ECR-MELLON POS INTEGRATION
The basic communication protocol

Version : 1.00B
Date : 25 April 2025

Change history

Version	Date	Description	Author
1.00	23/12/2021	First compact version	P.Ntousis
1.00B	25/04/2025	Added a note for Cash Advance	K.Kalampokis

Table of contents

1 Introduction

This document describes the minimal implementation required for the communication between electronic cashier machines and Mellon POS terminals found currently on the field.

It constitutes the compact version of the document "*ECR-MELLON INTEGRATION - Specification of flows and message protocol - draft*", written in years 2013-2017 as thorough description of the proposed solution.

In cases of specific implementations requiring extension of the communication protocol to cover particular needs, complementary documentation will be provided with the corresponding versioning (e.g. 1.00.ABC.01, 1.00.ABC.02 κλπ) and indication of the extensions inside the text.

2 New features and differences against v0.06

The differences concerning the protocol itself between versions 0.06 (17/10/2017) and 1.00 are the following:

New features:

1. Possibility for ECR to print the POS receipt.
2. Addition of two more ECR requests for the transactions REFUND and VOID.
3. Redefinition of the field M as "custom data", useful for specific functions like bill payments or cash-advance.

Changes:

1. The reply to ECHO message includes also TID and POS application version number.
2. In the specification of AMOUNT message:
    - The elements **ecr-number**, **operator-number**, **receipt-number** may include letters (alphanumeric)
3. In the specification of RESULT message:
    - **batch-num** can be up to 6-digit long (and not up to 3-digit)
    - **auth-code** can include Latin characters
    - **terminalId** can include Latin characters
    - **card-pan-masked** has wider range of lengths
4. The connection over RS232 is not supported any more in the basic protocol.

3 The general scheme

The integration concerns three systems: ECR, MELLON POS and BANK:

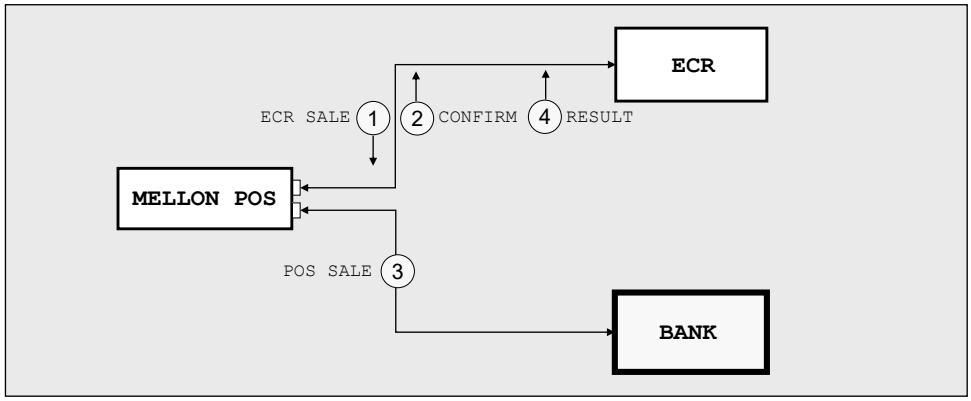

Figure 1

The usual flow of communication follows 4 steps:

1. The transactions starts from ECR: the operator selects "payment with card" as form of payment and ECR sends the corresponding request to POS.
2. POS immediately confirms to ECR the reception of the request and ECR enters into state to wait for the outcome.
3. POS connects to the bank to ask online authorization or approves the transaction offline or declines it offline or interrupts the transaction.
4. POS replies to ECR with the final outcome: declined or approved. In case of approval, POS sends complementary information (transaction number, approval code etc)

Basic assumptions and limitations:

1. There is no provision for ECR to interrupt the POS processing. If during the step 3 ECR wishes to stop the processing, that must be done manually on POS.
2. There is no provision for automatic financial reversal in case of failure during the step 4. Any required action in that case (repeat, void, reprint etc) must be done manually.
3. POS can serve only one ECR request each tine, no queue of ECR requests is kept and POS cannot even reply to new request while the current one is being processed.
4. The communication does not include in no case sensitive authentication data, like plain card pan, cvv2, track2 or cardholder name.

4 The physical connection

CONNECTION OVER TCP/IP

The connection between POS and ECR so far is made only over TCP/IP by using LAN cable:

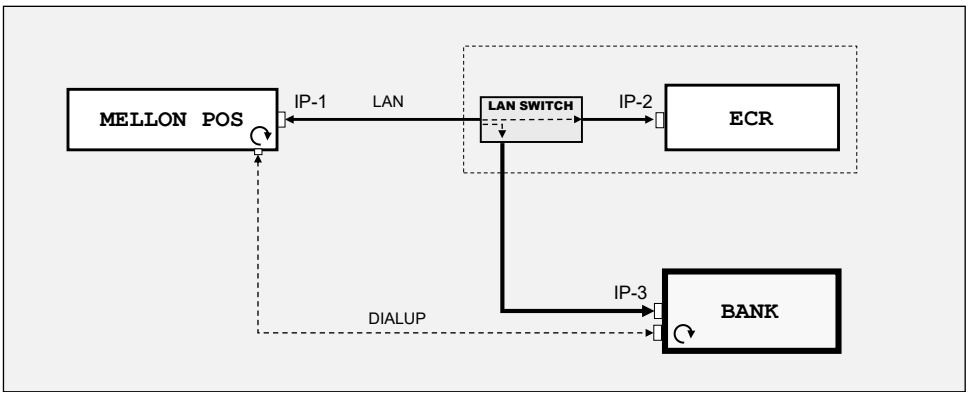

Figure 2

POS acts as "server" in relation to the ECR and as "client" in relation to the bank. The LAN switch can be external device or embedded in the cashier machine.

Last chapter provides instructions about how to set up the connection for each POS type.

CONNECTION OVER USB

This connection is not supported in Axium devices. The connection over USB is also supported, without any change in the protocol. However, that solution is not widely available in the existing POS applications.

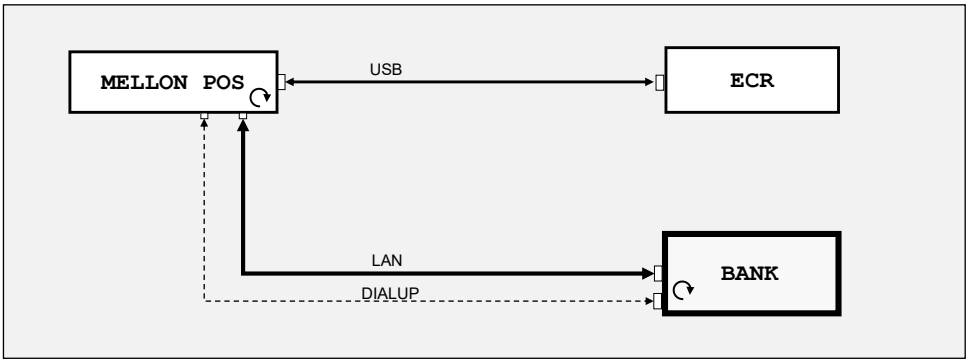

Figure 3

CONNECTION OVER RS232

The connection over RS232 is not supported in the basic protocol.

5 Flows and the messages briefly

By using symbolic names, the messages exchanged between ECR and POS are:

[**ECHO**]:	Test of communication (ECR->POS->ECR)
[**AMOUNT**]:	Request for sale (ECR->POS)
[**CONFIRMED**]:	Confirmation of the request (POS->ECR)
[**ERROR**]:	Inability to serve the request (POS->ECR)
[**RESULT**]:	Outcome of the transaction (POS->ECR)

Optional extensions:

[**AMOUND-REFUND**]:	Request of refund (ECR->POS)
[**AMOUNT-VOID**]:	Request of void (ECR->POS)

Three different flows of messages are allowed:

A) Common flow of sale (or refund, or void):

[t0]	POS ← [**AMOUNT**] ← ECR Aside from the transaction amount, ECR sends additional information, like receipt number, ECR number, cashier code etc	
[t1]	POS → [**CONFIRMED**] → ECR POS confirms immediately the reception and ECR enters to state waiting the outcome.	t1-t0 < 2 sec
	POS processes the request, prompts for card tapping, connects for online authorization etc.	
[t2]	POS → [**RESULT**] → ECR POS replies to ECR with the final outcome. In case of approval, POS sends complementary data (transaction number, approval code etc)	Usually t2-t1 < 60 sec

The three messages above ([AMOUNT], [CONFIRMED], [RESULT]) carry a common 6-digit long code (the "*session number"*), different for each new transaction, which is generated by ECR. The session number is used to control the consistency of the messages and to avoid critical mistakes.

B) Flow in case of POS inability to process the request:

[t0]	POS ← [**AMOUNT**] ← ECR	
[t1]	POS → [**ERROR**] → ECR POS confirms immediately the reception, but with an error code that indicates inability to process the request.	t1-t0 < 2 sec

Γ) Elementary flow of echo:

[t0]	POS ← [**ECHO**] ← ECR	
[t1]	POS → [**ECHO**] → ECR	t1-t0 < 2 sec

6 Flows and messages in details

6.1 Syntax of the messages

Each message consists of a header and a body as follows:

BYTES	ΠΕΡΙΓΡΑΦΗ	
0-1	MSG SIZE (2 bytes, binary)	The size of the message that follows: MSG SIZE: b0*256 + b1
2-4	DIRECTION INDICATOR (3 bytes, ascii)	Determines the source of the message: **ECR** (from ECR to POS) **MEL** (from POS to ECR)
5-6	PROTOCOL VARIANT (2 bytes, ascii)	Determines the flow and the mode of function: **01**: default function ("variant 1") **02**: ECR undertakes the printing of the POS receipt("variant 2")
7-8	PROTOCOL VERSION (2 bytes, ascii)	Determines the syntax in the message body. Always **01** so far.
9-…	The body of the message (MSG SIZE-7)	As specified here below.

The body of the message consists of a capital letter as prefix, which determines the type of the message, and a sequence of fields, each of which has usually a capital letter again as prefix. Each field in turn can be divided into more subfields, which are interpreted according to their position in the field.

As field separator the character '/' is used and as subfield separator the character ':'. For escaping sequence the character '\' is reserved, but in practice there is no need to use escape character.

So the message body has the following syntax:

MSG BODY := <*msg type*>**/**<*field*>{**/**<*field*>{**/**<*field*>}…}
msg type := <*letter*>

field := {<*letter*>}<*subfield*>{**:**<*subfield*>{**:**<*subfield*>}…}
letter := **A** | **B** | **C** | … | **Z**
subfield := as specified for each case
(data type, size in bytes, meaning)

For definition of data types the following abbreviations are used:

num – numeric, right alignment, zero padding
an – alphanumeric, spaces and special characters are not allowed
anp – alphanumeric, spaces are allowed
ans – alphanumeric, spaces and special characters are allowed

6.2 Message [ECHO]

It is sent by ECR and initiated by the operator to check the connection with the POS (usually during the installation). The terminal ID and the POS application version use also to be completed in the echo message:

Syntax:

ECR REQUEST:

X/*<text>*

POS RESPONSE:

X/*<text>*/***T***<*tid*>:*<app-version>*

Element name	Type	Size	Description
text	anp	1..200	Free text, expected the same in the response.
tid	an	1..8	Terminal ID
app-version	ans	1..10	POS application version

Example:

```
ECR->POS: BYTES 23
00 17                                           |..
45 43 52 30 32 30 31 58 2F 48 65 6C 6C 6F 20 66 |ECR0201X/Hello f
72 6F 6D 20 45 43 52                            |rom ECR
POS->ECR: BYTES 42
00 2A 4D 45 4C 30 32 30 31 58 2F 48 65 6C 6C 6F |.*MEL0201X/Hello
20 66 72 6F 6D 20 45 43 52 2F 54 36 34 39 39 39 | from ECR/T64999
39 39 39 3A 31 2E 35 2E 32 32 2E 32             |999:1.5.22.2
```

6.3 Message [AMOUNT]

It is sent by ECR when a new sale is to start. When a cash advance transaction is to be started "H" needs to be used instead of "A"

Syntax:

ECR REQUEST:

A/**S***<session number>*/**F***<amount>*:<cur-code>:<cur-exp>
/**D***<datetime>*/***R***<*ecr-number*>/***H***<*operator-number*>
/***T***<*receipt number*>/***G***<*vat1*>:*<vat2>:<vat3>:<vat4>*/**M***<custom-data>*

Element name	Type	Size	Description
session number	num	6	Different for each new transaction. It can be sequential, random or formed according to other convention. **POS must check that each new request comes with different session number than the previous one.**
amount	num	1..12	The transaction amount
cur-code	num	3	The ISO 4217 currency code (978 for €)
cur-exp	num	1	The currency decimal points (2 for €)
datetime	num	14	Current date and time in form YYYYMMDDhhmmss
ecr-number	An	1..8	Cashier machine number
operator-number	An	1..8	Cashier (operator) code
receipt-number	An	1..8	ECR receipt nunber
vat1,vat2,…vat4	num	1..2	Not used for the time being. They can be set zeros (0:0:0:0)

custom-data	ans	1..100	Data with content and format defined in accordance with the specific ECR type. In the past VAT used to be sent. If the field is not used, zero can be sent ("**M**0"). **In transactions with bill payments or cash advance transaction this subfield includes the specific 12-digit payment code**

Example:

(Complete examples in section 6.5)

```
00 51                                           |.Q
45 43 52 30 31 30 31 41 2F 53 30 30 30 36 37 37 |ECR0101A/S000677
2F 46 32 35 30 30 3A 39 37 38 3A 32 2F 44 32 30 |/F2500:978:2/D20
32 31 31 31 32 32 31 32 33 36 35 32 2F 52 38 2F |211122123652/R8/
48 31 32 31 2F 54 30 30 30 36 37 37 2F 47 3A 30 |H121/T000677/G:0
3A 30 3A 30 3A 30 2F 4D 31 32 33 34 35 36 37 38 |:0:0:0/M12345678
39                                              |9
```

6.4 Message [CONFIRMED]

It is sent immediately by POS as first answer to initial request for sale (or refund or void) of ECR, confirming that the request is being processed.

Syntax:

POS RESPONSE:

A/**S**<*session number*>/**F**<*amount*>

Element name	Type	Size	Description
session number	num	6	It must be the same as in [AMOUNT] message and **this must be checked by ECR.**
amount	num	1..12	It must be the same as in [AMOUNT] message and **this must be checked by ECR.**

Examples:

(Complete examples in section 6.5)

```
POS->ECR: BYTES 22
00 16 4D 45 4C 30 31 30 31 41 2F 53 30 30 30 36 |..MEL0101A/S0006
37 37 2F 46 32 35 30 30                         |77/F2500
```

6.5 Message [RESULT]

It is sent by POS as final answer to initial request for sale (or refund or void) of ECR and carries the outcome of the transaction.

The answer can be received immediately (if the request was approved or declined offline), within a few seconds (typical case of online authorization) or even in more than minutes in

case of slow online communication or delayed PIN entry. It is suggested the setting in ECR of timeout >150 sec.

Syntax:

R/**S**<*session number*>/**C**<rsp-*code*>{/**D**<*trans-data*>{/**P**<*prn-data*>}}

- The field <*trans-data*> is returned only if the transaction was approved, i.e. the field <*rsp-code*> is 00.

  The field <*trans-data*> is composed of the following elements:

  ```
  <trans-data> =  <card-type>:<cardpan-masked>:
                  <amount>:<final-amount>:<acqId>:<terminalId>:
                  <batch-num>:<rrn>:<stan>:<authcode>:<trans-datetime>
  ```

- The field <*prn-data*> is returned if a) that transaction was approved b) the *protocol variant* in the header of [AMOUNT] was 02 c) the *protocol variant* in the header of [RESULT] is also 02[1]. The printing data have size 1-4Kb and consists of lines for printing together with specific formatting characters, as specified here below.

Element name	Type	Size	Description
session number	num	6	It must be the same with the one in [CONFIRMED] **and checked by ECR.**
rsp-code	num	2	POS response code: **00**: success, transaction approved **33**: declined for any reason In certain implementation the POS response code specifies the reason of rejection: **03**: user cancellation or timeout **04**: declined by the terminal **05**: declined by the host **06**: communication problem **09**: bank's host unreachable **66**: system error in POS
card-type	an	1..20	Card type (Visa, Mastercard, κλπ)
card-pan-masked	ans	14..19	Card pan with masked the middle digits.
amount	num	1..12	Transaction amount. It must be the same with the one in [CONFIRMED] **and checked by ECR.**
amount-final	num	1..12	It may differ from the *amount* in case of loyalty with redemption or in case that tip is added.
acqId	num	1..3	Code of the acquiring bank. It can be useful in multi-acquiring POS configurations
terminalId	an	1..8	The POS terminal Id.
batch-num	num	1..6	The POS batch number.
rrn	num	0..12	The RRN of the transactions In certain implementations it can be empty for transactions approved offline.
stan	num	1..6	The transaction number in POS
authcode	an	6..8	The authorization code

[1] In some cases maybe POS should print the receipt, despite the capability of ECR to print it.

trans-datetime	num		Date and time of approval in form YYYYMMDDhhmmss
prn-data	ans	0..4Kb	It is composed from lines for printing and controlling characters used for formatting as follows: ▪ **0x0A** – new line ▪ **0x1B 0x01** – printing of basic logo ▪ **0x1B 0x02** – printing of 2nd logo (e.g. of loyalty program) ▪ **0x1B 0x03** – printing of c-less icon ▪ **0x1B 0x0C** - pause before printing client copy ▪ **0x1B 0x43** – alignment in center ▪ **0x1B 0x52** – right alignment ▪ **0x1B 0x4C** ('L') – left alignment (default after new line) ▪ **0x1B 0x4E** ('N') – use of characters of normal size (default) ▪ **0x1B 0x42** ('B')- use of bold characters ▪ **0x1B 0x53** ('S') – use of small characters. Greek characters are sent in ISO-8859-7 and Cyrillic characters in ISO-8859-5.

Note about the POS application of NBG:

For years the elements **stan**, **batch-num** and **rrn** were received with size 4, 3 and 6 respectively. Due to changes in bank authorization system implemented in 2020, **rrn** started being always 12-digit long and **stan** and **batch-num** could be 6-digit long. To avoid cases of overflow in ECR that were built taking into account the previous assumptions, POS application temporarily returns to ECR the corresponding fields as follows:

```
stan = real_stan % 1000
batch-num = real-batch-num % 1000
rrn = batch-num.stan
```

Examples:

1. Example of declined sale

```
[211122 123929] ECR connection from [10.1.101.132]
ECR->POS: BYTES 81
00 51                                           |.Q
45 43 52 30 31 30 31 41 2F 53 30 30 30 36 37 37 |ECR0101A/S000677    [AMOUNT]
2F 46 32 35 30 30 3A 39 37 38 3A 32 2F 44 32 30 |/F2500:978:2/D20
32 31 31 31 32 32 31 32 33 36 35 32 2F 52 38 2F |211122123652/R8/
48 31 32 31 2F 54 30 30 30 36 37 37 2F 47 3A 30 |H121/T000677/G:0
3A 30 3A 30 3A 30 2F 4D 31 32 33 34 35 36 37 38 |:0:0:0/M12345678
39                                              |9
POS->ECR: BYTES 22
00 16 4D 45 4C 30 31 30 31 41 2F 53 30 30 30 36 |..MEL0101A/S0006   [CONFIRMED]
37 37 2F 46 32 35 30 30                         |77/F2500
[211122 123929] ECR request

[211122 123932] TXN-L [1][535178xxxxxx6172][2500]
[211122 123932] Connecting [.....................]   online
[211122 123935] T [271]===>                          authorization
. . . . . . . . . . . . . . . . . . . . . . . . .
[211122 123935] <===H [88]
. . . . . . . . . . . . . . . . . . . . . . . . .
[211122 123939] TXN-L declined (91) rrn=132630115039

POS->ECR: BYTES 20
```

```
00 14 4D 45 4C 30 31 30 31 52 2F 53 30 30 30 36 |..MEL0101R/S0006    [RESULT]
37 37 2F 43 33 33                               |77/C33
[211122 123940] ECR connection closed
```

2. Example of approval (without sending data for printing):

```
[211126 180434] ECR connection from [10.1.101.217]
ECR->POS: BYTES 82
00 52                                           |.R
45 43 52 30 31 30 31 41 2F 53 30 30 30 37 32 38 |ECR0101A/S000728    [AMOUNT]
2F 46 32 30 30 30 3A 39 37 38 3A 32 2F 44 32 30 |/F2000:978:2/D20
32 31 31 31 32 36 31 38 30 31 34 34 2F 52 45 38 |211126180144/RE8
2F 48 41 32 31 2F 54 30 30 30 37 32 38 2F 47 3A |/HA21/T000728/G:
30 3A 30 3A 30 3A 30 2F 4D 31 32 33 34 35 36 37 |0:0:0:0/M1234567
38 39                                           |89
POS->ECR: BYTES 22
00 16 4D 45 4C 30 31 30 31 41 2F 53 30 30 30 37 |..MEL0101A/S0007    [CONFIRMED]
32 38 2F 46 32 30 30 30                         |28/F2000
[211126 1804 34] ECR request
[211126 180439] TXN-L [1][491791xxxxxx3489][2000]
[211126 180439] Connecting  [.....................]

[211126 180441] T [117]===>
. . . . . . . . . . . . . . . . . . . . . . .   online
[211126 180441] <===H [108]                     authorization
. . . . . . . . . . . . . . . . . . . . . . .   (+ loyalty)
. . . . . . . . . . . . . . . . . . . . . . .
[211126 180454] T [167]===>
. . . . . . . . . . . . . . . . . . . . . . .
[211126 180455] <===H [102]
. . . . . . . . . . . . . . . . . . . . . . .
[211126 1804 55] TXN-L authorized (787032) rrn=133030119089
POS->ECR: BYTES 121
00 79 4D 45 4C 30 31 30 31 52 2F 53 30 30 30 37 |.yMEL0101R/S0007
32 38 2F 43 30 30 2F 44 56 69 73 61 20 43 72 65 |28/C00/DVisa Cre
64 69 74 3A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A |dit:************    [RESULT]
33 34 38 39 3A 32 30 30 30 3A 31 35 30 30 3A 31 |3489:2000:1500:1
31 3A 36 34 39 39 39 39 39 39 3A 30 30 30 30 39 |1:64999999:00009    (final amount
31 3A 31 33 33 30 33 30 31 31 39 30 38 39 3A 30 |1:133030119089:0    is 15,00,
30 30 30 36 35 3A 37 38 37 30 33 32 3A 32 30 32 |00065:787032:202    redemption
31 31 31 32 36 31 38 30 34 35 34                |11126180454         took place)
[211126 180455] ECR connection closed
```

3. Example of approval (by sending data for printing):

```
[211126 174956] ECR connection from [10.1.101.217]
ECR->POS: BYTES 81
00 51                                           |.Q
45 43 52 30 32 30 31 41 2F 53 30 30 30 37 32 37 |ECR0201A/S000727    [AMOUNT]
2F 46 35 30 30 3A 39 37 38 3A 32 2F 44 32 30 32 |/F500:978:2/D202
31 31 31 32 36 31 37 34 37 30 36 2F 52 45 38 2F |11126174706/RE8/
48 41 32 31 2F 54 30 30 30 37 32 37 2F 47 3A 30 |HA21/T000727/G:0
3A 30 3A 30 3A 30 2F 4D 31 32 33 34 35 36 37 38 |:0:0:0/M12345678
39                                              |9
POS->ECR: BYTES 21                                                  [CONFIRMED]
00 15 4D 45 4C 30 32 30 31 41 2F 53 30 30 30 37 |..MEL0201A/S0007
32 37 2F 46 35 30 30                            |27/F500
[211126 1749 56] ECR request

[211126 175000] TXN-L [1][491791xxxxxx3489][500]
[211126 175000] Connecting [.....................]   online
[211126 175002] T [268]===>                         authorization
. . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . .
[211126 175003] <===H [124]
. . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . .
[211126 1750 03] TXN-L authorized (787031) rrn=133030119082
POS->ECR: BYTES 1035
```

```
04 0B 4D 45 4C 30 32 30 31 52 2F 53 30 30 30 37 |..MEL0201R/S0007
32 37 2F 43 30 30 2F 44 56 69 73 61 20 43 72 65 |27/C00/DVisa Cre
64 69 74 3A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A |dit:**********
33 34 38 39 3A 35 30 30 3A 35 30 30 3A 31 31 3A |3489:500:500:11:
36 34 39 39 39 39 39 39 3A 30 30 30 30 39 31 3A |64999999:000091:
31 33 33 30 33 30 31 31 39 30 38 32 3A 30 30 30 |133030119082:000
30 36 34 3A 37 38 37 30 33 31 3A 32 30 32 31 31 |064:787031:20211
31 32 36 31 37 35 30 30 34 2F 50 1B 01 0A 1B 4E |126175004/P....N
54 45 53 54 20 57 34 0A 1B 4E 4D 45 4C 4C 4F 4E |TEST W4..NMELLON
20 49 57 4C 20 54 45 52 4D 49 4E 41 4C 0A 1B 4E | IWL TERMINAL..N
31 38 35 34 37 2C 20 20 20 D0 45 49 50 41 49 41 |18547,   .EIPAIA
D3 0A 0A 1B 4E 32 36 2F 31 31 2F 32 30 32 31 1B |....N26/11/2021.
52 1B 4E 31 37 3A 35 30 0A 1B 43 1B 42 56 69 73 |R.N17:50..C.BVis
61 20 43 72 65 64 69 74 0A 0A 1B 4E 2A 2A 2A 2A |a Credit...N****
2A 2A 2A 2A 2A 2A 2A 2A 33 34 38 39 0A 0A 1B 43 |********3489...C
1B 53 28 28 28 63 6F 6E 74 61 63 74 6C 65 73 73 |.S(((contactless
29 29 29 0A 1B 43 1B 53 56 49 53 41 20 43 4F 4E |)))..C.SVISA CON
54 41 43 54 4C 45 53 53 0A 1B 43 1B 42 C1 C3 CF |TACTLESS..C.B...
D1 C1 2D 53 41 4C 45 0A 1B 42 D0 CF D3 CF 2F C1 |..-SALE..B..../.
CC D4 3A 1B 52 1B 42 35 2C 30 30 20 45 55 52 0A |..:.R.B5,00 EUR.
0A 1B 4E C1 D1 2E D4 C5 D1 CC C1 D4 C9 CA CF D5 |..N.............
3A 20 36 34 39 39 39 39 39 39 0A 1B 4E C1 D1 2E |: 64999999..N...
D0 C1 CA C5 D4 CF D5 3A 20 39 31 0A 1B 4E C1 D1 |.......: 91..N..
2E D3 D5 CD C1 CB CB C1 C3 C7 D3 3A 20 36 34 0A |...........: 64.
1B 4E CA D9 C4 2E C5 C3 CA D1 C9 D3 C7 D3 3A 20 |.N............:
37 38 37 30 33 31 0A 1B 4E 52 52 4E 3A 20 31 33 |787031..NRRN: 13
33 30 33 30 31 31 39 30 38 32 0A 0A 1B 53 4D 49 |3030119082...SMI
44 3A 20 31 32 33 34 38 31 34 20 30 30 30 37 0A |D: 1234814 0007.
1B 53 4C 30 31 20 76 31 2E 35 2E 32 32 2E 32 0A |.SL01 v1.5.22.2.
0A 1B 53 41 50 2E 4C 41 42 45 4C 3A 20 56 69 73 |..SAP.LABEL: Vis
61 20 43 72 65 64 69 74 0A 1B 53 41 49 44 3A 20 |a Credit..SAID:
41 30 30 30 30 30 30 30 30 33 31 30 31 30 0A 1B |A0000000031010..
43 1B 42 D6 D5 CB C1 CE D4 C5 20 D4 CF 20 C1 CD |C.B....... .. ..
D4 C9 C3 D1 C1 D6 CF 0A 1B 43 1B 42 C1 CD D4 C9 |.........C.B....
C3 D1 C1 D6 CF 20 C5 CC D0 CF D1 CF D5 0A 1B 43 |..... .........C
1B 42 2A 2A 2A 2A 20 C5 D5 D7 C1 D1 C9 D3 D4 CF |.B****  .........
D5 CC C5 20 2A 2A 2A 2A 0A 1B 4E 0A 0A 0A 0A 0A |... ****..N.....
1B 0C 1B 01 0A 1B 4E 54 45 53 54 20 57 34 0A 1B |......NTEST W4..
4E 4D 45 4C 4C 4F 4E 20 49 57 4C 20 54 45 52 4D |NMELLON IWL TERM
49 4E 41 4C 0A 1B 4E 31 38 35 34 37 2C 20 20 20 |INAL..N18547,
D0 45 49 50 41 49 41 D3 0A 0A 1B 4E 32 36 2F 31 |.EIPAIA....N26/1
31 2F 32 30 32 31 1B 52 1B 4E 31 37 3A 35 30 0A |1/2021.R.N17:50.
1B 43 1B 42 56 69 73 61 20 43 72 65 64 69 74 0A |.C.BVisa Credit.
0A 1B 4E 34 39 31 37 39 31 2A 2A 2A 2A 2A 2A 33 |..N491791******3
34 38 39 0A 0A 1B 43 1B 53 28 28 28 63 6F 6E 74 |489...C.S(((cont
61 63 74 6C 65 73 73 29 29 29 0A 1B 43 1B 53 56 |actless)))..C.SV
49 53 41 20 43 4F 4E 54 41 43 54 4C 45 53 53 0A |ISA CONTACTLESS.
1B 43 1B 42 C1 C3 CF D1 C1 2D 53 41 4C 45 0A 1B |.C.B.....-SALE..
42 D0 CF D3 CF 2F C1 CC D4 3A 1B 52 1B 42 35 2C |B..../...:.R.B5,
30 30 20 45 55 52 0A 0A 1B 4E C1 D1 2E D4 C5 D1 |00 EUR...N......
CC C1 D4 C9 CA CF D5 3A 20 36 34 39 39 39 39 39 |.......: 6499999
39 0A 1B 4E C1 D1 2E D0 C1 CA C5 D4 CF D5 3A 20 |9..N..........:
39 31 0A 1B 4E C1 D1 2E D3 D5 CD C1 CB CB C1 C3 |91..N...........
C7 D3 3A 20 36 34 0A 1B 4E CA D9 C4 2E C5 C3 CA |..: 64..N.......
D1 C9 D3 C7 D3 3A 20 37 38 37 30 33 31 0A 1B 4E |.....: 787031..N
52 52 4E 3A 20 31 33 33 30 33 30 31 31 39 30 38 |RRN: 13303011908
32 0A 0A 1B 53 4D 49 44 3A 20 31 32 33 34 38 31 |2...SMID: 123481
34 20 30 30 30 37 0A 1B 53 4C 30 31 20 76 31 2E |4 0007..SL01 v1.
35 2E 32 32 2E 32 0A 0A 1B 53 41 50 2E 4C 41 42 |5.22.2...SAP.LAB
45 4C 3A 20 56 69 73 61 20 43 72 65 64 69 74 0A |EL: Visa Credit.
1B 53 41 49 44 3A 20 41 30 30 30 30 30 30 30 30 |.SAID: A00000000
33 31 30 31 30 0A 1B 43 1B 42 C1 CD D4 C9 C3 D1 |31010..C.B......
C1 D6 CF 20 D0 C5 CB C1 D4 C7 0A 1B 43 1B 42 2A |... .........C.B*
2A 2A 2A 20 C5 D5 D7 C1 D1 C9 D3 D4 CF D5 CC C5 |***  ............
20 2A 2A 2A 2A 0A 1B 4E 0A 0A 0A 0A 0A          | ****..N.....
[211126 175004] ECR connection closed
```

[RESULT]
With data for printer.

The corresponding receipt is shown in Figure 4.

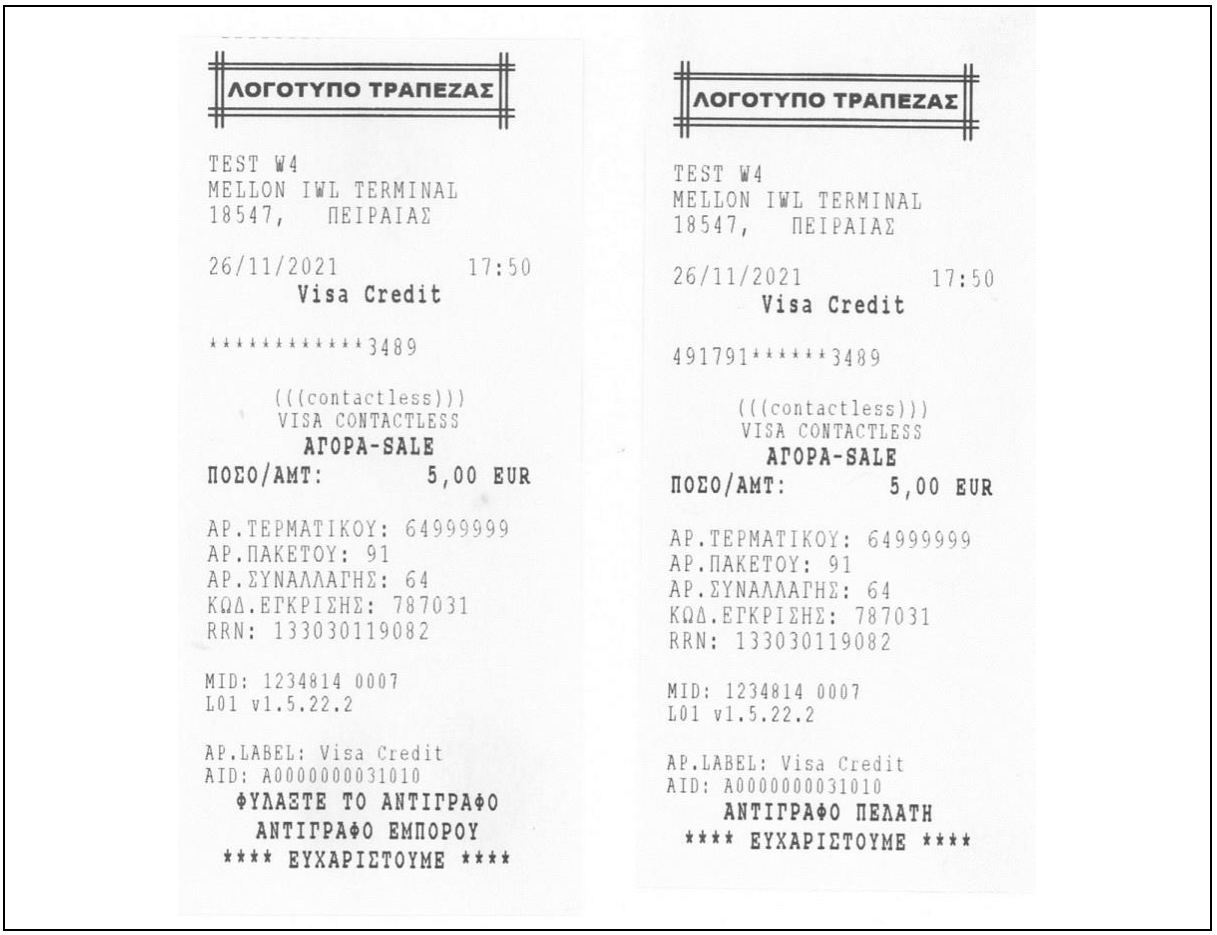

Figure 4

6.6 Message [ERROR]

It is sent by POS as immediate response to the initial ECR request in cases that it cannot be processed. Often the symbol `[BUSY]` is used for the case of code 999, where POS is considered busy with other activity.

Syntax:

POS RESPONSE:

E/*<error code>*

Element name	Type	Size	Description
error code	num	3	001: "protocol not supported" 002: "duplicate request received" 003: "Syntax error in request" 004: "Invalid currency" 100: "Internal POS error" 999: "BUSY"

More description or error codes:

1. Code 001: not supported protocol. However the POS response uses in its header the version and variant declared in ECR request.
2. Code 002: the session number is the same with the one of the previous transaction.
3. Code 003: syntax error in the message body.

4. Code 004: ECR sends different currency code than the one set in POS.
5. Code 100: internal POS error.
6. Code 999: POS is busy (e.g. navigation in menu takes place, it is updating parameters etc).

> **Note**: POS cannot respond at all to other ECR request, while it is processing the current one and while is printing the transaction receipt.

Examples:

1. ECR request in busy POS

```
ECR->POS: BYTES 81
00 51                                           |.Q
45 43 52 30 31 30 31 41 2F 53 30 30 30 36 37 33 |ECR0101A/S000673
2F 46 32 35 30 30 3A 39 37 38 3A 32 2F 44 32 30 |/F2500:978:2/D20
32 31 31 31 32 32 31 31 34 37 32 30 2F 52 38 2F |211122114720/R8/
48 31 32 31 2F 54 30 30 30 36 37 33 2F 47 3A 30 |H121/T000673/G:0
3A 30 3A 30 3A 30 2F 4D 31 32 33 34 35 36 37 38 |:0:0:0/M12345678
39                                              |9
POS->ECR: BYTES 12
00 0C 4D 45 4C 30 31 30 31 45 2F 39 39 39       |..MEL0101E/999
```

2. Request from ECR with other currency set

```
ECR->POS: BYTES 81
00 51                                           |.Q
45 43 52 30 31 30 31 41 2F 53 30 30 30 36 37 34 |ECR0101A/S000674
2F 46 32 35 30 30 3A 31 30 30 3A 32 2F 44 32 30 |/F2500:100:2/D20
32 31 31 31 32 32 31 31 35 39 32 37 2F 52 38 2F |211122115927/R8/
48 31 32 31 2F 54 30 30 30 36 37 34 2F 47 3A 30 |H121/T000674/G:0
3A 30 3A 30 3A 30 2F 4D 31 32 33 34 35 36 37 38 |:0:0:0/M12345678
39                                              |9
POS->ECR: BYTES 12
00 0C 4D 45 4C 30 31 30 31 45 2F 30 30 34       |..MEL0101E/004
```

3. ECR request with wrong protocol version or variant

```
ECR->POS: BYTES 80
00 50                                           |.P
45 43 52 30 33 30 33 41 2F 53 30 30 30 36 37 35 |ECR0303A/S000675
2F 46 32 35 30 30 3A 39 37 38 3A 32 2F 44 32 30 |/F2500:978:2/D20
32 31 31 31 32 32 31 31 35 39 32 37 2F 52 38 2F |211122115927/R8/
48 31 32 31 2F 54 30 30 30 36 37 34 2F 47 3A 30 |H121/T000674/G:0
3A 30 3A 30 3A 30 2F 4D 31 32 33 34 35 36 37 38 |:0:0:0/M12345678
POS->ECR: BYTES 12
00 0C 4D 45 4C 30 33 30 33 45 2F 30 30 31       |..MEL0303E/001
```

6.7 Messages [AMOUNT-REFUND] and [AMOUNT-VOID]

They have syntax, contents and flow exactly the same with [AMOUNT] except for the starting symbol, which is '**Z**' for refund and '**V**' for void:

Any complementary data required to accomplish void or refund (e.g. number of initial transaction) should be entered manually in the POS as they are not sent automatically by ECR.

ECR REQUEST (AMOUNT-REFUND):

```
Z/S<session number>/F<amount>:<cur-code>:<cur-exp>
  /D<datetime>/R<ecr-number>/H<operator-number>/T<receipt number>
  /G<vat1>:<vat2>:<vat3>:<vat4>/M<custom-data>
```

ECR REQUEST (AMOUNT-VOID):

```
V/S<session number>/F<amount>:<cur-code>:<cur-exp>
  /D<datetime>/R<ecr-number>/H<operator-number>/T<receipt number>
  /G<vat1>:<vat2>:<vat3>:<vat4>/M<custom-data>
```

7 Instructions for connecting POS and ECR over TCP/IP

STEP 1: **Determining the IP address of the POS**

POS should be set up with static local IP, otherwise ECR should be configured each time the POS local IP is changed.

Setting static IP for TETRA terminals:
[.] → Control Panel → Terminal Settings → Comm means → Ethernet →
Set:

```
DHCP activation => OFF
IP address
Subnet mask
Gateway
```

To print the current Ethernet parameters:

```
Print parameters
```

Setting static IP in iCT terminals:
[.] → TELIUM MANAGER → Initialization → Hardware → Ethernet Setup
Select:

```
1-Boot Proto => Static Address
```

Set:

```
2-IP address
3-Subnet mask
4-Gateway
```

And saving the change:

```
10-Save
```

To print Ethernet parameters with static IP:

```
9-Print
```

In certain POS applications the current local IP can be printed be selecting:

```
Left key [-] -> SUPPORT -> BASIC INFORMATION
```

STEP 2: **Starting the listening process on POS**

First it must be checked in MTMS that POS has activated the corresponding parameters το accept ECR requests.

To start the process:

```
Left key [-] -> SETTINGS -> ECR CONNECTION -> CONNECT
```

In the bottom-left area of the display the corresponding indicator should appear.

STEP 3: **Testing the connection between ECR and POS**

POS listens for ECR requests in port 4000.
Trivial test can be performed with echo message.