IBM 4610 SureMark Fiscal Printer
Italy - Models GR3/GR5/KR3/KR5/KD3/KD5
Programming Guide Supplement
Version 43 01

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Summary of Changes

Changes resulting in document revisions will be summarized in this table in reverse chronological sequence. Revision codes - alpha characters - will be used to highlight text changed in new document versions.

Version	Date	Change Description
43 01	Sep 9, 2004	• There are not changes for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 43.
42 01	Sep 2, 2004	• Power-On Reports: version number was eliminated. • Fiscal Voucher printout: blank lines were eliminated. • This version of Programming Guide Supplement corresponds to microcode EC level 42.
41 01	Aug 17, 2004	• x68 cmd. (Compact Flash Space Management): range to set MWS and almost was changed. • This version of Programming Guide Supplement corresponds to microcode EC level 41.
40 01	Aug 3, 2004	• There are not changes for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 40.
3F 01	Aug 2, 2004	• There are not changes for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 3F.
3E 01	Jul 19, 2004	• xCF cmd. (ELECTRONIC JOURNAL REPORT): (byte 3 - bit 2-0) = 110 (By Voucher Number for Current Sale Period) was added. • RC 135: was added. • Printouts: – Electronic Journal Report by V.N. - Specific Clos.N./Date (Without Closure): was changed. – Electronic Journal Report by V.N. - Current Sale Period: was added. • This version of Programming Guide Supplement corresponds to microcode EC level 3E.
3D 01	May 31, 2004	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 3D.

Version	Date	Change Description
3C 01	May 24, 2004	• Fiscal Voucher: – blank lines before and after ″6 msg.″ are removed. – ″AMMONT″ (6 msg.) and D4_Amount are always printed in single-high and emphasized. – ″TOTALE EURO″ (72 msg.) and D4_Amount are always printed in double-high and emphasized. – C4 cmd. (Fiscal Parameter Configuration): x02 cmd. extension (Set DI Led Blinking) was added. – DB cmd. (Electronic Read Accumulators and Counters): byte 27/33 bit 3 for KR3/KR5 and KD3/KD5 models was added. – • This version of Programming Guide Supplement corresponds to microcode EC level 3C.
3B 01	Apr 19, 2004	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 3B.
3A 01	Apr 2, 2004	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 3A.
39 01	Jan 7, 2004	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 39.
38 01	Dec 30, 2003	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 38.
37 01	Dec 16, 2003	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 37.
36 01	Nov 20, 2003	• Normal printing line before ″RESTO″ message line: was added. • This version of Programming Guide Supplement corresponds to microcode EC level 36.
35 01	Nov 5, 2003	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 35.
34 01	Nov 4, 2003	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 34.
33 01	Nov 4, 2003	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 33.
32 01	Oct 16, 2003	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 32.
31 01	Oct 3, 2003	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 31.

Version	Date	Change Description
30 01	Oct 3, 2003	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 30.
2F 01	Sep 22, 2003	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 2F.
2E 01	Sep 12, 2003	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 2E.
2D 01	Jul 30, 2003	• EURO and LIRE words (where aplicable) were included before the amounts in: – Electronic Journal File Format – Electronic Journal File Format - PLD Recovery – Closure Report (Lira Currency) – Closure Report (Euro Currency) – Closure Report (Lira & Euro Currency) – Fiscal Memory Report (Lira Currency) – Fiscal Memory Report (Euro Currency) – Fiscal Memory Report (Lira & Euro Currency) • This version of Programming Guide Supplement corresponds to microcode EC level 2D.
2C 01	Jul 7, 2003	• 69 cmd. (Get Compact Flash Information): new cmd. extension was added. • This version of Programming Guide Supplement corresponds to microcode EC level 2C.
2B 01	Jun 17, 2003	• EJ RC 66: was added. • This version of Programming Guide Supplement corresponds to microcode EC level 2B.
2A 01	Jun 4, 2003	• EJ Rc′s 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64 and 65: were added. • There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 2A.

Version	Date	Change Description
29 01	Apr 30, 2003	• 19 cmd. (Set New Currency): was added for GR3/GR5 models. • D7 cmd. (Set Store Header): the double-wide special control characters ″0x0e″ and ″0x14″ were added. • DA cmd. (Electronic Read Fiscal Memory Tables): response to Read Daily Totals Table was changed. • DB cmd. (Electronic Read Accumulators and Counters): response for byte 27 - bit 6 was changed. • Fiscal Memory Layout: ″x92″ and ″xA0 to xA3″ addresses for GR3/GR5 models were added. • Msg. 40, 43, 71, 73, 74 and 75: were added. • RC 162: was added. • Passaggio all Euro Report: was added. • Fiscal Voucher: totals for Lira were added. • Closure Report (Lira Currency): was added. • Closure Report (Lira & Euro Currency): was added. • Fiscal Memory Report Short (Lira Currency): was added. • Fiscal Memory Report Short (Lira & Euro Currency): was added. • Fiscal Memory Report Extended (Lira Currency): was added. • Fiscal Memory Report Extended (Lira & Euro Currency): was added. • This version of Programming Guide Supplement corresponds to microcode EC level 29.
28 01	Apr 25, 2003	• Power-On Reports: version number was added. • This version of Programming Guide Supplement corresponds to microcode EC level 28.
27 01	Apr 27, 2003	• E7 cmd. (Diagnostic and Alignment Utilities): new rules were added. • Fiscal Memory Map: bytes 00300 to 003c7 are reserved. • This version of Programming Guide Supplement corresponds to microcode EC level 27.
26 01	Mar 26, 2003	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 26.
25 01	Mar 6, 2003	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 25.
24 01	Mar 3, 2003	• C9 cmd. (Print Barcode): rules were changed. • D2 cmd. (Item Sale): Char Print Mode Mask was added. • D3 cmd. (Negative Item Sale): Char Print Mode Mask was added. • D5 cmd. (Payment): Char Print Mode Mask was added. • D7 cmd. (Set Store Header): Char Print Mode Mask was added. • D8 cmd. (Not Paid): Char Print Mode Mask was added. • EA cmd. (Normal Printing Lines in CR/SJ): Char Print Mode Mask was added. • F4 cmd. (Head Position & Open/Close Throat): was changed. • F7 cmd. (Command Buffer Management): was added. • 97 msg.: was added. • Response to Read CF Initialization Table for SureMark RS-485 KR3/KR5: was added. • This version of Programming Guide Supplement corresponds to microcode EC level 24.

Version	Date	Change Description
23 01	Jan 23, 2003	• Electronic Journal File: start (x84) and end (xA4) record type constants for fiscal logo was added. • This version of Programming Guide Supplement corresponds to microcode EC level 23.
22 01	Jan 22, 2003	• Closure Report: ″SIG. FISCALE″ msg. printed before fiscal logo. • Closure Report Ended (by PLD): ″SIG. FISCALE″ msg. printed before fiscal logo. • Electronic Journal Reports - All/Betw.Clos.Numbers/Betw.Clos.Dates: ″SIG. FISCALE″ msg. printed before fiscal logo. • This version of Programming Guide Supplement corresponds to microcode EC level 22.
21 01	Jan 14, 2003	• Display Sensing: available for RS-485 and RS-232. • This version of Programming Guide Supplement corresponds to microcode EC level 21.
20 01	Nov 29, 2002	• RC 122: was added. • Msg′s 95 and 96: were added. • Full J4/CE Jumper: was added. • Fiscal Memory Map: was changed. • Fiscal Memory - Full J4/CE Jumper Table: was added. • Fiscal Memory Report Extended: was changed. • Power-On Reports: were changed. • This version of Programming Guide Supplement corresponds to microcode EC level 20.

Version	Date	Change Description
1F 01	Nov 14, 2002	• RS-232 Communication Interface: was added. • 4610 SureMark RS-232 - KD3/KD5 Model - Printer and Fiscal Unit Status: was added. • Initialization Sequence: was changed. • Day_N_NFR_EJ (EJ Report Number) daily counter: was added. • Lif_N_CF (Compact Flash Number) lifetime counter: was added. • CD cmd. (Cash Drawer Management): was added. • CF cmd. (Electronic Journal Report): was added. • DA cmd. (Electronic Read Fiscal Memory Tables): was changed. • 19 cmd. (Set New Currency): was eliminated. • 60 cmd. (Open Electronic Journal File): was added. • 61 cmd. (Close Electronic Journal File): was added. • 62 cmd. (Read Electronic Journal File): was added. • 63 cmd. (Get Extended EJ Error): was added. • 65 cmd. (Get Compact Flash Directory): was added. • 66 cmd. (Set Public and Private Key): was added. • 67 cmd. (Get Public Key): was added. • 68 cmd. (CF Space Management): was added. • 69 cmd. (Get Compact Flash Free Space): was added. • 6A cmd. (Read Current Electronic Journal File): was added. • RC′s 84 and 182: were changed. • Msg′s 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93 and 94: were added. • Electronic Journal Return Codes: were added. • Fiscal Memory - Daily Totals Table: was changed. • Fiscal Memory - Compact Flash Initialization Table: was added. • Electronic Journal File Format: was added. • Electronic Journal File Format - PLD Recovery: was added. • Closure Report Ended by PLD printout: was added. • Electronic Journal Reports: were added. • Almost Full CF Space Report: was added. • Full CF Space Report: was added. • Closure Report printout: was changed. • Fiscal Memory Report Extended printout: was changed. • Passaggio all Euro Report: was eliminated. • Suggestions for Application Developer′s: new suggestion was added. • This version of Programming Guide Supplement corresponds to microcode EC level 1F.
1E 01	Aug 15, 2002	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 1E.
1D 01	Jul 18, 2002	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 1D.
1C 01	May 5, 2002	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 1C.

Version	Date	Change Description
1B 02	Apr 12, 2002	• ATTENTION: USB version works only in EURO currency therefore: – 19 cmd. (Set New Currency): was disabled for USB version. – All Printouts: the amounts are showed in EURO currency for USB version. • RC 123: was added. • This version of Programming Guide Supplement corresponds to microcode EC level 1B.
1A 01	Dic 27, 2001	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 1A.
19 01	Dic 19, 2001	• 4610 SureMark G USB - Printer and Fiscal Unit Status: byte 8 was changed. • RC 208: was added. • This version of Programming Guide Supplement corresponds to microcode EC level 19.
15 01	Jul 20, 2001	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 15.
14 01	Jul 13, 2001	• CB cmd. (Flip Document in DI Station): was eliminated. • DC cmd. (MICR Read): was eliminated. • RC 123: was eliminated. • 0F cmd. (Cancel Fiscal Receipt): 'Day_N_Recp = Day_N_Recp + 1' calculation was added. • 10 cmd. (Cancel Fiscal Invoice): 'Day_N_Invc = Day_N_Invc + 1' calculation was added. • 11 cmd. (Cancel Accompanying Document): 'Day_N_Accd = Day_N_Accd + 1' calculation was added. • This version of Programming Guide Supplement corresponds to microcode EC level 14.
09 01	Mar 19, 2001	• C8 cmd. (Set Barcode Parameters): was changed. • C9 cmd. (Print Barcode): new rule was added. • This version of Programming Guide Supplement corresponds to microcode EC level 09.
08 01	Feb 16, 2001	• There are not changes in the spec for this version. • This version of Programming Guide Supplement corresponds to microcode EC level 08.
07 01	Jan 31, 2001	• F8 cmd. (Report Printer EC): cmd. extension 01 and 02 were added. • E8 cmd. (Set Number of Dot Rows per Line Feed): Note 1 was changed. • This version of Programming Guide Supplement corresponds to microcode EC level 07.
06 01	Jan 3, 2001	• DB cmd. (Read Accumulators and Counters): byte 25 = 05 is Non-Fiscal Report CR in Progress and byte 25 = 06 is Non-Fiscal Report SJ in Progress. • Print buffer line after PLD: was added. • This version of Programming Guide Supplement corresponds to microcode EC level 06.

Version	Date	Change Description
05 01	Dic 4, 2000	• RC 124: was added. • This version of Programming Guide Supplement corresponds to microcode EC level 05.
04 01	Nov 29, 2000	• CA cmd. (Print and Download Graphics): was added. • CB cmd. (Flip Document in DI Station): was added. • DC cmd. (MICR Read): was added. • RC′s 116, 117, 118 and 119: were added. • Non-Fiscal Report printouts: were added. • This version of Programming Guide Supplement corresponds to microcode EC level 04.
03 01	Nov 10, 2000	• 0F cmd. (Cancel Fiscal Receipt): was changed. • 10 cmd. (Cancel Fiscal Invoice): was changed. • 11 cmd. (Cancel Accompanying Document): was changed. • RC 123: was added. • This version of Programming Guide Supplement corresponds to microcode EC level 03.
02 01	Nov 3, 2000	• C2 cmd. (Cancel Check or Credit Slip): was changed. • C3 cmd. (Check or Credit Slip Line Feed): was changed. • C8 cmd. (Set Barcode Parameters): was added. • C9 cmd. (Print Barcode): was added. • DD cmd. (Start Non-Fiscal Report): was changed. • E8 cmd. (Set Number of Dot Rows per Line Feed): was changed. • EC cmd. (Line Feed): was changed. • ED cmd. (Ready Document): was changed. • RC′s 104 and 105: were added. • RS-485 Printer and Fiscal Unit Status: was changed. • This version of Programming Guide Supplement corresponds to microcode EC level 02.
01 01	Oct 23, 2000	• E9 cmd. (Native Printer Commands): temporarily disabled. • F4 cmd. (Return Print Head to Left Home Position): the header only will be returned to left home position. • Full and narrow type documents were eliminated due to incompatible behavior between 4610 and Model 3 fiscal printer. • The portrait and landscape orientation print were added in commands that prints in DI station. • This version of Programming Guide Supplement corresponds to microcode EC level 01.

Table 1. Change Summary

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1.0 Scope

This document covers the programming interface and functional characteristics of the 4610 SureMark Fiscal Printer - models GR3/GR5/KD3/KD5/KR3/KR5 for Italy.
This specification is applicable for fiscal microcode EC level 43.

2.0 Definition of Abbreviations and Terminology

2.1 Abbreviations

The following abbreviations are used in this document.

- FP: Fiscal Printer
- FU: Fiscal Unit
- CF: Compact Flash
- FM: Fiscal Memory
- EJ: Electronic Journal
- JP: Journal Period
- NFM: Non-Fiscal Mode
- TRM: Training Mode
- FIM: Fiscal Mode
- SP: Sale Period
- ST: Sale Transaction
- FV: Fiscal Voucher
- CR: Customer Receipt
- SJ: Summary Journal
- DI: Document Insert
- RAM: Ramdom Access Memory
- PLD: Power Line Disturbance
- POR: Power-On Reset
- IPL: Initial Program Loaded
- EPROM: Electrically Programable Read only Memory

2.2 Definition of Terminology

Some of the terminology was originally translated from Italian to English and documented at that time. The English terminology may be different than you would expect.
Please study these definitions:

Customer Receipt — is the left side print thermal station that prints from rolls of paper.
This station prints the slip of paper that verifies that a sales transaction occurred.

Summary Journal — is the right side print thermal station that prints on rolls of paper and winds up the printed paper in the printer as the journal of the day's printing.

Document Insert — is the print impact station that has the capability to insert forms from the top or the bottom of the printer and print either in a forward or reverse direction, where allowed.

Sales Period — is a group of sales transactions over a given amount of time, usually measured daily.

Sales Transaction — is a process of recording item sales and arriving at the amount to be paid by or to a customer.
The receiving of payment for merchandise or services is also included in a transaction.

Fiscal Voucher — is the slip of paper that verifies that a sales transaction occurred.
Is printed in the CR station of the printer.

Rectify is an option on certain sales transaction commands used to modify, cancel, or undo a previous operation.

Tendering is the process of concluding a sales transaction and accounting for the methods of payment.

Return is used when returning items total or partially.

Void is used when cancelling or voiding items.

Bonus although not limited to this description, bonus items are items that are discounted by means of a coupon or promotional sale.

Discount is the reduction of the item price (negative item) or the reduction of a part of a sales transaction (discount on subtotal), or the reduction of an entire sales transaction (discount on total).

Empties Although not limited to this description, empties are a type of return, such as the return of an empty bottle to be used for recycling purposes.

Cancel is used when cancelling or voiding an entire sales transaction.

Checks are personal checks written by a customer to pay for merchandise.

Fiscal Receipt is a pre-printed form used in Italy by service providers, such as a hotel or restaurant.
The FP can print this form in the DI station but there are rules that apply in this case.

Fiscal Invoice is used in Italy to indicate a whole ST printed in the DI station of the FP. There are rules that apply in this case.

Accompanying Document
is used in Italy to print a special document required when transferring products from one location to another.
There are rules that apply when the accompanying document is printed in the DI station.

J4/CE Jumper is a procedure performed by service representatives that clears the battery-backed RAM.

3.0 4610 SureMark Fiscal Printer

3.1 Features

The FP features are:

- RS-485 communication interfaces (only GR3, GR5, KR3 and KR5 models)
- RS-232 communication interfaces (only KD3 and KD5 model)
- Customer Receipt - thermal printing (all models)
- Summary Journal - thermal printing (only GR3 and GR5 models)
- Document Insert - impact printing (only GR3 and KR3 models)
- Electronic Journaling (only KD3, KD5, KR3 and KR5 models)
- Barcode generation (all models, all stations)
- Barcode printing capability (all models, all stations)
- Paper Cutter (all models, CR station only)
- User defined character sets

3.2 Models

MODEL	INTERFACE	POWER	STATIONS SJ	STATIONS DI	EJ
GR3	RS-485	Terminal	Yes	Yes	No
GR5	RS-485	Terminal	Yes	No	No
KD3	RS-232	Brick	No	Yes	Yes
KD5	RS-232	Brick	No	No	Yes
KR3	RS-485	Terminal	No	Yes	Yes
KR5	RS-485	Terminal	No	No	Yes

Where:
in MODEL, G = fiscal 3 stations (2 thermal - 1 impact)
in MODEL, K = fiscal 2 stations (1 thermal - 1 impact)

4.0 Fiscal Command Processing

The FU operates under control of an application program communicating with it via a serial link. It is designed to execute a predefined set of commands, logically sequenced according to the type of operations to be performed.
The application program has no direct control of the resources residing in the FU, but it can retrieve data related to accumulators, counters, FU state and FM.

The FU performs the following operations, assuring that they are executed according to the fiscal law of Italy.

- Record serialization parameters.
- Record fiscal configuration option.
- Record store configuration options.
- Record sale amount and generate FV.
- Record fiscal receipt amount and generate fiscal receipt document.
- Record fiscal invoice amount and generate fiscal invoice document.
- Generate accompanying document.
- Record daily sales on FM and generate closure report.
- Generate FM content reports.
- Print reports generated by the application program.
- Report selected data to the application program.
- Print on personal checks and credit slips

4.1 RS-232 Communication Interface

ONLY FOR RS-232

4.1.1 Protocol

The protocol implemented for communication with the FP has two main characteristics:

- The host begins all communications.
- The FP will never send an unsolicited message.

So, the protocol could be defined as one of type Host (PC) / Slave (Fiscal Printer)
The protocol is a one-bit sliding window protocol. In this kind of protocol, the partners speaks successively one each time. The first to speak will be always the host. Every part keeps internally a packet counter. After initialization, this counter is used to distinguish between new packets and retransmissions changing from 0 to 1 continuously. (see normal communication below).
All packets have the same format. There are no special packets for ACKs, NAKs, etc.

4.1.2 Packet Format

HEADER	LENGTH	DATA	CRC-16
1 byte	2 bytes	Length bytes	2 bytes

- HEADER: Source / Packet Type (see below Header Format)
- LENGTH: A binary 2 bytes unsigned value representing a number from 0 to 0xFFFF = 65535. This is the maximum theoretical length of the data to be transmitted. The real maximum will be a lot shorter due to buffer limits.
  Length can be > 0 only for packet types IF0 and IF1.
- DATA: This is the meaningful data to be transmitted. If length = 0, then no Data must be present. This is mandatory for packet types SNRM, ROL and NSA. It's optional for packet types IF0 and IF1. In this last case, such a packet can be used from he host side to give 'the right to speak' to the device (polling), or, from the slave side, to recognize successful reception of a previous packet from host when the slave has no data to send.
- CRC-16: This is the CRC-16 of all the preceding data (Header + Length + Data). The polynomial used is x^16+x^12+x^5+1 (the one recommended by CCITT).

Note that LENGTH and CRC are transmitted in Big Endian Format (most significant byte first). That's the format used internally by the device C microcode. While most of the Hosts will have to swap the bytes because they use Little Endian Format, we choose to favor the slowest device.

4.1.3 Header Format

BITS 7-4	BIT 3	BITS 2 - 0
Reserved (specify 0)	Source	Packet Type

- SOURCE: The source of the packet (0 = Host / 1 = Slave)
- PACKET TYPE: One of these values

NAME	VALUE	DIRECTION	LENGTH FIELD
SNRM (Set Normal Response Mode)	0x04	From Host	Must be 0 (no data)
ROL (Request On Line)	0x05	From Slave	Must be 0 (no data)
NSA (Non Sequence Acknowledge)	0x06	From Slave	Must be 0 (no data)
Information Frame #0	0x00	Both	0 to 0xFFFF
Information Frame #1	0x01	Both	0 to 0xFFFF

4.1.4 Communication Parameters

28800 bits per second / No Parity / 8 bits / 1 Stop bit

4.1.5 State Machine for Host

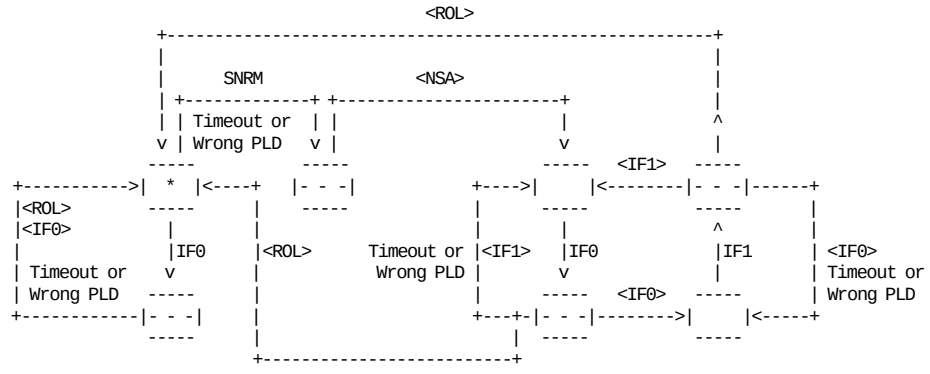


Figure 1. State Machine for Host.

4.1.6 State Machine for Slave

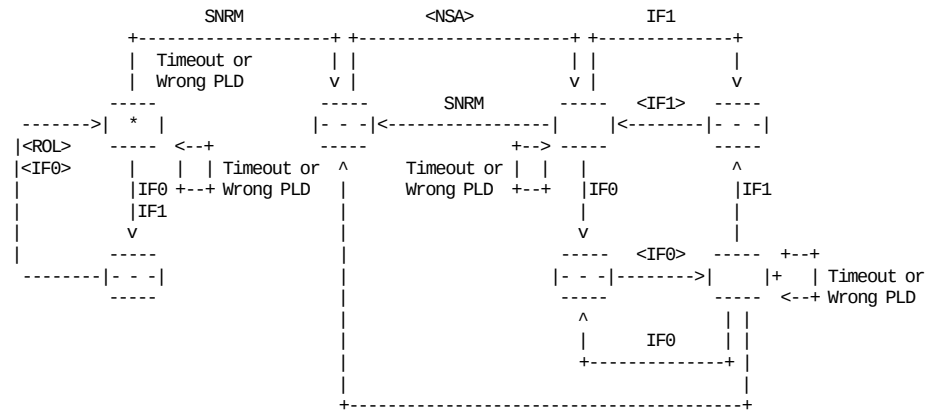


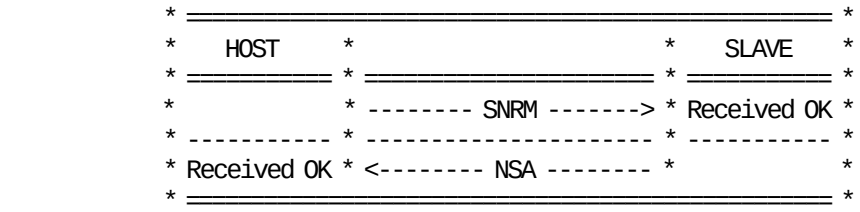
Figure 2. State Machine for Slave.

4.1.7 Initialization

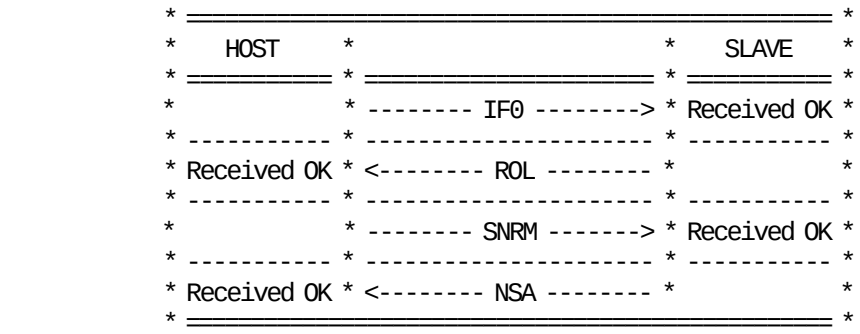
The very first packet that the Host transmits must be a SNRM (Set Normal Response Packet) or an IF0 without data (see State Machine below). If an IF0 is sent, the Slave can respond in two differents ways: with a ROL (Request On Line) if the Slave is just initiating communications also, or with an IF0 if the Slave has a previous communication ongoing. If this info result useful to recognize between these two cases, the IF0 must be sent first and then SNRM. If it's not necessary, the SNRM can be sent directly.
When a SNRM is sent, after successful reception, the Slave will reset its internal packet counter to 0 and send a NSA (Non Sequence Acknowledge). If the Host receives it successfully, it will continue with the normal communication. If it's not, the host will resend the SNRM packet.
Initially, the Slave will wait for a packet from host (it always speaks after the host). If the first packet received is a SNRM, the slave must respond with NSA. If something else is correctly received the Slave must send a ROL (Request On Line) packet, asking the host to resynchronize communication. After reception the host must send a SNRM and set its internal packet counter to 0. The Slave will respond with NSA, and normal communication will continue.

4.1.7.1 Initialization Flow

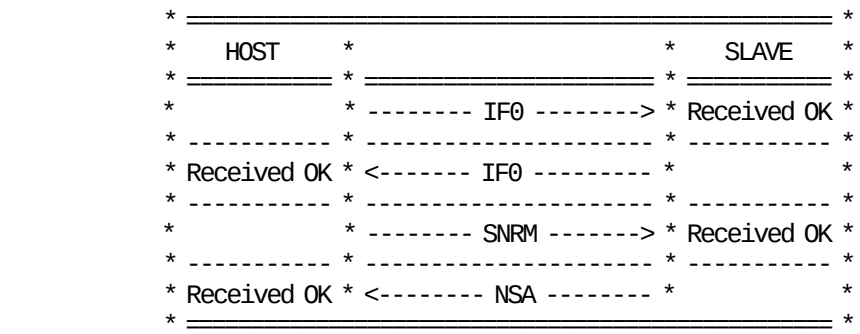
- Normal case without Host recognizing Slave reset



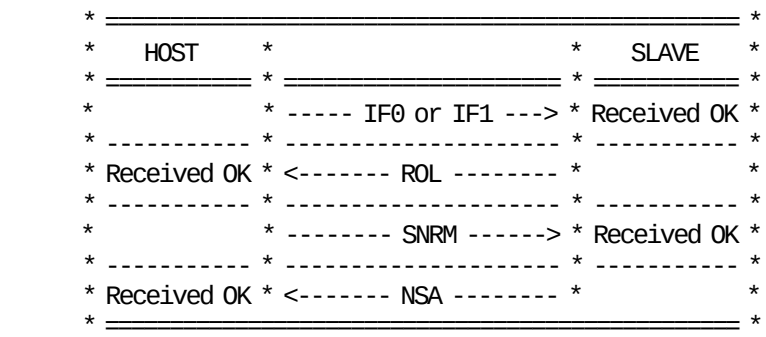
- Host and Slave reset at the same time with Host recognizing



- Host reset and Slave not with Host recognizing



- Slave reset when Host has an ongoing communication

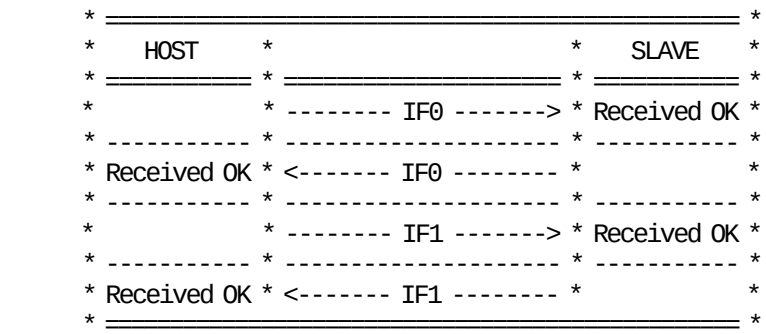


4.1.8 Normal Communication

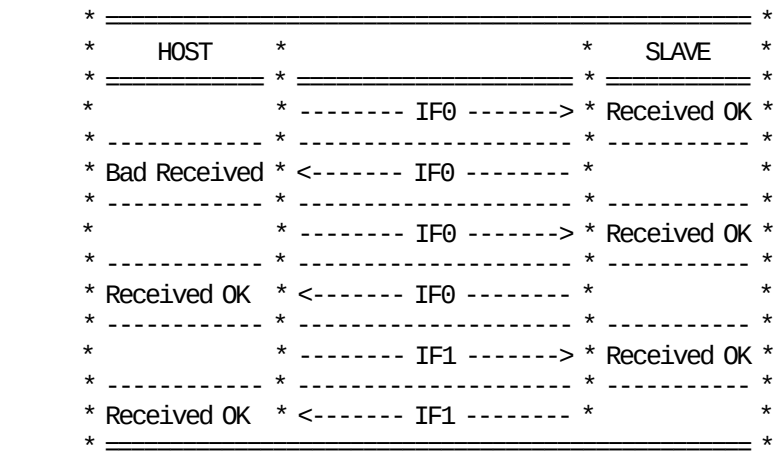
Information Frame (IF) packets are interchanged between host and slave. These IF packets have two different types 0 and 1 corresponding to the internal counter kept by each part. The first packet to be sent will be IF0, then IF1, then IF0 and so on. This way, the partner can recognize a new packet from a retransmission.
A packet is automatically acknowledged when the partner sends the following packet with the expected numbering. If the host receives a packet with wrong CRC, the preceding host packet will be retransmitted forcing the slave to retransmit its packet. If the slave receives a packet with wrong CRC it will just ignore it and the host must retransmit it when the time waiting for a response has expired. If the host doesn't receive a response for its packet, it must resend the packet after a time-out period.

4.1.8.1 Normal Communication Flow

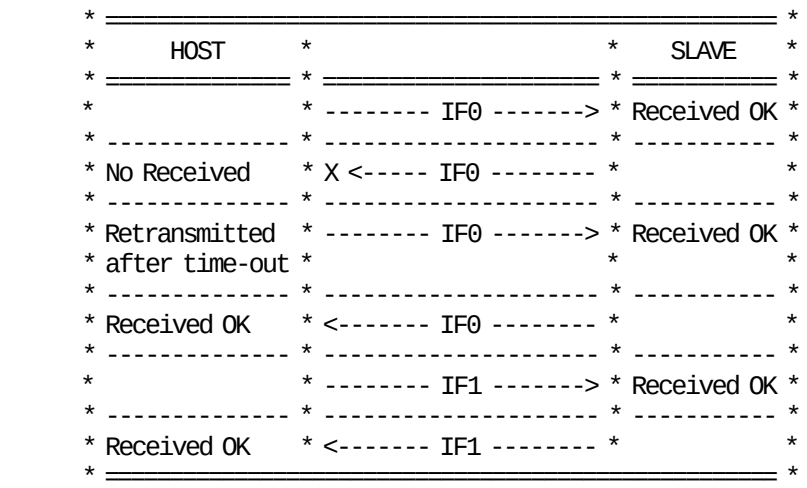
- Normal Case



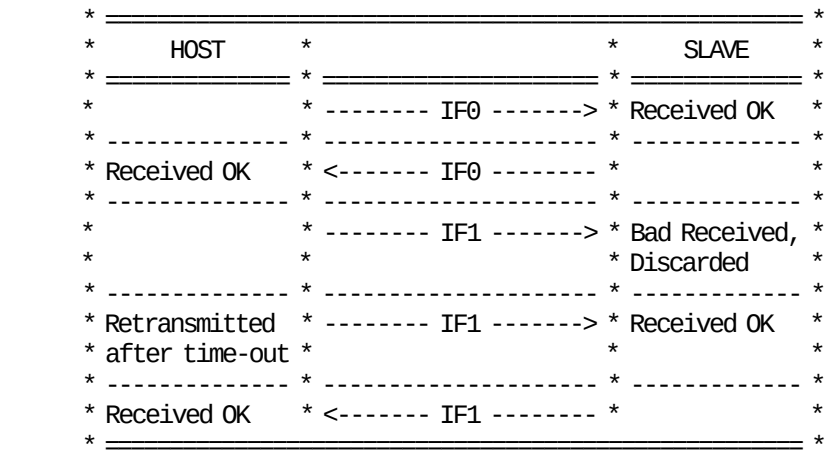
- Bad CRC Packet Received by Host



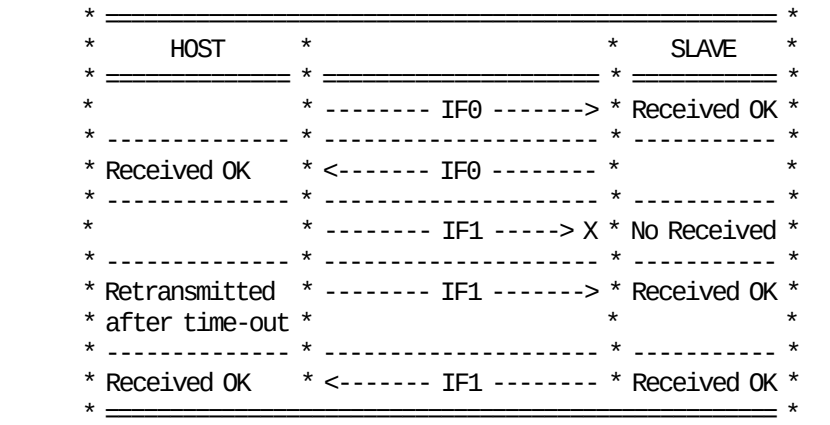
- No Packet received by Host



- Bad CRC Packet received by Slave



- No Packet received by Slave



4.1.9 Timing

The maximum delay between consecutive bytes sent by any device is 50ms. Also, after the host ends sending a packet, the device has a maximum of 250ms for sending the first byte of the response. The host has no restriction about how often it must send packets to the slave, the slave must wait forever to receive something from it, but, if the host doesn′t gives a ′chance to speak′ to the device, it will be unable to inform the host of any asynchronous event detected i.e. cover open/close.

4.1.10 Polling

Even if this is not strictly related to the protocol, it′s important to note that the FP responses are always status. These status can be one of three different types:

- Intermediate: Status sent during execution of a command while not complete.
- Final: Status sent at command execution ending.
- Asynchronous: Status sent outside command execution.

After sending a command, it is very important to keep ′polling′ the printer (sending IFs without data) until the slave returns a final status. This way the hosts gives the FP a chance to send its status back. If command execution is not quick, the FP will send intermediate status periodically until the command is ended and a final status is sent.
The FP can generate also asynchronous status, that is status generated outside the execution of any command. These status are mainly originated due to changes in the status of the printer (covers open/close, buttons pressed, etc.). If the host needs to take care of these status, it must keep polling the printer even when no command is executed. The polling inside command execution must be more frequent to avoid slowing the device throughput (around once every 0.05 sec). The polling outside command execution can be usually slower (maybe once every 0.50 sec). These times doesn′t need to be exact and some tuning could be necessary to achieve optimum performance.

4.1.11 Retries

The number of retries is infinite for the slave. This means that, by example, it will keep sending IF0s all the time if, while it′s waiting an IF1, it continuously receives IF0s from the host. For the host, the number of retries must be decided according to the perceived quality of the communication link. Anyway, at least 5 retries before considering the communication as broken are strongly suggested.

4.2 Summary Command Set

In this section is a summary of the FU command set.
See 10.1, “ 00 - SYSTEM COMMANDS” on page 68 for the command structure.
The code preceding the command name represents the hexadecimal value of command byte 0.

INITIALIZATION

1B - Serialize Fiscal Memory
16 - Set Date and Time
18 - Set Fiscal Mode
1E - Set Fixed Vendor Information
1A - Set Display Address
D7 - Set Store Header

TRAINING MODE

1D - Set Training Mode ON
1C - Set Training Mode OFF

SALE TRANSACTION

01 - Print Store Header
D2 - Item Sale
D3 - Negative Items:
Returns
Voids
Bonus
Discounts
Empties
Miscellaneous
D4 - Subtotal/Total Transaction
D5 - Payment
D8 - Not Paid
06 - End Transaction
07 - Cancel Transaction

FISCAL DOCUMENTS

E0 - Print Fiscal Receipt
E3 - End Fiscal Receipt
0F - Cancel Fiscal Receipt

E1 - Print Fiscal Invoice
E4 - End Fiscal Invoice
10 - Cancel Fiscal Invoice

E2 - Print Accompanying Document
E5 - End Accompanying Document
11 - Cancel Accompanying Document

C0 - Print Check or Credit Slip
C1 - End Check or Credit Slip
C2 - Cancel Check or Credit Slip
C3 - Check or Credit Slip Line Feed

NON-FISCAL REPORT

DD - Start Non-Fiscal Report
DE - End Non-Fiscal Report

CLOSE SALE PERIOD

13 - Close Sale Period

Figure 3. Summary Command Set - Part 1 of 2.

FISCAL MEMORY AND COMPACT FLASH REPORTS

15 - Fiscal Memory Report
CF - Electronic Journal Report

ELECTRONIC JOURNAL/COMPACT FLASH

60 - Open Electronic Journal File
61 - Close Electronic Journal File
62 - Read Electronic Journal File
63 - Get Extended EJ Error
65 - Get Compact Flash Directory
66 - Set Public and Private Key
67 - Get Public Key
68 - Compact Flash Space Management
69 - Get Compact Flash Information
6A - Read Current Electronic Journal File

PRINTER

E7 - Diagnostic and Alignment Utilities
E8 - Set Number of Dot Rows per Line Feed
EA - Normal Printing Lines in CR/SJ
EB - Normal Printing Lines in DI
EC - Line Feed
ED - Ready Document
EE - Cut Customer Receipt Paper
EF - Eject Document (Forward/Reverse Feed)
F4 - Head Position & Open/Close Throat

MISCELLANEOUS

19 - Set New Currency
C4 - Fiscal Parameter Configuration
C8 - Set Barcode Parameters
C9 - Print Barcode
CA - Print and Download Graphics
CD - Cash Drawer Management

UTILITIES

DA - Electronic Read Fiscal Memory Tables
DB - Electronic Read Accumulators and Counters
F1 - Communicate Power-On Status
F7 - Command Buffer Management
F8 - Report Printer EC
F9 - Report Current Status
FA - Reset Fiscal Printer
FB - Run Online Diagnostics
FC - Report Microcode EC
FF - Engineering Dump Ram Memory and Fiscal Eprom

SYSTEM

00 - System Commands

Figure 4. Summary Command Set - Part 2 of 2.

4.3 Y2K Issues

4.3.1 Scope

The FP microcode have the ability to correctly process, provide and receive date data within and between the 20th and 21st centuries constrained to 100 year window as described below.

4.3.2 Year Window Description

The microcode is utilizing the fixed window method.
It Define a 100 years window from Jan 1, 1990 through Dec 31, 2089 and interprets the date in 2-digit year format using this window.
Year values from 90 to 99 must be interpreted as 1990 through 1999.
Year values from 00 to 89 must be interpreted as 2000 through 2089.

4.3.3 Format Date in Printouts

In the following reports the format date printed is:

- Fiscal Voucher: dd/mm/yy
- Closure Report: dd/mm/yy
- Fiscal Memory Report: dd/mm/yy
- Engineering Dump Fiscal RAM and Fiscal Memory: dd/mm/yy
- Initialization Reports: dd/mm/yy

Where:

dd ranges from 01 to 31
mm ranges from 01 to 12
yy ranges from 90 (1990) to 89 (2089)

4.3.4 Commands that have dates as I/O

- Have dates as input:
  - 16 cmd. - Set Date use ddmmyyyy input format
  - 15 cmd. - Fiscal Memory Report use ddmmyyyy input format
- Have dates as output:
  - DA cmd. - Read Fiscal Memory (electronic) use dd/mm/yy output format
  - DB cmd. - Read Accumulators and Counters (electronic) use dd/mm/yy output format

4.3.5 Date in Fiscal Memory

The date is stored in FM (yymmdd compacted format) during each:

- Daily entry table generated with 13 cmd.
- Repair action table generated with J4/CE jumper intervention.

5.0 Fiscal Hardware

5.1 J4/CE Jumper

5.1.1 Description

When the J4/CE jumper is activated the RAM is cleared and all totals are reset. Available information, such as the FM serial number is loaded from the FM (EPROM) to the RAM.

5.1.2 Procedure

The activate jumper procedure consists in:

- Turn OFF the FP
- Put the J4/CE jumper in ACTIVE (ON) position
- Turn ON the FP

The deactivate jumper procedure consists in:

- Turn OFF the FP
- Put the J4/CE jumper in STORED (OFF) position
- Turn ON the FP

5.1.3 Rules

- Only authorized service personnel can move the J4/CE jumper.
- The RAM pattern is initialized after all the other initialization has been completed.
- This process can take a long time if the FM is almost full or full.
- Flags are set or cleared as shown below.
- 200 repair actions are allowed during the life of the FP and each repair action is stored in the FM.

5.1.4 Calculations while the jumper is active:

- **Recover the following counters from the FM tables**

  Lif_N_Clos
  Lif_N_Ract
  Lif_N_CF

- **Calculate the Grand Total**

  $Grand\_Total = \sum \forall Day\_TotlinFM$

- **Operate on the following counters as shown below and they are incremented on every jumper procedure**

  $Lif\_N\_Ract = Lif\_N\_Ract + 1$

5.2 Full J4/CE Jumper

5.2.1 Description

This procedure consists in perform 5 consecutive IPL's (Power OFF/ON) with J4/CE jumper active (See 5.1, "J4/CE Jumper").
Only in this case:

- All internal variables related with CF management are cleared.
- EJ information is not lost after a normal (only one) J4/CE jumper operation to allow keeping data from previous operations (as the SJ roll of paper isn't lost due to an intervention).
- Only the EJ file for the current JP will be lost.
- When the procedure is not finished:
  - By each IPL performed, the "RAM CLEARED - EJ KEPT" message is printed in the power-on reports.
- When the procedure is finished:
  - The "RAM CLEARED - EJ CLEARED" message is printed in the power-on reports.
  - The FM is updated by filling a new entry in the Full J4/CE Jumper table with the following data:

    FM_FJ_N_Clos = Lif_N_Clos + 1
    FM_FJ_Date = Current_Date
    FM_FJ_Time = Current_Time

It's possible also that due to a microcode/hardware failure or just if the current CF is removed and lost in the middle of a JP, the EJ information needs to be completely cleared. In that case the Full J4/CE Jumper procedure must be performed.

6.0 Initialization

6.1 Initialization Commands

6.1.1 Serialize Fiscal Memory

This procedure is used at the end of manufacturing process to serialize the fixed area of FM.

6.1.2 Set Date And Time

This procedure is used to update the FU TOD (time of date).

6.1.3 Set Fiscal Mode

This procedure is used to set the FIM in FM.
Once this procedure has been executed the FU will operate according to the configured country fiscal law.

6.1.4 Set Fixed Vendor Information

For vendor stands along a street which are maintained in a fixed location then the POSTAZIONI FISSE category of the fiscal law applies.

6.1.5 Set Display Address

This procedure is used to set the addresses of the two displays that have to be monitored for connection by the FU.

6.1.6 Set Store Header

This procedure is used to load in RAM the salutation message and header lines.

6.1.7 Set New Currency

This procedure is used to set the Euro currency in FM.

6.1.7.1 New Currency Procedure

- If the FU is fiscalized and the LIRA is the current currency, the user/application must issue the 19 cmd. (Set New Currency) to set the EURO currency.
- If the EURO is the current currency, no actions are performed by the microcode (because the EURO currency is already set).
- If the FM is new or the FU is working in NFM, when the 18 cmd. (Set Fiscal Mode) is issued the fiscal microcode sets the EURO currency as default updating it in FM and doesn′t print the ″Passaggio all euro″ report.

6.2 Initialization Sequence

The initialization sequence to Italy is:

1. RAM CLEAR
   - Turn OFF the FP
   - Put the J4/CE jumper in ACTIVE (ON) position
   - Turn ON the FP
   - Wait 30 seconds
   - Turn OFF the FP
   - Put the J4/CE jumper in STORED (OFF) position
   - Turn ON the FP
2. SET PUBLIC AND PRIVATE KEY

   (ONLY FOR KD3/KD5/KR3/KR5 MODELS)
   - Execute --> Set Public and Private Key = 1B66 6600 (1 time)
   - Execute --> Set Public and Private Key = 1B66 6601 (0 or 1 or more times)
   - Execute --> Set Public and Private Key = 1B66 6602 (1 time) OR
   - Execute --> Set Public and Private Key = 1B66 6603 (1 time)
3. SERIALIZE FISCAL MEMORY
   - Execute --> Serialize Fiscal Memory = 1B66 1B00
4. SET DATE AND TIME
   - Execute --> Set Date and Time = 1B66 1600
5. FISCALIZATION
   - Execute --> Set Fiscal Mode (Shops) = 1B66 1800
     OR
   - Execute --> Set Fiscal Mode (Fixed Vendor) = 1B66 1801
     OR
   - Execute --> Set Fiscal Mode (Convert from Fixed Vendor to Shops) = 1B66 1802
6. SET FIXED VENDOR INFORMATION

   This command is executed if fiscal mode (1801) was set before
   - Execute --> Set Fixed Vendor Information - First = 1B66 1E02
     AND
   - Execute --> Set Fixed Vendor Information - Second = 1B66 1E03
     AND
   - Execute --> Set Fixed Vendor Information - Third = 1B66 1E04
7. SET DISPLAY ADDRESS
   - Execute --> Set Display Address = 1B66 1A00
8. SET STORE HEADER

   (Minimum = 1, Maximum = 5)
   If fiscal mode (1801) was select before, only salutation message and store header 4 can be set.
   - Execute --> Set Salutation Message = 1B66 D701
   - Execute --> Set Store Header 1 = 1B66 D702
   - Execute --> Set Store Header 2 = 1B66 D703
   - Execute --> Set Store Header 3 = 1B66 D704
   - Execute --> Set Store Header 4 = 1B66 D705
9. CF SPACE MANAGEMENT

   (ONLY FOR KD3/KD5/KR3/KR5 MODELS)

   (Optional)
   - Execute --> Compact Flash Space Management - Set = 1B66 6800

Figure 5. Initialization Sequence.

6.3 Reinitialization Sequence

The reinitialization sequence to Italy is:

1. RAM CLEAR
   - Turn OFF the FP
   - Put the J4/CE jumper in ACTIVE (ON) position
   - Turn ON the FP
   - Wait 30 seconds
   - Turn OFF the FP
   - Put the J4/CE jumper in STORED (OFF) position
   - Turn ON the FP
2. SET DATE AND TIME
   - Execute --> Set Date and Time = 1B66 1600
3. FISCALIZATION

   (Optional - Will be executed if the fiscal mode set previously must be changed)
   - Execute --> Set Fiscal Mode (Shops) = 1B66 1800
     OR
   - Execute --> Set Fiscal Mode (Fixed Vendor) = 1B66 1801
     OR
   - Execute --> Set Fiscal Mode (Convert from Fixed Vendor to Shops) = 1B66 1802
4. SET FIXED VENDOR INFORMATION

   This command is executed if fiscal mode (1801) was set before
   - Execute --> Set Fixed Vendor Information - First = 1B66 1E02
     AND
   - Execute --> Set Fixed Vendor Information - Second = 1B66 1E03
     AND
   - Execute --> Set Fixed Vendor Information - Third = 1B66 1E04
5. SET DISPLAY ADDRESS
   - Execute --> Set Display Address = 1B66 1A00
6. SET STORE HEADER

   (Minimum = 1, Maximum = 5)
   If fiscal mode (1801 - fixed vendor) was select before, only salutation message and store header 4 can be set.
   - Execute --> Set Salutation Message = 1B66 D701
   - Execute --> Set Store Header 1 = 1B66 D702
   - Execute --> Set Store Header 2 = 1B66 D703
   - Execute --> Set Store Header 3 = 1B66 D704
   - Execute --> Set Store Header 4 = 1B66 D705

Figure 6. Initialization Sequence.

6.4 Printer and Fiscal Unit Status

6.4.1 For GR3/GR5 Models (RS-485)

The FU response to the application program is contained in the FU status, which is 9 bytes long (6 bytes for the printer status and 3 bytes for FU status).

For compatibility reasons, the printer status bytes received from the 4610 are mapped in the closest possible way to the model 3 status bytes.
The ″MAPPED FROM″ column shows from which byte/bit of the 4610 status bytes was the returned taken form.

The following table shows the content of the printer and FU status.

BYTE	BIT	CONTENT	MAPPED FROM BYTE	MAPPED FROM BIT		
0		PRINTER UNIT STATUS	n/a			
	0 (LSB)	COMMAND COMPLETE Set to 1 when the command is complete.				
	1	LEFT HOME POSITION Set to 1 when the print head is in the left home position.	1	2		
	2	RESERVED (Always = '0')	n/a			
	3	MICR PRESENT Set to 1 when the micr is present.	n/a			
	4	RESERVED (Always = '0')	n/a			
	5	HOME ERROR	3	1		
	6	DOCUMENT ERROR The document not inserted after document station was selected and the wait timed out.	3	2		
	7 (MSB)	COMMAND REJECT				
1		PRINTER UNIT STATUS				
	0 (LSB)	CASH RECEIPT PRINT ERROR Paper cover is open or the CR station is out of paper.	1	6		
	1	SJ PAPER OUT Set to 1 when SJ station is out of paper.				
	2	PRINTER KEY PRESSED Set to 1 when a printer key operation is in progress.	7	4		
	3	EC LEVEL Set to 1 when responding to an EC level request.	5	1		
	4	COVER OPEN OR CR PAPER OUT Set to 1 when the cover in CR, SJ or DI stations is open. Set to 1 when CR station is out of paper.			5	6
	5	DOCUMENT READY Set to 0 when the DI station is ready for printing. This occurs when both document sensors are made and the document has been fed to the first print position.	2	0		
	6	DOCUMENT PRESENT UNDER THE FRONT SENSOR Set to 0 when a document is under the front document sensor.	2	1		
	7	CASH RECEIPT PRINT ERROR Paper cover is open or the CR station is out of paper.				

(Continued in the next page)

Figure 7. Printer and Fiscal Unit Status - GR3/GR5 Models - Part 1 of 3

Printer and Fiscal Unit Status - GR3/GR5 Models continued...

BYTE	BIT	CONTENT	MAPPED BYTE	FROM BIT
2		PRINTER UNIT STATUS		
	0 (LSB)	LEFT HOME POSITION Set to 1 when the print head is in the left home position.	1	2
	1	DOCUMENT ERROR The document not inserted after DI station was selected and the wait timed out.	3	2
	2	DOCUMENT PRESENT UNDER THE TOP SENSOR Set to 0 when a document is under the top document sensor.	2	2
	3	RESERVED (Always = '0')	n/a	
	4	FLASH EPROM LOAD ERROR OR MCT LOAD ERROR	3	3
	5	RIBBON COVER OPEN Set to 1 when the ribbon cover is open.	1	5
	6	RESERVED (Always = '0')	n/a	
	7 (MSB)	SJ STATION PAPER FAULT Set to 1 when the paper is not present.	5	7
3		PRINTER UNIT STATUS Contains the printer EC level with all status messages.	4	
4		RESERVED (Always = '00')	n/a	
5		PRINTER UNIT STATUS Contains the current line count the printer is on.	6	
6		FISCAL UNIT STATUS	(Note 1)	
	0 (LSB)	RESERVED (Always = '0')		
	1	IPL STATUS When set, it indicates that status byte 8 contains the IPL completion status; and bit 4 of byte 6 is set as it was at IPL time.		
	2	IPL IN PROGRESS Set to indicate that the FU is performing the IPL sequence.		
	3	FISCAL MICROCODE EC LEVEL When set it indicates that status byte 7 contains the microcode EC.		
	4	PLD STATUS This bit is set at IPL time to indicate that a command was in execution during PLD and that all modifications caused by the suspended command have been deleted.		
	5	ASYNCHRONOUS STATUS When set it indicates that the FU is executing an internal command (e.g. POR sequence) or it received an asynchronous status from the printer.		
	6	INTERMEDIATE STATUS When set it indicates that execution of a command is still in progress.		
	7 (MSB)	FISCAL UNIT BUSY Set to 1 when a command is received while a previous command is still in execution.		

(Continued in the next page)

Figure 8. Printer and Fiscal Unit Status - GR3/GR5 Models - Part 2 of 3

BYTE	BIT	CONTENT	
7		ADDITIONAL DATA/COUNTRY VERSION/COUNTRY CODE - x41 (65)	
	0-4	COUNTRY CODE Italy = x00001	
	5-6	COUNTRY VERSION (hardware model) 4610 SureMark RS-485 = x10 (02)	
	7 (MSB)	ADDITIONAL DATA	(Note 2)
8		FISCAL UNIT RETURN CODE	(Note 3)
9 - n		ADDITIONAL DATA (if byte 7 bit 7 is on)	

Note : Bit 7 is the most significant bit and bit 0 is the least significant bit.

Note 1: When FU status byte 5 is 00 then command is complete.

Note 2: Where additional data follows the nine fiscal status bytes.

Note 3: When FU return code is 43 hex. (67_{10}), it means that no error is indicated on this status message.

Figure 9. Printer and Fiscal Unit Status - GR3/GR5 Models - Part 3 of 3

The fiscal unit return codes are defined in 11.0, “Fiscal Unit Return Codes” on page 173 .

6.4.2 Version/Country Code Definitions

- Country Name = Italy
- Models = GR3 and GR5
- Country Version (hardware model) = 02 (4610 SureMark RS-485 - Protocol SIO - Cable 7)
- Country Code = 01
- Country Version + Country Code:
  - Hexadecimal = 41
  - Decimal = 65
- Fiscal Microcode EC Level = 43

6.5 For KD3/KD5 Model (RS-232)

The printer and FU response to the application program is contained in the FU status, which is 15 bytes long (8 bytes for the fiscal printer status and 7 bytes for FU status).

The following figure shows the content of the fiscal status.

BYTE	BIT	CONTENT
0		PRINTER UNIT STATUS
	0 (LSB)	COMMAND LOADED For RS-232 buffered commands. Set to 1 when the command is received into the print buffer. Note: this is not when the line is actually printed. COMMAND COMPLETE For RS-232 immediate command and flash storage commands. Set to 1 when the command is complete.
	1	CASH RECEIPT RIGHT HOME POSITION Set to 1 when the print head is in the cash receipt right home position.
	2	LEFT HOME POSITION Set to 1 when the print head is in the left home position.
	3	DOCUMENT RIGHT HOME POSITION Set to 1 when the print head is in the document right home position.
	4	RESERVED (always = '0')
	5	RIBBON COVER OPEN Set to 1 when the ribbon cover is open.
	6	CASH RECEIPT PRINT ERROR Paper cover is open or the CR station is out of paper.
	7 (MSB)	COMMAND REJECT
1		PRINTER UNIT STATUS
	0 (LSB)	DOCUMENT READY Set to 0 when the DI station is ready for printing. This occurs when both document sensors are made and the document has been fed to the first print position.
	1	DOCUMENT PRESENT UNDER THE FRONT SENSOR Set to 0 when a document is under the front document sensor.
	2	DOCUMENT PRESENT UNDER THE TOP SENSOR Set to 0 when a document is under the top document sensor.
	3	RESERVED (always = '1').
	4	PRINT BUFFER HELD Set to a 1 when the print buffer is being held. Cleared when buffer released. The printer may be held due to a hold buffer command or one of the following printer errors: - Ribbon cover open with commands to be printed in the DI station. - CR print error with commands to the CR station.
	5	OPEN THROAT POSITION Set to 1 when the print head is in the open throat position.
	6	BUFFER EMPTY Set when there is no longer any print data or commands in the buffer.
	7 (MSB)	BUFFER FULL Set when only 512 bytes remain in the buffer. Cleared when 3k bytes are free (RS-485 only).

(Continued in the next page)

Figure 10. Printer and Fiscal Unit Status - KD3/KD5 Model - Part 1 of 3

Printer and Fiscal Unit Status - KD3/KD5 Model continued...

BYTE	BIT	CONTENT
2		PRINTER UNIT STATUS
	0 (LSB)	MEMORY SECTOR IS FULL
	1	HOME ERROR
	2	DOCUMENT ERROR The document not inserted after document station was selected and the wait timed out.
	3	FLASH EPROM LOAD ERROR OR MCT LOAD ERROR
	4	RESERVED (always = '0')
	5	USER FLASH STORAGE SECTOR IS FULL
	6	FIRMWARE ERROR CRC on the firmware failed. The printer is running out of the boot sector. ONLY system commands and firmware commands will be accepted.
	7 (MSB)	FISCAL BIT Set to show a line completed printing.
3		PRINTER UNIT STATUS Contains the printer EC level with all status messages.
4		PRINTER UNIT STATUS
	0 (LSB)	PRINTER ID REQUEST/EXTENDED ADDRESS CMD Set to 1 when responding to a printer ID request.
	1	EC LEVEL Set to 1 when responding to an EC level request.
	2	MICR READ Set to 1 when responding to a MICR read command.
	3	MCT READ Set to 1 when responding to a MCT read command.
	4	USER FLASH READ Set to 1 when responding to a user flash read command.
	5	RESERVED (always = '1').
	6	SJ COVER OPEN Set to 1 when the cover in SJ station is open.
	7	SJ STATION PAPER FAULT Set to 1 when the paper is not present.
5		PRINTER UNIT STATUS Contains the current line count the printer is on.
6		PRINTER UNIT STATUS
	0 (LSB)	RESERVED (always = '0')
	1	+24 VOLT POWER SUPPLY STATUS 0 = Voltage in spec 1 = Voltage below spec
	2	RESERVED (always = '0')
	3	CASH DRAWER STATUS Set to 1 when cash draw is opened.
	4	PRINTER KEY PRESSED Set to 1 when a printer key operation is in progress.
	5	RESERVED (always = '1')
	6	STATION SELECTED Set when the DI station is selected. Clear when the CR station is selected.
	7 (MSB)	DOCUMENT FEED ERROR Set when there is an error after a MICR command is executed.

(Continued in the next page)

Figure 11. Printer and Fiscal Unit Status - KD3/KD5 Model - Part 2 of 3

Printer and Fiscal Unit Status - KD3/KD5 Model continued...

BYTE	BIT	CONTENT	
7		PRINTER UNIT STATUS	
	0-7	RESERVED (always = '0')	
8		FISCAL UNIT STATUS	
	0	FISCAL/PRINTER DEVICE INFO 0 = Fiscal Device Info is NOT contained in this message 1 = Fiscal or Printer Device Info IS contained in this message	
	1	IPL STATUS When set, it indicates that status byte 14 contains the IPL completion status and bit 4 of byte 6 is set as it was at IPL time.	
	2	IPL IN PROGRESS Set to indicate that the FU is performing the IPL sequence.	
	3	MICROCODE EC When set it indicates that status byte 13 contains the microcode EC.	
	4	PLD STATUS This bit is set at IPL time to indicate that a command was in execution during PLD and that all modifications caused by the suspended command have been deleted.	
	5	ASYNCHRONOUS STATUS When set it indicates that the FU is executing an internal command (e.g. POR sequence) or it received an asynchronous status from the printer).	
	6	INTERMEDIATE STATUS When set it indicates that execution of a command is still in progress.	
	7	FISCAL UNIT BUSY Set to 1 when a command is received while a previous command is still in execution.	
9		FISCAL UNIT STATUS	
	0-6	RESERVED (always = '0')	
	7	ADDITIONAL DATA (= 1 when any data is available; otherwise = 0)	(Note 2)
10		COUNTRY CODE 01 = Italy	
11		COUNTRY VERSION (hardware model) 05 = 4610 SureMark RS-232 - 2 stations	
12		FISCAL MICROCODE EC LEVEL	
13		FISCAL UNIT RETURN CODE	(Note 1)
14		FISCAL UNIT RETURN CODE (reserved for future use)	
15-n		ADDITIONAL DATA (if byte 9 bit 7 is ON)	

Note : Bit 7 is the most significant bit and bit 0 is the least significant bit.

Note 1: When FU return code is 43 hex. (67_{10}), it means that no error is indicated on this status message.

Note 2: Where additional data follow the fifteen FU status bytes.

Figure 12. Printer and Fiscal Unit Status - KD3/KD5 Model - Part 3 of 3

The fiscal unit return codes are defined in 11.0, "Fiscal Unit Return Codes" on page 173 .

6.5.1 Version/Country Code Definitions

- Country Name = Italy
- Model = KD3 and KD5
- Country Code = 01
- Country Version (hardware model) = 05 (4610 SureMark RS-232 - 2 stations)
- Fiscal Microcode EC Level = 43

6.6 For KR3/KR5 Models (RS-485)

The FU response to the application program is contained in the FU status, which is 9 bytes long (6 bytes for the printer status and 3 bytes for FU status).

For compatibility reasons, the printer status bytes received from the 4610 are mapped in the closest possible way to the model 3 status bytes.
The "MAPPED FROM" column shows from which byte/bit of the 4610 status bytes was the returned taken form.

The following table shows the content of the printer and FU status.

BYTE	BIT	CONTENT	MAPPED FROM
0		PRINTER UNIT STATUS	n/a
	0 (LSB)	RESERVED (Always = '1')	
	1	LEFT HOME POSITION Set to 1 when the print head is in the left home position.	1 2
	2	RESERVED (Always = '0')	n/a
	3	MICR PRESENT Set to 1 when the micr is present.	n/a
	4	RESERVED (Always = '0')	n/a
	5	HOME ERROR	3 1
	6	DOCUMENT ERROR The document not inserted after document station was selected and the wait timed out.	3 2
	7 (MSB)	COMMAND REJECT	
1		PRINTER UNIT STATUS	
	0 (LSB)	RESERVED (Always = '0')	n/a
	1	RESERVED (Always = '0')	n/a
	2	PRINTER KEY PRESSED Set to 1 when a printer key operation is in progress.	7 4
	3	EC LEVEL Set to 1 when responding to an EC level request.	5 1
	4	COVER OPEN OR CR PAPER OUT Set to 1 when the cover in CR or DI stations is open. Set to 1 when CR station is out of paper.	5 6
	5	DOCUMENT READY Set to 0 when the DI station is ready for printing. This occurs when both document sensors are made and the document has been fed to the first print position.	2 0
	6	DOCUMENT PRESENT UNDER THE FRONT SENSOR Set to 0 when a document is under the front document sensor.	2 1
	7	CASH RECEIPT PRINT ERROR Paper cover is open or the CR station is out of paper.	

(Continued in the next page)

Figure 13. Printer and Fiscal Unit Status - KR3/KR5 Models - Part 1 of 3

Printer and Fiscal Unit Status - KR3/KR5 Models continued...

BYTE	BIT	CONTENT		
2		PRINTER UNIT STATUS		
	0 (LSB)	LEFT HOME POSITION Set to 1 when the print head is in the left home position.	1	2
	1	RESERVED (Always = '0')		
	2	DOCUMENT PRESENT UNDER THE TOP SENSOR Set to 0 when a document is under the top document sensor.	2	2
	3	RESERVED (Always = '0')	n/a	
	4	FLASH EPROM LOAD ERROR OR MCT LOAD ERROR	3	3
	5	RESERVED (Always = '0')		
	6	RESERVED (Always = '0')	n/a	
	7 (MSB)	RESERVED (Always = '0')		
3		PRINTER UNIT STATUS Contains the printer EC level with all status messages.	4	
4		RESERVED (Always = '00')	n/a	
5		PRINTER UNIT STATUS Contains the current line count the printer is on.	6	
6		FISCAL UNIT STATUS	(Note 1)	
	0 (LSB)	RESERVED (Always = '0')		
	1	IPL STATUS When set, it indicates that status byte 8 contains the IPL completion status; and bit 4 of byte 4 is set as it was at IPL time.		
	2	IPL IN PROGRESS Set to indicate that the FU is performing the IPL sequence.		
	3	FISCAL MICROCODE EC LEVEL When set it indicates that status byte 7 contains the microcode EC.		
	4	PLD STATUS This bit is set at IPL time to indicate that a command was in execution during PLD and that all modifications caused by the suspended command have been deleted.		
	5	ASYNCHRONOUS STATUS When set it indicates that the FU is executing an internal command (e.g. POR sequence) or it received an asynchronous status from the printer.		
	6	INTERMEDIATE STATUS When set it indicates that execution of a command is still in progress.		
	7 (MSB)	FISCAL UNIT BUSY Set to 1 when a command is received while a previous command is still in execution.		

(Continued in the next page)

Figure 14. Printer and Fiscal Unit Status - KR3/KR5 Models - Part 2 of 3

BYTE	BIT	CONTENT	
7		ADDITIONAL DATA/COUNTRY VERSION/COUNTRY CODE - x01 (01)	
	0-4	COUNTRY CODE Italy = x00001	
	5-6	COUNTRY VERSION (hardware model) 4610 SureMark RS-485 2 stations = x00 (00)	
	7 (MSB)	ADDITIONAL DATA	(Note 2)
8		FISCAL UNIT RETURN CODE	(Note 3)
9 - n		ADDITIONAL DATA (if byte 7 bit 7 is on)	

Note : Bit 7 is the most significant bit and bit 0 is the least significant bit.

Note 1: When FU status byte 5 is 00 then command is complete.

Note 2: Where additional data follows the nine fiscal status bytes.

Note 3: When FU return code is 43 hex. (67_{10}), it means that no error is indicated on this status message.

Figure 15. Printer and Fiscal Unit Status - KR3/KR5 Models - Part 3 of 3

The FU return codes are defined in 11.0, “Fiscal Unit Return Codes” on page 173 .

6.6.1 Version/Country Code Definitions

- Country Name = Italy
- Models = KR3 and KR5
- Country Version (hardware model) = 00 (4610 SureMark RS-485 - Protocol SIO - Cable 7)
- Country Code = 01
- Country Version + Country Code:
  - Hexadecimal = 01
  - Decimal = 01
- Fiscal Microcode EC Level = 43

6.7 Error Conditions

Errors encountered during command execution are processed as follows:

- Command processing is suspended.
- Internal accumulators and counters are restored to their original value (the value they had before the command in error was received).
- An error is included in the final status sent over the communication link.
  The error type indicates the cause of the abnormal termination.
- The application program can resend the same command again or any other command that is valid for the procedure that is in progress.

To warn the operator that the same line could appear more than once for the same item, an overlay string (″###″) is provided by microcode.
This overlay operation is activated by the application program by setting the retry bit in the repeated command.
The retry bit has effect only on the following commands:

- D2 - Item Sale
- D3 - Negative Item Sale
- D5 - Payment
- D8 - Not Paid
- E0 - Print Fiscal Receipt
- E1 - Print Fiscal Invoice
- E2 - Print Accompanying Document
- E3 - End Fiscal Receipt
- E4 - End Fiscal Invoice
- E5 - End Accompanying Document

The string ″###″ overlays the first 3 characters of the printed line.

Note - check and credit slip printing does not use the retry bit.

Only exception to the above process is the recovery from error occurred during close SP (Closure), FM report, end transaction and cancel transaction.

- 13 cmd. - Close Sale Period On receipt of first command, after error, the closure function is completed in one of the following two ways:

  1. FM already updated. The close sale period is terminated as if error did not occur.
  2. FM not yet updated. The daily data are restored as they were before close sale period and the customer slip is voided.

- 15 cmd. - Fiscal Memory Report On receipt of first command, after error, the report is terminated and the slip is voided.
- 06 cmd. - End Transaction Only end transaction or cancel transaction commands are accepted.
- 07 cmd. - Cancel Transaction Only cancel transaction command is accepted.

6.8 Power Line Disturbance (PLD)

When a PLD occurs the FU goes in a power off state.
When power is restored the microcode checks:

- If no command was in progress a normal IPL is performed.
- If command was in progress then internal accumulators and counters are restored to their original value (the value they had at PLD time).
  A bit (PLD bit) is included in the IPL status sent over the communication link.
  The PLD bit indicates to the application that the last command sent was not executed because of PLD.
- If no command was in progress but one line in buffer wasn't printed. In this case, when power is restored, the stored line is printed and the string ("###") overlays the first 3 characters.

  The string ("###") is to warn the operator that the same line could appear more than once.

The IPL routines guaranties that accumulators and counters are restored to their original values, but no actions can be performed on totally or partially printed lines.

Only exception to the above process is the recovery from PLD occurred during close SP (Closure) and FM report.

- 13 cmd. - Close Sale Period On IPL completion, after PLD, the closure function is completed in one of the following two ways:

  1. FM already updated. The close sale period is terminated as if PLD did not occur.
  2. FM not yet updated. The daily data are restored as they were before close sale period and the customer slip is voided.

- 15 cmd. - Fiscal Memory Report On IPL completion, after PLD, the report is terminated and the slip is voided.

7.0 Accumulators and Counters

To describe how the microcode maintains amounts and counters printed on various reports and stored in FM it is necessary to define some internal accumulators and counters.

7.1 Transaction Accumulators

The following accumulators are used during a transaction:

	RANGE Min	Max
Tra_Totl (Total)	0	2147483647
Tra_Retn (Returns Total)	-2147483648	2147483647
Tra_Void (Voids Total)	-2147483648	2147483647
Tra_Bonu (Bonus Total)	-2147483648	2147483647
Tra_Disc (Discounts Total)	-2147483648	2147483647
Tra_Empt (Empties Total)	-2147483648	2147483647
Tra_Misc (Miscellaneous Total)	-2147483648	2147483647
Tra_Notp (Not Paid Total)	0	2147483647
Tra_Paid (Payment Total)	0	2147483647
Tra_Paid (Amount Due/Change Due)	-2147483648	2147483647

Figure 16. Transaction Accumulators.

7.2 Daily Accumulators

The following accumulators are used during a SP:

	RANGE Min	Max
Day_Totl (Total)	0	4294967295
Day_Retn (Returns Total)	-2147483648	2147483647
Day_Void (Voids Total)	-2147483648	2147483647
Day_Bonu (Bonus Total)	-2147483648	2147483647
Day_Disc (Discounts Total)	-2147483648	2147483647
Day_Empt (Empties Total)	-2147483648	2147483647
Day_Misc (Miscellaneous Total)	-2147483648	2147483647
Day_Invc (Invoices Total)	0	4294967295
Day_Recp (Fiscal Receipt Total)	0	4294967295
Day_Canc (Cancel Transaction Total)	-2147483648	2147483647
Day_Notp (Not Paid Total)	0	2147483647

Figure 17. Daily Accumulators.

7.3 Daily Counters

The following counters are used during a SP:

		RANGE Min	Max
Day_N_Vouc	(Fiscal Voucher Number)	0	9999
Day_N_Canc	(Cancel Fiscal Voucher Number)	0	9999
Day_N_Invc	(Fiscal Invoice Number)	0	9999
Day_N_CInvc	(Cancel Fiscal Invoice Number)	0	9999
Day_N_Recp	(Fiscal Receipt Number)	0	9999
Day_N_CRecp	(Cancel Fiscal Receipt Number)	0	9999
Day_N_Accd	(Accompaning Document Number)	0	9999
Day_N_CAccd	(Cancel Accompaning Document Number)	0	9999
Day_N_NFR_CR	(Non-Fiscal Reports Number - CR Station)	0	9999
Day_N_NFR_SJ	(Non-Fiscal Reports Number - SJ Station)	0	9999
Day_N_NFR_DI	(Non-Fiscal Reports Number - DI Station)	0	9999
Day_N_NFR_EJ	(EJ Fiscal Reports Number - DI Station)	0	9999
Day_N_Check	(Check Number)	0	9999
Day_N_CredC	(Credit Card Number)	0	9999
Day_N_FMR	(Fiscal Memory Report Number)	0	9999

Figure 18. Daily Counters.

7.4 Lifetime Counters

The following counters are used during a FP lifetime:

		RANGE Min	Max
Lif_N_Ract	(Repair Action Number)	0	200
Lif_N_Clos	(Closure Number)	0	3840
Lif_N_CF	(Compact Flash Number)	0	9999

Figure 19. Lifetime Counters.

8.0 Fiscal Unit

8.1 Fiscal Unit States

In this section are defined the FU states that are important for the comprehension of the fiscal rules.

- **SALE PERIOD IN PROGRESS**

  This state indicates that since the execution of the close SP procedure at least one of the following commands have been executed:

  D2 - Item Sale
  D3 - Negative Item Sale
  15 - Fiscal Memory Report
  E0 - Print Fiscal Receipt
  E1 - Print Fiscal Invoice
  E2 - Print Accompanying Document

  This state is ended by close sale period (13 cmd.).

- **SALE TRANSACTION IN PROGRESS**

  ST is in progress when any one of the following commands have been executed:

  D2 - Item Sale
  D3 - Negative Item Sale

  This state is ended by:

  06 - End Transaction
  07 - Cancel Transaction

  During this process a FV is printed.

- **FISCAL RECEIPT IN PROGRESS**

  Fiscal receipt is in progress when the following command has been executed:

  E0 - Print Fiscal Receipt

  This state is ended by one of the following commands:

  E3 - End Fiscal Receipt
  0F - Cancel Fiscal Receipt

- **FISCAL INVOICE IN PROGRESS**

  Fiscal invoice is in progress when the following command has been executed:

  E1 - Print Fiscal Invoice

  This state is ended by one of the following commands:

  E4 - End Fiscal Invoice
  10 - Cancel Fiscal Invoice

- **PRINT ACCOMPANYING DOCUMENT IN PROGRESS**

  Accompanying document is in progress when the following command has been executed:

  E2 - Print Accompanying Document

  This state is ended by:

E5 - End Accompanying Document
11 - Cancel Accompanying Document

- **NON-FISCAL REPORT IN PROGRESS**

  Non-fiscal report is in progress when the following command has been executed:

  DD - Start Non-Fiscal Report

  This state is ended by:

  DE - End Non-Fiscal Report

- **PRINT CHECK AND CREDIT SLIP**

  A check or a credit slip is in progress when either of the following commands has been executed:

  C0 - Print Check or Credit Slip
  C3 - Check or Credit Slip Line Feed

  This state is ended by:

  C1 - End Check or Credit Slip
  C2 - Cancel Check or Credit Slip

8.2 A5 Pattern

The fiscal microcode writes the pattern ″A5″ in address 82 (hexa) in the FM to be able to detect the eprom connection.

It is read for all fiscal commands.
If it isn′t found, the FP returns error code 109.

8.3 Operational Modes

The FU can operate in three different modes depending on FIM setting.

1. Non-Fiscal Mode
   - Fiscal rules are not applied and FM is not used.
   - Training mode is not allowed.
2. Fiscal Mode - No Training Mode
   - Fiscal rules are applied and FM is used.
3. Fiscal Mode - Training Mode
   - Fiscal rules are applied and FM is not used.
   - Training mode must be set out of the SP.
   - In this mode are allowed only ST operations.

8.4 Fiscal Unit Rules

The following rules are applicable when FIM is set:

- Before execution of any command the microcode checks that two displays are operational. The displays to be monitored are defined using ″Set Display Address″ (1A cmd.).
- Each line printed in CR station is replicated in SJ station.

The only exceptions are:

- Store Header
  It is never printed in SJ station.
- Fiscal LOGO.
  Fiscal LOGO printed in CR station is not replicated in SJ station.
- Fiscal LOGO is printed in SJ station at the end of closure report and then, after that, before executing for the first time any one of the following commands:
  - 01 - Print Store Header
  - 13 - Close Sale Period
  - 15 - Fiscal Memory Report

1. Each time the RAM is cleared using the hardware J4/CE jumper, the repair action counter residing in FM is increased by 1 and the FU current time is recorded for later printing on closure report.
2. FM may not be disconnected.
   The microcode checks for it before execution of the following commands:
   - 01 - Print Store Header
   - 06 - End Transaction
   - E0 - Print Fiscal Receipt
   - E3 - End Fiscal Receipt
   - E1 - Print Fiscal Invoice
   - E4 - End Fiscal Invoice
   - E2 - Print Accompanying Document
   - E5 - End Accompanying Document
   - 15 - Fiscal Memory Report
   - 13 - Close Sale Period
   - C0 - Print Checks or Credit Slips

   If the FM is not connected an error is reported to the application.
   Recovery from this error requires that the RAM is cleared using the hardware J4/CE jumper.
3. Normal printing lines received when not in any of the ″sale transaction in progress″ or ″non-fiscal reports in progress″ states, is preceded and followed by the line ″NON FISCALE″.
4. Line feed in DI station is processed inserting the message line ″NON FISCALE″ after 30 consecutive line feeds including the line feeds associated with print lines except if a valid fiscal document state is in progress.

8.5 Fiscal Operations

In this section is given a detailed description for executing fiscal procedures and their effect on FM, accumulators, counters and printed slips.

8.5.1 Printer Operations

The following bigtop print modes are supported:

- 12 CPI
- 15 CPI
- 12 CPI Char Print Mode Mask
- 15 CPI Char Print Mode Mask
- 15 CPI Emphasized
- 12 CPI Emphasized

- 15 CPI Double-High
- 15 CPI Double-High, Emphasized

The print mode is controlled by the application program by setting the required bits in the command extension. The selected print mode applies to all characters of the same line.

It is also possible to print one or more substrings, within the same printed line, with a double-wide character size.
The size of each double-wide substring can range from one character to the number of characters of the printed line.
The double-wide substring is enabled by delimiting it with the following special control characters:

- 0x0e = enable double-wide
- 0x14 = disable double-wide

8.5.2 Char Print Mode Mask

8.5.2.1 Description

The print mode is controlled by the application program by setting the required bits in the command extension. The selected print mode applies to all characters of the same line.
It is also possible to print one or more substrings, in the same printed line, with a specific print mode. Each characted of the description has a ″Char Print Mode Mask″ byte (see below) associated to it.
To apply a specific print mode to one or more characters in the same printing line, you must specify that on the respective ″Char Print Mode Mask″ bytes.

8.5.2.2 Command List

The ″Char Print Mode Mask″ will be allowed for the followings commands:

- D7 - Set Store Header
- D2 - Item Sale
- D3 - Negative Item Sale
- D5 - Payment
- D8 - Not Paid
- EA - Normal Printing Lines in CR/SJ

The ″Char Print Mode Mask″ will be available only in CR station.

8.5.2.3 Command Extension

To associate a ″Char Print Mode Mask″ to the command description, the bit 5-3 of the command extension are used to define this special print mode, as follows:

```
-----------------------------------------------------------------

BYTE BIT  CONTENT                                          TYPE   LENGTH

 ..............................................................
 ..............................................................
 3        Cmd. Extension                                   hex        1
     ............................
     ............................
     5-3  Print Mode
          000 = 15 CPI
          001 = 12 CPI
          010 = 15 CPI Char Print Mode Mask
          011 = 15 CPI Double-High
          100 = 15 CPI Emphasized
          101 = 12 CPI Emphasized
          110 = 12 CPI Char Print Mode Mask
          111 = 15 CPI Double-High, Emphasized
 ..............................................................
 ..............................................................

-----------------------------------------------------------------
```

8.5.2.4 Byte

The format for each "Char Print Mode Mask" byte is the following:

```
     ------------------------------------------------

     BIT     FORMAT

     7       1 = Underline
     6       1 = Inverted Mode
     5       1 = Double-Wide                (Note 1)
     4       1 = Double-High
     3       1 = Emphasized
     2       1 = Overline
     1-0     Reserved (always=0, else RC=103)

     ------------------------------------------------

     Note 1: The size of each double-wide substring can range from one character
             to the number of characters of the printed line.
             So, if the description commands exceeds the printed line, will be
             truncated.
```

8.5.2.5 Command Example:

```
          1        2        3            4                  5                  6
     4567890123456789012345678901234567   8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
Cmd '<---- Description -----><-Amount->  <------------ Char Print Mode Mask ------------>'

D200'ABCDEFGHIJKLddddddddddee0000001000x'80402010080408C0E0F0F8FC000000000000000000000000'
```

8.5.2.6 Printout Example:

```
              Print Position
MSG          1         2         3
NUM 12345678901234567890123456789012345678
     -------------------------------------
    .                                     .
    .                                     .
    |ABCDEFGHIJKLddddddddddd    aa.aaa.aaa  | a..a = Item Amount
    .                                     .
    .                                     .
     -------------------------------------

     Where:
           A is printed in Underline
           B is printed in Inverted Mode
           C is printed in Double-Wide
           D is printed in Double-High
           E is printed in Emphasized
           F is printed in Overline
           G is printed in Underline
           H is printed in Underline + Inverted Mode
           I is printed in Underline + Inverted Mode + Double-Wide
           J is printed in Underline + Inverted Mode + Double-Wide + Double-High
           K is printed in Underline + Inverted Mode + Double-Wide + Double-High + Emphasized
           L is printed in Underline + Inverted Mode + Double-Wide + Double-High + Emphasized + Overline
           ddddddddddd is printed without format (mask = 00)
           ee are not printed (were truncated because of the double-wide chars selected)
```

8.5.3 Reserved Characters

Any of the following characters, used to generate the stylized MF, may not appear in any description string:

- ASCII decimal value 216 (xD8)
- ASCII decimal value 217 (xD9)
- ASCII decimal value 218 (xDA)

The microcode checks for them, and if they are present, they are replaced with ′/′ character.

8.5.4 Printed Amounts

The following rules apply to amounts printed on slips:

- A full stop character will be inserted every three digits from right to left, starting from the units.
- When amount and description fields overlap the amount will overlay the description.
- The amount string will be always preceded by at least one blank character.

8.5.5 Automatic Slip Cut

The following slips will be automatically cut (partial cut):

- IPL messages (when not in ST nor in non-fiscal report in CR station).

8.6 Non-Fiscal Mode

When the FP is serialized and not in FIM, the NFM is present, that is to say, after the Serialize Fiscal Memory (1B cmd.) is issued and before that the Set Fiscal Mode (18 cmd.) is issued.

8.6.1 Non-Fiscal Mode Rules

- Fiscal rules are not applied and FM is not used.
- Training mode is not allowed inside this mode.
- The manufacturer id, IBM manufacturing id, FM serial number and fiscal logo are not printed in any document.
- Set Date and Time:
  - Set Date and Time (16 cmd.) cannot be executed when SP is in progress or if the J4/CE jumper is active, the new date must be the current date or one day ahead.
  - Date can be set to the current date or one day ahead in normal operations.
  - After operation of J4/CE jumper any date can be set later than last closure, if any.
- FV number is not printed.
- Electronic Read Fiscal Memory Tables (DA cmd.) and Fiscal Memory Report (15 cmd.) are not allowed.
- Accumulators and counters are restored to zero when FIM is set.
- The ″NON FISCALE″ message line will be inserted every 6 lines printed.
- Normal Printing Lines:
  - When in ST state no more than 645 normal printing lines in CR station can be sent. On receipt of the 646 normal printing line the ST will be voided by microcode.
  - When print store header has been executed, but ST is not yet in progress, if more than 645 normal printing lines in CR station are received, the FV will be voided by microcode.

9.0 Electronic Journaling

(ONLY FOR KD3/KD5/KR3/KR5 MODELS)

9.1 Electronic Journaling Operation

The 4610 SureMark RS-485/RS-232 FP includes the hardware and related microcode in order to implement an EJ method. Briefly, this method consists in saving all fiscal relevant data printed in the CR station in the CF inserted in the respective slot.
To be considered valid for fiscal and audit purposes, this data is signed safely at the end of the JP using a private/public key signature method.

9.2 Compact Flash

The fiscal microcode EC level was tested with the following CF brands:

BRANDS	MBytes			
	64	128	512	
IBM	X			
Kingston	X	X	X	(Note 1)
SanDisk	X	X		
Simpletech	X	X		
Viking	X	X		

Note 1: Kington CF (64 and 128 MBytes) are not supported for KR3/KR5 models.

10.0 Command Set Reference

A command consists of a string of data received from the serial communication link. The minimum length of a command string is four byte; the maximum length depends on the command type.
The microcode checks that the length is not less than the minimum required for the command type specified in byte 2. A command is composed of four parts:

1. Command Prefix.

   It consists of two constant bytes x'1B66' (ESC f).
   Command prefix is not present in system commands.

2. Command Code.

   Command code is in byte 2 of command string. It identifies the command to be executed.
   Its value can range from x'00' to x'FF'.

3. Command Extension.

   Command extension is in byte 3 of command string. It contains command options.
   Reserved bits must be set to 0. Only exception is retry bit which is ignored by microcode on commands where it has not any effect.

4. Command Data.

   Command data starts from byte 4 of command string. Its content depends on the command type.
   Character strings must be left aligned.
   Numeric strings must be right aligned.
   Non significant digits in numeric fields can be blank.

At least one status is sent in response to a command.
The only exception is related to system commands: no response is given for system commands not recognized by the FU.
The format of the printer and FU status is described in 6.4, "Printer and Fiscal Unit Status" on page 42.

Note - 7 is the most significant bit and 0 is the least significant bit.

10.1 00 - SYSTEM COMMANDS

10.1.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0		00 - System Commands	hex	1
1		Command 10 = Test 20 = Status 40 = POR 80 = EC Level	hex	1

System commands are processed as follows:

1. Test

   Firstly a FU test is performed and then the status is sent over the communication link.

2. Status

   The FU status bytes are sent over the communication link.

3. POR

   The microcode performs a software FU POR.

4. EC level

   The FU status containing the ec level is sent over the communication link.

If command byte 1 is different than those defined above no processing is performed and no response is given.

10.2 INITIALIZATION COMMANDS

The following commands controls the FP initialization.

- 1B - Serialize Fiscal Memory
- 16 - Set Date and Time
- 18 - Set Fiscal Mode
- 1E - Set Fixed Vendor Information
- 1A - Set Display Address
- D7 - Set Store Header

10.2.1 1B - SERIALIZE FISCAL MEMORY

This command is used at the end of the manufacturing process to write the unit manufacturer id, IBM manufacturing id and FM serial number in a fixed area of the FM.

10.2.1.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		1B - Serialize Fiscal Memory	hex	1	
3		Cmd. Extension	hex	1	
	7-0	Reserved (always = '0x00')			
4-5		Manufacturer ID	ASCII	2	(Note 1)
6-7		IBM Manufacturing ID	ASCII	2	
8-13		FM Serial Number	ASCII	6	

Note 1: Assigned by Government.

10.2.1.2 Serialize Fiscal Memory Rules

- This command can be executed only once and updates the FM serial number and fiscal logo table in FM.
- **(ONLY FOR KD3/KD5/KR3/KR5 MODELS)**
  The public and private key must be set by Set Public and Private Key (66 cmd.) before the 1B cmd. execution. Otherwise, the return code RC = 122 will be returned.

10.2.2 16 - SET DATE AND TIME

This command is used to update the FP time of day clock.

10.2.2.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		16 - Set Date and Time	hex	1
3		Cmd. Extension	hex	1
	7-0	Reserved (always = '0x00')		
4-5		Day	ASCII	2
6-7		Month	ASCII	2
8-11		Year	ASCII	4
12-13		Hours	ASCII	2
14-15		Minutes	ASCII	2
16-17		Seconds	ASCII	2

10.2.2.2 Set Header Rules

- This command cannot be executed when SP is in progress or if the J4/CE jumper is active, the new date must be the current date or one day ahead.
- Date can be set to the current date or one day ahead in normal operations.
  After operation of J4/CE jumper any date can be set later than last closure, if any.

10.2.3 18 - SET FISCAL MODE

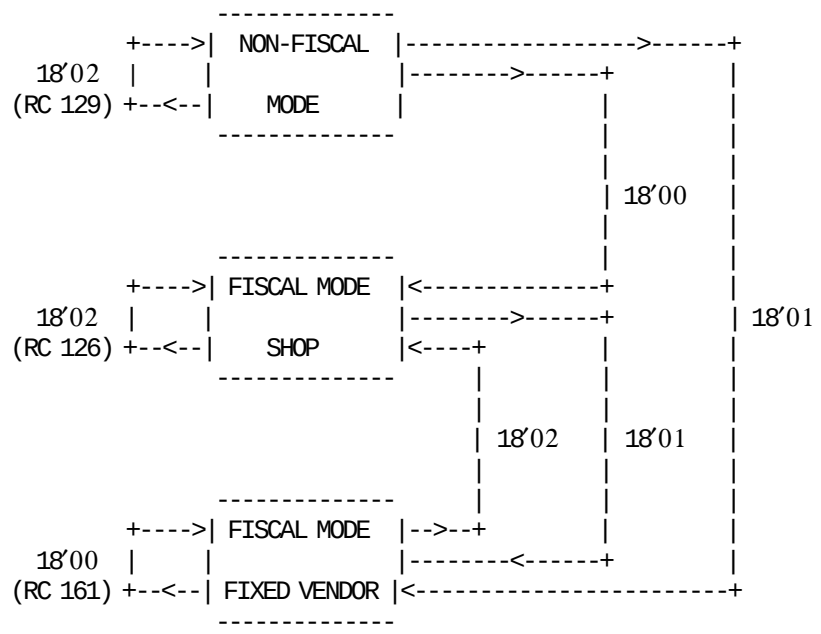
This command is used to set the FP to FIM. In this mode the information is writen in FM.
Once this procedure has been executed the FU will operate according to the configured country fiscal law.

10.2.3.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		18 - Set Fiscal Mode	hex	1
3		Set Type 00 = Shops 01 = Fixed Vendor 02 = Convert from Fixed Vendor to Shops	hex	1
4-7		Password	ASCII	4

10.2.3.2 Set Fiscal Mode Rules

- In this mode the SP totals are stored in FM.
- The following graphic state shows the differents FIM's and the converts allowed.



10.2.4 1E - SET FIXED VENDOR INFORMATION (POSTAZIONI FISSE)

This command is used to load the fixed vendor information into the FM.

10.2.4.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		1E - Set Fixed Vendor Information	hex	1
3		Cmd. Extension	hex	1
	7-6	Reserved (always = '0')		
	5-3	Print Mode 000 = 15 CPI 001 = 12 CPI 010 = Reserved 011 = Reserved 100 = 15 CPI Emphasized 101 = 12 CPI Emphasized 110 = Reserved 111 = Reserved		
	2-0	Line Number 001 = Reserved 010 = First (to set PARTITA IVA N.) 011 = Second (to set REC. N.) 100 = Third (to set C.C.I.A.A. di)		
4-7		Password	ASCII	4
For Line Number = First (010)				
8-27		PARTITA IVA N.	ASCII	20
For Line Number = Second (011)				
8-27		REC. N.	ASCII	20
For Line Number = Third (100)				
8-27		C.C.I.A.A. di	ASCII	20

10.2.4.2 Set Fixed Vendor Information Calculations

There are not calculations for this command.

10.2.4.3 Set Fixed Vendor Information Rules

- This command can be issued
  - If the FIM for fixed vendor (18 cmd - Cmd. Extension 01) was set previously.
  - Out of the SP.
- This command must be executed three times to set the vendor information for ″PARTITA IVA N.″, ″REC. N.″ and ″C.C.I.A.A. di″ respectively.
- The fixed vendor information is printed as store header lines lines 1 through 3 just like for shops.
- The fixed vendor information is updated in the fixed vendor information table in FM.
- The fixed vendor information can be changed 10 times.

10.2.5 1A - SET DISPLAY ADDRESS

ONLY FOR GR3/GR5/KR3/KR5 MODELS

This command is used to define the serial I/O addresses of the two displays (operator and customer) required by fiscal law.

10.2.5.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		1A - Set Display Address	hex	1	
3		Cmd. Extension	hex	1	
	7-0	Reserved (always = '0x00')			
4-7		Password	ASCII	4	
8-9		First Address	ASCII	2	(Note 1, 2)
10-11		Second Address	ASCII	2	(Note 1, 2)

Note 1: Specify the ASCII representation of the hexadecimal address.
Example: for hexadecimal address x'2A' specify ASCII characters '2','A'.
Valid addresses are:
- x'20' to x'27'
- x'2A' to x'2F'
- x'5C' to x'5D'
- x'1C' to x'1D'

Note 2: This set address is mandatory.

10.2.5.2 Set Display Address Rules

- The fiscal microcode will check the HOST communication channel to detect that these displays are attached. Each display type has a different HOST address.
  The microcode will check for displays at the HOST addresses set with this command. therefore is very important to set the correct display address for the fiscal logic to detect these devices.
- This command must be executed out of the SP.
- Is mandatory to set the first and second addresses.

10.2.6 D7 - SET STORE HEADER

This command is used to store the header into FP battery backed up RAM.

10.2.6.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		D7 - Set Store Header	hex	1	
3		Cmd. Extension	hex	1	
	7-6	Reserved (always = '0')			
	5-3	Print Mode			
		000 = 15 CPI			
		001 = 12 CPI			
		010 = 15 CPI, Char Print Mode Mask			(Note 1)
		011 = 15 CPI, Double-High			(Note 2)
		100 = 15 CPI, Emphasized			
		101 = 12 CPI, Emphasized			
		110 = 12 CPI, Char Print Mode Mask			(Note 1)
		111 = 15 CPI, Double-High, Emphasized			(Note 2)
	2-0	Header Line Number			(Note 3)
		001 = Salutation Msg			
		010 = First			
		011 = Second			
		100 = Third			
		101 = Fourth			
4-39		Data	ASCII	36	
		If (Byte 3 - bit 5-3 = 010 or 110) specify:			
40-75		Char Print Mode Mask	hex	36	(Note 4)

Note 1: If this print mode was selected, the double-wide control characters (x0E and x14) are NOT allowed.

Note 2: These print modes are only allowed for the salutation message, where the double-wide control characters (x0E and x14) are also allowed.

Note 3: When FIM for fixed vendor was select, only salutation message and fourth header lines can be set.
When FIM for shops was select, all header lines can be set.

Note 4: See 8.5.2, "Char Print Mode Mask" on page 60 to complete Char Print Mode Mask.

10.2.6.2 Set Store Header Rules

- The header lines are stored in RAM memory.
- The header lines are erased when RAM is cleared by activation of the J4/CE jumper and is necessary to set them again.
- This command must be executed out of the sales period.

10.3 SALE TRANSACTION COMMANDS

The following commands controls a FV.

- 01 - Print Store Header
- D2 - Item Sale
- D3 - Negative Items
- D4 - Subtotal/Total Transaction
- D5 - Payment
- D8 - Not Paid
- 06 - End Transaction
- 07 - Cancel Transaction

10.3.1 Sale Transaction Sequence Diagram

The following diagram shows the correct sequence commands to produce a FV.

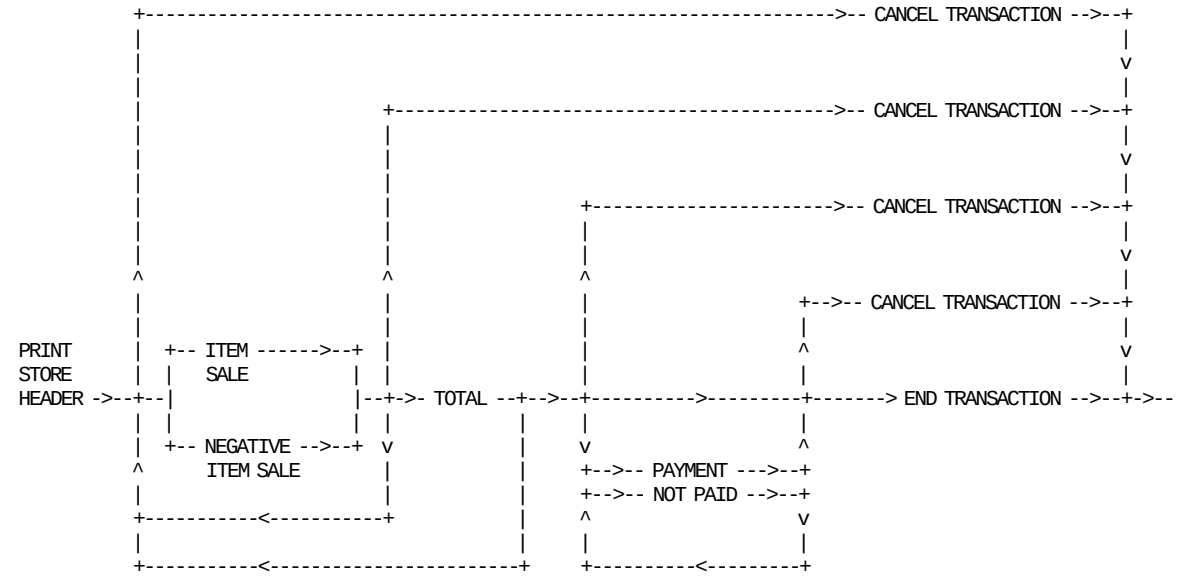


Figure 20. Sale Transaction Sequence Diagram

10.3.2 Fiscal Voucher Rules

- The FV's produced are identified by consecutive numbers.
  Number 1 is assigned to the first FV produced after close sale period report.
- Barcode printing is allowed in any place of the FV.
- Normal Printing Lines:
  - The normal printing lines are issued with the EA cmd.
  - The normal printing lines can be printed after of:
    - Header
    - Item Sale
    - Negative Item Sale
    - Transaction Total
    - Payment

— Not Paid

- – Only the FIRST normal printing line issued after that (Tra_Paid >= Tra_Totl) will be printed
- before the ″RESTO″ message line.
  - – **ONLY FOR GR3/GR5 MODELS**
    - — No more than 645 normal printing lines in CR or SJ station are allowed during a FV.
    - — Normal printing lines in SJ station are replicated in CR station.
    - — Normal printing lines in CR station are replicated in SJ station.
  - – **ONLY FOR KD3/KD5/KR3/KR5 MODELS**
    - — No more than 645 normal printing lines in CR station are allowed during a FV.
  - – Excess of normal printing lines (more than 645):
    - — Before the payment phase is in progress, the FV is cancelled.
    - — If payment is in progress (with payment o notpaid amount equal 0), the FV is cancelled.
    - — If payment is in progress (with payment o notpaid amount greater than 0), the error code 069 is returned.

- Amount field in command string of item/negative item can be blank. This allows the processing of items with description longer than the number of characters allowed in one line.
  Consecutive item/negative item with blank amount are not allowed.

- Minus Sign
  - – Is printed for negative items with rectify = NO.
  - – Is printed for payment/notpaid with rectify = YES.

- The following identification characters are printed for negative items:
  - – **R** for type = RETURN
  - – **A** for type = VOID
  - – **B** for type = BONUS
  - – **S** for type = DISCOUNTS
  - – **C** for type = EMPTIES
  - – **V** for type = MISCELLANEOUS

- String ′TOTAL′:
  - – Any command that would print ′TOTAL′ character string (any case), during a ST, is not accepted. Specifically, the string ′TOTAL′ can be allowed in the header or fixed vendor ID character strings.
  - – String ′TOTAL′ (any case) may not be present in any command except for the set store header (D7 cmd.).

- The transaction total accumulator must NOT be negative when subtotal/total transaction (D4 cmd.) is received.

- Payment/Not Paid is optional.
  Once the procedure has been started the following rules are applied:
  - – Not paid amount must not exceed the transaction total.
  - – End transaction (06 cmd.) is executed only if the total paid amount is not less than the transaction total amount.

10.3.3 01 - PRINT STORE HEADER

This command is used to print the header loaded in RAM memory.

10.3.3.1 Command Format

BYTE	CONTENT	TYPE	LENGTH
0-1	1B66 - cmd prefix	hex	2
2	01 - Print Store Header	hex	1
3	Cmd. Extension	hex	1
7-0	Reserved (always = '0x00')		

10.3.3.2 Print Store Header Rules

- The store header is loaded in RAM memory and printed in CR station.
- The fixed vendor information is printed as header lines 1 through 3.

10.3.4 D2 - ITEM SALE

This command is used to record the amount of an item and to print a line containing description and amount.

10.3.4.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		D2 - Item Sale	hex	1
3		Cmd. Extension	hex	1
	7	Retry 0 = NO 1 = YES		
	6	Reserved (always = '0')		
	5-3	Print Mode 000 = 15 CPI 001 = 12 CPI 010 = 15 CPI Char Print Mode Mask 011 = Reserved 100 = 15 CPI, Emphasized 101 = 12 CPI, Emphasized 110 = 12 CPI, Char Print Mode Mask 111 = Reserved		
	2-0	Reserved (always = '0')		
4-27		Description	ASCII	24
28-37		D2_Amount	ASCII	10 (Note 1, 2)
		If (Byte 3 - bit 5-3 = 010 or 110) specify:		
38-61		Char Print Mode Mask	hex	24 (Note 3)

Note 1: D2_Amount string can be blank.

Note 2: Max D2_Amount = 2 147 483 647.

Note 3: See 8.5.2, "Char Print Mode Mask" on page 60 to complete Char Print Mode Mask.

10.3.4.2 Item Sale Calculations

$$Tra\_Totl = Tra\_Totl + D2\_Amount$$

10.3.5 D3 - NEGATIVE ITEM SALE

This command is used to record the amount of an negative item and to print a line containing description and amount.

10.3.5.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		D3 - Negative Item Sale	hex	1
3		Cmd. Extension	hex	1
	7	Retry 0 = NO 1 = YES		
	6	Rectify 0 = NO 1 = YES		
	5-3	Print Mode 000 = 15 CPI 001 = 12 CPI 010 = 15 CPI Char Print Mode Mask 011 = Reserved 100 = 15 CPI, Emphasized 101 = 12 CPI, Emphasized 110 = 12 CPI, Char Print Mode Mask 111 = Reserved		
	2-0	Negative Item Type 0 = RETURN 1 = VOID 2 = BONUS 3 = DISCOUNT 4 = EMPTY 5 = MISCELLANEOUS		
4-27		Description	ASCII	24
28-37		D3_Amount	ASCII	10 (Note 1, 2)
		If (Byte 3 - bit 5-3 = 010 or 110) specify:		
38-61		Char Print Mode Mask	hex	24 (Note 3)

Note 1: D3_Amount string can be blank.

Note 2: Max D3_Amount = 2 147 483 647.

Note 3: See 8.5.2, “Char Print Mode Mask” on page 60 to complete Char Print Mode Mask.

10.3.5.2 Negative Item Sale Calculations

- **Rectify = NO**

  Tra_Totl = Tra_Totl − D3_Amount
  Tra_Retn = Tra_Retn + D3_Amount (if type = RETURN)
  Tra_Void = Tra_Void + D3_Amount (if type = VOID)
  Tra_Bonu = Tra_Bonu + D3_Amount (if type = BONUS)
  Tra_Disc = Tra_Disc + D3_Amount (if type = DISCOUNTS)

Tra_Empt = *Tra_Empt* + *D*3_*Amount* (if type = EMPTIES)
Tra_Misc = *Tra_Misc* + *D*3_*Amount* (if type = MISCELLANEOUS)

- **Rectify = YES**

  Tra_Totl = *Tra_Totl* + *D*3_*Amount*
  Tra_Retn = *Tra_Retn* − *D*3_*Amount* (if type = RETURN)
  Tra_Void = *Tra_Void* − *D*3_*Amount* (if type = VOID)
  Tra_Bonu = *Tra_Bonu* − *D*3_*Amount* (if type = BONUS)
  Tra_Disc = *Tra_Disc* − *D*3_*Amount* (if type = DISCOUNTS)
  Tra_Empt = *Tra_Empt* − *D*3_*Amount* (if type = EMPTIES)

10.3.6 D4 - SUBTOTAL/TOTAL TRANSACTION

This command is used to calculate the subtotal or total transaction and verify that the total amount accumulated by the FU matches the amount accumulated by the application program.

10.3.6.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		D4 - Subtotal/Total Transaction	hex	1	
3		Cmd. Extension	hex	1	
	7-6	Reserved (always = '0')			
	5-0	Print Mode			(Note 1)
		00 = 15 CPI			
		20 = 15 CPI			
		01 = 15 CPI			
		21 = 15 CPI, Emphasized			
		19 = 15 CPI			
		39 = 15 CPI, Emphasized			
4-13		D4_Amount	ASCII	10	

Note 1: The default is single-wide and single-high print mode.

10.3.6.2 Subtotal/Total Transaction Rules

- GR3/GR5 Models
  - "AMMONT" (6 msg.) and D4_Amount are printed according to the print mode selected in D4 cmd. (byte 3 - bits 5-0).
  - "TOTALE LIRE and TOTALE EURO" (71 & 72 msg's) are always printed in double-wide and the emphasized mode is applied according to the print mode selected in D4 cmd. (byte 3 - bits 5-0). D4_Amount is printed according to the print mode selected in D4 cmd. (byte 3 - bits 5-0).
- KR3/KR5 and KD3/KD5 Models
  - "AMMONT" (6 msg.) and D4_Amount are always printed in single-high and emphasized.
  - "TOTALE EURO" (72 msg.) and D4_Amount are always printed in double-high and emphasized.

10.3.7 D5 - PAYMENT

This command is used to apply the paid amount.

10.3.7.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		D5 - Payment	hex	1	
3		Cmd. Extension	hex	1	
	7	Retry 0 = NO 1 = YES			
	6	Rectify 0 = NO 1 = YES			
	5-3	Print Mode 000 = 15 CPI 001 = 12 CPI 010 = 15 CPI, Char Print Mode Mask 011 = Reserved 100 = 15 CPI, Emphasized 101 = 12 CPI, Emphasized 110 = 12 CPI, Char Print Mode Mask 111 = Reserved			(Note 1)
	2-0	Reserved (always = '0')			
4-15		D5_Description	ASCII	12	
16-25		D5_Amount	ASCII	10	(Note 2)
		If (Byte 3 - bit 5-3 = 010 or 110) specify:			
26-37		Char Print Mode Mask	hex	12	(Note 3)

Note 1: Print mode is also applied to "RESTO" line.

Note 2: Max D5_Amount = 2 147 483 647.

Note 3: See 8.5.2, "Char Print Mode Mask" on page 60 to complete Char Print Mode Mask.

10.3.7.2 Payment Calculations

$Tra\_Paid = Tra\_Paid + D5\_Amount$
$Tra\_Amt\_Due = Tra\_Totl - Tra\_Paid$

10.3.8 D8 - NOT PAID

This command is used to apply the not paid amount.

10.3.8.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		D8 - Not Paid	hex	1
3		Cmd. Extension	hex	1
	7	Retry 0 = NO 1 = YES		
	6	Rectify 0 = NO 1 = YES		
	5-3	Print Mode 000 = 15 CPI 001 = 12 CPI 010 = 15 CPI Char Print Mode Mask 011 = Reserved 100 = 15 CPI, Emphasized 101 = 12 CPI, Emphasized 110 = 12 CPI, Char Print Mode Mask 111 = Reserved		
	2-0	Reserved (always = '0')		
4-12		D8_Description	ASCII	9
13-22		D8_Amount	ASCII	10 (Note 1)
		If (Byte 3 - bit 5-3 = 010 or 110) specify:		
23-31		Char Print Mode Mask	hex	9 (Note 2)

Note 1: Max D8_Amount = 2 147 483 647.

Note 2: See 8.5.2, "Char Print Mode Mask" on page 60 to complete Char Print Mode Mask.

10.3.8.2 Not Paid Calculations

Tra_Notp = Tra_Notp + D8_Amount
Tra_Amt_Due = Tra_Totl − Tra_Notp

10.3.9 06 - END TRANSACTION

This command is used to end a FV.

10.3.9.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		06 - End Transaction	hex	1
3		Cmd. Extension	hex	1
	7-0	Reserved (always = '0x00')		
4-7		Store Number	ASCII	4 (Note 1)
8-11		Operator Number	ASCII	4 (Note 1)
12-15		Terminal Number	ASCII	4 (Note 1)

Note 1: These fields are printed on the sale slip as they appear in the command string. Blank characters are assumed if the field is less than 12 bytes, but still greater than 6 bytes.

10.3.9.2 End Transaction Calculation

Day_N_Vouc = *Day_N_Vouc* + 1

Day_Totl = *Day_Totl* + *Tra_Totl*

Day_Retn = *Day_Retn* + *Tra_Retn*
Day_Void = *Day_Void* + *Tra_Void*
Day_Bonu = *Day_Bonu* + *Tra_Bonu*
Day_Disc = *Day_Disc* + *Tra_Disc*
Day_Empt = *Day_Empt* + *Tra_Empt*
Day_Misc = *Day_Misc* + *Tra_Misc*
Day_Notp = *Day_Notp* + *Tra_Notp*

The transaction accumulators are clearing as follows:

Tra_Totl = 0
Tra_Retn = 0
Tra_Void = 0
Tra_Bonu = 0
Tra_Disc = 0
Tra_Empt = 0
Tra_Misc = 0
Tra_Paid = 0
Tra_Notp = 0

10.3.10 07 - CANCEL TRANSACTION

This command is used to cancel a FV.

10.3.10.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		07 - Cancel Transaction	hex	1
3		Cmd. Extension	hex	1
	7-0	Reserved (always = '0x00')		
4-7		Store Number	ASCII	4 (Note 1)
8-11		Operator Number	ASCII	4 (Note 1)
12-15		Terminal Number	ASCII	4 (Note 1)

Note 1: These fields are printed on the sale slip as they appear in the command string. Blank characters are assumed if the field is less than 12 bytes, but still greater than 6 bytes.

10.3.10.2 Cancel Transaction Calculations

Day_N_Vouc = *Day_N_Vouc* + 1 (if any item was sold)
Day_N_Canc = *Day_N_Canc* + 1 (if any item was sold)

Day_Canc = *Day_Canc* + *Tra_Totl*

The transaction accumulators are clearing as follows:

Tra_Totl = 0
Tra_Retn = 0
Tra_Void = 0
Tra_Bonu = 0
Tra_Disc = 0
Tra_Empt = 0
Tra_Misc = 0
Tra_Notp = 0
Tra_Paid = 0

10.3.10.3 Cancel Transaction Rules

- The transaction can be cancelled:
  - After header is printed and before any item sale
  - With items sold
  - During payment
  - By excess of normal printing lines
    - When more than 645 normal printing lines are received and only store header was printed.
    - When more than 645 normal printing lines are received after items were sold.

10.4 FISCAL DOCUMENT COMMANDS

ONLY FOR MODELS WITH DI STATION

A fiscal document consists of a number of description lines printed in DI station.
Last line of fiscal receipt and fiscal invoice contains also an amount.

There are three types of fiscal documents:

- Fiscal Receipt
- Fiscal Invoice
- Accompanying Document

The following commands controls the fiscal documents:

- E0 - Print Fiscal Receipt
- E3 - End Fiscal Receipt
- 0F - Cancel Fiscal Receipt

- E1 - Print Fiscal Invoice
- E4 - End Fiscal Invoice
- 10 - Cancel Fiscal Invoice

- E2 - Print Accompanying Document
- E5 - End Accompanying Document
- 11 - Cancel Accompanying Document

10.4.1 Fiscal Documents Sequence Diagram

The following diagram show the correct command sequence to produce each type of document.

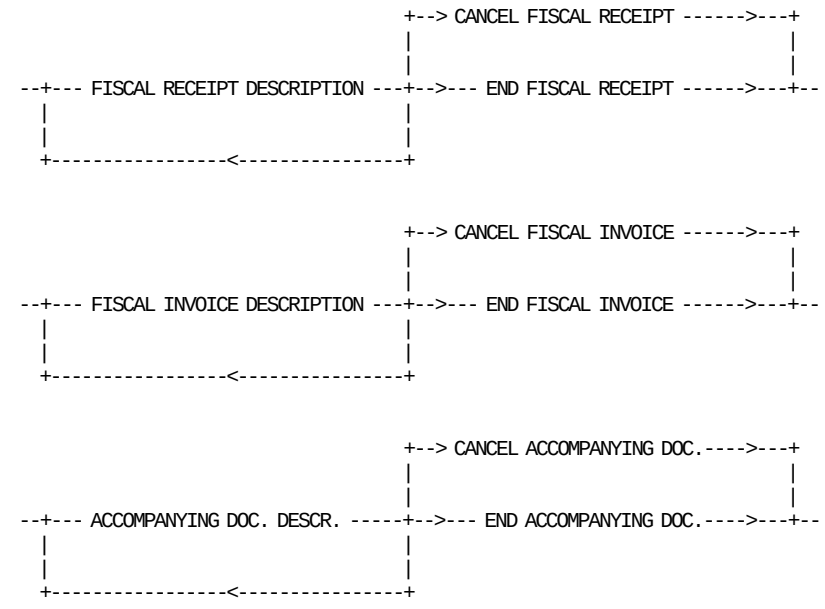


Figure 21. Fiscal Documents Sequence Diagram

10.4.2 Fiscal Documents Rules

- For fiscal receipts, fiscal invoices and accompanying documents, there are no ″NON FISCALE″ messages inserted for line feeds.

10.4.3 E0 - PRINT FISCAL RECEIPT

This command is used to print a fiscal receipt.

10.4.3.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		E0 - Print Fiscal Receipt	hex	1	
3		Cmd. Extension	hex	1	
	7	Retry 0 = NO 1 = YES			
	6	Reserved (always = '0')			(Note 1)
	5-3	Print Mode 000 = 15 CPI 001 = 12 CPI 010 = Reserved 011 = Reserved 100 = 15 CPI, Emphasized 101 = 12 CPI, Emphasized 110 = Reserved 111 = Reserved			
	2-1	Reserved (always = '0')			(Note 1)
	0	Orientation Print 0 = Portrait 1 = Landscape			(Note 2, 3)
4-89		E0_Description	ASCII	86	(Note 4)

Note 1: This field must be filled with zeros (0).

Note 2: The emphasized option is ingnored during landscape orientation print.

Note 3: The print lines sent are from botton-of-form to the top-of-form.

Note 4: E0_Description field will be truncated as follows:
Portrait orientation at 15 CPI to 47 characters
Portrait orientation at 12 CPI to 37 characters
Landscape orientation at 15 CPI to 86 characters
Landscape orientation at 12 CPI to 86 characters

10.4.4 E3 - END FISCAL RECEIPT

This command is used to end a fiscal receipt.

10.4.4.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		E3 - End Fiscal Receipt	hex	1	
3		Cmd. Extension	hex	1	
	7	Retry 0 = NO 1 = YES			
	6	Reserved (always = '0')			(Note 1)
	5-3	Print Mode 000 = 15 CPI 001 = 12 CPI 010 = Reserved 011 = Reserved 100 = 15 CPI, Emphasized 101 = 12 CPI, Emphasized 110 = Reserved 111 = Reserved			
	2-1	Reserved (always = '0')			(Note 1)
	0	Orientation Print 0 = Portrait 1 = Landscape			(Note 2, 3)
4-80		E3_Description	ASCII	77	(Note 4)
81-89		E3_Amount	ASCII	9	

Note 1: This field must be filled with zero/s (0).

Note 2: The emphasized option is ingnored during landscape orientation print.

Note 3: The print lines sent are from botton-of-form to the top-of-form.

Note 2: E3_Description field will be truncated as follows:
Portrait orientation at 15 CPI to 47 characters.
Portrait orientation at 12 CPI to 37 characters.
Landscape orientation at 15 CPI to 86 characters.
Landscape orientation at 12 CPI to 86 characters.

10.4.4.2 End Fiscal Receipt Calculations

$Day\_N\_Recp = Day\_N\_Recp + 1$
$Day\_Recp = Day\_Recp + Amount$

10.4.5 0F - CANCEL FISCAL RECEIPT

This command is used to cancel a fiscal receipt.

10.4.5.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		0F - Cancel Fiscal Receipt	hex	1
3		Cmd. Extension	hex	1
		00 (00) = Portrait Orientation		
		01 (01) = Landscape Orientation		
		10 (02) = Reserved		
		11 (03) = Reserved		

10.4.5.2 Cancel Fiscal Receipt Calculations

$Day\_N\_CRecp = Day\_N\_CRecp + 1$
$Day\_N\_Recp = Day\_N\_Recp + 1$

10.4.6 E1 - PRINT FISCAL INVOICE

This command is used to print a fiscal invoice.

10.4.6.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		E1 - Print Fiscal Invoice	hex	1	
3		Cmd. Extension	hex	1	
	7	Retry 0 = NO 1 = YES			
	6	Reserved (always = '0')			(Note 1)
	5-3	Print Mode 000 = 15 CPI 001 = 12 CPI 010 = Reserved 011 = Reserved 100 = 15 CPI, Emphasized 101 = 12 CPI, Emphasized 110 = Reserved 111 = Reserved			
	2-1	Reserved (always = '0')			(Note 1)
	0	Orientation Print 0 = Portrait 1 = Landscape			(Note 2, 3)
4-89		E1_Description	ASCII	86	(Note 4)

Note 1: This field must be filled with zeros (0).

Note 2: The emphasized option is ingnored during landscape orientation print.

Note 3: The print lines sent are from botton-of-form to the top-of-form.

Note 4: E1_Description field will be truncated as follows:
Portrait orientation at 15 CPI to 47 characters.
Portrait orientation at 12 CPI to 37 characters.
Landscape orientation at 15 CPI to 86 characters.
Landscape orientation at 12 CPI to 86 characters.

10.4.7 E4 - END FISCAL INVOICE

This command is used to end a fiscal invoice.

10.4.7.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		E4 - End Fiscal Invoice	hex	1	
3		Cmd. Extension	hex	1	
	7	Retry 0 = NO 1 = YES			
	6	Reserved (always = '0')			(Note 1)
	5-3	Print Mode 000 = 15 CPI 001 = 12 CPI 010 = Reserved 011 = Reserved 100 = 15 CPI, Emphasized 101 = 12 CPI, Emphasized 110 = Reserved 111 = Reserved			
	2-1	Reserved (always = '0')			(Note 1)
	0	Orientation Print 0 = Portrait 1 = Landscape			(Note 2, 3)
4-80		E4_Description	ASCII	77	(Note 4)
81-89		E4_Amount	ASCII	9	

Note 1: This field must be filled with zero/s (0).

Note 2: The emphasized option is ingnored during landscape orientation print.

Note 3: The print lines sent are from botton-of-form to the top-of-form.

Note 4: E4_Description field will be truncated as follows:
Portrait orientation at 15 CPI to 47 characters.
Portrait orientation at 12 CPI to 37 characters.
Landscape orientation at 15 CPI to 86 characters.
Landscape orientation at 12 CPI to 86 characters.

10.4.7.2 End Fiscal Invoice Calculations

$Day\_N\_Invc = Day\_N\_Invc + 1$
$Day\_Invc = Day\_Invc + Amount$

10.4.8 10 - CANCEL FISCAL INVOICE

This command is used to cancel a fiscal invoice.

10.4.8.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		10 - Cancel Fiscal Invoice	hex	1
3		Orientation Print 00 (00) = Portrait 01 (01) = Landscape 10 (02) = Reserved 11 (03) = Reserved	hex	1

10.4.8.2 Cancel Fiscal Invoice Calculations

Day_N_CInvc = *Day_N_CInvc* + 1
Day_N_Invc = *Day_N_Invc* + 1

10.4.9 E2 - PRINT ACCOMPANYING DOCUMENT

This command is used to print a accompaying document.

10.4.9.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		E2 - Print Accompanying Document	hex	1	
3		Cmd. Extension	hex	1	
	7	Retry 0 = NO 1 = YES			
	6	Reserved (always = '0')			(Note 1)
	5-3	Print Mode 000 = 15 CPI 001 = 12 CPI 010 = Reserved 011 = Reserved 100 = 15 CPI, Emphasized 101 = 12 CPI, Emphasized 110 = Reserved 111 = Reserved			
	2-1	Reserved (always = '0')			(Note 1)
	0	Orientation Print 0 = Portrait 1 = Landscape			(Note 2, 3)
4-89		E2_Description	ASCII	86	(Note 4)

Note 1: This field must be filled with zero/s (0).

Note 2: The emphasized option is ingnored during landscape orientation print.

Note 3: The print lines sent are from botton-of-form to the top-of-form.

Note 4: E2_Description field will be truncated as follows:
Portrait orientation at 15 CPI to 47 characters.
Portrait orientation at 12 CPI to 37 characters.
Landscape orientation at 15 CPI to 86 characters.
Landscape orientation at 12 CPI to 86 characters.

10.4.10 E5 - END ACCOMPANYING DOCUMENT

This command is used to end a accompaying document.

10.4.10.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		E5 - End Accompanying Document	hex	1	
3		Cmd. Extension	hex	1	
	7	Retry 0 = NO 1 = YES			
	6	Reserved (always = '0')			(Note 1)
	5-3	Print Mode 000 = 15 CPI 001 = 12 CPI 010 = Reserved 011 = Reserved 100 = 15 CPI, Emphasized 101 = 12 CPI, Emphasized 110 = Reserved 111 = Reserved			
	2-1	Reserved (always = '0')			(Note 1)
	0	Orientation Print 0 = Portrait 1 = Landscape			(Note 2, 3)
4-89		E5_Description	ASCII	86	(Note 4)

Note 1: This field must be filled with zero/s (0).

Note 2: The emphasized option is ingnored during landscape orientation print.

Note 3: The print lines sent are from botton-of-form to the top-of-form.

Note 4: E5_Description field will be truncated as follows:
Portrait orientation at 15 CPI to 47 characters.
Portrait orientation at 12 CPI to 37 characters.
Landscape orientation at 15 CPI to 86 characters.
Landscape orientation at 12 CPI to 86 characters.

10.4.10.2 End Accompanying Document Calculations

$Day\_N\_Accd = Day\_N\_Accd + 1$

10.4.11 11 - CANCEL ACCOMPANYING DOCUMENT

This command is used to cancel a accompaying document.

10.4.11.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		11 - Cancel Accompanying Document	hex	1
3		Orientation Print	hex	1
		00 (00) = Portrait		
		01 (01) = Landscape		
		10 (02) = Reserved		
		11 (03) = Reserved		

10.4.11.2 Cancel Accompanying Document Calculations

$Day\_N\_CAccd = Day\_N\_CAccd + 1$
$Day\_N\_Accd = Day\_N\_Accd + 1$

10.5 CHECK AND CREDIT SLIP COMMANDS

ONLY FOR MODELS WITH DI STATION

This special procedure is used for franking checks and credit slips in the DI station.

The following commands controls the checks and credit slips.

- C0 - Print Check or Credit Slip
- C1 - End Check or Credit Slip
- C2 - Cancel Check or Credit Slip
- C3 - Check or Credit Slip Line Feed

10.5.1 Check and Credit Slip Rules

- The rules for franking checks and credit slips are the same as for printing non-fiscal reports in the DI station.

10.5.2 C0 - PRINT CHECK OR CREDIT SLIP

This command is used to print check and credit slip lines.

10.5.2.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		C0 - Print Check or Credit Slip	hex	1	
3		Cmd. Extension	hex	1	
	7	Retry 0 = NO 1 = YES			
	6	Reserved (always = '0')			
	5-3	Print Mode 000 = 15 CPI 001 = 12 CPI 010 = Reserved 011 = Reserved 100 = 15 CPI, Emphasized 101 = 12 CPI, Emphasized 110 = Reserved 111 = Reserved			
	2-1	Reserved (always = '0')			
	0	Orientation Print 0 = Portrait 1 = Landscape			(Note 1, 2)
4-89		C0_Description	ASCII	86	(Note 3)

Note 1: The emphasized option is ingnored during landscape orientation print.

Note 2: The print lines sent are from botton-of-form to the top-of-form.

Note 3: C0_Description field will be truncated as follows:
Portrait orientation at 15 CPI to 47 characters.
Portrait orientation at 12 CPI to 37 characters.
Landscape orientation at 15 CPI to 86 characters.
Landscape orientation at 12 CPI to 86 characters.

10.5.3 C1 - END CHECK OR CREDIT SLIP

This command is used to end a check or credit slip.

10.5.3.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		C1 - End Check or Credit Slip	hex	1
3		Cmd. Extension	hex	1
	7	Retry 0 = NO 1 = YES		
	6	Reserved (always = '0')		
	5-3	Print Mode 000 = 15 CPI 001 = 12 CPI 010 = Reserved 011 = Reserved 100 = 15 CPI, Emphasized 101 = 12 CPI, Emphasized 110 = Reserved 111 = Reserved		
	2-1	Reserved (always = '0')		
	0	Orientation Print 0 = Portrait 1 = Landscape		(Note 1, 2)
4-89		C1_Description	ASCII	86 (Note 3)

Note 1: The emphasized option is ingnored during landscape orientation print.

Note 2: The print lines sent are from botton-of-form to the top-of-form.

Note 3: C1_Description field will be truncated as follows:
Portrait orientation at 15 CPI to 47 characters.
Portrait orientation at 12 CPI to 37 characters.
Landscape orientation at 15 CPI to 86 characters.
Landscape orientation at 12 CPI to 86 characters.

10.5.3.2 End Check or Credit Slip calculations

$Day\_N\_Check = Day\_N\_Check + 1$
$Day\_N\_CredC = Day\_N\_CredC + 1$

10.5.4 C2 - CANCEL CHECK OR CREDIT SLIP

This command is used to cancel a check or credit slip.

10.5.4.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		C2 - Cancel Check or Credit Slip	hex	1
3		Cmd. Extension 00 = Portrait 01 = Landscape	hex	1

10.5.5 C3 - CHECK OR CREDIT SLIP LINE FEED

This command is used to feed line feeds inside a check or credit slip.

This command is used to feed the paper a specified number of lines inside a check or credit slip.

10.5.5.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		C3 - Check or Credit Slip Line Feed	hex	1
3		Cmd. Extension	hex	1
	7-5	Reserved (always = '0')		
	4	Orientation Print 0 = Portrait 1 = Landscape		
	3-0	Number of Line Feed (min 1, max 15)		
4		Number of Dot Rows per Line Feed	hex	1 (Note 2)

Note 1: This command starts the check and credit slip printing state just as if a print check or credit slip command had been issued. An end or cancel command must be issued to exit this state.

Note 2: Range allowed:
Minimum = x'00' (decimal 00).
Maximum = x'FF' (decimal 255).

10.6 NON-FISCAL REPORTS COMMANDS

There are two commands that control non-fiscal reports:

- DD - Start Non-Fiscal Report
- DE - End Non-Fiscal Report

10.6.1 Non-Fiscal Reports Rules

- Normal printing lines in CR, SJ or DI stations are allowed during non-fiscal reports.
- ″NON FISCALE″ Message Line:
  - In CR and SJ stations, the message is not inserted during normal printing lines.
  - In DI station, the message is inserted every 6 normal printing lines.

10.6.2 DD - START NON-FISCAL REPORT

This procedure is used to start of non-fiscal report.

10.6.2.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		DD - Start Non-Fiscal Report	hex	1	
3		Cmd. Extension	hex	1	
	7-2	Reserved (always = '0')			
	1-0	Station and Orientation Print			(Note 1)
		00 (0) = CR			
		01 (1) = SJ (ONLY FOR GR3/GR5 MODELS)			
		01 (1) = CR (ONLY FOR KD3/KD5/KR3/KR5 MODELS)			
		10 (2) = DI - Portrait (ONLY FOR MODELS WITH DI STATION)			
		11 (3) = DI - Landscape (ONLY FOR MODELS WITH DI STATION)			

Note 1: If "Station = 01" for KD3/KD5/KR3/KR5 models is selected, the SJ Non-Fiscal Report is opened but is printing in CR station.

10.6.2.2 Start Non-Fiscal Report Rules

- The execution of this command sets the FU in 'Non-Fiscal Report In Progress' state.
- A message is also printed as described below:
  - **ONLY FOR GR3/GR5 MODELS**
    - In CR station, print "NON FISCALE". Is replicated in SJ station.
    - In SJ station, print "NON FISCALE". Is replicated in CR station.
    - In DI station, don't print "NON FISCALE" message.
  - **ONLY FOR KD3/KD5/KR3/KR5 MODELS**
    - In CR station, print "NON FISCALE".
    - In DI station, don't print "NON FISCALE" message.

10.6.3 DE - END NON-FISCAL REPORT

This procedure is used to end the non-fiscal report.

10.6.3.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		DE - End Non-Fiscal Report	hex	1
3		Cmd. Extension	hex	1
	7-0	Reserved (always = '0x00')		

10.6.3.2 End Non-Fiscal Report Calculations

The number of non-fiscal reports in CR, SJ and DI stations are counted and reported on the closure report.

- **In CR station**

  $Day\_N\_NFR\_CR = Day\_N\_NFR\_CR + 1$

- **In SJ station <u>(ONLY FOR GR3/GR5 MODELS)</u>**

  $Day\_N\_NFR\_SJ = Day\_N\_NFR\_SJ + 1$

- **In DI station**

  $Day\_N\_NFR\_DI = Day\_N\_NFR\_DI + 1$

10.6.3.3 End Non-Fiscal Report Rules

- **<u>ONLY FOR GR3/GR5 MODELS</u>**
  - In CR station, print ″NON FISCALE″. Is replicated in SJ station.
  - In SJ station, print ″NON FISCALE″. Is replicated in CR station.
- **<u>ONLY FOR KD3/KD5/KR3/KR5 MODELS</u>**
  - In CR station, print ″NON FISCALE″.
- In DI station, don't print ″NON FISCALE″ message.

10.7 TRAINING MODE COMMANDS

The following commands controls the TRM.

- 1D - Set Training Mode ON
- 1E - Set Training Mode OFF

10.7.1 Training Mode Rules

- TRM set is allowed only during FIM and out of the SP.
- Blank characters will be printed as ′?′.
- Accumulators and counters are not affected.
- Fiscal Voucher:
  - FV number is not printed.
  - ″NON FISCALE″ Message:
    - The FV is preceded by ″NON FISCALE″ message line.
    - The first item sale line is preceded by ″NON FISCALE″ message line and then, the same ″NON FISCALE″ message line, will be inserted every 3 lines printed as result of ST fiscal commands.
  - Normal Printing Lines:
    - When print store header has been executed, but ST is not yet in progress, if more than 645 normal printing lines in CR station are received, the FV will be voided by microcode.
    - When in ST state no more than 645 normal printing lines in CR station can be sent. On receipt of the 646 normal printing line the ST will be voided by microcode.
- Set Date and Time:
  - Set Date and Time (16 cmd.) cannot be executed when SP is in progress or if the J4/CE jumper is active, the new date must be the current date or one day ahead.
  - Date can be set to the current date or one day ahead in normal operations.
  - After operation of J4/CE jumper any date can be set later than last closure, if any.

10.7.2 1D - SET TRAINING MODE ON

This command is issued to enable the FU to operate according to TRM mode rules.

10.7.2.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		1D - Set Training Mode ON	hex	1
3		Cmd. Extension	hex	1
	7-0	Reserved (always = '0x00')		

10.7.3 1C - SET TRAINING MODE OFF

This command is used to disable the TRM.

10.7.3.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		1C - Set Training Mode OFF	hex	1
3		Cmd. Extension	hex	1
	7-0	Reserved (always = '0x00')		

10.7.3.2 Set Training Mode OFF Rules

- On execution of this command all accumulators and counters are restored to the value they had before entering TRM.

10.8 CLOSE SALE PERIOD COMMAND

The following command controls the SP and print the closure report:

- 13 - Close Sale Period

10.8.1 13 - CLOSE SALE PERIOD

This command is used to close the SP, updates the FM and generates the closure report.

10.8.1.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		13 - Close Sale Period	hex	1
3		Cmd. Extension	hex	1
	7-0	Reserved (always = '0x00')		

10.8.1.2 Close Sale Period Calculations

Lif_N_Clos = *Lif_N_Clos* + 1
Day_N_Vouc = *Day_N_Vouc* + 1

The daily accumulators and counters are clearing as follows:

Day_Totl = 0

Day_Retn = 0
Day_Void = 0
Day_Bonu = 0
Day_Disc = 0
Day_Empt = 0
Day_Misc = 0

Day_Invc = 0
Day_Recp = 0

Day_Canc = 0

Day_Notp = 0

Day_N_Vouc = 0
Day_N_Canc = 0

Day_N_Invc = 0
Day_N_CInvc = 0

Day_N_Recp = 0
Day_N_CRecp = 0

Day_N_Accd = 0
Day_N_CAccd = 0

Day_N_NFR_CR = 0
Day_N_NFR_SJ = 0
Day_N_NFR_DI = 0

Day_N_NFR_EJ = 0

Day_N_Check = 0
Day_N_CredC = 0

Day_N_FMR = 0

Day_N_Paid = 0
Day_N_Notp = 0

10.8.1.3 Close Sale Period Rules

- Up to 3840 entries are available for the FU life time.
- The daily totals are loaded in the daily totals table in FM.

10.9 FISCAL MEMORY AND EJ REPORTS COMMANDS

- 15 - Fiscal Memory Report
- CF - Electronic Journal Report

10.9.1 15 - FISCAL MEMORY REPORT

This command is used to print the closures stored in FM in CR station.

10.9.1.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		15 - Fiscal Memory Report	hex	1
3		Cmd. Extension	hex	1
	7	Reserved (always = '0')		
	6	Type 0 = Extended 1 = Short		
	5-3	Reserved (always = '0')		
	2-0	Range 100 (4) = Between Closure Numbers 010 (2) = Between Closure Dates 001 (1) = All Fiscal Memory		
		If Range = 2 specify:		
4-11		First Closure Date	ASCII	8 (Note 1)
12-19		Last Closure Date	ASCII	8 (Note 1)
		If Range = 4 specify:		
4-7		First Closure Number	ASCII	4
8-11		Last Closure Number	ASCII	4 (Note 2)

Note 1: Date string must be formatted as: ddmmyyyy
dd = day
mm = month
yyyy = year

Note 2: If a number greater than the last closure stored in FM is specified, the FM report will print until the last closure stored.

10.9.1.2 Fiscal Memory Report Calculations

$Day\_N\_Vouc = Day\_N\_Vouc + 1$
$Day\_N\_FMR = Day\_N\_FMR + 1$

10.9.1.3 Fiscal Memory Report Rules

- Two types of reports are provided: short and extended.

10.9.2 CF - ELECTRONIC JOURNAL REPORT

ONLY FOR KD3/KD5/KR3/KR5 MODELS

This command is used to print the EJ files from the inserted CF.

10.9.2.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - Cmd Prefix	hex	2
2		CF - Electronic Journal Report	hex	1
3		Cmd. Extension	hex	1
	7-3	Reserved (always = '0')		
	2-0	Range		
		001 (1) = All EJ Files (All Vouchers)		
		010 (2) = Between Closure Dates (All Vouchers)		
		011 (3) = By Voucher Number for a specific Closure Date		
		100 (4) = Between Closure Numbers (All Vouchers)		
		101 (5) = By Voucher Number for a specific Closure Number		
		110 (6) = By Voucher Number for Current Sale Period		
		If Range = 2 specify:		
4-11		First Closure Date	ASCII	8 (Note 1)
12-19		Last Closure Date	ASCII	8 (Note 1)
		If Range = 3 specify:		
4-7		First Ticket Number	ASCII	4
8-11		Last Ticket Number	ASCII	4 (Note 3)
12-19		Closure Date	ASCII	8 (Note 1)
		If Range = 4 specify:		
4-7		First Closure Number	ASCII	4
8-11		Last Closure Number	ASCII	4 (Note 2)
		If Range = 5 specify:		
4-7		First Voucher Number	ASCII	4
8-11		Last Voucher Number	ASCII	4 (Note 3)
12-15		Closure Number	ASCII	4
		If Range = 6 specify:		
4-7		First Voucher Number	ASCII	4
8-11		Last Voucher Number	ASCII	4 (Note 3)

Note 1: Date string must be formatted as: ddmmyyyy
dd = day
mm = month
yyyy = year

Note 2: If a number greater than the last closure stored in EJ is specified, the EJ report will print until the last closure stored.

Note 3: If a number greater than the last FV stored in EJ file is specified, the EJ report will print until the last FV stored.

10.9.2.2 Electronic Journal Report Calculations

$Day\_N\_NFR\_EJ = Day\_N\_NFR\_EJ + 1$

10.9.2.3 Electronic Journal Report Rules

- This command is not available in TRM.
- If there are no closures in the requested period, no error is returned and EJ Report (without closures) is printed.
- If there are no FV′s in the requested period, no error is returned and EJ Report (without FV′s) is printed.
- If invalid date, invalid closure number, invalid FV number or invalid period are requested, the error code 103 is returned.
- No actions performed if a PLD occurs when the report is printed.
  - EJ report printing is interrrumped when the PLD occurs.
  - The EJ report counter is not incremented.

10.10 ELECTRONIC JOURNAL/COMPACT FLASH COMMANDS

ONLY FOR KD3/KD5/KR3/KR5 MODELS

- 60 - Open Electronic Journal File
- 61 - Close Electronic Journal File
- 62 - Read Electronic Journal File
- 63 - Get Extended EJ Error
- 65 - Get Compact Flash Directory
- 66 - Set Public and Private Key
- 67 - Get Public Key
- 68 - Compact Flash Space Management
- 69 - Get Compact Flash Information
- 6A - Read Current Electronic Journal File

10.10.1 60 - OPEN ELECTRONIC JOURNAL FILE

ONLY FOR KD3/KD5/KR3/KR5 MODELS

This command is used to specify the EJ file that is necessary to begin to read.

10.10.1.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - Cmd Prefix	hex	2	
2		60 - Open Electronic Journal File	hex	1	
3		Cmd. Extension	hex	1	
	7-0	Reserved (always = '0x00')			
4-15		Filename	ASCII	12	(Note 1)

Notes:

1. Filename format is "IBM~cccc.EJ"

   where:
   cccc = Closure Number

   e.g. "IBM~0012.EJ"

10.10.1.2 Open Electronic Journal File Rules

- The filename specified must be in normal DOS format (filename.ext).

10.10.2 61 - CLOSE ELECTRONIC JOURNAL FILE

ONLY FOR KD3/KD5/KR3/KR5 MODELS

This command is used to close the EJ file that is currently been read.

10.10.2.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - Cmd Prefix	hex	2
2		61 - Close Electronic Journal File	hex	1
3		Cmd. Extension	hex	1
	7-0	Reserved (always = '0x00')		

10.10.3 62 - READ ELECTRONIC JOURNAL FILE

ONLY FOR KD3/KD5/KR3/KR5 MODELS

This command is used to read the EJ file opened with open electronic journal file (60 cmd.)

10.10.3.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - Cmd Prefix	hex	2	
2		62 - Read Electronic Journal File	hex	1	
3		Cmd. Extension	hex	1	
	7-0	Reserved (always = '0x00')			
4-7		Sequence	hex	4	(Note 1)

Response will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH	
0-8		Fiscal Unit Status	hex	9	
	0-14	Fiscal Unit Status	hex	15	
9-10	15-16	Length Read	hex	2	(Note 1)
11-138	17-144	Bytes read from the file	hex	128	(Note 2)

Notes:

1. Specified in Motorola format (MSB first).
2. If length read < 128, the end of file was reached and bytes beyond length read are not meaningful.

10.10.3.2 Read Electronic Journal File Rules

- This command reads always in 128 bytes blocks.
- The first time after an Open EJ File (60 cmd.), sequence must be 0.
- Later, the sequence can be:
  - 0 = reads the first block
  - n = read again the last block read
  - n + 1 = read the block following the last block read
- Length read will be between 0 and 128.
- If length read is less than 128, the end of file was reached.

10.10.4 63 - GET EXTENDED EJ ERROR

ONLY FOR KD3/KD5/KR3/KR5 MODELS

This command is used to get the extended EJ error.
Due to the limited number of return codes available, all commands that fails due to a problem related with EJ, just fail returning a general RC ″84″.
If the application needs to know the reason for failure, it must send this command. To know the meaning of a particular EJ error, refer to 12.0, “Electronic Journal Return Codes” on page 195.

10.10.4.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - Cmd Prefix	hex	2
2		63 - Get Extended EJ Error	hex	1
3		Cmd. Extension	hex	1
	7-0	Reserved (always = ’0x00’)		

Response will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH	
0-8		Fiscal Unit Status	hex	9	
	0-14	Fiscal Unit Status	hex	15	
9	15	Extended EJ Error	hex	1	
10	16	Extended EJ Error Subcode	hex	1	(Note 1)

Notes:

1. This subcode is used to identify the different situations when the same extended EJ error is returned.

10.10.5 65 - GET COMPACT FLASH DIRECTORY

ONLY FOR KD3/KD5/KR3/KR5 MODELS

This command is used to retrieve the CF directory.

10.10.5.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - Cmd Prefix	hex	2	
2		65 - Get Compact Flash Directory	hex	1	
3		Cmd. Extension 00 = Find First 01 = Find Next 02 = Get CF Identification	hex	1	
		If Cmd. Extension = 00 specify:			
4-15		Filename (IBM~cccc.EJ)	ASCII	12	(Note 1)
16-16		Arch Attribute State 0 = Clear 1 = Set 2 = Both	hex	1	

Response to get compact flash directory (for Cmd. Extension 00 and 01) will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH	
0-8		Fiscal Unit Status	hex	9	
	0-14	Fiscal Unit Status	hex	15	
9	15	EJ Error	hex	1	(Note 2)
10-21	16-27	Filename (short format)	ASCII	12	(Note 3)
22	28	File Attributes	hex	1	(Note 4 on page 122)
23-24	29-30	File Last Modification Time	hex	2	(Note 5 on page 122, 7 on page 122)
25-26	31-32	File Last Modification Date	hex	2	(Note 6 on page 122, 7 on page 122)
27-30	33-36	File Length	hex	4	(Note 7 on page 122)
31-69	37-75	Filename (large format)	ASCII	39	

Notes:

1. Where:

   cccc = Closure Number

2. This field will be:

   - 0 = file info returned
   - 0x1B = no more files available

3. Specified in normal DOS format (filename.ext) padded with spaces if necessary.

4. Specified in normal DOS format.

5. Specified in normal DOS format (hhhhhmmmmmssssss).

   - hhhhh = hours (0 to 23)
   - mmmmmm = minutes (0 to 59)
   - ssssss = seconds divided by 2 (0 to 29)

6. Specified in normal DOS format (yyyyyyymmmmddddd).

   - yyyyyyy = year (1980 based)
   - mmmm = month (1 to 12)
   - ddddd = day (1 to 31)

7. Specified in INTEL format (LSB First) for DOS compatibility.

Response to get compact flash directory (for Cmd. Extension 02) will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH
0-8		Fiscal Unit Status	hex	9
	0-14	Fiscal Unit Status	hex	15
9-19	15-25	CF/FM Serial Number	ASCII	11 (Note 1)
20-21	26-27	Progressive CF Identification Number	hex	2

Notes:

1. Is the FM serial number of the printer where the compact flash was formatted.

10.10.5.2 Get Compact Flash Directory Rules

- The normal use will be to send a find first option followed by succesive calls to find next until it returns EJ Error 27 (hex 1B).
  In this case the RC will be 67, because this is not really an error, just a message to signal that no more files are available.
- There is only a root directory in the CF. No support for subdirectories is available.
- The filename specified must be in normal DOS format (IBM~cccc.EJ).
- Wildcards (*) and (?) can be used as usual in DOS.
  e.g. ″IB*.E? ″
- The arch attribute state can be used to restrict the search only to the files with the arch attribute in the specified condition.
- Find first will retrieve data related with the first file in the directory that matches the filename and attribute requested.
- Find next will retrieve succesive files matching the filename and attribute specified in find first.

10.10.6 66 - SET PUBLIC AND PRIVATE KEY

ONLY FOR KD3/KD5/KR3/KR5 MODELS

This command is used to set the public and private key used to sign the EJ files.

10.10.6.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - Cmd Prefix	hex	2
2		66 - Set Public and Private Key	hex	1
3		Cmd. Extension 00 = First 01 = Next 02 = Last 03 = Unique	hex	1
		If Cmd. Extension = 00 specify:		
4-5		Length	hex	2
6-69		Data	hex	64
		If Cmd. Extension = 01 specify:		
4-67		Data	hex	64
		If Cmd. Extension = 02 specify:		
4-67		Data	hex	64 (Note 1)
		If Cmd. Extension = 03 specify:		
4-5		Length	hex	2
6-69		Data	hex	64 (Note 1)

Notes:

1. The remainder data bytes are sent. This is up to 64 bytes.

10.10.6.2 Set Public and Private Key Rules

- This command must be issued before the FM serialization (1B cmd.).
- Key Length vs. Cmd. Extension
  - 64 bytes < Key length <= 128 bytes ---> first and last (00 and 02 cmd. ext.) are used.
  - Key length > to 128 bytes ---> first, next ... next and last (00, 01..01 and 02 cmd.ext.) are used.
  - Key length <= to 64 bytes ---> unique (03 cmd.ext.) is used.
- Currently only the DSA 512 bits (Digital Signature Algorithm) is supported (defined in the document FIPS PUB 186-1). In this case, the key must be specified in the following way:
  - Length = 00E9h (constant)
  - Data
    - Key Type (1 byte) = 01h (DSA 512 bits)
    - Subprime (20 bytes)
    - Prime (64 bytes)
    - Base (64 bytes)
    - Public Key (64 bytes)
    - Private Key (20 bytes)

- If a PLD occurs before the complete sequence is sent, the command must be reissued beginning from first.

10.10.7 67 - GET PUBLIC KEY

ONLY FOR KD3/KD5/KR3/KR5 MODELS

This command is used to get the public key.

10.10.7.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - Cmd Prefix	hex	2
2		67 - Get Public Key	hex	1
3		Cmd. Extension 00 = First 01 = Next	hex	1
		If Cmd. Extension = 00 specify:		
4-5		Key Number	ASCII	2 (Note 1)

Notes:

1. Range allowed is 00 to 01.
   '00' return the last public key set.
   '01' return the first public key set.

Response to Get Public Key command (for FIRST) will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH
0-8		Fiscal Unit Status	hex	9
	0-14	Fiscal Unit Status	hex	15
9-10	15-16	Key Number	ASCII	2
11-18	17-24	Creation Date (ddmmyyyy)	ASCII	8
19-23	25-29	Creation Time (hh:mm)	ASCII	5
24	30	Record Type 0 = Next 1 = Last	ASCII	1
25-26	31-32	Key Length	hex	2
27-90	33-96	Key	hex	64

Response to Get Public Key command (for NEXT) will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH
0-8		Fiscal Unit Status	hex	9
	0-14	Fiscal Unit Status	hex	15

9	15	Record Type 0 = Next 1 = Last	ASCII	1
10-73	16-79	Key	hex	64

10.10.7.2 Get Public Key Rules

- To begin getting key, the cmd. extension 00 (FIRST) must be used. If the length returned is ≤ 64 bytes, all data is returned in the response. Else, subsequent calls with cmd. extension 01 (NEXT) will bring the following data in 64 bytes chunks until the length is exausted.
- The key data are:
  - Data
    - Key Type (1 byte) = 01h (DSA 512 bits)
    - Subprime (20 bytes)
    - Prime (64 bytes)
    - Base (64 bytes)
    - Public Key (64 bytes)

10.10.8 68 - COMPACT FLASH SPACE MANAGEMENT

ONLY FOR KD3/KD5/KR3/KR5 MODELS

This command is used to set or get the value to be compared against the remaining space in CF before any command.

10.10.8.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - Cmd Prefix	hex	2	
2		68 - Compact Flash Space Management	hex	1	
3		Cmd. Extension 00 = Set 01 = Get	hex	1	
		If Cmd. Extension = 00 specify:			
4-7		Max Wasted Space (MWS)	hex	4	(Note 1, 2)
8-11		Almost Full CF Space (Almost)	hex	4	(Note 1, 2)

Response for GET will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH	
0-8		Fiscal Unit Status	hex	9	
	0-14	Fiscal Unit Status	hex	15	
9-12	15-18	Max Wasted Space (MWS)	hex	4	(Note 1, 2)
13-16	19-22	Almost Full CF Space (ALMOST)	hex	4	(Note 1, 2)

Notes:

1. The value is specified in Motorola format (MSB First).
2. Ranges:
   - MWS must be:
     - greater than or equal to 72Kb
     - less than or equal to 60Mb
   - ALMOST must be:
     - greater than or equal to 40Kb
     - less than or equal to 60Mb
   - MWS must be less than or equal to ALMOST

   Where:
   60 Mb = $62.914.560_{10}$ bytes = $3C00000_{16}$
   72 Kb = 73.728_{10} bytes = 12000_{16}
   40 Kb = 40.960_{10} bytes = $A000_{16}$

10.10.8.2 Compact Flash Space Management Rules

- This command is optional.
- The MWS default value is 40.960 bytes (40 Kb).
- The ALMOST default value is 73.728 bytes (72Kb).
- The check of the CF free space against the MWS and Almost values, is performed in the bellow described forms:
  - If the free space is less than max wasted space (MWS):
    - The JP can′t be open and the CF has to be changed by an empty one.
  - If the free space is less than Almost Full CF Space (ALMOST):
    - The ″Almost Full CF Space Report″ is printed after FV′s, fiscal memory reports and closure reports.

10.10.9 69 - Get Compact Flash Information

10.10.10 69 - get compact flash information

ONLY FOR KD3/KD5/KR3/KR5 MODELS

This command is used to get the CF serial number and size and the remaining free space in the inserted CF.

10.10.10.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - Cmd Prefix	hex	2
2		69 - Get Compact Flash Information	hex	1
3		Cmd. Extension 00 = Get CF Free Space 01 = Get CF Serial Number and Size	hex	1

Response to Get CF Free Space will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH	
0-8		Fiscal Unit Status	hex	9	
	0-14	Fiscal Unit Status	hex	15	
9-12	15-18	Compact Flash Free Space (in bytes)	hex	4	(Note 1)

Response to Get CF Serial Number and Size will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH	
0-8		Fiscal Unit Status	hex	9	
	0-14	Fiscal Unit Status	hex	15	
9-28	15-34	CF Serial Number	ASCII	20	
29-32	35-38	CF Size (in bytes)	hex	4	(Note 1)

Notes:

1. Specified in Motorola format (MSB First).

10.10.11 6A - READ CURRENT ELECTRONIC JOURNAL FILE

ONLY FOR KD3/KD5/KR3/KR5 MODELS

This command is used to read the EJ file that is being generated.

10.10.11.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - Cmd Prefix	hex	2	
2		6A - Read Current Electronic Journal File	hex	1	
3		Cmd. Extension	hex	1	
	7-0	Reserved (always = '0x00')			
4		Sequence	hex	4	(Note 1)

Response will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH	
0-8		Fiscal Unit Status	hex	9	
	0-14	Fiscal Unit Status	hex	15	
9-10	15-16	Length Read	hex	2	(Note 1)
11-138	17-144	Bytes Read from the File	hex	128	(Note 2)

Notes:

1. Specified in Motorola format (MSB First).
2. If length read < 128 bytes, the end of the file is reached and bytes beyond length read are not meaningful.

10.10.11.2 Read Current Electronic Journal File Rules

- To read the current EJ file, there is no open or close commands. So, this command can be used anytime. This is different from closed EJ files that must be previously open with 60 cmd. in order to be read thru 62 cmd..
- This command reads always in 128 bytes blocks.
- When this command is issued by first time in a JP, the sequence must be zero.
  Later, the sequence can be:
  - 0 = reads for first block
  - n = read again the last block read
  - n+1 = read the block following the last block read
- Length read will be between 0 to 128.
- If length read is less than 128, the end of the file is reached.

10.11 UTILITIES COMMANDS

- DA - Electronic Read Fiscal Memory Tables
- DB - Electronic Read Accumulators and Counters
- F1 - Communicate Power-On Status
- F7 - Command Buffer Management
- F8 - Report Printer EC
- F9 - Report Current Status
- FA - Reset Fiscal Printer
- FB - Run Online Diagnostics
- FC - Report Microcode EC
- FF - Engineering Dump Ram Memory and Fiscal Eprom

10.11.1 DA - ELECTRONIC READ FISCAL MEMORY TABLES

This command is used to request the FU to report the FM table content.

10.11.1.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		DA - Electronic Read Fiscal Memory Tables	hex	1
3		Cmd. Extension	hex	1
		03 = Read Next CF Initialization Table ONLY FOR KD3/KD5/KR3/KR5 MODELS		
		02 = Start Read CF Initialization Table ONLY FOR KD3/KD5/KR3/KR5 MODELS		
		01 = Read Next Daily Totals Table		
		00 = Start Read Daily Totals Table		
4-7		Closure Number	ASCII	4 (Note 1)

Note 1: Apply to Start Read Daily Totals and CF Initialization Tables.

Response to Read Daily Totals Table will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH	
0-8		Fiscal Unit Status	hex	9	
	0-14	Fiscal Unit Status	hex	15	
9	15	DA - Record Identification	hex	1	
10-23	16-29	Request Date and Time (dd/mm/yy hh:mm)	ASCII	14	
24	30	Return Code 43 = Good Completion 60 = Invalid Character in Bytes 4-7 of Command 5A = Closure Not Found 64 = Error on Reading FM	hex	1	
25	31	New "Currency" Indicator 0 = LIRA 1 = EURO	hex	1	
26-29	32-35	Closure Number	ASCII	4	FM_DT_N_Clos
30-37	36-43	Closure Date (dd/mm/yy)	ASCII	8	FM_DT_Date
38-41	44-47	Daily Total	hex	4	FM_DT_Totl
42-45	48-51	Fiscal Invoice Daily Total	hex	4	FM_DT_Invc
46-49	52-55	Fiscal Receipt Daily Total	hex	4	FM_DT_Recp
50-65	56-71	Reserved	hex	16	
66-67	72-73	Number of Fiscal Invoices	hex	2	FM_DT_N_Invc
68-69	74-75	Number of Fiscal Receipts	hex	2	FM_DT_N_Recp
70-71	76-77	Number of Accompanying Documents	hex	2	FM_DT_N_Accd
72-79	78-85	Reserved	hex	8	
	86-87	Compact Flash Number	hex	2	FM_DT_N_CF (Note 2)
	88-107	Hash	hex	20	FM_DT_Hash (Note 2)

Note 1: If return code indicates an error then closure data are meaningless.

Note 2: Only for KD3/KD5/KR3/KR5 models.

Response to Read CF Initialization Table will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH	
0-8		Fiscal Unit Status	hex	9	
	0-14	Fiscal Unit Status	hex	15	
9	15	DA - Record Identification	hex	1	
10-23	16-29	Request Date and Time (dd/mm/yy hh:mm)	ASCII	14	
24	30	Return Code 43 = Good Completion 60 = Invalid Character in Bytes 4-7 of Command 5A = Closure Not Found 64 = Error on Reading FM	hex	1	
25	31	Reserved	hex	1	
26-27	32-33	Compact Flash Number	hex	2	FM_EJ_N_CF
28-35	34-41	Date (dd/mm/yy)	ASCII	8	FM_EJ_Date
36-40	42-46	Time (hh:mm)	ASCII	5	FM_EJ_Time
41-42	47-48	Closure Number	hex	2	FM_EJ_N_Clos

Note 1: If return code indicates an error then closure data are meaningless.

10.11.2 DB - ELECTRONIC READ ACCUMULATORS AND COUNTERS

This command is used to request the FU to report the content of transaction, daily and lifetime counters and accumulators.

10.11.2.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		DB - Electronic Read Accumulators and Counters	hex	1
3		Cmd. Extension	hex	1
	7-0	Reserved (always = '0x00')		

Response will be formatted as follows:

BYTE RS-485	BYTE RS-232	BIT	CONTENT	TYPE	LENGTH
0-8			Fiscal Unit Status	hex	9
	0-14		Fiscal Unit Status	hex	15
9	15		DB - Record Identification	hex	1
10-23	16-29		REQUEST DATE AND TIME (dd/mm/yy hh-mm)	ASCII	14
24	30		RETURN CODE 43 = Good Completion	hex	1
25	31		FISCAL UNIT STATE 00 = No Procedure in Progress 01 = Sale Transaction in Progress 02 = Fiscal Receipt in Progress 03 = Fiscal Invoice in Progress 04 = Accompanying Doc. in Progress 05 = Non-Fiscal Report CR in Progress 06 = Non-Fiscal Report SJ in Progress 07 = Non-Fiscal Report DI Landscape in Progress 08 = Non-Fiscal Report DI Portrait in Progress 09 = Check Printing in Progress	hex	1
26	32		SALE TRANSACTION	hex	1
		7	1 = Header Printed		
		6	1 = Item/Negitem Sold		
		5	1 = Total Requested		
		4	1 = Payment in Progress		
		3	1 = End Transaction in Progress		
		2	1 = Cancel Transaction in Progress		
		1-0	Reserved (set to 0)		
27	33		FISCAL UNIT MODE	hex	1
		7	1 = Fiscal Mode Set		
		6	1 = New Currency Set (EURO)		
		5	1 = Sale Period in Progress		
		4	1 = Training Mode Set		
			For GR3/GR5 Models		
		3-0	Reserved (set to 0)		
			For KR3/KR5/KD3/KD5 Models		
		3	1 = DI Led Blinking Disabled		
		2-0	Reserved (set to 0)		
28-30	34-36		RESERVED (set to 0)	hex	3

(Continued in the next page)

Response to Electronic Read Accumulators and Counters continued...:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH	VARIABLE NAME
		TRANSACTION ACCUMULATORS			

31-34	37-40	Total	hex	4	Tra_Totl (Note 2)
35-38	41-44	Returns	hex	4	Tra_Retn (Note 2)
39-42	45-48	Voids	hex	4	Tra_Void (Note 2)
43-46	49-52	Bonus	hex	4	Tra_Bonu (Note 2)
47-50	53-56	Discounts	hex	4	Tra_Disc (Note 2)
51-54	57-60	Empties	hex	4	Tra_Empt (Note 2)
55-58	61-64	Miscellaneous	hex	4	Tra_Misc (Note 2)
59-62	65-68	Not Paid	hex	4	Tra_Notp (Note 1)
63-66	69-72	Amount Due/Change Due	hex	4	Tra_Paid (Note 2, 3)
67-78	73-84	Reserved (set to 0)	hex	12	
		DAILY ACCUMULATORS			

79-82	85-88	Total	hex	4	Day_Totl (Note 1)
83-86	89-92	Returns	hex	4	Day_Retn (Note 2)
87-90	93-96	Voids	hex	4	Day_Void (Note 2)
91-94	97-100	Bonus	hex	4	Day_Bonu (Note 2)
95-98	101-104	Discounts	hex	4	Day_Disc (Note 2)
99-102	105-108	Empties	hex	4	Day_Empt (Note 2)
103-106	109-112	Miscellaneous	hex	4	Day_Misc (Note 2)
107-110	113-116	Not Paid	hex	4	Day_Notp (Note 1)
111-114	117-120	Fiscal Invoices	hex	4	Day_Invc (Note 1)
115-118	121-124	Fiscal Receipts	hex	4	Day_Recp (Note 1)
119-122	125-128	Cancel Transactions	hex	4	Day_Canc (Note 2)
123-134	129-140	Reserved (set to 0)	hex	12	
		DAILY COUNTERS			

135-136	141-142	Transactions	hex	2	Day_N_Vouc
137-138	143-144	Fiscal Invoices	hex	2	Day_N_Invc
139-140	145-146	Fiscal Receipts	hex	2	Day_N_Recp
141-142	147-148	Accompanying Documents	hex	2	Day_N_Accd
143-144	149-150	Cancelled Transactions	hex	2	Day_N_Canc
145-146	151-152	Cancelled Fiscal Invoices	hex	2	Day_N_CInvc
147-148	153-154	Cancelled Fiscal Receipts	hex	2	Day_N_CRecp
149-150	155-156	Cancelled Accompanying Documents	hex	2	Day_N_CAccd
151-152	157-158	Number of Closures (lifetime counter)	hex	2	Lif_N_Clos
153-154	159-160	Number of Repair Actions (lifetime counter)	hex	2	Lif_N_Ract
155-156	161-162	Number of Non-Fiscal Reports (CR/SJ)	hex	2	Day_N_NFR_CR + Day_N_NFR_SJ
157-158	163-164	Number of Non-Fiscal Reports (DI)	hex	2	Day_N_NFR_DI
159-160	165-166	Number of Check and Credit Slip	hex	2	Day_N_Check + Day_N_CredC

(Continued in the next page)

Response to Electronic Read Accumulators and Counters...:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH	VARIABLE NAME
		MISCELLANEOUS			
161-162	167-168	Fiscal Unit ID	ASCII	2	
163-170	169-176	FM Serial Number	ASCII	8	
171-186	177-192	Reserved (set to 0)	hex	16	
187-188	193-194	Number of Fiscal Memory Reports	hex	2	Day_N_FMR

Note 1: Unsigned.

Note 2: Signed.

Note 3: > 0 = Amount due; < 0 = Change due.

10.11.3 F1 - COMMUNICATE POWER-ON STATUS

This command requests the FU to communicate the power-on completion status.

10.11.3.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		F1 - Communicate Power-On Status	hex	1
3		Cmd. Extension	hex	1
	7-0	Reserved (always = '0x00')		

10.11.4 F7 - COMMAND BUFFER MANAGEMENT

This command is used to retrieve the last command issued of the command buffer.

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		F7 - Command Buffer Management	hex	1
3		Cmd. Extension	hex	1
		00 = Retrieve Last Command		
		01 = Retrieve Previous Command		
		02 = Clear Command Buffer		

Response will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH	
0-8		Fiscal Unit Status	hex	9	
	0-14	Fiscal Unit Status	hex	15	
9-128		Additional Information	hex	120	(Note 1)
	15-128	Additional Information	hex	114	(Note 1)

Notes:

1. See response for the Additional Information.

Response for Additional Information will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH	
9	15	Type	hex	1	(Note 1)
10	16	Command Data Length	hex	1	(Note 2)
11	17	Additional Data Length	hex	1	(Note 3 on page 140)
12	18	Command	hex	1	
		Command Extension	hex	n0	
		Command Data	hex	n1	
		Additional Data	hex	n2	(Note 4 on page 140)
		Fiscal Untit Status Executed Command	hex	n3	(Note 5 on page 140)

Notes:

1. Type:
   - 0xFF = command retrieved
   - 0xFE = there was a new command between F700 and F701
   - 0x00 = no commands found
2. Command Data Length = 1 byte + n0 bytes + n1 bytes
   where:

- Command = 1 byte
- Command Extension = n0 bytes
- Command Data = n1 bytes

3. Additional Data Length is n2 bytes
   where:
   - Command Response = n2 bytes
   - n2 = 129 - (Type + Command + Command Extension + Command Data + Fiscal Unit Status)
4. The Additional Data of the Executed Command is shown in the remaining bytes (n2) of the Additonal Information Response.
   If the Additional Data of the Executed Command length is greater than the remaining bytes (n2) of the Additonal Information Response the Additional is truncated.
5. FU Status Executed Command (buffering command) length is n3
   where:
   - RS-485 = 9 bytes
   - RS-232 = 15 bytes

10.11.4.1 Example: Command Buffer Management - Additional Information Response

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
FF	10	5F	FF	11	30	35	30	30	43	30	35	30	39	30	34
39	31	36	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
FF	FF	08	4F	00	0A	20	07	28	00	00	80	02	01	0B	43
00														

10.11.4.2 Command Buffer Management Rules

- The command buffer size is 2 Kb (2048 bytes).
- When a command is executed, this command is stored in the Command Buffer (except the F7 cmd.).
- If the command buffer is full the oldest command is removed of the command buffer.
- If a PLD occurs during the command execution, the interrupted command is stored in the command buffer and the FU status of the executed command is equal to zero.

10.11.5 F8 - REPORT PRINTER EC

This command is used to request the FU to report the printer EC level. Printer EC level is returned in the FU status.

10.11.5.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		F8 - Report Printer EC	hex	1
3		Cmd. Extension 00 (00) = Fiscal Unit 01 (01) = Fiscal Device Information 10 (02) = Printer Device Information	hex	1

Response to FU:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH
0-8		Fiscal Unit Status	hex	9
	0-14	Fiscal Unit Status	hex	15

Response to Fiscal Device Information:

BYTE RS-485	BYTE RS-232	BIT	CONTENT	TYPE	LENGTH
0-5			PRINTER STATUS	hex	6
	0-7		PRINTER STATUS	hex	8
6	8		FISCAL STATUS & DEVICE INFO	hex	1
		7-1	Fiscal Status		
		0	Fiscal/Printer Device Info (ONLY FOR RS-485) 0 = Fiscal Device Info is NOT contained in this message 1 = Fiscal or Printer Device Info IS contained in this message		
		0	Reserved (ONLY FOR RS-232)		
7			COUNTRY VERSION - COUNTRY CODE	hex	1
	9		ADDITIONAL STATUS	hex	1
		7	Device Information Response 0 = NO 1 = YES		
		6-0	Reserved		
	10		COUNTRY CODE	hex	1
	11		COUNTRY VERSION	hex	1
	12		COUNTRY EC LEVEL	hex	1
8	13		FISCAL RETURN CODE	hex	1
	14		FISCAL RETURN CODE	hex	1
9	15		DEVICE TYPE 0x31 = Fiscal Printer	hex	1
10	16		DEVICE ID 0x00 = fiscal 2 stations thermal/impact (K --> Jacare) 0x01 = fiscal 3 stations thermal/impact (G --> Macarena) 0x02 - 0xFF = Reserved	hex	1
11	17		FEATURE BYTE #1	hex	1
		7-4	Reserved (always = '0')		
		3	Reference Data Base Present 0 = NOT 1 = YES		
		2	Microcode Flash Can be Updated 0 = NO 1 = YES		
		1	Compact Flash Present 0 = NO 1 = YES		
		0	FM Size 0 = 512 KB 1 = 256 KB		
12	18		RESERVED (always '0x00')	hex	1
13	19		FISCAL EC LEVEL	hex	1

(Continued in the next page)

Response to Printer Device Information:

BYTE RS-485	BYTE RS-232	BIT	CONTENT	TYPE	LENGTH
0-5			PRINTER STATUS	hex	6
	0-7		PRINTER STATUS	hex	8
6	8		FISCAL STATUS & DEVICE INFO	hex	1
		7-1	Fiscal Status		
		0	Fiscal/Printer Device Info (ONLY FOR RS-485) 0 = Fiscal Device Info is NOT contained in this message 1 = Fiscal or Printer Device Info IS contained in this message		
		0	Reserved (ONLY FOR RS-232)		
7			COUNTRY VERSION - COUNTRY CODE	hex	1
	9		ADDITIONAL STATUS	hex	1
		7	Device Information Response 0 = NO 1 = YES		
		6-0	Reserved		
	10		COUNTRY CODE	hex	1
	11		COUNTRY VERSION	hex	1
	12		COUNTRY EC LEVEL	hex	1
8	13		FISCAL RETURN CODE	hex	1
9	14		FISCAL RETURN CODE	hex	1
10-14	15-19		DEVICE INFO BYTES (exactly as received from the printer microcode - See SureMark User Guide Extended Address Command)	hex	5

10.11.6 F9 - REPORT CURRENT STATUS

This command is used to requests the FU to report its current status.

10.11.6.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		F9 - Report Current Status	hex	1
3		Cmd. Extension	hex	1
	7-0	Reserved (always = '0x00')		

10.11.7 FA - RESET FISCAL PRINTER

This command is used to reset the FU and FP.

10.11.7.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		FA - Reset Fiscal Printer	hex	1
3		Cmd. Extension	hex	1
	7-1	Reserved (always = '0')		
	0	Unit 0 = Fiscal Unit 1 = Printer		

10.11.8 FB - RUN ONLINE DIAGNOSTICS

10.11.8.1 Command Format

This command is used to run the FU and printer diagnostics.

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		FB - Run Online Diagnostics	hex	1
3		Cmd. Extension 01 (01) = Fiscal Unit 10 (02) = Printer 11 (03) = Both	hex	1

10.11.9 FC - REPORT MICROCODE EC

This command is used to retrieve the fiscal microcode EC level in the return code.

10.11.9.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		FC - Report Microcode EC	hex	1	
3		Cmd. Extension	hex	1	
		00 (00) = Fiscal Microcode EC Level			
		01 (01) = Fiscal Microcode Internal EC Level			
		10 (02) = Country Code			(Note 1)
		11 (03) = Country Version (Hardware Model)			(Note 2)

Notes:

1. Country Code = 01.
2. The Country Version according to communication interface is:
   - For 4610 SureMark RS-485 - KR3/KR5 Models
     Country Version (Hardware Model) = 00
   - For 4610 SureMark RS-485 - GR3/GR5 Models
     Country Version (Hardware Model) = 02
   - For 4610 SureMark RS-232 - GR3/GR5 Models
     Country Version (Hardware Model) = 05

10.11.10 FF - ENGINEERING DUMP FISCAL RAM AND FISCAL EPROM

This command is used to print the content of the fiscal EPROM or the fiscal RAM memory in hexadecimal format.

10.11.10.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		FF - Engineering Dump Fiscal RAM & Fiscal EPROM	hex	1	
3		Cmd. Extension	hex	1	
	7-5	Reserved (always = '0')			
	4	Type Report 0 = Printed 1 = Electronic			
	3-1	Reserved (always = '0')			
	0	Type Memory 0 = RAM 1 = EPROM			
4-8		Start Address	ASCII	5	(Note 1)
9-13		End Address	ASCII	5	(Note 2)

Notes:

1. Fiscal RAM address range (64 Kbytes):
   X'00000' - X'0FFFF'
2. Fiscal EPROM address range (512 Kbytes):
   X'00000' - X'7FFFF'

Response for Electronic Dump will be formatted as follows:

BYTE RS-485	BYTE RS-232	BIT	CONTENT	TYPE	LENGTH	
0-8			Fiscal Unit Status	hex	9	
	0-14		Fiscal Unit Status	hex	15	
9-218			Electronic Data	hex	210	(Note 1)
	15-142		Electronic Data	hex	128	(Note 2)

Notes:

1. The data are shown in a block of 210 bytes where valid are only those specified in the command, the rest are padded with zeroes.
2. The electronic data block can be up to 128 bytes long. Only are shown those bytes specified in the command.

10.11.10.2 Engineering Dump Fiscal RAM and Fiscal EPROM Memory Rules

- This command can be issued with J4/CE jumper (FJUMPER flag) in ACTIVE (ON) or STORED (OFF) position.

10.12 PRINTER COMMANDS

- E7 - Diagnostic and Alignment Utilities
- E8 - Set Number of Dot Rows per Line Feed
- EA - Normal Printing Lines in CR/SJ
- EB - Normal Printing Lines in DI
- EC - Line Feed
- ED - Ready Document
- EE - Cut Customer Receipt Paper
- EF - Eject Document (Forward/Reverse Feed)
- F4 - Head Position & Open/Close Throat

10.12.1 E7 - DIAGNOSTIC AND ALIGNMENT UTILITIES

This command is used to diagnostics and alignmets.

10.12.1.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		E7 - Diagnostic and Alignment Utilities	hex	1
3		Cmd. Extension	hex	1
		00 = Set MCT Value		
		01 = DI Print Document Top Registration Pattern		
		02 = Reserved		
		03 = DI Print Backlash Adjustment Pattern		
		04 = Reserved		
		05 = CR Read MCT Value		
		06 = Reserved		
		07 = Reserved		
		08 = CR Print Test Command		
		09 = SJ Print "HIHI...HIHI" Pattern (ONLY FOR GR3/GR5 MODELS)		
		09 = CR Print "HIHI...HIHI" Pattern (ONLY FOR KD3/KD5/KR3/KR5 MODELS)		
		0A = DI Print "HIHI...HIHI" Pattern		
		0B = DI Character Alignment		
		0C = DI MICR Read, Print Front Check, Print Back Check & CR Print MICR data		
		0D = CR Cut Paper		
		0E = DI Home Head Left		
		0F = DI Home Head Right		

(Continued in the next page)

Diagnostic and Alignment Utilities continued...

BYTE	BIT	CONTENT	TYPE	LENGTH
If Cmd. Extension = 00 or 01 specify:				
4	4	MCT Number	hex	1
5	5	MCT Value - High Order Byte	hex	1
6	6	MCT Value - Low Order Byte	hex	1
If Cmd. Extension = 03 or 0B specify:				
4	4	MCT Number 1	hex	1
5	5	MCT Value 1 - High Order Byte	hex	1
6	6	MCT Value 1 - Low Order Byte	hex	1
7	7	MCT Number 2	hex	1
8	8	MCT Value 2 - High Order Byte	hex	1
9	9	MCT Value 2 - Low Order Byte	hex	1
10	10	MCT Number 3	hex	1
11	11	MCT Value 3 - High Order Byte	hex	1
12	12	MCT Value 3 - Low Order Byte	hex	1
13	13	MCT Number 4	hex	1
14	14	MCT Value 4 - High Order Byte	hex	1
15	15	MCT Value 4 - Low Order Byte	hex	1
16	16	MCT Number 5	hex	1
17	17	MCT Value 5 - High Order Byte	hex	1
18	18	MCT Value 5 - Low Order Byte	hex	1
19	19	MCT Number 6	hex	1
20	20	MCT Value 6 - High Order Byte	hex	1
21	21	MCT Value 6 - Low Order Byte	hex	1
22	22	MCT Number 7	hex	1
23	23	MCT Value 7 - High Order Byte	hex	1
24	24	MCT Value 7 - Low Order Byte	hex	1
25	25	MCT Number 8	hex	1
26	26	MCT Value 8 - High Order Byte	hex	1
27	27	MCT Value 8 - Low Order Byte	hex	1
28	28	MCT Number 9	hex	1
29	29	MCT Value 9 - High Order Byte	hex	1
30	30	MCT Value 9 - Low Order Byte	hex	1
If Cmd. Extension = 05 specify:				
4	4	MCT Number	hex	1

(Continued in the next page)

Response to CR Read MCT Value

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH
0-8		Fiscal Unit Status	hex	9
	0-14	Fiscal Unit Status	hex	15
9	15	MCT Value - High Order Byte	hex	1
10	16	MCT Value - Low Order Byte	hex	14

10.12.1.2 Diagnostic and Alignment Utilities Rules

- For more information about MCT's, refers to "IBM SureMark Printer - User's Guide" document.

10.12.2 E8 - SET NUMBER OF DOT ROWS PER LINE FEED

This command is used to change the number of dot rows per line feed from 12 (default - 6 lines/inch) to 9 (alternate - 8 lines/inch).

10.12.2.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		E8 - Set Number of Dot Rows per Line Feed	hex	1
3		Cmd. Extension	hex	1
	7-4	Reserved (always = '0')		
	3	DI Station - Landscape (ONLY FOR MODELS WITH DI STATION		
		1 = Set Alternate Value for DI		
		0 = Set Default Value for DI		
	2	DI Station - Portrait (ONLY FOR MODELS WITH DI STATION		
		1 = Set Alternate Value for DI		
		0 = Set Default Value for DI		
	1	SJ Station (ONLY FOR GR3/GR5 MODELS)		
		1 = Set Alternate Value for SJ		
		0 = Set Default Value for SJ		
	1	CR Station (ONLY FOR KD3/KD5/KR3/KR5 MODELS)		
		1 = Set Alternate Value for CR		
		0 = Set Default Value for CR		
	0	CR Station		
		1 = Set Alternate Value for CR		
		0 = Set Default Value for CR		

Note 1: alternate = 12 Dot Rows per LF = 6 lines/inch.
default = 9 Dot Rows per LF = 8 lines/inch.

10.12.3 EA - NORMAL PRINTING LINES IN CR/SJ

This command is used to print one line in CR and SJ stations.

10.12.3.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		EA - Normal Printing Lines in CR/SJ	hex	1
3		Cmd. Extension	hex	1
	7	Reserved (always = '0')		
	6	Station 0 = CR 1 = SJ (ONLY FOR GR3/GR5 MODELS) 1 = CR (ONLY FOR KD3/KD5/KR3/KR5 MODELS)		
	5-3	Print Mode 000 = 15 CPI 001 = 12 CPI 010 = 15 CPI Char Print Mode Mask 011 = 15 CPI, Double-High 100 = 15 CPI, Emphasized 101 = 12 CPI, Emphasized 110 = 12 CPI, Char Print Mode Mask 111 = 15 CPI, Double-High, Emphasized		
	2-0	Number of Line Feed (min 1, max 7)		
4-41		EA_Description	ASCII	38
		If (Byte 3 - bit 5-3 = 010 or 110) specify:		
42-79		Char Print Mode Mask	hex	38 (Note 2)

Note 1: One line feed is assumed if number of line feed is 0.

Note 2: See 8.5.2, "Char Print Mode Mask" on page 60 to complete Char Print Mode Mask.

10.12.4 EB - NORMAL PRINTING LINES IN DI

(ONLY FOR MODELS WITH DI STATION)

This command is used to print one line in the DI station.

10.12.4.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - cmd prefix	hex	2	
2		EB - Normal Printing Lines in DI	hex	1	
3		Cmd. Extension	hex	1	
	7-6	Reserved (always = '0')			
	5-3	Print Mode			(Note 1)
		000 = 15 CPI			
		001 = 12 CPI			
		010 = Reserved			
		011 = 15 CPI, Double-High			
		100 = 15 CPI, Emphasized			
		101 = 12 CPI, Emphasized			
		110 = Reserved			
		111 = 15 CPI, Double-High, Emphasized			
	2-1	Reserved (always = '0')			(Note 1)
	0	Orientation Print			
		0 = Portrait			
		1 = Landscape			(Note 2, 3)
4-89		EB_Description	ASCII	86	(Note 4)

Note 1: This field must be filled with zeros (0).

Note 2: The emphasized option is ingnored during landscape orientation print.

Note 3: The print lines sent are from botton-of-form to the top-of-form.

Note 4: EB_Description field will be truncated as follows:
Portrait orientation at 15 CPI to 47 characters
Portrait orientation at 12 CPI to 37 characters
Landscape orientation at 15 CPI to 86 characters
Landscape orientation at 12 CPI to 86 characters

10.12.5 EC - LINE FEED

This command is used to feed the paper a specified number of lines on one of the printer stations.

10.12.5.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		EC - Line Feed	hex	1
3		Cmd. Extension	hex	1
	7-6	Reserved (always = '0')		
	5-4	Station		
		00 = CR		
		01 = SJ (ONLY FOR GR3/GR5 MODELS)		
		01 = CR (ONLY FOR KD3/KD5/KR3/KR5 MODELS)		
		10 = DI		
		11 = Reserved		
	3-0	Number of Line Feed (min 0, max 15)		

10.12.6 ED - READY DOCUMENT

This command is used to request the printer to advance the inserted document to the first print position.

10.12.6.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		ED - Ready Document	hex	1
3		Cmd. Extension 00 = Top Registration	hex	1

10.12.7 EE - CUT CUSTOMER RECEIPT PAPER

This command is used to do a partial cut of the CR paper.

10.12.7.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		EE - Cut Customer Receipt Paper	hex	1
3		Cmd. Extension	hex	1
	7-1	Reserved (always = '0')		
	0	Guillotine 0 = No Cut 1 = Partial Cut		

10.12.8 EF - EJECT DOCUMENT

This command is used to request the printer to line feed a document until EOF sensor is broken.

10.12.8.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		EF - Eject Document	hex	1
3		Cmd. Extension	hex	1
	7-1	Reserved (always = '0')		
	0	Line Feed Direction 0 = Forward 1 = Reverse		

10.12.9 F4 - HEAD POSITION & OPEN/CLOSE THROAT

This command requests the printer to return the print head to right or left position and open or close the throat.

10.12.9.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		F4 - Head Position & Open/Close Throat	hex	1
3		Cmd. Extension	hex	1
	7-2	Reserved (always = '0')		
	1-0	Head Position & Throat		
		00 (00) = Right Head Position		
		01 (01) = Left Head Position		
		10 (02) = Open Throat		
		11 (03) = Close Throat		

10.13 MISCELLANEOUS COMMANDS

- 19 - Set New Currency
- C4 - Fiscal Parameter Configuration
- C8 - Set Barcode Parameters
- C9 - Print Barcode
- CA - Print and Download Graphics

10.13.1 19 - SET NEW CURRENCY

(ONLY FOR GR3/GR5 MODELS)

This command is used to set EURO currency.

10.13.1.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		19 - Set New Currency	hex	1
3		00 - Cmd Extension	hex	1
4-7		Password	ASCII	4

10.13.1.2 Set New Currency Calculations

$Day\_N\_Vouc = Day\_N\_Vouc + 1$

10.13.1.3 Set New Currency Rules

- This command can be executed only one time.
- This command must be executed out of the SP.
- When this command is executed, the passaggio all euro report is printed in CR station and replicate in SJ station.
- The microcode will record the number of closures done with the Lira currency. Once this procedure has been executed the FU will change the operations as follows:
  - Amounts included in the command string are considered as fixed point numbers with two decimal digits. Separator character should not be included. For example:

for amount	specify
120.45	'12045'
120.4	'12040'
120	'12000'
0.45	'45'
0.00	'00'

  - Amounts printed on FV, fiscal receipt or fiscal invoice slips will be printed with no decimal digits for Lira currency and with 2 decimal digits for Euro currency.
    The separator character will be ',' (comma).
  - Amounts printed on closure report will be printed with no decimal digits for Lira currency and with 2 decimal digits for Euro currency.
    Two grand totals will be printed, one for Lira currency with no decimal digits and other one for Euro currency with 2 decimal digits.
  - Amounts printed on FM report will be printed with no decimal digits for closures done with Lira currency and with 2 decimal digits for closures done with Euro currency.

10.13.2 C4 - FISCAL PARAMETER CONFIGURATION

ONLY FOR KR3/KR5/KD3/KD5 MODELS

This command is used to enable and disabled the DI led blinking.

10.13.2.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - cmd prefix	hex	2
2		C4 - Fiscal Parameter Configuration	hex	1
3		Cmd. Extension 02 = Set DI Led Blinking	hex	1
		If Cmd. Extension = 02 specify		
4		Set DI Led Blinking 0 = Enabled 1 = Disabled	hex	1

10.13.2.2 Fiscal Parameter Configuration Rules

- Set DI Led Blinking (Cmd. Extension 02) Rules
  - Is optional and the default value is ″enabled″, otherwise if is issued, must be out of the sale period.
  - If any of the following commands are issued and DI led blinking was set to disabled, the DI led won't blink.
    - E3 - End Fiscal Receipt
    - E4 - End Fiscal Invoice
    - E5 - End Accompanying Document
    - 0F - Cancel Receipt
    - 10 - Cancel Invoice
    - 11 - Cancel Accompanying Document
    - EF - Document Eject

10.13.3 C8 - SET BARCODE PARAMETERS

This command is used to set the barcode parameters.

10.13.3.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - Cmd Prefix	hex	2	
2		C8 - Set Barcode Parameters	hex	1	
3		Cmd. Extension 00 = Size 01 = Station	hex	1	
If Cmd. Extension = 00 specify:					
4		Width	ASCII	1	(Note 1)
5-7		Height	ASCII	3	(Note 2)
If Cmd. Extension = 01 specify:					
4		Station 0 = CR 1 = SJ (ONLY FOR GR3/GR5 MODELS) 1 = CR (ONLY FOR KD3/KD5/KR3/KR5 MODELS) 2 = DI	hex	1	

Note 1: Ranges supported for horizontal magnification of the line width are:
- Minimum = 2
- Maximum = 4

Note 2: Ranges supported for dot height of the barcode are:
* For CR and SJ stations:
  - Minimum = 001
  - Maximum = 255

* For DI station:
  - Minimum = 3
  - Maximum = 5

  Values out of this range will be set to its closest valid value while printing in DI.

10.13.3.2 Set Barcode Parameters Rules

- The Horizontal magnification of the line width default is 3.
- The dot height default:
  - For CR and SJ stations is 162.
  - For DI station is 4.
- CR is the default station.
- The applied settings will remain after power off. Only will be reset to default after PLD or J4/CE jumper operation.

10.13.4 C9 - PRINT BARCODE

This command is used to print barcode.

10.13.4.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - Cmd Prefix	hex	2
2		C9 - Print Barcode	hex	1
3		Cmd. Extension	hex	1
	7	Reserved (always = '0')		
	6	HRI font 1 = 12 CPI 0 = 15 CPI		(Note 1)
	5-4	HRI location 11 = Both above and below the barcode 10 = Below the barcode 01 = Above the barcode 00 = Not printed		(Note 2)
	3-0	Barcode Type 1111 = Reserved 1110 = Reserved 1101 = Reserved 1100 = Reserved 1011 = Reserved 1010 = Reserved 1001 = Reserved 1000 = CODE93 0111 = CODE128 (C) 0110 = CODABAR 0101 = ITF 0100 = CODE39 0011 = JAN8 0010 = JAN13 0001 = UPC_E 0000 = UPC_A		
4-n		Barcode Data	ASCII	n (Note 3)

Note 1: The Human Readable Characters font, if it must be printed.

Note 2: Printing Position of the Human Readable Characters.

Note 3: Data to be encoded in the barcode.
- 3.1: Data must be null terminated.
- 3.2: Excess characters will be discarded.
- 3.3: If a x'00 or an invalid char is received before the required number of data bytes, zeros will be inserted following the data until the required number of bytes is reached. This is for UPC-A, UPC-E, JAN8 and JAN13.
- 3.4: A check digit will be generated if one is not supplied for UPC-A and JAN13.
- 3.5: UPC-E will generate it's own check characters. The printer will expand the data, generate a check digit and then parse the data before generating the bar code. Six or seven digits will be excepted. If seven digits are received and the first is a zero, then the last 6 bytes will be used to generate the bar code. If the first digit is not a zero, then the first six bytes will be used to generate the bar code and the seventh byte ignored.
- 3.6: A leading zero will be added to the data for ITF bar codes if the data received has an odd number of bytes.
- 3.7: Check digits will be figured and added for Code 128 and Code 93.

10.13.4.2 Print Barcode Rules

- The barcode will be printed in the station selected thru C8 cmd.
- The barcodes can be printed:
  - Inside of FV′s
  - Inside of non-fiscal reports
  - Outside of any document
- In barcode types CODE39 and CODE93, if the width is ≥ 3, the barcode might not fit in the sheet. In this case, it will be truncated.

10.13.5 CA - PRINT AND DOWNLOAD GRAPHICS

This command is used to download graphics.

10.13.5.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH	
0-1		1B66 - Cmd Prefix	hex	2	
2		CA - Print and Download Graphics	hex	1	
3		Cmd. Extension	hex	1	
		00 = First Print 100 DPI Packet			(Note 1)
		01 = First Print 200 DPI Packet			(Note 1)
		02 = First Download Packet			(Note 1)
		08 = Next Packet			
		09 = Last Packet			
		0A = Cancel Graphics Transmission			
		10 = Erase Graphics Download Area			
		11 = Print Downloaded 100 DPI			
		12 = Print Downloaded 200 DPI			
		If Cmd. Extension = 00 or 01 specify:			
4		Width	hex	1	(Note 2)
5		Height	hex	1	(Note 2)
6-65		First Pixels in Graphics	hex	60	
		If Cmd. Extension = 02 specify:			
4		Width	hex	1	(Note 2)
5		Height	hex	1	(Note 2)
6		Graphic Number	hex	1	(Note 3)
7-65		First Pixels in Graphics	hex	59	
		If Cmd. Extension = 08 or 09 specify:			
4-65		Pixels in Graphics	hex	62	
		If Cmd. Extension = 11 or 12 specify:			
4		Graphic Number	hex	1	(Note 3)

Note 1: If the number of data bytes exceeds 61 or 62 (depending on the cmd. extension), the POS will need to send a next or last packet after the first packet.

Note 2: The number given in this field should be multiplied by 8 in order to get the number of pixels.

Note 3: The FP can store up to 40 graphics in its internal memory so they can be printed later. The valid range is from x01 to x28.

Response to Cmd. Extension 00 or 01 will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH
0-8	0-14	Fiscal Unit Status	hex	9
9	15	CA - Record Identification	hex	1
10	16	Return Code 43 = Good Completion 74 = Invalid Sequence 75 = Invalid Size	hex	1

Response to Cmd. Extension 02 will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH
0-8	0-14	Fiscal Unit Status	hex	9
9	15	CA - Record Identification	hex	1
10	16	Return Code 43 = Good Completion 74 = Invalid Sequence 75 = Invalid Size 76 = Invalid Graphic Number 77 = Graphic with same number already in printer flash	hex	1

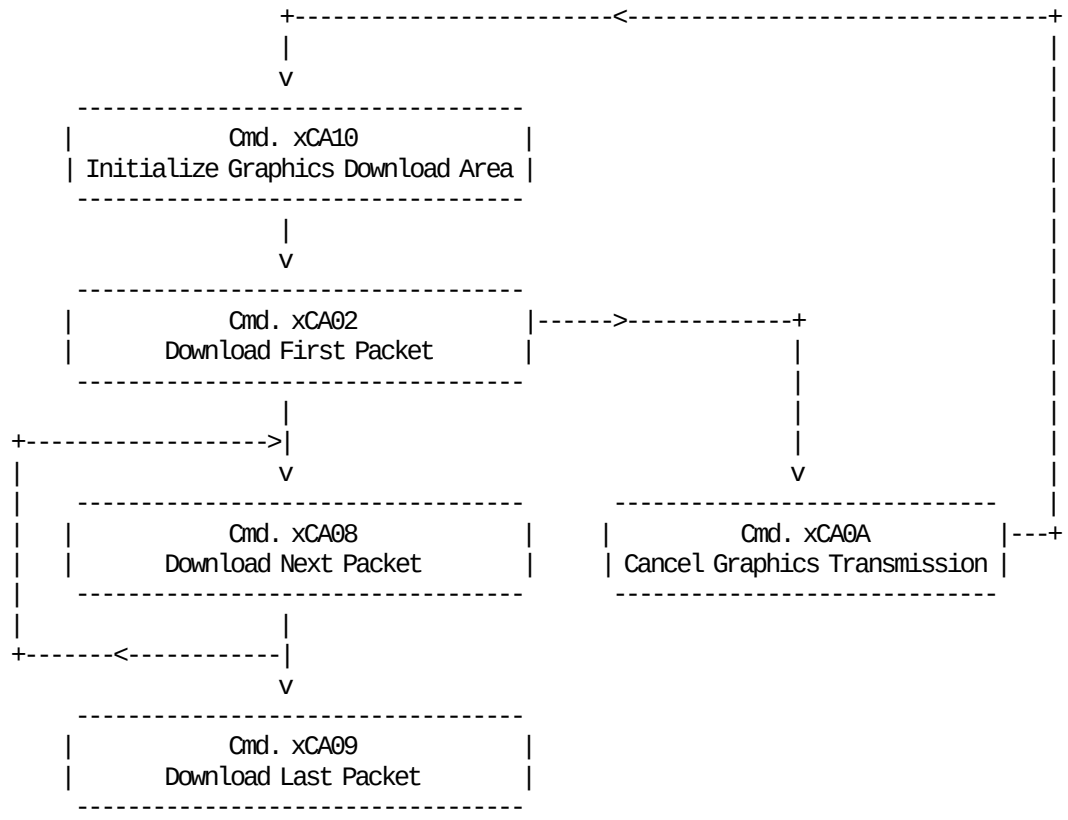
Response to Cmd. Extension 08 or 09 will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH
0-8	0-14	Fiscal Unit Status	hex	9
9	15	CA - Record Identification	hex	1
10	16	Return Code 43 = Good Completion 74 = Invalid Sequence	hex	1

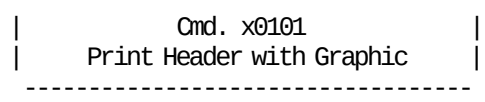
Response to Cmd. Extension 11 or 12 will be formatted as follows:

BYTE RS-485	BYTE RS-232	CONTENT	TYPE	LENGTH
0-8	0-14	Fiscal Unit Status	hex	9
9	15	CA - Record Identification	hex	1
10	16	Return Code 43 = Good Completion 76 = Invalid Graphic Number	hex	1

10.13.5.2 Download Graphics Flow



10.13.5.3 Print Graphics Flow



10.13.5.4 Print Graphic Example.

In order to understand the graphic data format used for the FP an example will be given.

- The number of bytes per row is specified in the width field and they represent the graphic row from left to right. The leftmost pixel is the most significant bit.
- The first data bytes correspond to the upper row.
- The last data bytes correspond to the bottom row.
- A bit should be set to '1' when the corresponding pixel is black and '0' when it is white. In the example below the 'X's are black and the '.'s are white.

```
Example: width = 2 (16 pixels) & heigth = 2 (16 pixels)
```

Column #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Data Bytes
Row #																	
0	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	1 2
1	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	3 4
2	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	5 6
3	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	7 8
4	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	9 10
5	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	11 12
6	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	13 14
7	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	15 16
8	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	17 18
9	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	19 20
10	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	21 22
11	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	23 24
12	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	25 26
13	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	27 28
14	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	29 30
15	.	X	.	X	.	X	.	X	.	X	.	X	.	X	.	X	31 32

```
Send the following packet in order to print the above graphic in 100 DPI in the CR station.
The semicolons (;) are used only to separate bytes in this example.

X'1B;66;CA;00;02;02;AA;AA;AA;AA;AA;AA;AA;AA;AA;AA;AA;AA;AA;AA;AA;AA;55;55;55;55;55;55;55;55;55;55;55;55;55;55;55;55'
```

Figure 22. Print Graphic Example.

10.13.6 CD - CASH DRAWER MANAGEMENT

ONLY FOR KD3/KD5 MODELS

This command is used to open and read status of the chash drawer.

10.13.6.1 Command Format

BYTE	BIT	CONTENT	TYPE	LENGTH
0-1		1B66 - Cmd Prefix	hex	2
2		CD - Cash Drawer Management	hex	1
3		Cmd. Extension 00 = Open Cash Drawer 01 = Get Cash Drawer Status	hex	1
If Cmd. Extension = 00 specify:				
4		Cash Drawer Number	hex	1 (Note 1)
5		Pulse Width ON Time	hex	1 (Note 2)
6		Pulse Width OFF Time	hex	1 (Note 2)

Notes:

1. Numbers allowed: 0 and 1.
2. The value given in this field must be multiplied by 2 in order to get the pulse width on/off in miliseconds.
   Range allowed: from x00 to xFF.

Response to Cmd. Extension 01 will be formatted as follows:

BYTE	BIT	CONTENT	TYPE	LENGTH
0-14		Fiscal Unit Status	hex	15
15		Cash Drawer Status 00 = Open 01 = Close	hex	1

11.0 Fiscal Unit Return Codes

11.1 4690 OS Hardware Return Code Descriptions

This list contains information about the return code (RC=*8090xxxx*) in system messages.
If your return code is not listed here **- or -** under "Return Code Descriptions" in the *IBM 4690 OS Store System: Messages Guide*, it is an undefined error.

Note: ***Service the FP to replace both the fiscal processor card and the fiscal printer.***

11.2 Return Codes 80900xxx

80900006

Explanation: The FU is off-line.

User Response: Retry the operation.

If the problem remains, service the FP to replace the fiscal processor card.

80900007

Explanation: The FU is not ready.

User Response: Retry the operation.

If the problem remains, service the FP to replace the fiscal processor card.

80900008

Explanation: A PLD occurred during command execution.

User Response: Issue a RESUME or RESUME RETRY command.

80900009

Explanation: The command was rejected by the FU at the time it was issued.

User Response: Issue the command again.

The following tables define the meaning of FU return codes reported in byte 8 of FU status.

11.3 DOS/WINDOWS and 4690 OS Return Code Descriptions

000 = DOS/WINDOWS 80900100 = 4690 OS

Explanation: An overflow occurred. The transaction total exceeds the maximum allowed value (2147483647) on an ITEM fiscal request. The request is not processed.

User Response: Issue a Subtotal/Total Transaction (D4 cmd.) and an End Transaction (06 cmd.) to close the FV.

001 = DOS/WINDOWS 80900101 = 4690 OS

Explanation: An overflow occurred. The RETURN transaction total exceeds the maximum allowed (2147483647). The request is not processed.

User Response: Issue a Subtotal/Total Transaction (D4 cmd.) and an End Transaction (06 cmd.) to close the FV.

002 = DOS/WINDOWS 80900102 = 4690 OS

Explanation: An overflow occurred. The VOID transaction total exceeds the maximum allowed (2147483647). The request is not processed.

User Response: Issue a Subtotal/Total Transaction (D4 cmd.) and an End Transaction (06 cmd.) to close the FV.

003 = DOS/WINDOWS 80900103 = 4690 OS

Explanation: An overflow occurred. The BONUS transaction total exceeds the maximum allowed (2147483647). The request is not processed.

User Response: Issue a Subtotal/Total Transaction (D4 cmd.) and an End Transaction (06 cmd.) to close the FV.

004 = DOS/WINDOWS 80900104 = 4690 OS

Explanation: An overflow occurred. The DISCOUNT transaction total exceeds the maximum allowed (2147483647). The request is not processed.

User Response: Issue a Subtotal/Total Transaction (D4 cmd.) and an End Transaction (06 cmd.) to close the FV.

005 = DOS/WINDOWS 80900105 = 4690 OS

Explanation: An overflow occurred. The EMPTIES transaction total exceeds the maximum allowed (2147483647). The request is not processed.

User Response: Issue a Subtotal/Total Transaction (D4 cmd.) and an End Transaction (06 cmd.) to close the FV.

006 = DOS/WINDOWS 80900106 = 4690 OS

Explanation: An overflow occurred. The MISCELLANEOUS transaction total exceeds the maximum allowed (2147483647). The request is not processed.

User Response: Issue a Subtotal/Total Transaction (D4 cmd.) and an End Transaction (06 cmd.) to close the FV.

---

007 = DOS/WINDOWS 80900107 = 4690 OS

Explanation: The NOT PAID transaction total exceeds the maximum allowed (transaction total). The request is not processed.

User Response: Decrease the NOT PAID amount to make it equal to or less than the transaction total.

---

008 = DOS/WINDOWS 80900108 = 4690 OS

Explanation: The current transaction total is less than the minimum allowed (-2147483648). The request is not processed.

User Response: Cancel the transaction or take action to make the total higher than the minimum allowed.

---

009 = DOS/WINDOWS 80900109 = 4690 OS

Explanation: The RETURN transaction total is less than the minimum allowed (-2147483648). The request is not processed.

User Response: Issue a Subtotal/Total Transaction (D4 cmd.) and an End Transaction (06 cmd.) to close the FV.

---

010 = DOS/WINDOWS 80900110 = 4690 OS

Explanation: The VOID transaction total is less than the minimum allowed (-2147483648). The request is not processed.

User Response: Issue a Subtotal/Total Transaction (D4 cmd.) and an End Transaction (06 cmd.) to close the FV.

---

011 = DOS/WINDOWS 80900111 = 4690 OS

Explanation: The BONUS transaction total is less than the minimum allowed (-2147483648). The request is not processed.

User Response: Issue a Subtotal/Total Transaction (D4 cmd.) and an End Transaction (06 cmd.) to close the FV.

---

012 = DOS/WINDOWS 80900112 = 4690 OS

Explanation: The DISCOUNT transaction total is less than the minimum allowed (-2147483648). The request is not processed.

User Response: Issue a Subtotal/Total Transaction (D4 cmd.) and an End Transaction (06 cmd.) to close the FV.

013 = DOS/WINDOWS 80900113 = 4690 OS

Explanation: The EMPTIES transaction total is less than the minimum allowed (-2147483648). The request is not processed.

User Response: Issue a Subtotal/Total Transaction (D4 cmd.) and an End Transaction (06 cmd.) to close the FV.

---

014 = DOS/WINDOWS 80900114 = 4690 OS

Explanation: The MISCELLANEOUS transaction total is less than the minimum allowed (-2147483648). The request is not processed.

User Response: Issue a Subtotal/Total Transaction (D4 cmd.) and an End Transaction (06 cmd.) to close the FV.

---

015 = DOS/WINDOWS 80900115 = 4690 OS

Explanation: The NOTPAID transaction total was negative at payment time. The request is not processed.

User Response: Take action to make the total positive or equal to zero.

---

016 = DOS/WINDOWS 80900116 = 4690 OS

Explanation: An overflow occurred. The daily total exceeded the maximum allowed value (4294967295) at TOTAL request time. The request is not processed.

User Response: Take action to make the total lower than or equal to the maximum allowed, then close the transaction or issue a Cancel Transaction (07 cmd.) and then issue a Close Sale Period (13 cmd.).

---

017 = DOS/WINDOWS 80900117 = 4690 OS

Explanation: An overflow occurred. The RETURN daily total exceeded the maximum allowed value (2147483647) at end transaction time. The request is not processed.

User Response: Take action to make the total lower than or equal to the maximum allowed, then close the transaction or issue a Cancel Transaction (07 cmd.) and then issue a Close Sale Period (13 cmd.).

---

018 = DOS/WINDOWS 80900118 = 4690 OS

Explanation: An overflow occurred. The VOIDS daily total exceeded the maximum allowed value (2147483647) at end transaction time. The request is not processed.

User Response: Take action to make the total lower than or equal to the maximum allowed, then close the transaction or issue a Cancel Transaction (07 cmd.) and then issue a Close Sale Period (13 cmd.).

---

019 = DOS/WINDOWS 80900119 = 4690 OS

Explanation: An overflow occurred. The BONUS daily total exceeded the maximum allowed value (2147483647) at end transaction time. The request is not processed.

User Response: Take action to make the total lower than or equal to the maximum allowed, then close the transaction or issue a Cancel Transaction (07 cmd.) and then issue a Close Sale Period (13 cmd.).

020 = DOS/WINDOWS 80900120 = 4690 OS

Explanation: An overflow occurred. The DISCOUNT daily total exceeded the maximum allowed value (2147483647) at end transaction time. The request is not processed.

User Response: Take action to make the total lower than or equal to the maximum allowed, then close the transaction or issue a Cancel Transaction (07 cmd.) and then issue a Close Sale Period (13 cmd.).

---

021 = DOS/WINDOWS 80900121 = 4690 OS

Explanation: An overflow occurred. The EMPTIES daily total exceeded the maximum allowed value (2147483647) at end transaction time. The request is not processed.

User Response: Take action to make the total lower than or equal to the maximum allowed, then close the transaction or issue a Cancel Transaction (07 cmd.) and then issue a Close Sale Period (13 cmd.).

---

022 = DOS/WINDOWS 80900122 = 4690 OS

Explanation: An overflow occurred. The MISCELLANEOUS daily total exceeded the maximum allowed value (2147483647) at end transaction time. The request is not processed.

User Response: Take action to make the total lower than or equal to the maximum allowed, then close the transaction or issue a Cancel Transaction (07 cmd.) and then issue a Close Sale Period (13 cmd.).

---

023 = DOS/WINDOWS 80900123 = 4690 OS

Explanation: An overflow occurred. The NOTPAID daily total exceeded the maximum allowed value (2147483647) on an ENDTRANS request. The request is not processed.

User Response: Take action to make the total lower than or equal to the maximum allowed, then close the transaction, and then issue a Close Sale Period (13 cmd.).

---

024 = DOS/WINDOWS 80900124 = 4690 OS

Explanation: The user TOTAL is not equal to the fiscal TOTAL. The value associated with the TOTAL request does not reflect the total stored in the FM. The request is not processed.

User Response: Correct the computation procedure of the total, and then close the transaction or issue a Cancel Transaction (07 cmd.).

---

025 = DOS/WINDOWS 80900125 = 4690 OS

Explanation: The word TOTAL was incorrectly used. The request is not processed.

User Response: Issue a new request without using the word “TOTAL”.

---

026 = DOS/WINDOWS 80900126 = 4690 OS

Explanation: The transaction amount was negative at TOTAL time. The request is not processed.

User Response: Take action to make the amount positive or equal to zero, and then close the transaction or issue a Cancel Transaction (07 cmd.).

027 = DOS/WINDOWS 8090061B = 4690 OS

Explanation: Any FV or non-fiscal report or fiscal document is in progress. The request is not processed.

User Response: Issue the command again when the FV or non-fiscal report or fiscal document is not in progress.

---

029 = DOS/WINDOWS 80900129 = 4690 OS

Explanation: Either the PAYMENT or NOTPAID total was less than the amount to be cashed. The request is not processed.

User Response: Correct the computation procedure of payment or not paid, or issue a Payment (D5 cmd.) or Not Paid (D8 cmd.) to complete processing.

---

030 = DOS/WINDOWS 80900130 = 4690 OS

Explanation: An overflow occurred. The request is not processed.

User Response: Correct the application program and issue the request again or service the printer.

---

031 = DOS/WINDOWS 8090061F = 4690 OS

Explanation: An underflow occurred. The request is not processed.

User Response: Correct the application program and issue the request again or service the printer.

---

033 = DOS/WINDOWS 80900141 = 4690 OS

Explanation: The RETURN daily total is less than the minimum allowed value (-2147483648). The request is not processed.

User Response: Take action to make the total higher than or equal to the minimum allowed, close the transaction or issue a Cancel Transaction (07 cmd.), and then issue a Close Sale Period (13 cmd.).

---

034 = DOS/WINDOWS 80900142 = 4690 OS

Explanation: The VOIDS daily total is less than the minimum allowed value (-2147483648). The request is not processed.

User Response: Take action to make the total higher than or equal to the minimum allowed, then close the transaction or issue a Cancel Transaction (07 cmd.), and then issue a Close Sale Period (13 cmd.).

---

035 = DOS/WINDOWS 80900143 = 4690 OS

Explanation: The BONUS daily total is less than the minimum allowed value (-2147483648). The request is not processed.

User Response: Take Action to make the total higher than or equal to the minimum allowed, then close the transaction or issue a Cancel Transaction (07 cmd.), and then issue a Close Sale Period (13 cmd.).

---

036 = DOS/WINDOWS 80900144 = 4690 OS

Explanation: The DISCOUNT daily total is less than the minimum allowed value (-2147483648). The request is not processed.

User Response: Take Action to make the total higher than or equal to the minimum allowed, then close the transaction or issue a Cancel Transaction (07 cmd.), and then issue a Close Sale Period (13 cmd.).

037 = DOS/WINDOWS 80900145 = 4690 OS

Explanation: The EMPTIES daily total is less than the minimum allowed value (-2147483648). The request is not processed.

User Response: Take Action to make the total higher than or equal to the minimum allowed, then close the transaction or issue a Cancel Transaction (07 cmd.), and then issue a Close Sale Period (13 cmd.).

038 = DOS/WINDOWS 80900146 = 4690 OS

Explanation: The MISCELLANEOUS daily total is less than the minimum allowed value (-2147483648). The request is not processed.

User Response: Take Action to make the total higher than or equal to the minimum allowed, then close the transaction or issue a Cancel Transaction (07 cmd.), and then issue a Close Sale Period (13 cmd.).

053 = DOS/WINDOWS 80900635 = 4690 OS

Explanation: The date requested is before the current date or more than one day after the current date or precedes the last closure date. The request is not processed.

User Response: Check the date sent by the application program.

Note: Only authorized service personnel can set the date and time when outside the limits noted in the **Explanation**.

055 = DOS/WINDOWS 80900203 = 4690 OS

Explanation: The fiscal request message length is less than the minimum required. The request is not processed.

User Response: Check the application program.

056 = DOS/WINDOWS 80900150 = 4690 OS

Explanation: An overflow occurred. The CANCEL transaction daily total exceeded the maximum allowed value (2147483647) at cancel transaction time. The request is not processed.

User Response: Take action to make the total lower than or equal to the maximum allowed, then issue a Cancel Transaction (07 cmd.), and then issue a Close Sale Period (13 cmd.).

057 = DOS/WINDOWS 80900151 = 4690 OS

Explanation: The CANCEL transaction daily total is less than the minimum allowed value (-2147483648). The request is not processed.

User Response: Take action to make the total higher than or equal to the minimum allowed, then issue a Cancel Transaction (07 cmd.), and then issue a Close Sale Period (13 cmd.).

058 = DOS/WINDOWS 8090063A = 4690 OS

Explanation: An overflow occurred. The Amount Due accumulator exceeds the maximum allowed (2147483647). The request is not processed.

User Response: Correct the payment amount and issue the request again.

059 = DOS/WINDOWS 8090063B = 4690 OS

Explanation: An underflow occurred. The Amount Due accumulator is less than the minimum allowed (-2147483648). The request is not processed.

User Response: Correct the payment amount and issue the request again.

---

063 = DOS/WINDOWS 8090063F = 4690 OS

Explanation: Fixed Vendor information not set. Operation not allowed in this state. The request is not processed.

User Response: Correct the application program. Issue a Set Fixed Vendor information.

---

064 = DOS/WINDOWS 80900127 = 4690 OS

Explanation: The specified value-received amount from the application program exceeds the maximum amount allowed. The request is not processed.

User Response: Retry the operation with a correct value.

---

065 = DOS/WINDOWS 80900201 = 4690 OS

Explanation: A request has been sent to the FU and the fiscal command byte cannot be recognized. The request is not processed.

User Response: Check the application program.

---

066 = DOS/WINDOWS 80900202 = 4690 OS

Explanation: A request has been sent to the FU and the fiscal command byte extension cannot be recognized. The request is not processed.

User Response: Check the application program.

---

067 = DOS/WINDOWS N/A = 4690 OS

Explanation: The command was processed successfully.

User Response: None

---

068 = DOS/WINDOWS 80900204 = 4690 OS

Explanation: An attempt was made to print a line in CR station outside a ST while in TRM. The request is not processed.

User Response: Check the application program.

---

069 = DOS/WINDOWS 80900205 = 4690 OS

Explanation: An attempt was made to print a line in CR station that would void the ST while payment was in progress. The request is not processed.

User Response: Set the payment value to “0” and issue the request again. If this error was encountered during the online printer diagnostic test, it indicates that the test cannot be completed because a ST is in progress. Either have the salesperson end the transaction, or diagnose the printer problem using the offline printer test that is invoked by pressing the keys on the printer in the correct sequence.

070 = DOS/WINDOWS 80900646 = 4690 OS

Explanation: Partial Line Feed dots out of range. The request is not processed.

User Response: Correct the application program. Range of command C3.

---

071 = DOS/WINDOWS 80900302 = 4690 OS

Explanation: An error occurred while printing in CR station. The request is not processed.

User Response: Service the printer.

---

072 = DOS/WINDOWS 80900207 = 4690 OS

Explanation: Printing on an inserted document is not allowed while in TRM. The request is not processed.

User Response: Check the application program.

---

073 = DOS/WINDOWS 80900303 = 4690 OS

Explanation: An error occurred while printing on an inserted document. The request is not processed.

User Response: Service the printer.

---

074 = DOS/WINDOWS 80900208 = 4690 OS

Explanation: Printing on an inserted document is not allowed after printing a voucher header on CR station. The request is not processed.

User Response: Check the application program.

---

075 = DOS/WINDOWS 80900209 = 4690 OS

Explanation: Printing on an inserted document is not allowed during transaction processing. The request is not processed.

User Response: Check the application program.

---

076 = DOS/WINDOWS 80900210 = 4690 OS

Explanation: An attempt was made to print a line on a nonexistent print station. The request is not processed.

User Response: Check the application program.

---

077 = DOS/WINDOWS 80900211 = 4690 OS

Explanation: An attempt was made to print a SJ outside a sales transaction while in TRM. The request is not processed.

User Response: Check the application program.

---

078 = DOS/WINDOWS 80900304 = 4690 OS

Explanation: An error occurred while printing in SJ station. The request is not processed.

User Response: Service the printer.

079 = DOS/WINDOWS 80900212 = 4690 OS

Explanation: A line feed in CR station is not allowed during printing of inserted fiscal documents. The request is not processed.

User Response: Check the application program.

---

080 = DOS/WINDOWS 80900213 = 4690 OS

Explanation: A line feed on an inserted document is not allowed during transaction processing. The request is not processed.

User Response: Check the application program.

---

081 = DOS/WINDOWS 80900651 = 4690 OS

Explanation: An invalid print mode was specified. The request is not processed.

User Response: Specify a valid print mode.

---

082 = DOS/WINDOWS 80900306 = 4683

Explanation: A request to print in CR, SJ or DI without the correct non-fiscal report mode selected. The request is not processed.

User Response: Check the application program sequence.

---

083 = DOS/WINDOWS 80900307 = 4690 OS

Explanation: An unrecoverable error occurred reading the FM identification/status area.

User Response: Service the printer.

---

084 = DOS/WINDOWS 80900308 = 4690 OS

ONLY FOR KD3/KD5/KR3/KR5 MODELS

Explanation: General EJ Error.

User Response: Due to the limited number of return codes available, all commands that fails due to a problem related with EJ, just fail returning this general EJ error ″84″.
To know the exact reason for failure, the application must send the Get Extended EJ Error (63 cmd.) to get the specific EJ return code. Refer to 12.0, “Electronic Journal Return Codes” on page 195.

---

086 = DOS/WINDOWS 80900401 = 4690 OS

Explanation: An invalid password was entered. The request is not processed.

User Response: Re-enter using the correct password.

Note: Only authorized service personnel can perform functions that require a password.

---

087 = DOS/WINDOWS 80900657 = 4690 OS

Explanation: An invalid printer command was issued. The request is not processed.

User Response: Issue a valid printer command.

089 = DOS/WINDOWS 80900312 = 4690 OS

Explanation: FM is full. All fiscal requests are rejected except the FM report (15 cmd).

User Response: Service the printer.

090 = DOS/WINDOWS 8090065A = 4690 OS

Explanation: The requested closure was not found in the FM. The request is not processed.

User Response: Specify a valid closure number or valid dates for the FM report.

091 = DOS/WINDOWS 80900314 = 4690 OS

Explanation: An error occurred while printing the end of a start-up message.

User Response: Service the printer.

095 = DOS/WINDOWS 80900425 = 4690 OS

Explanation: Invalid data. The requested address range is invalid or wrong in the engineering dump command. The request is not processed.

User Response: Correct the input data.

096 = DOS/WINDOWS 80900140 = 4690 OS

Explanation: A numeric field contains invalid characters. The request is not processed.

User Response: Correct the value and reissue the request.

098 = DOS/WINDOWS 80900411 = 4690 OS

Explanation: Fiscal RAM restored.

User Response: Put the J4/CE jumper in STORED (OFF) position and reinitialize the printer. See 5.1, “J4/CE Jumper” on page 37.

Note: Only authorized service personnel can move the J4/CE jumper.

099 = DOS/WINDOWS 80900318 = 4690 OS

Explanation: The maximum repairing actions number has been reached.

User Response: Exchange the FP at the next failure occurrence.

100 = DOS/WINDOWS 80900329 = 4690 OS

Explanation: An error occurred while reading from the FM. The request is not processed.

User Response: Service the printer.

101 = DOS/WINDOWS 80900326 = 4690 OS

Explanation: An unrecoverable error occurred when writing to FM. The request is not processed.

User Response: Service the printer.

103 = DOS/WINDOWS 80900421 = 4690 OS

Explanation: Invalid data. The requested data or number is out of range. The request is not processed.

User Response: Correct the input data.

---

104 = DOS/WINDOWS 80900360 = 4690 OS

Explanation: The barcode data must be null terminated. The request is not processed.

User Response: Correct the barcode data and issue the command again.

---

105 = DOS/WINDOWS 80900361 = 4690 OS

Explanation: The barcode size is invalid. The request is not processed.

User Response: Correct the barcode size and issue the command again.

---

108 = DOS/WINDOWS 80900328 = 4690 OS

Explanation: Fixed Vendor Information table full. The request is not processed.

User Response: Change the FM.

---

109 = DOS/WINDOWS 80900324 = 4690 OS

Explanation: FM is not connected. The FU cannot restart processing.

User Response: Service the printer.

When servicing, first check to ensure the cable connections on the fiscal processor card are correct.

---

110 = DOS/WINDOWS 80900131 = 4690 OS

Explanation: An overflow occurred. The daily invoice total exceeds the maximum allowed value (4294967295) on an ENDTRANSFD request. The request is not processed.

User Response: Issue a Close Sale Period (13 cmd.).

---

111 = DOS/WINDOWS 80900132 = 4690 OS

Explanation: An overflow occurred. The daily fiscal receipt total exceeds the maximum allowed value (4294967295) on an ENDTRANSFD request. The request is not processed.

User Response: Issue a Close Sale Period (13 cmd.).

---

112 = DOS/WINDOWS 80900670 = 4690 OS

Explanation: The FP was reset.

User Response: No action required.

---

113 = DOS/WINDOWS 80900341 = 4690 OS

Explanation: An unrecoverable printer error occurred after two power-on resets.

User Response: Switch **POWER OFF** and then ON again.

If the problem persists, service the printer.

114 = DOS/WINDOWS 80900363 = 4690 OS

Explanation: A printer communication error occurred.

User Response: Service the printer.

---

115 = DOS/WINDOWS 80900701 = 4690 OS

Explanation: Invalid value in the daily table pointer. The request is not processed.

User Response: Put the J4/CE jumper in ACTIVE (ON) position and reinitialize the printer.

Note: Only authorized service personnel can move the J4/CE jumper.

---

116 = DOS/WINDOWS 80900702 = 4690 OS

Explanation: Invalid Sequence. This command can only be sent inside a print or download graphics command set.

User Response: Issue the CA cmd. (Cmd. Extension 01) and then restart the print or download sequence.

---

117 = DOS/WINDOWS 80900703 = 4690 OS

Explanation: Invalid Size. Byte 4 is greater than x72. This cmd. can not be sent when a print or download graphics occurs.

User Response: Correct the value and issue the CA cmd. (00, 01 or 02 Cmd. Extension) again.

---

118 = DOS/WINDOWS 80900704 = 4690 OS

Explanation: Invalid graphic number.

Correct the graphic number and issue the CA cmd. (02, 11 or 12 Cmd. Extension) again.

---

119 = DOS/WINDOWS 80900677 = 4690 OS

Explanation: Graphic with same number already in printer flash.

User Response: The user attempted to download a graphic using a number already in printer flash.

Correct the graphic number or erase all graphics from printer flash using the CA cmd. (10 Cmd. Extension) and then issue the CA cmd. (02 Cmd. Extension) again.

---

120 = DOS/WINDOWS 80900678 = 4690 OS

Explanation: The printer card timed-out while executing a command.

User Response: Switch **POWER OFF** and then ON again.

If the problem persists, service the printer.

---

121 = DOS/WINDOWS 80900679 = 4690 OS

Explanation: The printer card timed-out while executing a command.

User Response: Switch **POWER OFF** and then ON again.

If the problem persists, service the printer.

122 = DOS/WINDOWS 8090067A = 4690 OS

ONLY FOR KD3/KD5/KR3/KR5 MODELS

Explanation: An attempt was made to serialize (1B cmd.) before the public and private key are set. The request is not processed.

User Response: Issue the Set Public and Private Key (66 cmd.) before the serialization.

---

123 = DOS/WINDOWS 8090067B => 4690 OS

Explanation: Operation not valid.
Possible reasons are:

- Error reading MICR data.
- MICR funtion not present in the printer.

User Response: Test again with another check. If the error persists service the printer.

---

124 = DOS/WINDOWS 8090067C => 4690 OS

Explanation: Graphic not downloaded yet.

User Response: Download graphic with CA cmd. (Cmd. Extension 02) before using the CA cmd. (Cmd. Extension 11 or 12).

---

125 = DOS/WINDOWS 8090067D = 4690 OS

Explanation: An EEPROM load error occurred on the printer logic card. The request is not processed.

User Response: Service the printer.

---

126 = DOS/WINDOWS 8090067E = 4690 OS

Explanation: FIM for fixed vendor not set. The Request is not processed.

User Response: Check the application program. Issue a set FIM for fixed vendor.

---

127 = DOS/WINDOWS 8090067F = 4690 OS

Explanation: Store header lines 1 to 3 cannot be set if FIM for fixed vendors is selected. The requested command cannot be executed.

User Response: Check the application program.

---

128 = DOS/WINDOWS 80900320 = 4690 OS

Explanation: FM is not yet serialized. The requested command cannot be executed.

User Response: Service the printer.

---

129 = DOS/WINDOWS 80900321 = 4690 OS

Explanation: Unit is not yet in FIM. The requested command cannot be executed.

User Response: Set FIM.

If the problem persists, service the printer.

Note: Only authorized service personnel can do this procedure.

131 = DOS/WINDOWS 80900323 = 4690 OS

Explanation: A problem has been detected in a display or in the configuration for the point of sale displays. No fiscal commands can be executed.
There must be two displays configured.
They must be a combination of the following:

- Alphanumeric operator display or integrated keyboard display
- Shopper display.

User Response: Follow the maintenance manual procedures to set the configuration correctly or set the correct display addresses using the Set Display (1A cmd.).

If the problem persists, call for service.

---

134 = DOS/WINDOWS 80900325 = 4690 OS

Explanation: The FU detected an internal hardware error. The requested command cannot be executed.

User Response: Run the printer test to determine the cause of the problem.

---

135 = DOS/WINDOWS 80900220 = 4690 OS

Explanation: Command extension not valid out of the sale period. The requested command cannot be executed.

User Response: Correct the application program sequence.

---

136 = DOS/WINDOWS 80900221 = 4690 OS

Explanation: Voucher related command was issued while a voucher transaction was not in progress. The request is not processed.

User Response: Correct the application program sequence.

---

137 = DOS/WINDOWS 80900222 = 4690 OS

Explanation: Fiscal receipt related command was issued while a fiscal receipt was not being processed. The requested command cannot be executed.

User Response: Correct the application program sequence.

---

138 = DOS/WINDOWS 80900223 = 4690 OS

Explanation: An invoice related command was issued while an invoice was not being processed. The requested command cannot be executed.

User Response: Correct the application program sequence.

---

139 = DOS/WINDOWS 80900224 = 4690 OS

Explanation: An accompanying document related command was issued while an accompanying document was not being processed. The requested command cannot be executed.

User Response: Correct the application program sequence.

140 = DOS/WINDOWS 80900225 = 4690 OS

Explanation: A voucher related command was issued before printing of the voucher header. The requested command cannot be executed.

User Response: Correct the application program sequence.

---

141 = DOS/WINDOWS 80900226 = 4690 OS

Explanation: A PAYMENT or ENDTRANS command was issued before a TOTAL command. The requested command cannot be executed.

User Response: Correct the application program sequence.

---

143 = DOS/WINDOWS 80900228 = 4690 OS

Explanation: TRM was not selected. The requested command cannot be executed.

User Response: Change the application program or set TRM ON.

---

144 = DOS/WINDOWS 80900229 = 4690 OS

Explanation: A print header command was issued and a header had not yet been set. The request is not processed.

User Response: Correct the application program sequence.

---

146 = DOS/WINDOWS 80900692 = 4690 OS

Explanation: Fiscal EPROM is in error. Serialization mismatch between RAM and EPROM.

User Response: Service the printer.

---

147 = DOS/WINDOWS 80900693 = 4690 OS

Explanation: Fiscal EPROM is in error. Fiscalization mismatch between RAM and EPROM.

User Response: Service the printer.

---

157 = DOS/WINDOWS 8090069D = 4690 OS

Explanation: Check Printing not in progress. The request is not processed.

User Response: Correct the application program sequence.

---

158 = DOS/WINDOWS 8090069E = 4690 OS

Explanation: Date not yet set by the application program. The request is not processed.

User Response: Issue a Set Date and Time (16 cmd.).

---

160 = DOS/WINDOWS 80900330 = 4690 OS

Explanation: FM already serialized. The requested command cannot be executed.

User Response: No action required.

161 = DOS/WINDOWS 80900331 = 4690 OS

Explanation: The unit is already in FIM. The requested command cannot be executed.

User Response: No action required.

162 = DOS/WINDOWS 80900332 = 4690 OS

Explanation: The requested command cannot be executed. New currency is already selected.

User Response: No action required.

164 = DOS/WINDOWS 80900350 = 4690 OS

Explanation: The IPL is in process.

User Response: No action required.

167 = DOS/WINDOWS 80900230 = 4690 OS

Explanation: The requested command cannot be issued while a sales period is in progress. A Close Sale Period (13 cmd.) must be performed first. The request is not processed.

User Response: Issue the command again when the sales period is not in progress.

168 = DOS/WINDOWS 80900231 = 4690 OS

Explanation: A command not related to a FV was issued while a FV transaction was in progress. The request is not processed.

User Response: Issue the command again when the FV is completed. If this error was encountered during the online printer diagnostic test, it indicates that the test cannot be completed because a ST is in progress. Either have the salesperson end the transaction, or diagnose the printer problem using the offline printer test that is invoked by pressing the keys on the printer in the correct sequence.

169 = DOS/WINDOWS 80900232 = 4690 OS

Explanation: A command not related to a fiscal receipt was issued while a fiscal receipt transaction was in progress. The request is not processed.

User Response: Issue the command again when the fiscal receipt is completed.

170 = DOS/WINDOWS 80900233 = 4690 OS

Explanation: A command not related to an invoice was issued while an invoice transaction was in progress. The request is not processed.

User Response: Issue the command again when the invoice is completed.

171 = DOS/WINDOWS 80900234 = 4690 OS

Explanation: A command not related to an accompanying document was issued while an accompanying document transaction was in progress. The request is not processed.

User Response: Issue the command again when the accompanying document transaction is completed.

172 = DOS/WINDOWS 80900235 = 4690 OS

Explanation: Only a voucher related command can be accepted after a voucher header is printed. The request is not processed.

User Response: Check the application program.

---

173 = DOS/WINDOWS 80900236 = 4690 OS

Explanation: Only CANCEL, PAYMENT, END TRANSACTION, ITEM, and NEGATIVE ITEM commands can follow a subtotal/total request. The request is not processed.

User Response: Check the application program.

---

174 = DOS/WINDOWS 80900237 = 4690 OS

Explanation: A PAYMENT was in progress. The command that was issued cannot be executed.

User Response: Complete the PAYMENT processing.

---

175 = DOS/WINDOWS 80900238 = 4690 OS

Explanation: TRM is in progress. The requested command cannot be executed.

User Response: Correct the application program sequence or exit TRM.

---

178 = DOS/WINDOWS 809006B2 = 4690 OS

Explanation: Fiscal EPROM is in error. EPROM serialized but pattern not found.

User Response: Service the printer.

---

179 = DOS/WINDOWS 809006B3 = 4690 OS

Explanation: Fiscal RAM is in error. Return to the FB cmd.

User Response: Service the printer.

---

182 = DOS/WINDOWS 809006B6 = 4690 OS

Explanation: An error occurred on an end transaction. The request is not processed.

User Response: Reissue the end transaction (06 cmd.).

---

183 = DOS/WINDOWS 809006B7 = 4690 OS

Explanation: An error occurred on a cancel transaction. The request is not processed.

User Response: Reissue the cancel transaction (07 cmd.).

---

184 = DOS/WINDOWS 809006B8 = 4683

Explanation: An invalid command sequence occurred. A command was requested that is not allowed during a Non-Fiscal Report. The request is not processed.

User Response: Check the application program sequence.

189 = DOS/WINDOWS 809006BD = 4683

Explanation: Check Printing in Progress. The request is not processed.

User Response: Check the application program sequence. Issue a End Check (C1 cmd.) or Cancel Check (C2 cmd.).

---

192 = DOS/WINDOWS 80900524 = 4690 OS

Explanation: Command reject from printer logic card.

User Response: Check for device driver programming error.

---

193 = DOS/WINDOWS 80900527 = 4690 OS

Explanation: A front-insert document error occurred. The request is not processed.

User Response: Ensure the document is inserted correctly.

---

194 = DOS/WINDOWS 80900521 = 4690 OS

Explanation: A print head home error occurred. The request is not processed. (On 4690 OS Operating System, this error could be reported for other types of printer problems besides home errors.)

User Response: If the problem persists, service the printer.

---

200 = DOS/WINDOWS 8090070D => 4690 OS

Explanation: A CR paper error occurred. The request is not processed.

User Response: Ensure the paper is installed correctly. If the problem persists, service the printer.

---

201 = DOS/WINDOWS 80900528 = 4690 OS

Explanation: The front-insert document is not present. The request is not processed.

User Response: Insert the document or if a document is already inserted, try removing and reinserting it.

If the problem persists, service the printer.

---

202 = DOS/WINDOWS 80900527 = 4690 OS

FOR MODELS WITH DI STATION

Explanation: The inserted document is not ready. The request is not processed.

User Response: Try removing the document and reinserting it. If the problem persists, service the printer.

FOR MODELS WITHOUT DI STATION

Explanation: Invalid command. The request is not processed.

User Response: Correct the application program.

---

203 = DOS/WINDOWS 80900522 = 4690 OS

Explanation: The printer cover is open. The request is not processed.

User Response: Close the printer cover.

If the cover is already closed, service the printer.

205 = DOS/WINDOWS 80900526 = 4690 OS

Explanation: A printer keybutton is pressed. The request is not processed.

User Response: Release the pressed keybutton.

If a keybutton is not pressed, service the printer.

---

206 = DOS/WINDOWS 80900525 = 4690 OS

Explanation: A SJ paper error occurred. The request is not processed.

User Response: Ensure the paper is installed correctly.

If the problem persists, service the printer.

---

208 = DOS/WINDOWS 809006D0 = 4690 OS

Explanation: The download graphic or logo or set character is corrupted. The request is not processed.

User Response:

- If the download graphic is corrupt: The graphics must be initialized. Erase all graphics from printer flash using CA cmd. (Cmd. Extension 10) and the issued CA cmd. (Cmd. Extension 02) again.
- If the logo or set character is corrupted: Service the printer.

---

213 = DOS/WINDOWS 80900528 = 4690 OS

Explanation: The top-insert document is not present. The request is not processed.

User Response: Insert the document or if a document is already inserted, try removing and reinserting it.

If the problem persists, service the printer.

---

214 = DOS/WINDOWS 80900527 = 4690 OS

Explanation: A top-insert document error occurred. The request is not processed.

User Response: Ensure that the document is inserted correctly.

---

225 = DOS/WINDOWS 80900529 = 4690 OS

Explanation: Front-insert document is present. The request is not processed.

User Response: If a document should not be inserted, remove the document.

If a document is not inserted, service the printer.

---

226 = DOS/WINDOWS 80900527 = 4690 OS

Explanation: The inserted document is ready. The request is not processed.

User Response: If a document should not be inserted, remove the document.

If a document is not inserted, service the printer.

237 = DOS/WINDOWS 80900529 = 4690 OS

Explanation: Top-insert document is present. The request is not processed.

User Response: If a document should not be inserted, remove the document.

If a document is not inserted, service the printer.

12.0 Electronic Journal Return Codes

Due to the limited number of return codes available, all commands that fails due to a problem related with EJ, just fail returning a general error ″84″.
To know the reason for failure, the application must send the Get Extended EJ Error (63 cmd.) to get the following extended EJ error.

12.1 Extended EJ Error Descriptions

000 (hex 0)

Explanation: The command was processed successfully.

User Response: None

001 (hex 1)

Explanation: CF not present. The request is not processed.

User Response: Insert the CF and issue the command again.

002 (hex 2)

Explanation: Not enough free space in CF. The request is not processed.

User Response: Close the current JP, then replace the CF with a new one and then issue the command again.

003 (hex 3)

Explanation: Flash Transfer Error. The request is not processed.

User Response: Retry the command. If the error persists, replace the CF, put the J4/CE jumper in ACTIVE (ON) position and reinitialize the printer.

004 (hex 4)

Explanation: The CF was changed inside a JP.

User Response: Put again the old one.

005 (hex 5)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

006 (hex 6)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

007 (hex 7)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

---

008 (hex 8)

Explanation: The CF has a wrong format. The request is not processed.

User Response: Format the CF during IPL process.

---

009 (hex 9)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

---

010 (hex A)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

---

011 (hex B)

Explanation: EJ Filename exists. The request is not processed.

User Response: Change the EJ filename and issue the command again.

---

012 (hex C)

Explanation: Invalid EJ Filename. The first five chars of an EJ filename specified cannot be equal to the five chars used for automatic generated EJ filenames. These chars are usually equal to the first five chars of the FM serial number. The request is not processed.

User Response: Change the EJ filename and issue the command again.

---

013 (hex D)

Explanation: Invalid Char in EJ Filename. The EJ filenames can only consist of the following chars: A to Z, a to z, 0 to 9, '-' and '_'. The request is not processed.

User Response: Change the EJ filename and issue the command again.

---

014 (hex E)

Explanation: Key lenght or command lenght invalid. The request is not processed.

User Response: Check the application program sequence.

---

015 (hex F)

Explanation: The algorithm specified is not known. The request is not processed.

User Response: Correct the input data and issue the Set Public and Private Key (66 cmd.) again.

016 (hex 10)

Explanation: The key specified is too long to be handle by the microcode. The request is not processed.

User Response: Correct the input data and issue the Set Public and Private Key (66 cmd.) again.

---

017 (hex 11)

Explanation: The length specified is invalid. The request is not processed.

User Response: Correct the input data and issue the Set Public and Private Key (66 cmd.) again.

---

018 (hex 12)

Explanation: Invalid sequence during set public and private key command. The request is not processed.

User Response: Correct the input data and issue the Set Public and Private Key (66 cmd.) again.

---

019 (hex 13)

Explanation: The key prime or subprime is invalid. The request is not processed.

User Response: Correct the input data and issue the Set Public and Private Key (66 cmd.) again.

---

020 (hex 14)

Explanation: The key base is invalid. The request is not processed.

User Response: Correct the input data and issue the Set Public and Private Key (66 cmd.) again.

---

021 (hex 15)

Explanation: The public and private key doesn't form a valid pair. The request is not processed.

User Response: Correct the input data and issue the Set Public and Private Key (66 cmd.) again.

---

022 (hex 16)

Explanation: The key prime and subprime doesn't form a valid pair. The request is not processed.

User Response: Correct the input data and issue the Set Public and Private Key (66 cmd.) again.

---

023 (hex 17)

Explanation: Key Table ful. The request is not processed.

User Response: Change FM.

---

024 (hex 18)

Explanation: Key not set. The request is not processed.

User Response: Issue the Set Public and Private Key (66 cmd.).

---

025 (hex 19)

Explanation: Key corrupt. The request is not processed.

User Response: Change the FM.

026 (hex 1A)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

---

027 (hex 1B)

Explanation: File not found. The CF doesn't have any (open EJ file or get directory first file) or more (get directory next file) files matching the filename specified. The request is not processed.

User Response: (none).

---

028 (hex 1C)

Explanation: Invalid filename characters. The filename specified includes invalid characters. The request is not processed.

User Response: Correct the application program.

---

029 (hex 1D)

Explanation: EJ file already open. There is one EJ file currently open. The request is not processed.

User Response: Correct the application program.

---

030 (hex 1E)

Explanation: EJ file not open. There is no one EJ file open. The request is not processed.

User Response: Correct the application program.

---

031 (hex 1F)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

---

032 (hex 20)

Explanation: Invalid EJ file attributes. The EJ file attribute requested is invalid. The request is not processed.

User Response: Correct the application program.

---

034 (hex 22)

Explanation: The compression type is unknown. The request is not processed.

User Response: Service the printer.

---

035 (hex 23)

Explanation: The current JP must be closed. The request is not processed.

User Response: Close the JP.

036 (hex 24)

Explanation: Internal error.

User Response: Service the printer.

---

037 (hex 25)

Explanation: Invalid sequence reading EJ file.

User Response: The sequence must be ″0″ (first block), ″n″ (again the last read block) or ″n + 1″ (read the next block).

---

038 (hex 26)

Explanation: CF hardware error. It didn′t pass the diagnostic test.

User Response: Insert a new CF.

---

040 (hex 28)

Explanation: CF hardware error.

User Response: Issue the command again. If the problem persist, remove and insert the CF and reissue the command.

---

041 (hex 29)

Explanation: The arch attribute state specified is invalid.

User Response: Select the correct arch attribute state and issue the command again.

---

043 (hex 2B)

Explanation: CF not ready.

User Response: Issue the command again.

---

044 (hex 2C)

Explanation: The Private and Public keys are frozen. The request is not processed.

User Response: (none).

---

045 (hex 2D)

Explanation: The compressed file is corrupt. The request is not processed.

User Response: (none).

---

046 (hex 2E)

Explanation: Invalid signature. The request is not processed.

User Response: (none).

047 (hex 2F)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

---

048 (hex 30)

Explanation: Error initializing the CF. The request is not processed.

User Response: Replace the CF and try again. If the problem persists, service the printer.

---

049 (hex 31)

Explanation: Error initializing the CF. The request is not processed.

User Response: Replace the CF and try again. If the problem persists, service the printer.

---

050 (hex 32)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

---

051 (hex 33)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

---

052 (hex 34)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

---

053 (hex 35)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

---

054 (hex 36)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

---

055 (hex 37)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

---

056 (hex 38)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

057 (hex 39)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

058 (hex 3A)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

059 (hex 3B)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

060 (hex 3C)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

061 (hex 3D)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

062 (hex 3E)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

063 (hex 3F)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

064 (hex 40)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

065 (hex 41)

Explanation: Internal Error. The request is not processed.

User Response: Service the printer.

066 (hex 42)

Explanation: Internal Error. The request is not processed.

User Response: Change the CF or service the printer.

128 (hex 80)

Explanation: The CF inserted is invalid.

- The CF inserted is not recognized because it was formatted in another fiscal printer. OR
- The CF 'Progressive CF Identification Number' is less than the last 'Progressive CF Identification Number' stored in Compact Flash Initialization Table.

The request is not processed.

User Response: Insert the last CF used in the FP or insert a new CF.

12.2 Return Code Conversion Table (4690 OS TO DOS/WINDOWS)

The following table is for converting 4690 OS return codes into DOS/WINDOWS return codes. Find the DOS/WINDOWS return code under 11.0, “Fiscal Unit Return Codes” on page 173.

Table 2 (Page 1 of 2). 4690 OS to DOS/WINDOWS Return Code Conversion

4690 OS Return Code	Equivalent DOS/WINDOWS Return Code
80900006	N/A
80900007	N/A
80900008	N/A
80900009	N/A
80900100	000
80900101	001
80900102	002
80900103	003
80900104	004
80900105	005
80900106	006
80900107	007
80900108	008
80900109	009
80900110	010
80900111	011
80900112	012
80900113	013
80900114	014
80900115	015
80900116	016
80900117	017
80900118	018
80900119	019
80900120	020
80900121	021
80900122	022
80900123	023
80900124	024
80900125	025
80900126	026
8090061B	027
80900127	064
80900129	029
80900131	110
80900132	111
80900140	096
80900141	033
80900142	034
80900143	035
80900144	036
80900145	037
80900146	038
80900150	056
80900151	057
80900201	065
80900202	066
80900203	055
80900204	068
80900205	069

Table 2 (Page 1 of 2). 4690 OS to DOS/WINDOWS Return Code Conversion

4690 OS Return Code	Equivalent DOS/WINDOWS Return Code
80900207	072
80900208	074
80900209	075
80900210	076
80900211	077
80900212	079
80900213	080
80900220	135
80900221	136
80900222	137
80900223	138
80900224	139
80900225	140
80900226	141
80900228	143
80900229	144
80900230	167
80900231	168
80900232	169
80900233	170
80900234	171
80900235	172
80900236	173
80900237	174
80900238	175
80900302	071
80900303	073
80900304	078
80900306	082
80900307	083
80900308	084
80900312	089
80900314	091
80900318	099
80900320	128
80900321	129
80900323	131
80900324	109
80900325	134
80900326	101
80900328	108
80900329	100
80900330	160
80900331	161
80900332	162
80900341	113
80900350	164
80900363	114
80900401	086
80900410	097

Table 2 (Page 2 of 2). 4690 OS to DOS/WINDOWS Return Code Conversion

4690 OS Return Code	Equivalent DOS/WINDOWS Return Code
80900411	098
80900421	103
80900425	095
80900521	194
80900522	203
80900524	192
80900525	206
80900526	205
80900527	193, 202, 214, 226
80900528	201, 213
80900529	225, 237
80900635	053
8090063A	058
8090063B	059
8090063F	063
80900646	070
80900651	081
80900657	087
8090065A	090
80900670	112
80900678	120
80900679	121
8090067A	122
8090067D	125
8090067E	126
8090067F	127
80900692	146
80900693	147
8090069D	157
8090069E	158
809006B2	178
809006B3	179
809006B6	182
809006B7	183
809006B8	184
809006BD	189
8090070D	200
N/A	067

13.0 Suggestions for Application Developer′s

This chapter is to suggests some hints for the application programs to improve the performance.

- If the totals in regular vouchers are calculated by the application instead of be requested to the FP, generally takes less time.
- **ONLY FOR RS-485 AND RS-232**
  After a PLD, read the ″PLD STATUS″ bit to determine if the last command sent before the PLD was executed or not. This should avoid duplication of interrupted commands.
  For 4610 SureMark RS-485 - GR3/GR5 Models: see 6.4.1, “For GR3/GR5 Models (RS-485)” on page 42 (byte 6 - bit 4). For 4610 SureMark RS-485 - KR3/KR5 Models: see 6.6, “For KR3/KR5 Models (RS-485)” on page 48 (byte 6 - bit 4).
  For 4610 SureMark RS-232 - KD3/KD5 Models: see 6.5, “For KD3/KD5 Model (RS-232)” on page 45 (byte 8 - bit 4).
- We recommend the usage the DA cmd. (Electronic Read Fiscal Memory Tables) and DB cmd. (Electronic Read Counters and Accumulators) after any type of interrupts, like power down, paper out to determine the state of the fiscal printer and the values of internal counters and accumulators to allow the continuation of the current document in progress, if any.
  FM tables can also be interrogated.
- In some countries, all the header lines are not mandatory, so the use of less lines result in a better performance.
- Inmediatelly after that a new CF is inserted, we recommended to issues the 15 cmd. (Fiscal Memory Report) in order to format it.

Appendix A. Summary of RAS Characteristics

The FP can be tested using non-fiscal print commands. The NON-FISCAL messages will be added by the fiscal processor as required by law.

The BigTop printer test key sequence will operate as usual.

A.1 Dependencies on RAS Utility

RAS will handle four new functions to be executed by an authorized C.E. and that will require a password to be used:

A.1.1 Set Fiscal Mode

This command, which can be executed only once, will put the machine in fiscal mode and allow printing of fiscal logo and storing of data into FM.

A.1.2 New Currency

This command, which can be executed only once, will change the way amounts are handled to fulfill the introduction of a new currency that has two decimal places.

A.1.3 Set Displays

This command will define the serial I/O addresses of the two displays (operator and customer), required by fiscal law. Addresses accepted will be from x′20′ to x′27′, x′2A′ to x′2F′, x′5C′ to x′5D′ and x′1C′ to x′1D′. (The video adapter on 4683 is excluded.)

A.1.4 Fiscal Memory Report

This command will initiate a report of the FM by the fiscal processor. The RAS utility will accept as input the starting and ending parameters for the report and determine whether to dump to the printer or to the serial I/O (a new option for BigTop).

Appendix B. Comments

WDIS Document Control Procedures

If you found errors in this document, or if you want to provide suggestions on its content or format, please send your comments to the document owner identified on the title page.

From (Optional)

Name: _____

Organization: _____

Location: _____

Phone: _____

Node/Id: _____

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(pld), power line disturbance 52

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