Fiscal Printer
FP-2000
USER'S MANUAL

INTRODUCTION

DATECS FP-2000 is a compact thermal printer with fiscal memory, which prints cash receipts and daily reports on one paper roll 78 mm (3 inch) wide. It is compatible to most European and World fiscal legislation systems.

The functions of the device are controlled with the help of buttons, located on its frontal part as well as commands, sent via the serial interface. The couplings for the cable connections are conveniently located for fast access and easy manipulations. The printing devices have low noise emission levels and high printing speeds - 220 mm/sec.

The printer has an automatic paper cutter. Optionally, it can support a display and a cash drawer.

Contemporary commercial activities and the demands of acting fiscal legislation systems demand a comparatively good knowledge on the ways to operate fiscal devices of different kinds - cash registers, electronic scales, different types of printing devices. It is for this reason, that the careful reading of this manual before starting work with the printer may save you lots of time and trouble later on.

WORKING WITH THE FP-2000 FISCAL PRINTER

The over 50 different commands which the printer can execute may initially create the impression that learning to work with it is a difficult job. Most of these commands, however, are related to the starting initialization, diagnostics and the generating of reports thus decreasing greatly the number of commands directly engaged with the issuing of receipts and other user's operations.

PROGRAM SUPPORT

To function normally the program for operating the fiscal printer must be able to control the execution of the commands, which often fail mainly due to the lack of paper, the sending of invalid commands or simply because of some minor cable problem. The current status of the printer is monitored by 6 bytes, returned by every command. Part of the bits are informative (opened non-fiscal receipt for instance), others indicate error (no paper, invalid command, etc.). The program must inform of existing errors or - if possible - react to these errors.

There are commands with the help of which the control program can acquire the whole needed information on the current status of the printer. The printer saves this info in the memory as well as the accumulated sums (during the day or only within the current receipt) even after it has been switched of from the power feed. If the device is in the "document opened" mode it cannot close down automatically but only from the control program.

GENERAL DESCRIPTION OF THE FP-2000

The functional control of the printer is performed with the help of buttons, located on its frontal part and commands, sent via the serial interface. The coupling of the cable connections are located in such a way as to make them easily connectable and the whole device fast to set up for normal operation.

Prior to using this device please read these instructions and the descriptions of the application programs carefully and make sure that you have really learned how to operate the FP-2000.

Upon delivery, the DATECS package will contain:

- Paper rolls - 1 pieces;
- AC-DC adapter;
- Serial cable for connecting to a PC;
- User's Manual;
- Instructions for the taxation authorities;
- Passport of the device.

CONTROL PANEL INDICATORS AND BUTTONS

"Power" indicator

Lights in green when the printer is on and does not execute commands. When the light is out this is an indication that the printer is "engaged" with a command.

"Error" indicator

Activated continuously when there is no paper in the device and blinks at the overheating of one/both printing devices. Goes out when the error is cleared.

"Feed" button

Moves the cash receipts paper roll forward. When the button is holded down while power on, the printer generates and prints out diagnostic information on paper roll.

DIP SWITCHES

Switch	OFF	ON
1	Select RS232 speed	
2	Select RS232 speed	
3	Select RS232 speed	
4	Normal mode	"Transparent display" mode
5	Automatic paper cutting off	Automatic paper cutting on
5	Half cut	Full cut
6	Not used	
7	Not used	

THE PROGRAM INTERFACE

Version 3.10 xx, where xx is the code of the country, where the device will operate:

EN - England
BG - Bulgaria
UA - The Ukraine
LT - Lithuania
RO - Romania
SR - Serbia
MC - Macedonia
BD - Bangladesh
AL - Albania

INTRODUCTION

The fiscal device operates under the control of an application program, with which it communicates via the RS232 serial, USB Device or LAN connection. The device executes a previously set of wrapped commands, arranged according to the type of the operations which have to be executed. The application program does not have a direct access to the resources of the fiscal device although it can detect data connected with the status of the fiscal device and the fiscal memory.

The fiscal device performs the following types of operations:

- Saves the serial number of the fiscal device and the number of the fiscal memory;
- Saves fiscal parameters, like the tax registration number, the date of entering into exploitation, etc.;
- Saves information on the owner - name and address, etc.;
- Saves the daily turnover in the fiscal memory and generates a daily report;
- Generates reports on concluded sales and the content of the fiscal memory;
- Sends data to the application program.

TAXATION CATEGORIES AND CALCULATION OF VAT

Each concluded sale can be related to a certain taxation category (VAT) defining a tax rate, applicable to the base price used for the formation of the sale price. The fiscal printer can operate with a maximum of 9 taxation categories, which are most often indicated with the first letters of the language of the country, where the fiscal printer is used-in the case of Albania these letters are **A**, **B**, **C**, **D**, **E**, **F**, **G**, **H** and **I**.

Each of the first 8 taxation groups (except '**A**') has a set tax rate (in percent) which is expressed by a number not greater than 99.00 and by no more than two digits after the decimal point. Group '**A**' is tax exempt.

Part of the four standard categories may be forbidden by using ***Enabled*** parameter in the **83 (53H)** command. The commands for registering sales expect these four letters as a parameter.

FUNCTION MODES OF THE FISCAL DEVICE

The fiscal device has two functional modes:

1. **The training mode**. The device is not fiscalized and all data needed for its normal functioning are entered and saved in the fiscal memory with the exception of the tax registration number of the owner. Fiscal receipts can be opened and closed but they always bear the inscription that they are not fiscal. Daily financial reports (Z-reports) can be generated but they are not written to the fiscal memory. Nothing is writing in electronic journal.

2. **Normal mode**. The device is fiscalized and the tax registration number of the owner is saved in the fiscal memory. All fiscal rules apply.

STATUS OF THE FISCAL DEVICE

The status of the fiscal device can differ. Shifting from one to another condition is not always possible. The control of the printer and the shifting between the different functions - when this is possible - is executed by the application program Host (PC), which must relate to the included protocol. If this protocol is not applied correctly the printer might enter into an undesirable status or to skip a given functional status, leading to an **ERROR**.

A) INITIAL STATUS

This is the functional status in which the date and the time are set, the number of the fiscal memory is entered as well as the serial.

THE ABOVE-DESCRIBED OPERATIONS ARE PERFORMED PRIOR TO SELLING THE DEVICE TO THE CLIENT ONLY BY AN AUTHORISED SERVICE SPECIALIST!

The following commands must be performed in the order in which they are presented: **61 (3DH)** and **91 (5BH)**.

B) STATUS AFTER THE FORMATTING OF THE FISCAL MEMORY

This is the state in which the name of the currency is entered, the number of the digits after the decimal point and the tax rates. After performing these operations the fiscal printer is ready for delivery to the future operator (owner). This is also the status in which the device is kept in the warehouse of the manufacturer.

Command **83 (53H)** is sent to the printer.

C) TRAINING MODE

The fiscal printer is in this status prior to fiscalization. Receipts can be issued but it must be born in mind that they will bear the mark "non-fiscal". The generation of a daily fiscal report is possible but it will not be saved into the fiscal memory. Nothing is writing in electronic journal. A tax registration number is entered but not into the fiscal memory and is subject to change. The clearing of the memory does not cause an entry in the fiscal memory. The clock may be set arbitrarily. To enter this mode, command **98** (**62H**) must be sent.

D) A FISCALIZED PRINTER

In this functional status fiscal receipts may be issued and they will be marked "fiscal". The Z-report is registered in the fiscal memory and the setting of the date is possible only ahead in relation to the last entry in the fiscal memory. Everything is writing in electronic journal. The tax registration number is registered in the FM and cannot be changed from this point on. It is possible temporary to enter training mode using command 122.

The tax registration number of the owner of the device must be known prior to fiscalization. Command **98 (62H)** after which the command **72 (48H)** must be executed.

E) IRRECOVERABLE ERROR IN THE FISCAL PRINTER

This is the status of the printer when a serious technical or logical mistake has occurred as well as in case of fiscal memory failure. After switching ON the device in this mode a bold sign **"FATAL ERROR: 4"** appears. The printer does not perform commands for opening fiscal receipts as well as documents, which save data entries into the fiscal memory. Only diagnostic commands and periodic reports can be executed. Clearing the RAM and placing a new fiscal memory module must be performed because the module used before the error is now switched to the **READ ONLY** mode. ***ALL THESE OPERATIONS MUST BE PERFORMED BY AN AUTHORIZED SERVICE SPECIALIST***.

The events, which can bring the printer to this state, are:

- Impossibility to make a correct entry in the fiscal memory;
- Invalid control sum, tax number, serial number, reg. No. of the fiscal memory or some of the entries which contain the tax rates.
- Unidentified format of the fiscal memory module;
- If during the fiscal memory check up (immediately after switch ON) more than three invalid control sums from a daily report fiscal entry are found.

The current status of the device is coded in a field 6 bytes long which is sent within each message of the fiscal printer. Description of each byte in this field:

Byte 0: General purpose

0.7		Reserved
0.6	#	Electronic Journal Error
0.5		General error - OR of all errors marked with '#'
0.4		Failure in printing mechanism
0.3		Display is disconnected
0.2		The clock needs setting
0.1	#	Code of incoming command is invalid
0.0	#	Incoming data has syntax error

Byte 1: General purpose

1.7		Reserved
1.6		Not used
1.5		Printer cover is opened
1.4	#	RAM failure after power ON
1.3		RAM backup battery low
1.2	#	Operational memory was cleared
1.1	#	Command cannot be performed in the current fiscal mode
1.0		If during command some of the fields for the sums overflow. Status 1.1 will also be set and the command will not cause changes to the data in the printer.

Byte 2: General purpose

2.7		Reserved
2.6		Exchange fiscal receipt open
2.5		Non-fiscal receipt has been opened
2.4		Journal near end
2.3		A fiscal receipt has been opened (Both normal or exchange)
2.2		Journal paper end
2.1		Paper near end - both journal and receipt paper rolls.
2.0	#	No paper - valid for both paper rolls. If the flag is raised during a print-related command it will be rejected and the status of the printer will remain unchanged.

Byte 3: The status of the configuration keys

3.7	Reserved
3.6	SW2 state. Selects serial speed.
3.5	SW3 state. Selects serial speed.
3.4	SW4 state. Enables the "transparent display" mode.
3.3	SW5 state. Automatically cutting of the receipt.
3.2	SW6 state. Half or Full cut.
3.1	SW7 state. Not used.
3.0	SW8 state. Not used.

Byte 4: The fiscal memory

4.7	Reserved
4.6	Fiscal memory number programmed

4.5 OR of all mistakes marked by '*' from bytes 4 and 5.
4.4 * Fiscal memory is full.
4.3 There is place for not more than 50 entries in the FM.
4.2 Serial number programmed
4.1 VAT registration number programmed
4.0 * Error writing to fiscal memory

Byte 5: The fiscal memory

5.7 Reserved
5.6 Training mode
5.5 Fiscal memory read error
5.4 VAT rates have been entered at least once
5.3 The printer is in the fiscal mode
5.2 Last fiscal closure not OK
5.1 The fiscal memory has been formatted
5.0 * The fiscal memory is in the "read-only" mode

POWER SUPPLY CUT-OFF

The status of the printer at each particular moment is reflected in the so-called "status bytes". The application program must get information on the status of the printer when switched ON after a power cut-off. This is performed by the commands **76 (4AH)** and **103 (67H)**.

The application program must make a decision on the future behaviour of the printer depending on its current status. It is guaranteed that the fiscal memory will not be affected by the power failure as well as that all accumulated sums in the operational memory of the device will be valid. If the power cut-off has occurred during a printing session, when switched ON, again the printer will print a line containing the text **"* POWER DROP *"** in an expanded bold type and will then complete the print.

ISSUING FISCAL AND NON-FISCAL RECEIPTS

A) NON-FISCAL RECEIPTS

The receipt is first opened, a text is then printed and the receipt is closed. The commands **38 (26H)** are used, an indefinite number of times the command **42 (2AH)** and **39 (27H)**.

B) FISCAL RECEIPTS

A fiscal receipt is first opened, the sales are registered, payment is performed and the receipt is finally closed.
The following commands are used: **48 (30H)**, **49 (31H)**, **51 (33H)**, **52 (34H)**, **53 (35H)**, **54 (36H)** and **56 (38H)**. At the end of the day a daily financial report and clear are performed in order to enter and save the accumulated information in the fiscal memory. The function is started with the command **69 (45H)**.

GENERATING REPORTS

Reports are generated singularly by the fiscal printer upon receiving the respective command from the PC. In these reports the user's program will not add any changes to the appearance and content of the reports, i.e., they appear exactly as they have been defined in the fiscal printer. The following commands are used for the generation of reports:

50 (32H)	Report on changes in tax rates and decimal points
69 (45H)	Daily financial report (X or Z)
79 (4FH) / 95 (5FH)	Short financial report from date to date /from number to number of the respective fiscal entries
94 (4EH) / 73 (49H)	Detailed financial report from date to date /from number to number of the respective fiscal entries
120 (78H)	Electronic journal reports.

LOW LEVEL PROTOCOL

A) PROTOCOL TYPE - MASTER (HOST) / SLAVE

The fiscal printer performs the commands sent by the Host and returns messages, which depend on the result.
The fiscal printer cannot instigate asynchronous communications itself. Only responses to commands from the Host are sent to the Host. These messages are either wrapped or single byte control codes. The fiscal printer maintains the

communication via the RS232 serial connection at baud rates of 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200 bps, 8N1. The baud rate is set by adjusting the configuration switches **SW1**, **SW2** and **SW3**:

Sw1	Sw2	Sw3	Speed
0	0	0	1200 bps
0	0	1	2400 bps
0	1	0	4800 bps
0	1	1	9600 bps
1	0	0	19200 bps
1	0	1	38400 bps
1	1	0	57600 bps
1	1	1	115200 bps

B) NON-WRAPPED MESSAGES - TIME-OUT

When the transmitting of messages from the Host is normal, Slave answers not later than 60 ms either with a wrapped message or with a 1 byte code. Host must have 500 ms of time-out for receiving a message from Slave. If there is no message during this period of time the Host will transmit the message again with the same sequence number and the same command. After several unsuccessful attempts Host must indicate that there is either no connection to the fiscal printer or there is a hardware fault.

Non-wrapped messages consist of one byte and they are:

A) NAK 15H

This code is sent by Slave when an error in the control sum or the form of the received message is found. When Host receives a NAK it must again send a message with the same sequence number.

B) SYN 16H

This code is sent by Slave upon receiving a command which needs longer processing time. SYN is sent every 60 ms until the wrapped message is not ready for transmitting.

C) WRAPPED MESSAGES

a) Host to printer (Send)

<01><LEN><SEQ><CMD><DATA><05><BCC><03>

b) Printer to Host (Receive)

<01><LEN><SEQ><CMD><DATA><04><STATUS><05><BCC><03>

Where:

<01> ***Preamble***.
1 byte long. Value: 01H.

<LEN> Number of bytes from <01> preamble (excluded) to <05> (included) plus the fixed offset of 20H. Length: 1 byte. Value: 20H - FFH.

<SEQ> ***Sequence number of the frame***.
Length : 1 byte. Value: 20H – FFH.
The fiscal printer saves the same <SEQ> in the return message. If the FP gets a message with the same <SEQ> as the last message received it will not perform any operation, but will repeat the last sent message.

<CMD> ***The code of the command***.
Length: 1 byte. Value: 20H - 7FH.
The fiscal printer saves the same <CMD> in the return message. If the printer receives a non-existing code it returns a wrapped message with zero length in the data field and sets the respective status bit.

<DATA> ***Data***.
Length: 0-218 bytes for Host to printer, 0-213 bytes for Printer to Host. Value: 20H – FFH.
The format and length of the field for storing data depends on the command. If the command has no data the length of this field is zero. If there is a syntax error the respective status bit is established in the data and a wrapped message is returned with zero field length.

<04> Separator (only for printer-to-Host massages)
Length: 1 byte. Value: 04H.

<STATUS> ***The field with the current status of the fiscal device***.
Length: 6 bytes. Value: 80H-FFH.

<05> ***Postamble***
Length: 1 byte. Value:05H.

<BCC> ***Control sum*** (0000H-FFFFH)
Length: 4 bytes. Value of each byte: 30H-3FH.
The sum includes between <01> preamble (excluded) to <05>. Each digit from the two bytes is sent after 30H is added to it. For example the sum 1AE3H is presented as 31H, 3AH, 3EH, 33H.

<03> ***Terminator***
Length: 1 byte. Value: 03H.

MESSAGE COMPOSITION, SYNTAX, AND MEANINGS

a) The data field depends on the command.

b) The parameters sent to the printer may be separated with a comma and/or may have a fixed length.

c) The comma between the parameters shows that it is mandatory.

d) When the parameters are closed by <> they are mandatory although the brackets themselves are not present in the message. When a given parameter is closed in [ ] it is not mandatory - the bracket themselves are also not present in the message. When parameters are separated by '|' symbol, only one of them may present in the input data.

The symbols with ADCII codes under 32 (20H) have special meanings and their use is explained whenever necessary. If such a symbol has to be sent for some reason (for example in an ESCAPE-command to the display) it must be preceded by 16 (10H) with an added offset 40H.

Example*:* when we write **2500, 100, Text** for the data field then in that field there will be **2D 32 35 30 2C 31 30 30 2C 54 65 78 74** where each hexadecimal digit is an ASCII value.

LIST OF FISCAL COMMANDS - FUNCTIONAL ARRANGEMENT

This section contains a list of the fiscal printer commands arranged in groups depending on their functions:

INITIALIZATION

24H (36)	Set LAN Settings
29H (41)	Write settings to flash
2BH (43)	Setting header, footer and printing options
3DH (61)	Setting date and time
48H (72)	Fiscalization
53H (83)	Setting the multiplier, decimal points and VAT rates.
55H (85)	Programming additional payment types.
5BH (91)	Programming the manufacturer's serial number and fiscal memory number.
62H (98)	Programming VAT registration number
65H (101)	Programming operator's password
66H (102)	Programming operator's name
6BH (107)	Programming or reading articles
73H (115)	Loading the graphic logo
7AH (122)	Enable/disable training mode

SALES

26H (38)	Opening a non-fiscal receipt
27H (39)	Closing a non-fiscal receipt
2AH (42)	Printing a non-fiscal free text
30H (48)	Opening a fiscal receipt
31H (49)	Registering a sale
33H (51)	Subtotal
34H (52)	Registering and displaying a sale
35H (53)	Total (payment).
36H (54)	Printing a free fiscal text
38H (56)	Closing a fiscal receipt
3AH (58)	Registering an programmed item sale
3CH (60	Cancel receipt
54H (84)	Printing a bar code
6DH (109)	Printing a duplicate receipt

DAILY CLOSURE

45H (69) Daily financial report (fiscal closure)

REPORTS

32H (50) Report on changed tax rates and decimal points through the period
49H (73) Detailed report of the fiscal memory (from number to number)
5EH (94) Detailed report of the fiscal memory (from date to date)
4FH (79) Short report of the fiscal memory (from date to date)
5FH (95) Short report of the fiscal memory (from number to number)
69H (105) Operator's report
6FH (111) Items report
78H (120) Electronic Journal Support

INFORMATION TO HOST

3EH (62) Reads the date and the time
40H (64) Information on the last fiscal entry
41H (65) Information on daily taxation
44H (68) Number of free entries in the fiscal memory
4AH (74) Receiving the status bytes
4CH (76) Status of the fiscal transaction
56H (86) Reading date of last fiscal memory record
5AH (90) Reading diagnostic information
61H (97) Reading the VAT rates
63H (99) Reading VAT registration number
67H (103) Information on the current receipt
6EH (110) Receiving information on the sums arranged according to the type of payments
70H (112) Receiving information on the operator
71H (113) Receiving information on the last printed document
72H (114) Receiving information on a fiscal entry or selected period
74H (116) Read fiscal memory block
77H (119) Read and print monthly report

PRINTER CONTROL COMMANDS

2CH (44) Advance paper
2DH (45) Cut paper
5CH (92) Print separator line

DISPLAY

21H (33) Clearing the display
23H (35) Showing a text (lower line)
2FH (47) Showing a text (upper line).
3FH (63) Showing the date and the hour.
64H (100) Display - full control.

OTHER

46H (70) Service cash-in and cash-out
47H (71) Printing diagnostic information
50H (80) Sound signal
59H (89) Programming the manufacturing test area
6AH (106) Drawer kick-out

SERVICE COMMANDS

76H (118) Read code memory (firmware) block
7FH (127) Service RAM reset

DETAILED DESCRIPTION OF THE COMMANDS

21H (33) CLEARING THE DISPLAY

Data field: No data
Response: None

A clear display command is sent. If a fiscal receipt is opened and SW4 is OFF only the lower line is cleared.

23H (35) TEXT ON THE LOWER LINE OF THE DISPLAY

Data field: ***<Text>***
Response: None

Text A text of up to 20 symbols sent directly to the display. Prior to this a command for positioning and clearing the lower line is sent automatically from the printer.

24H (36) SET LAN SETTINGS

Data field: ***[<IPAddr>,<SubnetMask>,<TCPPort>,<DefGateway>[,<MACAddr>]]***
Response: ***[<IPAddr>,<SubnetMask>,<TCPPort>,<DefGateway>,<MACAddr>]***

IPAddr 4 numbers up to 255 separated with dot, represented device IP address.
SubnetMask 4 numbers up to 255 separated with dot, represented device Subnet mask.
TCPPort 4 numbers up to 255 separated with dot, represented device IP port.
DefGateway 4 numbers up to 255 separated with dot, represented device Default Gateway.
MACAddr Up to 8 hexadecimals symbols represented device MAC address. Works only with service jumper!!!

If there no data field returns current settings.

26H (38) OPENING A NON-FISCAL RECEIPT.

Data field: ***None***
Response: ***NFReceipt***

NFreceipt The number of non-fiscal receipts since last daily closure on (4 bytes).

The FP performs the following actions:

- Prints the header and the tax registration number of the seller
- Prints operator number and name
- A response is send which contains ***NFreceipt***

The command is not permitted if:

- The fiscal memory has not been formatted
- There is an opened fiscal receipt
- There is an opened non-fiscal receipt
- The clock is not set

27H (39) CLOSING A NON-FISCAL RECEIPT.

Data field: None
Response: ***NFReceipt***

NFreceipt The number of non-fiscal receipts since last daily closure on (4 bytes).

The FP performs the following actions:

- Prints the footer
- The date and hour of the document are printed

If the S1.1 flag is raised the command is not executed because there is no opened non-fiscal receipt.

29H (41) SET MEMORY SWITCHES

Data field: [<Switches>]
Response: None

Switches 8 bytes with value ‘0’ or ‘1’ – the configuration switches.

The command writes to flash memory the switches value, graphics logo, barcode height, print darkness and default drawer pulse length. After RAM reset they are restored with the saved values.

If the switches parameter is not present, then the old switches are kept.

Switch	OFF	ON
1	Select RS232 speed	
2	Select RS232 speed	
3	Select RS232 speed	
4	Normal mode	"Transparent display" mode
5	Automatic paper cutting off	Automatic paper cutting on
5	Half cut	Full cut
6	Not used	
7	Not used	

Sw1	Sw2	Sw3	Speed
0	0	0	1200 bps
0	0	1	2400 bps
0	1	0	4800 bps
0	1	1	9600 bps
1	0	0	19200 bps
1	0	1	38400 bps
1	1	0	57600 bps
1	1	1	115200 bps

2AH (42) PRINTING OF A FREE NON-FISCAL TEXT

Data field: ***Text***
Response: None

Text A text of 40 symbols (at most). The symbols after 40 are cut off.

If S1.1 is raised there is no non-fiscal receipt opened and the text is not printed.

2BH (43) SETTING HEADER, FOOTERS AND PRINTING OPTIONS

Data field: ***<Item><Text>***
Response: ***None*** or current settings in case of **Item = 'I'**

Footer consists of 2 lines of text printed at the end of each receipt. It is automatically centered.

Item One symbol having the following meaning:

"0" to **"7"** **0** to **5** are the HEADER lines, **6** and **7** are the FOOTER lines.

"B" Set bar code height in pixels (0.125 mm). Possible values from 24 (3 mm) to 240 (30 mm). The barcode is printed with command **84** (**54H**).

"C" Permission/rejection of the automatic cutting of paper after each receipt. After switching ON, the performance of printer is defined in accordance with the setting of the switch **SW5**.

"D" Set print darkness. Possible values:

'**1**': Very low
'**2**': Low
'**3**': Normal
'**4**': Dark
'**5**': Very dark

"E" Enable / disable the printing of the total in **EUR** when executing the first payment command (**53**) in the fiscal receipt. By default this option is forbidden. Optionally the command programs the exchange rate **EUR** / **LEKI**. Data syntax:

<Enable>[,Rate]

Enable Flag disable / enable printing. One symbol: '**0**' or '**1**'.

Rate Exchange rate. Floating point number with up to 8 significant digits and 5 decimals. If this field missing, the old value is used. If the value is ***0.00000***, then nothing is printed independent on the value of ***Enable*** flag.

"L" Permission/rejection and height of graphic logo of the printing of graphic logo immediately before the header. This logo is defined with command **115 (73H)**.

"T" Enable / disable printing of accumulated VAT values in a non-invoice type fiscal receipt.

"X" Enable / disable automatic cash drawer pulse in commands **53 (35H)** and **70 (46H)**.

"I" Gives us the option to read values, set earlier with command 43. After the letter **"I"** only one more symbol follows which coincides with some of the above.

Text A text string:

- If ***<Item>*** is from '**0**'to '**7**' - the text of the header / footer line (up to 48 symbols). '**0**' to '**5**' are header lines (set using command **98**), '**6**' and '**7**' are footer lines.
- If **<Item> = 'B'** - A number – the height of bar code in pixels.
- If **<Item> = 'C'** - One symbol value **'0'** or **'1'**, where **"0"** forbids and **"1"** permits the automatic cutting of the receipt.
- If **<Item> = 'D'** - The print darkness (1 to 5).
- If ***<Item>*** = **'E'** – Returns ***Enable,Rate***, where ***Enable*** is Disable / enable flag and ***Rate*** is current exchange rata **EUR** / **LEKI**.
- If **<Item> = 'L'** Syntax <Enabled>,<Height>
  Enabled '0' or '1', where '1' means, that logo printing is enabled.
  Height Graphics logo height in lines (0.125 mm). A number from 8 to 96.
- If <***Item***> = **'T'** – One symbol: **'0'** or **'1'**, where **'0'** disables and **'1'** enables printing of accumulated VAT values in a non-invoice type fiscal receipt.
- If <***Item***> = **'X'** – One symbol: **'0'** or **'1'**, where **'1'** disables and **'0'** enables automatic cash drawer pulse in commands **53 (35H)** and **70 (46H)**.

2CH (44) ADVANCING PAPER

Data field: ***[Lines[,Option]]***
Response: None

Lines Advancing paper measured in lines. The programmed line count cannot be greater than 99 (1 or 2 bytes). If the parameter is not there the default setting is 1 line.

Option Defines which paper to be advanced:
"0" No effect
"1" The receipt paper roll is advanced

If the second parameter is missing the default setting is to advance only the receipt paper roll.

2DH (45) CUTTING OFF PRINTED DOCUMENTS

Data field: None
Response: ***Result***

Result The result from the execution of the command:
"P" Successful cut off
"F" The automatic cutter has blocked.

The command causes the cutting off of the printed, ready document. It must be considered that the program must advance the paper with at least two lines or the document will not be cut off correctly. If the printer is in the "automatic cut off" mode it positions the paper itself and the command becomes redundant.

When the printing mechanism blocks for some reason, the paper roll must be taken out of the cutter mechanism and the command must be executed again. This will position the blade in the extreme right-end of the mechanism.

2F(47) DISPLAYING A TEXT ON THE UPPER LINE OF THE DISPLAY

Data field: ***Text***
Response: None

Text A text of up to 20 symbols which is sent directly to the display. Prior to this a command for the positioning and clearing of the upper line. If a fiscal receipt is opened and SW4 is OFF the command is rejected.

30H(48) OPENING A FISCAL CLIENT'S RECEIPT

Data field: ***<OpCode>,<OpPwd>,<TillNum>[,<Invoice><Num>]***
Response: ***FReceipt***

OpCode Operator's number (1 to 16)
OpPwd Operator's password (4 to 8 digits)

TillNum	Till number (0 to 5 digits)
Invoice	One symbol with value **"I"**. If present, the receipt has an invoice reference.
Num	One integer from 0 to 100000000 – the invoice number.
FReceipt	The number of all fiscal receipts since last fiscal closure (4 bytes).

The FP performs the following actions:

- Prints the header
- Prints the tax registration number
- Prints the number and name of the operator
- Sends receipt counts

The command will not be successful if:

- There is an opened fiscal or non-fiscal receipt
- The maximum number of receipts, as fixed for the day, has already been issued
- The fiscal memory is full
- The fiscal memory is damaged
- The operators password is not correct
- No tax registration number available
- Wrong operator password
- The clock needs setting

After entering three wrong operator's passwords the printer blocks and must be switched off and ON again to restart operating.

31H(49) REGISTRATION OF SALES

Data field: ***<L1>[<Lf><L2>] <Tab><TaxCd>[<Exch>]<[Sign]Price>[*<Quan>][,Perc|;Abs]***
Response: None

L1	A text of up to 30 bytes containing one line of description of the sale.
Lf	One byte, containing 0Ah.
L2	An optional text of up to 30 bytes containing a second line describing the sale.
Tab	One byte containing 09h.
TaxCd	One byte containing the letter which indicates the type of the tax. There is a restriction, depending on the parameter ***EnabledTaxes*** which is set using command **83 (53H)**.
Exch	One byte – the symbol '^'. If present, this is an exchange (turn back) operation.
Sign	One byte with a value of '+' or '-'.
Price	This is a singular price and it consists of 8 meaningful digits.
Quan	A non-mandatory parameter setting the quantity of the items for sale. By default this is 1.000.The length of this parameter is 8 meaningful digits (not more than 3 after the decimal point). The result Price*Quan is rounded up to the set number of digits and cannot be longer than 8 meaningful digits.
Perc	This is also a non-mandatory parameter which sets the value of the discount or surcharge (depending on the symbol) in percent over the currently performed sale. Possible values are between - 99.00% and 99.00%, where up to 2 decimal places are acceptable.
Abs	A non-mandatory parameters which sets the value of discount or mark up directly as sum (not as percent). Only one of the parameters ***Perc*** or ***Abs*** may be used in the command!

The FP performs the following actions:

- The text, describing the sale is printed out together with the price and the code of the discount or surcharge. If there is a set quantity the information on it is printed out too.
- The price of the items sold is accumulated to the sums already stored in the operational memory. In case of memory overflow the value of the respective bites of the status field will be set.
- If there is a discount or a surcharge it is printed out on a separate line and is then added to a specially maintained registers in the printer. The values for the day are printed out together with the daily financial report.

The exchange operation must be with value <= of the accumulated sum for this tax group in the receipt. After the first exchange command, all other registration commands in this receipt must be of exchange type.

Exchange commands didn't allow using of discount or mark up.

The command will not be executed when:

- No fiscal receipt has been opened
- The maximum number of sales for one receipt have already been performed (500)

- The **35H** command has been successfully executed
- The sum for some of the tax groups has become negative
- An exchange after normal sold items

32H (50) TAX RATES ENTERED DURING THE ACCOUNTED PERIOD

Data field: ***[<Start>,<End>]***
Response: ***Data***

Start The starting date for the period - DDMMYY/6 bytes/
End The end date for the period - DDMMYY /6 bytes/
Data 1 byte:
'F' if no tax rates for the period have been found or in case of error
'PBB,CC,DD,EE,FF,GG,HH,II,DDMMYY' if rates have been found, where **'P'** means 'PASS' after which the active rates are listed out as well as the date of their entry. If there are unused groups (***Enabled*** field in command 83) for them instead of a rate in percent a **'DT'** is returned (Disabled tax).

When ***Start*** and ***End*** are entered the comma is mandatory. In case the data field is empty only information on the last entered rates is returned.

The command prints a report on the changes made in the decimal points and tax rates during the selected period.

33H(51) SUBTOTAL

Data field: ***<Print><Display>[,Perc|;Abs]***
Response: ***Subtotal,TaxA,TaxB,TaxC,TaxD,TaxE,TaxF,TaxG,TaxH,TaxI***

Print One byte, which if '1' the sum of the subtotal will be printed out.
Display One byte which if '1' the sum of the subtotal will appear on display.
Perc A non-mandatory parameter, which shows the value of discount or surcharge in percent over the sum accumulated so far.
Abs A non-mandatory parameter, which shows the value of discount as absolute value (up to 8 digits). Only one of the parameters ***Perc*** and ***Abs*** is permitted in the command line.
Subtotal Sum of subtotal.
TaxX The sum over tax group **A, B**, **C**, **D**, **E**, **F**, **G**, **H** and **I** (VAT exempt) **-** 10 bytes each field

The sum of all sales registered in the fiscal receipt is calculated. If necessary, the sum may be printed out and/or brought out on display. The calculated total sum and the accumulated separate sums for each tax group are returned to the PC. If a discount or surcharge is entered, it is printed out on a separate line and the accumulated sums over the different tax groups are respectively corrected.

34H(52) REGISTRATION AND DISPLAY

Data field: ***[Line]]<Tab><TaxCd>[<Exch>]<[Sign]Price>[*Quan][,Perc|;Abs]***
Response: None

Line A 20 byte string containing text, which describes the sale.
Tab One byte containing 09h
TaxCd One byte containing letter that indicates the tax group ('**A**', '**B**', '**C**', '**D**', '**E**', '**F**', '**G**', '**H**' and '**I**'). There is a restriction, which depends on disabled taxes (command **83**).
Exch One byte – the symbol '^'. If present, this is an exchange (turn back) operation.
Sign One byte with a value of or '-' (if void is needed).
Price This is the price - up to 8 valid digits
Quan This is a non-mandatory parameter setting the quantity of the items sold. By default its value is 1000 and its length - 8 valid digits.
Perc This is a non-mandatory parameter showing the value of surcharge and discount (depending on the sign) in percent over the current sale. Possible values are between -99.00% to 99.00%.
Abs This is a non-mandatory parameter which sets the value of discount or surcharge (depending on the sign) over the currently performed sale. Up to 8 significant digits. Only one of the parameters ***Perc*** and ***Abs*** allowed.

The fiscal printer will:

- Print out the text describing the sale together with the price and the code of the tax group.
- The price of the item sold is added to the accumulated sums in the registries of operational memory. In case of overflow, the respective bits of status bytes are set.

- If there is a surcharge or discount made on the sum, it is printed out on a separate line and is added to registries, specially reserved in the printer. The daily accumulated sums are printed out together with the daily financial report.

The price of the item is shown on the upper line of display and its description - on the lower.

The exchange operation must be with value <= of the accumulated sum for this tax group in the receipt. After the first exchange command, all other registration commands in this receipt must be of exchange type.

Exchange commands didn't allow using of discount or mark up.

The command will not be executed successfully if:

- No fiscal memory has been opened
- The maximum possible number of sales have already been performed
- The command **53 (34H)** has been successfully executed
- The sum under some of the tax groups has become negative

35H(53) CALCULATION OF A TOTAL

Data field: ***[<Line1>][<Lf><Line2>]<Tab>[[<PaidMode>]<[Sign]Amount>]***
Resonse: ***<PaidCode><Amount>***

Line1 A text of up to 30 bytes containing the first line
Lf One byte containing **0Ah**
Line2 A text of up to 30 bytes containing the second line
Tab One byte containing **09h**
PaidMode A non-mandatory code indicating the terms of payment. It may have the following values:
'P' Payment in cash
'N' Payment via credit
'C' Payment in cheques
'D' Payment with a debit card
'I' Programmable payment 1
'J' Programmable payment 2
'K' Programmable payment 3
'L' Programmable payment 4

Depending on the code, the sums are accumulated in different registers and are printed in the daily report.

Sign One byte with a value '+' indicating the ***Amount*** (the sum which has to be tendered)
Amount The sum tendered (up to 10 meaningful symbols)
PaidCode One byte - resulting from the execution of the command
'F' Error
'E' The calculated sub-total sum is negative. Payment is withheld and ***Amount*** will contain a negative sub-total.
'D' If the paid sum is less than the sum on the receipt. The residual sum due for payment is returned to ***Amount***
'R' When the paid sum is greater than the sum on the receipt. A message "**CHANGE**" will be printed out and the change will be returned to ***Amount***.
'I' An error has occurred because the sum under one of the tax groups is negative. The current subtotal is returned to ***Amount***.
Amount Up to 9 digits with a sign. Depends on ***PaidCode***.

This command starts the calculation of the sums from fiscal receipt, the printing of the sum with a special font and showing the result on display. An additional text may also be printed.

When the command has been successfully executed a further command for opening a cash drawer is activated. If there is no more data after the symbol <**Tab**>, the printer will automatically pay out the whole available sum in cash.

The command will not be successful if:

- No fiscal receipt has been opened,
- The accumulated sum is negative,
- If some of the accumulated sums under taxation (tax group) is negative.

After the successful completion of the command, fiscal printer will not perform the commands **49** and **51** within the opened receipt, although it can still perform command 53.

Note: *The codes of error 'E' and 'I' will never appear in this version of the printer because commands 49 and 52 (registering a sale) do not accept negative sums.*

36H(54) PRINTING A FREE FISCAL TEXT

Data field: ***Text***
Response: None

Text Up to 40 bytes text

A fiscal receipt must be opened because in the opposite case the text will not be printed and the S1.1. flag is raised. If the text is longer than 40 symbols the redundant letters are cut off.

38H(56) CLOSING A FISCAL RECEIPT

Data field: No data
Response: ***FReceipt***

FReceipt The number of all fiscal receipts since last fiscal closure (4 bytes).

The accumulated sums from the fiscal receipt are added to the daily sums in the registries of the operational memory.

The command will not be successful if:

- No fiscal receipt has been opened,
- Command **53 (35h)** has failed,
- The sum paid in command **53** is less than the total sum of the fiscal receipt.

3AH (58) REGISTERING THE SALE OF A PROGRAMMED ITEM

Data field: ***[<Display>][<Exch>]<[Sign]PLU[*Quan>][,Perc|;Abs][#]***
Response: None

Display One optional byte with value of '**D**'. If present, the article name and sum is displayed.
Exch One byte – the symbol '^'. If present, this is an exchange (turn back) operation.
Sign One byte with a value of '-'
PLU The individual number of the item - a whole number between 1 and 999999999 (not more than 9 digits).
Quan A non-mandatory parameter setting the quantity of the items for sale with a default value of 1.000. Length cannot be longer than 8 meaningful digits (not more than 3 after the decimal point). The resulting singular price (****Quan***) is rounded up to the set number of digits after the decimal point and also cannot be greater than 8 meaningful digits.
Perc A non-mandatory parameter showing the value of surcharge or discount (depending on the symbol) in percent over the current sale. Possible values are between -99.00% to 99.00%. Up to 2 digits after the decimal point are acceptable.
Abs This is a non-mandatory parameter which sets the value of discount or surcharge (depending on the sign) over the current sale. Up to 8 significant digits. Only one of the parameters ***Perc*** and ***Abs*** allowed.

The fiscal printer performs the following operations:

- The name, price and tax group of the item is read from items list, programmed in the printer.
- Prints out the name of the item, selected quantity and singular price. The second printed line contains the final price together with the letter, designating the tax group from which the sale will be performed. The registries for accumulated sums and item quantities are updated.
- The price of the item is added to the accumulated sums in the registries of operational memory. In case of overflow, the respective bytes from the status field will be set.
- If there is a discount or surcharge, it is printed out on a separate line and is added in specially selected registries in the printer. The values from the whole day will be printed together with the daily financial report.

The price of the item is shown on the upper line of display and its description - on the lower.

The exchange operation must be with value <= of the accumulated sum for this tax group in the receipt. After the first exchange command, all other registration commands in this receipt must be of exchange type.

Exchange commands didn't allow using of discount or mark up.

The command will not be successful if:

- No item has been programmed under the given number,
- No fiscal receipt has been opened,
- The maximum number of sales for one receipt (380) has already been registered.
- The command **35h** has been successfully executed.

- The sum under one or more of the tax groups has turned out negative.

3CH (60) CANCEL FISCAL RECEIPT

Data field: None
Response: None

The command cancels an open fiscal receipt. All sales in the receipt are discarded. The message "== **CANCELLED** ==" is printed and then the receipt is closed as non-fiscal. The command is not permitted, if command **53** (Total) is already executed for this receipt.

3DH(61) SETTING THE CLOCK - DATE AND TIME

Data field: ***<DD-MM-YY><space>HH:MM[:SS]>***
Response: None

You cannot set a date, which is earlier than the date of the last entry into the fiscal memory of device and the capacity of this memory includes the year 2099. After RESET of memory, this command must be executed – otherwise, the normal functioning of device cannot be resumed. The printer's real-time clock must always be set correctly.

3EH (62) READING CURRENT DATE AND HOUR

Data field: None
Response: ***<DD-MM-YY><Space><HH:MM:SS>***

3FH (63) DISPLAYING THE DATE AND HOUR

Data field: None
Response: None

Current date and time are displayed on lower line using the format: ***DD-MM-YY HH:MM:SS.***

40H (64) LAST FISCAL CLOSURE DETAILS

Data field: None
Response: ***ErrorCode[Rec,TotA,TotB,TotC,TotD,TotE,TotF,TotG,TotH,TotI,Date]***

ErrCode Exit code:
- **'P'** Successful command. Data present after ',' symbol.
- **'F'** Can't read last record. No data present.

Rec Receipt count
TotX VAT group total (12 bytes with sign each field).
Date Closure date in format DDMMYY.

The command returns the accumulated sums by VAT groups for the last fiscal closure.

41H (65) DAILY TOTALS

Data field: None
Response: ***TotA,TotB,TotC,TotD,TotE,TotF,TotG,TotH,TotI***

TotX VAT group total (12 bytes with sign each field).

The command returns the accumulated sums by VAT groups for the day.

44H (68) THE NUMBER OF FREE FIELDS IN THE FISCAL MEMORY

Data field: None
Response: ***Logical,Physical***

Logical The number of logical locations for fiscal entries (4 bytes)
Physical Not used. Repeats the value of ***Logical***.

The number of free fields in the fiscal memory, reserved for saving information from the daily report.

45H (69) DAILY FINANCIAL REPORT

Data field: ***[<Option>[N][A]]***
Response: **Response:** ***Closure,Total,TotA,TotB,TotC,TotD,TotE,TotF,TotG,TotH,TotI***

Option A non-mandatory parameter controlling the type of generated report.
- '**0**' A Z-report (Daily report with writing to fiscal memory and clearing the daily registers).
- '**2**' A X-report (Daily report without writing to fiscal memory and clearing the daily registers)..

N The presence of this symbol at the end of the data cancels the option to clear the data accumulated on the operators during a Z-report.

A The presence of this symbol at the end of the data cancels the option to clear the data about sold article quantities during a Z-report.

Closure Fiscal closure (Daily report) number – 4 bytes.

Total Total

TotX VAT group total (12 bytes with sign each field).

46H (70) INTERNAL DEBITING AND CREDITING (SERVICE IN AND OUT)

Data field: ***[<Amount>]***
Response: ***ExitCode,CashSum,ServIn,ServOut***

Amount The sum, which will be registered (up to 9 bytes). Depending on the sign of the digit, this sum is interpreted either as credit or debit (serveIn or serveOut).

ExitCode One byte:
- '**P**' The order has been completed. If the ordered sum is not 0, the printer will print an interior receipt for registering the operation.
- '**F**' The order has been canceled. This happens if:
  - The cash sum available is less than the ordered interior credit (serveIn),
  - There is an opened fiscal and non-fiscal receipt.

CashSum Available cash. Apart from this command, the sum grows after each payment in cash.

ServIn The sum from all commands "Interior credit"

ServOut The sum from all commands "Interior debit"

Changes the content of the cash availability register. Depending on the sign of the sum in question, it is accumulated in the register for interior debit-credit. The information is not saved in the fiscal memory of device and is accessible until the performance of the daily closure. It is printed out at the command **69 (45h)** and at the generation of the daily report without closure from the printer itself. At successful completion of this command, the drawer "kick-out" function is automatically activated.

47H (71) PRINTING DIAGNOSTIC INFORMATION

Data field: None
Response: None

The command initiates the generation of an interior receipt containing diagnostic information as follows:
- Prints the date and version of the employed software,
- Prints the control sum of the employed firmware,
- Prints the serial port's band rate,
- Prints out the status of memory switches,
- Prints emergency time after power supply cut-off,
- Prints the number, date and hour of the last reset of the RAM (if there is such),
- Prints the current temperature of the two printer heads,
- Prints the overall number of fields in the fiscal memory and the number of the free fields,
- Prints the current date and hour.

The command will not be executed when there is an open receipt in progress or when the paper roll has finished. It may also be activated by pressing the <**FEED**> button while power on for less than 2 seconds.

48H (72) FISCALIZATION

Data field: <Serial>

Response: ErrCode

Serial The serial number of device - it must be the number entered with command **5Bh**. Status 5.3 is used to verify whether the command has been successfully executed.
ErrCode Error or '**P**' code when the action has been successful.

The command will not be executed (and an error code will be set) if:
'**1**' The serial number is invalid,
'**2**' The printer has been fiscalized,
'**3**' No serial number has been programmed,
'**4**' The serial number is different from the one programmed,
'**5**' There is an opened receipt in progress,
'**6**' There are some already issued fiscal receipts or the 70(46h) command has been executed after the last daily report with closure,
'**7**' No tax rates have been entered into the memory of device,
'**8**' The tax registration number consists only of zeros,
'**9**' The clock needs setting.

Fiscalization of device must be performed and after successful execution of the command, the returning of printer to a "non-fiscalized" mode becomes impossible.

The tax number and current VAT rates is entered in the fiscal memory, together with the current date and hour. All registries are cleared (to zero) after which the printer opens the first fiscal receipt, marks the moment of fiscalization on this receipt and closes it.

49H (73) DETAILED FISCAL MEMORY REPORT BY CLOSURE NUMBER

Data field: ***<Start>,<End>***
Response: ***None***

Start The number of the starting fiscal entry - 4 bytes
End The number of the ending fiscal entry - 4 bytes

The command leads to the printing of a detailed report of the fiscal memory from one selected number to another.

4AH (74) READING THE STATUS OPTIONS

Data field: ***[Option]***
Response: ***<S0><S1><S2><S3><S4><S5>***

Option One byte with the following meanings:
'W' All printer buffers must be printed out first.
'X' The status is returned immediately (default).
Sn Status byte **n**.

4CH (76) STATUS OF THE FISCAL TRANSACTION

Data field: [***Option***]
Repsonse: ***Open,Items,Amount[,Tender]***

Option **='T'** If the parameter has been selected the command will return the information on the current state of the sum due for payment by the client.
Open One byte which is '1' if a fiscal or a non-fiscal receipt has been opened (which it is can be understood from the status bytes) and '0' if there is no opened receipt.
Items The number of sales registered on the on the current or last fiscal receipt - 4 bytes.
Amount The sum from the last fiscal receipt - 9 bytes with a sign.
Tender The sum tendered against the current or the last receipt - 9 bytes with a sign (Only if ***Option*** is present).

The command supports the PC application's ability to monitor the status and if needed to restore and complete am already started fiscal operation which has been interrupted on emergency or out of time - for example as a result of a power failure.

4FH (79) SHORT PERIODICAL FISCAL REPORT

Data field: ***<Start>,<End>***
or
<Period>
Response: None

Start Starting date - 6 bytes (DDMMYY)
End End date - 6 bytes (DDMMYY)
Period Used to print monthly or annual periodical report.
For monthly report – 4 bytes expected with format MMYY
For annual report – 2 bytes expected with format YY.

This command prints out a short financial report on the period between two selected dates or on the selected month or year.

50H (80) SOUND SIGNAL

Data field: ***[<SoundData>]***
Response: None

This command is used for making (beeping) a sequence of sounds with a certain frequency and duration. The data is in format, similar to the one used for writing notes and can be of any length up to 218 bytes. The first invalid character cancels the command. If the input string is empty, the one sound signal with frequency 2 kHz and duration 300 ms is emitted. ***SoundData*** format is a sequence of the following subcommands:

- Notes of the scale: One latine letter with value from '**A**' to '**G**'.
  '**C**' - Do
  '**D**' - Re
  '**E**' - Mi
  '**F**' - Fa
  '**G**' - Sol
  '**A**' - La
  '**B**' – Si
  If immediately after the note comes character '**#**', then the note is higher in pitch by a semitone (***sharp***). If immediately after the note comes character '**&**', then the note is lower in pitch by a semitone (***flat***).
- Pause: Character space (ASCII 20h).
  After a note or pause there can be one or a few bytes, which specify the duration. Valid are characters from '0' to '5', they have the following meaning:
  '**0**' basic duration of a note/pause
  '**1**' basic duration * 2
  '**2**' basic duration * 4
  '**3**' basic duration * 8
  '**4**' basic duration * 16
  '**5**' basic duration * 32
  If there are a few durations one after another they are summed up.
- Going to higher scale: character '+'.
- Going to lower scale: character '-'.
- Specifying tempo: character '^', followed by a number. The number specifies the percentage: duration of notes and intervals to basic duration. Values:
  '**1**' 200 %
  '**2**' 175 %
  '**3**' 140 %
  '**4**' 120 %
  '**5**' 100 %
  '**6**' 80 %
  '**7**' 60 %
  '**8**' 50 %
  '**9**' 40 %
- Return to scale 1 (it is default). Character '**@**'. Tone 'La' in it is 440 Hz.

53H (83) SETTING THE MULTIPLIER, DECIMALS AND ENABLED TAXES

Data fields: ***[Multiplier,Decimals,Enabled,TaxB,TaxC,TaxD,TaxE,TaxF,TaxG,TaxH,TaxI]***
Response: ***Multiplier,Decimals,Enabled,TaxB,TaxC,TaxD,TaxE,TaxF,TaxG,TaxH,TaxI***

Multiplier A multiplier between 0 and 3 which shows the degree of 10 before multiplying it times the input or output value (at present deactivated and out of use).
Decimals One byte with a value 0 or 2 and shows the exact place of the decimal point.
Enabled 8 bytes with value '**0**' or '**1**', corresponding to VAT groups '**B**', '**C**', '**D**', '**E**, '**F**', '**G**','**H**' and '**I**' in this order. '**0**' means disabled VAT group, '**1**' – enabled VAT group. VAT group '**A**' is always enabled.
TaxX The VAT rate for the corresponding VAT group in % with up to 2 decimals (0.00 to 99.00).

If nothing is entered in the data field, the FP returns the currently valid values. Even when only one of the parameters must be changed, the rest must be entered too.

The fiscal memory has a fixed capacity for a set number of entries, and for that reason the command can be performed not more than 19 times after the fiscalization. Before the fiscalization the data are hold in RAM only and may be changed without limitations. The command may be executed only before the first fiscal receipt for the day.

54H (84) PRINTING A BAR CODE

Data field: ***<Type>,<Data>***
Response: ***Result***

Type Barcode type. 1 byte with possible value:
'**1**' EAN8 bar code. Data contains only digits and is 7 bytes long. The check sum is automatically calculated and printed.
'**2**' EAN13 bar code. Data contains only digits and is 12 bytes long. The check sum is automatically calculated and printed.
'**3**' Code128 bar code. Data contains symbols with ASCII codes between 32 and 127. Data length is between 15 and 30 symbols (depends on the content – the maximum length is if all symbol are digits). The check sum is automatically calculated and printed.
'**4**' Interleaved 2 of 5 (ITF) bar code without control sum.
'**5**' Interleaved 2 of 5 (ITF) bar code with control sum.

Result One byte:
'P' No error.
'F' Name longer than 30 bytes.

The command prints a bar code. Printing a bar code is permitted only in an opened fiscal or non-fiscal receipt. The barcode is centered. If data length or content is not valid, nothing is printed and "Syntax error" status bit is set.

55H (85) DIFINE ADDITIONAL PAYMENT TYPES NAME

Data field: ***Option[,Name]***
Response: ***Result|Name***

Option:
'I' Additional payment 1
'J' Additional payment 2
'K' Additional payment 3
'L' Additional payment 4

Name Name (comment text) of the payment. Up to 30 bytes. If not present, the current name is returned.

Result One byte:
'P' No error.
'F' Name longer than 30 bytes.

The command defines the comment text, printed before the additional (programmable) payments. The command is not permitted after the first fiscal receipt for the day.

56H (86) GET LATEST FISCAL MEMORY RECORD DATE

Data field: No data
Response: Date

Date Date of last (latest) record in the fiscal memory in format:

59H (89) PROGRAMMING THE PRODUCTION TEST AREA

Data field: ***<Test>***
Response: Result,Free

Test One byte. If '**T**' an entry into the fiscal memory is done - otherwise there will be no 'save' performed and only the parameters will be returned.
Result One byte:
'P' No error
'F' Error
Free The number of the free blocks left for saving such entries - 4 bytes.

The command is executed for testing the fiscal memory.
Test block for entries into the fiscal memory: *55h,AAh,33h,CCh,5Ah, A5h,3Ch,C3h*
If- and when- the S1.1 flag has been raised the fiscal memory has not been formatted or is in the **READONLY** mode.

5AH (90) RETURNS DIAGONSTIC INFORMATION

Data field: ***<Calc>***
Response: ***<Name>,<FwRev><Sp><FwDate><Sp><FwTime>,<Chk>,<Sw>,<Ser>,<FM>***

Calc If '**1**' the control sum of the fiscal memory is calculated - 1 byte.
Name Name of the printer (the string "**FP2000**").
FwRev The version of the software program - 4 bytes.
Sp Space - 1 byte.
FwDate The date of the software program DDMmmmYY - 8 bytes.
Sp Space - 1 byte.
FwTime Hour of the software program HHMM - 4 bytes.
Chk The EPROM control sum - a 4 bytes string in the hexadecimal code. For example if the control sum is 214Ah it will be presented as 32h, 31h, 34h, 42h
Sw The configuration switches from Sw1 to Sw4 - a 4 bytes string with '0' or '1'.
Ser The serial number - 8 bytes.
FM Number of the fiscal module - 8 bytes.

5BH (91) PROGRAMMING THE SERIAL NUMBER AND FISCAL MEMORY NUMBER

Data field: ***<SerialNum>,<FiscalNum>***
Response: ***Result,CountryStr***

SerialNum The serial number. 10 symbols – 2 letters and 8 digits.
FiscalNum The fiscal memory number. 10 symbols – all digits.
Result One byte. '**P**' - OK; '**F**' - errors.
CountryStr The name of the country. For example: **"ALBANIA"**

The command is permitted only in service mode and is performed by the manufacturer of the printer. The printer is handed over to the owner with the serial number and fiscal memory number.

If ***Result*** = '**F**' and the S1.1 flag is raised the command has not been successful because either the fiscal memory has not been formatted or the serial number has already been entered.

5CH (92) PRINT SEPARATOR LINE

Data field: ***<Type>***
Response: None

Type The type of the separator line. One symbol with possible value:
'1' 48 times the symbol '-'.
'2' 24 times the sequence '-' and ' '.
'3' 48 times the symbol '='.

The command prints a separator line using the full paper width. Permitted in a fiscal or non-fiscal receipt only,

5EH (94) DETAILED FISCAL MEMORY REPORT BY CLOSURE DATE

Data field: ***<Start>,<End>***
or
<Period>
Response: None

Start The starting date of the selected fiscal entry - 6 bytes DDMMYY
End Ending date of the fiscal entry - 6 bytes DDMMYY
Period Used to print monthly or annual periodical report.
For monthly report – 4 bytes expected with format MMYY
For annual report – 2 bytes expected with format YY.

This command prints out a detailed financial report on the period between two selected dates or on the selected month or year.

5FH (95) SHORT FISCAL MEMORY REPORT BY CLOSURE NUMBER

Data field: ***<Start>,<End>***
Response: None

Start Starting number of the fiscal entry
End End number of fiscal entry

The command starts the calculation and the printing of a short periodic financial report.

61H (97) READING THE SET TAX RATES

Data field: None
Response: ***TaxB,TaxC,TaxD,TaxE,TaxF,TaxG,TaxH,TaxI***

TaxB Current tax rate B
TaxC Current tax rate C
TaxD Current tax rate D
TaxE Current tax rate E
TaxF Current tax rate F
TaxG Current tax rate G
TaxH Current tax rate H
TaxI Current tax rate I

62H (98) SETTING THE TAX REGISTRATION NUMBER

Data field: ***<TaxNo>***
Response: None

TaxNo The tax registration number as a text (from 8 to 14 bytes).

The command changes the tax registration. Before fiscalization this data are hold in RAM only, so they can be changed unlimited times.

The fiscalization writes the current data set using this command to the fiscal memory.

63H (99) READING THE TAX REGISTRATION NUMBER

Data field: None
Response: ***TaxNo***

TaxNot The tax registration number as a text.

64H (100) SHOWING TEXT ON DISPLAY

Data field: ***Text***
Response: None

Text A text of no more than 40 symbols sent for displaying. If symbols with ASCII codes smaller than 20h (control symbols) they are increased with 40h and are preceded by 10h.

Example: To send 1Bh, 4Bh, 00h the data field will have to contain 10h, 5Bh, 10h, 40h.

65H (101) SETTING THE OPERATOR'S PASSWORD

Data field: ***<OpCode>,<OldPwd>,<NewPwd>***
Response: None

OpCode Operator's code (1 to 16)
OldPwd Old password (4 to 8 digits)
NewPwd New password (4 to 8 digits)

Sets one of the 16 operator's passwords, which will be demanded upon opening a fiscal receipt. After three erroneous password entries, the printer will block, it must then be switched OFF and ON again to continue operating.

After initialization or reset of the operational memory, all 16 passwords are "**0000**".

66H (102) ENTERING OPERATOR'S NAME

Data field: ***<OpCode>,<Pwd>,<OpName>***
Response: None

OpCode Operator's code (1 to 16)
Pwd Password (4 to 8 digits)
OpName Name of the operator (up to 24 symbols)

Enters one of the 16 operator names. The number and the name of the operator are printed at the beginning of each fiscal (clients) receipt. After three erroneous password entries the printer will block, it must then be switched OFF and ON again to continue operating. After initialization or reset of the operational memory all 16 passwords locations are empty.

67H (103) INFORMATION ON THE CURRENT RECEIPT

Data field: None
Response: ***CanVd,TaxA,TaxB,TaxC,TaxD,TaxE,TaxF,TaxG,TaxH,TaxI***

CanVd Possible/impossible return (sale registration with a negative sign) ['**0**' / '**1**']
TaxX The sum accumulated for each VAT group (9 digits with sign each field)

The command offers information on sums accumulated so far under the different tax groups and whether it is possible to return the registered items sold.

68H (105) OPERATOR'S REPORT

Data field: None
Response: None

Information on the sales, performed by the operators, is printed out where for each separate operator the following data is printed out: name, individual number, number of fiscal receipts, discharges made, surcharge, sum adjustments and accumulated total sums.

6AH (106) DRAWER KICK OUT

Data field: [<mSec>]
Response: None

mSec The length of the impulse in milliseconds (5-100)

Sends an impulse for opening the cash drawer. This parameter sets a new value for the length of the impulse, which is stored in the memory of the printer. If this parameter is skipped, the last entered value remains valid. After memory RESET a value of 15 ms is set.

6BH (107) DEFINING AND READING ITEMS

Data field: ***<Option>[Parameters]***
Response: ***ErrorCode[,Data]***

Option One byte, defining the type of the selected operation. Depending on this, the command might - or might not - demand the entering of additional parameters. The possible values are: '**I**', '**P**', '**D**', '**A**', '**C**', '**R**', '**F**', '**L**', '**N**', '**X**', '**f**', '**l**', '**n**', '**x**'.

ErrorCode One byte, showing the result from the operation and having the following meaning:
- **'P'** Successful command
- **'F'** Unsuccessful command

Parameters Data on the command - described in detail further on.

SUBCOMMANDS (depending on ***Option***):

- **'I'** Article information
  Syntax: <I>
  Returns: <Total>,<Prog>,<Len>
  Total Total programmable article count (10000 for this printer).
  Progr Programmed article count.
  Len Maximal article name length (36 for this printer).

- **'P'** Programming an item
  Syntax: <P><TaxGr><PLU>,<Group>,<SPrice>,[<Replace>]<Quantity>,<Name>
  TaxGr Tax group. One byte ('**A**', '**B**', '**C**', '**D**', '**E**, '**F**', '**G**', '**H**' or '**P**').
  PLU Number of the item (1 to 999999999)
  Group Article group (1 – 99).
  SPrice Singular price - up to 8 meaningful digits.
  Replace A non-mandatory parameter – one byte with value '**A**'. Changes the meaning of the next parameter (***Quantity***).
  Quantity A number with up to 3 decimals – the available quantity of the article. If ***Replace*** is present, then the available quantity is replaced with this parameter, otherwise it is added to the old value (if the article is already programmed, of course). Every sale command of this article will decrease this value.
  Name Name of the item - up to 36 bytes.

Up to 10000 different items may be programmed and the command will be rejected if a similar item has already been programmed in the memory of printer and sales of this item have been registered. An item with zero accumulated sums is subject to change. The number of the free items is returned after an ***ErrorCode*** parameter.

- **'A'** Change the quantity of an item
  Syntax: <A><PLU>,<Quantity>
  PLU Article number (1 to 999999999).
  Quantity Quantity correction - a floating-point number with 3 decimal places. Positive number increases the available quantity, negative decreases it.

Changing the quantity is possible, if the article is programmed.

- **'C'** Change the price of an item
  Syntax: <C><PLU>,<Sprice>
  PLU Article number (1 to 999999999).
  SPrice Singular price - up to 8 meaningful digits.

Changing the price is possible, if the article is programmed and no sales of this article are made in the fiscal receipt (if a fiscal receipt is open).

- **'D'** Deleting an item
  Syntax: <D><A | PLU | PLU1, PLU2>
  A Delete all items with non-zero accumulated sums.
  PLU Deletes article with selected number if there are no accumulated sums.
  PLU1,PLU2 Deletes the articles within a set interval which do not have accumulated sums.

- **'R'** Reading Item data
  Syntax: <R><PLU>
  PLU Item number. 9 digits.
  Returns: <P><PLU>,<TaxGr>,<Group>,<SPrice>,<Total>,<Sold>,<Available>,<Name>
  PLU Individual number of the item. 9 digits (000000001 to 999999999)
  TaxGr Tax group - 1 byte
  Group Article group. 2 digits (01 - 99).

SPrice	Singular price. A floating-point number – decimal places depend on the count set using command **83 (53h)**.
Total	Accumulated sum for this article.
Sold	Accumulated quantity - a floating-point number with 3 decimal places.
Available	Available quantity of this article.
Name	The name of the item. Up to 36 symbols.

If the item cannot be found, one '**F**' byte is returned.

- **'F'** Returning the data on the first found programmed item.
  Syntax: <F>[<PLU>]

If the parameter ***PLU*** is present, then the first programmed article with number greater than or equal to ***PLU*** is returned. If missing, ***PLU=1*** is assumed. The returned data is similar to the subcommand '**R**'.

- **'L'** Returning the data on the programmed item with the greatest number.
  Syntax: <L>[<PLU>]

If the parameter ***PLU*** is present, then the first programmed article with number lower than or equal to ***PLU*** is returned. If missing, ***PLU=999999999*** is assumed. The returned data is similar to the subcommand '**R**'.

- **'N'** Returning the data on the next found programmed item. Depending of the starting subcommand ('**F**' or '**L**'), the articles are enumerated in ascending or descending order.
  Syntax: <N>

The returned data is similar to the subcommand '**R**'.

The last three commands are used to receive a list of programmed items. The subcommand '**F**' or '**L**' is followed by '**N**' until the response '**F**' comes. This means that the process of reading has ended with the last available item.

- **'f'** Returning the data on the first sold item.
  Syntax: <f>[<PLU>]

If the parameter ***PLU*** is present, then the first sold article with number greater than or equal to ***PLU*** is returned. If missing, ***PLU=1*** is assumed. The returned data is similar to the subcommand '**R**'.

- **'l'** Returning the data on the sold item with the greatest number.
  Syntax: <l>[<PLU>]

If the parameter ***PLU*** is present, then the first sold article with number lower than or equal to ***PLU*** is returned. If missing, ***PLU=999999999*** is assumed. The returned data is similar to the subcommand '**R**'.

- **'n'** Returning the data on the next found sold item. Depending of the starting subcommand ('**f**' or '**l**'), the articles are enumerated in ascending or descending order.
  Syntax: <n>

The returned data is similar to the subcommand '**R**'.

The last three commands are used to receive a list of sold items. The subcommand '**f**' or '**l**' is followed by '**n**' until the response '**F**' comes. This means that the process of reading has ended with the last available item.

- **'X'** Returning the data on the first free item.
  Syntax: <X>[<PLU>]
  Returns: PLU

If the parameter ***PLU*** is present, then the first free (not programmed) article with number greater than or equal to ***PLU*** is returned. If missing, ***PLU=1*** is assumed.

- **'x'** Returning the data on the last free item.
  Syntax: <x>[<PLU>]
  Returns: PLU

If the parameter ***PLU*** is present, then the first free (not programmed) article with number lower than or equal to ***PLU*** is returned. If missing, ***PLU=999999999*** is assumed.

6DH (109) PRINTING A DUPLICATE RECEIPT

Data field: ***<Count>***
Response: None

Count Number of duplicate receipts (only a value of 1 or 2 is accepted!).

The command initiates the printing of a copy of the last closed receipt containing registered sales. Immediately after the tax registration number the inscription "**DUPLICATE**" is printed out in bold letters.

The printer will refuse to print a second copy of a receipt.

6EH (110) ADDITIONAL DAILY INFORMATION (PAYMENT INFO)

Data field: None
Response: ***Cash,Credit,Debit,Cheque,Pay1,Pay2,Pay3,Pay4,Closure,FReceipt,CReceipt***

Cash	Paid in cash
Credit	Payment credited
Debit	Paid with a debit card
Cheque	Paid with a cheque
PayX	Paid with one of the additional payment types (‘**I**’, ’**J**’, ’**K**’, ’**L**’).
Closure	Current (last) fiscal entry
Receipt	Number of the next fiscal receipt
FReceipt	Number of the next fiscal receipt
CReceipt	Number of the next exchange receipt

Returns information on the distribution of the daily sum according to the terms of payment used.

6FH (111) ITEMS REPORT

Data field: ***<Option>[<Start>,<End>[,<Group>]]***
Reponse: None

Option Defines the type of information under print. Possible values:
- **‘S’** Only sold items are printed out. The data on these items include: the individual number, VAT group, group, name, single price, sold quantity and total sum for the day.
- **‘P’** All programmed items are printed out, containing their number, VAT group, group, name, sold quantity, available quantity and single price.

Start	First article number (PLU) printed. PLUs less than this are not included in the report. Default: 1.
End	Last article number (PLU) printed. PLUs greater than this are not included in the report. Default: 999999999.
Group	A number from 1 to 99. If present, only articles from this group are printed, otherwise all articles are printed.

Items are arranged according to their individual numbers. When a Z-report is printed, then the accumulated sums are cleared, if the parameter ‘**A**’ is not present in the command line.

70H (112) READING INFORMATION ON THE OPERATOR

Data field: ***Operator***
Response: ***NReceipts,Total,TotalC,Discount,Surcharge,Void,Name[,Password]***

Operator	Number of the operator (1 to 16)
NReceipts	Number of all receipts
Total	Number of registered sales and total accumulated sum, separated by a ‘;’
Discount	Number of discounts and total number of discounts, separated by a ‘;’
Surcharge	Number of surcharges and total number of surcharges made, separated by a ‘;’
Void	Number of voids (and corrections of sums) and their total sum, separated by a ‘;’
Name	Name of the operator
Password	Password of the operator (only in service mode)

The command leads to the reading of the available information, which will be printed out in the operator’s report. The sums are returned as floating-point numbers incorporating the currently set number of decimal places.

71H (113) READING THE NUMBER OF THE LAST PRINTED DOCUMENT

Data field: None
Response: ***DocNum***

DocNum The number of the last issued document (7 digits)

72H (114) INFORMATION ON THE FISCAL ENTRY OR A FISCAL PERIOD

Data field: ***<Record>[,<Type>[,Record1]]***
Response: ***ErrorCode,Data***

Record Start number of the fiscal memory record.
Type The type of the information demanded.
Record1 Optional end number of fiscal memory record for ***Type*** '**1**', '**2**' and '**3**'. For all other subcommands this field is empty.
ErrorCode One byte with a value of:
- '**P**' Valid data found
- '**F**' Wrong control sum (Data is invalid)
- '**E**' The selected entry is empty

Data Returned data.

Type	***Data*** format
"0"	***DecRecord,Decimals,Enabled,RateA,RateB,RateC,RateD,DateTime***
"1"	***ClosCnt,RecCnt,TotA,TotB,TotC,TotD,TotE,TotF,TotG,TotH,TotI***
"2"	***ClosCnt,RecCnt,NetA,NetB,NotC,NetD,NetE,NetF,NetG,NetH,NetI***
"3"	***ClosCnt,RecCnt,TaxA,TaxB,TaxC,TaxD,TaxE,TaxF,TaxG,TaxH,TaxI***
"4"	***Closure,DecRecord,ResetRecord,DateTime***
"5"	***Decimals,Enabled,RateB,RateC,RateD,RateE,RateF,RateG,RateH,RateI,DateTime***
"6"	***DateTime***

Closure Z-report record number
DecRecord Fiscal memory decimals record number.
Decimals Decimals
Enabled Enabled taxes mask
RateX VAT rate (in %)
DateTime Date and time in format DD-MM-YY hh:mm:ss
ClosCnt Closure count for the period
RecCnt Fiscal receipt count for the period
TotX Accumulated turnover sum for the period
TotExcX Accumulated turnover sum from exchanges for the period
NetX Accumulated net sum for the period
NetExcX Accumulated net sum from exchanges for the period
TaxX Accumulated VAT sum for the period
TaxExcX Accumulated VAT sum from exchanges for the period

The command returns information on the different tax groups for each separate entry or a selected period of time. Periodic references for longer time periods may take a few seconds to process.

Depending on ***Type***, different information is returned:

"**0**" Information on the active decimals and VAT rates record for the Z-report with number ***Record***
"**1**" Information on the accumulated turnover sums
"**2**" Information on the accumulated net sums
"**3**" Information on the accumulated VAT sums
"**4**" Information on the active decimals and VAT rates record for the Z-report with number ***Record***
"**5**" Information on the decimals and VAT rates record with number ***Record***
"**6**" Information on reset record with number ***Record***

73H (115) PROGRAMMING A GRAPHIC LOGO

Data field: ***<RowNum>,<Data>***
or ***R<RowNum>***
Response: None
or ***<Data>***

R If the letter is present at the beginning of the command, then the command returns the data of the corresponding line.
RowNum Shows the line, which is being programmed - a number between 0 and 95
Data Graphic data. Two symbols for each byte of information are entered in the hexadecimal code (Two symbols for every byte). The length of the data is up to 54 bytes, and if they are less, an automatic addition of "00" follows.

This command offers the option to define a graphic logo with dimensions 72 x 12 mm (432 x 96 dots) designed by the user themselves. The printing of this logo is activated with command **43**. It is printed out immediately before the

HEADER - at the beginning of each fiscal or non-fiscal receipt. In order to define the whole logo, the command must be executed 96 times - once for each line. After RESET of memory, default logo is active.

74H (116) READ FISCAL MEMORY BLOCK

Data field: ***<Address>,<Bytes>***
Response: ***Data***

Address Starting address in the fiscal memory in hexadecimal representation (up to 5 hexadecimal digits). From **00000** to **1FFFF** for 1 Mbit fiscal memory.
Bytes Block length. From 1 to 64.
Data The data, read from the fiscal memory in hexadecimal form (2 symbols for each data byte).

This command offers the option to read directly a block of data from the fiscal memory. It is possible to read the whole fiscal memory, sending the command many times with different start addresses.

76H (118) READ CODE MEMORY BLOCK

Data field: ***<Address>,<Bytes>***
Response: ***Data***

Address Starting address in the code memory in hexadecimal representation (up to 5 hexadecimal digits). From **00000** to 2**FFFF**.
Bytes Block length. From 1 to 64.
Data The data, read from the code memory in hexadecimal form (2 symbols for each data byte).

The value **(*Address*+*Bytes*)** may not be greater than ***30000h*** (for example **Address=2FFF0** and **Bytes=17** is wrong).

This command offers the option to read directly a block of data from the code memory (firmware). It is possible to read the whole code memory, sending the command many times with different start addresses.

The command is permitted only when the service jumper is placed on the main board of the printer

77H (119) READ AND PRINT MONTHLY REPORT

Data field: ***<Option>[,<Data>]***
Response: ***Answer***

Option One byte, which selects the required action. Possible values:
'**F**' Get the first monthly report line (the header). ***Data*** contains 4 digits – the month in format **MMYY** (without the century, 20 assumed).
'**N**' Get the next monthly report line (Z-report data or control sum). ***Data*** field is empty.
'**P**' Prints the monthly report. ***Data*** contains 32 hexadecimal digits – the MD5 control sum of the report data. If the control sum is correct, the report is printed.

Answer Contains returned data or the letter '**F**' if not successful, or monthly report data line.

The command must be used as follows:
- Send once command with option '**F**' and the required month and year.
- Send command with option '**N**' until ***Answe***r '**F**' is returned.
- Send command with option '**P**' and the control sum. The control sum can be calculated, or the string of the last ***Answer*** before '**F**' can be used. The monthly report is printed.

When calculating the MD5 control sum, the bytes **CR** (0Dh) and **LF** (0Ah) must be added to the end of the line in this order (the answer does not contain these symbols, only pure text).

All this command sequence must be sent without switching the printer off!

78H (120) ELECTRONIC JOURNAL SUPPORT

Data field: ***<Cmd>[,<Data>]***
Response: ***RespData***

Cmd A letter, selecting the desired action. ***Data*** and ***RespData*** depends on ***Cmd***.

'**I**' Electronic journal information. ***Data*** field is empty. ***RespData*** Syntax:
<Num>,<Cnt>,<Line>,<TotLines>,<FreeLines>,<TotLines>

Num	Journal number
Cnt	Last Z-report
Line	Last written line number.
TotLines	Total written journal lines.
FreeLines	Free lines count in el. journal.
TotLines	Total lines count in el. Journal

If ***Cmd*** is '**F**', '**PL**' or '**PS**' ***Data*** field syntax is:
[<EJReportType>[,<Period>]]

EJReportType
- '***F***' Full journal report (info and lines) for every receipt in current period.
- '***L***' Only lines for every receipt in current period.
- '***I***' Only info for every receipt in current period.

Period syntax is:
[<D>]ZReceipt1[,[ZReceipt2]][,ZReceipt3,RReceipt2]
If ***Period*** is empty, the period is entire Electronic Journal.

D if there is '***D***' ***ZReceipt1*** or/and ***ZReceipt2*** are DATE TIME in format **YY[MM[DD[hh[mm]]]]**. Only **YY** of ***ZReceipt1*** is needed, the other fields are **01010000,YY12312359** i.e. it can be done Year, Month, Day, Hour or Minute journal report without typing second field.

ZReceipt1 If only this parameter is present, the period will be only for that ZReceipt (without any other receipts). If there is comma after ***ZReceipt1*** the period will be from that ZReceipt till end of the Electronic Journal (with all receipts (R and X) in it).

ZReceipt2 The period will be from ***ZReceipt1*** to ***ZReceipt2*** ZReceipts (with all receipts (R and X) in it).

ZReceipt3 and ***RReceipt2*** The period will be from ***ZReceipt1*** ZReceipt and ***ZReceipt2*** RReceipt to ***ZReceipt3*** ZReceipt and ***RReceipt2*** RReceipt (with all receipts (R and X) in it).

'**F**' Get first journal line in period. ***RespData*** Syntax:
'F' or ***'P,<Text>'***
- '**F**' No journal line found
- '**P**' Journal line successfully read
- ***Text*** The journal line, ready to be stored in a file.

'**N**' Get next journal line. ***Data*** field is empty. ***RespData*** is the same as '**F**' subcommand.

'**PL**' Print journal using normal font size. If ***Data*** field is empty device print electronic journal starting from the last ZReport, than all journal lines in current Z day. If ***Data*** present it will work like **'F'** subcommand, but period will be printed, not downloaded.

'**PS**' Print journal using half-height font size. If ***Data*** field is empty device print electronic journal starting from the last ZReport, than all journal lines in current Z day. If ***Data*** present it will work like **'F'** subcommand, but period will be printed, not downloaded.

'**CL**' Continue **'PL'** or **'PS'** without ***Data*** (start with the first non-printed receipt) using normal font size. ***Data*** must be empty.

'**CS**' Continue **'PL'** or **'PS'** without ***Data*** (start with the first non-printed receipt) using half-height font size. ***Data*** must be empty.

7AH (122) ENABLE / DISABLE TRAINING MODE

Data field: ***[<NewMode>]***
Response: ***OldMode***

NewMode One byte with possible value '**0**' or '**1**':
- ***'0'*** Disable training mode.
- ***'1'*** Enable training mode.

OldMode The value before executing the command. One byte with possible value '**0**' or '**1**':
- ***'0'*** Disable training mode.
- ***'1'*** Enable training mode.

This command switches training mode on and off. If executed without parameters, the curren setting is returned only.

The command must be executed after Z-report, before the first fiscal receipt for the day.

Before the fiscalisation the printer is unconditionally in training mode.

7FH (127) RAM RESET

Data field: None
Response: None

The command clears the operational memory of the printer (like the CMOS error). After executing it, the clock must be set with command 61, which writes a "CMOS error" record in the fiscal memory with this date and time.

The command is permitted only when the service jumper is placed on the main board of the printer.

There is place for 100 records in the fiscal memory.

APPENDIX 1

FP-2000 CHARACTER SET

	0_	1_	2_	3_	4_	5_	6_	7_	8_	9_	A_	B_	C_	D_	E_	F_
_0				**0**	**@**	**P**	**`**	**P**	**€**			**°**	**Ŕ**	**Đ**	**ŕ**	**đ**
_1			**!**	**1**	**A**	**Q**	**a**	**Q**		**‘**	**ˇ**	**±**	**Á**	**Ń**	**á**	**ń**
_2			**“**	**2**	**B**	**R**	**b**	**R**	**‘**	**’**	**˘**	**˛**	**Â**	**Ň**	**â**	**ň**
_3			**#**	**3**	**C**	**S**	**c**	**S**	***f***	**“**	**Ł**	**ł**	**Ă**	**Ó**	**ă**	**ó**
_4			**$**	**4**	**D**	**T**	**d**	**T**	**„**	**”**	**¤**	**´**	**Ä**	**Ô**	**ä**	**ô**
_5			**%**	**5**	**E**	**U**	**e**	**u**	**…**	**•**	**Ą**	**µ**	**Ĺ**	**Ő**	**Í**	**ő**
_6			**&**	**6**	**F**	**V**	**f**	**v**	**†**	**–**	**|**	**¶**	**Ć**	**Ö**	**ć**	**ö**
_7			**‘**	**7**	**G**	**W**	**g**	**w**	**‡**	**—**	**§**	**·**	**Ç**	**×**	**ç**	**÷**
_8			**(**	**8**	**H**	**X**	**h**	**x**		**˜**	**¨**	**¸**	**Č**	**Ř**	**č**	**ř**
_9			**)**	**9**	**I**	**Y**	**I**	**y**	**‰**	**™**	**©**	**ą**	**É**	**Ů**	**é**	**ű**
_A			*****	**:**	**J**	**Z**	**j**	**z**	**Š**	**š**	**Ş**	**ş**	**Ę**	**Ú**	**ę**	**ú**
_B			**+**	**;**	**K**	**[**	**k**	**{**	**‹**	**›**	**«**	**»**	**Ë**	**Ű**	**ë**	**ű**
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APPENDIX 2

LIST OF FISCAL COMMANDS - IN ASCENDING ORDER

HEX	DEC	Function
21h	(33)	Clear the display
23h	(35)	Show text on lower line of display
24h	(36)	Set LAN Settings
26h	(38)	Open non-fiscal receipt

27h	(39)	Close non-fiscal receipt
29h	(41)	Write current settings to flash memory
2Ah	(42)	Print non-fiscal free text
2Bh	(43)	Set header, footer and printing options
2Ch	(44)	Advance paper
2Dh	(45)	Paper cut
2Fh	(47)	Show text on upper line of display
30h	(48)	Open fiscal receipt (invoice)
31h	(49)	Register sale
32h	(50)	Tax rates set during selected period
33h	(51)	Subtotal
34h	(52)	Register sale and show on display
35h	(53)	Calculate total (Payment command)
36h	(54)	Print free fiscal text
38h	(56)	Close fiscal receipt
3Ah	(58)	Sell a programmed article
3Ch	(60)	Cancel receipt
3Dh	(61)	Set date and time
3Eh	(62)	Get current date and time
3Fh	(63)	Show date and time on display
40h	(64)	Info on last fiscal entry
41h	(65)	Info on daily accumulated sums
44h	(68)	Number of free fields in fiscal memory
45h	(69)	Daily financial report with/without writing to fiscal memory
46h	(70)	Internal debiting/crediting
47h	(71)	Print diagnostic info
48h	(72)	Fiscalization
49h	(73)	Detailed report of the fiscal memory selected by number of entry
4Ah	(74)	Read status bytes
4Ch	(76)	Status of the fiscal transaction
4Fh	(79)	Short report of the fiscal memory selected by date of entry
50h	(80)	Sound Signal
53h	(83)	Set multiplier, decimals and enabled taxes
54h	(84)	Print bar code
55h	(85)	Program additional payment types
56h	(86)	Get last fiscal memory record date
59h	(89)	Program production test area
5Ah	(90)	Return diagnostic info
5Bh	(91)	Program serial number and fiscal memory number
5Dh	(92)	Print separator line
5Eh	(94)	Detailed of fiscal memory (selected by date of entry)
5Fh	(95)	Short report of fiscal memory (selected by entry number)
61h	(97)	Return tax rates
62h	(98)	Set tax registration number
63h	(99)	Return tax registration number
64h	(100)	Show free text on display
65h	(101)	Set operator’s password
66h	(102)	Enter operator’s name
67h	(103)	Info on current receipt
69h	(105)	Operator report
6Ah	(106)	Drawer kick-out
6Bh	(107)	Define items and items info
6Dh	(109)	Print duplicate receipt
6Eh	(110)	Info on accumulated sums (different payment types)
6Fh	(111)	Report on programmed items
70h	(112)	Reading info on operator
71h	(113)	Read the number of the last printed document
72h	(114)	Read info on fiscal entry or period

73h	(115)	Program graphic logo
74h	(116)	Read fiscal memory block
76h	(118)	Read code (firmware) memory block
77h	(119)	Read and print monthly report
78h	(120)	Electronic Journal Support
7Ah	(122)	Enable/disable training mode
7Fh	(127)	Service RAM reset