



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

Part no. **XV-102-B2-35TQR-10**  
 Catalog No. **140008**

EL-Nummer (Norway) **0004521103**

### 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 USB device Slot for SD card UL508, cUL approvals
Display - Type			Color display, TFT
Touch-technology			Resistive-Touch
Number of colours			64 k Colours
Resolution		Pixel	QVGA 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 1 x USB device 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
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 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 dimmable via software
Service life of back-lighting		h	Normally 40000
Resistive touch protective screen			Touch sensor (glass with foil)

#### Operation

Technology			Resistive-Touch 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 NAND-Flash (can be used for data backup): approx. 128 MByte available

External memory			NVRAM (retained data): approx. 32 KByte available
Cooling			SD Memory Card Slot: SDA Specification 1.00
Back-up of real-time clock			Fanless CPU and system cooling, natural convection-based passive cooling
Battery (service life)			non-replaceable, CR2032 soldered in
Backup (time at zero voltage)			Normally 10 years

## Engineering

Visualisation software			GALILEO EPAM XSOF-TCODESYS-2 XSOF-TCODESYS-3
PLC-Programming software			XSOF-TCODESYS-2 XSOF-TCODESYS-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 1 x USB device 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

## 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%) Absolute with ripple: 18,0-31,2 V DC Battery powered: 18,0-31,2 V DC (rated operating voltage -25%/+30%) 35 V DC for a duration of < 100 ms
Voltage dips		ms	≤ 10 ms from rated voltage (24 V DC) 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
Siemens MPI, (optional)			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") 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) 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) EN 61000-6-2 EN 61000-6-4 EN 61131-2
Product standards			EN 50178 EN 61131-2

Security			EN 60950 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		%	≤ 5
Siemens MPI, (optional)			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			
10.2.2.1 Verification of thermal stability of enclosures			Meets the product standard's requirements.
10.2.2.2 Verification of resistance of insulating materials to normal heat			Meets the product standard's requirements.
10.2.2.3 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.

## 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		1
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		Yes
Number of colours of the display		65536
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	64000
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 The following end-product enclosures are required: Fire The unit must be supplied via a SELV source. 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

## Assets (links)

### Declaration of CE Conformity

00002510

### Instruction Leaflets

IL048007ZU2018\_02

### Manuals

MN04802004Z\_DE (German)

MN04802004Z\_EN (English)

MN04802013Z\_DE (German)

MN04802013Z\_EN (English)

## Additional product information (links)

<b>Instruction leaflet IL048007ZU XV-102</b>
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Instruction leaflet IL048007ZU XV-102	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL048007ZU2018_02.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL048007ZU2018_02.pdf</a>
<b>Instruction manual XV-102 MN04802004Z</b>	
Bedienungsanleitung XV-102 MN04802004Z - Deutsch	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04802004Z_DE.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04802004Z_DE.pdf</a>
Instruction manual XV-102 MN04802004Z - English	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04802004Z_EN.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04802004Z_EN.pdf</a>
<b>Quick-start manual XV100 MN04802013Z</b>	
Schnellstart-Handbuch XV100 MN04802013Z - Deutsch	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04802013Z_DE.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04802013Z_DE.pdf</a>
Quick-start manual XV100 MN04802013Z - English	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04802013Z_EN.pdf">ftp://ftp.moeller.net/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="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04802091Z-DE.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04802091Z-DE.pdf</a>
User manual XSoft-CoDeSys-2, SPS programming XV100 MN04802091Z - English	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04802091Z-EN.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04802091Z-EN.pdf</a>
<b>Manual XSOF-CODESYS-3, SPS programming MN048008ZU</b>	
Handbuch XSOF-CODESYS-3, SPS-Programmierung MN048008ZU - Deutsch	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN048008ZU_DE.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN048008ZU_DE.pdf</a>
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Product overview (WEB)	<a href="http://www.eaton.eu/xv">http://www.eaton.eu/xv</a>