invalid card please remove card!	Karte ungültig Bitte Karte entnehmen!
51	81		balance display please remove card!	Guthabenanzeige Bitte Karte entnehmen!

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value (hexa- decima l)	value (deci mal)	1)	Definition	Bedeutung
52	82	x	system malfunction please remove card!	Systemfehler Bitte Karte entnehmen!
53	83	x	payment not possible please remove card!	Zahlung nicht möglich Bitte Karte entnehmen!
54	84		credit not sufficient please remove card!	Guthaben nicht ausreichend Bitte Karte entneh- men!
55	85	x	incorrect PIN please remove card!	Geheimzahl falsch Bitte Karte entnehmen!
56	86		limit not sufficient please remove card!	Limit nicht ausreichend Bitte Karte entnehmen!
57	87	x	please wait... please remove card!	Bitte warten... Bitte Karte entnehmen!
58	88	x	PIN try limit exceeded please remove card!	Geheimzahl zu oft falsch Bitte Karte entnehmen!
59	89	x	card-data incorrect please remove card!	Kartendaten falsch Bitte Karte entnehmen!
5A	90		service-mode please remove card!	Servicemodus Bitte Karte entnehmen!
5B	91	x	approved. please fill-up please remove card!	Autorisierung erfolgt. Bitte tanken Bitte Karte entnehmen!
5C	92	x	approved. please take goods please remove card!	Zahlung erfolgt. Bitte Ware entnehmen Bitte Karte entnehmen!
5D	93	x	declined please remove card!	Autorisierung nicht möglich Bitte Karte entneh- men!
66	102		PT is waiting for input of the mobil-number please remove card!	BZT wartet auf Eingabe der Mobilfunknummer Bitte Karte entnehmen!
67	103		PT is waiting for repeat of the mobil-number please remove card!	BZT wartet auf Wiederholung der Mobilfunknum- mer Bitte Karte entnehmen!
C7	199		PT is waiting for input of the mileage	BZT wartet auf Eingabe des Kilometerstands
C8	200		PT is waiting for cashier	BZT wartet auf Kassierer
C9	201		PT is commencing an automatic diagnosis	BZT leitet eine automatische Diagnose ein
CA	202		PT is commencing an automatic initialisation	BZT leitet eine automatische Initialisierung ein
CB	203		merchant-journal full	Händlerjournal voll
CC	204		debit advice not possible, PIN required	Lastschrift nicht möglich, PIN notwendig
D2	210		connecting dial-up	DFÜ Verbindung wird hergestellt
D3	211		dial-up connection made	DFÜ Verbindung besteht
E0	224		PT is waiting for application-selection	BZT wartet auf Anwendungsauswahl
E1	225		PT is waiting for language-selection	BZT wartet auf Sprachauswahl
F1	241		offline	offline
F2	242		online	online
F3	243		offline transaction	offline Transaktion
FF	255		no appropriate ZVT status code matches the status. See TLV tags 24 and 07	

1) the texts marked with x are of particular relevance for certification of unattended basis-terminals and must displayed word-for-word on the customer-display.

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### 3.8 Dial-Up (06 D8)

If the PT has received the master-rights from the ECR it can request with this command that the ECR makes a dial-up connection, e.g to host or maintenance-system, for the PT. To be able to utilise this function the ECR must be configured accordingly, since most ECRs do not provide dial-up support.

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	D8	xx	<dialing-data>

Data-block:

- <dialing-data> are the dialing parameters to be used, 7-bit ASCII encoded.

structure of <dialing-data>:

Connection-type	Parameter
modem and ISDN without user-data	F <baud> : <target call number>
modem and ISDN with user-data	P <baud> : <target call number> [, <user-data>]

<baud> = desired Baudrate between dial-up module and remote station (e.g. host, TCS);  
standard-values = 9600 or 2400 Baud

<target call number> = call number of the remote station

<user-data> = routing information. Separated from the call number via „“. The ECR has to decide whether the user-data are sent in the dialing-string or after the connect.

[encoding](#) of <baud>, <target call number> and <userdata>:

7-bit ASCII with umlauts, e.g. F0 F3 01 23 45 (F0 F3 means 3 ASCII bytes follow)


The data described above must be agreed from case-to-case with the network operator.

The ECR forwards the received data to the dial-up module and responds after the connect with:

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
80	00	00	

Or if connection failed, with an error-message.

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### 3.9 Hang-Up (06 DB)


With this the PT causes the ECR to disconnect a dial-up connection:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	DB	00	

The ECR terminates the connection and responds with:

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
80	00	00	

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### 3.10 Transmit Data via Dial-Up (06 D9)

If the PT has received the master-rights from the ECR it can request with this command that the ECR transmits data via a dial-up module on the ECR:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	D9	xx	<dial-up data>

Data-block:


- <dial-up data> is the data to be transmitted.

The ECR forwards the received data to the dial-up module and responds after the connect with:

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
80	00	00	



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### 3.11 Receive Data via Dial-Up (06 DA)

With this command the PT receives data via a dial-up module connected to the ECR:

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	DA	00	

The ECR receives the data from the dial-up module and responds with:


#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
80	00	xx	<dial-up data>

Data-block:

- <dial-up data> is the data received from the dial-up module Data. Order: FIFO – the first received byte is relayed first to the PT.

The ECR waits for a approx.0.5s for the reception of data. If no data is received after this time-out it responds with 80-00-00.

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### 3.12 Transparent-Mode (06 DD)

This commands serves to make transparent connection between PT and a third-party (e.g. Terminal-Configuration-Server TCS) after the dial-up connection has been made.

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	DD	00	

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
80	00	00	

All messages between the third-party and the PT are transmitted transparently further by the ECR. **Therefore no checking of the data takes place by the ECR (e.g. no ACK/NAK or 80-00-00).**


The ECR ends the Transparent-Mode automatically if the connection between the dial-up module and the third-party is terminated. There is no Completion command for the command Transparent-Mode.

#### Sequence – transmit transparent data:

1. The PT makes a connection to the TCS via command „Dial-Up“.
2. The PT switches the ECR into Transparent-Mode.
3. TKS and PT communicate directly“.
4. The TCS terminates the connection. The ECR must monitor the status the of the dial-up module to recognise the hang-up. Then the ECR terminates the Transparent-Mode. Time-out T4 also terminates the Transparent-Mode if no communication takes place between PT and TKS within the time-out period.

#### Sequence – Remote-Maintenance:

1. Terminal-Supervisor calls the ECR.
2. The ECR relays data between Terminal-Supervisor and PT transparently.
3. The Terminal-Supervisor terminates the connection. The ECR must monitor the status the of the dial-up module to recognise the hang-up. Then the ECR terminates the Transparent-Mode. Time-out T4 also terminates the Transparent-Mode if no communication takes place between PT and TKS within the time-out period.

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### 3.13 Menu-Request (04 0E)

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
04	0E	xx	[06<TLV-container>]

Data-block:

- <TLV-container> see chapter TLV-container tag 2B (menu)

The PT sends a Menu in tag 2B to the ECR, so that a request is displayed on the ECR.

**Note:**

The command „Menu-Request“ may only be used if the ECR has noted during Registration that it supports this command.

**ECR response:**

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	xx	06<TLV-container>

Data-block:

- <TLV-container> see chapter TLV-container tag 19

The ECR returns the selected response in tag 19.

alternative:

**ECR response:**


ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	00	xx	06<TLV-container>

Data-block:

- <TLV-container> see chapter TLV-container tag 19

The ECR returns the selected response in tag 19.

alternative:

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### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	yy (any value, excepting 00)	xx	xx

### Note:

- The responses 80-00 and 84-00 are positive acknowledgements from the ECR.
- A response 84-yy with ,yy' not equal to ,00' implies that the **Menu-Request was aborted with an error** (See chapter Error-Messages).

## 3.14 Blocked-List Query to ECR (06 E4)

With this command the PT can send a blocked-list query to the ECR after reading the card. The ECR checks the BLZ / account number / PAN or other relevant card parameter and returns the result to the terminal. Depending on the outcome the terminal either proceeds with the transaction or aborts. In any event there follows a completion or abort message from the PT to the ECR.

This command may only be sent by the PT to the ECR if the ECR listed it as a supported command in the TLV container during registration.


PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
06	E4	xx	<card data>

### Data-block:

- <card data> contains numerous fields, whereby each field is prefixed by a bitmap (i.e 22<PAN / EF\_ID>0E<exp-date>...). The individual bitmaps are defined as follows, and are optional depending on the payment-type. The order of fields is arbitrary.

### Card-data definition:

BMP Number	Name	Format
0E	<exp-date>	expiry date, 2 byte BCD, format YYMM
17	<seq-nr.>	card sequence-number, 2 byte BCD packed (only for ec-cards)

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BMP Number	Name	Format
22	<PAN / EF_ID>	PAN for magnet-stripe or EF_ID for chip, LLVAR (2 byte counter [FxFy], data BCD packed, D = separator), e.g. F0 F3 01 23 45 (F0 F3 means 3 bytes follow)  receipt-data of the EF_ID: - card-number: byte 5-9 from EF_ID - expiry-date: byte 11-12 from EF_ID  The transfer of the PAN for girocard transactions (ecTrack2, ecEMV online/offline) is in BCD format (analogous to credit card payments).
8A	<card-type>	card-type (= ZVT card-type ID), 1 byte binary; see chapter ZVT-card-type-ID. Via BMP 8A can only cards within the first 255 card-type-IDs be transferred. For cards ID 256 upwards tag 41 must be used.  If the ZVT card-type ID is larger than decimal 255 then BMP 8A should contain 'FF' and tag 41 should be used (see chapter TLV-container), providing the ZVT Card-Type ID is to be sent to the ECR. Alternatively BMP 8A can be omitted.

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	00	

alternative:

#### ECR response:


ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	00	00	

alternative:

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	9C	00	

alternative:

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#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	yy (any value, excepting 00 and 9C)	xx	xx

#### Note:

- The responses 80-00-00 and 84-00-00 are positive acknowledgements from the ECR (card is not in the blocked-list).
- Response 84-9C-00 states that the PT should resend the blocked-list request after 2s.
- Response 84-yy-xx-xx with ,yy' not equal to ,00' or ,9C' or ,6E' implies that an error occurred whilst checking the blocked-list.
- Response 84-6E-00 states that blocked-list request was completed successfully and the card is contained in the blocked-list.

### 3.15 Input-Request (04 0D)

The PT sends an Input-Request to prompt for a string, a number or an amount at the ECR.

PT → ECR			
APDU			
Control-field		Length	Data-block
CLASS	INSTR		
04	0D	xx	[06<TLV-container>]

Data-block:

- <TLV-container> see chapter TLV-container tag 32 (Input container)

#### Note:


Input-Requests are only sent by the PT, if the ECR has added 04 0D to the list of permitted ZVT-commands (tag 26) in command 06 00 (Registration).

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
80	00	xx	06<TLV-container>

Data-block:

- <TLV-container> see chapter TLV-container tag 32 (Input container)

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The ECR returns the result of input in tag 1F3A (as sub-tag of tag 32) in the response. If the timeout for the input has expired without any input, tag 1F3A or TLV container is not added to response.

alternative:

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	00	xx	06<TLV-container>

Data-block:

- <TLV-container> see chapter TLV-container tag 32 (Input container)

The ECR returns the result of input in tag 1F3A (as sub-tag of tag 32) in the response. If the timeout for the input has expired without any input, tag 1F3A or TLV container is not added to response.


alternative:

#### ECR response:

ECR → PT			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	yy (any value, excepting 00)	xx	xx

#### Note:


- The responses 80-00 and 84-00 are positive acknowledgements from the ECR.
- A response 84-yy with ,yy' not equal to ,00' implies that the **Input-Request was aborted or an error occurred** (See chapter Error-Messages).

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### 3.16 Other Commands

The PT transmits no further commands to the ECR.



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## 4 Important Receipt Texts

### 4.1 Transfer of Receipt-Information

If the ECR assumes printing of payment-data it can receive the important information for receipt-printout in two different ways:

1. Aquisition of the texts from the command „Print Lines“ and their printing details without re-formatting.
2. Aquisition of the texts from the command „Status-Information“ and their printing details with the preceding sorting and formatting.


The first method has the advantage that the programmer of the ECR does not need be concerned with the contents of the receipt; the important details are always present and the formatting is correctly set. Thus it is assured that the requirements of the ZKA or credit-card organisations or other partners are met. Additionally the ECR is not liable to the ZKA.

The following table gives an overview of the most important data which must be included on a receipt.

### 4.2 Receipt-Information – Common Information


The required common data for each payment are:

- name of the means-of-payment
- payment-type (payment, reversal, refund, aquisition, ...)
- amount from BMP ,04' with currency code (recognisable from BMP ,49'; 0978 = ,EUR')
- terminal-ID from BMP ,29'
- date from BMP ,0D' and time from BMP ,0C'
- trace-number from BMP ,0B'
- receipt-number from BMP ,87'
- result-code from BMP ,A0' (if present)
- additional-text from BMP ,3C' (if present)
- expiry-date of the card from BMP ,0E'

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### 4.3 Extended Receipt-Information dependent on Payment Type

payment-type	print-texts
ELV (Track 3)	<ul style="list-style-type: none"> <li>• name of the means-of-payment: ec direct-debit</li> <li>• signature line for customer</li> <li>• permitted advice-text from operator for direct-debit entry</li> <li>• card-sequence number from BMP ,17'</li> <li>• account-number and bank-code from the PAN from BMP ,22'</li> </ul>
PoZ (obsolete)	<ul style="list-style-type: none"> <li>• name of the means-of-payment: PoZ</li> <li>• signature line for customer</li> <li>• reference-number BMP ,3B' (not available for reversal)</li> <li>• reference-parameter from BMP ,BA' (not available for reversal)</li> <li>• permitted ZKA advice-text from operator for direct-debit entry</li> <li>• card-sequence number from BMP ,17'</li> <li>• account-number and bank-code from the PAN from BMP ,22'</li> </ul>
Online-direct-debit (not ZKA)	<ul style="list-style-type: none"> <li>• name of the means-of-payment obtained from network operator</li> <li>• signature line for customer</li> <li>• reference-number BMP ,3B', so long as sent by network operator</li> <li>• reference-parameter from BMP ,BA', so long as sent by network operator</li> <li>• permitted advice-text from operator for direct-debit entry</li> <li>• card-sequence number from BMP ,17'</li> <li>• account-number and bank-code from the PAN from BMP ,22'</li> </ul>
ec-Cash (up to TA 6.0)	<ul style="list-style-type: none"> <li>• name of the means-of-payment: electronic cash</li> <li>• authorisation-attribute from BMP ,3B'</li> <li>• AID-parameter from BMP ,BA' for online-TA or from BMP ,92' for offline-TA</li> <li>• card-sequence number from BMP ,17'</li> <li>• account-number and bank-code from the PAN from BMP ,22'</li> </ul>
GiroCard (TA7.0)	<ul style="list-style-type: none"> <li>• the ECR has to check tag 45 to determine which receipts have to be printed</li> <li>• name of the means-of-payment from BMP 8B or tag 4A</li> <li>• receipt DOL from tags 46 or 47, if available</li> <li>• authorisation-attribute from BMP ,3B'</li> <li>• card-sequence number from BMP ,17'</li> <li>• account-number from the PAN in BMP ,22'</li> </ul>
Maestro (TA5.2)	<ul style="list-style-type: none"> <li>• name of the means-of-payment: Maestro</li> <li>• authorisation-attribute BMP ,3B'</li> <li>• AID-parameter BMP ,BA' for online-TA or from BMP ,92' for offline-TA</li> <li>• card-number from the PAN from BMP ,22'</li> </ul>
Geldkarte (Version 3.0)	<p>receipt-printout is optional according to specification. If a receipt is printed, then following are required:</p> <ul style="list-style-type: none"> <li>• name of the means-of-payment: Geldkarte</li> <li>• Geldkarte-number from BMP ,9A'</li> <li>• merchant card-number from BMP ,9A'</li> <li>• purse booking account from BMP ,9A'</li> <li>• certificate from BMP ,9A'</li> <li>• sequence-number BSEQ from the Geldkarte from BMP ,9A'</li> <li>• sequence-numbers SSEQ the merchant-card from BMP ,9A'</li> <li>• sequence-numbers HSEQ the merchant-card from BMP ,9A'</li> </ul>
Credit-cards (non DC POS)	<ul style="list-style-type: none"> <li>• authorisation-attribute from BMP ,3B'</li> <li>• VU-Number from BMP ,2A'</li> <li>• card-number from the PAN from BMP ,22'</li> </ul>

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Credit-cards (DC POS 2.4)	<ul style="list-style-type: none"> <li>the ECR has to check tag 45 to determine which receipts have to be printed</li> <li>name of the means-of-payment from BMP 8B or tag 4A</li> <li>receipt DOL from tags 46 or 47, if available</li> <li>authorisation-attribute from BMP ,3B‘</li> <li>VU-Number from BMP ,2A‘</li> <li>card-number from the PAN from BMP ,22‘</li> </ul>
Customer-cards, Aquisition-cards, Fleetcards, other	<ul style="list-style-type: none"> <li>to be agreed with network operator</li> </ul>

## 5 Event Sequence for PT in Locked Condition and for Execution of Time-Controlled Events on PT

### 5.1 Sequence for Locked Condition

There are locked-conditions during which the PT is temporarily out-of-order. These conditions are reflected by the terminal-status. In this condition the PT is basically able to receive and respond to all PT commands. However, all PT commands are responded to with the Abort command, with these exceptions:


- Status-Request
- Display Text
- Display Text (old Version)
- Display Text with Function-Key Input
- Display Text with Function-Key input (old Version)
- Display Text with numerical Input
- Display Text with numerical input (old Version)
- Activate Service-Mode
- Software-Update
- Registration
- Log-Off
- Read Card
- Abort

These commands will be processed normally.

Additionally commands which can deactivate the locked condition, (state can be read via the PT-command „Status-Request“) are also processed.

### 5.2 Time-Controlled Events

The PT has the possibility to execute time-controlled events independently. During this time the PT is temporarily out-of-order. In this case commands sent to the PT will not be responded to. After completion of the event, commands are processed normally by the PT again. It is left up to the vending-machines or ECR to decide how it reacts in this case. It is possible to discern when the PT is operational again by polling with the command Status-Request. It must be noted that time-controlled events may last a considerable time period (e.g. for software-update).

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## 6 Additional Data

Depending on the software the ECR can send additional data commands Authorisation, Reversal etc.

### 6.1 Additional Data type 1 (for fleet-cards)

The field „3C<additional-data>“ is optional, length variable.

#### 6.1.1 structure


length [byte]	field
3	Length of flowing data within BMP 3C, LLLVAR encoded
2	driver-code, BCD packed, if the field driver-code is not used, default ,00 00'
3	mileage, BCD packed, if the field mileage is not used, default ,00 00 00'
2	error- and status-code, binary
8	goods-data information #1
8	goods-data information #2
8	goods-data information #3
8	goods-data information #4
8	goods-data information #5
	...
8	goods-data information #n

#### 6.1.2 Error- and Status-codes

byte 1: not used

byte 2:

bit	definition
0	PIN-input bypass
1	outdoor
2	RFU
3	card lockedt
4	card expired
5	transaction-data manually captured
6	rental car
7	reversal

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### 6.1.3 Goods-Data Information


The maximum number of the goods-data information is variable and depends on the requirements of the host system. Each goods-data information comprises:

- product-code, 2 byte, BCD packed
- partial-amount, 3 byte, BCD packed, in hundreds of units → 000150 means 1,50 pieces or litre.
- partial-sum, 3 byte, BCD packed, in hundreds of units → 000150 means 1,50€.

Note: if a negative sum is given (e.g. for deposit), this can be noted via a ‚D‘ in the MS-nibble of the partial-sum. In this case the maximum partial-sum is 999,99 EUR.

## 6.2 Additional Data type 2

RFU

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### 6.3 Additional Data type 3 (for fleet-cards)

The field „3C<additional-data>“ is optional, length variable max. 213 byte.

#### 6.3.1 Structure

length [byte]	field
3	length of following data within BMP 3C, LLLVAR encoded
3	mileage, BCD packed, if the field mileage is not used, default ,00 00 00'
2	vehicle-number, BCD packed, if the field vehicle-number is not used, default ,00 00'
2	driver-code, BCD packed, if the field driver-code is not used, default ,00 00'
3	capture-type, binary encoded
20	Info, ASCII encoded
2	filler, ASCII encoded
1	number of the goods-data information, BCD packed, range 0 bis 15
12	goods-data information #1
	...
12	goods-data information #n


#### 6.3.2 Capture-Type

The contents are dependent on the network operator

#### 6.3.3 Goods-Data Information

The number of the goods-data information is variable and limited to max. 15. Each goods-data information comprises:

- product-code, 3 byte, BCD packed
- partial-amount, 3 byte, (4 pre-decimal positions, 2 decimal positions), BCD packed.
- partial-sum, 5 byte, (7 pre-decimal positions, 3 decimal positions), BCD packed. The third decimal position is always '0'
- prefix, 1 byte ASCII („ “ for positive and „-“ for negative amounts)

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## 7 TLV-Container

Using the TLV-container variable data-elements can be transferred between ECR and PT. In contrast to bitmaps the data-elements are transferred in a consistent format. Each element is pre-fixed with a tag (ID of the data-element) and a length. The concatenation of tag + length + data-element is known as a data-object.

### 7.1 Advantages of the TLV-container

1. The ECR-interface is increasingly extended through new functions. The number of the possible bitmaps is however limited to max. 256. Thus there is a resource-conflict. The flexible structure the data-objects allows (theoretically) any desired number of different data-objects to be defined.
2. For bitmaps there are different formats - bitmaps with fixed length, LL-Var and LLL-Var encoded. Therefore the receiver must be able to identify each single bitmap to process it and to know where the next bitmap in the data-flow begins.  
Through their uniform structure data-objects may be skipped or ignored if unknown to the receiver. This allows a certain downwards-compatibility for differing performance levels between transmitter and receiver is possible.
3. The uniform structure and the flexibility facilitate the development of new functions and allow further development without creating unnecessarily long data-objects.

### 7.2 Transport of TLV-containers

The TLV-container is transmitted in a bitmap (= transport-container). The bitmap itself is TLV-encoded:

bitmap 06 (= pseudo-tag) + length-field (structure of the length-field according to chapter Length-Field, and NOT LLL-Var!) + data-element (= list of data-objects).

**transport-container = BMP06 + length-field + list of data-objects**


Example:

- 06 + length + data-object
- 06 + length + data-object 1 + data-object 2 + ... + data-object n

**data-object = tag + length + data-element** (see chapter Structure)

#### 7.2.1 Transmission of TLV-container from ECR to PT

The ECR can send the PT a TLV-container for any command. If the ECR only wants to signal the PT, that the PT may send a TLV-container, it can send BMP 06 with length 00 without data-element.

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### 7.2.2 Transport of TLV-container from ECR to PT

The PT may only send a TLV-container to the ECR, if the ECR sent a TLV-container (BMP 06 with length 00 without data-element) during Registration or if the ECR sent a TLV-container to the PT in the corresponding request. For the following commands it is insignificant whether the ECR sent the BMP06 for the Authorisation or another command. The TLV-activation via the ECR is valid until Log-off.

## 7.3 Structure

Data-objects consist basically of 3 consecutive fields:

tag + length + data-element

For special-case length = 0 the data-element is omitted:

tag + length

### 7.3.1 Tag-field

The tag-field is the identification of the following data-element. With it the receiver can associate the contents.

In the tag is a class (bit 7 and 8), a type (bit 6) and a number (bit 1 bis 5) encode.


byte 1:

b8	b7	b6	b5	b4	b3	b2	b1	Definition
0	0							universal-class
0	1							application-class
1	0							context-specific class
1	1							private class
		0						primitive data-object
		1						constructed data-object
			0	0	0	0	0	tag-number
			1	1	1	1	1	tag-number in next byte

byte 2 bis n (optional):

b8	b7	b6	b5	b4	b3	b2	b1	Definition
1								a further byte follows
0								last byte
	0	0	0	0	0	0	0	(part of ) tag-number



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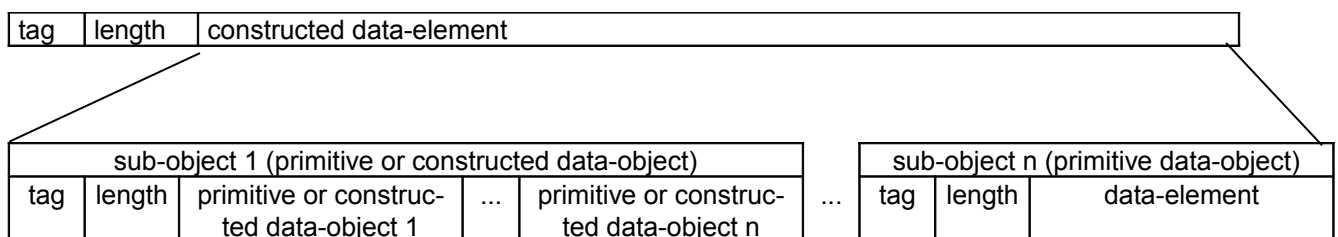
#### Primitive Data-Object:

tag	length	data-element
-----	--------	--------------

#### Constructed Data-Object:

A constructed data-object contains, in contrast to primitive data-objects further sub-data-objects. These sub-data-objects can also contain primitive and constructed data-objects.

Example constructed data-object:



### 7.3.2 Length


byte 1:

b8	b7	b6	b5	b4	b3	b2	b1	Definition
0	value decimal 0 to 127							length (in bytes) of the following data-element
1	0	0	0	0	0	0	0	invalid value
1	0	0	0	0	0	0	1	one length-byte follows
1	0	0	0	0	0	1	0	two length-bytes follow: 2 <sup>nd</sup> byte: high byte 3 <sup>rd</sup> byte: low byte
1	value 3 to 127							RFU

If the length has value 0, the data-element is omitted. This is referred to as an empty data-object.

### 7.3.3 Data-Element

Format and contents of the data-elements are dependent on the particular tag.

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## 7.4 Defined Data-Objects

The following data-objects are defined.

Note:

The given lengths are the typical values for each field. However, the length of each data-object must always be interpreted from the data-object since only this value is definitive.

Overview of tags used:


Tag	Name	see
	<b>primitive</b>	
01	reversal-ID	section „Miscellaneous“
02	driver-number	section „Fleet-card“
03	auto-number	section „Fleet-card“
04	mileage	section „Fleet-card“
05	goods-group	section „Fleet-card“
06	restriction-code 1	section „Fleet-card“
07	text-lines	section „Miscellaneous“
08	receipt-number	section „Miscellaneous“
09	attribute	section „Miscellaneous“
0A	ZVT-command	section „Miscellaneous“
0B	info-field	section „Miscellaneous“
0C	info-field2	section „Miscellaneous“
0D	restriction-code 2	section „Fleet-card“
0E	service-code	section „Fleet-card“
0F	assignment-number	section „Miscellaneous“
10	number of columns and number of lines merchant-display	section „Miscellaneous“
11	number of columns and number of lines customer-display	section „Miscellaneous“
12	number of characters per line of the printer	section „Miscellaneous“
13	extra result-code	section „Miscellaneous“
14	ISO-characteraset	section „Miscellaneous“
15	language-code	section „Miscellaneous“
16	menu-type	section „Menu“
17	context	section „Menu“
18	destination	section „Menu“
19	return-code	section „Menu“
1A	max. length of the APDU	section „Miscellaneous“
1B	diagnosis-type	section „Miscellaneous“
1C	file-block	section „Miscellaneous“
1D	file-ID	section „Miscellaneous“
1E	start-position	section „Miscellaneous“
40	EMV-config-parameter	section „EMV“
41	ZVT card-type-ID	section „EMV“
42	name of the application	section „EMV“
43	application-ID	section „EMV“
44	application preferred name	section „EMV“

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Tag	Name	see
	<b>primitive</b>	
45	receipt-parameter	section „EMV“
46	EMV-print-data (customer-receipt)	section „EMV“
47	EMV-print-data (merchant-receipt)	section „EMV“
48	priority	section „EMV“
49	network-operator card-type-ID	section „EMV“
4A	DC POS 2.4 product display	section „EMV“
4B	Issuer country code	section „EMV“
80	prepaid-PIN	section „Prepaid“
81	telefon number	section „Prepaid“
82	top-up text	section „Prepaid“
83	prepaid type	section „Prepaid“
C1	transaction-type	section „Bonus-points“
C2	number of bonus-points	section „Bonus-points“
C3	number of remaining bonus-points	section „Bonus-points“
C4	transaction-number of ECR	section „Bonus-points“
1F 00	total length of file	section „Miscellaneous“
1F 01	receipt-ID	section „Miscellaneous“
1F 02	from TA-number	section „Miscellaneous“
1F 03	to TA-number	section „Miscellaneous“
1F 04	receipt-parameter	section „Miscellaneous“
1F 05	transaction-parameter	section „Miscellaneous“
1F 06	reservation-parameter	section „Miscellaneous“
1F 07	receipt-type	section „Miscellaneous“
1F 08	data track 1 of the magnet-stripe	section „Miscellaneous“
1F 09	data track 2 of the magnet-stripe	section „Miscellaneous“
1F 0A	data track 3 of the magnet-stripe	section „Miscellaneous“
1F 0B	max. pre-authorisation amount	section „Fleet-card“
1F 0C	licence plate number	section „Fleet-card“
1F 0D	transparent data to host	section „Miscellaneous“
1F 0E	date	section „Miscellaneous“
1F 0F	time	section „Miscellaneous“
1F 10	cardholder authentication	section „Miscellaneous“
1F 11	online flag	section „Miscellaneous“
1F 12	card-type	section „Miscellaneous“
1F 13	ECR function request	section „Miscellaneous“
1F 14	card identification item	section „Miscellaneous“
1F 15	card reading control	section „Miscellaneous“
1F 16	extended error code	section „Miscellaneous“
1F 17	extended error text	section „Miscellaneous“
1F 18	card notification control	section „Miscellaneous“
1F 19	card acceptance, binary	section „Miscellaneous“
1F 1A	PAN for card acceptance matching	section „Miscellaneous“
1F 1B	markup in % with 2 dezimals	section „DCC“
1F 1C	card name	section „DCC“
1F 1D	currency information Type	section „Miscellaneous“
1F 1E	number of decimals	section „Miscellaneous“

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Tag	Name	see
	<b>primitive</b>	
1F 20	amount	section „Miscellaneous“
1F 21	ISO currency code	section „Miscellaneous“
1F 22	Inverted rate display unit	section „DCC“
1F 23	Retrieval ID	section „DCC“
1F 24	Reference Number	section „DCC“
1F 25	Cashback Amount	section „Miscellaneous“
1F 26	End of Day mode	section „Miscellaneous“
1F 27	Extended product name (EuroELV DF8118)	section „Miscellaneous“
1F 28	Emergency mode (EuroELV)	section „Miscellaneous“
1F 29	Limit overridden (EuroELV)	section „Miscellaneous“
1F 2A	Additional card holder information (EuroELV DF8117)	section „Miscellaneous“
1F 2B	Trace number (long format)	section „Miscellaneous“
1F 2C	Profilename	section „Miscellaneous“
1F 2D	Card data input type	section „Miscellaneous“
1F 2E	Barcode type	section "Barcode data"
1F 2F	Product code	section "Barcode data"
1F 30	EPurse top up amount	section „Miscellaneous“
1F 31	Encrypted PIN	section „Miscellaneous“
1F 32	SMID value	section „Miscellaneous“
1F 33	Message data	section „Miscellaneous“
1F 34	MAC value	section „Miscellaneous“
1F 35	ECR Identification	section „Miscellaneous“
1F 36	TIP Amount	section "EMV"
1F 37	Receipt information	section „Miscellaneous“
1F 38	Input mode	section „Input“
1F 39	Timeout	section „Input“
1F 3A	Input result	section „Input“
1F 3B	Transaction information	section „Miscellaneous“
1F 3C	Input	section „Input“
1F 3D	Alphanumeric data	section „Input“
1F 3E	Encrypted cardholder information	section „Miscellaneous“
1F 3F	Available credit	Section "Geldkarte"
	<b>constructed</b>	
20	fleet-card container	section „Fleet-card“
21	list of permitted goods-groups	section „Fleet-card“
22	list of prohibited goods-groups	section „Fleet-card“
23	list of open pre-authorisations	section „Miscellaneous“
24	display-texts	section „Miscellaneous“
25	print-texts	section „Miscellaneous“
26	list of permitted ZVT-Commands	section „Miscellaneous“
27	list of supported character-sets	section „Miscellaneous“
28	list of supported languages	section „Miscellaneous“
29	list of menus	section „Menu“
2A	list of menus	section „Menu“
2B	menu	section „Menu“
2C	menu-point	section „Menu“
2D	file	section „Miscellaneous“
2E	time-stamp	section „Miscellaneous“


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Tag	Name	see
	<b>primitive</b>	
2F	payment-type	section „Miscellaneous“
30	card acceptance matching, container	section „Miscellaneous“
31	amount information	section „Miscellaneous“
32	input container	section „Input“
60	application	section „EMV“
61	list of applications on magnet-stripe	section „EMV“
62	list of applications on chip	section „EMV“
63	prepaid-container	section „Prepaid“
64	receipt header	section „EMV“
65	receipt advertising text	section „EMV“
66	receipt customer copy	section „EMV“
67	receipt merchant copy	section „EMV“
68	receipt transaction outcome	section „EMV“
69	reference transaction	section „EMV“
6A	invalid application	section „EMV“
E1	bonus-points container	section „Bonus-points“
E2	DCC container	section „DCC“
E3	Barcode Container	section "Barcode data"


#### 7.4.1 Miscellaneous:

primitive data-objects:

Tag	Data-element
01	reversal -ID for EC-Cash chip offline, 8 byte, binary encoded. The PT sends the reversal-ID in the status-information.
07	text-lines, length variable, ASCII-encoded (not null-terminated) . See tag 24, 25, 2C
08	receipt-number, BCD-packed, 2 byte with leading zeros . See tag 23
09	attribute; length 1 byte. structure see chapter Print Lines (06 D1). See tag 25
0A	ZVT-command (CLASS and INSTR, see specification Application Protocol); 2 byte. this tag is used in connection with tag 26.
0B	info-field; ASCII-encoded (not null-terminated), max. 20 byte. The PT sends the info-field in the status-information.
0C	info-field 2; ASCII-encoded (not null-terminated), max. 10 byte. The PT sends the info-field 2 in the status-information.
0F	assignment-number; ASCII-encoded (not null-terminated), max. 20 byte; can be used for sequence-control for service-calls (see command „Software-Update“)
10	number of columns and number of lines of the merchant-display (of the ECR or of the PT); 2 bytes BCD-packed; format SSZZ (SS= number of columns; ZZ= number of lines); tag 10 can be sent by the ECR to the PT during registration, if the ECR has a merchant-display and/or from the PT in the Completion command of the Registration on the ECR. If the tag is empty (i.e. length = 0 or no data-element available), then no merchant-display is available.
11	number of columns and number of lines of the customer-display (of the ECR or of the PT); 2 bytes BCD-packed; format SSZZ (SS= number of columns; ZZ= number of lines); can be sent by the ECR to the PT during registration, if the ECR has a customer-display and/or from the PT in the Completion command of the Registration on the ECR
12	number of characters per line of the printer; format 1 byte BCD-packed.


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Tag	Data-element
	<p>With command „Registration“ the ECR sends the width ECR printer.  In Completion the PT sends optionally the used width of the terminal printer.</p>
13	<p>extra result-code; variable length; ASCII encoded (not null-terminated)  e.g. for EMV: Z1-Z3, Y1-Y3  The error-codes are application-specific. The definition must be taken from the relevant specification.  The PT sends the extra result-code in the Status-Information to the ECR. The PT should however still send the BMP27.</p>
14	<p>ISO-character-set; length variable  00 = ASCII 7 bit common character-set (does not correspond to ZVT-character-set!)  01 = ISO8859-1 (Latin 1)  02 = ISO8859-2  ... and so on til  10 = ISO8859-16 with the exception for ISO8859-12 which is not in the standard.  FE= UTF8 Encoder for unicode  FF = 8 bit ZVT-character-set CP437 (default; must be supported)  The PT sends this tag within the tags 27 2B, 32 and in the status-information and within tag 27 in completion command for registration.</p>
15	<p>language-code; length 2 bytes; ASCII encoded (not null-terminated)  language-code according to ISO 639-1; e.g. DE = German; FR = French; EN = English; IT = Italian;  There is no difference between captital and small letters.  The PT sends this tag within the Tags 28 and 2B, in authorisation commands as optional language preselection and in the status-information.</p>
1A	<p>max. length the APDU; length variable; binary encoded (hi-byte sent before lo-byte)</p> <p>During the Registration the ECR defines in tag 1A the maximum size of the APDU that the ECR can process. The PT can send it owns max. size of APDU to be received in tag 1A in the Completion of the Registration.</p> <p>Note:  During the implementation it must be observed that the data of the transport-protocols can be not-ably longer than the APDU (overhead of the transport-protocol: DLE, STX, DLE, ETX, CRC, CRC and duplication of the ,0x10'; see also PA00P016).  Each transmitter must observe that the APDU does not exceed the receive-buffer capacity of the receiver.</p>
1B	<p>diagnosis-type; length variable, binary encoded  01 = line diagnosis  02 = extended-diagnosis (default-value)  03 = configuration diagnosis  04 = EMV configuration diagnosis  05 = EP2 configuration</p>
1C	<p>file-block; length variable; contains the transmitted raw-data; the contents are implementation-dependent</p>
1D	<p>file-ID; length variable; with this tag the ECR can select which it wants to read. The PT signals with this tag which file will be sent.  01 = merchant-journal  02 = log-file the application  03 = log-file of the ECR-protocol  04 = log-file of the communication-modulse  05 = log-file of the PIN-pad  06 = reconciliation data (content is implementation dependent)</p>

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Tag	Data-element
1E	start-position; length variable; this tag has two functions:  1.) for the request from the ECR: offset from which should be read/written 2.) for file-transfer: position within the file.
1F 00	total-length of file. Should the file be so large that it cannot be transmitted in a single tag, then this tag serves to inform the receiver, that further status-information may follow. From the start-position (tag ,1E') the receiver knows in which order the status-information belong
1F 01	receipt-ID; length variable; binary encoded; this tag is used together with command „Repeat Receipt“:  01 = last receipt 02 = payment-receipt merchant (see also tag ,1F 02' and tag ,1F 03') 03 = payment-receipt customer (see also tag ,1F 02' and tag ,1F 03') 04 = end-of-day receipt 05 = journal (see also tag ,1F 02' and tag ,1F 03') 06 = reconciliation
1F 02	from_ TA-number; length variable; binary encoded; used with tag ,1F 01'.  If from_ TA-Number is given in command Repeat Receipt the terminal prints all receipts stored in the terminal starting at TA-number from_ TA-number. from_ TA-Number can be linked with to_ TA-Number. If from_ TA-Number and to_ TA-Number are identical only one receipt will be printed for this TA-number. For from_ TA-Number= 0 and missing to_ TA-Number all receipts are printed.
1F 03	to_ TA-number; length variable; binary encoded; used with tag ,1F 01' and tag ,1F 02'.
1F 04	receipt-parameter; length variable; bit-field; sent for the Registration or for a transaction: Byte 0: 1xxx xxxx positive customer-receipt required (0xxx xxxx = no customer-receipt); only relevant if the PT should send print-lines or receipt-blocks and the transaction was success fully completed  x1xx xxxx negative customer-receipt required (x0xx xxxx = kein customer-receipt); only relevant if the PT should send print-lines or receipt-blocks and the transaction was <b>not</b> sucessfully completed  xx1x xxxx positive merchant-receipt required (xx0x xxxx = kein merchant-receipt); only relevant if the PT should send print-lines or receipt-blocks and the transaction was sucessfully completed  xxx1 xxxx negative merchant-receipt required (xxx0 xxxx = kein merchant-receipt); only relevant if the PT should send print-lines or receipt-blocks and the transaction was <b>not</b> sucessfully completed  xxxx 1xxx customer-receipt should be sent before the merchant-receipt (xxxx 0xxx = merchant-receipt should be sent before the customer-receipt) ; only relevant if the PT should send print-lines or receipt-blocks  xxxx x1xx print short receipt (payment-data excluded; no header/footer/advertising-text) (xxxx x0xx = print normal receipt)




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Tag	Data-element
	<p>xxxx xx1x do not print product-data (from BMP3C) on the receipt (xxxx xx0x = print normal receipt)</p> <p>xxxx xxx1 use ECR as printer ( commands 06 D1/ 06 D3) instead of internal printer or if no printer available. This enables printing of receipts with print commands only for the command the tag is issued with, despite the print commands being disabled in general in the registration with MSB of the config byte equal to 0. It does not influence the effect of the bits xxxx x1 1x in the config byte of the registration.</p> <p>Byte 1: 1xxx xxxx enable sending of TLV-Tag E3 in command print text-block (06D3) within TLV-Tag 25</p> <p>Further functions may be added in future, the bit-field can be extended from the right. The ECR should set all unused bits to ,0'.</p> <p>These parameters are only valid for optional receipts, i.e. via the payment-type used the PT can override these guidelines (e.g. customer-receipt for ec-cash or error-receipt for prepaid top-up). If tag 1F04 is not sent, the order of the receipts is dependent on the implementation in the PT.</p> <p>See also tag 1F07.</p>
1F 05	<p>transaction-parameter; length variable; bit-field; sent for the Registration or for a transaction:</p> <p>1xxx xxxx      The PT should send the card-data read during the Authorisation to the ECR if these cannot be processed by the terminal, i.e card unknown/locked. (0xxx xxxx = Terminal aborts in this case with an error). See also tag 1F08, 1F09, 1F0A.</p> <p>x1xx xxxx      Activate swipe-reader (x0xx xxxx = deactivate swipe-reader)</p> <p>Further functions may be added in future, the bit-field can be extended from the right. The ECR should set all unused bits to ,0'.</p>
1F 06	<p>reservation-parameter; length variable; sent for pre-authorisation or book total:</p> <p>01 = pre-authorisation  02 = reservation  03 = extension of reservation  04 = book total  05 = booking of reservation  06 = telephonic reservation  07 = telephonic extension of reservation</p>
1F 07	<p>receipt-type; length variable; sent by receipt-printout:</p> <p>01 = transaction-receipt (merchant-receipt)  02 = transaction-receipt (customer-receipt)  03 = administration-receipt</p> <p>See also tag 1F04 and 1F37.</p>
1F 08	<p>magnet-stripe data, track 1; length variable; optional; unpacked</p> <p>The PT can send the track-data in the Status-Information to the ECR. See also tag 1F05.</p> <p>Note: if the track has an even length no padding (e.g. „1F“ or „F0“) may be used.</p>
1F 09	<p>magnet-stripe data, track 2 of the magnet-stripe; length variable; optional; BCD packed including special characters (A-F).</p>




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Tag	Data-element
	<p>The PT can send the track-data in the Status-Information to the ECR, if the PT cannot process the card-data itself (e.g. card unknown, card not permitted in PT).  See also tag 1F05.  Note: if the track has an even length no padding (e.g. „1F“ or „F0“) may be used.</p>
1F 0A	<p>magnet-stripe data, track 3 of the magnet-stripe; length variable; optional; BCD packed including special characters (A-F).  The PT can send the track-data in the Status-Information to the ECR, if the PT cannot process the card-data itself (e.g. card unknown, card not permitted in PT).  See also tag 1F05.  Note: if the track has an even length no padding (e.g. „1F“ or „F0“) may be used.</p>
1F 0D	ECR data transported transparently from and to host
1F 0E	date. 4 byte, BCD-Format: YYYYMMDD
1F 0F	time. 3 byte, BCD-Format: HHMMSS
1F 10	<p>cardholder authentication:  0 = no cardholder authentication  1 = signature  2 = online PIN  3 = offline encrypted PIN  4 = offline plaintext PIN  5 = offline encrypted PIN + signature  6 = offline plaintext PIN + signature  7 = online PIN + signature  0xFF = unknown cardholder verification</p>
1F 11	<p>online flag:  0 = offline  1 = online</p>
1F 12	<p>card-type:  0 = magnet-stripe  1 = chip  2 = NFC (near field communication, contact less)</p>
1F 13	<p>The PT requests a ZVT function from the ECR to avoid losing information in an automatic execution after e. g. a host return code.  00 = extended diagnosis  01 = reconciliation with closure.  02 = configuration diagnosis  03 = OPT pre initialisation  04 = EMV configuration diagnosis  05 = Tax free transaction</p>
1F 14	<p>card identification item.  Variable in length, binary. Contains a unique identification of a card. Algorithm not specified here.  This tag is only sent if requested by tag 1F15 due to possible impact on execution time of the card reading process. The data doesn't contain any plain text data as track data and can be stored by the ECR for reference purpose e.g. receipt printing in gas vending machines.</p>
1F 15	<p>card reading control.  Variable length, bitfield, extension .  1xxx xxxx      The PT should calculate and send the tag 1F14 in the status information (04 0F) of the command read card and card payment commands.  Further functions may be added in future, the bit-field can be extended from the right. The ECR should set all unused bits to '0'.</p>
1F 16	<p>extended error code.  Variable length, binary. Contains PT manufacturer specific error code. Can be used if no reason-</p>

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Tag	Data-element
	able mapping to ZVT error codes is possible. Can be sent within status information ( 04 0F) or abort frames ( 06 1E). This tag mainly serves logging or debug purposes.
1F 17	extended error text. Variable length, encoded in ZVT 8-bit charset. Contains the PT manufacturer specific plain text related to the error code specified in tag 1F16. Can be used for the merchant receipt in case no reasonable mapping to ZVT error codes is possible. In other cases the tag may serve logging or debug purposes
1F 18	card notification control Controls behaviour of ZVT command Display Text with Function-Key Input 06 E1: 00 or missing: only function keys are recognized 01 card insertion terminates the command too
1F 19	card acceptance, binary 00 accept 01 deny
1F 1A	PAN for card acceptance matching, BCD-packed, according to BMP 22 encoding
1F 1D	currency information; binary Type: 1 = Base currency 2 = Exchange rate 3 = Foreign currency 4 = Commission 5 = Balance
1F 1E	number of decimals, binary
1F 20	amount; BCD-packed encoded
1F 21	ISO-currency code; packed BCD encoded; e.g. 0978 for EUR (€)
1F 25	Cash back amount; BCD-packed encoded The tag contains the cashback amount for transactions with cashback. The tag can be used as follows:  1. In ECR command to the PT (e.g. 06 01 Authorization): The ECR may send this tag in the command to the PT to specify the amount for the customer cash-back. Please note: <ul style="list-style-type: none"> <li>• BMP 04 (amount) must contain the sum of both, the payment amount and the cashback amount.</li> <li>• The support of cashback depends on the card that is used for transaction and the configuration/implementation of the PT. For this reason it is recommended for the ECR to use command 04 0D (Input-Request) for amount inputs instead of usage of 1F25. If the ECR sends 1F25 and cashback isn't supported by PT or card, the PT may reject the ECR command or ignore the tag. In second case the PT performs normal payment without cashback, but uses the complete amount!</li> </ul> 2. In command 04 0F (Status-Information) from PT to the ECR: The PT sends this tag in command 04 0F (Status-Information) to ECR, if a transaction with cash-back was processed. Please note: For transactions with cashback BMP 04 (amount) contains the sum of both, the payment amount and the cashback amount.
1F 26	End of Day mode 00 = Normal End of Day 01 = Forced End of Day 02 = Automatic End of Day

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Tag	Data-element
1F 27	Extended product name (EuroELV tag DF8118), 1 to 24 bytes, to be printed in a separate line before the product name (bitmap 8B).
1F 28	Emergency mode (EuroELV), 1 byte, 0 or 1, if 1 print "Notbetrieb" on merchant's receipt only
1F 29	Limit overridden (EuroELV), 1 byte, 0 or 1, if 1 print "Limit übersteuert" on merchant's receipt only
1F 2A	Additional card holder information (EuroELV tag DF8117), 1 to 24 bytes, ASCII encoded, can occur up to two times, the element consists of two parts separated by the "/" character (e.g. "BLZ/1234567" or "Kto/12345"). It's recommended to print the first part left adjusted and the second part right adjusted on the receipt.
1F 2B	Trace number, BCD-packed encoded, variable length. Note: This tag is only used for trace numbers with more than 6 digits. In this case bitmap 0B is set to 000000. Bitmap 0B is still used for trace numbers up to 6 digits to keep compatibility to old implementations. For commands sent to PT, it is also required by ECR to set bitmap 0B to 000000 before using long trace number in TLV tag 1F 2B.
1F 2C	Profile name (name of a card profile) ASCII encoded (not null-terminated)
1F 2D	Card data input type (binary, 1 byte). If the ECR sends card data (a PAN for a manual payment in BMP 22 or track data in BMP 2D, 23 or 24), this tag contains additional information about how the card was mechanically read by ECR (e.g. if the PAN was read from a barcode and not manually entered via keyboard). 0x00 read from magnet stripe 0x01 read from chip 0x02 read from barcode
1F30	EPurse top up amount (e.g. German GeldKarte), 6 bytes, BCD: This TLV tag is sent by the terminal in status information command 040F during EPurse payments, if the payment amount has exceeded the credit of the EPurse card and an implicit EPurse top up transaction was processed during payment to increase the credit.
1F 31	Encrypted PIN block, BCD-packed encoded, variable length. The PT may send this tag within the TLV container that is returned by command PIN-Verification for Customer-Cards (06E3).
1F 32	SMID value, BCD-packed encoded, variable length. The PT may send this tag within the TLV container that is returned by command PIN-Verification for Customer-Cards (06E3) or MAC calculation (06E5). It is an optional parameter of command MAC calculation.
1F 33	Message data, binary, variable length The PT may send this tag within the TLV container of command MAC calculation.
1F 34	MAC value, binary, variable length The PT may send this tag within the TLV container that is returned by command MAC calculation.
1F 35	ECR Identification, 4 bytes BCD encoded number to identify the ECR at PT with an 8 digit workstation ID
1F 36	<p>Tip amount, BCD-packed encoded The tag contains the tip amount for transactions with tip. The tag can be used as follows:</p> <p>1. In ECR command to the PT (e.g. 0601 Authorization): The ECR may send this tag in the command to the PT to specify the tip amount. Please note:</p> <ul style="list-style-type: none"> <li>• BMP 04 (amount) must contain the sum of both, the payment amount and the tip amount.</li> <li>• The support of tip depends on the card that is used for transaction and the configuration/implementation of the PT. For this reason it is recommended for the ECR to use command 04 0D (Input-Request) for amount inputs instead of usage of 1F36. If the ECR sends 1F36 and tip isn't supported by PT or card, the PT may reject the ECR command or ignore the tag. In second case the PT performs normal payment without tip, but uses the complete amount!</li> </ul>

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Tag	Data-element
	<p>2. In command 04 0F (Status-Information) from PT to the ECR:  The PT sends this tag in command 04 0F (Status-Information) to ECR, if a transaction with tip was processed.  Please note:  For transactions with tip BMP 04 (amount) contains the sum of both, the payment amount and the tip amount.</p>
1F 37	<p>Receipt information (binary, variable length)  When printing with command 06D3 (Print Text-Block) the PT sends this optional tag with additional information about the receipt. The tag may prevent the ECR to parse or analyse the text lines in tag 25 to get the information that is provided by following bit mask:</p> <p>Byte 0:</p> <ul style="list-style-type: none"> <li>0x01: Positive receipt for an authorised transaction  (0x04 used for negative receipts)</li> <li>0x02: If a positive receipt is printed (bit combined with 0x01),  this receipt contains a signature field.</li> <li>0x04: Negative receipt for an aborted or rejected transaction  (0x01 used for positive receipts)</li> <li>0x80: Printing of the receipt is mandatory and must not be  aborted by customer/retailer.</li> </ul> <p>Further functions may be added in future, the bit-field can be extended and additional bytes can be added. The ECR should set all unused bits to '0'.</p> <p>See also tag 1F07 containing information about the receipt type.</p>
1F 3B	<p>Transaction information (binary, variable length)</p> <p>The PT sends this optional tag in command 040F (Status-Information) to the ECR to provide additional information about the transaction with following bit mask:</p> <p>Byte 0:</p> <ul style="list-style-type: none"> <li>0x01: tippable transaction, the ECR is allowed to send command 060C (Book tip) for this transaction</li> </ul> <p>Further functions may be added in future, the bit-field can be extended and additional bytes can be added. The ECR should set all unused bits to '0'.</p>
1F 3E	<p>Encrypted cardholder information, binary, variable length  General data field comprising encrypted data for transaction journal purposes. Since decryption information (algorithm, keys) is not available on ECR side the content is fully transparent and can only be used for post-processing by the host provider or within another secure environment.</p>

constructed data-objects:

Tag	Data-element
23	<p>list of open pre-authorisations; container with an arbitrary list of receipt-numbers (tag '08')  The PT sends the tag 23 in command „Enquire if Pre-Authorisations exist“</p>
24	<p>display-texts; container with an arbitrary list of text lines (tag '07')  Note: each text line is formed in its own line, i.e. no line-return necessary  The PT sends the tag 24 in Intermediate Status-Information.</p>
25	<p>print-texts; container with an arbitrary list of attributes and text lines (tag '09' and '07'). The PT sends the tag 25 in command „Print Text-Block“.  Note:</p>

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Tag	Data-element
	<ul style="list-style-type: none"> <li>- the attribute (tag '09') has to be sent as last item in the last text block of a receipt with the contents 1xxx xxxx (not equal to 80) to indicate the end of a receipt for the ECR. In all other text block the tag is optional.</li> <li>- the attribute (tag '09') relates to all following text lines until a further attribute follows</li> <li>- a further attribute replaces the previous attribute for the following text lines</li> <li>- each text line is formed in its own line, i.e. no line-return necessary</li> <li>- for barcode support additional tags 'E3' may be inserted between attributes (tag '09') and text lines (tag '07'), see also description of tag 1F04 for activation</li> <li>- the attribute (tag '09') doesn't affect format of barcode in (tag 'E3')</li> </ul>
26	<p>list of permitted ZVT-commands; container with an arbitrary list of ZVT-commands (tag '0A').</p> <p><b>Function:</b>  With this list the ECR informs the PT during the Registration which ZVT-commands it can process (e.g. is the dial-up for network operation over ECR possible or must another communication-module be used; should the receipt via command "Print Lines" or "Print Text-Block" be sent to the ECR etc.) Not listed commands should not be sent by the PT to the ECR.</p> <p><b>Exceptions:</b></p> <ul style="list-style-type: none"> <li>- The commands "Status-Information", "Completion" and "Abort" may always be sent by the PT - independent of whether in the list of allowed commands not.</li> <li>- For ZVT-command "Intermediate-Status", the config-byte of the Registration must be evaluated. If the Intermediate-Status is allowed by the config-byte the Registration the PT may send Intermediate-Status - independent of whether the command is in the list of allowed commands or not.</li> <li>- If via the config-byte of the Registration the receipt-printout over the ECR is demanded, the PT should either send 06D1 or 06D3 to the ECR ( not valid if the ECR builds the receipt itself from the status-information!). Which of the two commands (06D1 or 06D3) should be sent from PT to the ECR is defined by the ECR in this list. Should information from the ECR be missing then the PT uses 06D1 for downwards-compatibility, i.e. the ECR must explicitly request 06D3.</li> <li>- All other commands should not be used by the PT if the ECR sends bitmap 06 in the Registration.</li> </ul>
27	<p>list of supported character-sets; length variable</p> <p>The ECR sends the list of supported character sets in command „Registration“ to the PT. The PT responds in the Completion command of the Registration with the list of commonly (ECR + PT) supported character sets.</p> <p>Alternatively the tag can be used to configure a specific character set to the PT. The ECR sends a single character-set (tag 14) in command „Registration“ to the PT. If the PT supports the character set, it is echoed in tag 27 in the Completion command. If the transmitted character set is not supported by the PT or more than one tag 14 was sent in the Registration, then no tag 27 is sent in the Completion and the default character set CP437 is used by the PT.</p> <p>If a character set is accepted by the PT it is then used for all print (06 D1, 06 D3) and display commands (customer and merchant texts).</p> <p>See also tag 14.</p>
28	<p>list of supported languages; length variable</p> <p>The ECR sends the list of supported languages in command „Registration“ to the PT. The PT responds in the Completion command of the Registration with the list of commonly (ECR + PT) supported languages.</p> <p>The ECR can then use command „Select Language“ to choose a suitable language.</p>

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Tag	Data-element
	See also tag 15.
2D	file; length variable; consists of file -block (tag ,1C'), file-ID (tag ,1D'), start-position (tag ,1E') and total length of the file (tag ,1F 00')  Used together with command „Read File“.
2E	time-stamp, container with tags „date“ (1F 0E) and „time“ (1F 0F) in arbitrary order.
2F	payment-type, container with tags „cardholder authentication“ (1F 10), „online flag“ (1F 11) and "card-type" (1F 12) in arbitrary order.
30	card acceptance matching, container consists of ZVT card-type-ID(tag, 41), card acceptance (tag, 1F 19) and optionally PAN for card acceptance matching (tag, 1F 1A) With this container the ECR sends a black- and or whitelist of card-type-IDs in payment and refund commands. The PT checks if the ZVT card-type-ID of the used card matches. Depending on the content of the card acceptance tag the card is accepted or denied. If a whitelist is sent, all other cards are denied, if a blacklist is sent, all other cards are accepted. If a card can be accepted due to the card acceptance matching, the final acceptance is the terminal's decision. If both, black- and whitelist are sent, the whitelist has priority over the blacklist. For each card in the black- or whitelist the ECR has to send a tag 30 with tags 41 or 1F1A and 1F19. If the PAN for card acceptance matching is provided, it will also be used for the matching. Only the unmasked digits are compared.
31	Amount information, container, consists of Currency information type (tag 1F1D), Number of decimal digits (tag 1F1E), Amount (tag 1F20) and ISO-currency code (tag 1F21). This container bundles information related with a transaction amount.


#### 7.4.2 For Bonus-points/ Card credit:

Tag	Data-element
E1	bonus-points container The ECR sends the bonus-points container in command „Authorisation“, „Pre-Authorisation“, „Reversal“, „Refund“ or „Telephonic Authorisation“. The PT sends the bonus-points container in the Status-Information to the ECR.
C1	transaction-type; value: '47 4C' for card top-up (credit amount BMP4) '4D 45' for collect bonus-points '4D 53' for redeem bonus-points '4D 55' for enquire bonus-points '4D 57' for credit bonus-points see tag E1.
C2	number of bonus-points, BCD-packed, 8 byte with leading zeros see tag E1.
C3	number of remaining bonus-points, BCD-packed, 8 byte with leading zeros see tag E1.
C4	transaction-number of the ECR, BCD-packed, 4 byte with leading zeros

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	<b>Caution:</b> this is an ECR-internal number and not the trace-number of the PT! see tag E1.
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### For Fleet-cards:


primitive data-objects:

Tag	Data-element
02	driver-number, BCD-packed, 2 byte, with leading zeros. See tag 20
03	auto-number, BCD-packed, 2 byte, with leading zeros. See tag 20
04	mileage, BCD-packed, 3 byte, with leading zeros. See tag 20
05	goods-group, BCD-packed, 3 byte, with leading zeros. See tag 20
06	restriction-code 1, BCD-packed, 1 byte, with leading zeros. See tag 20
0D	restriction-code 2, BCD-packed, 1 byte, with leading zeros. See tag 20
0E	service-code, BCD-packed, 2 byte, with leading zeros. See tag 20
1F 0B	maximum pre-authorisation amount, with leading zeros in Cent, BCD-packed, max. 6 byte
1F 0C	licence plate number, ASCII encoded, <b>not</b> Null-terminated.

constructed data-objects:

Tag	Data-element
20	fleet-card container contents: arbitrary data-objects for fleet-cards (see primitive data-objects) Function: transfer of additional information that the ECR requires for the journal or the receipt-printout. The PT sends the tag 20 in the Status-Information.
21	list of permitted goods-groups contents: arbitrary list of tag 05 Function: transfer of permitted goods-groups belonging to sequence "Read Card" to inform the ECR which goods-groups (e.g. for a pump-selection) are possible. With this the ECR can execute the pump-selection immediately after reading the card and can recognise early whether the actual transaction should be started at all. Avoiding unnecessary PIN-input, communication-costs etc. Alternatively this tag can be sent with the status-information of an pre-authrosation command to return the list of permitted goods eventually sent by the host.
22	list of prohibited (blocked) goods-groups contents: arbitrary list of tag 05 Function: transfer of prohibited goods-groups in the Status-Information during the sequences "Authorisation" in case the PT recognises that at least one goods-group is not permitted. Herewith the ECR can recognise which goods-group is not permitted for this card.




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### 7.4.3 For EMV (debit/credit and DC POS):

primitive tags:


Tag	Data-element																		
40	<p>EMV-configuration-parameter; sent by the ECR in command „Registration“ to the PT; length variable; bit-field:</p> <p>Byte 1</p> <table border="0"> <tr> <td>1xxx xxxx</td><td>the PT should send „Application Label“ (tag 42) in the Status-Information (for Read Card and (Pre-)Authorisation)</td></tr> <tr> <td>x1xx xxxx</td><td>the PT should send „Application Preferred Name“ (tag 44) in the Status-Information (for Read Card and (Pre-)Authorisation)</td></tr> <tr> <td>xx1x xxxx</td><td>the PT should send tag 46 in the Status-Information</td></tr> <tr> <td>xxx1 xxxx</td><td>the PT should send tag 47 in the Status-Information</td></tr> <tr> <td>xxxx 1xxx</td><td>the PT should send tag 64 in the Status-Information</td></tr> <tr> <td>xxxx x1xx</td><td>the PT should send tag 65 in the Status-Information</td></tr> <tr> <td>xxxx xx1x</td><td>the PT should send tag 66 in the Status-Information</td></tr> <tr> <td>xxxx xxx1</td><td>the PT should send tag 67 in the Status-Information</td></tr> </table> <p>Byte 2</p> <table border="0"> <tr> <td>1xxx xxxx</td><td>the PT should send „DC POS 2.4 product display“ (tag 4A) in the Status-Information</td></tr> </table> <p>If tags 66 and 67 are requested by the ECR, the PT may send tags 46 and 47 within tags 66 and 67, even if tags 46 and 47 were not specifically requested. The PT should ignore the configuration bits for tag 46 and 47 in this case.</p> <p>Affects tag 60 in the Status-Information for Read Card and (Pre-)Authorisation and not the BMP 8B.</p> <p>See also tag 60.</p>	1xxx xxxx	the PT should send „Application Label“ (tag 42) in the Status-Information (for Read Card and (Pre-)Authorisation)	x1xx xxxx	the PT should send „Application Preferred Name“ (tag 44) in the Status-Information (for Read Card and (Pre-)Authorisation)	xx1x xxxx	the PT should send tag 46 in the Status-Information	xxx1 xxxx	the PT should send tag 47 in the Status-Information	xxxx 1xxx	the PT should send tag 64 in the Status-Information	xxxx x1xx	the PT should send tag 65 in the Status-Information	xxxx xx1x	the PT should send tag 66 in the Status-Information	xxxx xxx1	the PT should send tag 67 in the Status-Information	1xxx xxxx	the PT should send „DC POS 2.4 product display“ (tag 4A) in the Status-Information
1xxx xxxx	the PT should send „Application Label“ (tag 42) in the Status-Information (for Read Card and (Pre-)Authorisation)																		
x1xx xxxx	the PT should send „Application Preferred Name“ (tag 44) in the Status-Information (for Read Card and (Pre-)Authorisation)																		
xx1x xxxx	the PT should send tag 46 in the Status-Information																		
xxx1 xxxx	the PT should send tag 47 in the Status-Information																		
xxxx 1xxx	the PT should send tag 64 in the Status-Information																		
xxxx x1xx	the PT should send tag 65 in the Status-Information																		
xxxx xx1x	the PT should send tag 66 in the Status-Information																		
xxxx xxx1	the PT should send tag 67 in the Status-Information																		
1xxx xxxx	the PT should send „DC POS 2.4 product display“ (tag 4A) in the Status-Information																		
41	<p>ZVT card-type-ID of the application on magnet-stripe; length variable; binary encoded; correlates to the ZVT card-type-ID; see chapter „list of ZVT-card-type-IDs“</p> <p>Sent by the PT in the Status-Information of command „Read Card“ to the ECR</p> <p>see also tag 60.</p> <p>Additionally the ECR can also pre-define the card-type-ID (tag 41) for command „Authorisation“ (e.g. after the application-selection on second customer-display).</p> <p>If the ZVT card-type-ID is larger than decimal 255 then BMP 8A should be set to ‘FF’ and tag 41 used, providing the ZVT card-type-ID should be sent to the ECR. Alternatively tag 8A can be omitted. The sending of the ZVT card-type-ID to the ECR is optional.</p>																		
42	<p>name of the application (= Application Label); length variable; ASCII encoded (not null-terminated); see also tag 60.</p>																		
43	<p>application-ID (RID+PIX). length variable; binary encoded</p> <p>See also tag 44.</p> <p>Additionally the ECR can also pre-define the application -ID (tag 43) for command „Authorisation“ (e.g. after the application-selection on second customer-display).</p>																		
44	<p>application preferred name; length variable; ASCII encoded (not null-terminated); see also tag 60.</p>																		

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Tag	Data-element																								
45	<p>receipt-parameter, 4 byte BCD encoded</p> <p>The PT sends the tag 45 in the Status-Information of a transaction.</p> <table><tr><th>Pos.</th><th>Value</th><th>Definition</th></tr><tr><td rowspan="4">1</td><td></td><td>pre-definition of merchant-receipt</td></tr><tr><td>'0'</td><td>no merchant-receipt</td></tr><tr><td>'1'</td><td>merchant-receipt for authorised transactions</td></tr><tr><td>'2'</td><td>merchant-receipt for authorised, rejected and aborted transactions</td></tr><tr><td rowspan="4">2</td><td></td><td>pre-definition of customer-receipt</td></tr><tr><td>'0'</td><td>no customer-receipt</td></tr><tr><td>'1'</td><td>customer-receipt for authorised transactions, printing of customer-receipt may be aborted</td></tr><tr><td>'2'</td><td>customer-receipt s for authorised, rejected and aborted transactions</td></tr><tr><td>4 - 8</td><td>'0'</td><td>RFU</td></tr></table> <p>the nibble position 1 is the ms-nibble (left) of byte 1 and nibble position 8 is the ls-nibble(right) of byte 4.</p>	Pos.	Value	Definition	1		pre-definition of merchant-receipt	'0'	no merchant-receipt	'1'	merchant-receipt for authorised transactions	'2'	merchant-receipt for authorised, rejected and aborted transactions	2		pre-definition of customer-receipt	'0'	no customer-receipt	'1'	customer-receipt for authorised transactions, printing of customer-receipt may be aborted	'2'	customer-receipt s for authorised, rejected and aborted transactions	4 - 8	'0'	RFU
Pos.	Value	Definition																							
1		pre-definition of merchant-receipt																							
	'0'	no merchant-receipt																							
	'1'	merchant-receipt for authorised transactions																							
	'2'	merchant-receipt for authorised, rejected and aborted transactions																							
2		pre-definition of customer-receipt																							
	'0'	no customer-receipt																							
	'1'	customer-receipt for authorised transactions, printing of customer-receipt may be aborted																							
	'2'	customer-receipt s for authorised, rejected and aborted transactions																							
4 - 8	'0'	RFU																							
46	<p>EMV-print-data (customer-receipt), length variable, ASCII-encoded (not null-terminated) = evaluated directly printable receipt-DOL for customer-receipt.</p> <p>The PT sends the tag 46 in the Status-Information if configured in tag 40. The ECR should print the receipt-DOL unchanged.</p> <p>For new implementations only tag 66 should be evaluated.</p>																								
47	<p>EMV-print-data (merchant-receipt), length variable, ASCII-encoded (not null-terminated) = evaluated directly printable receipt-DOL for merchant-receipt</p> <p>The PT sends the tag 47 in the Status-Information if configured in tag 40. The ECR should print the receipt-DOL unchanged</p> <p>For new implementations only tag 67 should be evaluated.</p>																								
48	<p>priority; length variable; hex-encoded. Priority is sen in tag 60 to deliver the priority of the different applications (chip- and/or magnet-strip applications) for the application-selection.</p>																								
49	<p>network-provider card-type ID; length variable; binary coding; represents BMP 8C of the status information. If the network-provider card-type-ID is larger than decimal 255 then BMP 8C should be set to 'FF' and tag 41 used, providing the network-provider card-type-ID should be sent to the ECR. Alternatively BMP 8C can be omitted. The sending of the network-provider card-type-ID to the ECR is optional.</p>																								
4A	<p>DC POS 2.4 product display; length variable; ASCII encoded (not null-terminated); contains the product name to be displayed according to the rules of DC POS 2.4.</p>																								
4B	<p>Issuer country code (EMV Tag ,5F28'), 2 byte BCD encoded with leading 0</p>																								

constructed tags:

Tag	Data-element
60	<p>application</p> <p>consists of the tags 41 or 43 and additionally (depending on configuration following command „Registration“ see tag 40) the tags 42 and/or 44 and 48 (priority), 4A product display and 4B Issuer country code</p> <p>see also tag 61 and tag 62</p>
61	<p>list of applications on magnet-stripe. The list consists of one or several tag 60, which the PT sends in the Status-Information of command „Read Card“ to the ECR.</p>

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Tag	Data-element
	<p>Additionally the ECR can also pre-define card-type-ID (tag 41) for command „Authorisation“ (e.g. after the application-selection on second customer-display).</p>
62	<p>list of applications on chip. The list consists of one or several tag 60, which the PT sends in the Status-Information of command „Read Card“ to the ECR.</p> <p>Additionally the ECR can also pre-define application-ID (tag 43) for command „Authorisation“ (e.g. after the application-selection on second customer-display).</p>
63	<p>see “Prepaid”</p>
64	<p>receipt header. container with attributes and text-lines, order arbitrary (tag ,09' and ,07').</p> <p>Note:</p> <ul style="list-style-type: none"> <li>- attribute (tag ,09') is optional</li> <li>- attribute (tag ,09') relates to all following text-lines until the next attribute.</li> <li>- a further attribute replaces the previous one for following text-lines.</li> <li>- each text-line is represented in ist own line, i.e. no carriage return must be sent.</li> </ul> <p>The PT sends tag 64 in the Status Information if configured in tag 40. The ECR should print the receipt unchanged.</p>
65	<p>receipt advertising text. container with attributes and text-lines, order arbitrary (tag ,09' and ,07').</p> <p>Note:</p> <ul style="list-style-type: none"> <li>- attribute (tag ,09') is optional</li> <li>- attribute (tag ,09') relates to all following text-lines until the next attribute.</li> <li>- a further attribute replaces the previous one for following text-lines.</li> <li>- each text-line is represented in ist own line, i.e. no carriage return must be sent.</li> </ul> <p>The PT sends tag 65 in the Status Information if configured in tag 40. The ECR should print the receipt unchanged.</p>
66	<p>customer receipt data. container with arbitrary order of tags:</p> <ul style="list-style-type: none"> <li>- “EMV print data (customer receipt)” (46)</li> <li>- “print text transaction outcome” (68)</li> </ul> <p>The PT sends tag 66 in the Status Information if configured in tag 40. The ECR should print the receipt unchanged.</p>
67	<p>merchant receipt data. container with arbitrary order of tags:</p> <ul style="list-style-type: none"> <li>- “EMV print data (merchant receipt)” (47)</li> <li>- “print text transaction outcome” (68)</li> </ul> <p>The PT sends tag 67 in the Status Information if configured in tag 40. The ECR should print the receipt unchanged.</p>
68	<p>receipt text transaction outcome. container with attributes and text-lines, order arbitrary (tag ,09' and ,07').</p> <p>Note:</p> <ul style="list-style-type: none"> <li>- attribute (tag ,09') is optional</li> <li>- attribute (tag ,09') relates to all following text-lines until the next attribute.</li> <li>- a further attribute replaces the previous one for following text-lines.</li> <li>- each text-line is represented in ist own line, i.e. no carriage return must be sent.</li> </ul>
69	<p>reference transaction container (e.g. timestamp of the original transaction for reversal, tag 2E).</p>
6A	<p>invalid application</p> <p>consists of the tags 41 or 43 and additionally (depending on configuration following command „Registration“ see tag 40) the tags 42 and/or 44 and 48 (priority) and 4A product display</p> <p>see also tag 61 and tag 62</p>

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#### 7.4.4 For Menus:

primitive tags:

Tag	Data-element
16	Menu-type: length variable The tag menu-type is used in tag 2B.  contents: 1 = request 1 from n further values RFU
17	context: length variable The tag context is used in tag 2B.  contents: 1 = other menu 2 = application-selection 3 = language-selection further values RFU  tag 17 is used to control the appearance of the menus. In connection with tag 18 the target-display can also be controlled. It must be ensured during the implementation that the ECR always displays the application-selection on the customer-display.  see tag 18 and 2B
18	target; length variable The tag target is used in tag 2B.  contents: 1 = merchant-display 2 = customer-display further values RFU  see tag 17 and 2B
19	return-value; length variable; binary encoded. The tag return-value is used in tag 2B.

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constructed tags:

Tag	Data-element
29	list of menus which should be displayed over the ECR or on a second customer-display.  The ECR sends this information for the Registration to the PT. see also tag 16, 17.
2A	list of menus which the ECR will not display and therefore must be displayed on the PT.  The ECR sends this information for the Registration to the PT. see also tag 16, 17.
2B	menu; contains the tags 14 (ISO character-set; optional), 15 (language-code; optional), 16 (menu-type), 17 (context) and 18 (target) and several tag 2C.  The PT sends this tag for command „Menu-Request“.
2C	menu-item; contains a display-text (tag 07) and a related return-value (tag 19). The PT sends the tag 2C in tag 2B.

All menus which are not listed in tag 29 nor in tag 2A, handles the PT according to the default-settings in the PT, i.e. in the PT it must be configured (or programmed) whether the PT sends the command „Menu-Request“ for these menus.

Menus can only be sent if the ECR had signaled in the Registration in tag 26 (= permitted ZVT-Commands) that the ECR supports menus.

#### 7.4.5 For Prepaid:

primitive tags:

Tag	Data-element
80	prepaid-PIN; optional; length variable; ASCII encoded; see tag 63
81	telefon number; optional; length variable; ASCII encoded; see tag 63
82	top-up text; optional; length variable; ASCII encoded; see tag 63
83	prepaid type, optional, length variable, ASCII encoded; see tag 63 P = PIN printing; E = E-loading


constructed tags:

Tag	Data-element
63	prepaid container; container for Prepaid tags; sent in the Status-Information after the Prepaid Top-Up (see also tag 80, 81, 82, 83)

#### 7.4.6 For DCC:

primitive tags:

Tag	Data-element
1F1B	markup in % with 2 dezimals;BCD-packed encoded; 2 bytes
1F1C	card name; e.g. VISA; ASCII encoded; up to 32 bytes
1F22	inverted rate display unit; exponent of the base currency to be printed (e.g. '1' or '100'; 1 USD or 100 JPY); BCD-packed encoded; 1 byte
1F23	retrieval ID; ASCII encoded; up to 18 bytes

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1F24	reference Number; ASCII encoded; up to 14 bytes
------	---

constructed tags:

Tag	Data-element
E2	DCC container; container for DCC tags; sent in the Status-Information of a DCC transaction to enable receipt printing based on the Status-Information It contains multiple Tags 31, each identified by the contents of Tag 1F1D (currency information type) (see also tag 1F1B, 1F1C, 31, 1F22, 1F23, 1F24)


#### 7.4.7 Barcode data:

primitive tags:

Tag	Data-element
1F2E	Barcode type, binary, 1 byte: Value    Barcode type 00      UPC-A 01      UPC-E 02      EAN 13 03      EAN 8 04      Code 39 05      Interleaved 2/5 (ITF) 06      Codabar
1F2F	Product code, BCD, variable length. If length of product code is odd, it is padded with one nibble 0xf.

constructed tags:

Tag	Data-element
E3	Container for barcode data that is sent in command print text-block (06D3) within TLV-Tag 25. It contains data for the ECR for printing a barcodes on the receipt, see tags 1F2E (barcode type) and 1F2F (product code). Please note that the tag must be enabled in Tag 1F04 with registration command, before the PT will send it.

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### 7.4.8 For Input:

primitive tags:

Tag	Data-element
1F38	Input mode (1 byte, binary): 0 – input a string (all characters allowed, default if tag 1F38 is missing) 1 – input a number (only characters '0'-'9' are allowed) 2 – input an amount (same as input number, additional currency may be found in TLV tag 1F21)  see tag 32
1F39	Timeout (2 bytes, big endian, binary): An optional timeout may specify the maximal time for the input in seconds. If the tag is missing, the time for input is not limited.  see tag 32
1F3A	Input result (variable length, ASCII): The tag contains the result of the input and returned in the response 8000 for the input request.  For amount input (tag 1F38) the amount is returned as a numeric character string in smallest unit of the used currency (tag 1F21). The ECR also has to consider the number of decimal places (tag 1F1E) for the result. Example: <b>"100" for 1 Euro with 2 decimal places.</b>  <b>If the timeout (tag 1F39) for the input expires, result tag 1F3A (or complete TLV container) is not sent in the response message.</b>  see tag 32


constructed tags:

Tag	Data-element
32	Input container Container for TLV tags used for command 040D (Input-Request). For the request and the response the tag contains the following tags:  1. Request: <ul style="list-style-type: none"> <li>24 (mandatory): Prompt text for user input, arbitrary list of text lines (tag '07')</li> <li>1F38 (optional): Input mode</li> <li>1F39 (optional): Timeout</li> <li>14 (optional): ISO-character-set specifying encoding of prompt text (tag 24) and input result text to be returned in tag 1F3A. If the tag is missing, the terminal uses encoding that was configured with tag 27 in command 0600 (Registration).</li> <li>1F21 (optional): ISO-currency code, for amount input only. If the tag is missing, 0x0978 for EUR (€) is the default.</li> <li>1F1E (optional): Number of decimals, for number and amount input only. If the tag is missing, 2 decimal places for amount input or 0 decimal places for input a number is the default.</li> <li>1F3A (optional): initial value for the input dialog. If omitted an empty input dialog is used.</li> </ul> 2. Response: <ul style="list-style-type: none"> <li>1F3A (optional): Input result. If the tag is missing, the timeout for the input has expired.</li> </ul>

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Input-Requests are only sent by the PT, if the ECR has added 040D to the list of permitted ZVT-commands (tag 26) in command 0600 (Registration).



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## 8 Error-Messages


Following Error-Messages are possible:

Error-ID (hexa- decimal)	Error-ID (decimal)	Definition
00	00	no error
01-63	01 – 99	errorcodes from network-operator system/authorisation-system
64	100	card not readable (LRC-/parity-error)
65	101	card-data not present (neither track-data nor chip found)
66	102	processing-error (also for problems with card-reader mechanism)
67	103	function not permitted for ec- and Maestro-cards
68	104	function not permitted for credit- and tank-cards
6A	106	turnover-file full
6B	107	function deactivated (PT not registered)
6C	108	abort via time-out or abort-key
6E	110	card in blocked-list (response to command 06 E4)
6F	111	wrong currency
71	113	credit not sufficient (chip-card)
72	114	chip error
73	115	card-data incorrect (e.g. country-key check, checksum-error)
77	119	end-of-day batch not possible
78	120	card expired
79	121	card not yet valid
7A	122	card unknown
7B	123	fallback to magnetic stripe for girocard not possible
7C	124	fallback to magnetic stripe not possible (used for non girocard cards)
7D	125	communication error (communication module does not answer or is not present)
83	131	function not possible
85	133	key missing
89	137	PIN-pad defective
9A	154	protocol error
9B	155	error from dial-up/communication fault
9C	156	please wait
A0	160	receiver not ready
A1	161	remote station does not respond
A3	163	no connection
A4	164	submission of Geldkarte not possible
B1	177	memory full
B2	178	merchant-journal full
B4	180	already reversed
B5	181	reversal not possible
B7	183	pre-authorisation incorrect (amount too high) or amount wrong
B8	184	error pre-authorisation
BF	191	voltage supply too low (external power supply)
C0	192	card locking mechanism defective
C1	193	merchant-card locked
C2	194	diagnosis required
C3	195	maximum amount exceeded

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Error-ID (hexa- decimal)	Error-ID (decimal)	Definition
C4	196	card-profile invalid. New card-profiles must be loaded.
C5	197	payment method not supported
C6	198	currency not applicable
C8	200	amount zu small
C9	201	max. transaction-amount zu small
CB	203	function only allowed in EURO
CC	204	printer not ready
CD	205	Cashback not possible
D2	210	function not permitted for service-cards/bank-customer-cards
DC	220	card inserted
DD	221	error during card-eject (for motor-insertion reader)
DE	222	error during card-insertion (for motor-insertion reader)
E0	224	remote-maintenance activated
E2	226	card-reader does not answer / card-reader defective
E3	227	shutter closed
E4	228	Terminal activation required
E7	231	min. one goods-group not found
E8	232	no goods-groups-table loaded
E9	233	restriction-code not permitted
EA	234	card-code not permitted (e.g. card not activated via Diagnosis)
EB	235	function not executable (PIN-algorithm unknown)
EC	236	PIN-processing not possible
ED	237	PIN-pad defective
F0	240	open end-of-day batch present
F1	241	ec-cash/Maestro offline error
F5	245	OPT-error
F6	246	OPT-data not available (= OPT personalisation required)
FA	250	error transmitting offline-transactions (clearing error)
FB	251	turnover data-set defective
FC	252	necessary device not present or defective
FD	253	baudrate not supported
FE	254	register unknown
FF	255	system error (= other/unknown error), See TLV tags 1F16 and 1F17


The host return-codes the ‚A0‘ - ‚AF‘ are returned to the ECR as error-code ‚00‘.

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## 9 Terminal Status Codes

following status are defined:


Error-ID (hexa- decimal)	Status- Code (decimal)	Definition
00	00	PT ready
51	81	initialisation required
62	98	date/time incorrect
9C	156	please wait (e.g. software-update still running)
9D	157	partial issue of goods
B1	177	memory full
B2	178	merchant-journal full
BF	191	voltage supply too low (external power supply)
C0	192	card locking mechanism defect
C1	193	merchant card locked
C2	194	diagnosis required
C4	196	card-profile invalid. New card-profiles must be loaded
CC	204	printer not ready
DC	220	card inserted
DF	223	out-of-order
E0	224	remote-maintenance activated
E1	225	card not completely removed
E2	226	card-reader doe not answer / card-reader defective
E3	227	shutter closed
E4	228	Terminal activation required
F6	246	OPT-data not availble (= OPT-Personalisation required)

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Recovery-Actions:

The following table describes which actions are necessary to resolve the status from the PT.

Status-Code (decimal)	Recovery-Action (ZVT-Command)
00	PT ready → no action required
81	„Initialisation“
98	„Set Date and Time in PT“ (time from vending machine) or „Diagnosis“ (time from host)
100	repeat card insertion
101	„Start OPT-Action“
156	PT needs further time → no action required
177	„End-of-Day“ or service-technician fix
178	„Read File“ and/or „Delete File“
191	service-technician fix
192	service-technician fix
193	„Set Date and Time in PT“ (time from vending machine) or „Diagnosis“ (time from host). Depending on PT merchant-card re-register and re-attempt, otherwise service-technician fix
194	„Diagnosis“
196	„Software-Update“ (new card profiles can be loaded from the service-computer) or service-technician fix
204	service-technician fix
220	PT ready. Card can be processed or via „Abort“ ejected.
223	service-technician fix
224	service-technician fix
225	PT ready. Card must be fully extracted.
226	service-technician fix
228	Service-technician fix

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## 10 List of ZVT-card-type IDs

Card	ZVT-card-type ID	IIN/AID
DouglasCard	1	604655
ec-card (national, international, Bank-customer card)	2	
Miles&More	3	
(RFU)	4	
girocard	5	
Mastercard	6	
EAPS	7	
American Express	8	
Lastschrift based on track 2 or EMV chip (e.g. EuroELV)	9	
Visa	10	
VISA electron	11	
Diners	12	
V PAY	13	
JCB	14	
REKA Card	15	
Esso fleet-card	16	
Happiness Cards	17	
DKV/SVG	18	
Transact Geschenkkarte	19	
Shell fleet-card	20	
Payeasy	21	
DEA	22	
boncard POINTS	23	
Leaseplan	24	
boncard PAY	25	
OK	26	
Klarmobil	27	
UTA	28	
Mobile World	29	
Geldkarte (formerly also: ec-cash with Chip)	30	
Ukash	31	
Hessol	32	
Wallie	33	
Lomo	34	
MyOne	35	
Woehrl	36	
Gutscheinkarte DOUGLAS Gruppe	37	691000 639402 636663 604655
Breuninger	38	
ABO Card	39	A000000157444A
BSW	40	
BonusCard	41	A000000157010B
Comfort Card	42	
CCC Commit Card	43	A0000001574457
YESSS	44	
DataStandards (DAS)	45	A0000001574461

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Card	ZVT-card-type ID	IIN/AID
Maestro (formerly: edc)	46	
GiftCard	47	A0000001574451
Easycard	48	
Jelmoli Card	49	A0000001570103
CitiShopping	50	
J-Geschenkkarte	51	A000000157444E
EuroReal (TeleCash)	52	
Jubin	53	A000000157445F
Hertie	54	
ManorCard	55	A0000001570104
Goertz	56	
Power Card	57	A000000157010D 9756163001
Lafayette	58	
Supercard plus	59	A0000001574444
Heinemann	60	
SwissBonus Card	61	A0000001574449
Harley Davidson	62	
SwissCadeau	63	A000000157445A
Shopping Plus	64	
Tetora	65	A0000001579999
Family Dent Card	66	
WIRcard	67	A000000157010C
Karstadt Card	68	
Postcard (Postfinance Card)	69	A0000001110101 A0000001570050 A0000001570051
Hagebau Partner Card	70	
lebara	71	
Lyca	72	
GT Mobile	73	
HP	74	
IKEA Family Plus	76	
Koch Card Plus	78	
XTRA Card	80	
Optimus	82	
VW Club	84	
Scandlines	86	
Cast Customer-Card, Payment-function	88	
Cast Customer-Card, Bonus-capture	90	
ECMcard	92	
Solitaire Card	94	
AirPlus	127	
Hornbach Profi	137	
Hornbach Projektwelt	138	
Weat fleet-card	142	
GDB fleet-card	144	
DKV blue fleet-card	146	
Conoco/Jet fleet-card	148	
Gulf card	149	
Eurotrafic fleet-card	150	
Westfalen fleet-card	152	


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Card	ZVT-card-type ID	IIN/AID
Elf fleet-card	154	
Präsentcard	155	
Agip fleet-card	156	
Hornbach Gutscheinkarte	157	
Total fleet-card	158	
AVIA	160	
BFT fleet-card	162	
Routex fleet-card	164	
PAN-Diesel fleet-card	166	
BayWa	176	
GAZ-card/Roadrunner-Card	177	
Go-Card	178	
XNet-Card	179	
PaysafeCard Blue	180	
PaysafeCard Red	181	
Tele 2	182	
Sunrise	183	
Sorena ZED	184	
Quam now-card	185	
Mox Universal	186	
Mox Calling Card	187	
Loop Card	188	
Go Bananas	189	
Free & Easy card	190	
Callya-Card	191	
VCS-DAFA	192	
Caravaning-Card	193	
AirPlus Cargo	194	
HEM-card	195	
Dankort	196	
VISA/Dankort	197	
CUP-card	198	
Mango-card	199	
Payback payment-card	200	
Lunch Card	201	
Payback (without payment function)	202	
Micromoney	203	
T-Card	204	
Blau	205	
BILDMobil	206	
Congstar	207	
C3 Bestminutes	208	
C3 Bestcard	209	
C3 Callingcard	210	
EDEKAMOBIL	211	
XTRA-PIN	212	
Klimacard	213	
ICP-International-Fleet-Card	214	
ICP-Gutscheinkarte	215	
ICP-Bonuskarte	216	
Austria Card	217	
ConCardis Geschenkkarte	218	

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Card	ZVT-card-type ID	IIN/AID
TeleCash Gutscheinkarte	219	
Shell private label credit card	220	
ADAC	221	
Shell Clubsmart	222	
Shell Pre-Paid-Card	223	
Shell Master-Card	224	
bauMax Zahlkarte	225	
Fiat-Lancia-Alfa Servicecard	226	
Nissan-Karte	227	
ÖBB Vorteilskarte	228	
Österreich Ticket	229	
Shopin-Karte	230	
Tlapa-Karte	231	
Discover Card	232	
f+f-Karte ( frei & flott - Karte)	233	700164 700165
Syrcon	234	
Citybike Card	235	
	236	
	237	
IKEA FAMILY Bezahlkarte	238	
Ikano Shopping Card	239	
InterCard Gutscheinkarte	240	
InterCard Kundenkarte	241	
M&M-Gutscheinkarte	242	636347
Montrada card	243	
CP Customer Card	244	
AmexMembershipReward	245	
FONIC	246	
OTELLO DE	247	
SIMYO	248	
Schlecker Smobil	249	
Schlecker Zusatzprodukte	250	
CHRIST Gutscheinkarte	251	691000
IQ-Card	252	
AVS Gutscheinkarte (Pontos)	253	
Novofleet Card	254	708551
Indication for ZVT-card-type ID in TLV tag 41	255	




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## 11 Summary of utilised BMPs

BMP	Format	Definition
01	1 byte binary	time-out
02	1 byte binary	max.status infos
03	1 byte binary	service-byte
04	6 byte BCD	Amount
05	1 byte binary	pump-Nr.
06	TLV-encoded	TLV-container; length according to TLV-encoding (not LLL-Var !)
0B	3 byte BCD	trace-number
0C	3 byte BCD	Time
0D	2 byte BCD	date, MM DD (see AA)
0E	2 byte BCD	expiry-date, YY MM
17	2 byte BCD	card sequence-number
19	1 byte binary	status-byte/payment-type/card-type
22	LL-Var	PAN / EF_ID, 'E' used to indicate masked numeric digit <sup>1</sup>
23	LL-Var	track 2 data, 'E' used to indicate masked numeric digitFehler: Referenz nicht gefunden
24	LLL-Var	track 3 data, 'E' used to indicate masked numeric digitFehler: Referenz nicht gefunden
27	1 byte binary	result-code
29	4 byte BCD	TID
2A	15 byte ASCII	VU-number
2D	LL-Var	track 1 data
2E	LLL-Var	synchronous chip data
37	3 byte BCD	trace-number of the original transaction for reversal
3B	8 byte	AID authorisation-attribute
3C	LLL-Var	additional-data/additional-text
3D	3 byte BCD	Password
49	2 byte BCD	currency code
60	LLL-Var	individual totals
87	2 byte BCD	receipt-number
88	3 byte BCD	turnover record number
8A	1 byte binary	card-type (card-number according to ZVT-protocol; comparison 8C)
8B	LL-Var	card-name
8C	1 byte binary	card-type-ID of the network operator (comparison 8A)
92	LLL-Var	additional-data ec-Cash with chip offline
9A	LLL-Var	Geldkarte payments-/ failed-payment record/total record Geldkarte
A0	1 byte binary	result-code-AS
A7	LL-Var	chip-data, EF_ID
AA	3 byte BCD	date YY MM DD (see 0D)
AF	LLL-Var	EF_Info
BA	5 byte binary	AID-parameter
D0	1 byte binary	algorithm-Key
D1	LL-Var	card offset/PIN-data
D2	1 byte binary	direction
D3	1 byte binary	key-position

<sup>1</sup> To meet the PCI-DSS requirements, the bitmap 22 through 24 can be omitted instead of using masking.


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BMP	Format	Definition
E0	1 byte binary	min. length of the input
E1	LL-Var	text2 line 1
E2	LL-Var	text2 line 2
E3	LL-Var	text2 line 3
E4	LL-Var	text2 line 4
E5	LL-Var	text2 line 5
E6	LL-Var	text2 line 6
E7	LL-Var	text2 line 7
E8	LL-Var	text2 line 8
E9	1 byte binary	max. length of the input
EA	1 byte binary	echo the Input
EB	8 byte binary	MAC over text 1 and text 2
F0	1 byte binary	display-duration
F1	LL-Var	text1 line 1
F2	LL-Var	text1 line 2
F3	LL-Var	text1 line 3
F4	LL-Var	text1 line 4
F5	LL-Var	text1 line 5
F6	LL-Var	text1 line 6
F7	LL-Var	text1 line 7
F8	LL-Var	text1 line 8
F9	1 byte binary	number of beep-tones
FA	1 byte binary	status
FB	1 byte binary	confirmation the input with <OK> required
FC	1 byte binary	dialog-control

The PT needn't support all bitmaps listed above; however the PT must react correctly. The PT should ignore known, but not supported bitmaps and respond to unknown bitmaps with an error:

**PT response:**

PT → ECR			
APDU			
Control-field		Length	Data-block
CCRC	APRC		
84	83	00	

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## 12 Summary of Commands

0F XX RFU for proprietary applications, the utilisation for particular cases should be clarified between manufacturers

01 01 RFU

04 01 Set Date and Time in ECR

04 0D Input-Request

04 0E Menu-Request

04 0F Status-Information

04 FF Intermediate-Statusinformation

05 01 Status-Enquiry

05 FF RFU

06 00 Registration

06 01 Authorisation

06 02 Log-Off

06 03 Account Balance Request

06 09 Prepaid Top-Up

06 0A Tax Free

06 0B RFU

06 0C TIP

06 0F Completion

06 10 Send Turnover Totals

06 11 RFU

06 12 Print Turnover Receipts

06 18 Reset Terminal

06 1A Print System Configuration

06 1B Set/Reset Terminal-ID

06 1E Abort

06 20 Repeat Receipt

06 21 Telephonic Authorisation

06 22 Pre-Authorisation/Reservation

06 23 Partial-Reversal of a Pre-Authorisation/Booking of a Reservation

06 24 Book Total

06 25 Pre-Authorisation Reversal

06 30 Reversal

06 31 Refund

06 50 End-of-Day

06 51 Send offline Transactions

06 70 Diagnosis

06 79 Selftest

06 82 RFU


06 85 Display Text (only included for downwards-compatibility, for new implementations use 06 E0)

06 86 Display Text with Numerical Input (only included for downwards-compatibility, for new implementations use 06 E2)


06 87 PIN-Verification for Customer-Card (only included for downwards-compatibility, for new implementations use 06 E3)

06 88 Display Text with Function-Key Input (only included for downwards-compatibility, for new implementations use 06 E1)

06 90 RFU

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06 91 Set Date and Time in PT  
06 93 Initialisation  
06 95 Change Password  
06 B0 Abort  
06 C0 Read Card  
06 CE RFU  
06 D1 Print Line  
06 D3 Print Text-Block  
06 D4 RFU  
06 D8 Dial-Up  
06 D9 Transmit Data via Dial-Up  
06 DA Receive Data via Dial-Up  
06 DB Hang-Up  
06 DD Transparent-Mode  
06 E0 Display Text  
06 E1 Display Text with Function-Key Input  
06 E2 Display Text with Numerical Input  
06 E3 PIN-Verification for Customer-Card  
06 E4 Blocked-List Query to ECR  
06 E5 MAC calculation  
  
08 01 Activate Service-Mode  
08 02 Switch Protocol  
08 10 Software-Update  
08 11 Read File  
08 12 Delete File  
08 20 Start OPT Action  
08 21 Set OPT Point-in-Time  
08 22 OPT-Pre-Initialisation  
08 23 Output OPT-Data  
08 24 OPT Out-of-Order  
08 30 Select Language  
08 40 Change Baudrate  
08 50 Activate Card-Reader  
  
0F xx reserved for proprietary extensions  
0F CA ChipActivator  
  
80 00 Positive Acknowledgement  
84 00 Positive Acknowledgement  
84 xx Negative Acknowledgement  
84 9C Repeat Statusinfo

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## 13 ZVT-Charactersets

### 13.1 7-bit ASCII ZVT-Characterset


0x20		0x30	<b>0</b>	0x40	<b>@</b>	0x50	<b>P</b>	0x60	<b>`</b>	0x70	<b>p</b>
0x21	<b>!</b>	0x31	<b>1</b>	0x41	<b>A</b>	0x51	<b>Q</b>	0x61	<b>a</b>	0x71	<b>q</b>
0x22	<b>"</b>	0x32	<b>2</b>	0x42	<b>B</b>	0x52	<b>R</b>	0x62	<b>b</b>	0x72	<b>r</b>
0x23	<b>#</b>	0x33	<b>3</b>	0x43	<b>C</b>	0x53	<b>S</b>	0x63	<b>c</b>	0x73	<b>s</b>
0x24	<b>\$</b>	0x34	<b>4</b>	0x44	<b>D</b>	0x54	<b>T</b>	0x64	<b>d</b>	0x74	<b>t</b>
0x25	<b>%</b>	0x35	<b>5</b>	0x45	<b>E</b>	0x55	<b>U</b>	0x65	<b>e</b>	0x75	<b>u</b>
0x26	<b>&amp;</b>	0x36	<b>6</b>	0x46	<b>F</b>	0x56	<b>V</b>	0x66	<b>f</b>	0x76	<b>v</b>
0x27	<b>'</b>	0x37	<b>7</b>	0x47	<b>G</b>	0x57	<b>W</b>	0x67	<b>g</b>	0x77	<b>w</b>
0x28	<b>(</b>	0x38	<b>8</b>	0x48	<b>H</b>	0x58	<b>X</b>	0x68	<b>h</b>	0x78	<b>x</b>
0x29	<b>)</b>	0x39	<b>9</b>	0x49	<b>I</b>	0x59	<b>Y</b>	0x69	<b>i</b>	0x79	<b>y</b>
0x2a	<b>*</b>	0x3a	<b>:</b>	0x4a	<b>J</b>	0x5a	<b>Z</b>	0x6a	<b>j</b>	0x7a	<b>z</b>
0x2b	<b>+</b>	0x3b	<b>;</b>	0x4b	<b>K</b>	0x5b	<b>Ä</b>	0x6b	<b>k</b>	0x7b	<b>ä</b>
0x2c	<b>,</b>	0x3c	<b>&lt;</b>	0x4c	<b>L</b>	0x5c	<b>Ö</b>	0x6c	<b>l</b>	0x7c	<b>ö</b>
0x2d	<b>-</b>	0x3d	<b>=</b>	0x4d	<b>M</b>	0x5d	<b>Ü</b>	0x6d	<b>m</b>	0x7d	<b>ü</b>
0x2e	<b>.</b>	0x3e	<b>&gt;</b>	0x4e	<b>N</b>	0x5e	<b>^</b>	0x6e	<b>n</b>	0x7e	<b>ß</b>
0x2f	<b>/</b>	0x3f	<b>?</b>	0x4f	<b>O</b>	0x5f	<b>_</b>	0x6f	<b>o</b>	0x7f	<b>Δ</b>

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## 13.2 8-bit ZVT-Character set (CP437, OEM-US)

	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	.A	.B	.C	.D	.E	.F
0.	NUL 0	☺ 263A	☹ 263B	♥ 2665	♦ 2666	♣ 2663	♠ 2660	• 2022	◼ 25D8	○ 25CB	◻ 25D9	♂ 2642	♀ 2640	♪ 266A	♫ 266B	☀ 263C
1.	▶ 25BA	◀ 25C4	↕ 2195	!! 203C	¶ B6	§ A7	— 25AC	↕ 21A8	↑ 2191	↓ 2193	→ 2192	← 2190	↶ 221F	↷ 2194	▲ 25B2	▼ 25BC
2.		! 21	" 22	# 23	\$ 24	% 25	& 26	' 27	( 28	) 29	* 2A	+ 2B	, 2C	- 2D	. 2E	/ 2F
3.	0 30	1 31	2 32	3 33	4 34	5 35	6 36	7 37	8 38	9 39	: 3A	; 3B	< 3C	= 3D	> 3E	? 3F
4.	@ 40	A 41	B 42	C 43	D 44	E 45	F 46	G 47	H 48	I 49	J 4A	K 4B	L 4C	M 4D	N 4E	O 4F
5.	P 50	Q 51	R 52	S 53	T 54	U 55	V 56	W 57	X 58	Y 59	Z 5A	[ 5B	\ 5C	] 5D	^ 5E	_ 5F
6.	` 60	a 61	b 62	c 63	d 64	e 65	f 66	g 67	h 68	i 69	j 6A	k 6B	l 6C	m 6D	n 6E	o 6F
7.	p 70	q 71	r 72	s 73	t 74	u 75	v 76	w 77	x 78	y 79	z 7A	{ 7B	 7C	} 7D	~ 7E	␣ 2302
8.	Ç C7	ü FC	é E9	â E2	ä E4	à E0	å E5	ç E7	ê EA	ë EB	è E8	ï EF	î EE	ì EC	Ä C4	Å C5
9.	É C9	æ E6	Æ C6	ô F4	ö F6	ò F2	û FB	ù F9	ÿ FF	Ö D6	Ü DC	¢ A2	£ A3	¥ A5	Ps 20A7	f 192
A.	á E1	í ED	ó F3	ú FA	ñ F1	Ñ D1	ª AA	º BA	¿ BF	¬ 2310	¬ AC	½ BD	¼ BC	¡ A1	« AB	» BB
B.	░ 2591	▒ 2592	▓ 2593	 2502	 2524	 2561	 2562	 2556	 2555	 2563	 2551	 2557	 255D	 255C	 255B	 2510
C.	┐ 2514	┐ 2534	┐ 252C	┐ 251C	┐ 2500	┐ 253C	┐ 255E	┐ 255F	┐ 255A	┐ 2554	┐ 2569	┐ 2566	┐ 2560	= 2550	┐ 256C	┐ 2567
D.	┐ 2568	┐ 2564	┐ 2565	┐ 2559	┐ 2558	┐ 2552	┐ 2553	┐ 256B	┐ 256A	┐ 2518	┐ 250C	▀ 2588	▀ 2584	▀ 258C	▀ 2590	▀ 2580
E.	α 3B1	β DF	Γ 393	π 3C0	Σ 3A3	σ 3C3	μ B5	τ 3C4	Φ 3A6	Θ 398	Ω 3A9	δ 3B4	∞ 221E	φ 3C6	ε 3B5	∩ 2229
F.	≡ 2261	± B1	≥ 2265	≤ 2264	∫ 2320	∫ 2321	÷ F7	≈ 2248	° B0	· 2219	· B7	√ 221A	² 207F	² B2	■ 25A0	A0

The hexadecimal number below the symbol denotes the unicode number.  
This charset is valid for incoming commands with text displays.

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## 14 Trace-Examples

Traces for several commands are available under [www.terminalhersteller.de](http://www.terminalhersteller.de)

## 15 References

The current version of each document is available under [www.terminalhersteller.de](http://www.terminalhersteller.de)

PA00P016	ECR-Interface ZVT-Protocol – Transport-Protocol and Application-Protocol
PA00P017	Implications of TA7.0 / DC POS2.4 on the ECR-Interface Protocol
DCPOS25	Schnittstellenspezifikation für chipbasierte EMV-Debit/Credit-Anwendungen POS-Terminals Version 2.5 07.04.2011

## 16 Change-Control

The change-control for this documentation is assigned to CCV Deutschland GmbH. The current versions are announced on [www.terminalhersteller.de](http://www.terminalhersteller.de).