**Product datasheet**

**Characteristics**

**TM251MESC**
controller M251 Ethernet CAN

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**Main**

- **Range of product**: Modicon M251
- **Product or component type**: Logic controller
- **[Us] rated supply voltage**: 24 V DC

**Complementary**

- **Maximum number of I/O expansion module**: 7 (local) / 14 (remote)
- **Supply voltage limits**: 20.4…28.8 V
- **Inrush current**: 50 A
- **Power consumption in W**: 32.6…40.4 W (with max number of I/O expansion module)
- **Memory capacity**: 8 MB for program / 64 MB for system memory RAM
- **Data backed up**: 128 MB built-in flash memory for backup of user programs
- **Data storage equipment**: <= 32 GB SD card (optional)
- **Battery type**: BR2032 lithium non-rechargeable, battery life: 4 year(s)
- **Backup time**: 2 years at 25 °C
- **Execution time for 1 KInstruction**: 0.3 ms for event and periodic task / 0.7 ms for other instruction
- **Execution time per instruction**: 0.022 µs
- **Application structure**: 3 cyclic master tasks + 1 freewheeling task / 8 event tasks / 4 cyclic master tasks / 8 external event tasks
- **Realtime clock**: With
- **Clock drift**: <= 60 s/month at 25 °C
- **Integrated connection type**: USB port with mini B USB 2.0 connector / Non isolated serial link serial with RJ45 connector and RS232/RS485 interface / Dual-port Ethernet with RJ45 connector / CANopen J1939 with SUB-D 9 connector
- **Supply**: (serial)serial link supply: 5 V, <200 mA
- **Transmission rate**: 1.2...115.2 kbit/s (115.2 kbit/s by default) for bus length of 15 m for RS485 / 1.2...115.2 kbit/s (115.2 kbit/s by default) for bus length of 3 m for RS232

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Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications.

28 Nov, 2019
| Communication port protocol | USB port: USB - SoMachine-Network  
Non isolated serial link: Modbus master/slave - RTU/ASCII or SoMachine-Network |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Port Ethernet</td>
<td>Ethernet marking 10BASE-T/100BASE-TX - 2 copper cable</td>
</tr>
<tr>
<td>Web services</td>
<td>Web server</td>
</tr>
</tbody>
</table>
| Communication service       | DHCP client  
Downloading  
Ethernet/IP slave device  
IEC VAR ACCESS  
Modbus TCP client  
Modbus TCP server  
Modbus TCP slave device  
Monitoring  
NGVL  
Programming  
Updating firmware  
SMS notifications  
FTP client/server  
SNMP client/server  
SQL client  
Send and receive email from the controller based on TCP/UDP library  
Web server (WebVisu & XWeb system)  
OPC UA server  
DNS client |
| Maximum number of connections | 8 Modbus server  
8 Modbus client  
16 Ethernet/IP target  
4 FTP server  
10 web server  
8 SoMachine protocol |
| CANopen feature profile     | DR 303-1  
DS 301 V4.02 |
| Number of slave            | 63 CANopen: |
| Local signalling            | 1 LED (green)PWR:  
1 LED (green)RUN:  
1 LED (red)module error (ERR):  
1 LED (red)/O error (/O):  
1 LED (green)SD card access (SD):  
1 LED (red)BAT:  
1 LED (green)Ethernet port activity:  
1 LED (green)SL:  
1 LED (red)bus fault on TM4 (TM4):  
1 LED (green)CANopen run:  
1 LED (green)CANopen error: |
| Electrical connection       | removable screw terminal blockpower supply (pitch 5.08 mm) |
| Insulation                  | Non-insulated between supply and internal logic  
Between supply and ground at 500 V AC |
| Marking                     | CE |
| Surge withstand             | 1 kV shielded cable common mode conforming to EN/IEC 61000-4-5  
1 kV power lines common mode conforming to EN/IEC 61000-4-5  
0.5 kV power lines differential mode conforming to EN/IEC 61000-4-5 |
| Mounting support            | Top hat type TH35-15 rail conforming to IEC 60715  
Top hat type TH35-7.5 rail conforming to IEC 60715 plate or panel with fixing kit |
| Height                      | 90 mm |
| Depth                       | 95 mm |
| Width                       | 54 mm |
| Net weight                  | 0.22 kg |

**Environment**

| Standards                  | ANSI/ISA 12-12-01  
CSA C22.2 No 142  
CSA C22.2 No 213  
EN/IEC 61131-2-2:2007  
Marine specification (LR, ABS, DNV, GL)  
UL 1604  
UL 508 |
| **Product certifications** | CULus  
| | CSA  
| **Resistance to electrostatic discharge** | 8 kV in air conforming to EN/IEC 61000-4-2  
| | 4 kV on contact conforming to EN/IEC 61000-4-2  
| **Resistance to electromagnetic fields** | 10 V/m 80 MHz...1 GHz conforming to EN/IEC 61000-4-3  
| | 3 V/m 1.4 GHz...2 GHz conforming to EN/IEC 61000-4-3  
| | 1 V/m 2 GHz...3 GHz conforming to EN/IEC 61000-4-3  
| **Resistance to fast transients** | 2 kV (power lines) conforming to EN/IEC 61000-4-4  
| | 1 kV (Ethernet line) conforming to EN/IEC 61000-4-4  
| | 1 kV (serial link) conforming to EN/IEC 61000-4-4  
| **Resistance to conducted disturbances** | 10 V 0.15...80 MHz conforming to EN/IEC 61000-4-6  
| | 3 V 0.1...80 MHz conforming to Marine specification (LR, ABS, DNV, GL)  
| | 10 V spot frequency (2, 3, 4, 6.2, 8.2, 12.6, 16.5, 18.8, 22, 25 MHz) conforming to Marine specification (LR, ABS, DNV, GL)  
| **Electromagnetic emission** | Conducted emissions - test level: 120...69 dBμV/m QP (power lines) at 10...150 kHz conforming to EN/IEC 55011  
| | Conducted emissions - test level: 63 dBμV/m QP (power lines) at 1.5...30 MHz conforming to EN/IEC 55011  
| | Radiated emissions - test level: 40 dBμV/m QP class A (10 m) at 30...230 MHz conforming to EN/IEC 55011  
| | Conducted emissions - test level: 79...63 dBμV/m QP (power lines) at 150...1500 kHz conforming to EN/IEC 55011  
| | Radiated emissions - test level: 47 dBμV/m QP class A (10 m) at 230...1000 MHz conforming to EN/IEC 55011  
| **Immunity to microbreaks** | 10 ms  
| **Ambient air temperature for operation** | -10...35 °C (vertical installation)  
| | -10...55 °C (horizontal installation)  
| **Ambient air temperature for storage** | -25...70 °C  
| **Relative humidity** | 10...95 %, without condensation (in operation)  
| | 10...95 %, without condensation (in storage)  
| **IP degree of protection** | IP20 with protective cover in place  
| **Pollution degree** | 2  
| **Operating altitude** | 0...2000 m  
| **Storage altitude** | 0...3000 m  
| **Vibration resistance** | 3.5 mm at 5...8.4 Hz on symmetrical rail  
| | 3 gn at 8.4...150 Hz on symmetrical rail  
| | 3.5 mm at 5...8.4 Hz on panel mounting  
| | 3 gn at 8.4...150 Hz on panel mounting  
| **Shock resistance** | 15 gn for 11 ms  

**Offer Sustainability**

- **Sustainable offer status**: Green Premium product
- **REACH Regulation**: REACH Declaration
- **REACH free of SVHC**: Yes
- **EU RoHS Directive**: Pro-active compliance (Product out of EU RoHS legal scope)  
| | EU RoHS Declaration  
| **Mercury free**: Yes
- **RoHS exemption information**: Yes
- **China RoHS Regulation**: China RoHS declaration
- **Environmental Disclosure**: Product Environmental Profile
- **Circularity Profile**: End of Life Information
- **WEEE**: The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins
Dimensions

![Dimensions Diagram]

- Width: 54 mm
- Height: 25.6 mm
- Depth: 35.4 mm
- Height: 21.2 mm
Clearance
Product datasheet  

Mounting and Clearance  

**TM251MESC**

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**Mounting Position**

![Mounting Position Diagrams]

**NOTE:** Keep adequate spacing for proper ventilation and to maintain an ambient temperature between -10°C (14°F) and 55°C (131°F).

**Acceptable Mounting**

![Acceptable Mounting Diagrams]

**NOTE:** Expansion modules must be mounted above the controller.

**Incorrect Mounting**

![Incorrect Mounting Diagrams]
Direct Mounting on a Panel Surface
USC Connection to a PC
Ethernet Connection to a PC
### CANopen

#### Wiring

<table>
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<tr>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>–</td>
<td>Reserved</td>
</tr>
<tr>
<td>2</td>
<td>CAN_L</td>
<td>CAN_L bus line</td>
</tr>
<tr>
<td>3</td>
<td>CAN_GND</td>
<td>CAN ground</td>
</tr>
<tr>
<td>4</td>
<td>–</td>
<td>Reserved</td>
</tr>
<tr>
<td>5</td>
<td>(CAN_SHLD)</td>
<td>Optional CAN shield</td>
</tr>
<tr>
<td>6</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>7</td>
<td>CAN_H</td>
<td>CAN_H bus line</td>
</tr>
<tr>
<td>8</td>
<td>–</td>
<td>Reserved</td>
</tr>
<tr>
<td>9</td>
<td>(CAN_V+)</td>
<td>Optional CAN external positive supply</td>
</tr>
</tbody>
</table>