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# Packet

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## Structure

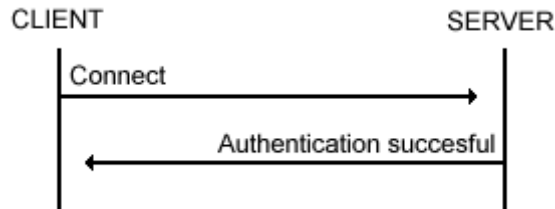
<b>8 bits</b>
<b>STX (0x02)</b>
Size (Stx..Checksum)
Command
[Data byte 1]
...
[Data byte n]
Checksum
<b>ETX (0x03)</b>

The start of the packet (STX) and end of packet (ETX) have a fixed value. Data bytes change depending on the command. Maximum packet size is n bytes.

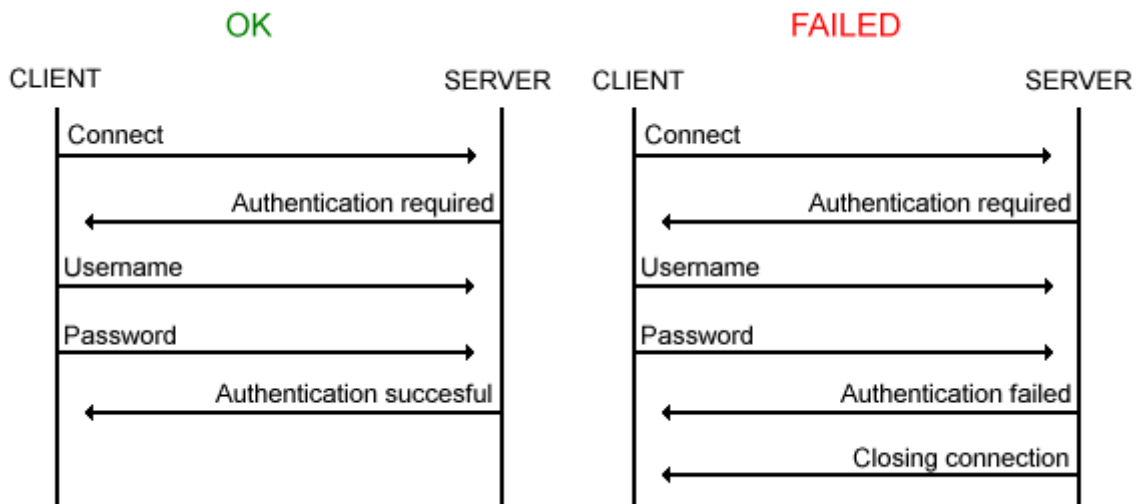
# Authentication process

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## No authentication required



## With authentication enabled



## Commands

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### Authentication required (0x58)

When connecting to a VM201 that requires authentication, you will receive this packet. Respond with a Username (0x55) and Password (0x57) packet to authenticate yourself. After authenticating, you will receive either an Authentication succesful (0x4Cn) or Authentication failed (0x58) packet. If authentication failed, the server will also send a Server is closing the connection (0x43) packet and subsequently close the connection.

#### Example packet:

STX	0x02
Size	0x05
Command	0x58
Checksum	
ETX	0x03

### Username (0x55)

This packet is sent by the client to provide a username during authentication. The username should be padded to a length of 9 characters with zeroes (0x00).

#### Example packet:

STX	0x02
Size	0x0E
Command	0x55
Data byte 1	0x61 'a'
Data byte 2	0x64 'd'
Data byte 3	0x6D 'm'
Data byte 4	0x69 'i'
Data byte 5	0x6E 'n'
Data byte 6	0x00
Data byte 7	0x00
Data byte 8	0x00
Data byte 9	0x00
Checksum	
ETX	0x03

## Password (0x57)

This packet is sent by the client to provide a password during authentication. The password should be padded to a length of 9 characters with zeroes (0x00).

### Example packet:

STX	0x02
Size	0x0E
Command	0x57
Data byte 1	0x74 't'
Data byte 2	0x65 'e'
Data byte 3	0x73 's'
Data byte 4	0x74 't'
Data byte 5	0x00
Data byte 6	0x00
Data byte 7	0x00
Data byte 8	0x00
Data byte 9	0x00
Checksum	
ETX	0x03

## Authentication succesful (0x4Cn)

This packet is sent by the server to indicate that authentication was succesful or that authentication is not required.

### Example packet:

STX	0x02
Size	0x05
Command	0x4C
Checksum	
ETX	0x03

## Authentication failed (0x58)

This packet is sent by the server to indicate that authentication failed. This packet will be followed by a Server is closing the connection (0x43) packet after which the server will actively close the connection. It is not possible to make multiple login attempts on one connection.

Example packet:

STX	0x02
Size	0x05
Command	0x4C
Checksum	
ETX	0x03

**Server is closing the connection (0x43)**

This packet is sent by the server to indicate that it is about to actively close the connection. This is caused by a failed authentication attempt.

Example packet:

STX	0x02
Size	0x05
Command	0x43
Checksum	
ETX	0x03

**Channel name (0x4E)**

The names of each relay channel are sent after authenticating. These names have been chosen by the user. When one or more names are changed through the web interface, these names will be sent again to keep the client up to date. Channel names are always 16 characters long, if necessary padded with zeroes (0x00). The channel nr. is a bit mask where each bit represents a channel, and channel 1 is the least significant bit (rightmost bit).

Example packet:

STX	0x02
Size	0x22
Command	0x4E
Channel nr.	0x04 ('00000100' = relay 3)
Data byte 1	0x00
Data byte 2	0x00
Data byte 3	0x00
Data byte 4	0x00
Data byte 5	0x00
Data byte 6	0x00
Data byte 7	0x00

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Data byte 8	0x00
Data byte 9	0x00
Data byte 10	0x00
Data byte 11	0x00
Data byte 12	0x00
Data byte 13	0x00
Data byte 14	0x00
Data byte 15	0x00
Data byte 16	0x00
Checksum	
ETX	0x03

### Status request (0x52)

This packet is sent by the client to request the status of each relay, input and timer. The server will respond with a Status (0x53) packet.

#### Example packet:

STX	0x02
Size	0x05
Command	0x52
Checksum	
ETX	0x03

### Status (0x53)

Packet that contains the status of each relay, input and timer. This packet is sent any time a relay, input or timer changes state, or when the client sends a Status request (0x52) packet.

#### Example packet:

STX	0x02
Size	0x08
Command	0x53
Relay status	0x81 ('10000001' = relays 1 and 8 are on)
Timer status	0x13 ('00010011' = timers 1, 2 and 5 are set to 'RUN')
Input status	0x01 (=input on) 0x00 (=input off)
Checksum	
ETX	0x03

## VM201 Protocol