8 Channel Multifunction RS485 Module command

Default state: Slave ID is OX01, MODBUS command

AT command (ASCII characters)

Note:
1. In the AT command mode slave ID is invalid
2. AT commands must be uppercase, lowercase invalid
3. Jumper switch status: M0's two pads are soldered together, M1 M2 is random, as shown

9600 Band, 8 Data bits, None Parity, 1 Stop Bit

Read Status:
Channel 1: AT+R1
Channel 2: AT+R2
Channel 3: AT+R3
Channel 4: AT+R4
Channel 5: AT+R5
Channel 6: AT+R6
Channel 7: AT+R7
Channel 8: AT+R8

Open:
Channel 1: AT+O1
Channel 2: AT+O2
Channel 3: AT+O3
Channel 4: AT+O4
Channel 5: AT+O5
Channel 6: AT+O6
Channel 7: AT+O7
Channel 8: AT+O8

Close:
Channel 1: AT+C1
Channel 2: AT+C2
Channel 3: AT+C3
Channel 4: AT+C4
Channel 5: AT+C5
Channel 6: AT+C6
Channel 7: AT+C7
Channel 8: AT+C8
Toggle (Self-locking)
Channel 1: AT+T1
Channel 2: AT+T2
Channel 3: AT+T3
Channel 4: AT+T4
Channel 5: AT+T5
Channel 6: AT+T6
Channel 7: AT+T7
Channel 8: AT+T8

Latch (Inter-locking)
Channel 1: AT+L1
Channel 2: AT+L2
Channel 3: AT+L3
Channel 4: AT+L4
Channel 5: AT+L5
Channel 6: AT+L6
Channel 7: AT+L7
Channel 8: AT+L8

Momentary (Non-locking)
Channel 1: AT+M1
Channel 2: AT+M2
Channel 3: AT+M3
Channel 4: AT+M4
Channel 5: AT+M5
Channel 6: AT+M6
Channel 7: AT+M7
Channel 8: AT+M8

Delay
Channel 1: AT+D1=XXXX
Channel 2: AT+D2=XXXX
Channel 3: AT+D3=XXXX
Channel 4: AT+D4=XXXX
Channel 5: AT+D5=XXXX
Channel 6: AT+D6=XXXX
Channel 7: AT+D7=XXXX
Channel 8: AT+D8=XXXX

XXXX refers to the 0000 to 9999 figures, Unit is seconds
Return command : OpenX, CloseX (X = 1/2/3/4/5/6/7/8)

Example 1:
Send command "AT+D1=0010", Channel 1 is "Open", after delay of 10 seconds, channel 1 is "Close"
Send command "AT+D2=0100", Channel 2 is "Open", after delay of 100 seconds, channel 2 is "Close"

Example 2:
Send command "AT+L1", Channel 1 is "Open", other Channels is "Close"
Send command "AT+L2", Channel 2 is "Open", other Channels is "Close"

**MODBUS command (function code 06 is Control command, 03 is Read status command)**

Note:
1. MODBUS command must be HEX
2. Slave ID (device address) must be correct, the default slave address is 01, and the Slave ID is set to see the bottom.
3. Jumper switch status: M0's two pads must be disconnected, M1 M2 is random, as shown

   ![Jumper Switch Status](image)

4. If you don't remember the Slave ID, use the command Read Slave ID : FF 03 00 FF 00 01 A1 E4 9600 Band .8 Data bits, None Parity, 1 Stop Bit.

**MODBUS 06 Command (Control command, HEX):**

<table>
<thead>
<tr>
<th>Bytes Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODBUS Definitions</td>
<td>Slave ID</td>
<td>Function</td>
<td>Address</td>
<td>Data</td>
<td>CRC Check</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Device Address</td>
<td>Function</td>
<td>Channel number</td>
<td>Command</td>
<td>Delay time</td>
<td>CRC Check</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open</td>
<td>0x00-0x 2F</td>
<td>0x06</td>
<td>0x0001-0x0008</td>
<td>0x01</td>
<td>0x00</td>
<td>2Bytes CRC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Close</td>
<td>0x00-0x 2F</td>
<td>0x06</td>
<td>0x0001-0x0008</td>
<td>0x02</td>
<td>0x00</td>
<td>2Bytes CRC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toggle (Self-locking)</td>
<td>0x00-0x 2F</td>
<td>0x06</td>
<td>0x0001-0x0008</td>
<td>0x03</td>
<td>0x00</td>
<td>2Bytes CRC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latch Inter-locking)</td>
<td>0x00-0x 2F</td>
<td>0x06</td>
<td>0x0001-0x0008</td>
<td>0x04</td>
<td>0x00</td>
<td>2Bytes CRC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Momentary (Non-locking)</td>
<td>0x00-0x 2F</td>
<td>0x06</td>
<td>0x0001-0x0008</td>
<td>0x05</td>
<td>0x00</td>
<td>2Bytes CRC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delay</td>
<td>0x00-0x 2F</td>
<td>0x06</td>
<td>0x0001-0x0008</td>
<td>0x06</td>
<td>0x00-0x ff</td>
<td>2Bytes CRC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open all</td>
<td>0x00-0x 2F</td>
<td>0x06</td>
<td>0x0000</td>
<td>0x07</td>
<td>0x00</td>
<td>2Bytes CRC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Close all</td>
<td>0x00-0x 2F</td>
<td>0x06</td>
<td>0x0000</td>
<td>0x08</td>
<td>0x00</td>
<td>2Bytes CRC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Remarks:
1 Momentary mode, delay time is 1 seconds
2 Delay mode, delay time is 0-255 seconds

Return command:
Command is active, return to send commands; instruction is invalid no return.

**MODBUS 03 Command (Read status command, HEX):**

<table>
<thead>
<tr>
<th>Bytes Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODBUS Definitions</td>
<td>Slave ID</td>
<td>Function</td>
<td>Address</td>
<td>Data</td>
<td>CRC Check</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Device Address</td>
<td>Function</td>
<td>Starting register address</td>
<td>Register length</td>
<td>CRC Check</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read Channel 1 State</td>
<td>0x00-0x2F</td>
<td>0x03</td>
<td>0x0001</td>
<td>0x0001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read Channel 2 State</td>
<td>0x00-0x2F</td>
<td>0x03</td>
<td>0x0002</td>
<td>0x0001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read 2 consecutive channels status</td>
<td>0x00-0x2F</td>
<td>0x03</td>
<td>0x0001-0x0003</td>
<td>0x0002</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read 3 consecutive channels status</td>
<td>0x00-0x2F</td>
<td>0x03</td>
<td>0x0001-0x0002</td>
<td>0x0003</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read all 8 channels status</td>
<td>0x00-0x2F</td>
<td>0x03</td>
<td>0x0001</td>
<td>0x0008</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Read status command returns (function code 03, HEX format):

<table>
<thead>
<tr>
<th>Bytes length</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODBUS Definitions</td>
<td>Slave ID</td>
<td>Function</td>
<td>data length</td>
<td>data</td>
<td>CRC16 Check</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Device Address</td>
<td>Function</td>
<td>data length</td>
<td>Relay state 0x0001 open 0x0000 close</td>
<td>CRC16 Check</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel 1 open</td>
<td>0x00-0x1F</td>
<td>0x03</td>
<td>0x02</td>
<td>0x0001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel 1 close</td>
<td>0x00-0x1F</td>
<td>0x03</td>
<td>0x02</td>
<td>0x0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel 2 open</td>
<td>0x00-0x1F</td>
<td>0x03</td>
<td>0x02</td>
<td>0x0001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel 2 close</td>
<td>0x00-0x1F</td>
<td>0x03</td>
<td>0x02</td>
<td>0x0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel 1 open Channel 2 open</td>
<td>0x00-0x1F</td>
<td>0x03</td>
<td>0x04</td>
<td>0x0001 0x0001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel 1 open</td>
<td>0x00-0x1F</td>
<td>0x03</td>
<td>0x04</td>
<td>0x0001 0x0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
MODBUS commands you can use “Modbus Poll” input, as shown below
(CRC check generated automatically)

You can also use HyperTerminal serial input, as shown below
(Manually add CRC check)
Examples (Slave ID is 1, DIP switch state)
Channel 1 Open: 01 06 00 01 01 00 D9 9A
Channel 1 Close: 01 06 00 01 02 00 D9 6A
Channel 1 Toggle: 01 06 00 01 03 00 D8 FA
Channel 1 Latch: 01 06 00 01 04 00 DA CA
Channel 1 Momentary: 01 06 00 01 05 00 DB 5A
Channel 1 Delay 10 seconds: 01 06 00 01 06 0A 5B AD
Channel 1 Delay 100 seconds: 01 06 00 01 06 64 DA 41

Channel 2 Open: 01 06 00 02 01 00 29 9A
Channel 2 Close: 01 06 00 02 02 00 29 6A
Channel 2 Toggle: 01 06 00 02 03 00 28 FA
Channel 2 Latch: 01 06 00 02 04 00 2A CA
Channel 2 Momentary: 01 06 00 02 05 00 2B 5A
Channel 2 Delay 10 seconds: 01 06 00 02 06 0A AB AD
Channel 2 Delay 100 seconds: 01 06 00 02 06 64 2A 41

Read state (assuming that the channel 1 is open, the channel 2 is close).
Read channel 1 state: 01 03 00 01 00 01 D5 CA
Return open: 01 03 02 00 01 79 84

Read channel 2 state: 01 03 00 02 00 01 25 CA
Return close: 01 03 02 00 00 B8 44

Read channel 1 and channel 2 state: 01 03 00 01 00 02 95 CB
Return channel open and channel 2 close: 01 03 04 00 01 00 00 AB F3

Set Slave ID (Device Address)

1. Read Slave ID

   Send data
   
<table>
<thead>
<tr>
<th>Slave ID (Broadcast address) (1)</th>
<th>Function (1)</th>
<th>Register address (2)</th>
<th>Read number (2)</th>
<th>CRC16 (2)</th>
</tr>
</thead>
</table>
   
   Returns data
Broadcast address 0xff
Function code 0x03
Register address: 0x00FF
Read number: 0x0001

For example:
send data: FF 03 00 FF 00 01 A1 E4
Returns data: FF 03 02 00 01 50 50
FF Broadcast address, 03 Function, 02 length, 01 is the current module Slave ID, 50 50 crc16
Note: When using this command, only one temperature module can be connected to the RS485 bus, more than one will be wrong!

2. Write Slave ID

Send data

<table>
<thead>
<tr>
<th>Slave ID (Device Address)</th>
<th>Function (1)</th>
<th>Register address (2)</th>
<th>Setting Content (2)</th>
<th>CRC16 (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slave ID (Device Address)</td>
<td>Function (1)</td>
<td>Register address (2)</td>
<td>Setting Content (2)</td>
<td>CRC16 (2)</td>
</tr>
</tbody>
</table>

Returns data

<table>
<thead>
<tr>
<th>Slave ID (Device Address)</th>
<th>Function (1)</th>
<th>Register address (2)</th>
<th>Register value (2)</th>
<th>CRC16 (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slave ID (Device Address)</td>
<td>Function (1)</td>
<td>Register address (2)</td>
<td>Register value (2)</td>
<td>CRC16 (2)</td>
</tr>
</tbody>
</table>

Function code 0x06
Register address: 0x00FF
Setting Content: 2Bytes(1-247)

For example, The current Slave ID is 1, We need to change the Slave ID to 3:
Send data(Slave ID is 1): 01 06 00 FF 00 03 F9 FB
Returns data: 01 06 00 FF 00 03 F9 FB