ELTRADE

COMMUNICATION PROTOCOL

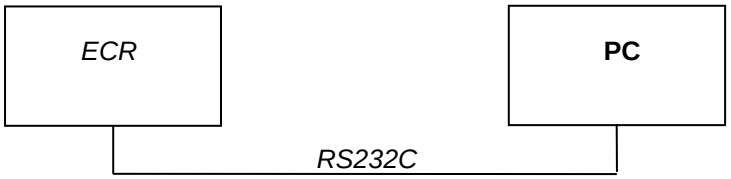
(ver. 1.0.9)

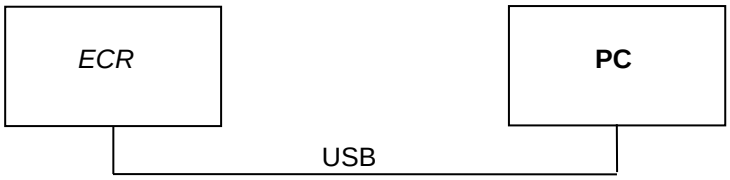
Content

Introduction

The purpose of this document is to explain exchange data formats and communication protocol of Eltrade fiscal printer (FP).

The fiscal printer is working and being controlled by application software. The link between fiscal printers' resources and the application software is performed by means of a driver. The communication is carried out via RS232 interface or USB.





Communication settings

Interface – RS232C

Speed – 115200 bps

Parity – none

Data bits - 8

Stop bits – 1

STATUS BITS OF THE FISCAL PRINTER

The current status of the device is coded in 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 – is always 1

0.6 Not used
0.5 General error – “OR” of all errors marked with „#“
0.4 # Failure in printing mechanism
0.3 Not connected a customer display
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 – is always 1
1.6 The internal terminal is not working
1.5 Paper cover is open
1.4 # RAM failure after switch ON
1.3 # Low battery (the clock is in reset state)
1.2 # Operational memory was cleared
1.1 # If 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 – is always 1
2.6 Not used
2.5 A non-fiscal receipt is opened
2.4 Coming end of KLEN (10MB free)
2.3 A fiscal receipt is opened
2.2 End of KLEN(under 1MB free)
2.1 Not enough paper
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 switches
3.7 Reserved – is always 1
3.6 SW7 state
3.5 SW6 state
3.4 SW5 state
3.3 SW4 state
3.2 SW3 state.
3.1 SW2 state
3.0 SW1 state

Byte 4: The fiscal memory

4.7 Reserved – is always 1
4.6 Not used
4.5 OR of all mistakes marked by „*“ from bytes 4 and 5.
4.4 * Fiscal memory is fully engaged.
4.3 If there is space for not more than 50 entries in the FM.
4.2 FM number has been set
4.1 EIK is entered.
4.0 * Error during writing from the fiscal memory

Byte 5: The fiscal memory
5.7 Reserved – is always 1
5.6 Not used
5.5 Error in fiscal memory.
5.4 Tax rates have been entered at least once

5.3 The printer is in a fiscal mode
5.2 * The last record in the fiscal memory is not successful
5.1 The fiscal memory is formatted
5.0 * The fiscal memory is in the “read-only” mode

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), 56 (38H) and 58 (3AH). 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).

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 115200 b/s, 8N1. Supported is and a USB connection which is activated automatically after connecting the printer to the PC through USB cable.

B) SEQUENCE OF THE MESSAGES

Host sends a wrapped message, containing a command for the printer.
FP executes the requested operation and response with a wrapped message.
Host has to wait for a response from the printer before to send another message.
The protocol uses non-wrapped messages with a length one byte for processing of the necessary pauses and error conditions.

C) 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.

D) 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 - 7FH.
<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 nonexisting code it returns a wrapped message with zero length in the data field and sets the respective status bit.
<DATA> Data.
Length: 0-213bytes for Host to printer, 0-218 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 ASCII 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

21h (33)CLEARING THE DISPLAY

Data field: No data
Response: None

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

Data field: ***<Text>***
Response: None
Text A text of up to 20 symbols is sent directly to the display. Prior to this a command for positioning and clearing the lower line is sent.

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

Data field: None
Response: ***Allreceipt,ErrCode***

Allreceipt The number of all issued receipts (fiscal and non-fiscal) from the last daily closure on (4 bytes).
ErrCode Error code when the command is unsuccessful /1 byte/.

The FP performs the following actions:
- Prints the header
- Print the tax registration number of the seller
- A response is received which contains Allreceipt

If the command cannot be executed:
- 1 The fiscal memory has not been formatted
- 2 There is an opened fiscal receipt
- 3 There is an opened non-fiscal

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

Data field: None
Response: ***Allreceipt***

Allreceipt The number of all issued receipts (fiscal and non-fiscal) from the last daily closure on (4 bytes).
The FP performs the following actions:
- Prints the footer
- The sequence number, date and hour of the document are printed
- **"NON-FISCAL RECEIPT"** is printed in expanded style

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

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

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

Text A text up to 46 symbols. The symbols after 46th are cut off. In the beginning and end of the line is printed a symbol „#".
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: Depends on field data

HEADER consists of 6 lines of text, which are printed at the beginning of each fiscal and non-fiscal receipt. The printer will function normally only when at least two "header" lines have been programmed for printing.
FOOTER consists of 2 lines of text printed at the end of each receipt.
HEADER and **FOOTER** are automatically center aligned.
This command must be fulfill to 8 times, to set all lines on **HEADER** and **FOOTER**.
Item One symbol having the following meaning:
"0" to **"7"** The sequence number of the set line the **header** lines being numbered from 0 to 5 and those of the **footer** - 6 and 7.
"B" Sets the height of the barcode in pixels (0,125mm). Acceptable values: form 24 (3mm) to 240 (30mm). Barcode is printed with command **84 (54H)**.
"C" Permission/rejection of the automatic cutting of the paper after each receipt. After power on the performance of the printer is defined in accordance with the setting of DIP switch **Sw8**.
"D" Sets printer intensity. Possible values:
„1": very pale
„2": pale
„3": normal
„4": dense
„5": very dense
"L" Permission/rejection of the printing of the graphic logo immediately before the header. This logo is defined with the command **115 (73H)**. Data "Text" is in format <**Enable**>, <**H**>. **H** - logo height (in pixels), **Enable -** one byte with value "1"(enable) or "0"(disable).
"R" Add extra space between characters in mode "printing with 90 degree rotated text". After the letter follow integer value from 0 to 4.
"T" Permission/rejection of the printing of the accumulated tax (ДДС) for the receipt in normal (not extended /invoice/) fiscal receipt.
"X" Permission/rejection of the automatically generated pulse for drawer kick-out after commands **53 (35H)** and **70 (46H)**.
"l" Gives us the option to read the values, set earlier with command 43. After the letter **"l"** only one more symbol follows which coincides with some of the above.
Text A text string up to 36 symbols:
- If **<Item>** is a digit from **"0"** to **"7"** - the text of the respective line.
- If **<Item> = 'B' -** Barcode height (in pixels)
- If **<Item>** = **„C"** - One symbol value **„0"** or **„1"**, where **"0"** forbids and **"1"** permits automatic cutting of the receipt.
- If <**Item**> = „**D**" - Printing density (1 to 5).
- If <**Item**> = „**L**" – Return **Enable,H** (**H** - logo height in pixels, **Enable** – is flag enable/disable).
- If <**Item**> = „**R**" - Integer - value **„0"** to**„4" -** additional space between characters in mode 90 degree rotated text.
- If <**Item**> = „**T**" - One symbol value **„0"** or **„1"**, where **"0"** forbids and **"1"** permits printing the printing of the accumulated tax (ДДС) for the receipt in normal (not extended /invoice/) fiscal receipt.

- If <**Item**> = „**X**" - One symbol value **„0"** or **„1"**, where **"0"** forbids and **"1"** permits the automatically opening of the drawer after commands **53 (35H)** and **70 (46H)**.

2Ch (44) ADVANCING PAPER

Data field: ***Lines***
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.

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

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

Text A text of 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 SW1 is OFF the command is rejected..

31h (49) REGISTRATION (sale) of goods

Data field: ***[<L1>][<Lf><L2>]<Tab>TaxCd><[Sign]Price>[*<Qwan>][,Perc\;Abs]***
Or
[<L1>][<Lf>L2>]<Tab>Dept>Tab><[Sign]Price>[*<Qwan>][,Perc\;Abs]
Response: None

L1 Text of 30 bytes
Lf one byte with conetent of 0Ah.
L2 Text of 30 bytes second line
Tab one byte with conetent of 09h.
TaxCd one byte of leter of the tax rate ('**A**', '**B**', '**B**', **...**). check ***Enabled_taxes***,commend **83**.
Dept Department number. Integer from 1 to 100
Sign one byte with value '-'.
Price single price up to 8 digits

Qwan This is a non-mandatory parameter, which is quantity of the goods, by default 1.000 length 8 digits.

Perc This is a non-mandatory parameter, showing the value of the surcharge and discount (depending on the sign) in percentage. Value from 99.00 % to 99.00 %.
Abs This is a non-mandatory parameter showing the value of the surcharge and discount (depending on the sign) as an amount. It is not acceptable a discount with value higher than the value of the sale

Only one is accepted ***Perc*** or ***Abs.***
The command will not be successful if:
- There isn't an opened fiscal receipt
- The fiscal memory is full

- The fiscal memory is damaged
- The clock needs setting
- The electronic journal (KLEN) is full or not functionable.

33h (51) SUBTOTAL

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

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 the display.
Perc A non-mandatory parameter which shows the value of the discount or surcharge in percent over the sum accumulated so far.
Abs A non-mandatory parameter which shows the value of the discount or surcharge as an amount (up to 8 significant digits). It is not aloud a surcharge bigger than the sale.
Permitted only one of the arguments Perc or Abs.
SubTotal The sum accumulated for the current fiscal receipt (10 bytes).
TaxA The sum over tax group A/10 bytes/
TaxB The sum over tax group B/10 bytes/
TaxC The sum over tax group C/10 bytes/
TaxD The sum over tax group D/10 bytes/
TaxE The sum over tax group E/10 bytes/
TaxF The sum over tax group F/10 bytes/
TaxG The sum over tax group G10 bytes/
TaxH The sum over tax group H/10 bytes/

34h (52) REGISTRATION AND DISPLAY

Data field: ***[Line]]<Tab><TaxCd><[Sign]Price>[*Qwan][,Perc|;Abs]***
or
[Line]]<Tab><Dept><Tab><[Sign]Price>[*Qwan][,Perc\;Abs]
Response: None

Line ***String*** 20 bytes of text.
Tab one byte with **09h**
TaxCd one byte of leter of the tax rate ('**A**', '**B**', '**B**', **...**). check ***Enabled_taxes***,commend **83**.
Dept Department number. Integer from 1 to 100
Sign one byte with value '-'.
Price Price length 8 digits.
Qwan This is a non-mandatory parameter, which is quantity of the goods, by default 1.000 length 8 digits.
Perc This is a non-mandatory parameter, showing the value of the surcharge and discount (depending on the sign) in percentage. Value from 99.00 % to 99.00 %.
Abs This is a non-mandatory parameter showing the value of the surcharge and discount (depending on the sign) as an amount. It is not acceptable a discount with value higher than the value of the sale

The command will not be successful if:
- There isn't an opened fiscal receipt
- The fiscal memory is full

- The fiscal memory is damaged
- The clock needs setting
- The electronic journal (KLEN) is full or not functionable.

35h (53) CALCULATION OF A TOTAL

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

Line1 A text of 36 bytes containing the first line
Lf One byte containing 0Ah
Line2 A text of 36 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 (default)
„N" - Payment with a check
„C" - Payment with Coupons
„D" - Payment with a External Coupons
„I" - Payment with a wrappage
'J' - Internal service
'K' – Payments on "Damages"
'L' - Payments on Debit/Credit cards
'M' – Paymens on Bank transfer
'Q' – Payments NZOK,
'R' – Reserve.

Depending on the code the sums are accumulated in different registers and may be recovered 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 8 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 of the receipt. The residual sum due for payment is returned to **Amount**
„R" When the paid sum is greater than the sum of 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 the fiscal receipt, the printing of the sum with a special font and showing the result on the 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 that is permit with sub command **„X"** on command **43**. 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 the fiscal printer will not perform the commands 49 and 51 within the opened receipt although it can still perform command 53.

36h (54) PRINTING A FREE FISCAL TEXT

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

Text Up to 46 bytes

The text is surrounded by two „#" symbols.
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 46 symbols the redundant letters are cut off.

38h (56) CLOSING A FISCAL RECEIPT

Data field: None
Response: ***Allreceipt, FiscReceipt***

Allreceipt All issued receipts from the last daily closure up to the moment
FiscReceipt All issued fiscal receipts from the last daily closure up to the moment
The accumulated sums from the fiscal receipt are added to the daily sums in the registries of the operational
The command will not be successful if:
- No fiscal receipt has been opened,
- Command **53 (35h)** has failed,
- The sum paid under command **53** is less than the total sum of the fiscal receipt.

39h (57) PRINTING OF THE INFORATION OF THE CUSTOMMER

Data field: [#]<Bulstat>[<TabxSeller>[<TabxReceiver>[<TabxClient>[<TabxTaxNo>[<TabxAddress>]]]]]
Response: None

Bulstat EIK number of the customer. 9 or 10 symbols If '#' infromt the data is use as UCN
Tab tabulation ***(09H).***
Seller Name of the saler up to 26 symbols.
Receiver Name of the receiver up to 26 symbols.
Client Client name up to 26 symbols.
TaxNo Tax number of the receiver from 10 to 14 symbols
Address Address of the customer up to 2 lines each of 36 symbols separate with ***LF*** (0AH).
Only the first one parameter is a must.

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

Data field: ***[D]<[Sign]PLU>[<TabxDeptxTab>][*<Qwan>][,Perc\;Abs]***
Response: None

D One optional byte with value of 'D'. If present, the article name and sum is displayed.

Sign One byte with a value of '-'

PLU The individual number of the item - a whole number between 1 and 29999 (not more than 9 digits)..

Tab One byte - tabulation (ASCII code 9).

Dept	Number of department. From 1 to 100..
Qwan	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 (1500) 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) CANCELING OF A FISCAL RECEIPT

Data field: None
Response: None

This command is accessible only over opened fiscal receipt and only before the execution of **53** (Total).

3Dh (61) SETTING THE CLOCK - DATE AND HOUR

Data field: <DD-MM-YYxspacexHH:MM[:SS/>
Response: None

You cannot set a date which is earlier than the date of the last entry into the fiscal memory or KLEN of the device.

3Eh (62) READING CURRENT DATE AND HOUR

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

3Fh (63) READING CURRENT DATE AND HOUR

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

41h (65) INFORMATION ON DAILY TAXATION

Data field: *[Option]*
Response: ***TaxA,TaxB,TaxC,TaxD,TaxE,TaxF,TaxG,TaxH***

Option Determines what information to be returned:
'0' - total turnover (default).
'1' – accumulated VAT.

TaxX The amounts of each VAT group „**A**", „**Б**", „**B**", **…** (A,B,C...)- 12 signed bytes.

42h (66) SETTING THE INTERVAL OF THE INVOICES/ CREDIT NOTES

Data field: **[S][Start,End]**

Response: **[Start,End,Current]**

S if this parameter is send the command is setting number of range for credit note (Storno of Invoice)
Start Start number. Integer of 10 digits.
End End number. Integer of 10 digits.
Current Currecnt number of the invoice. Integer of 10 digits.
Start must be < = ***End***.

44h (68) NUMBER OF THE 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 previous entry.
The number of free fields in the fiscal memory, reserved for saving information from the daily report with clear(Z-report).

45h (69) DAILY FINANCIAL REPORT

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

Option A non-mandatory parameter controlling the type of generated report.
„**0**" - The printout ends with the inscriptions "FISCAL RECEIPT" or "NON-FISCAL RECEIPT" depending on the status of the printer (fiscalized or non-fiscalized).

„**2**" - A daily report without closure is generated i.e., no entry into the fiscal memory is made and no closures are performed. The printout ends with the inscription "OFFICIAL RECEIPT". The same actions may be generated directly from the printer if during power on the left button is pressed down.
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 report with clear.
a - The presence of this symbol at the end of the data prohibits clearing of accumulated data items in a report with clear.
Closure - Fiscal closure (Daily report) number – 4 bytes.
FM_Total - The sum of all sales for the day - 12 bytes with a sign.
TotX - The nett sums (Total –VAT) under all tax categories - A, B, C, D, E, F, G, and H - 12 bytes with a sign.
A daily report with no clearing can be executed and by holding the **<FEED>** button, at turning on, until the second sound signal.

46h (70) INTERNAL DEBITING AND CREDITING (SERVE 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 the 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 the successful completion of this command the drawer "kick-out" function is activated (if it is permitted wit subcommand **'X'** of command **43**.

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 the version of the employed software,
- Prints the control sum of the employed firmware,
- Prints the serial port"s baud rate,
- Prints out the status of the configuration keys and the number of the country
- 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.

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

Data field: ***[[<SHA1>][<SkipZ>]<Start>,<End>]***
Response: None

SHA1 - Optional argument - a byte with value '#'. If exists, for each Z-report and a check sum is printed (SHA-1 algorithm)
SkipZ - Optional argument - a byte with value '*'. If exists, for each Z-report are printed only the VAT groups with no zero amount.
A such report is not standard and its use is not encouraged.
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. If no parameters are entered the command will be executed for the whole period of exploitation.

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]***
Response: ***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 for 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) SUMS ACCUMULATED IN THE FISCAL MEMORY FOR A SELECTED PERIOD

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

Response: None

Start Start date - 6 bytes (DDMMYY)
End End date - 6 bytes (DDMMYY)

The command generates the printing out of a short periodic financial report.
If the second parameter is missing, the command will generate monthly or annual. The syntax in this case is:
Start Month - 4 bytes (MMYY) for monthly report.
Start Year - 2 bytes (YY) for annual report.

53h (83) SETTING THE MULTIPLIER, DECIMALS, CURRENCY NAME AND TAXES

Data field: ***[Multiplier,Decimals,Currency,EnabledT,TaxA,...]***
Response: ***Multiplier,Decimals,Currency_name,EnabledT,TaxA,TaxB, TaxC,TaxD,...***

Multiplier from 0 to 3 shows the extent of 10 to be multiplied by the input and output number.
Decimals 0 or 2 - place of the Decimal point.
Currency Currecncy name. Up to 6 bytes.
EnabledT 8 bytes with possible value of 0 or 1. 0 means the VAT is disable 1 means enable
TaxX Value of the VAT rate.

If the command is send without data field the device will return the current values

54h (84) BARCODE PRINTING

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

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
printer.
‘5’ Interleaved 2 of 5 (ITF) bar code with control sum.
‘6’ QR bacode.

Result One byte:
‘P’ No error.4
‘F’ Name longer than 30 bytes.

This command prints a barcode. It is accessible only if a receipt is opened. The barcode is printed centered. If the data separator is a comma, under the barcode is printed the information in text format too. If data length or/and its content are invalid, the status bit “syntax error” is set and a barcode is not printed.
Barcode height is set with command 43.

55h (85) PROGRAMMING OF TYPES OF PAYMENTS

Datafield: ***Option[,Name]***

Response: Result\Name

Option P,N, C, D, I, J, K, L, M, Q и R(symbol for type of payment) as follow 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 и 11 types of payment

Name up to 20 symbols, if it is not set it will return current name.

Result One byte:
'P' No error.
'F' The name is more than 20 bytes.

57h (87) PROGRAMMING OF DEPATMENT/ MANDATOR

Data field: ***<Dept>,<TaxGr>,<Line1>[<LF><Line2>]***
Response: None
Dept Number of DEPATMENT/ MANDATOR. Integer from 1 to 100. DEPATMENTS are from 1 to 50. MANDATORS are from 51 to 100.
TaxGr Tax rate od the Department/Mandator.
Line1 Name or text of the Department/Mandator . Up to 20 symbols.
LF separator one byte – ASCII code 10.
Line2 Name or text of the Department/Mandator . Up to 20 symbols second line

All changes for the Mandator will be executed after Z report.

5Ah (90) RETURN 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 fiscal device
FwRev - The version of the software program - 4 bytes.
Country - Country code - pair of letters (2 bytes; in this case "BG").
Sp Space - 1 byte.
FwDate - The date of the software program DDMmmYY - 7 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.

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

Data field: ***[<SHA1>][<SkipZ>]<Start>[,<End>]***
Response: None

SHA1 - Optional argument - a byte with value '#'. If exists, for each Z-report and a check sum is printed (SHA-1 algorithm)

SkipZ - Optional argument - a byte with value '*'. If exists, for each Z-report are printed only the VAT groups with no zero amount.
A such report is not standard and its use is not encouraged.
Start - The number of the starting fiscal entry - 6 bytes (DDMMYY)
End - The number of the ending fiscal entry - 6 bytes (DDMMYY)
This command prints out a detailed financial report on the period between two selected dates.
If the second parameter is missing, this command generates monthly or annual report. The syntax in this case is:
Start Month – 4 bytes (MMYY) for monthly report.
Start Year – 2 bytes (YY) for annual report.

5Fh (95) SUMS ACCUMULATED IN THE FISCAL MEMORY FOR A GIVEN PERIOD OF TIME

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. This report can be make by holding <FEED> when the printer to the fourth signal.

61h (97) READING THE SET TAX RATES

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

TaxA Tax rate **A**
TaxB Tax rate **B**
TaxC Tax rate **C**
TaxD Tax rate **D**
TaxE Tax rate **E**
TaxF Tax rate **F**
TaxG Tax rate **G**
TaxH Tax rate **H**

63h (99) READING THE TAX REGISTRATION NUMBER

Data field: None
Response: ***Text,Name***

Text The tax registration number as a text.
Name This is the comment in front of EIK.

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.

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 eight passwords locations are empty.

67h (103) INFORMATION ON THE CURRENT RECEIPT

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

CanVd Possible/impossible return (sale registration with a negative sign) [„**0**" / "**1**"]
TaxA The sum accumulated under tax A
TaxB The sum accumulated under tax B
TaxC The sum accumulated under tax C
TaxD The sum accumulated under tax D
TaxE The sum accumulated under tax E
TaxF The sum accumulated under tax F
TaxG The sum accumulated under tax G
TaxH The sum accumulated under tax H
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.

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', 'R', 'F', 'L'.

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

Parameters <Option> Data on the command - described in detail further on.

- **'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').
  PLU Number of the item (1 to 29999)
  Group Article group (1 – 50).
  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 20 bytes.

- **'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 29999)
  TaxGr Tax group - 1 byte
  Group Article group. 2 digits (01 - 50).
  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 20 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=29999 is assumed. The returned data is similar to the subcommand 'R'.

6Dh (109) PRINTING A DUPLICATE RECEIPT

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

Count - Number of duplicate receipts (only a value of 1 is accepted).
The command initiates the printing of a copy of the last closed receipt containing registered sales.

6Eh (110) ADDITIONAL DAILY INFORMATION

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

Cash - Paid in cash
Credit - Payment credited **Debit -** Paid with a debit card **Cheque -** Paid with a cheque **Virman** – Paid with a virman
PayX - Paid by one of the additional payment types.
Closure - Current (last) fiscal entry
Receipt - Number of the next fiscal receipt
Returns information on the distribution of the daily sum according to the terms of payment used.

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)

90h (144) OPENING FISCAL RECEIPTS/INVOICE/STORNO H-18/2018

Data field: ***<OperName>,<UNP>[,Type[,<FMIN>,<Reason>,<num>[,<time>[,<inv>]]]]***
Response: ***AllreceipT, FiscReceipt***

Type = I –invoice; Type = S – storno/ credit note

Options:
* ***<OperName>,<UNP>***
* ***<OperName>,<UNP>,I***
* ***<OperName>,<UNP>,S,<FMIN>,<Reason>,<num>[,<time>[,<inv>]]***

In case the printer is working in ESFP system parameter <UNP> is replaced just with operator number *YYYY*

* ***OperName*** – Name of operator
* UNP Unique number for sale /EDXXXXXX-YYYY-NNNNNNN/

* Type One symbol with value:

"I". Its presence causes printing of extended client note. Automatically after the header the number (ID) of the invoice is printed and after the first payment command a print of the sums by tax groups. After the payment information for the buyer shoul be printed using command 57 (39h).

* "S" Credit note.

* FMIN Number of fiscal memory of the credit note /44XXXXXX/

* Reason – reason for the credit operation.

* "O" Operator error, only if the receipt issued from the fiscal memory.

* "R" refund / Reclamation

* "T" Reduction in the tax base.

* num Number of the receipt, which will be credit

* time Date and time of the note, which will be sort in format YYYY-MM-DDThh:mm:ss

* /2018-10-31T15:58:43

* inv Number of the invoice, if refund the note which is invoice.

* Allreceipt - number of all issued notes (fiscal and service) from the last finished of the day to now /4 byte/

* FiscReceipt number of all issued client fiscal notes from the last finished of the day to now /4 byte/

* The command will not be executed successfully, if:

* There is opened fiscal or service receipt.

* The fiscal memory is full

* The fiscal memory is broken

* Missing operator number or password, or cashier number.

* HEADER contains less than 2 rows.

* There isn't set Unified Identity Code

* The operator password is wrong.

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