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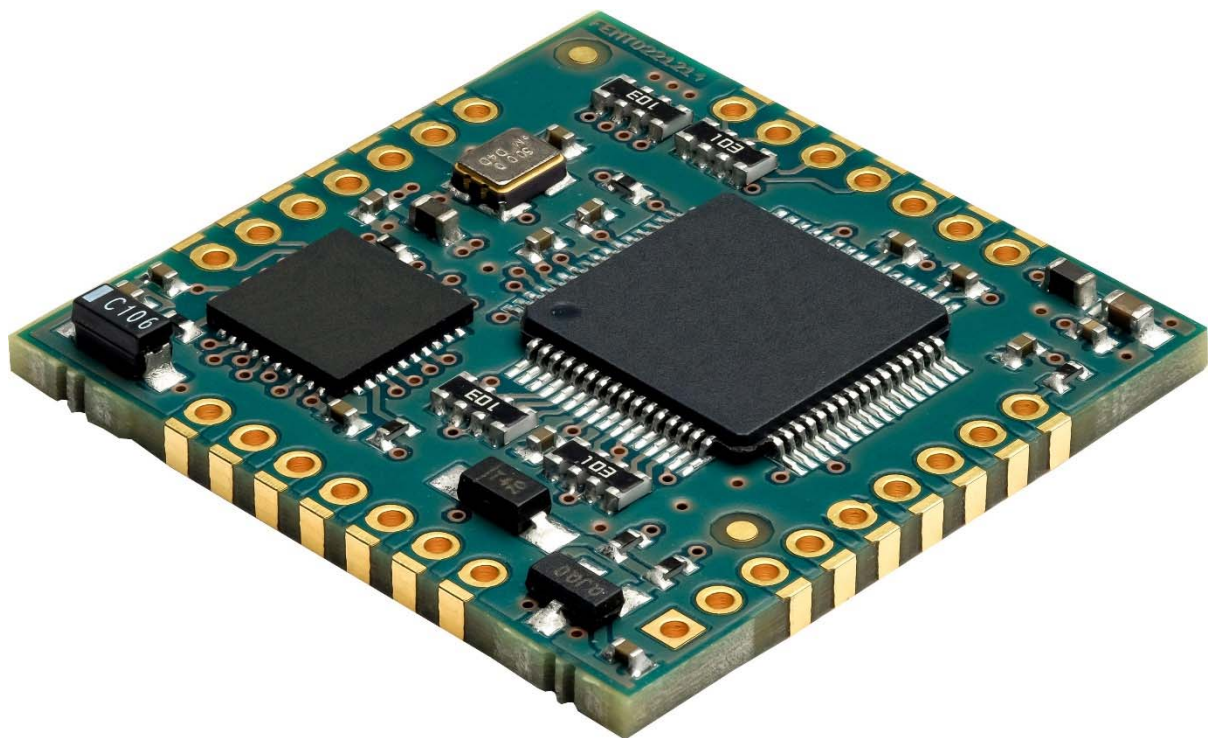
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# XT - FEMTO - SXL

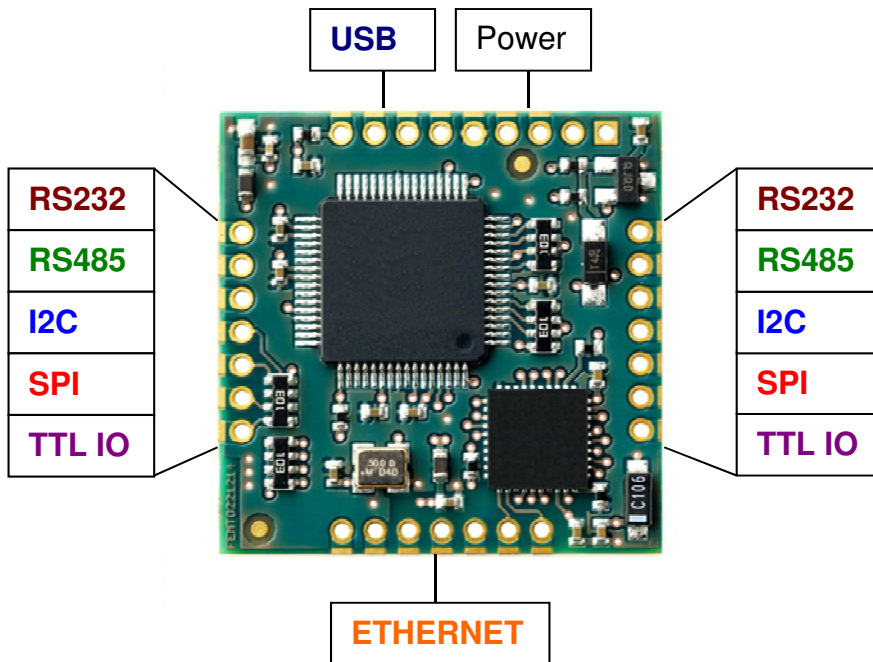


■ MADE  
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## XT-FEMTO-SXL

The **XT-FEMTO-SXL** is a very small embedded network module which can be easily integrated into any terminal. The **XT-FEMTO-SXL** embedded network module with the dimensions 27 x 27 x 3mm, can be built-in as SMD or as THT component and be used in your switching directly or optionally. A total of **two bus systems** with five switchable interfaces such as **RS232**, **RS485**, **I2C**, **SPI** as well as **TTL-IO** will be made available. With only a few additional components such as a RJ45 jack with an integrated transducer and a 3.3 volts power supply your terminal will be immediately network-compatible and can be accessed world-wide.

## Hardware description



## Supported systems

1. Windows
2. Linux
3. UNIX

## Supported protocols IP-Dual-Stack

- |            |                  |
|------------|------------------|
| 1. IPv4    | 20. IPv6         |
| 2. TCP     | 21. NDP          |
| 3. UDP     | 22. ICMPv6       |
| 4. FTP     | 23. DHCPv6       |
| 5. TFTP    | 24. TCPv6        |
| 6. ICMP    | 25. UDPv6        |
| 7. ARP     | 26. Netbios-NS   |
| 8. SNMP    | 27. LLMNR        |
| 9. LPR     | 28. ZeroConfig   |
| 10. DHCP   | -APIPA           |
| 11. BOOTP  | -AutoIP          |
| 12. DNS    | 29. IP-Multicast |
| 13. TELNET | 30. AK-M2M       |
| 14. HTML   | 31. IEEE802.1x   |
| 15. http   | 32. SSL 3.0      |
| 16. DYNDNS | 33. TLS1.0       |
| 17. SMTP   | 34. TLS1.1       |
| 18. POP3   | 35. TLS1.2       |
| 19. SYSLOG |                  |

## Technical data

- **Temperature range:**  
-40°C .. + 85°C
- **Standards**  
CE / WEEE / RoHS  
EN 55022 Class B  
EN 55024 Class A
- **Power supply:**  
3.3 volts  
170 mA
- **Dimensions:**  
27 x 27 x 3 mm
- **Weight:**  
3 grams
- **Ethernet (MDIX)**  
10 Half Duplex  
10 Full Duplex  
100 Half Duplex  
100 Full Duplex  
AutoSensing
- **Interfaces – Features**  
- All data pins 3.3 volts TTL, 10K Pullup  
- All data interfaces are freely selectable
- **2 x RS232/RS485**  
Baud rate : up to 2.5 MBauds  
DataBits : 7,8  
Parity : Odd,Even,None  
Mark,Space  
Signals : TXD, RXD, RTS, CTS,  
DSR, DTR, DCD  
ReadWrite
- **2 x I2C**  
Mode : Master  
DataBits : 8  
Data rate : 100KHz up to 2.5 MHz  
Signals : SDA, SCL
- **2 x SPI**  
Mode : Master/Slave  
DataBits : 8  
Data rate : up to 25 MBit(Master)  
up to 2.5 MBit(Slave)  
Signals : MISO,MOSI,SCK,SS  
SD-CARD : CardDetect,CardLock
- **2 x TTL-IO**  
Mode : digital Input/Output  
Signals : 7 Pins
- **1 x USB** (optional)
- **1 x Ethernet**  
Signals : RX+,RX-,TX+,TX-,AVDD,  
LED-ACT,LED-LINK

## Management

1. Telnet
2. Browser
3. serial interface

## Emulations and functions

- Modem Emulation
- Connect-On-Data
- Auto-Connect
- Tunnel-Mode
- DYNDNS-Client
- FTP-Server
- FTP-Client
- LPR-Server
- I2C – Master
- SPI – Master / Slave
- TTL – IO
- 512KB internal flashdrive
- Flash-File system
- SD and DF CARD
- 4bit and SPI DISPLAY
- E-Mail – Client
- TCP/UDP -Client
- TCP/UDP –Server
- SYSLOG-Client

### RS232 (TTL)

It is possible to use up to 2 independent, individually operating serial interfaces. Each interface can be individually set and it is possible to transfer data rates of up to 2.500.000 bauds. Furthermore, it is possible to additionally set emulations such as modem, Auto-Connect, Connect-On-Data, TCP / UDP client using up to 10 parallel connections, TCP/UDP server, tunnel mode with transfers of the signal modes as well as settings, E-Mail client including sending and receiving of e-mails.

### RS485 (TTL)

It is possible to use up to 2 independently operating RS485 interfaces. This mode also supports so-called 2-wire components, e.g. the MAX3072E, since it does not possess a proper control wire. Each interface can be individually set and it is possible to transfer data rates of up to 2.500.000 bauds. Furthermore, it is possible to additionally set emulations such as modem, AutoConnect, Conntect-On-Data, TCP/UDP client using up to 10 parallel connections, TCP/UDP server, tunnel mode with transfer of the signal modes as well as settings, E-Mail client including sending and receiving of e-mails.

### I2C

It is possible to use up to 2 independently operating I2C interfaces. A data mode has also been implemented to achieve a maximum of flexibility. The interface can be individually set up and it is possible to transfer data rates of up to 2.500.000 bits/sec. Furthermore, you can additionally set emulations such as modem, AutoConnect, Conntect-On-Data, TCP/UDP client using up to 10 parallel connections, TCP/UDP server, E-Mail client including sending and receiving of e-mails.

### SPI

It is possible to use up to 2 independently operating SPI interfaces in the master or slave mode. Each interface can be set up individually and it is possible to transfer data rates of up to 25MBit(Master) and 2.5Mbit(Slave). Furthermore, it is possible to additionally set emulations such as AutoConnect, Conntect-On-Data, TCP/UDP client using up to 10 parallel connections, TCP/UDP server, E-Mail-Client including sending and receiving of e-mails.

By making adjustments in the setup, the SPI interface can directly operate SD cards, DF cards or Data-Flash components. An implemented Flash-File system with FAT12/16/32 structure supports the FTP to save data on it or to read data from it. Now it is possible to save your own homepage or JAVA applet in order to present a proper and individual look to the customers via the WEB server.

SD cards:

- Up to 4 GByte
- FAT12/16/32
- PC-compatible

DF cards / components:

- Up to 4 GByte
- FAT12/16/32
- AT45DB011B, AT45DB021B  
AT45DB041B, AT45DB081B  
AT45DB0161B, AT45DB0321B  
AT45DB0642, AT45DB1282  
will be directly identified.

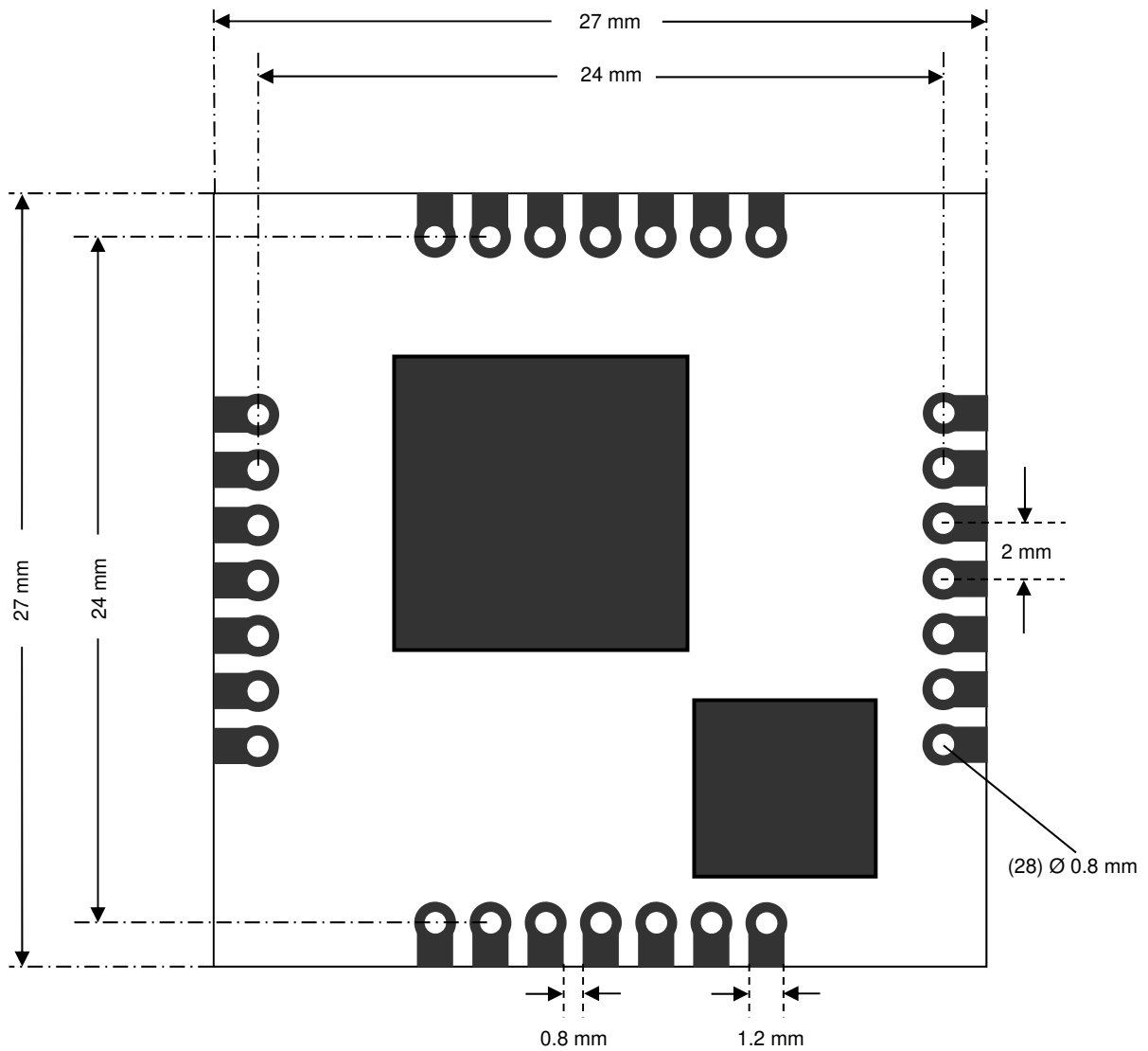
The SPI interface can also directly control as SPI display, e.g. the EA DOGM162B-A, which you can directly use via TCP/IP.

### TTL IO

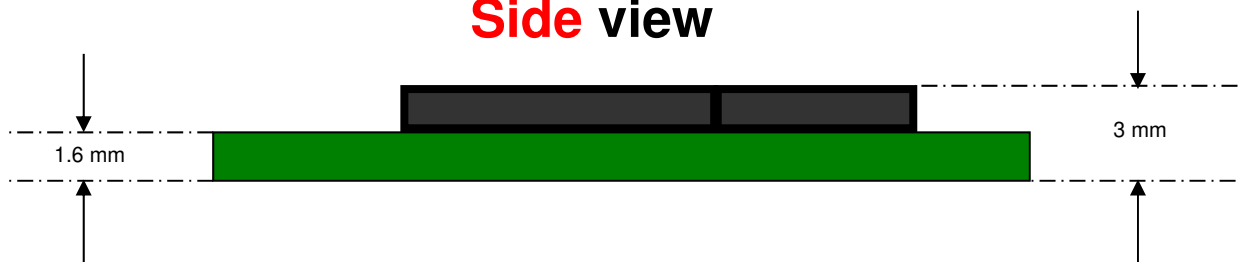
It is possible to directly control up to 14 pins via two interfaces. To do so, there is a proper control mode which can read the signals, switch them on or off. A tunnel mode allows the automatic transfer of the signal modes.

## Dimensions

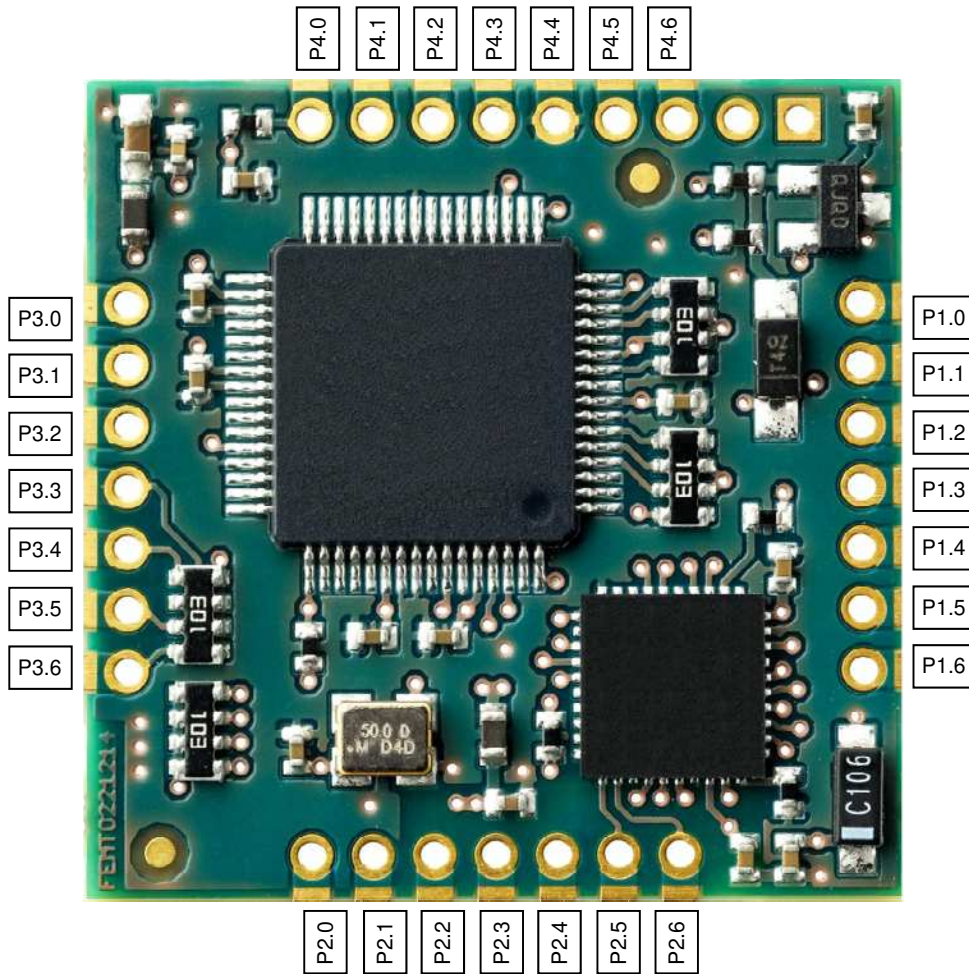
### Top view



### Side view



## Top view



### Absolute Maximum Ratings

|                                      |                       |
|--------------------------------------|-----------------------|
| Ambient temperature under bias.....  | -40°C to +85°C        |
| Storage temperature.....             | -65°C to +150°C       |
| Voltage on VDD.....                  | -0.3V to +4.0V        |
| Voltage on any 3.3 V pin.....        | -0.3V to (VDD + 0.3V) |
| Voltage on any 5V tolerant pin ..... | -0.3V to +5.5V        |
| Voltage on D+ or D- pin .....        | -0.3V to (VDD + 0.3V) |
| Voltage on VBUS.....                 | -0.3V to +5.5V        |

## PIN DESCRIPTION

### PORT1:

| PIN  | RS232 | RS485 | I2C  | SPI   | TTL-IO | PULLUP | Type | VDD max      |
|------|-------|-------|------|-------|--------|--------|------|--------------|
| P1.0 | TXD0  | TXD0  |      | MISO0 | PIN1   | 10K    | I/O  | +3.3 volts   |
| P1.1 | RXD0  | RXD0  |      | MOSI0 | PIN2   | 10K    | I/O  | +3.3 volts   |
| P1.2 | RTS0  |       | SCL0 |       | PIN3   | 10K    | I/O  | +3.3 volts   |
| P1.3 | CTS0  |       | SDA0 |       | PIN4   | 10K    | I/O  | +3.3 volts   |
| P1.4 | DTR0  | R/W0  |      | SS0   | PIN5   | 10K    | I/O  | +3.3 volts   |
| P1.5 | DSR0  |       |      | SCK0  | PIN6   | 10K    | I/O  | +3.3 volts   |
| P1.6 | DCD0  |       |      |       | PIN7   | 10K    | I/O  | +5V tolerant |

### PORT2:

| PIN  | Ethernet | PULLUP | Type | VDD max    |
|------|----------|--------|------|------------|
| P2.0 | LED LINK |        | O    | +3.3 volts |
| P2.1 | LED ACT  |        | O    | +3.3 volts |
| P2.2 | AVDD 3.3 |        | PWR  |            |
| P2.3 | TD-      |        | I/O  |            |
| P2.4 | TD+      |        | I/O  |            |
| P2.5 | RD-      |        | I/O  |            |
| P2.6 | RD+      |        | I/O  |            |

### PORT3:

| PIN  | RS232 | RS485 | I2C  | SPI   | TTL-IO | PULLUP | Type | VDD max      |
|------|-------|-------|------|-------|--------|--------|------|--------------|
| P3.0 | TXD1  | TXD1  |      | MISO1 | PIN1   | 10K    | I/O  | +3.3 volts   |
| P3.1 | RXD1  | RXD1  |      | MOSI1 | PIN2   | 10K    | I/O  | +3.3 volts   |
| P3.2 | RTS1  |       | SCL1 |       | PIN3   | 10K    | I/O  | +5V tolerant |
| P3.3 | CTS1  |       | SDA1 |       | PIN4   | 10K    | I/O  | +5V tolerant |
| P3.4 | DTR1  | R/W1  |      | SS1   | PIN5   | 10K    | I/O  | +3.3 volts   |
| P3.5 | DSR1  |       |      | SCK1  | PIN6   | 10K    | I/O  | +3.3 volts   |
| P3.6 | DCD1  |       |      |       | PIN7   | 10K    | I/O  | +5V tolerant |

### PORT4:

| PIN  | USB   | POWER | RESET | Type | PULLUP | VDD max      |
|------|-------|-------|-------|------|--------|--------------|
| P4.0 | USBID |       |       | I    | 10K    | +5V tolerant |
| P4.1 | USB+  |       |       | I/O  |        | +3.3 volts   |
| P4.2 | USB-  |       |       | I/O  |        | +3.3 volts   |
| P4.3 | VBUS  |       |       | I    |        | +5V tolerant |
| P4.4 |       | GND   |       | PWR  |        | 0            |
| P4.5 |       | VDD   |       | PWR  |        | +3.3 volts   |
| P4.6 |       |       | RESET | I    | 10K    | +5V tolerant |

= ActivLow

# Schematic

