



Touch panel, 24 V DC, 3.5z, TFTmono, ethernet, profibus

Part no. **XV-102-A2-35MQR-10**  
 Catalog No. **141820**

EL-Nummer **4560860**  
 (Norway)

### Delivery program

|   |  |       |  |
|---|--|-------|--|
| Product range                               |  |       | XV100 3.5"   |
| Product range                               |  |       | XV-102   |
| Function                                    |  |       | HMI  |
| Common features of the model series         |  |       | Ethernet interface<br>USB device<br>Slot for SD card<br>UL508, cUL approvals |
| Display - Type                              |  |       | B/W display, TFT   |
| Touch-technology                            |  |       | Resistive-Touch  |
| Number of colours                           |  |       | 32 grey levels   |
| 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                                 |  |       | no PLC function possible   |
| 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<br>1 x PROFIBUS/MPI               |
| 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   |
| Heat dissipation                            |  | W     | 5  |

### Technical data

#### Display

|                                   |  |                   |                                |
|-----------------------------------|--|-------------------|--------------------------------|
| Display - Type                    |  |                   | B/W display, TFT               |
| Screen diagonal                   |  | Inch              | 3.5                            |
| Resolution                        |  | Pixel             | QVGA<br>320 x 240              |
| Visible screen area               |  | mm                | 70 x 53                        |
| Number of colours                 |  |                   | 32 grey levels                 |
| 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 |
|------------|--|--|---------------------------|

#### 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 |
| External memory            |  |  | SD Memory Card Slot: SDA Specification 1.00   |
| Back-up of real-time clock |  |  |   |

|   |           |     |  |
|---|-----------|-----|--|
| Battery (service life)                              |           |     | non-replaceable, CR2032 soldered in  |
| Backup (time at zero voltage)                       |           |     | Normally 10 years  |
| <b>Engineering</b>                                  |           |     |  |
| Visualisation software                              |           |     | GALILEO/EPAM   |
| PLC-licence   |           |     | no PLC function possible   |
| Operating system                                    |           |     | Windows CE 5.0 (licence incl.)   |
| <b>Interfaces, communication</b>                    |           |     |  |
| built-in interfaces                                 |           |     | 1 x Ethernet 10/100 Mbps<br>1 x USB device<br>1 x PROFIBUS/MPI   |
| USB device  |           |     | USB 2.0, not galvanically isolated   |
| Profibus  |           |     | PROFIBUS, not galvanically isolated, max. 1.5 MBit/s (SUB-D socket 9 pole, UNC)  |
| Slots   |           |     | for SD card: 1   |
| Ethernet  |           |     | 100Base-TX/10Base-T  |
| <b>Power supply</b>                                 |           |     |  |
| 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                                   | $P_{max}$ | 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   |
| <b>General</b>                                      |           |     |  |
| Housing material                                    |           |     | Plastic, gray  |
| Front type  |           |     | Standard front with standard membrane (fully enclosed)   |
| 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   |
| Applied standards and directives                    |           |     |  |
| EMC   |           |     | (in relation to CE)<br>EN 61000-6-2<br>EN 61000-6-4<br>EN 61131-2  |
| Explosion protection (relevant for CE)              |           |     | EN 60079-0<br>EN 61241-1<br>EN 13463_x   |
| 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  |
| <b>Environmental conditions</b>                     |           |     |  |
| Climatic environmental conditions                   |           |     |  |
| Air pressure (operation)                            |           | hPa | 795 - 1080   |
| Temperature   |           |     |  |
| Storage / Transport                                 | θ         | °C  | -20 - +60  |
| Operating ambient temperature min.                  |           | °C  | 0  |
| Operating ambient temperature max.                  |           | °C  | + 50   |
| Relative humidity                                   |           |     |  |
| Relative humidity                                   |           |     | 10 - 95%, non-condensing   |
| <b>Supply voltage <math>U_{Aux}</math></b>          |           |     |  |
| Rated operational voltage                           | $U_{Aux}$ | V   | 24 V DC (-20/+25%)   |

|                                      |  |     |
|--------------------------------------|--|-----|
| Protection against polarity reversal |  | Yes |
| Potential isolation                  |  | No  |

## Design verification as per IEC/EN 61439

| Technical data for design verification   |                 |    |  |
|--|-----------------|----|--|
| Static heat dissipation, non-current-dependent   | P <sub>vs</sub> | W  | 5  |
| 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) (ecl@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   |  |   | Yes         |

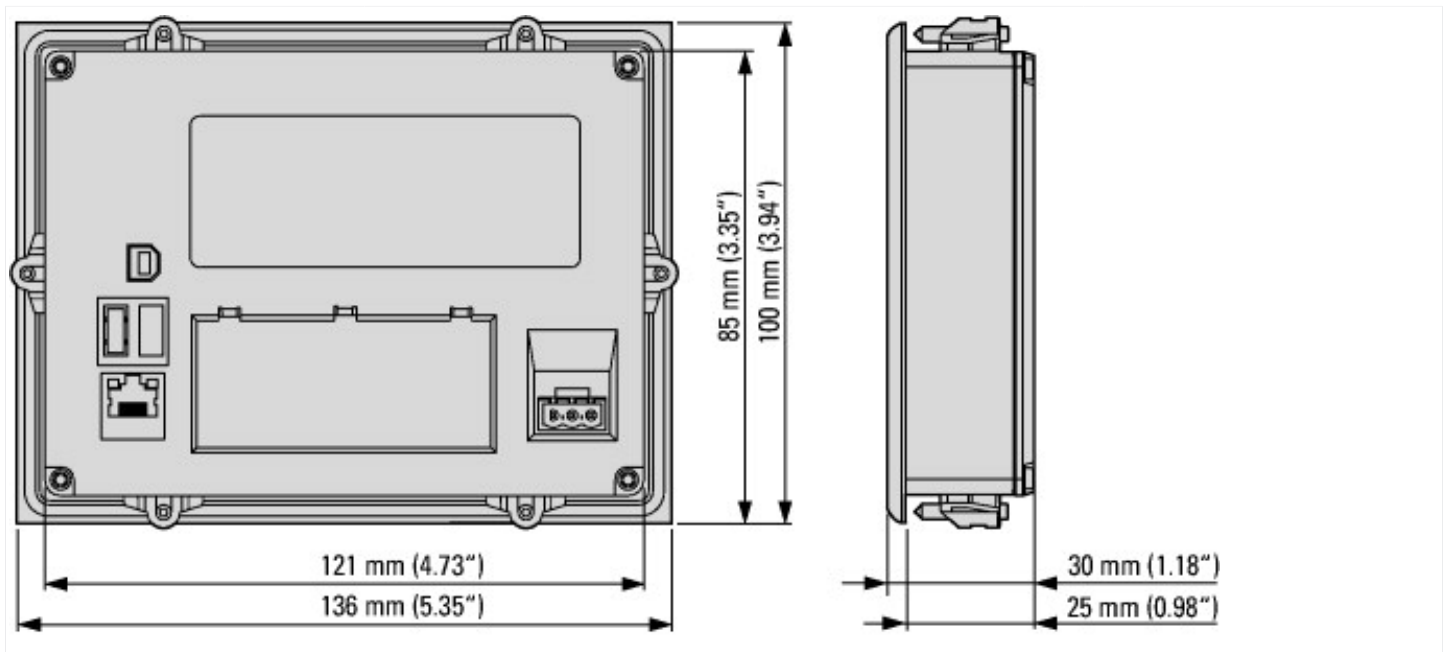
|   |       |                 |
|---|-------|-----------------|
| Supporting protocol for CAN                         |       | No              |
| Supporting protocol for INTERBUS                    |       | No              |
| Supporting protocol for ASI                         |       | No              |
| 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                                 |       | No              |
| Number of colours of the display                    |       | 32              |
| Number of grey-scales/blue-scales of display        |       | 32              |
| 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

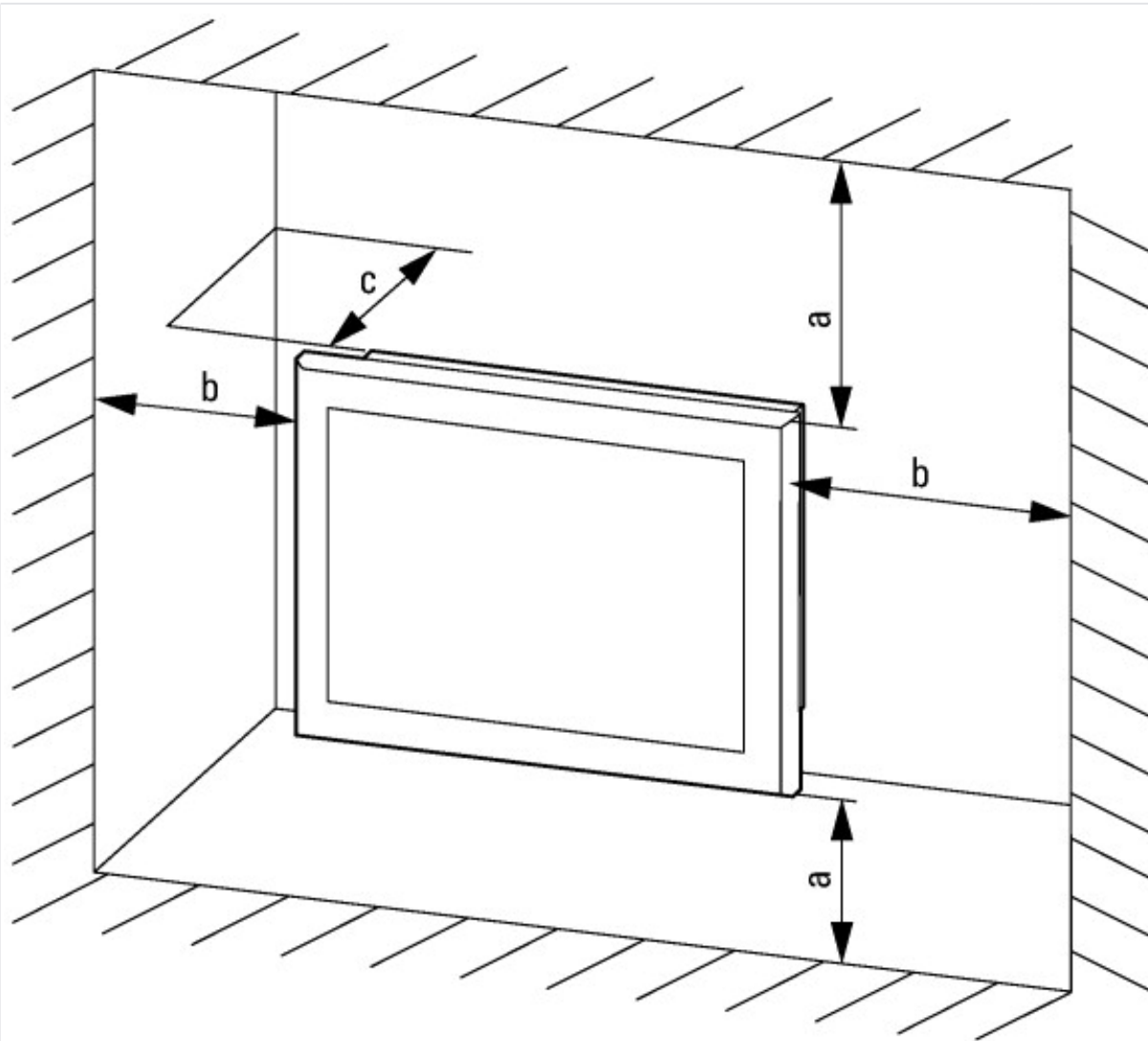
|                                      |  |  |
|--------------------------------------|--|--|
| Product Standards                    |  | UL 60950-01; CSA-C22.2 No. 60950-1; IEC/EN 61131-2; CE marking   |
| UL File No.                          |  | E208621  |
| UL Category Control No.              |  | NWQG2  |
| CSA File No.                         |  | UL report applies to both US and Canada  |
| CSA Class No.                        |  | NWQG8  |
| 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

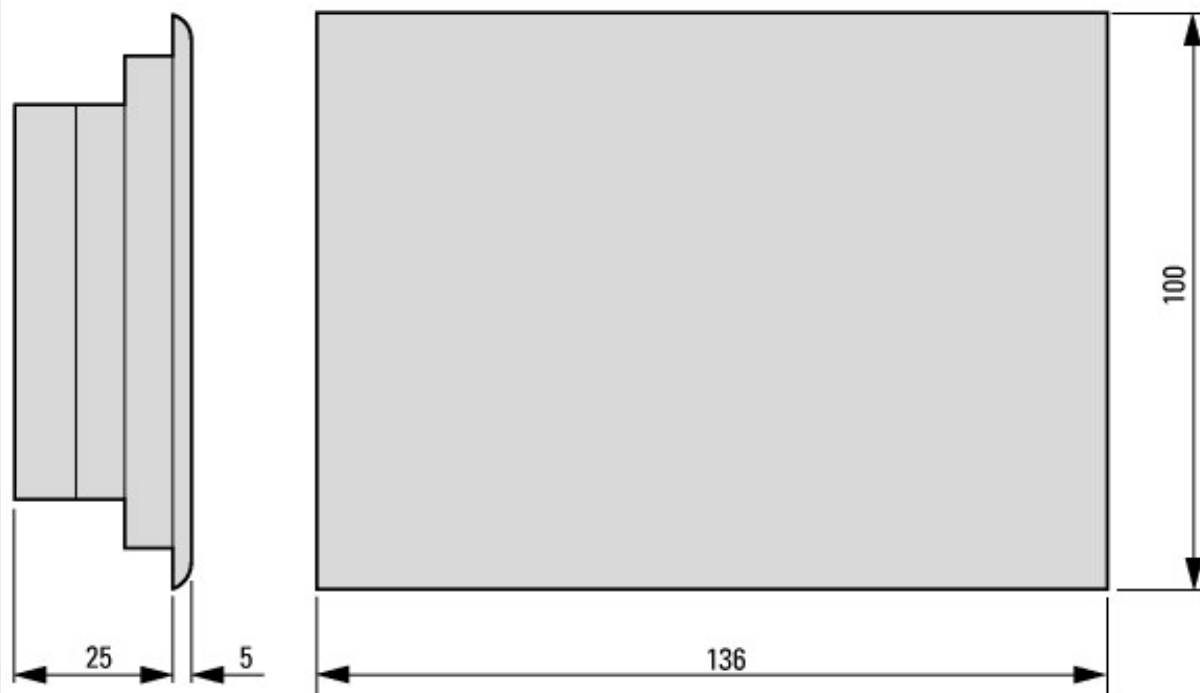


a1 = 5.35" (136 mm); a2 = 4.73" (121 mm); b1 = 3.94" (100 mm); b2 = 3.35" (85 mm); c1 = 1.18" (30 mm); c2 = 0.98" (25 mm)

SmartWire-DT HMI-PLC



$a, b, c \geq 30 \text{ mm}, 0 \leq T \leq 50 \text{ }^\circ\text{C}$



Dimensions

### Additional product information (links)

f1=1454&f2=1242&f3=1773;Download Software GALILEO

<http://applications.eaton.eu/sdlc?LX=11&>

Produktübersicht (WEB)

<http://www.eaton.eu/xv>

