



QUIK two-factor authentication

User's manual

Version 16.2

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1. QUIK two-factor authentication

Two-factor authentication is an additional layer of security used to prevent unauthorized access to the user's terminal. Unauthorized access can occur because of losing or stealing access keys and cause financial loss to user.

With two-factor authentication, a user is required to enter not only the standard parameters (name and password for secret key protection), but to have an access password (hereinafter referred as PASSWORD) that is received via a communication channel secured from a hacker. A PASSWORD may be received:

- via SMS that is sent to the mobile phone number that was specified by the user;
- via e-mail that are sent to the address that was specified by the user;
- directly from the broker organization employee (hereinafter referred as BROKER) who serves the user (for example, by phone).

A new PASSWORD needs to be entered when a user tries to establish connection from the device which was not used for connection establishing before (potentially key and password stealing can take place). To detect such a situation QUIK server identifies and saves parameters of each user connection on the basis of new two-factor authentication scheme and when connection parameter change is suspected it requests PASSWORD. The PASSWORD is sent to the user only by means of a preliminary selected communication channel.

2. Configuration of QUIK two-factor authentication

2.1 quik.ini settings

Open the **quik.ini** file from QUIK\Server\ directory with the QUIK server settings to edit.

Set up the following parameters in sections:

2.1.1 [mail] section

- **FromAddress** – sender address of the e-mails on two-factor authentication and password recovering.

2.1.2 [mobile_terminals] section

- **System** – operation system of mobile terminals. Value by default: Android,iPhone. Two-factor authentication with sending PIN code at the moment of connection to QUIK server is available to be configured for mobile devices. When receiving the parameter value that contains one of strings of the setting, server identifies the mobile terminal and requests a PIN code only after the terminal's operating rights have been fully verified.



2.1.3 [quik_auth] section

Two-factor authentication parameters

- **retry** – number of attempts to enter PIN. If the attempts to enter the PIN code for two-factor authentication are exhausted, the user will be disconnected from the server without blocking user. Value by default: 0 (number of attempts is not restricted). Parameter filling is obligatory.
- **Quik_Auth_Wait_TMO** – time out while waiting for user to enter PIN in seconds. Value by default: 75.
- **BlockTypeOnUnsuccessAuth** – type of blocking on entering wrong authentication password the specified quantity of times. Valid values:
 - _ 0 – not block;
 - _ 1 (by default) – block user for the time specified in settings;
 - _ 2 – reset user password.

The setting is used if the [UnsuccessAuthMaxAttempts](#) setting contains a value different from 0.

Common parameter

- **PinCodeDefaultTransport** – PIN delivery method. Valid values:
 - _ sms (by default);
 - _ email;
 - _ no – both methods are used.

If the selected method is not available, then the server uses the alternative channel if one is available.

For example, the user only has an email address (no phone number) and the following is used:

```
PinCodeDefaultTransport = sms
```

Then PIN is sent to the user by email.

Password retrieval parameters

- **RetrievePassword** – password recovering mode. Valid values:
 - _ 0 (by default) – disabled;
 - _ 1 – enabled.

If authentication by login and password is not used or two-factor authentication is disabled at server then the mode is disabled disregarding the parameter value.

- **RetrievePasswordOnLockedUsers** – password recovering mode to blocked users. Valid values:
 - _ 0 (by default) – disabled;



- _ 1 – enabled.
- **RetrievePasswordOnTerminalTypes** – the list of terminal types (separated by "|") for which password recovery is allowed. Valid values:
 - _ ALL (by default) – all terminal types. If this code is selected, all other codes are ignored;
 - _ DESKTOP – QUIK Workstation;
 - _ IQUIKX – iQUIK X Workstation;
 - _ QUIKANDROIDX – QUIK Android X Workstation;
 - _ WEBQUIK – webQUIK Workstation.
- **UseEmailOnRetrievePassword** – send password by e-mail for recovery. Valid values:
 - _ 0 – disabled. Password is sent by SMS. Only when SMS is used as a second authorization factor;
 - _ 1 (by default) – enabled.
- **SendMsgOnChangePassword** – send notification on password change if the two-factor authentication is enabled. Valid values:
 - _ 0 – do not send;
 - _ 1 (by default) – send.

For security reasons, disabling password change notifications is not recommended.

- **NewRetrieveCodeTimeOut** – comma separated list of time intervals before new confirmation code is requested. Intervals are specified in seconds. The 0 value means that new code can be requested immediately. Number of values in the list stands for the quantity of new confirmation code request attempts. For example, the value "0, 60, 120, 240" means that the user can request a new confirmation code four times exclusive of the code that is sent automatically. At this the first code can be requested immediately, the next one in a minute, and others in two and four minutes. Value by default: 0, 0, 0, 0, 0 (five new code requests without waiting).
- **NewRetrieveCodeMaxAttempts** – maximum quantity of attempts to enter the confirmation code. Value by default: 0 – attempts quantity is unlimited.
- **RetrieveCodeProcessingTimeOut** – maximum timeout in seconds of reply after the confirmation code is sent. Value by default: 0 (unlimited).
- **TemporaryPasswordLength** – length of the temporary password for authentication by login and password. Integer from 8 to 32. If a number that is not included in the interval is specified then the nearest interval bound is used. Value by default: 8.
- **TemporaryPasswordSymbols** – list of symbol sets that are allowed to be in a temporary password. Values in the list are separated by '|'. Valid values:
 - _ Number – digits (0-9);
 - _ Lowercase – lowercase letters (a-z);



- _ Uppercase – uppercase letters (A-Z);
- _ Underline – “_”;
- _ Minus – “-”;
- _ Space – “ ”.

At least one of the following values is required: Number, Lowercase, Uppercase. Value by default: Lowercase|Number.

- **TemporaryPasswordMaxAttempts** – maximum quantity of attempts to recover password per day. Value by default: 0 (unlimited).
- **TemporaryPasswordValidityPeriod** – temporary password validity period in minutes. Value by default: 0 (the password validity period is the same as the validity period of the permanent password). Maximum value: 1440.
- **AddInfoOnRetrievePassword** – type of additional data required for password recovery process start. Valid values:
 - _ 0 – is not requested;
 - _ 1 – email for two-factor authentication;
 - _ 2 – phone number for two-factor authentication;
 Value by default:
 - _ 1 (email), if [UseEmailOnRetrievePassword=1](#);
 - _ 0 (is not requested), if [UseEmailOnRetrievePassword=0](#)).
- **CheckLastDigitsInPhoneNumber** – quantity of the last digits of phone number to be checked for coincidence. Is used if phone number is requested as additional information ([AddInfoOnRetrievePassword=2](#)). The zero value stands for full number checking for coincidence. Value by default: 10.
- **UnsuccessAuthMaxAttempts** – maximum quantity of authentication attempts in a trading session. The zero value means no restrictions for attempts quantity. Value by default: 10.
- **AlertOnUnsuccessAuth** – user notification of entering wrong authentication data the specified quantity of times. Valid values:
 - _ 0 – not notify;
 - _ 1 (by default) – notify.

The setting is used if the [UnsuccessAuthMaxAttempts](#) setting contains a value different from 0.

- **BlockPeriodOnUnsuccessAuth** – time in seconds of blocking user on entering wrong authentication data the specified quantity of times. Value by default: 10.

The setting is used if [BlockTypeOnUnsuccessAuth=1](#).

- **Template<Language><Code of template type>FileName** – path to the file with the template of message on password recovery or with the code for two-factor authentication. For each template type a separate template file is to be created. Template texts can contain actions (for details see [Appendix](#)).



Where:

- **<Language>** – message language. Valid values:
 - Ru – Russian;
 - En – English;
 - Def – language is not defined. Can be used for templates of the 2ndFactorAuthSubject and 2ndFactorAuthText types.
- **<Code of template type>** – message type. Valid values:

Templates of the texts to be used for the password recovery procedure:

 - **RetrievingNotSupported** – the text which is displayed if in the current configuration the QUIK server does not support the password recovery procedure for all users or for the current user.
 - **MaxRetrievingAttempts** – the text which is displayed when a user tries to restore password, if the number of attempts is exceeded.
 - **UserUnknown** – the text which is displayed if a user entered wrong login or e-mail for password recovery request.
 - **UnknownError** – the text which is displayed if the Alert dispatch module is unavailable or if any other error of sending an SMS occurs.
 - **IncorrectCode** – the text which is displayed if the user entered wrong code for password recovery confirmation.
 - **TooMuchErrorsForCode** – the text which is displayed if the number of attempts to enter confirmation code is exceeded.
 - **TooMuchErrors** – the text which is displayed if many errors occurred on new password request.
 - **RetrievingInfo** – the text which is displayed in the **User identification** dialog box. This text is displayed in the dialog box for entering login and e-mail. The length is less than or equal to 700 symbols. The text can be unspecified (in this case the text is not displayed).
 - **InfoDescription** – link to the password recovering rules. Is displayed in the **User identification** dialog box. The length is less than or equal to 100 symbols. The text can be unspecified (in this case the text is not displayed).
 - **InfoText** – text of the password recovering rules. Is displayed on clicking the link in the **User identification** dialog box. The length is less than or equal to 4 kByte. Text format: standard (plain text). Is required if **InfoDescription** is specified.
 - **WaitForCode** – text of the message which informs that the code for confirmation of the new password creation procedure was sent to the user. Is displayed in the **Password recovery confirmation** dialog box and in the notification which is displayed on clicking the **Send new password** button.
 - **PasswordSent** – text of the message which informs that a new password was created and sent by e-mail.
 - **AddInfoTitle** – additional field name.



- **BlockOnUnsuccseccAuth** – notification text that is displayed when user account is blocked as a result of entering wrong authentication data the specified quantity of times.

Templates of password change notifications:

- **PasswordChangedSubject** – email subject of a password change notification;
- **PasswordChangedText** – text of a password change notification. It is sent using the method selected for sending the second factor for the QUIK two-factor authentication.

If templates are not configured while the [SendMsgOnChangePassword](#) setting is set, the following default notification is sent on password change: "Password has been changed. The previous password is no more valid".

Templates of the texts (also in form of link to the file with the template text) to be sent to the users by SMS and e-mail:

- **Code** – text of the message with the confirmation code. It is sent with the one-time confirmation code which is used to start the password recovery procedure. It is sent using the method selected for sending the second factor for the QUIK two-factor authentication (usually by SMS). The length is less than or equal to 280 symbols (4 SMS).
- **NewPasswordSubject** – subject of the email with a temporary password. The length is less than or equal to 128 symbols.
- **NewPasswordText** – text of the message with the temporary password. The QUIK server sends an e-mail with the one-time confirmation code which is used to start the password recovery procedure. Text format: standard (plain) or HTML. The length is less than or equal to 4 kByte.

Templates for the message subjects and text with the two-factor authentication code:

- **2ndFactorAuthSubject** – subject of the message with the second factor. It is sent when authentication by the second factor is passed. The length is less than or equal to 128 symbols.
- **2ndFactorAuthText** – text of the message with the second factor. It is sent when authenticating by the second factor or restoring a password. The length is less than or equal to 4 kByte. Text format: standard (plain) or HTML. If a PIN for two-factor authentication is to be sent by SMS then the setting is ignored.

For example:

```
TemplateRuInfoTextFileName=Templates\ru\InfoText
```



- **Template<TemplateType>Type** – template file format. The parameter is supported for the NewPasswordText and 2ndFactorAuthText template types. Valid values:
 - _ plain (by default) – standard text;
 - _ html – text in HTML.

2.2 qadminsrv.ini settings

Open the **qadminsrv.ini** file to edit.

Set up the following parameters in sections:

2.2.1 [auth] section

- **Max2faAttempt** – maximum quantity of two-factor authentication code entries. When the limit is exceeded, the user is blocked and the current session is forcibly terminated. Value by default: 10.
- **Max2faRequest** – maximum amount of requests to send a new two-factor authentication code within a single login attempt. After the limit is exhausted, the user will not be able to request a new code until they perform a repeated login into the system. Value by default: 3.
- **Timeout2faBlock** – automatic lockout time (in seconds). Value by default: 30.
- **Timeout2faLogin** – Two-factor authentication password entry time (in seconds). Value by default: 180.
- **NewRetrieveCodeTimeOut** – time interval for requesting a new confirmation code (in seconds). A value of 0 means that requesting a new code is available immediately. Value by default: 0.
- **PinCodeDefaultTransport** – PIN code delivery method. Possible values: "sms", "email". If the parameter is not specified, QUIK Administrator automatically selects a delivery method from the available options. Value by default: "" (empty).

2.2.2 [mail] section

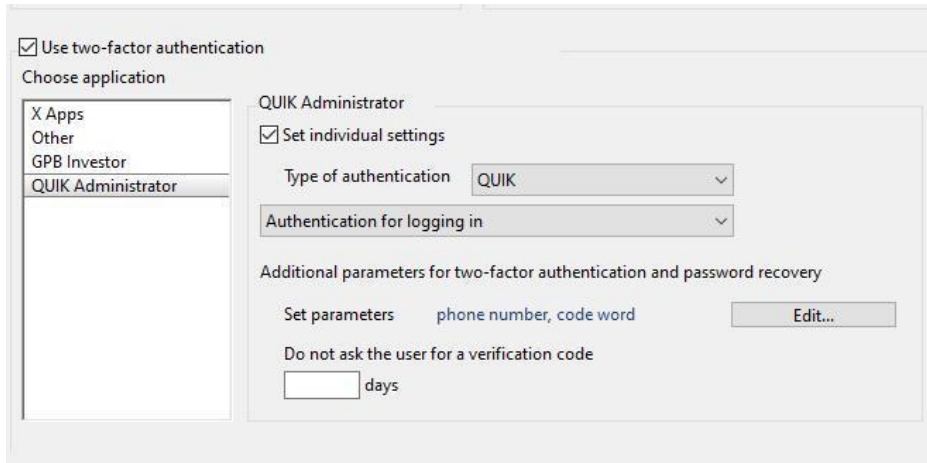
- **Server** – name or IP address of the SMTP server. Value by default: "" (empty).
- **Port** – port of the SMTP server. Value by default: 25.
- **User** – user's name for authentication on the SMTP server. Value by default: "" (empty).
- **Password** – user's password for authentication on the SMTP server. Value by default: "" (empty).
- **FromAddress** – email address from which QUIK Administrator sends messages. Value by default: "" (empty).



2.3 QUIK Administrator settings

In QUIK Administrator do the following:

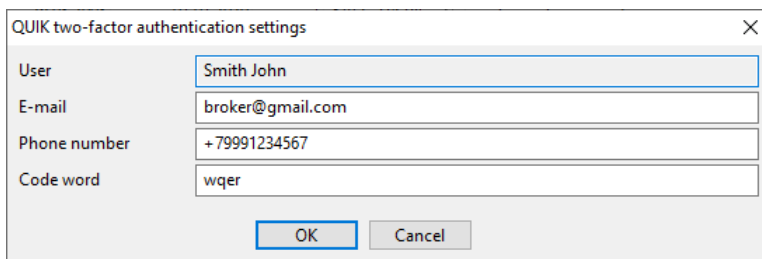
1. In user permissions set up dialog box on the Security tab tick the **Use two-factor authentication** option and select **QUIK** type of authentication.



- The **Do not ask the user for a verification code ... days** box stands for the number of days for which an additional password for QUIK two-factor authentication will not be requested if the user doesn't change the connection parameters. Allowed values: integer numbers from 1 to 365. Editable when **QUIK** authentication type is selected.

If changes of the connection parameters occur then an additional password will be requested. If the box is not filled or the value 0 is specified then a new additional password will be requested every time a session is being established by the user.

2. On clicking **Edit...** the dialog box appears in which the following boxes for different ways of password delivery are available:

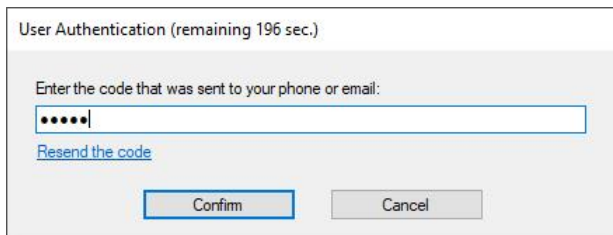


- **E-mail** – an email address to which an additional password will be sent.
- **Phone number** – a mobile phone number to which SMS is sent. For this method of password delivery to work a broker should make integration with the Alert dispatch module.
- **Code word** – a code word which identifies a user when he contacts his broker to receive a password.

Methods of password delivery to a user can be used both separately and simultaneously.



When the two-factor authentication setting for the QUIK Administrator application is enabled, the **User identification** window is additionally displayed after successful completion of the first factor during system login:

A dialog box titled "User Authentication (remaining 196 sec.)". It contains a text input field with a placeholder "Enter the code that was sent to your phone or email:" and a masked input field with five dots. Below the input field is a blue link "Resend the code". At the bottom are two buttons: "Confirm" and "Cancel".

- **Resend the code** – initiates the code regeneration and sending to the user. The function is available if authentication is configured via QUIK.
- **Confirm** button – performs code verification.
- **Cancel** button – It interrupts the authorization process. The Connection to the server is broken.

If the password is not submitted within the allotted time, authentication is considered failed and the server terminates the connection.

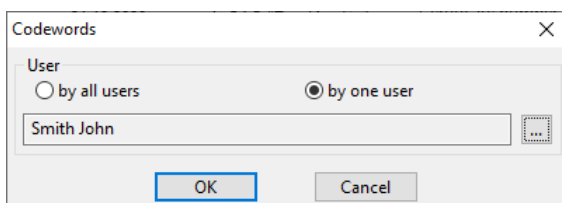
If an incorrect password is submitted ten times (by default), the user's account is locked.

The lock can be removed in the user's rights dialog on the Security tab.

3. Report on QUIK two-factor authentication

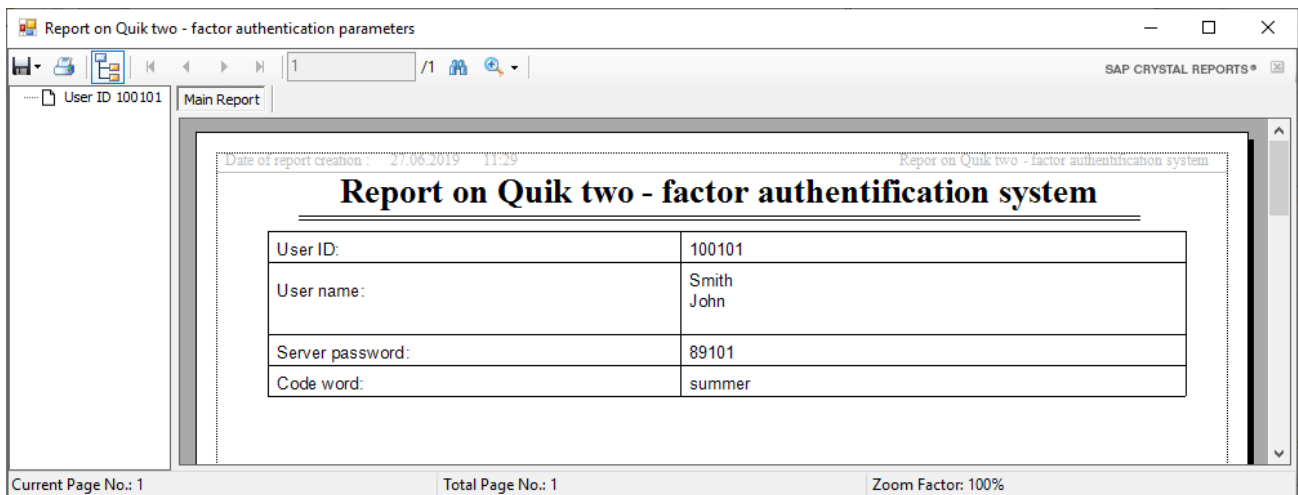
The report is intended to create a list of passwords for the users that establish connection by means of two-factor authentication. Only those users are displayed in the report which have **Code word** box filled in user permission settings.

The report is used, for example, if a client calls the broker and asks for the password for connection establishment. In this case the broker should create a report for the client and ask the client for the code word. The report can be created in QUIK Administrator (menu **QUIK server / Reports / Codewords...**).

A dialog box titled "Codewords". It has a "User" section with two radio buttons: "by all users" and "by one user". The "by one user" option is selected. Below the radio buttons is a text input field containing "Smith John". At the bottom are two buttons: "OK" and "Cancel".

Only if the code word named by the client is correct a password for two-factor authentication can be told to the client.





The report can be created for all the clients who need password. To do this select **by all users**.

4. Password initial receiving / recovering

If a user does not know the password for authentication (the user has not yet received the password or has lost it), he can receive it without visiting broker and without participation of broker's employee.

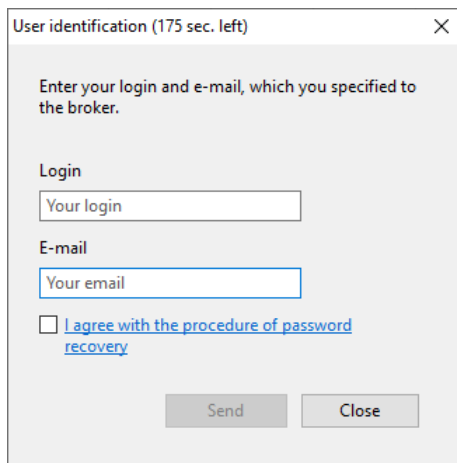
Password recovery service operates if the following conditions are met simultaneously:

- Authentication by login and password is used for the user.
- Two-factor authentication of the QUIK type with second authentication factor sending by SMS is enabled.
- The user has phone number and email for two-factor authentication specified in user's settings.
- The [RetrievePassword](#) setting in the [quik_auth] section of the quik.ini file is enabled.

When a user passes the procedure of password initial receiving / recovering the dialog boxes which are constructed by the broker by means of [templates](#) are displayed. The dialog boxes created on the bases of the templates supplied by default are shown below.

- In the **Login** dialog box, a user clicks on the **Get password** button. The **User identification** dialog box is opened.





User identification (175 sec. left) X

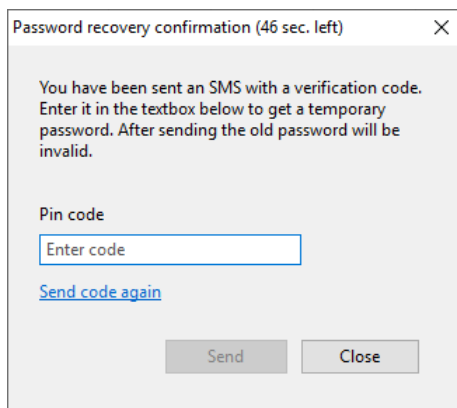
Enter your login and e-mail, which you specified to the broker.

Login

E-mail

☐ [I agree with the procedure of password recovery](#)

- The user enters login and e-mail and confirms that he reviewed the procedure of password recovery by ticking the checkbox.
- The server checks if two-factor authentication is enabled for the user and if authorization is not expired. If the check passed successfully the server sends an SMS with a confirmation code to the user.
- In the **Password recovery confirmation** dialog box, the user enters the received code.



Password recovery confirmation (46 sec. left) X

You have been sent an SMS with a verification code. Enter it in the textbox below to get a temporary password. After sending the old password will be invalid.

Pin code

[Send code again](#)

- The server checks the code, generates a temporary code and sends it to the user by e-mail.

5. Login with QUIK two-factor authentication

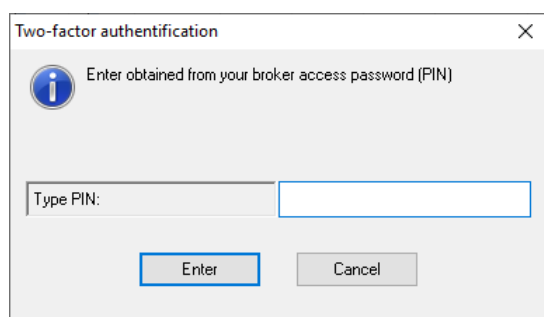
First part of the authentication procedure (by means of the access keys from the pubring.txk and secring.txk files or login and password) is standard – login and password are entered, and the server checks the entered parameters for correctness. If the first authentication part has passed successfully, then the QUIK server starts the second authentication part according to the following rules:

1. The QUIK server checks the parameters of the connection.



2. If the connection information is saved at server, the server checks if the connection is confirmed at the QUIK server (whether two-factor authentication passed on previous connection or not).
3. The connection expiration period is controlled (the expiration period is set up in QUIK Administrator in user settings, see sub-section [2.2](#)).

If all the checks passed successfully, then QUIK two-factor authentication is meant to be completed, and the user starts receiving data from the server. If at least one of the checks is not passed, then user must confirm new connection parameters by a new PASSWORD.



When a password entry dialog box is opened the password is sent to the client by the predefined connection channel – e-mail, SMS to the mobile phone or a call to the broker. If the last channel is used, the client must tell the code word to the broker. If the password that is entered in the box coincides with the required password, the new connection is meant to be confirmed.

If the password entry timeout has expired, the first authentication part (enter login and password for secret key security) is passed again.

Quantity of attempts to enter password is restricted. After the attempt's quantity is exhausted user is temporarily blocked or password is reset. Information on user temporary blocking is available in QUIK Administrator in the user editing dialog box on the **Security** tab where blocking can also be removed.

Appendix. Actions for text templates

Texts of templates to be used for various notifications of password recovery can include actions.

All the actions have the following view: {CMD}, where CMD is command to insert some text parameter. A text can include free number of these commands, and one command can be included several times. To use symbol '{' or '}' type it in the text as '{{' or '}}' correspondingly.

Allowed actions:

- DATE – current date in format <DD.MM.YYYY>.
- TIME – current time in format <HH:MM:SS>.
- UID – identifier of the user (UID) whose password is recovered.
- USERNAME – user full name.



- PASSWORD – text of the temporary password.
- CODE – confirmation code. It is available only in a template of the Code type.
- EMAIL – e-mail for two-factor authentication.
- BLOCKEDTILL – date and time of user blocking expiration in format <DD.MM.YYYY HH:MM:SS>. Is used if [BlockTypeOnUnsuccessAuth](#)=1 and the value of [BlockPeriodOnUnsuccessAuth](#) differs from 0.

