



Touch panel, 24 V DC, 3.5z, TFTcolor, ethernet, (PLC)

Part no. **XV-102-B0-35TQR-10**  
 Catalog No. **140007**

EL-Nummer (Norway) **0004521101**

### Delivery program

|   |  |       |  |
|---|--|-------|--|
| Product range                               |  |       | XV100 3.5"   |
| Product range                               |  |       | XV-102   |
| Function                                    |  |       | HMI-PLC (SPS function, retrofittable)  |
| Common features of the model series         |  |       | Ethernet interface<br>USB device<br>Slot for SD card<br>UL508, cUL approvals |
| Display - Type                              |  |       | Color display, TFT   |
| Touch-technology                            |  |       | Resistive-Touch  |
| Number of colours                           |  |       | 64 k Colours   |
| Resolution                                  |  | Pixel | QVGA<br>320 x 240  |
| Portrait format                             |  |       | yes  |
| Screen diagonal                             |  | Inch  | 3.5  |
| Model                                       |  |       | Insulating enclosure and front plate   |
| Operating system                            |  |       | Windows CE 5.0 (licence incl.)   |
| PLC-licence                                 |  |       | Can be fitted by user with article no. 142581 LIC-PLC-MXP-COMPACT            |
| License certificates for onboard interfaces |  |       | Can be expanded as required, see Accessories -> License product certificates |
| built-in interfaces                         |  |       | 1 x Ethernet 10/100 Mbps<br>1 x USB device                                   |
| Front type                                  |  |       | Standard front with standard membrane (fully enclosed)                       |
| Utilization                                 |  |       | Flush mounting   |
| Slots                                       |  |       | for SD card: 1   |
| Memory card automation                      |  |       | Optionally with SD card -> article no. 139807                                |
| Pluggable communication cards (optional)    |  |       | no   |
| Touch sensor                                |  |       | Glass with film  |
| Heat dissipation                            |  | W     | 5  |

### Technical data

#### Display

|                                   |  |                   |                                |
|-----------------------------------|--|-------------------|--------------------------------|
| Display - Type                    |  |                   | Color display, TFT             |
| Screen diagonal                   |  | Inch              | 3.5                            |
| Resolution                        |  | Pixel             | QVGA<br>320 x 240              |
| Visible screen area               |  | mm                | 70 x 53                        |
| Number of colours                 |  |                   | 64 k Colours                   |
| Contrast ratio (Normally)         |  |                   | Normally 300:1                 |
| Brightness                        |  | cd/m <sup>2</sup> | Normally 250                   |
| Back-lighting                     |  |                   | LED<br>dimnable via software   |
| Service life of back-lighting     |  | h                 | Normally 40000                 |
| Resistive touch protective screen |  |                   | Touch sensor (glass with foil) |

#### Operation

|              |  |  |                           |
|--------------|--|--|---------------------------|
| Technology   |  |  | Resistive-Touch<br>4 wire |
| Touch sensor |  |  | Glass with film           |

#### System

|                 |  |  |  |
|-----------------|--|--|--|
| Processor       |  |  | RISC CPU, 32 Bit, 400 MHz  |
| Internal memory |  |  | DRAM (OS, Program and data memory): 64 MByte<br>NAND-Flash (can be used for data backup): approx. 128 MByte available<br>NVRAM (retained data): approx. 32 KByte available |

|                               |  |  |  |
|-------------------------------|--|--|--|
| External memory               |  |  | SD Memory Card Slot: SDA Specification 1.00                              |
| Cooling                       |  |  | Fanless CPU and system cooling, natural convection-based passive cooling |
| Back-up of real-time clock    |  |  |  |
| Battery (service life)        |  |  | non-replaceable, CR2032 soldered in                                      |
| Backup (time at zero voltage) |  |  | Normally 10 years  |

## Engineering

|                          |  |  |   |
|--------------------------|--|--|---|
| Visualisation software   |  |  | GALILEO<br>EPAM<br>XSOF-CODESYS-2<br>XSOF-CODESYS-3               |
| PLC-Programming software |  |  | XSOF-CODESYS-2<br>XSOF-CODESYS-3                                  |
| PLC-licence              |  |  | Can be fitted by user with article no. 142581 LIC-PLC-MXP-COMPACT |
| Operating system         |  |  | Windows CE 5.0 (licence incl.)                                    |


## Interfaces, communication

|                     |  |  |  |
|---------------------|--|--|--|
| built-in interfaces |  |  | 1 x Ethernet 10/100 Mbps<br>1 x USB device |
| USB device          |  |  | USB 2.0, not galvanically isolated         |
| Slots               |  |  | for SD card: 1                             |
| Ethernet            |  |  | 100Base-TX/10Base-T                        |

## Power supply

|                                      |                   |    |  |
|--------------------------------------|-------------------|----|--|
| Nominal voltage                      |                   |    | 24 V DC SELV (safety extra low voltage)  |
| permissible voltage                  |                   |    | Effective: 19.2-30.0 V DC (rated operating voltage -20%/+25%)<br>Absolute with ripple: 18,0-31,2 V DC<br>Battery powered: 18,0-31,2 V DC (rated operating voltage -25%/+30%)<br>35 V DC for a duration of < 100 ms |
| Voltage dips                         |                   | ms | ≤ 10 ms from rated voltage (24 V DC)<br>5 ms from undervoltage (19.2 V DC)   |
| Power consumption                    | P <sub>max.</sub> | W  | 5  |
| Heat dissipation                     |                   | W  | 5  |
| Note on heat dissipation             |                   |    | Heat dissipation with power consumption for 24 V, all ports and interfaces connected   |
| Protection against polarity reversal |                   |    | yes  |
| Type of fuse                         |                   |    | Yes (fuse not accessible)  |
| Potential isolation                  |                   |    | no potential isolation   |

## General

|   |  |    |   |
|---|--|----|---|
| Housing material                                    |  |    | Plastic, gray   |
| Front type  |  |    | Standard front with standard membrane (fully enclosed)  |
| Dimensions (W x H x D)                              |  | mm | 136 x 100 x 30  |
| flush mounted                                       |  |    | Clearance: W x H x D ≥ 30 mm (1.18")<br>Inclination from vertical: ±45° (if using natural convection) |
| Weight  |  | kg | 0.3   |
| Degree of protection (IEC/EN 60529, EN50178, VBG 4) |  |    | IP65 (at front), IP20 (at rear)   |
| Approvals   |  |    |   |
| Approvals   |  |    | cUL (UL508)<br>EAC  |
| Explosion protection (according to ATEX 94/9/EC)    |  |    | II 3D Ex II T70°C IP5x: Zone 22, Category 3D  |
| shipping classification                             |  |    | DNV GL  |
|   |  |    |                   |
| Applied standards and directives                    |  |    |   |
| EMC   |  |    | (in relation to CE)<br>EN 61000-6-2<br>EN 61000-6-4<br>EN 61131-2                                     |
| Product standards                                   |  |    | EN 50178<br>EN 61131-2  |
| Security  |  |    | EN 60950<br>UL 60950  |
| Mechanical shock resistance                         |  | g  | according to IEC 60068-2-27   |

|           |  |  |                               |
|-----------|--|--|-------------------------------|
| Vibration |  |  | according to IEC/EN 60068-2-6 |
| RoHS      |  |  | conform                       |

### Environmental conditions

|                                    |  |     |                          |
|------------------------------------|--|-----|--------------------------|
| Climatic environmental conditions  |  |     |                          |
| Air pressure (operation)           |  | hPa | 795 - 1080               |
| Temperature                        |  |     |                          |
| Operating ambient temperature min. |  | °C  | 0                        |
| Operating ambient temperature max. |  | °C  | + 50                     |
| Relative humidity                  |  |     |                          |
| Relative humidity                  |  |     | 10 - 95%, non-condensing |

### Supply voltage $U_{Aux}$

|                                      |           |   |                    |
|--------------------------------------|-----------|---|--------------------|
| Rated operational voltage            | $U_{Aux}$ | V | 24 V DC (-20/+25%) |
| Protection against polarity reversal |           |   | Yes                |
| Potential isolation                  |           |   | No                 |

### Supply voltage $U_{Pow}$

|                                      |           |   |                    |
|--------------------------------------|-----------|---|--------------------|
| Supply voltage                       | $U_{Pow}$ | V | 24 DC -20 % + 25 % |
| Input voltage ripple                 |           | % | $\leq 5$           |
| Protection against polarity reversal |           |   | yes                |

## Design verification as per IEC/EN 61439

|  |            |    |  |
|--|------------|----|--|
| Technical data for design verification   |            |    |  |
| Rated operational current for specified heat dissipation   | $I_n$      | A  | 0  |
| Heat dissipation per pole, current-dependent   | $P_{vid}$  | W  | 0  |
| Equipment heat dissipation, current-dependent  | $P_{vid}$  | W  | 0  |
| Static heat dissipation, non-current-dependent   | $P_{vs}$   | W  | 5  |
| Heat dissipation capacity  | $P_{diss}$ | W  | 0  |
| Operating ambient temperature min.   |            | °C | 0  |
| Operating ambient temperature max.   |            | °C | 50   |
| IEC/EN 61439 design verification   |            |    |  |
| 10.2 Strength of materials and parts   |            |    |  |
| 10.2.2 Corrosion resistance  |            |    |  |
|  |            |    | Meets the product standard's requirements.   |
| 10.2.3.1 Verification of thermal stability of enclosures   |            |    |  |
|  |            |    | Meets the product standard's requirements.   |
| 10.2.3.2 Verification of resistance of insulating materials to normal heat   |            |    |  |
|  |            |    | Meets the product standard's requirements.   |
| 10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects |            |    |  |
|  |            |    | Meets the product standard's requirements.   |
| 10.2.4 Resistance to ultra-violet (UV) radiation   |            |    |  |
|  |            |    | Please enquire   |
| 10.2.5 Lifting   |            |    |  |
|  |            |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.2.6 Mechanical impact   |            |    |  |
|  |            |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.2.7 Inscriptions  |            |    |  |
|  |            |    | Meets the product standard's requirements.   |
| 10.3 Degree of protection of ASSEMBLIES  |            |    |  |
|  |            |    | Meets the product standard's requirements.   |
| 10.4 Clearances and creepage distances   |            |    |  |
|  |            |    | Meets the product standard's requirements.   |
| 10.5 Protection against electric shock   |            |    |  |
|  |            |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.6 Incorporation of switching devices and components   |            |    |  |
|  |            |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.7 Internal electrical circuits and connections  |            |    |  |
|  |            |    | Is the panel builder's responsibility.   |
| 10.8 Connections for external conductors   |            |    |  |
|  |            |    | Is the panel builder's responsibility.   |
| 10.9 Insulation properties   |            |    |  |
| 10.9.2 Power-frequency electric strength   |            |    |  |
|  |            |    | Is the panel builder's responsibility.   |
| 10.9.3 Impulse withstand voltage   |            |    |  |
|  |            |    | Is the panel builder's responsibility.   |
| 10.9.4 Testing of enclosures made of insulating material   |            |    |  |
|  |            |    | Is the panel builder's responsibility.   |
| 10.10 Temperature rise   |            |    |  |
|  |            |    | The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices. |
| 10.11 Short-circuit rating   |            |    |  |
|  |            |    | Is the panel builder's responsibility.   |
| 10.12 Electromagnetic compatibility  |            |    |  |
|  |            |    | Is the panel builder's responsibility.   |
| 10.13 Mechanical function  |            |    |  |
|  |            |    | The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.                         |

## Technical data ETIM 7.0

|  |       |             |
|--|-------|-------------|
| PLC's (EG000024) / Graphic panel (EC001412)  |       |             |
| Electric engineering, automation, process control engineering / Display and control component / Panel (HMI) / Graphic panel (HMI) (ec1@ss10.0.1-27-33-02-01 [AFX016003]) |       |             |
| Supply voltage AC 50 Hz  | V     | 0 - 0       |
| Supply voltage AC 60 Hz  | V     | 0 - 0       |
| Supply voltage DC  | V     | 20.4 - 28.8 |
| Voltage type of supply voltage   |       | DC          |
| Number of HW-interfaces industrial Ethernet  |       | 1           |
| Number of interfaces PROFINET  |       | 0           |
| Number of HW-interfaces RS-232   |       | 0           |
| Number of HW-interfaces RS-422   |       | 0           |
| Number of HW-interfaces RS-485   |       | 0           |
| Number of HW-interfaces serial TTY   |       | 0           |
| Number of HW-interfaces USB  |       | 1           |
| Number of HW-interfaces parallel   |       | 0           |
| Number of HW-interfaces Wireless   |       | 0           |
| Number of HW-interfaces other  |       | 0           |
| With SW interfaces   |       | Yes         |
| Supporting protocol for TCP/IP   |       | Yes         |
| Supporting protocol for PROFIBUS   |       | No          |
| Supporting protocol for CAN  |       | No          |
| Supporting protocol for INTERBUS   |       | No          |
| Supporting protocol for ASI  |       | No          |
| Supporting protocol for KNX  |       | No          |
| Supporting protocol for MODBUS   |       | Yes         |
| Supporting protocol for Data-Highway   |       | No          |
| Supporting protocol for DeviceNet  |       | No          |
| Supporting protocol for SUCONET  |       | No          |
| Supporting protocol for LON  |       | No          |
| Supporting protocol for PROFINET IO  |       | No          |
| Supporting protocol for PROFINET CBA   |       | No          |
| Supporting protocol for SERCOS   |       | No          |
| Supporting protocol for Foundation Fieldbus  |       | No          |
| Supporting protocol for EtherNet/IP  |       | Yes         |
| Supporting protocol for AS-Interface Safety at Work  |       | No          |
| Supporting protocol for DeviceNet Safety   |       | No          |
| Supporting protocol for INTERBUS-Safety  |       | No          |
| Supporting protocol for PROFIsafe  |       | No          |
| Supporting protocol for SafetyBUS p  |       | No          |
| Supporting protocol for other bus systems  |       | Yes         |
| Radio standard Bluetooth   |       | No          |
| Radio standard WLAN 802.11   |       | No          |
| Radio standard GPRS  |       | No          |
| Radio standard GSM   |       | No          |
| Radio standard UMTS  |       | No          |
| IO link master   |       | No          |
| Type of display  |       | TFT         |
| With colour display  |       | Yes         |
| Number of colours of the display   |       | 65.536      |
| Number of grey-scales/blue-scales of display   |       | 0           |
| Screen diagonal  | inch  | 3.5         |
| Number of pixels, horizontal   |       | 320         |
| Number of pixels, vertical   |       | 240         |
| Useful project memory/user memory  | kByte | 64          |
| With numeric keyboard  |       | Yes         |

|   |    |                 |
|---|----|-----------------|
| With alpha numeric keyboard                         |    | Yes             |
| Number of function buttons, programmable            |    | 0               |
| Number of buttons with LED                          |    | 0               |
| Number of system buttons                            |    | 1               |
| Touch technology                                    |    | Resistive touch |
| With message indication                             |    | Yes             |
| With message system (incl. buffer and confirmation) |    | Yes             |
| Process value representation (output) possible      |    | Yes             |
| Process default value (input) possible              |    | Yes             |
| With recipes  |    | Yes             |
| Number of password levels                           |    | 200             |
| With printer output                                 |    | Yes             |
| Number of online languages                          |    | 100             |
| Additional software components, loadable            |    | Yes             |
| Degree of protection (IP), front side               |    | IP65            |
| Degree of protection (NEMA), front side             |    | 4X              |
| Operation temperature                               | °C | 0 - 50          |
| Rail mounting possible                              |    | No              |
| Wall mounting/direct mounting                       |    | No              |
| Suitable for safety functions                       |    | No              |
| Width of the front                                  | mm | 136             |
| Height of the front                                 | mm | 100             |
| Built-in depth                                      | mm | 25              |

## Approvals

|                                      |  |  |
|--------------------------------------|--|--|
| Product Standards                    |  | UL 60950-01; CSA-C22.2 No. 60950-1; IEC/EN 61131-2; CE marking   |
| UL File No.                          |  | E208621  |
| UL Category Control No.              |  | NWGQ2  |
| CSA File No.                         |  | UL report applies to both US and Canada  |
| CSA Class No.                        |  | NWGQ8  |
| North America Certification          |  | UL recognized, certified by UL for use in Canada   |
| Conditions of Acceptability          |  | The investigated Pollution Degree is: 2<br>The following end-product enclosures are required: Fire<br>The unit must be supplied via a SELV source.<br>The provided Ethernet Connection is only allowed to connect to inhouse networks. |
| Specially designed for North America |  | No   |
| Current Limiting Circuit-Breaker     |  | No   |
| Degree of Protection                 |  | IEC: IP65, UL/CSA Type: -  |

## Dimensions

|                      |
|----------------------|
| SmartWire-DT HMI-PLC |
| Dimensions           |

## Additional product information (links)

|  |   |
|--|---|
| <b>Instruction manual XV-102 MN04802004Z</b>                                     |   |
| Bedienungsanleitung XV-102 MN04802004Z - Deutsch                                 | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04802004Z_DE.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04802004Z_DE.pdf</a> |
| Instruction manual XV-102 MN04802004Z - English                                  | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04802004Z_EN.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04802004Z_EN.pdf</a> |
| <b>Quick-start manual XV100 MN04802013Z</b>                                      |   |
| Schnellstart-Handbuch XV100 MN04802013Z - Deutsch                                | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04802013Z_DE.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04802013Z_DE.pdf</a> |
| Quick-start manual XV100 MN04802013Z - English                                   | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04802013Z_EN.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04802013Z_EN.pdf</a> |
| <b>User manual XSoft-CoDeSys-2, SPS programming XV100 MN04802091Z</b>            |   |
| Benutzerhandbuch XSoft-CoDeSys-2, SPS-Programmierung XV100 MN04802091Z - Deutsch | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04802091Z-DE.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04802091Z-DE.pdf</a> |

|  |   |
|--|---|
| User manual XSoft-CoDeSys-2, SPS programming XV100 MN04802091Z - English | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04802091Z-EN.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04802091Z-EN.pdf</a> |
| <b>Manual XSOFT-CODESYS-3, SPS programming MN048008ZU</b>                |   |
| Handbuch XSOFT-CODESYS-3, SPS-Programmierung MN048008ZU - Deutsch        | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN048008ZU_DE.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN048008ZU_DE.pdf</a>   |
| Manual XSOFT-CODESYS-3, SPS programming MN048008ZU - English             | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN048008ZU_EN.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN048008ZU_EN.pdf</a>   |
| f1=1454&f2=1242&f3=1773;Download Software GALILEO                        | <a href="http://applications.eaton.eu/sdlc?LX=11&amp;">http://applications.eaton.eu/sdlc?LX=11&amp;</a>   |
| Product overview (WEB)   | <a href="http://www.eaton.eu/xv">http://www.eaton.eu/xv</a>   |