Armenian lane, 9/1/1,
Moscow, 10100,
Tel./fax: +7 495 721 36 21

Logic of SmartSale cash-based solution. Transactions flow diagrams.

Version 5

March, 2017

Table of contents

«INPAS SOFT» Armenian lane, 9/1/1, Moscow, 101000, tel: (495) 721-3621 fax: (495) 721-3621

Glossary

PIN – clients's Personal Identification Number.

Pinpad – device that is used for one or more of the following operations: card accepting, PIN entry, keys storage, cryptographic operations.

ECR – Electronic cash register.

POS-terminal – device that is used for one or more of the following operations: card accepting, PIN entry, keys storage, cryptographic operations; and additionally has a printer for printing out transaction results.

Transaction – any financial or administrative operation in a payment system.

Host – bank's processing system.

Smart_Sale – software produced «INPAS-SOFT UNIPOS Terminal» intended to work on Verifone POS-Terminals and Pinpads.

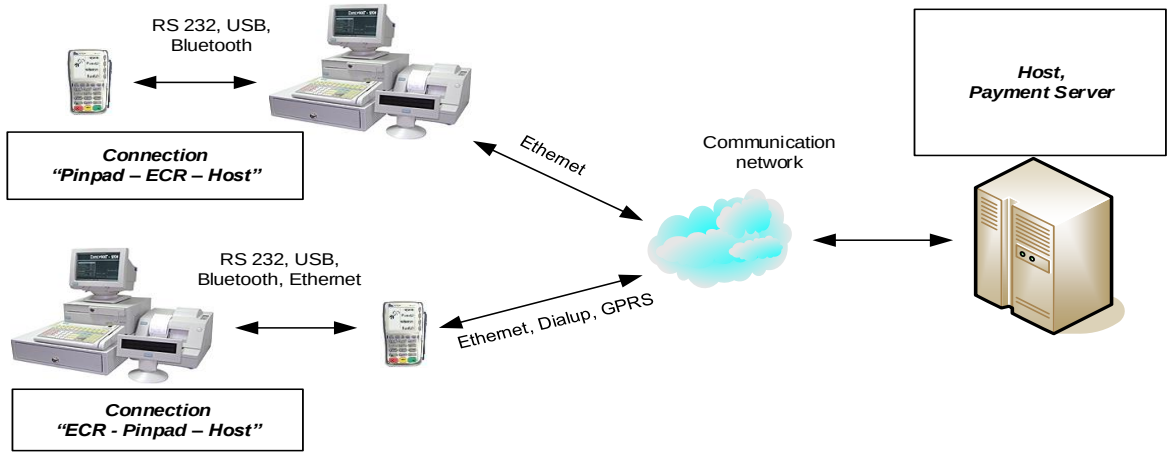
DUAL Connector - software produced by INPAS Company and intended to be used in ECR software (Windows, Linux and Android) as the mechanism for providing interaction between ECR and the *Smart_Sale* software.

Common description

This document describes the rules of interaction (or integration) between the ECR and the POS-Terminal (pinpad) with Smart_Sale software installed. This integration provides an infrastructure for reception of payment cards as a means of payment for goods and services.

1. Solution structure

There are 2 primary schemes of devices interconnection (see Pic.1):



Pic. 1 Scheme of devices interconnection

1.1. Software ECR objective

The task of the ECR software includes construction of correct request packet, followed by sending the request packet to the POS-Terminal and receiving the response from the POS-Terminal. Data format for the different operations are described in the documentation.

ECR Communication with Smart Sale software can be implemented in two ways:

- Exchange request and response format SA-protocol.
- Exchange with the use of DUAL Connector ((Windows, Linux and Android).

«INPAS SOFT» Armenian lane, 9/1/1, Moscow, 101000, tel: (495) 721-3621 fax: (495) 721-3621

1.2. Connection scheme «Pinpad – ECR – host»

This solution utilizes communications and printing capabilities of ECR.

Hardware used:
Pinpad

Software used:
Smart Sale software (build for Pinpad)
DUALConnector software

Connection scheme:
A Pinpad is connected to a ECR via RS-232, USB or Bluetooth port.

.

The logic of the scheme:

A cashier selects card operation in the ECR thus activating the DUALConnector object, which in turn activates the communication port (RS-232, USB or Bluetooth) to the Pinpad. The DUALConnector object sends to the Pinpad a command that includes operation type, amount and currency.

The Pinpad analyzes transaction data and if required requests additional data (for example, the customer's PIN).

The Pinpad constructs a transaction packet and sends it to the DUALConnector object via RS-232 or USB communication port. DUALConnector translates the received packet to the Host utilizing the ECR communicating capabilities. Upon receiving a response from the Host, DUALConnector translates it to the Pinpad.

The Pinpad parses the packet and returns the data (card PAN, response code and others) to the ECR through the DUALConnector.

ECR prints the receipt and responds the DUALConnector about transaction completion. The DUALConnector closes communicating session with the Pinpad.

If the DUALConnector receives no response from the cash machine, it initiates a cancellation transaction on the Pinpad.

1.3. Connection scheme «ECR – pinpad – host»

This solution utilizes communications and printing capabilities of POS-Terminal.

Hardware used:
Pinpad or POS-Terminal.

Software used:
Smart Sale software (build for Pinpad or POS-Terminal)
DUALConnector software

Connection scheme:
A Pinpad (POS-Terminal) is connected to ECR via RS-232, USB or Ethernet port.

The logic of the scheme:

A cashier selects card operation in the ECR thus activating the DUALConnector object, which in turn activates the communication port (RS-232, USB, Ethernet, WiFi) to the Pinpad. The DUALConnector object sends to the Pinpad a command that includes operation type, amount and currency.

The analyzes transaction data and if required requests additional data (for example, the customer's PIN).

The Pinpad constructs a transaction packet and sends it to the Host utilizing its own communicating capabilities. Upon receiving a response from the Host, the Pinpad parses the packet then and returns the data (card PAN, response code and others) to the ECR through the DUALConnector.

«INPAS SOFT» Armenian lane, 9/1/1, Moscow, 101000, tel: (495) 721-3621 fax: (495) 721-3621

ECR prints the receipt and responds the DUALConnector about transaction completion. The DUALConnector closes communicating session with the Pinpad.

If the Pinpad receives no response from the ECR, it initiates a cancellation transaction to the Host.

2. Transactions description

2.1. The primary transactions supported

The basic solution capabilities provide the following transaction types:

- Purchase for goods and services.
- Reversal of Purchase for goods and services, if original payment was carried out during the current operational day.
- Refund of Purchase for goods and services, if original payment was carried out before the current operational day.
- Emergency Reversal. Used for cancellation the last operation that was completed incorrectly or was not completed at all.
- Reconciliation. Valid for transactions in the current operational day.
- Test connection
- Request a summary report
- Request a full report
- Request a copy of the receipt

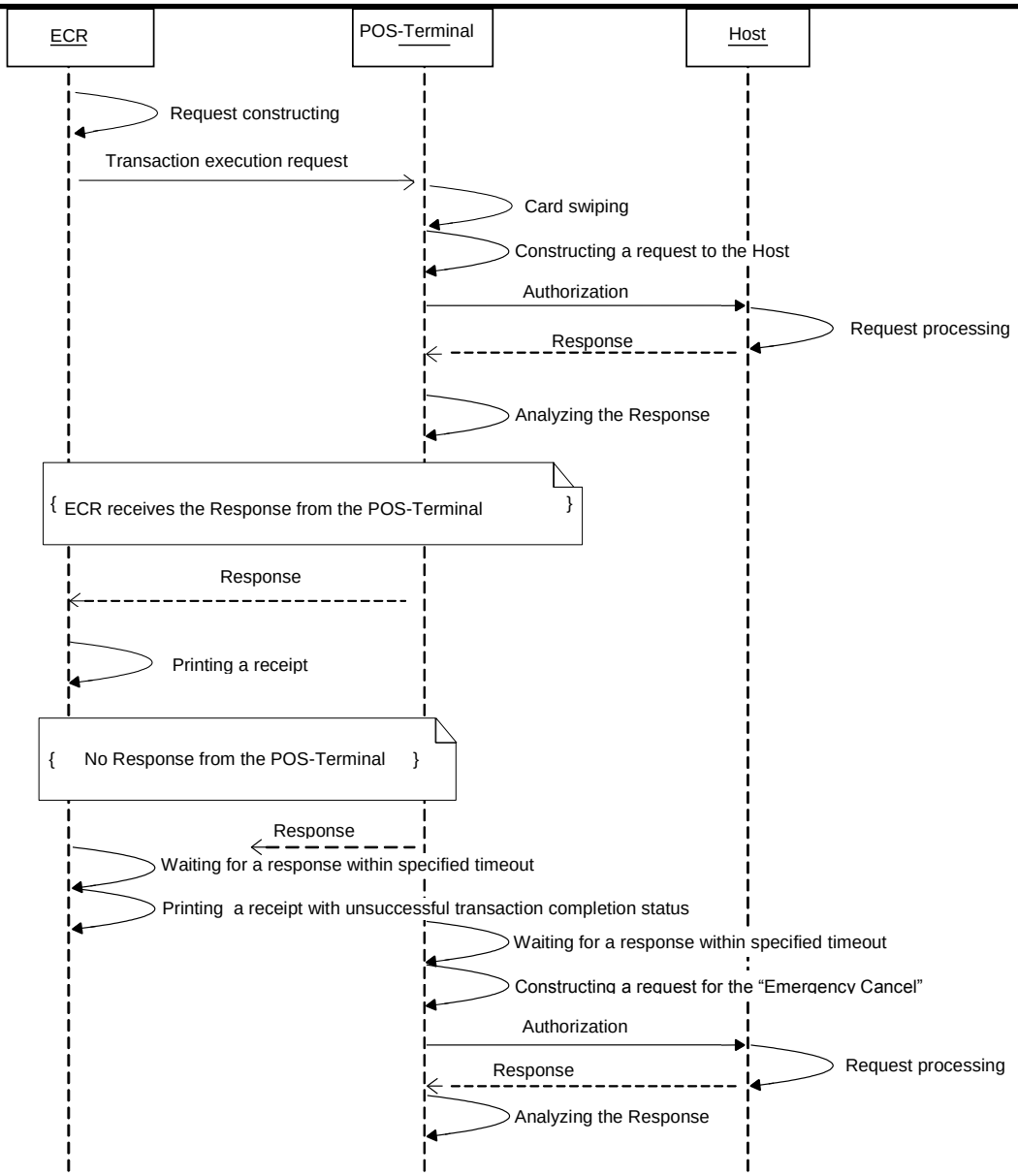
The interaction diagram for authorization transaction.

The task of the ECR software includes construction of correct request packet, followed by sending the request packet to the POS-Terminal and receiving the response from the POS-Terminal.

The task of the Smart Sale software, installed on Pinpad or POS-Terminal, includes the following routines:

- receiving a request packet from the ECR and parsing the request;
- constructing and sending a request to the Host;
- receiving a response packet from the Host and parsing the response;
- constructing and sending a response packet to the ECR.

«INPAS SOFT» Armenian lane, 9/1/1, Moscow, 101000, tel: (495) 721-3621 fax: (495) 721-3621



2.2. The typical scenario of "Purchase" transaction

1. The Cashier enters total operation amount and selects the payment by card method.
2. The ECR constructs a transaction request and sends it to the Pinpad (POS-Terminal).
3. The Pinpad (POS-Terminal) requests the card by prompting the cashier.
4. The Pinpad (POS-Terminal) constructs and sends a request to the Host (in the form of the Host protocol).
5. Upon processing the request, the Host sends a response to the Pinpad (POS-Terminal).
6. Upon processing the response from the Host, Pinpad (POS-Terminal) sends a response to the cash machine. The ECR prints a receipt.

If the ECR receives no response from the Pinpad (POS-Terminal) within a specified timeout, it reports the cashier (on the display or by printing a receipt) about the failure of the operation. The the Pinpad (POS-Terminal) in turn sends an emergency cancellation to the Host.

«INPAS SOFT» Armenian lane, 9/1/1, Moscow, 101000, tel: (495) 721-3621 fax: (495) 721-3621

2.3. The typical scenario of “Reversal” and “Refund” transactions

1. The Cashier enters total operation amount (can be less than original operation amount) and initiates the Reversal (Refund) transaction. If required he enters additional data such as Authorization Code or RRN. These additional data may be retrieved either from customer’s receipt or from Merchant’s database.
2. The ECRconstructs a transaction request and sends it to the Pinpad (POS-Terminal).
3. The Pinpad (POS-Terminal) requests the card by prompting the cashier.
4. The Pinpad (POS-Terminal) constructs and sends a request to the Host (in the form of the Host protocol).
5. Upon processing the request, the Host sends a response to the Pinpad (POS-Terminal).
6. Upon processing the response from the Host, Pinpad (POS-Terminal) sends a response to the cash machine. The ECR prints a receipt.

If the ECRreceives no response from the Pinpad (POS-Terminal) within a specified timeout, it reports the cashier (on the display or by printing a receipt) about the failure of the operation.

2.4. ”Emergency Reversal” transaction

Transaction is intended to Reversal the last approved (!) operation sent from the ECR to the POS-Terminal. The reason for initiating this type of transaction could be the failure in printing of receipt or the denial of the cardholder in completing the transaction (for example, the cardholder did not sign the receipt).

«INPAS SOFT» Armenian lane, 9/1/1, Moscow, 101000, tel: (495) 721-3621 fax: (495) 721-3621