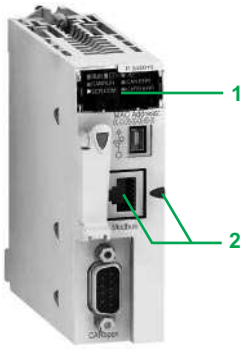
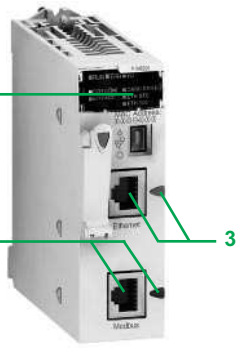
# Modicon M340 automation platform

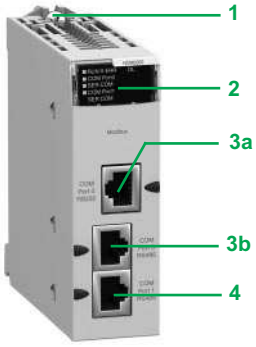
## Modbus and Character mode serial link




*BMX P34 2010/20102*




*BMX P34 1000/2000*
*BMX P34 2020*




*BMX NOM 0200*

## Description

The Modicon M340 platform offers two serial link connection options for Modbus or Character mode.

### Link integrated in the processor

**BMX P34 1000/2000/2010/20102/2020** processors integrate a serial link which can be used with either the Modbus RTU/ASCII master/slave protocol or with the Character mode protocol.
The following front panel features relate to this serial port on these processors:
1 A display block including at least the following LEDs:
□ SER COM LED (yellow): Activity on the serial link (lit) or fault on a device present on the serial link (flashing)
2 An RJ45 connector for Modbus serial link or Character mode link (non-isolated RS 232C/RS 485) with its black indicator
3 An RJ45 connector for Ethernet Modbus/TCP port with its black indicator (**BMX P34 2020** processors only)

***Note:*** *For more information about the processors, see page 1/5.*

### BMX NOM 0200 serial link module

The **BMX NOM 0200** module front panel comprises:
1 Safety screw for locking the module in a slot in the rack
2 A display block with 4 LEDs:
□ RUN (green) and ERR (red): Module status
□ For each of the two channels: SER COM (green): Activity on the serial link (lit) or fault on a device present on the serial link (flashing).
3 Two RJ45 connectors (exclusive use) with their black indicator for connecting channel 0 with:
□ 3a A connector for RS 232C connection, marked COM Port 0 RS232
□ 3b A connector for RS 485 connection, marked COM Port 0 RS485
4 An RJ45 connector with its black indicator for RS 485 connection of channel 1, marked COM Port 1 RS485

**To be ordered separately**:
RS 485 cordsets (see page 3/52) or RS 232 cordsets for DCE terminal (see page 3/51).

# Modicon M340 automation platform

## Modbus and Character mode serial link

### Characteristics of the integrated link in the processor

| Protocol | | Modbus | | Character mode | |
|---|---|---|---|---|---|
| | Physical interface | RS 232, 4-wire | RS 485, 2-wire | RS 232, 4-wire | RS 485, 2-wire |
| Structure | Type | Non-isolated serial link *(1)* | | | |
| | Access method | Master/slave type, switchable online | | – | |
| | Peripheral power supply | – | Provides a 5 V ⎓/190 mA power supply | – | Provides a 5 V ⎓/190 mA power supply |
| | Connection | RJ45 female connector | | | |
| Transmission | Mode | Asynchronous in baseband | | Asynchronous in baseband | |
| | Frame | RTU/ASCII, Half duplex | | Full duplex | Half duplex |
| | Data rate | 0.3…38.4 Kbps (19.2 Kbps by default) | | 0.3…38.4 Kbps (19.2 Kbps by default) | |
| | Medium | Shielded twisted pair | | Single or double shielded twisted pair | Shielded twisted pair |
| Configuration | Number of devices | 2 (point-to-point) | Up to 32 per segment | 2 (point-to-point) | Up to 32 per segment |
| | Maximum number of link addresses | 248 | | 248 | |
| | Maximum length of bus | 15 m | 10 m non-isolated link 1000 m isolated link *(1)* | 15 m | 10 m non-isolated link 1000 m isolated link *(1)* |
| | Maximum length of a tap link | – | 15 m non-isolated link 40 m isolated link *(1)* | – | 15 m non-isolated link 40 m isolated link *(1)* |
| Services | Frame | 252 bytes of data per RTU request 504 characters per ASCII request | | 1 KB of data per request | |
| | Safety, check parameter | One CRC on each frame (RTU) One LRC on each frame (ASCII) | | One LRC on each frame (ASCII) | |
| | Monitoring | Diagnostics counters, event counters | | – | |

### Characteristics of the BMX NOM 0200 serial link module

| Protocol | | Modbus | | Character mode | |
|---|---|---|---|---|---|
| Module channels | | COM Port 0 | COM Port 0 and Port 1 | COM Port 0 | COM Port 0 and Port 1 |
| Structure | Physical interface | RS 232, 8-wire *(2)* | RS 485, 2-wire | RS 232, 8-wire *(2)* | RS 485, 2-wire |
| | Serial link type | Non-isolated | Isolated | Non-isolated | Isolated |
| | Access method | Master/slave type, switchable online | | – | |
| | Peripheral power supply | – | | – | |
| | Connection | RJ45 female connector | Two female RJ45 connectors | RJ45 female connector | Two female RJ45 connectors |
| Transmission | Mode | Asynchronous in baseband | | | |
| | Frame | RTU/ASCII, Full duplex | RTU/ASCII, Half duplex | Full duplex | Half duplex |
| | Data rate | 0.3…115.2 Kbps | 0.3…57.6 Kbps | 0.3…115.2 Kbps | 0.3…57.6 Kbps |
| | Medium | Shielded twisted pairs | Shielded twisted pair | Shielded twisted pairs | Shielded twisted pair |
| | Line polarization | – | Automatic | – | Configurable with Unity Pro software |
| Configuration | Number of devices | 2 (point-to-point) | Up to 32 per segment | 2 (point-to-point) | Up to 32 per segment |
| | Maximum number of link addresses | 248 | | 248 | |
| | Maximum length of bus | 15 m | 1000 m | 15 m | 1000 m |
| | Maximum length of a tap link | – | 40 m isolated link | – | 40 m isolated link |
| Services | Frame | 252 bytes of data per RTU request 504 characters per ASCII request | | 1 KB of data per request | |
| | Safety, check parameter | One CRC on each frame (RTU) One LRC on each frame (ASCII) | | One LRC on each frame (ASCII) | |
| | Monitoring | Diagnostics counters, event counters | | – | |

*(1) For an isolated link, the* **TWD XCA ISO** *isolation box must be used.*
*(2) Manages the RXD, TXD, TRS, DTR, DSR, CTS and DCD signals; does not manage the RI signal.*

Description: page 3/49 Functions: page 3/51 References: page 3/51 Connections: page 3/52

# Modicon M340 automation platform

## Modbus and Character mode serial link



### Modbus functions

| Code | Functions | Modbus slave (server) | Modbus master (client) |
|---|---|---|---|
| 01 | Read output bits | Yes | Yes |
| 02 | Read input bits | Yes | Yes |
| 03 | Read output words | Yes | Yes |
| 04 | Read input words | Yes | Yes |
| 05 | Force 1 output bit | Yes | – |
| 06 | Preset 1 output word | Yes | – |
| 08 | Diagnostics | Yes | – |
| 0F | Write n output bits | Yes | – |
| 10 | Write n output words | Yes | – |
| 15 | Force n output bits | – | Yes |
| 16 | Preset n output words | Yes | Yes |
| 17 | Read/write n output words | Yes | – |
| 2B/0D | Access CANopen object dictionary | Yes | – |
| 2B/OE | Read slave identification | Yes | – |
| Other code | Access any Modbus function using the [DATA_EXCHG] DFB user function block *(1)* | – | Yes |

*(1) The* [DATA_EXCHG] *DFB user function block can also be used to send Modbus/TCP requests on the Ethernet network.*

### References

*BMX P34 1000/2000*

*BMX P34 2020*

*BMX NOM 0200*

| I/O capacity | Memory capacity | Integrated communication ports | Reference | Weight kg |
|---|---|---|---|---|
| **BMX P34 10 Standard processor with integrated serial link, 2 racks** | | | | |
| **512 discrete I/O 128 analog I/O20 app-sp. channels** | 2048 KB integrated | Modbus serial link | **BMX P34 1000** | 0.200 |
| **BMX P34 20 Performance processors with integrated serial link, 4 racks** | | | | |
| **1024 discrete I/O 256 analog I/O36 app-sp. channels** | 4096 KB integrated | Modbus serial link | **BMX P34 2000** | 0.200 |
| | | Modbus serial link CANopen bus | **BMX P34 2010** | 0.210 |
| | | Modbus serial link CANopen bus version V2.1 *(1)* | **BMX P34 20102** | 0.210 |
| | | Modbus serial link Ethernet Modbus/TCP network | **BMX P34 2020** | 0.205 |

### Modbus serial link

| Designation | Protocol | Physical layer | Reference | Weight kg |
|---|---|---|---|---|
| **Modbus serial link 2-channel** | Modbus master/slave RTU/ASCII, Character mode, GSM/GPRS modem | 1 non-isolated RS 232 channel (Port 0) 2 isolated RS 485 channels (Port 0 and Port 1) | **BMX NOM 0200** | 0.230 |

### Cordsets for RS 232 serial link *(2)*

| Designation | Description | | Length | Reference | Weight kg |
|---|---|---|---|---|---|
| **Cordset for Data Terminal Equipment (DTE)** (printer) | Equipped with an RJ45 connector and a 9-way female SUB-D connector | | 3 m | **TCS MCN 3M4F3C2** | 0.150 |
| **Cordset for Data Connection Equipment (DCE)** (modem, etc.) | Equipped with an RJ45 connector and a 9-way male SUB-D connector | 4-wire (RX, TX, RTS, CTS) | 3 m | **TCS MCN 3M4M3S2** | 0.150 |
| | | 8-wire (excluding RI signal) | 3 m | **TCS XCN 3M4F3S4** | 0.165 |

*(1) Version which can be used to customize configuration of the device Boot Up procedure compatible with all third-party CANopen products. Requires Unity Pro version V4.1.*
*(2) RS 485 serial link connection (see pages 3/52 and 3/53).*

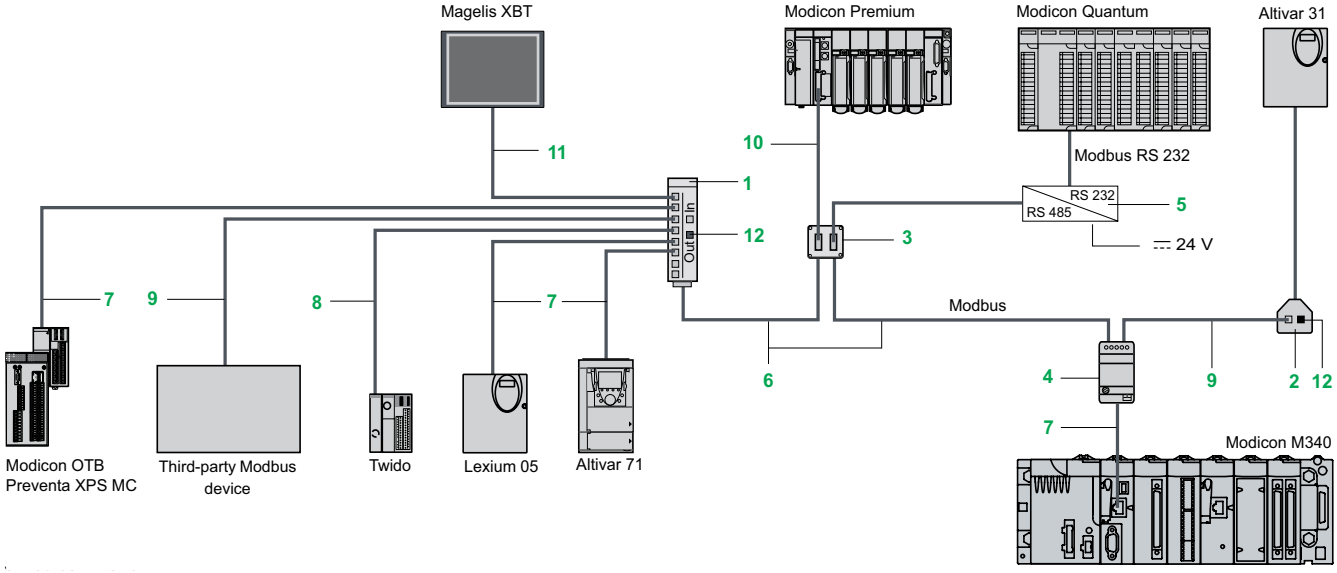
# Modicon M340 automation platform

## Modbus and Character mode serial link

## Cabling system



### Cabling system




### Extension and adaptation elements for RS 485 serial link

*TSX SCA 50*

*LU9 GC3*

*TSX SCA 62*

*VW3 A8 306 TF●●*

*TWD XCA ISO*

*TWD XCA T3RJ*

*VW3 A8 114*

*XGS Z24*

| Designation | Description | No. | Length | Unit reference | Weight kg |
|---|---|---|---|---|---|
| **Modbus splitter box** | - 1 screw terminal block for trunk cable: D(A), D(B), ⏚ and 0V<br>- 8 x RJ45 connectors for tap-off<br>- 2 x RJ45 connectors for series connection of LU9 GC3 splitter boxes<br>Mounted on 35 mm ⊔ | 1 | – | **LU9 GC3** | 0.500 |
| **T-junction boxes**<br>Dedicated component for Altivar and Lexium | - 2 x RJ45 connectors<br>- 1 integrated cable with RJ45 connector | 2 | 0.3 m | **VW3 A8 306 TF03** | 0.190 |
| | | | 1 m | **VW3 A8 306 TF10** | 0.210 |
| **Passive T-junction box** | - Tap-off and extension of the bus<br>- Line termination | – | – | **TSX SCA 50** | 0.520 |
| **2-channel passive subscriber socket**<br>2 x 15-way female SUB-D connectors and 2 screw terminal blocks | - 2-channel tap-off point and extension of trunk cable<br>- Address coding<br>- Line termination | 3 | – | **TSX SCA 62** | 0.570 |
| **Junction box**<br>Screw terminal block for trunk cable tap-off<br>1 x RJ45 connector for tap-off | - Isolation of the RS485 serial link<br>- Line termination (R = 120 Ω, C = 1 nF)<br>- Line pre-polarization *(1)* (2 R = 620 Ω)<br>24 V ⎓ power supply *(2)*<br>Mounted on 35 mm ⊔ | 4 | – | **TWD XCA ISO** | 0.100 |
| **Junction box**<br>3 x RJ45 connectors | - Line termination (R =120 Ω, C = 1 nF)<br>- Line pre-polarization *(1)* (2 R = 620 Ω)<br>Mounted on 35 mm ⊔ | – | – | **TWD XCA T3RJ** | 0.080 |
| **Modbus/Bluetooth® adaptor** | - 1 Bluetooth® adaptor (range 10 m, class 2) with 1 x RJ45 connector<br>- 1 x 0.1 m long cordset for PowerSuite with 2 x RJ45 connectors<br>- 1 x 0.1 m long cordset for TwidoSuite, with 1 x RJ45 connector and 1 mini-DIN connector<br>- 1 RJ45/9-way male SUB-D adaptor for Altivar drives | – | – | **VW3 A8 114** | 0.155 |
| **RS 232C/RS 485 line converter** without modem signals | 24 V ⎓/20 mA power supply , 19.2 Kbps<br>Mounted on 35 mm ⊔ | 5 | – | **XGS Z24** | 0.100 |
| **Line terminator** | For RJ45 connector<br>R = 120 Ω, C = 1 nF | 12 | Sold in packs of 2 | **VW3 A8 306 RC** | 0.200 |

*(1) Line polarization required for connection to the master Twido programmable controller.*
*(2) 24 V ⎓ power supply, or power supply via the serial port integrated in Modicon M340 processors.*

# Modicon M340 automation platform

## Modbus and Character mode serial link

## Cabling system

### Cables and cordsets for RS 232 serial link

| Designation | Description | No. | Length | Unit reference | Weight kg |
|---|---|---|---|---|---|
| **RS 485 double shielded twisted pair trunk cables** | Modbus serial link, supplied without connector | 6 | 100 m | **TSX CSA 100** | 5.680 |
| | | | 200 m | **TSX CSA 200** | 10.920 |
| | | | 500 m | **TSX CSA 500** | 30.000 |
| **Modbus RS 485 cordsets** | 2 x RJ45 connectors | 7 | 0.3 m | **VW3 A8 306 R03** | 0.030 |
| | | | 1 m | **VW3 A8 306 R10** | 0.050 |
| | | | 3 m | **VW3 A8 306 R30** | 0.150 |
| | 1 x RJ45 connector and 1 x 15-way SUB-D connector | – | 3 m | **VW3 A8 306** | 0.150 |
| | 1 x mini-DIN connector for Twido controller and 1 x RJ45 connector | 8 | 0.3 m | **TWD XCA RJ003** | 0.040 |
| | | | 1 m | **TWD XCA RJ010** | 0.090 |
| | | | 3 m | **TWD XCA RJ030** | 0.160 |
| | 1 x RJ45 connector and 1 end with flying leads | 9 | 3 m | **VW3 A8 306 D30** | 0.150 |
| | 1 miniature connector and 1 x 15-way SUB-D connector | 10 | 3 m | **TSX SCP CM 4530** | 0.180 |
| **Cordsets for Magelis XBT display units and terminals** | 1 x RJ45 connector and 1 x 25-way SUB-D connector for:<br>- XBT N200/N400/NU400<br>- XBT R410/411<br>- XBT GT2...GT7 (COM1 port) *(1)* | 11 | 2.5 m | **XBT Z938** | 0.210 |
| | 2 x RJ45 connectors for:<br>- XBT GT1 (COM1 port)<br>- XBT GT2...GT7 (COM2 port) | 11 | 3 m | **VW3 A8 306 R30** | 0.150 |

### Cordsets for RS 232 serial link

| Designation | Description | Length | Reference | Weight kg |
|---|---|---|---|---|
| **Cordset for Data Terminal Equipment (DTE)** (printer) | Serial link for DTE *(2)*<br>1 x RJ45 connector and 1 x 9-way female SUB-D connector | 3 m | **TCS MCN 3M4F3C2** | 0.150 |
| **Cordset for Data Connection Equipment (DCE)** (modem, converter) | Serial link for DCE<br>1 x RJ45 connector and 1 x 9-way male SUB-D connector | 3 m | **TCS MCN 3M4M3S2** | 0.150 |

*(1) For use with* **XBT ZG909** *adaptor.*
*(2) If the terminal is equipped with a 25-way SUB-D connector, you will also need to order the* **TSX CTC 07** *25-way female/9-way male SUB-D adaptor.*