



FMx C Slave Modbus ASCII	
Fieldbus extension for device family	FMSC / FMPC
Interfaces RS-232 / RS-485	1 / 1 (not simultaneously usable)
Meldungseingänge 32-bit double register, 2 x 16-bit each	29
Meldungsausgänge 32-bit double register, 2 x 16-bit each	29
Systemfehler-Meldeausgang 32-bit double register, 2 x 16-bit each	1
Programmierung BLxT-Lichtvorhang	1
Digital output BLxT / digital output O1	1
Required master	<ul style="list-style-type: none"> • FMSC Master Profi • FMSC Master Advanced • FMSC Master Basic • FMPC Master Basic

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3.2.1.1 Modbus ASCII overview

Supported Modbus functions:

- Read coils, function code 0x01
- Read holding register, function code 0x03
- Read input register, function code 0x04
- Write single coil, function code 0x05
- Write single register, function code 0x06
- Write multiple registers, function code 0x10
- Diagnostics, function code 0x08

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- Return query data, sub-function code 0x0000
- Clear counters and diagnostic register, sub-function code 0x000A
- Return bus message count, Sub-function code 0x000B
- Return bus communication error count, sub-function code 0x000C
- Return bus exception error count, sub-function code 0x000D

The timeout until the expected response should not be shorter than 500 ms for the Modbus master.
Supported requests are answered with the requested data or with a repetition of the request (confirmation).

**Unsupported requests are answered with an exception response.
The following exception responses are used:**

- Illegal function when querying functions other than the above. Exception code 0x01
- Illegal data address. If the requested register does not exist. Exception code 0x02
- Illegal data value, if the value is not in the permitted range or is otherwise invalid. Exception code 0x03

3.2.1.1.1 Structure of a Modbus frame:

MODBUS messages consist of a frame, with starting point, address field, Modbus function, data field, LRC and end point.
A message must begin with a colon and end with a carriage return-line feed (CR LF) pair.

The permissible characters within the frame are hexadecimal 0-9, A-F (ASCII-coded).

Start	Address	Function	Data	LRC	End
1 character	2 characters	2 characters	0 up to 2 x 252 characters depending on the function	2 characters	2 characters
:	01	03	0000 0001	FB	CR, LF
0x3A	0x30 und 0x31	0x30 und 0x33	0x30, 0x30, 0x30, 0x30 und 0x30, 0x30, 0x30, 0x31	0x46 und 0x42	0x0D und 0x0A

Examples of requests from the Modbus master: (Modbus address = 1, display without CRLF)

Read Holding Registers:

- :01 03 0000 0001 FB -> Read Holding Register Address 0 with length 1
- :01 03 0000 0006 F6 -> Read Holding Register Address 0 with length 6
- :01 03 0038 0001 C3 -> Read Holding Register Address 56 with length 1

Read Input Registers:

- :01 04 0004 0001 F6 -> Read Input Register Address 4 with length 1
- :01 04 0004 0002 F5 -> Read Input Register Address 4 with length 2

Write Single Registers: Write Single Holding Register:

- :01 06 0000 0002 F7 -> Write Holding Register 0 with value 0x0002
- :01 06 0038 000F B2 -> Write Holding Register 56 with value 0x000F

Write Multiple Registers:

- :01 10 0000 0006 0C 0403 0201 0807 0605 0C0B 0A09 8F -> Write 6 Holding Register ab Register 0 with various data

Read Coils:

- :01 01 0000 0001 FD -> Read Coil with address 0 with length 1
- :01 01 000F 0001 EE -> Read Coil with address 15 with length 1

Diagnostic:

- : 01 08 0000 FEDC 1D -> Sub-Code (0x0000) Return Query Data
- : 01 08 000A 0000 ED -> Sub-Code (0x000A) Clear Counters and Diagnostic Register
- : 01 08 000C 0000 EB -> Sub-Code (0x000C) Return Bus Communication Error Count
- : 01 08 000D 0000 EA -> Sub-Code (0x000D) Return Bus Exception Error Count
- : 01 08 000E 0000 E9 -> Sub-Code (0x000E) Return Server Message Count

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3.2.1.2 Pin assignment

The device has a 4-pin connector with screw terminals.



1. +24 V
2. GND
3. Output BLxT resp. digital output O1
4. Output EDM

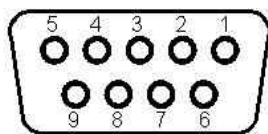
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3.2.1.3 Interfaces

The FMxC Slave Modbus ASCII provides an RS-232 and RS-485 interface.

Attention: In the device configuration it is possible to select either **RS232** or **RS485**.

3.2.1.3.1 Pin assignment RS-232



- Pin 1 :
- Pin 2: **TXD**
- Pin 3: **RXD**
- PIN 4: -
- PIN 5: **signal GND**
- PIN 6: -
- PIN 7: -
- Pin8: -
- Pin9: -

3.2.1.3.2 Pin assignment RS-485



From left to right:

- 1: signal-GND
- 2: B(-)
- 3: A(+)
- 4: -

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3.2.1.4 LED Indicators



LED Bus: Fieldbus status, colour red

LED Stat.: Device status, color yellow

LED EDM: Status in BLxT Programming mode, color green

LED BLxT: State of output BLxT or O1, color green

Fig.: LED displays

LED	LED status	Description
Bus	Illuminates temporarily	While transmitting or receiving on the fieldbus
Stat.	Permanent	Normal operating state The device has a device number. There is a bus connection to the control master

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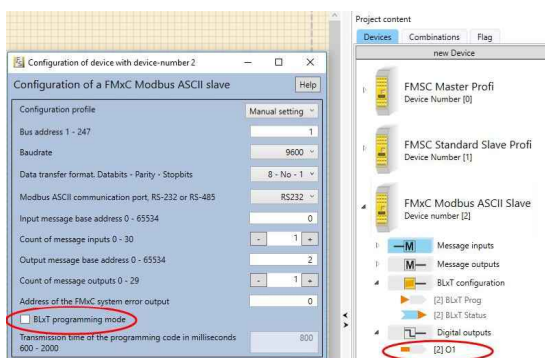
LED	LED status	Description
	Permanent	Device has no device number yet. There is a no bus connection to the control master
	Flashes 1 x per second	Device has no device number yet. There is a bus connection to the control master
Stat. and EDM	Flashes 1 x per second	The device has a device number. There is a no bus connection to the control master
EDM	Permanent	In the BLxT programming mode: For the duration of the programming process of the BLxT
BLxT	Permanent	Output BLxT or O1 is active.
Stat., EDM and BLxT	Flashes 5 x per second	Internal device error

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3.2.1.5 Digital output

The device has a digital output which can be used in an application if no BLxT programming has been activated in this device.

3.2.1.5.1 Configuration of digital output



In order to use **digital output O1**, BLxT programming must be deactivated in the Fiessler Studio in the device configuration of the FMxC Slave Modbus ASCII.

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3.2.1.6 Technical specifications FMxC Slave Modbus ASCII

Electrical data	
Supply voltage	24V DC SELV
Tolerance range	18 ... 30.0 V DC, max. 10% residual ripple
Power consumption	Typ. 20 mA
Connector Supply voltage	Alternatively: Screw connector or spring terminal connector min. 0.2 mm ² max. 2.5 mm ²
Mechanical data	
Frame size (HxWxD) without plug	114.5 x 22.5 x 99 mm

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Mechanical data

Mounting	DIN rail according to DIN 50 022
Housing protection type	IP 20
Terminals protection type	IP 20
Weight	100 g / 120 g with plug

Environmental conditions

Ambient temperature during operation	-25 ° C ... + 60 ° C
Storage Temperature	-25 ° C ... + 70 ° C
Relative humidity (non-condensing)	10% ... 95% RH
Air and creepage distances	DIN EN 50 178
Vibration:	DIN EN 60 068-2-6
EMC	DIN EN 61 000-6-2
Moisture condensation	impermissible

RS-232 / RS-485

Galvanic isolation	No
Status display	LED
Connection RS-232	SUB-D 9-pin
Connection RS-485	Alternatively: Screw connector or spring terminal connector min. 0.2 mm ² max. 2.5 mm ²

Output BLxt / Digital output O1

Galvanic isolation	No
Output voltage	24V (max=Vcc)
Output current	Max. 0.5A
Short-Circuit Protection	electronic
Status display	LED

Output EDM

Galvanic isolation	No
Short-Circuit Protection	electronic

Output EDM	
Status display	LED
Notice	Must only be used in combination with a BLxT Light barrier!

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3.3 DIN rail mounting with bus connection plug between master and slaves

Ordering data see bus connector for DIN rail according to EN 50022 35 mm x 7.5 mm.



The bus connection plugs must be clipped into the DIN rail as shown in Fig. 2 and then put together.

The devices must be placed over its interconnect plug.
To release the device again pull the metal clamp on the bottom downwards and release the device to the top.



Attention! The DIN rail must always be connected to functional ground!

Fig. 1: DIN rail mounting with bus connector

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