Operation Manual

ATM Monitoring R2

03.50.30

18.04.2020

Contents

ATM monitoring is a mandatory procedure carried out by the acquiring bank to detect failures in ATM operation and to eliminate their consequences in order to ensure uninterrupted service of cardholders. The frequency of ATM monitoring operations is determined by the acquiring bank's regulations or, when necessary, if a bank cardholder referred to the acquirer's customer support.

This document is intended for WAY4™ users (bank or processing centre employees) responsible for ATM monitoring.

When working with this document, it is recommended to refer to the following resources from the OpenWay documentation series:

- DB Manager
- Acquiring Module User Manual
- Menu Editor

The following conventions are used throughout the document:

- Screen form names are indicated in *italics.*
- Screen form button labels are enclosed in square brackets, for example [Approve].
- Sequences for selecting items from the user menu are shown with arrows, as in "Issuing → Contracts Input & Update".
- Sequences for selecting items from the system menu are shown with another type of arrow, as in "Database => Change password".
- Key combinations used in DB Manager are shown in angular brackets, for example <Ctrl>+<F3>.
-  Warnings about potentially hazardous situations or actions.
-  Information about important features, additional options or the best use of certain system functions.

1. ATMs in WAY4

1.1 Registering ATMs in the Database

ATMs are registered by entering the corresponding subcontract for a account contract (see the document "Acquiring Module User Manual").

When registering an ATM contract, data required for its operation in the system is entered. For example, the ATM type, its location, unique identifier in the system, etc., are specified.

1.2 ATMs in WAY4: Overview

Each ATM contract in WAY4 is assigned a set of operations carried out with this device (see the section "ATM Operations"), and the set of hardware required by the ATM to execute these operations is also described (see "ATM Hardware").

For an operation to be executed with an ATM, the hardware used to execute this operation must be appropriately configured.

A change in hardware status allows/prohibits execution of a particular operation, and a corresponding system message will be displayed.

Pursuant to this approach, "virtual hardware" is also included in the list of hardware, along with ATM components such as the card reader, printer, currency cassettes, etc. The ATM operator (for example, performing cash collection), the authorisation channel, etc., is considered to be "virtual hardware".

The readiness of ATM hardware to operate is determined by evaluating ATM status during ATM monitoring, as well as during analysis of operation execution after a bank cardholder refers to the acquirer's customer support service.

2. Monitoring ATM Networks

Acquirers monitor ATM networks in order to prevent malfunctions in operation and eliminate consequences when specific ATM hardware fails.

The user menu item "Acquiring → ATM Controller" is used to execute monitoring procedures.

Before starting to monitor the ATM network, the user must ensure that the required financial institution is set in the status line. If the user has privileges to work with several financial institutions, select the user menu item "Acquiring → ATM Controller → Set Financial Institution" to set the required values.

The user menu item "Acquiring → ATM Controller → ATM Status Monitor" is used to work with the selected financial institution's ATMs. The user menu item "Acquiring → ATM Controller → ATM Monitor – All" is used to work with the ATMs of all financial institutions.

To view consolidated information on the status of an ATM and its hardware, use the menu item "Acquiring → ATM Controller → ATM Monitor with Hardware – All". When this item is selected, information on the ATMs of all financial institutions is displayed.

2.1 ATM Status

To analyse ATM status, select the user menu item "Acquiring → ATM Controller → ATM Monitor – All" or "Acquiring → ATM Controller → ATM Status Monitor".

As a result, the grid form "ATM Monitor – All" ("ATM Status Monitor") (see Fig. 1) will be displayed.

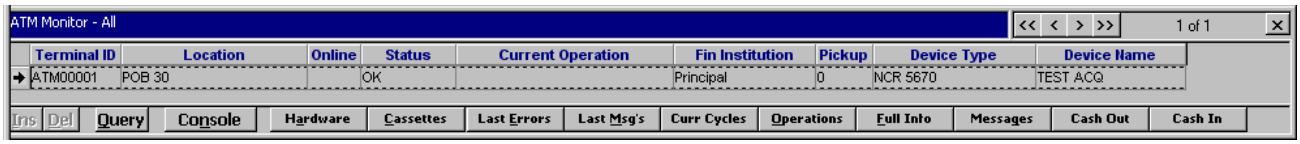


Fig. 1. Information about ATM status

This form contains the following columns:

- *Terminal ID* – unique identifier of the ATM in the system.
- *Location* – ATM location.
- *Online* – a flag indicating whether the ATM is connected to the host. This value can be "Yes" (connected) or "No" (not connected).
- *Status* – ATM status (see "ATM Status").
- *Current Operation* – the current operation being executed by the ATM.
- *Fin Institution* – the name of the financial institution for which the ATM is registered; this column is only present in the "ATM Monitor – All" grid form.
- *Pickup* – the number of bankcards (or other objects that may have been used as bankcards), withheld by the ATM when executing operations.
- *Device Type* – the ATM model registered in the system and described in the "ATM Types" dictionary ("Configuration Setup → Merchant Device Setup → ATM Types").

- *Device Name* – ATM name.

To obtain additional information about ATM status, as well as to change ATM status, the following management buttons are used:

- [Console] – opens a context menu containing the following items:
- "Console" – opens the ATM console window (see "Changing ATM Status and Managing ATMs").
- "Command to Group" – opens the ATM group command window (see "Changing ATM Status and Managing ATMs").
- [Hardware] – opens the "Hardware for <ATM name>" grid form containing the list and status of hardware for the selected ATM, (see "ATM Hardware").
- [Cassettes] – displays information about cassette status (see "Currency Cassette Status").
- [Last Errors] – displays a list of messages about errors in ATM operation for the last 24 hours (see "Messages Generated during ATM Operation").
- [Last Msg's] – displays a list of messages, including error messages, for the last 24 hours (see "Messages Generated during ATM Operation").
- [Curr Cycles] – opens a grid form with information about ATM financial cycles (see "Working with Financial Cycles").
- [Operations] – opens the "Operations for <ATM name>" grid form, containing a list of operations available at the present time for this device, the status of each operation (see "ATM Operations") and the name of the hardware that caused the status change.
- [Full Info] – opens the "Full Info for <ATM name>" form, containing information about device parameters (see the section "Configuring ATMs" of the document "Acquiring Module. User Manual").
- [Messages] – opens a grid form containing a list of messages from the time the ATM was registered in the system (see "Messages Generated during ATM Operation").
- [Cash Out] – opens a grid form with information about the status of cash dispensing cassettes; this form is used to ensure compatibility with previous WAY4 versions (see "Special Forms for Working with Cassettes").
- [Cash In] – opens a grid form with information on the status of cash acceptance cassettes; this form is used to ensure compatibility with previous versions of WAY4 (see "Special Forms for Working with Cassettes").

To view consolidated information about the status of an ATM and its hardware, select the user menu item "Acquiring → ATM Controller → ATM Monitor with Hardware – All".

When this menu item is selected, the "ATM Monitor with Hardware – All" ("ATM Status Monitor") grid form will be displayed (see Fig. 2).

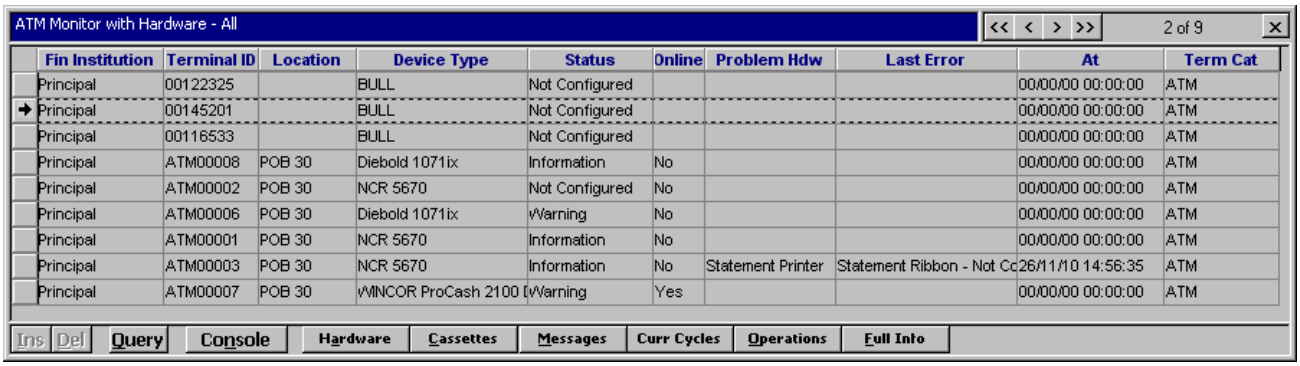


Fig. 2. Consolidated information about the status of an ATM and its hardware

This form contains the following columns:

- *Fin Institution* – the name of the financial institution for which the ATM is registered.
- *Terminal ID* – the unique identifier of the ATM in the system.
- *Location* – ATM location.
- *Device Type* – ATM model registered in the system and described in the dictionary "ATM Types" ("Configuration Setup → Merchant Device Setup → ATM Types").
- *Online* – a flag indicating whether the ATM is connected to the host. This value can be "Yes" (connected) or "No" (not connected)
- *Problem Hdw* – ATM hardware for which the last status message was "Warning", "Error", "Fatal Error" or "Not Configured".
- *Last Error* – the last "Warning", "Error", "Fatal Error" or "Not Configured" status message for ATM hardware.
- *At* – date and time a message was generated.
- *Term Cat* – device category ("ATM"/"POS"/"Imprinter"/"Infokiosk").

To obtain additional information about ATM status, as well as to change ATM status, the following management buttons are used:

- [Console] – opens a context menu containing the following items:
- "Console" – opens the ATM console window (see "Changing ATM Status and Managing ATMs").
- "Command to Group" – opens the ATM group command window (see "Changing ATM Status and Managing ATMs").
- [Hardware] – opens the "Hardware for <ATM name>" grid form containing the list and status of hardware for the selected ATM, (see "ATM Hardware").
- [Cassettes] – opens a grid form with cassette status (see "Currency Cassette Status").
- [Messages] – opens a grid form containing a list of messages from the time the ATM was registered in the system (se "Messages Generated during ATM Operation").
- [Curr Cycles] – opens a grid form with information on ATM financial cycles (see "Working with Financial Cycles").
- [Operations] – opens the "Operations for <ATM name>", containing the list of operations available at the present time for this device, with the status of each operation specified (see "ATM Operations") and the name of the hardware that caused the change in status.

- [Full Info] – opens the "Full Info for <ATM name>" form, containing information about device parameters (see the section "Configuring ATMs" of the document "Acquiring Module. User Manual").

2.1.1 ATM Status Values

In the *Status* column of the "ATM Monitor – All" ("ATM Status Monitor") grid form (see the first figure Fig. 1 in the section "ATM Status") the following ATM status values are possible:

- OK – all ATM hardware is functioning correctly.
- Information – all ATM hardware is functioning correctly, but the status of one or several components or operations has changed.
- Warning – one or several ATM components are in a state of error, making it impossible to execute some operations.
- Not configured – the ATM is not configured; it is not possible to execute operations.
- Error – it is impossible to use the ATM due to serious hardware failure.

To determine the reason for the change in ATM status, refer to the grid forms with the list of hardware and list of operations.

2.1.2 Changing ATM Status and Managing ATMs

During monitoring, the status of an ATM can be changed in the following ways:

- By sending a management command to the ATM controller (see "ATM Controller Management Commands").
- By sending a management command to a group of ATMs (see "Management Commands for ATM Groups").
- By sending a management command to an ATM component (see "ATM Hardware").
- By changing the status of an operation (see "ATM Operations").

Management commands to the ATM controller can be sent using the console window (see Fig. 3), opened by clicking the [Console] button and selecting the "Console" menu item.

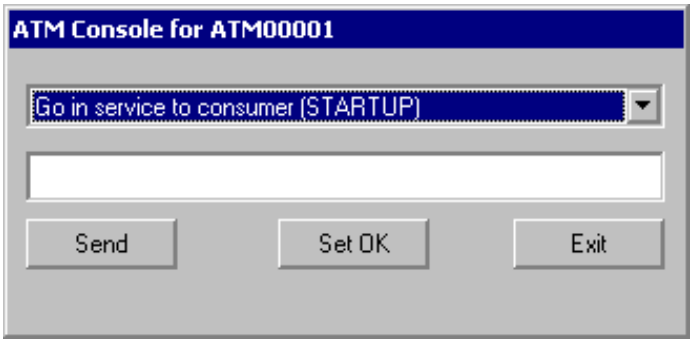


Fig. 3. ATM console window

The upper field of this window is used to select management commands from a list. The lower (empty) field allows management command parameters to be entered manually. To send the ATM controller a management command selected from the list, click the [Send] button.

Clicking the [Set OK] button sets the "OK" value for the status of an ATM with the "Information" value. If the "Error" or "Warning" value is found in the *Status* field of the "ATM Monitor – All" grid form (see the first figure Fig. 1 in the section "ATM Stat"), the situation should be analysed with the "Hardware for <ATM name>" window (see "ATM Hardware"), and measures should be taken to fix the respective hardware, change its status and activate the ATM.

Management commands can be sent to a group of ATMs using the ATM group command window (see Fig. 4) opened by clicking the [Console] button and selecting the item "Command to Group" from the context menu. When this context menu item is selected, management commands will be sent for all ATMs shown in the list of the grid form with information on ATM status (see the first figure Fig. 1 in the section "ATM Stat") or the grid form with consolidated information on the status of an ATM and its components (see the second figure Fig. 2 in the section "ATM Status").

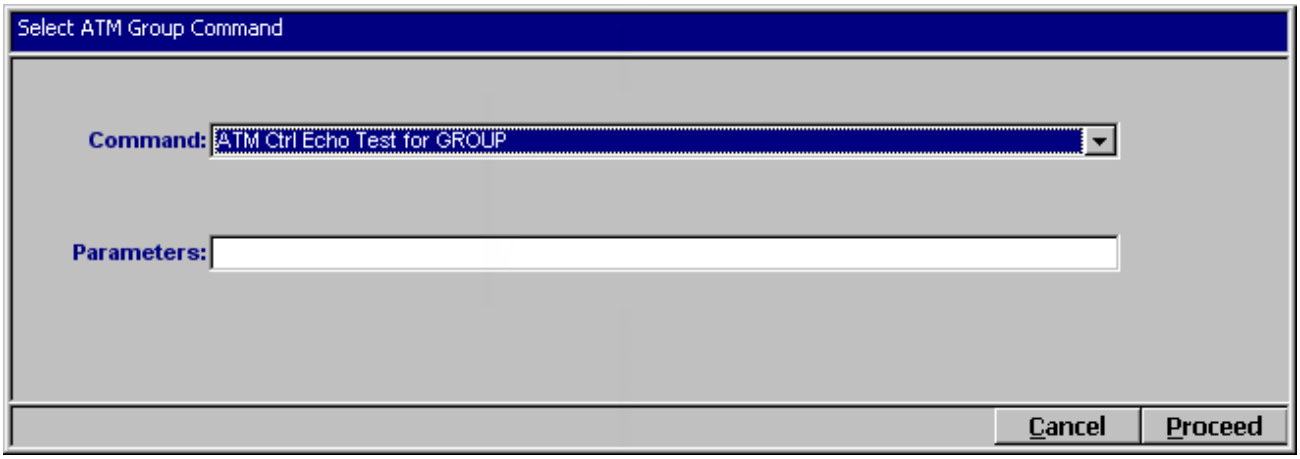


Fig. 4. ATM group command window

The *Command* field is used to select a management command from a list. The *Parameters* field allows management command parameters to be entered manually. To send an ATM group a management command selected from the list, click the [Proceed] button.

2.1.3 Messages Generated during ATM Operation

During ATM operation (execution of card operations, change in the status of an ATM or its hardware, etc.) the system generates corresponding messages. Messages generated in connection with one Event are grouped in batches.

The system uses the following mechanism for generating and processing messages:

- According to information from the ATM, ATM controller generates a message code and registers a message in the list of system messages with the "Waiting" status (waiting for processing).
- When processing a message, the system searches for the message type (by the message code) in the system message dictionary.
- If the required message is found in the system dictionary, the corresponding message type and text is specified in the list of ATM messages and the message itself is given the "Posted" status; after a message is successfully processed, the hardware/ATM status set by the message can be changed.

- If the required message was not found in the system dictionary or the hardware to which this message refers is absent from the ATM, the hardware/ATM status set in the system does not change and the message receives the "Decline" status.

The full list of system messages generated during ATM operation can be accessed by selecting the required ATM in the "ATM Monitor – All" ("ATM Status Monitor") grid form (see the first figure Fig. 1 in the section "ATM Stat") and clicking the [Messages] button.

This command opens the "Messages for <ATM name>" grid form (see Fig. 5) containing a list of messages from the time the ATM was registered in the system.

Messages for TEST ACQ — 2 of 26087

Record ID	Message Time	Message Text	Message Type	Error Level	Code	Status	Hardware
100000000000235737	21/02/11 13:23:28	Test	STARTUP FOR ALL ATM	Information	10101SALL	Posted	Outgoing Consc
100000000000234113	26/11/10 15:04:38		Terminal status is information	Information	TERMS1	Posted	ATM Systems
100000000000234112	26/11/10 15:04:38		The Supervisor OK !	OK	SuperVOK	Posted	Supervisor
100000000000234111	26/11/10 14:58:26		ATM Connection dropped	Information	LINK_N	Posted	ATM Systems
100000000000234110	26/11/10 14:57:38		Supervisor select Key from Select Mer	Information	1RD299	Posted	Supervisor
100000000000234109	26/11/10 14:57:30		Terminal status is warning	Information	TERMS2	Posted	ATM Systems
100000000000234108	26/11/10 14:57:30		ATM in Supervisor Mode	Information	SMODE	Posted	ATM Systems
100000000000234107	26/11/10 14:57:30		Supervisor mode entry	Error	1PD2021	Posted	Supervisor
100000000000234106	26/11/10 14:57:30		No new state	Information	1DS04	Posted	Card Reader
100000000000234105	26/11/10 14:57:30		No error (M-Status)	Information	1DMS00	Posted	Card Reader
100000000000234104	26/11/10 14:57:30		Card Reader OK	OK	1DE0	Posted	Card Reader
100000000000234103	26/11/10 14:57:30		No transaction exception condition occ	OK	1DD0	Posted	Card Reader
100000000000234102	26/11/10 14:57:21		No new state	Information	1DS04	Posted	Card Reader
100000000000234101	26/11/10 14:57:21		LFCC bin full soon/full	Information	1DMS38	Posted	Card Reader
100000000000234100	26/11/10 14:57:21		Card Reader Fatal Error	Warning	1DE4	Posted	Card Reader
100000000000234099	26/11/10 14:57:21		No transaction exception condition occ	OK	1DD0	Posted	Card Reader
100000000000234098	26/11/10 14:57:20		No new state	Information	1DS04	Posted	Card Reader

Ins Del Query Batch Doc

Fig. 5. List of system messages generated during ATM operation

This form contains the following fields:

- *Record Id* – message record number.
- *Message Time* – message generation date and time (the database server date and time are used).
- *Message Text* – message text.
- *Message Type* – message type.
- *Error Level* – error level assigned to the corresponding ATM hardware in the Hardware list when this message is received.

> When determining the error level assigned to ATM hardware, all the messages from one batch are analyzed. If a batch contains several messages with differing error levels, the hardware is assigned the highest (worst) level of all those in the batch.

- *Code* – message code generated by ATM controller.
- *Status* – message status:
- "Posted" – the message has been processed successfully.
- "Waiting" – the message is waiting to be processed.
- "Decline" – the message is declined because a message with this code was not found in the system menu or the ATM doesn't have the corresponding hardware.

- *Hardware* – the ATM hardware to which the message refers.

If as a result of processing a message, a document was generated by the system, information about the corresponding document can be obtained by clicking the [Doc] button.

> Messages received from a terminal after a message that generated a document (for example, service messages) will be linked with the last document created.

Clicking the [Batch] button (see Fig. 6) opens a form for viewing all messages of the batch that includes the selected message

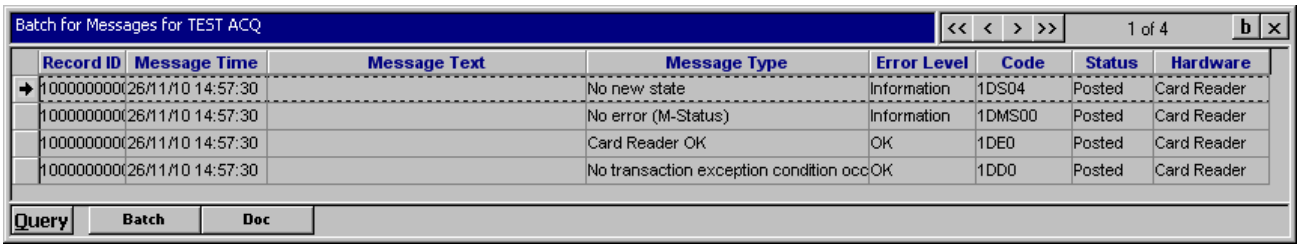


Fig. 6. List of system messages included in one batch

Clicking the [Last Errors] or [Last Msg's] buttons in the "ATM Monitor – All" ("ATM Status Monitor") grid form (see the first figure Fig. 1 in the section "ATM Stat") opens grid forms with error messages for the last 24 hours or with all messages for the last 24 hours, respectively.

These forms are similar to the "Messages for <ATM name>" form shown in Fig. 5, except they do not contain the [Batch] button and *Hardware* field, and contain information on the message date and time, as well as the message text and type, error level and message code.

2.1.4 ATM Controller Management Commands

A processing centre is linked with an ATM network through ATM controller, the WAY4 component providing online connection.

Further, a list of commands separated into groups is given. Commands may be sent to the ATM controller using the console window (see the figure Fig. 3 in the section "Changing ATM Status and Managing ATMs").

2.1.4.1 ATM Management Commands

2.1.4.1.1 Go in service to consumer (STARTUP)

The command according to which the controller puts ATMs into client service mode; this command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- ATM configuration information is requested and the configuration identifier received is compared with the identifier stored in the processing centre.
- If the configuration identifiers differ, all configuration data is imported into the ATM and the request for ATM configuration information is repeated.

- Information is requested on the state of ATM counters containing information on the number of banknotes loaded, dispensed, and forgotten, as well as the number of banknotes rejected by the ATM when dispensing.
- The ATM is put into service mode.

2.1.4.1.2 Go Out-of-service to consumer (SHUTDOWN)

The command according to which the controller takes an ATM out of client service mode; this command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service (if an operation is not being executed at the time). If an operation is progress, the ATM controller performs all actions required to complete the operation, and then takes the ATM out of service mode.
- Information is requested on the state of ATM counters containing information on the number of banknotes loaded, dispensed, and forgotten, as well as the number of banknotes rejected by the ATM when dispensing.

2.1.4.1.3 Go Temporary Out-of-service (SHUTDOWN)

The command according to which the controller temporarily takes the ATM out of client service mode; this command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service (if an operation is not being executed at the time). If an operation is progress, the ATM controller performs all actions required to complete the operation, and then takes the ATM out of service mode.
- Information is requested on the state of ATM counters containing information on the number of banknotes loaded, dispensed, and forgotten, as well as the number of banknotes rejected by the ATM when dispensing.

2.1.4.1.4 Shutdown Immediate

A command to the controller to immediately take the ATM out of client service mode; this command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service (if an operation is not being executed on the ATM at the time).
- If an operation is in progress on the ATM, and the controller sent the ATM a response to a transaction request, the controller performs all actions required to complete the operation, and then takes the ATM out of service mode.
- If the controller has not yet sent the ATM a response to the transaction request, the controller executes all required actions to roll back this operation; the ATM will be sent a denial of service and will be taken out of service.
- Information is requested on the state of ATM counters containing information on the number of banknotes loaded, dispensed, and forgotten, as well as the number of banknotes rejected by the ATM when dispensing.

2.1.4.1.5 SHUTDOWN IMMEDIATE FOR ALL ATM

This command is similar to the "Shutdown Immediate" command for all ATMs.

2.1.4.1.6 STARTUP FOR ALL ATM

A command to the controller to put all ATMs into client service mode; this command is executed for all ATMs in the same way as the "Go in service to consumer (STARTUP)" command.

2.1.4.2 Information Requests

2.1.4.2.1 Configuration information request

Request ATM configuration information.

2.1.4.2.2 Retrieve Configuration ID Number

Request the ATM configuration identification number.

2.1.4.2.3 Retrieve configuration information

Request ATM configuration information.

2.1.4.2.4 Retrieve enhanced configuration data

Request ATM configuration information.

2.1.4.2.5 Retrieve date and time information

Request the date and time set on the ATM; this command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is take out of service.
- The ATM sends the required information.
- The command "Go in service to consumer (STARTUP)" is used to return the ATM to service mode.

2.1.4.2.6 Retrieve Enhanced Supply counts

Request full information containing the values of ATM internal counters; this command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service.
- Information is requested on the state of ATM counters containing information on the number of banknotes loaded, dispensed, and forgotten, as well as the number of banknotes rejected by the ATM when dispensing.
- If the ATM was in service mode before the command was executed, it is put into service mode.

2.1.4.2.7 Retrieve fitness data only

Request data on the state of ATM hardware.

2.1.4.2.8 Retrieve hardware configuration data only

Request data on the state of each ATM device reflecting information on whether the device configuration is set.

2.1.4.2.9 Retrieve local configuration option digits

Request the ATM configuration identification number.

2.1.4.2.10 Retrieve Note Definitions

Request installation of the ATM cash acceptance module.

2.1.4.2.11 Retrieve supplies data only

Request data on the resources of each ATM device.

2.1.4.2.12 Retrieve software ID & release number data only

Request information from the ATM on the software release number and identification number.

2.1.4.2.13 Retrieve Supply counters

Request information containing the values of ATM internal counters; it is not recommended to use this command on ATMs supporting the "Retrieve Enhanced Supply counts" command.

2.1.4.2.14 Retrieve Supply counts

Request information containing the values of ATM internal counters; it is not recommended to use this command on ATMs supporting the "Retrieve Enhanced Supply counts" command.

2.1.4.2.15 Retrieve tamper and sensor status data only

Request information on the state of the "tamper" device and ATM sensors.

2.1.4.2.16 Retrieve Wincor CashIn Information

Request the status of the cash acceptance module for a Wincor ATM.

2.1.4.3 Key Management Commands

2.1.4.3.1 Decrypt new COMM (TPK) key with current COMM key

Change the ATMs PIN key; this command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service.
- The new PIN key, encrypted using the current PIN key, is sent to the ATM.
- In the parameter line, the new PIN key can be specified encrypted using the local master key, in the format "KEY=<new TPK(LMK)>". In this case, the ATM controller automatically changes the encryption key, encrypting the new PIN key using the current PIN key.
- If the key is not specified in the parameter line, the ATM controller generates it randomly on an encryption device.
- The command "Go in service to consumer (STARTUP)" is used to return the ATM to service mode.

2.1.4.3.2 Decrypt new COMM key with current Master key

Change the ATM PIN key; this command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The new PIN key, encrypted with the current master key, is sent to the ATM.
- In the parameter line, the new PIN key can be specified, encrypted with the local master key in the format "KEY=<new TPK(LMK)>". In this case, the ATM controller automatically changes the encryption key, encrypting the new PIN key using the current master key.
- If the key is not specified in the parameter line, the ATM controller generates it randomly on an encryption device.
- The command "Go in service to consumer (STARTUP)" is used to return the ATM to service mode.

2.1.4.3.3 Decrypt new MAC (TAK) key with current COMM key

Change the ATM electronic signature key; this command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The new electronic signature key, encrypted with the current PIN key, is sent to the ATM.
- In the parameter line, the new electronic signature key can be specified, encrypted with the local master key in the format "KEY=<new TAK(LMK)>". In this case, the ATM controller automatically changes the encryption key, encrypting the new electronic signature key with the current PIN key.
- If the key is not specified in the parameter line, the ATM controller generates it randomly on an encryption device.
- The command "Go in service to consumer (STARTUP)" is used to return the ATM to service mode.

2.1.4.3.4 Decrypt new MAC (TAK) key with current Master

Change the ATM electronic signature key; this command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The new electronic signature key, encrypted with the current master key, is sent to the ATM.

- In the parameter line, the new electronic signature key can be specified, encrypted with the local master key in the format "KEY=<new TAK(LMK)>". In this case, the ATM controller automatically changes the encryption key, encrypting the new electronic signature key with the current master key.
- If the key is not specified in the parameter line, the ATM controller generates it randomly on an encryption device.
- The command "Go in service to consumer (STARTUP)" is used to return the ATM to service mode.

2.1.4.3.5 Decrypt new Master (TMK) key with current Master

Change the ATM master key; this command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The new master key, encrypted with the current master key, is sent to the ATM.
- In the parameter line, the new master key can be specified, encrypted with the local master key in the format "KEY=<new TMK(LMK)>". In this case, the ATM controller automatically changes the encryption key, encrypting the new master key with the current master key.
- If the master key is not specified in the parameter line, the ATM controller generates it randomly on an encryption device.
- The command "Go in service to consumer (STARTUP)" is used to return the ATM to service mode.

2.1.4.3.6 Request EPP public key

Request the ATM public key.

2.1.4.3.7 Request EPP public key certificate

Request the ATM public key certificate.

2.1.4.3.8 Request EPP serial number

Request the ATM EPP serial number.

2.1.4.3.9 Request EPP signature public key certificate

Request the certificate with the public key used to validate messages sent by the ATM.

2.1.4.3.10 Request random number

Request a random number.

2.1.4.3.11 Send Host Certificate

Load the host certificate to the ATM EPP keypad.

2.1.4.3.12 Send new PKCS #7 encoded A-key

Load the A key in PKCS #7 format, encrypted under the RSA key, to the ATM EPP keypad.

2.1.4.3.13 Send new PKCS #7 encoded B-key

Load the B key in PKCS #7 format, encrypted under the RSA key, to the ATM EPP keypad.

2.1.4.3.14 Send new HSM public Key

Load a new host key to the ATM.

2.1.4.3.15 Send initial A-key with RSA key

Load the A key, encrypted under the RSA key, to the ATM EPP keypad.

2.1.4.3.16 Send initial B-key with RSA key

Load the B key, encrypted under the RSA key, to the ATM EPP keypad.

2.1.4.3.17 Send current COMM (& MAC) Key & Configuration

Change the ATM PIN key, electronic signature key and perform operations to load all configuration data to the ATM. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- New keys, encrypted using the current master key, are sent to the ATM; the ATM controller randomly generates a PIN key and electronic signature key on an encryption device.
- The name of the configuration file in the format "FILE=<file name with path specified>" can be specified in the parameter line; to load a specific configuration group, the "ID=<configuration ID>" parameter is used; all parameters are comma-delimited.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.3.18 Request all Key Verification values

Request ATM key verification values.

2.1.4.3.19 Use Power-up B-key as current COMM key

Install in the ATM the PIN key from the cell containing the key entered by security officers directly on the ATM; this command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required PIN key value is installed.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.3.20 Use Power-up B-key as current MAC key

Install in the ATM the MAC key from the cell containing the key entered by security officers directly on the ATM. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required MAC key is installed.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4 Commands for Loading Configuration Data

2.1.4.4.1 Load Time and Date from Host

Install the time and date in the ATM; the date and time in "DATE=<YYYYMMDDhhmm>" format can be specified in the parameter line; if the date and time are not specified in the parameter line, the controller installs the values of the own date and time. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4.2 Override Reserved Screens

Replace in the ATM configuration data of reserved screens used during operations. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4.3 Send Configuration ID Number to ATM

Import a configuration ID to an ATM; the configuration ID in the format "ID=<configuration ID>" can be specified in the parameter line. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4.4 Send EMV DDC Parameters

Import EMV parameters to an ATM.

2.1.4.4.5 Send ICC Currency Data Objects Table

Import ICC Currency Data Objects Table tables to the ATM; the name of the configuration file and number of a specific configuration group in the format "FILE=<name of file and file path >" and "ID=<configuration ID>" can be specified in the parameter line. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4.6 Send ICC Language Support Table

Import the ICC Language Support Table into the ATM; the name of the configuration file and number of a specific configuration group in the format "FILE=<name of file and file path >" and "ID=<configuration ID>" can be specified in the parameter line. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4.7 Send ICC Terminal Acceptable AIDs Table

Import the ICC Terminal Acceptable AIDs Table into the ATM; the name of the configuration file and number of a specific configuration group in the format "FILE=<name of file and file path >" and "ID=<configuration ID>" can be specified in the parameter line. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4.8 Send ICC Terminal Data Objects

Import the ICC Terminal Data Objects Table into the ATM; the name of the configuration file and number of a specific configuration group in "FILE=<name of file and file path >" and "ID=<configuration ID>" can be specified in the parameter line. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4.9 Send ICC Transaction Data Objects Table

Import the ICC Transaction Data Objects Table into the ATM; the name of the configuration file and number of a specific configuration group in the format "FILE=<name of file and file path >" and "ID=<configuration ID>" can be specified in the parameter line. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4.10 Send new Configuration to ATM

Import all configuration data into the ATM; the name of the configuration file in the format "FILE=<name of file and path used by ATM Controller>" can be specified in the parameter line. The parameter "ID=<configuration ID>" is used to import a specific configuration group. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4.11 Send new Enhanced Parameters, Timers to ATM

Import to the ATM enhanced configuration parameters, the ATM handle, values of timers. The name of the configuration file and number of a specific configuration group can be specified in the format "FILE=<file name and path>" and "ID=<configuration ID>" in the parameter line. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4.12 Send new Financial Institution Table to ATM

Import financial institution tables to the ATM; the name of the configuration file and number of a specific configuration group in the format "FILE=<name of file and file path >" can be specified in the parameter line. The parameter "NUMBER=<number of financial institution record>+<number of financial institution record>+..." can be used to import one or several records of a financial institution. The parameter "ID=<configuration ID>" is used to import financial institution tables from a specified configuration group. All parameters are delimited by semicolons. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4.13 Send new Format Templates to ATM

Import templates for entering data on the ATM screen (for ATMs using the "Diebold" protocol); the name of the configuration file in the format "FILE=<file name and path used by ATM Controller>" can be specified in the parameter line. The parameter "NUMBER=<template number>+<template number>+..." can be used to import a one or several templates. The parameter "ID=configuration ID>" is used to import template from a specific configuration group. All parameters are delimited by semicolons. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4.14 Send new Parameters, Timers to ATM

Import to the ATM configuration parameters, the ATM handle, values of timers (for ATMs using the "NDC/NDC+" protocol). The name of the configuration file and number of a specific configuration group can be specified in the parameter line in the format "FILE=<file name and path>" and "ID=<configuration ID>". This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4.15 Send new Screens to ATM

Import screen configuration data into the ATM; the name of the configuration file in the format "FILE=<file name and path>" can be specified in the parameter line. The parameter "NUMBER=<screen number>+<screen number>+..." can be used to import one or several screens. The parameter "ID=<configuration ID>" is used to import screens from a specific configuration group. All parameters are delimited by semicolons. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.4.16 Send new States to ATM

Import base state records into the ATM. The name of the configuration file in the format "FILE=<file name and path>" can be specified in the parameter line. The parameter "NUMBER=<base state number>+<number base state number>+..." can be used to import one or several records. To import records from a specific configuration group, the "ID=<configuration ID>" parameter is used. All parameters are delimited by semicolons. This command is executed in several stages:

- Regardless of whether the ATM is in service mode, it is taken out of service mode.
- The required data is sent to the ATM.
- Use the "Go in service to consumer (STARTUP)" command to return the ATM to service mode.

2.1.4.5 Service Commands to the ATM Controller

2.1.4.5.1 Abort Last Command

Terminate execution of the last command.

2.1.4.5.2 Change Debug Level

Change the debug level; the debug level is specified in the parameter line in the format "LEVEL=<debug level>"; the parameter may have a value from 0 to 9; "LEVEL=0" – debugging is turned off.

2.1.4.5.3 Change Debug Level for ALL ATM

This command is executed for all ATMs in the same way as the "Change Debug Level" command.

2.1.4.5.4 Close Current Operation

Execute emergency closure of the current operation being executed by the ATM.

2.1.4.5.5 Close Vandal Shield

Open the shield on the ATM and **permit** operations on cards.

2.1.4.5.6 EJ Upload Disable

Turn off uploading of the ATM's electronic journal to the host.

2.1.4.5.7 EJ Upload Enable

Turn on uploading of the ATM's electronic journal to the host.

2.1.4.5.8 Network connection closed

Terminate the transport level connection with the ATM.

2.1.4.5.9 Network Status request

Request status of the transport level connection with the ATM.

2.1.4.5.10 Open Vandal Shield

Lower the shield on the ATM and **prohibit** card operations.

2.1.4.5.11 Run ATM self test

Run an internal test on the ATM of all equipment.

2.1.4.5.12 Synchronize database cache

Synchronise the cache of ATM configuration data with the database.

2.1.5 Management Commands for ATM Groups

The processing centre is linked to the ATM network through ATM Controller, the WAY4 component providing online connection.

A list of commands that can be sent to a group of ATMs using the console window (see the second figure Fig. 4 in the section "Changing ATM Status and Managing ATMs") is given below. Management commands will be sent to all ATMs shown in the list of the grid form with information about ATM status

(see the first figure Fig. 1 in the section "ATM Stat") or the grid form of consolidated information about the status of an ATM and its components (see the second figure Fig. 2 in the section "ATM Status").

2.1.5.1 Change Debug Level to GROUP

This command is the same as the "Change Debug Level" command.

2.1.5.2 Decrypt new COMM key with current Master key

This command is the same as the "Decrypt new COMM key with current Master key" command.

2.1.5.3 Decrypt new MAC (TAK) key with current Master

This command is the same as the "Decrypt new MAC (TAK) key with current Master" command.

2.1.5.4 Decrypt new Master (TMK) key with current Master

This command is the same as the "Decrypt new Master (TMK) key with current Master" command.

2.1.5.5 Retrieve Enhanced Supply counts from GROUP

This command is the same as "Retrieve Enhanced Supply counts" command.

2.1.5.6 Load Time and Date from Host to GROUP

This command is the same as "Load Time and Date from Host".

2.1.5.7 Send new Configuration to GROUP

This command is the same as "Send new Configuration to ATM".

2.1.5.8 Send new Financial Institution Table to GROUP

This command is the same as "Send new Financial Institution Table to ATM".

2.1.5.9 Send new Screens to GROUP

This command is the same as "Send new Screens to ATM".

2.1.5.10 Send new States to GROUP

This command is the same as "Send new States to ATM".

2.1.5.11 SHUTDOWN IMMEDIATE FOR GROUP

This command is the same as "Shutdown Immediate".

2.1.5.12 STARTUP FOR GROUP

This command is the same as "STARTUP FOR ALL ATM".

2.2 ATM Hardware

The list of ATM hardware is accessed by selecting the required ATM in the list of the grid form "ATM Monitor – All" ("ATM Status Monitor") (see the first figure Fig. 1 in the section "ATM Stat") and clicking the [Hardware] button.

This command opens the grid form "Hardware for <ATM name>" (see Fig. 7).

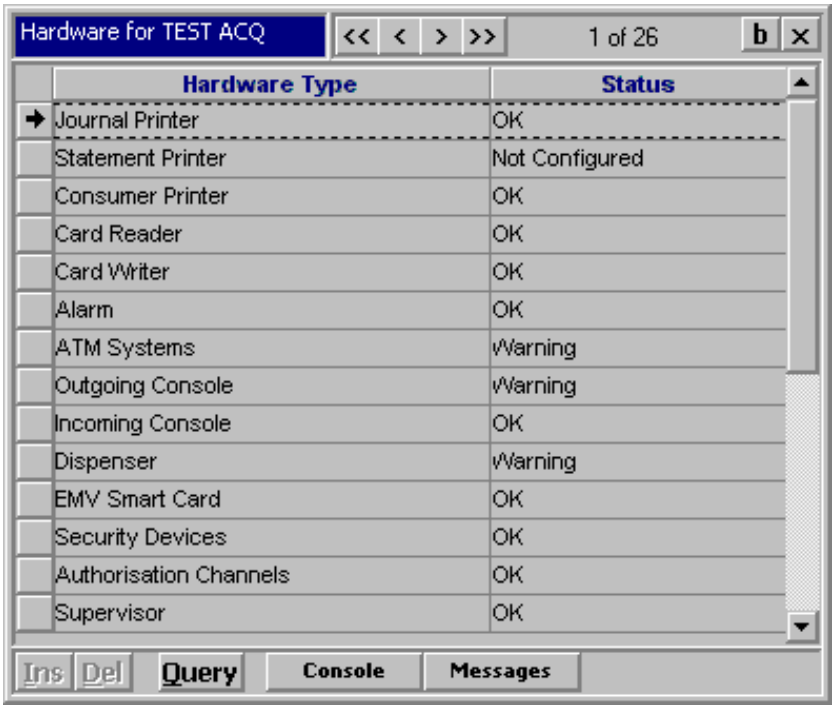


Fig. 7. List of ATM hardware

This grid form may contain the following components:

- *Alarm* – "virtual" component, related to the generation of warnings, for example, when incorrect actions are executed.
- *ATM Controller* – ATM controller.
- *ATM Systems* – components not belonging to other categories.
- *Authorization Channels* – "virtual" component, related to the bankcard authorisation procedure.
- *Cash Acceptor* – cash acceptance device.
- *Card Reader* – device for reading information from bankcards.
- *Card Writer* – device for writing information to bankcards.
- *Cheque Processing Module* – cheque processing device.
- *Coin Dispenser* – coin dispensing device (not supported in the current version of the controller).
- *Consumer Printer* – printer for printing client receipts and mini-statements on card accounts.
- *Contactless Smart Card Reader* – device for reading information from smart cards.
- *Currency Cassettes* – cassettes with banknotes.

- *Depository* – depository to store client correspondence for the bank, for example, client applications, etc.; this device can also be used to transfer cash to replenish card accounts if the bank provides such a service.
- *Digital Camera System* – digital video camera.
- *Dispenser* – cash dispenser.
- *Display* – screen.
- *Document Processing Module* – document processing module.
- *Electronic Data Capture* – device for maintaining an "electronic" ATM journal, similar to that which is printed using Journal Printer.
- *EMV Smart Card* – EMV smart card.
- *Envelope Dispenser* – envelope dispensing device.
- *Envelope Depository* – device for accepting deposit envelopes.
- *Incoming Console* – reserved component.
- *Journal Printer* – printer for printing the ATM journal.
- *Night Safe* – device for accepting deposit bags.
- *Retract Area / Cash Acceptor*, *Retract Area / Dispenser* – "virtual" components related to ATM management when cash is retracted during dispensing and accepting operations. These components can be used to block and unblock the ability to make transactions after retraction, regardless of the state of the ATM's physical components.
- *Statement Printer* – printer for printing card account statements.
- *Outgoing Console* – "virtual" component, related to managing the ATM from the processing centre.
- *Security Devices* – encryption equipment.
- *Sensors* – various types of sensors: movement, heat, opening/closing safe doors, presence or absence of currency cassettes, etc.
- *Supervisor* – "virtual component", related to ATM operator or administrator functions.
- *Vandal Shield* – device for protecting the ATM screen and keypad from vandals.
- *Withdrawal Area* – mechanism for dispensing banknotes to the bank cardholder.

The list of ATM hardware may vary depending on the ATM type.

The status of ATM hardware is shown in the *Status* column of the "Hardware for ..." form. A change in hardware status is even capable of changing the entire ATM status (see "ATM Status") to the "Error" value.

ATM hardware status may change as a result of the ATM's technical malfunction, actions performed by the operator or administrator on the ATM, as well as resulting from the execution of management commands generated using the console (see Fig. 8), opened by clicking the [Console] button.

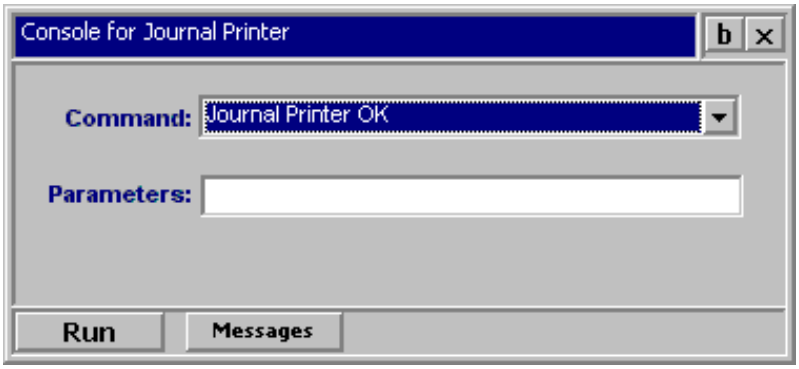


Fig. 8. ATM hardware console window

The *Command* field of this window is used to select management commands from a list. The *Parameters* field allows manual entry of management commands or comments. To execute a command selected from the list, click the [Run] button.

Information on the reasons for a change in ATM hardware status can be obtained using the grid form "Messages for <hardware name>" (see Fig. 9), opened by clicking the [Messages] button in the grid form "Hardware for <ATM name>" (see Fig. 7) or in the window "Console for <hardware name>" (see Fig. 8). This form is the same as the form shown in the first figure Fig. 5 in the section "Messages Generated during ATM Operation".

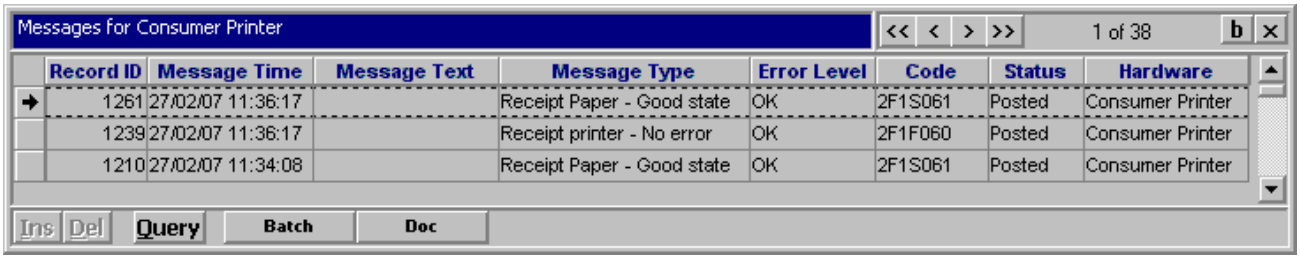


Fig. 9. Messages about changes in ATM hardware status

2.3 ATM Operations

To access the list of ATM operations, select the required ATM in the list of the "ATM Monitor – All" ("ATM Status Monitor") grid form (see the first figure Fig. 1 in the section "ATM Status") and click the [Operations] button.

The "Operations for <ATM name>"grid form will open (see Fig. 10).

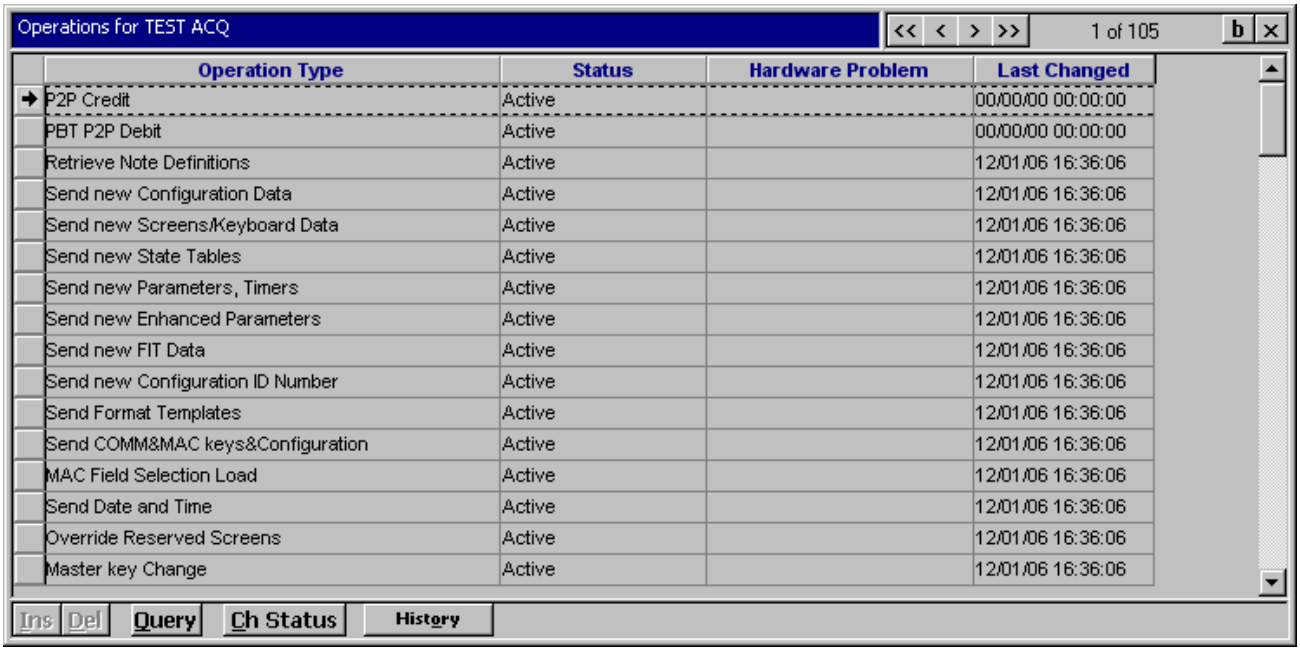


Fig. 10. List of ATM operations

This grid form contains a list of operations. Further, the list of operations separated into groups is provided. Some operations, depending on system Events (see the document "Events"), are used for the execution of system functions. For such operations, after the description of the operation, a list of functions that can be executed with it is given in brackets.

- Basic operations:
- Balance Inquiry with ticket – card account balance request, with printed receipt.
- Balance Inquiry without ticket – card account balance request, without printed receipt.
- Cash Dispense with ticket – cash dispense, with printed receipt.
- Cash Dispense without ticket – cash dispense, without printed receipt.
- Mini-Statement with ticket – print card account mini-statement, with printed receipt.
- Mini-Statement without ticket – print card account mini-statement, without printed receipt.
- Billing operations:
- Bill payment by cash – pay in cash.
- Bill payment with ticket – pay bills and top up mobile accounts in cash, with printed receipt.
- Bill payment without ticket – pay bills and top up mobile accounts in cash, without printed receipt.
- PWC: Cash Dispense (Change) – service operation related to bill payment operations mobile top-up in cash with change.
- PWC: Note Acceptance – service operation related to bill payment and mobile top-up in cash with change.
- PWC: Payment with Change – bill payment and mobile top-up in cash with change.
- PWC: Rounding – service operation related to bill payment and mobile top-up in cash with change.
- Service operations:
- ATM Service with ticket – notification of processing centre that ATM maintenance has been performed, with printed receipt.
- ATM Service without ticket – notification of processing centre that ATM maintenance has been performed, without printed receipt.
- Collection with ticket – cash acceptance module collection, with printed receipt.
- Collection without ticket – cash acceptance module collection, without printed receipt.
- End of Day with ticket – ATM balance settlement, with printed receipt.
- End of Day without ticket – ATM balance settlement, without printed receipt.
- Replenishment with ticket – collection, with printed receipt.
- Replenishment without ticket – collection, without printed receipt
- Additional operations:
- Card Control Request with ticket –card account management operations (Activate/Deactivate SMS-Banking, Cheque Book Request, Statement Request, Close Deposit, PIN Unblock, Activate Supplementary Card (Unlock plastic), Block/Unblock Supplementary Card, Pickup Lost/Stolen Supplementary Card, Set Supplementary Card Usages), with printed receipt.
- Card Control Request without ticket –card account management operations (Activate/Deactivate SMS-Banking, Cheque Book Request, Statement Request, Close Deposit, PIN Unblock, Activate Supplementary Card (Unlock plastic), Block/Unblock Supplementary Card, Pickup Lost/Stolen Supplementary Card, Set Supplementary Card Usages), without printed receipt.

- Card Service Request with ticket – card account service (One-Time Passwords List generation, Web Bank User and Password generation, MIDlet Enrollment, Serial Number and keys generation, 3-D Secure Enrollment: Password generation for 3-D Secure program), with printed receipt.
- Card Service Request without ticket – card account service (One-Time Passwords List generation, Web Bank User and Password generation, MIDlet Enrollment, Serial Number and keys generation, 3-D Secure Enrollment: Password generation for 3-D Secure program), without printed receipt.
- CE: Cash Dispense – service operation related to FX operations.
- CE: Cash Dispense (Change) – service operation related to FX operations.
- CE: Conversion – service operation related to FX operations.
- CE: Currency Exchange – currency exchange.
- CE: Rounding – service operation related to FX operations.
- Code for Cash with ticket – generation of code for issuing cash without a card, with printed receipt.
- Code for Cash without ticket – generation of code for issuing cash without a card, without printed receipt.
- Deposit with ticket – acceptance of deposit, with printed receipt.
- Funds Transfer with ticket – account-to-account fund transfer operations, for example, utilities payments, with printed receipt.
- Funds Transfer without ticket – account-to-account fund transfer operations, for example, utilities payments, without printed receipt.
- P2P by Cash with Ticket – cash transfer by one individual to another with verification of the payment sender's card data (with printed receipt).
- P2P by Cash without Ticket – cash transfer by one individual to another with verification of the payment sender's card data (without printed receipt).
- P2P with ticket – transfer of funds from the card of one individual to the card of another with printed receipt.
- P2P without ticket– transfer of funds from the card of one individual to the card of another, without printed receipt.
- Personal Menu with ticket – individual operations using WAY4 Universe functionality (with printed receipt).
- Personal Menu without ticket – individual operations using WAY4 Universe functionality (without printed receipt).
- PIN Change with ticket – PIN change (Online PIN, EMV Offline PIN), with printed receipt.
- PIN Change without ticket – PIN change, without printed receipt.
- Note Acceptance with ticket – operations for cash replenishment of a card account (On-Us, Cash to any Visa, MasterCard MoneySend, CUP Money Express Service), with printed receipt.
- Note Acceptance without ticket – operations for cash replenishment of a card account (On-Us, Cash to any Visa, MasterCard MoneySend, CUP Money Express Service), without printed receipt.
- Technical operations for terminal maintenance:
- In Supervisor Mode – transfer to ATM operator mode.
- Out-of-service – take ATM out of service
- Retrieve CashIn Supply Counters – request for cash-in counter values.
- Retrieve date and time information – request information on the set date and time.
- Retrieve Note Definitions – request cash-in module settings.

- Retrieve Wincor CashIn Info – request cash-in status for Wincor ATMs.
- Send Date and Time – import date and time values.
- Technical operations for importing configuration data:
- MAC Field Selection Load – import data on encrypted message fields.
- Override Reserved Screens – overwrite reserved ATM screens.
- Send Format Templates – import templates for entering data on the ATM screen.
- Send new Configuration Data – import new configuration data to the ATM.
- Send new Configuration ID Number – import new configuration ID number.
- Send new Enhanced Parameters – import new values of enhanced parameters and timers.
- Send new FIT Data – import new financial institution tables.
- Send new Parameters, Timers – import new configuration parameters and timers.
- Send new Screens/Keyboard Data – import new screen and keyboard configuration data.
- Send new State Tables – import new basic ATM state tables.
- Technical operations for importing configuration data to support EMV card service:
- Send EMV DDC Parameters – import EMV parameters.
- Send ICC Currency Data Table – import currency data from the controller to the ATM.
- Send ICC Language Support Table – import the table of supported languages from the controller to the ATM.
- Send ICC Terminal AIDs Table – import the table of application IDs from the controller to the ATM.
- Send ICC Terminal Data Object Table – import the table of basic settings from the controller to the ATM.
- Send ICC Transaction Data Table – Import static settings for transactions from the controller to the ATM.
- Operations for importing the electronic journal:
- EJ Upload Enable – an operation for turning on the mode to import the ATMs electronic journal to the host.
- Classic (DES) Key Management operations:
- COMM key under COMM key Change – change the terminal PIN key; the new PIN key is sent to the ATM encrypted under the current PIN key.
- COMM key under Master Change – change the terminal PIN key (TPK); the new PIN key is sent to the ATM encrypted under the current master key.
- MAC key under COMM key Change – change the electronic signature key (TAK); the new electronic signature key is sent to the ATM encrypted under the current PIN key.
- MAC key under Master key Change – change the electronic signature key (TAK); the new electronic signature key is sent to the ATM encrypted under the current master key.
- Master key Change – change the ATM's master key (TMK); the new master key is sent to the ATM encrypted under the current master key.
- Request current key entry mode – request information on the mode for importing encryption keys:
- Send COMM & MAC keys – change the terminal PIN key and the electronic signature key; the keys are sent to the ATM encrypted under the current master key.

- Send COMM & MAC keys & Config_ID – change the terminal PIN key and the electronic signature key, import a new configuration ID; the keys are sent to the ATM encrypted under the current master key.
- Send COMM & MAC keys & Configuration – change the terminal PIN key, change the electronic signature key and import new ATM configuration data; the keys are sent to the ATM encrypted under the current master key.
- Set B-key as current COMM key – set the value from the ATM's "B" cell as the terminal PIN key.
- Set B-key as current MAC key – set the value from the ATM's "B" cell as the electronic signature key.
- RKL operations – Remote Key Loading (RSA Key Management):
- Delete Host public key – delete the host public key.
- Load initial A-key with RSA key – load the A key, encrypted under the RSA key, to the ATM's EPP keypad.
- Load initial B-key with RSA key – load the B key, encrypted under the RSA key, to the ATM's EPP keypad.
- Request EPP public key – request the ATM's public key.
- Request EPP public key certificate – request the ATM's public key certificate.
- Request EPP serial number – request the EPP keypad serial number.
- Request EPP signature public key certificate – request the certificate with the public key used to verify messages sent by the ATM.
- Request random number – request a random number.
- Send Host Certificate – load the host certificate into the ATM EPP keypad.
- Send new Host public key – load the new host key into the ATM.
- Send new PKCS #7 encoded A-key – load the A key in PKCS #7 format, encrypted under the RSA key, to the ATM's EPP keypad.
- Send new PKCS #7 encoded B-key – load the B key in PKCS #7 format, encrypted under the RSA key, to the ATM's EPP keypad.

The table with the list of operations also contains columns with operation status (*Status*), the date and time of the last status change (*Last Changed*) and the name of the hardware due to which execution of an operation is impossible (*Hardware Problem*).

WAY4 uses the following values for ATM operation statuses:

- *Active* – the operation can be executed.
- *Inactive* – the operation cannot be executed due to the unavailability of the corresponding ATM hardware; in this case, the name of the hardware preventing execution of the operation is specified in the *Hardware Problem* column (see "ATM Hardware"). This status is only assigned automatically, it cannot be assigned by clicking the [Ch Status] button
- *Closed* – the operation is declined according to a command from the processing centre.

The current status of an operation can be changed by clicking the [Ch Status] button of the "Operations for <ATM name>" grid form (see Fig. 10). When this button is clicked, a message will appear about the change in operation status (see Fig. 11), and the operation status changes from the "Active" or "Inactive" value to "Closed", and vice-versa.

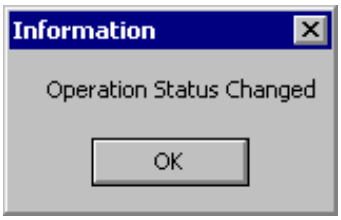


Fig. 11. Message that operation status has changed

If it is necessary to prohibit a particular operation on an ATM, the operation can be declined from the processing centre.

When the status of an operation changes, the ATM status value will become "Information".

2.4 Currency Cassette Status

The grid form "Cassettes for <ATM name>" (see Fig. 12) is opened by clicking the [Cassettes] button after selecting the row corresponding to the required ATM in the higher-ranking form "ATM Monitor – All" ("ATM Status Monitor") (see the first figure Fig. 1 in the section "ATM Stat").

> Note that in this form, several table rows with different values in the *Subtype* field can be shown for one cassette. Thereby, for example, for cash dispensing a more detailed account is maintained of banknotes dispensed, rejected during dispensing, or dispensed but left by cardholders.

Cassettes for TEST ACQ — 9 of 10

Cycle Type	Key Value	Direction	Item Type	Position	Name	Mapped To	Subtype	Currency	Denomination	Limit	Status	Loaded	Loaded Amount	Dispensed	Disp Amount	Checked
Cash-In	CBNTEST2	Credit	Banknote	0	TEST2	3		EUR	100,00	40	OK	0	0,00	0	0,00	0
Cash-Out Coin	DCP1	Debit	Coin	1	5			RUR	0,10	20	OK	0	0,00	0	0,00	0
Cash-Out Coin	DCP2	Debit	Coin	2	5			RUR	0,10	20	OK	0	0,00	0	0,00	0
Cash-Out Coin	DCP3	Debit	Coin	3	5			RUR	0,10	20	OK	0	0,00	0	0,00	0
Cash-Out Coin	DCP4	Debit	Coin	4	5			RUR	0,10	20	OK	0	0,00	0	0,00	0
Cash-In	CBNAA	Credit	Banknote	0	AA			RUR	100,00	0	OK	0	0,00	0	0,00	0
Cash-In	CBNAB	Credit	Banknote	0	AB			RUR	50,00	0	OK	0	0,00	0	0,00	0
Cash-In Coin	CNTEST_C	Credit	Banknote	0	TEST_C			RUR	10,00	0	OK	0	0,00	-2	-20,00	-2
→ Cash-In	CBNTEST1	Credit	Banknote	0	TEST1			USD	10,00	0	OK	0	0,00	0	0,00	0
Cash-In Coin	CNTEST_D	Credit	Coin	0	TEST_D			RUR	0,10	0	OK	0	0,00	-2	-0,20	-2
												0		-4		-4

Ins Del Query Status Console Dispense

Fig. 12. Grid form with information on ATM currency cassette status

This form contains the following columns:

- *Cycle Type* – financial cycle type, that is, the cassette type (for dispensing banknotes, accepting banknotes etc.).
- *Key Value* – identifier of the denomination of banknotes accepted by the ATM.
- *Direction* – direction of banknotes, dispensing (Debit) or accepting (Credit).
- *Item Type* – cassette content type: banknotes or coins (working with coins is not supported in the current version of the controller).
- *Position* – cassette position in the ATM.
- *Name* – cassette name; for the "NDC/NDC+" protocol, the numbers "1", "2", "3", "4", "5", "6", "7" are used.

- *Mapped To* – field reserved for use in future versions.
- *Subtype* – record subtype; this field makes it possible to provide detail for operations with this cassette; for example, three rows can correspond to a cassette for dispensing cash:
- With an empty *Subtype* field – row for recording dispensed banknotes.
- With the "Retracted" value in the *Subtype* field – row for recording banknotes dispensed from the cassette but left in the ATM by cardholders; these banknotes are put in a special section of the ATM.
- With the "Diverted" value – row for recording banknotes rejected by the ATM when dispensing.
- *Currency* – currency of banknotes loaded in the cassette.
- *Denomination* – denomination of banknotes loaded in the cassette.
- *Limit* – a number containing from 1 to 6 digits, that is used to set the maximum number of banknotes dispensed from the cassette in one operation (two lowest-order digits) and to generate rules for completing a set of banknotes from different cassettes when dispensing the required amount (higher orders).
- *Status* – cassette status.
- *Loaded* – number of banknotes loaded in the cassette during collection according to host data (this field contains a value specified by the collector when executing a service operation or by the operator through the cassette management console).
- *Loaded Amount* – amount of loaded banknotes according to their denomination.
- *Disp Amount* – amount of dispensed banknotes according to their denomination.

> Note that the values of the aforementioned fields are only appropriate for cassette main records (with an empty *Subtype* field). For additional cassette records (used for detailed recording of banknotes rejected when dispensing and of those dispensed but left by cardholders) only the *Dispensed* and *Checked* fields are used, the remaining values are copied from the cassette's main record or may be empty.

- *Dispensed* – the number of dispensed banknotes. Note that in the *Dispensed* column, the rows of total contains the amount for all table rows; that is, the amount in its total monetary expression without distinguishing between cassette currencies.
- *Checked* – a field containing information sent by the ATM about cassette contents.

The last row of the "Cassettes for <ATM name>" form contains summary information on the *Loaded*, *Dispensed* and *Checked* fields.

Based on information about ATM cassette status, a decision is made in the monitoring process on whether a collector should be called to load/unload cash.

The grid form "Cassettes for <ATM name>" makes it possible for the operator monitoring the ATM to change cassette status; in particular, prohibiting dispensing banknotes from the cassette.

The form "Set Cassette Status" (see Fig. 13) opened by clicking the [Status] button is used to change cassette status.

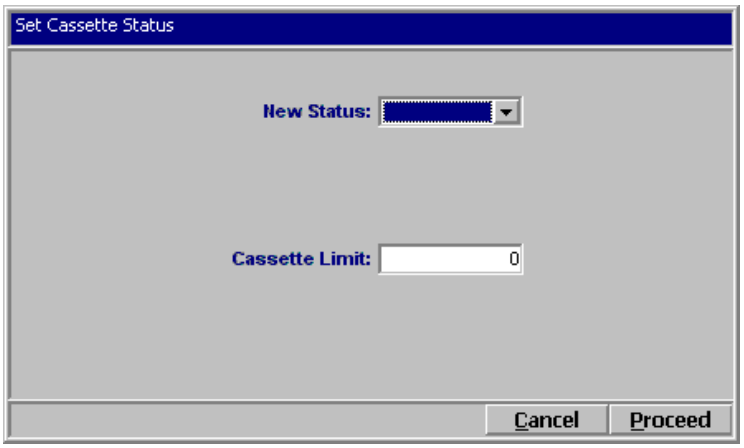


Fig. 13. Form for changing cassette status and parameters

This form makes it possible to change cassette status by selecting the required value from a drop-down list in the *Status* field. The *Cassette Limit* field makes it possible to change the value of the maximum number of banknotes dispensed from the cassette for one operation and the rules for completing a set of banknotes from different cassettes when dispensing the required amount.

After setting the required values in the "Set Cassette Status" form, click the [Proceed] button; to cancel the operation, click [Cancel].

The [Console] button of the "Cassettes for <ATM name>" form opens the "Console for ..." form (see Fig. 14), that can be used by the operator to manually manage the state of the ATM cassette counters on the host.

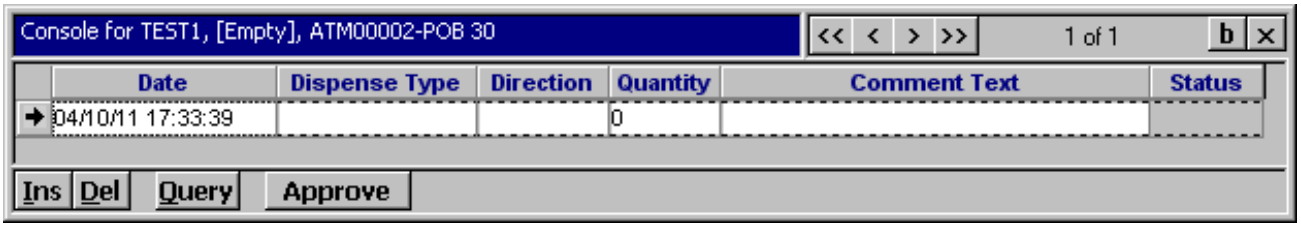


Fig. 14. Form for managing the state of cassette counters

To change the contents of ATM cassette counters, click the [Ins] button to add a row to this table. Then, in the *Dispense Type* field, select the type of operation with the counter (dispensing, loading, etc.), the type of counter in the *Direction* field (counter for dispensed banknotes, for those rejected during dispensing, etc.) and in the *Quantity* field, specify the number of banknotes. After setting command parameters, click the [Approve] button.

The [Dispense] button of the "Cassettes for <ATM name>" opens the "Dispense for ..." form (see Fig. 15).

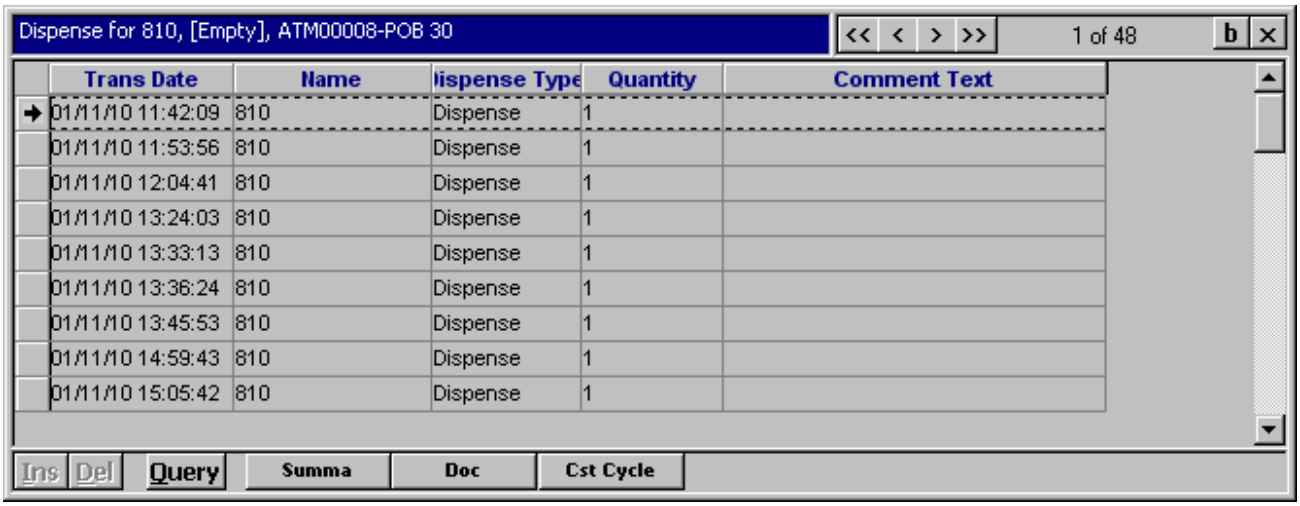


Fig. 15. Changing cassette counters

This form contains information about changes in ATM cassette counters on the host, for example, as a result of dispensing cash or according to information sent by the ATM.

This form's [Summa] button opens a form with information about the state of cassette counters.

The [Doc] button opens a form with information about a financial document if the change in cassette counters was accompanied by the generation of a financial document. A financial document is generated, for example, when counters change as a result of dispensing cash, while loading banknotes into a cassette, for example, may not be accompanied by generation of a document.

> Messages received from a terminal after a message that generated a document (for example, service messages) will be linked with the last created document.

The [Cst Cycle] button opens a form with information about ATM cassette status when the corresponding financial period was closed.

2.4.1 Special Forms for Working with Cassettes

To ensure compatibility with previous system versions, where the concept of cassette record sub-types was not used and the state of each cassette was shown in one row in the corresponding form, special forms are used.

These forms (see Fig. 16) are opened from the "ATM Monitor – All" ("ATM Status Monitor") form (see the first figure Fig. 1 in the section "ATM Stat") by clicking the [Cash Out] button for cash dispensing or the [Cash In] button for cash acceptance.

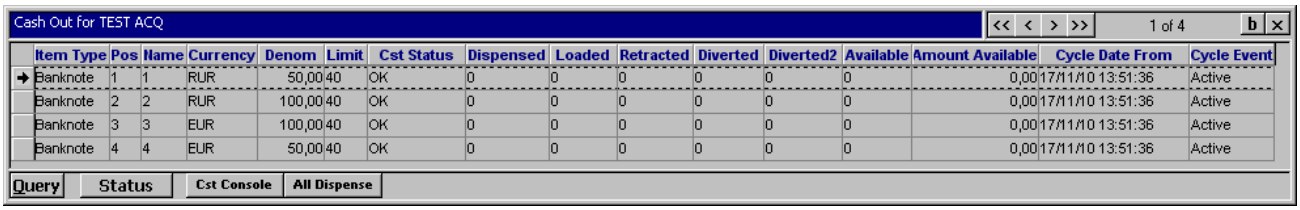


Fig. 16. Information about a cash-out cassette

This form contains the following fields:

- *Item Type* – field to specify the cassette content type; banknotes or coins (working with coins is not supported in the current version of the controller).
- *Pos* – cassette position in the ATM.
- *Name* – cassette name; the numbers "1", "2", "3", "4", "5", "6", "7" are used.
- *Currency* – the currency of banknotes loaded in the cassette.
- *Denom* – the denomination of banknotes loaded in the cassette.
- *Limit* – a number containing from 1 to 6 digits, that is used to set the maximum number of banknotes or coins dispensed from the cassette in one operation (two lowest-order digits) and to generate rules for completing a set of banknote or coins from different cassettes when dispensing the required amount (higher orders).
- *Cst Status* – cassette status.
- *Dispensed* – the number of banknotes dispensed from the cassette.
- *Loaded* – number of banknotes loaded in the cassette during collection.
- *Retracted* – number of banknotes dispensed from the cassette, but left in the ATM by cardholders; these banknotes are put in a special section of the ATM.
- *Diverted* – counter for the number of banknotes set aside or rejected by the ATM as a result of capturing several banknotes stuck together or repeat selection of banknotes during the ATM's interaction with the client (ATM user). The range of values is from 00000 to 65535;
- *Diverted2* – counter for the number of banknotes set aside or rejected by the ATM during execution of ATM administration test procedures or resulting from a command sent from the host.
- *Amount Available* – amount available for dispensing from the cassette; calculated as follows: the value in the *Loaded* field minus the sum of the values in the *Retracted, Diverted* and *Dispensed* fields.
- *Cycle Date From* – financial cycle start date and time.
- *Cycle Event* – financial cycle status (active or closed).

This form contains management buttons [Cst Console] and [All Dispense], used to access forms with information about the state of ATM cassettes when the corresponding financial period is closed, and about changes in ATM cassette counters on the host (see "Currency Cassette Status").

2.5 Working with Financial Cycles

An ATM financial cycle is the time interval between two operations for collecting one type of cassette. A financial cycle is the basis for accounting for operations on the device. Therefore, depending on an ATM's functions, it can have various financial cycles, related to cash dispensing, cash acceptance, etc. To separate financial cycles according to the cassette types (or operations on the ATM) to which they belong, WAY4 uses the concept of financial cycle types.

2.5.1 Financial Cycle Types

A financial cycle type is used to distinguish between financial cycles belonging to various ATM cassette types.

The form "Cycle Types for <ATM name>" (see Fig. 17) is used to access the list of financial cycle types. This form is opened from the higher-ranking form "ATM Monitor – All" ("ATM Status Monitor") (see the first figure Fig. 1 in the section "ATM Stat") by clicking the [Curr Cycles] button after selecting the row corresponding to the required ATM.

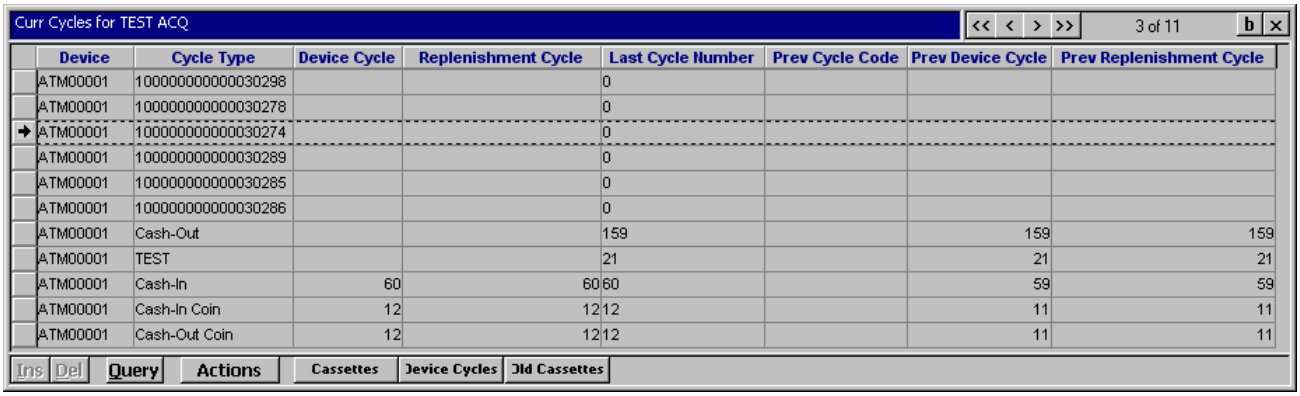


Fig. 17. ATM financial cycle types

This form contains the following fields:

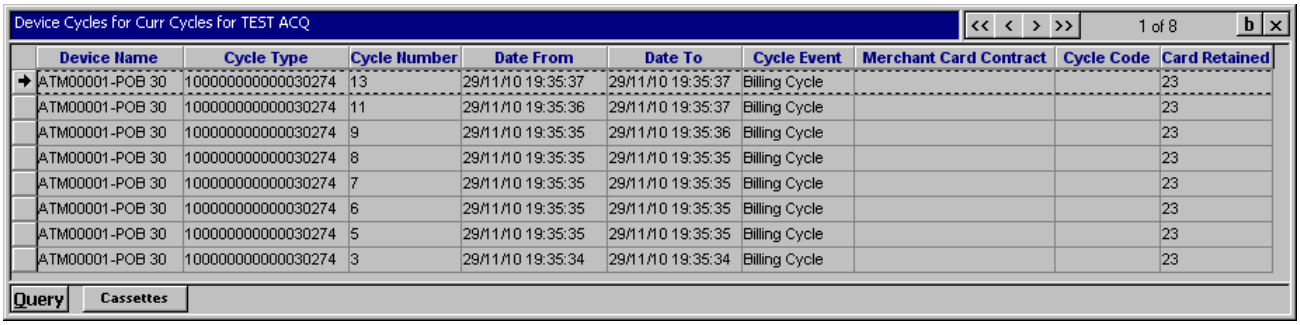
- *Device* – ATM name.
- *Cycle Type* – financial cycle type, for example, "Cash-Out" is the cycle related to cassettes for dispensing banknotes, "Cash-In" is the cycle related to cassettes for accepting banknotes, etc.
- *Device Cycle* – current cycle number.
- *Replenishment Cycle* – number of the active financial cycle; in the absence of active cycles, this field is left empty.
- *Last Cycle Number* – the last number assigned to a financial cycle; corresponds to the number of the active financial cycle if there is one.
- *Prev Cycle Code* – this field is not used for ATMs.
- *Prev Device Cycle* – this field is not used for ATMs.
- *Prev Replenishment Cycle* – this field is not used for ATMs.

This form contains the following management buttons:

- The [Actions] button is used to open a context menu containing the following items:
- [Close Cycle] – close the financial cycle (see the section "Closing Financial Cycles").
- [Reset Code] – this context menu item is not used for working with ATMs.
- [Cassettes] – button for accessing the form with information about the state of the corresponding type of cassettes.
- [Device Cycles] – button for accessing information about the history of financial cycles of the corresponding type (see "Financial Cycles").
- [Old Cassettes] – old form for working with cassettes. This form remains for compatibility with previous versions.

2.5.2 Financial Cycles

The "Device Cycles for <name of financial cycle type>" form (see Fig. 18) contains information about the history of financial cycles of the corresponding type. This form is opened from the "Curr Cycles for <ATM name>" form (see the figure Fig. 17 in the section "Financial Cycle Types") for the required cycle type by clicking the [Device Cycles] button.



Device Name	Cycle Type	Cycle Number	Date From	Date To	Cycle Event	Merchant Card Contract	Cycle Code	Card Retained
ATM00001-POB 30	100000000000030274	13	29/11/10 19:35:37	29/11/10 19:35:37	Billing Cycle			23
ATM00001-POB 30	100000000000030274	11	29/11/10 19:35:36	29/11/10 19:35:37	Billing Cycle			23
ATM00001-POB 30	100000000000030274	9	29/11/10 19:35:35	29/11/10 19:35:36	Billing Cycle			23
ATM00001-POB 30	100000000000030274	8	29/11/10 19:35:35	29/11/10 19:35:35	Billing Cycle			23
ATM00001-POB 30	100000000000030274	7	29/11/10 19:35:35	29/11/10 19:35:35	Billing Cycle			23
ATM00001-POB 30	100000000000030274	6	29/11/10 19:35:35	29/11/10 19:35:35	Billing Cycle			23
ATM00001-POB 30	100000000000030274	5	29/11/10 19:35:35	29/11/10 19:35:35	Billing Cycle			23
ATM00001-POB 30	100000000000030274	3	29/11/10 19:35:34	29/11/10 19:35:34	Billing Cycle			23

Fig. 18. Grid form with information on ATM financial cycles

The rows of this table correspond to the corresponding type of financial cycle, and the columns contain the following information:

- *Device Name* – ATM name.
- *Cycle Type* – financial cycle type.
- *Cycle Number* – financial cycle sequence number.
- *Date From* – financial cycle start date and time.
- *Date To* – financial cycle end date and time; for a current cycle, this field contains a null value.
- *Cycle Event* – financial cycle status (active or closed).
- *Merchant Card Contract* – collector's service card number.
- *Cycle Code* – conditional cycle code.
- *Card Retained* – number of bankcards withheld by the ATM in the course of a financial cycle.

The [Cassettes] button is used to open a form with information about the state of ATM cassettes when the corresponding financial cycle is closed.

2.5.3 Closing Financial Cycles

A financial cycle for an ATM is closed manually or in the collection process when the collector performs the corresponding service operation (see the section "ATM Operations"). The following service operations can be used during collection:

- "Replenishment with ticket" or "Replenishment without ticket" – to close a financial cycle for cash dispensing operations.
- "Collection with ticket" or "Collection without ticket" – to close a financial cycle for cash acceptance operations.

If a connection with the acquiring bank (processing centre) was absent during ATM collection, the financial cycle should be closed manually.

To close a financial cycle, having selected the required ATM in the "ATM Monitor – All" ("ATM Status Monitor") grid form (see the first figure Fig. 1 in the section "ATM Stat"), click the [Cycle Types] button. This command opens the "Curr Cycles for <ATM name>" form (see Fig. 17 in the section "Financial Cycle

Types"). In this form, select the required financial cycle type and click the [Actions] button, after which select the "Close Cycle" context menu item.

The "Cycle Event" form will be displayed (see Fig. 19).

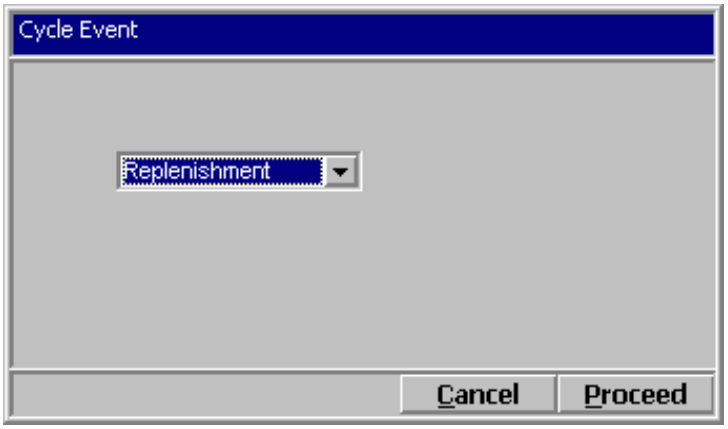


Fig. 19. Form for closing an ATM financial cycle

To close a financial cycle, in the drop-down list of this form's field select the "Replenishment" value and click the [Proceed] button.

When a financial cycle has been closed, an "Information" window (see Fig. 20) with the corresponding message will be displayed.

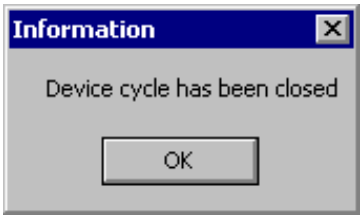


Fig. 20. Message that an ATM financial cycle has been closed

After closing the financial cycle, manually send the ATM the management command "Go in service to consumer (STARTUP)" (see. "Changing ATM Status and Managing ATMs") to activate cassettes.