2 Device description

2.1 Function

MICRO PANELs XV-102 can be used as HMI devices or as integrated HMI/PLC devices.

2.2 Intended use

MICRO PANELs XV-102 are primarily used in machine and system building. They are designed exclusively for the visualization, operation and control of machines and systems. Any other use must be agreed beforehand with the manufacturer.

2.3 Device versions

Fig. 1 XV-102 3.5"

Fig. 2 XV-102 5.7"

Fig. 3 XV-102 7.0"

MICRO PANELs XV-102 are available in the following versions:

Basic device	Display	Communication interfaces	XV-102 type
Version A: ■ 1 Slot for 1 SD card ■ Integrated interfaces: 1 × Ethernet 100/10 1 × USB Device Communication interfaces ■ Windows CE Core 5.0 license (incl.)	Resistive touch, 3.5" TFT-LCD, 32 greyscales, QVGA	–	XV-102-A0-35MQR…
		Profibus	XV-102-A2-35MQR…
		RS232	XV-102-A3-35MQR…
		RS485	XV-102-A4-35MQR…
		CAN and RS232	XV-102-A5-35MQR…
Version B: ■ 1 Slot for 1 SD card ■ Integrated interfaces: 1 × Ethernet 100/10 1 × USB Device Communication interfaces ■ Windows CE Core 5.0 license (incl.)	Resistive touch, 3.5" TFT-LCD, 32 greyscales, QVGA	–	XV-102-B0-35MQR…
		RS232	XV-102-B3-35MQR…
		RS485	XV-102-B4-35MQR…
		CAN and RS232	XV-102-B5-35MQR…
		CAN and RS485	XV-102-B6-35MQR…
		Profibus and RS485	XV-102-B8-35MQR…
	Resistive touch, 3.5" TFT-LCD, 64k colors, QVGA	–	XV-102-B0-35TQR…
		Profibus	XV-102-B2-35TQR…
		RS232	XV-102-B3-35TQR…
		RS485	XV-102-B4-35TQR…
		CAN and RS232	XV-102-B5-35TQR…
		CAN and RS485	XV-102-B6-35TQR…
		Profibus and RS485	XV-102-B8-35TQR…
Version D: ■ 1 Slot for 1 SD card ■ Integrated interfaces: 1 × Ethernet 100/10 1 × USB Device 1 × USB Host Communication interfaces ■ Windows CE Core 5.0 license (incl.)	Resistive touch, 5.7" TFT-LCD, 64k colors, VGA	RS232	XV-102-D0-57TVR…
		RS485 and RS232	XV-102-D4-57TVR…
		CAN, RS485 and RS232	XV-102-D6-57TVR…
		Profibus, RS485 and RS232	XV-102-D8-57TVR…
	Resistive touch, 7.0" TFT-LCD, 64k colors, WVGA	RS232	XV-102-D0-70TWR…
		RS485 and RS232	XV-102-D4-70TWR…
		CAN, RS485 and RS232	XV-102-D6-70TWR…
		Profibus, RS485 and RS232	XV-102-D8-70TWR…

Tab. 1 Device versions

2.4 Package contents

The accessories supplied with the MICRO PANELs XV-102 depend on the size of the device.

2.4.1 3.5" devices

Qty	Designation
1	MICRO PANEL: ■ XV-102-A…-35MQR… or ■ XV-102-B…-35MQR… or ■ XV-102-B…-35TQR…
4	Retaining brackets with threaded pin for mounting the device
1	Sealing strip for mounting the device
1	Power supply connector
1	Stylus

Tab. 2 Package contents for 3.5" devices

2.4.2 5.7" devices

Qty	Designation
1	MICRO PANEL: ■ XV-102-D…-57TVR…
6	Retaining brackets with threaded pin for mounting the device
1	Sealing strip for mounting the device
1	Power supply connector
1	Stylus

Tab. 3 Package contents for 5.7" devices

2.4.3 7.0" devices

Qty	Designation
1	MICRO PANEL: ■ XV-102-D…-70TWR…
8	Retaining brackets with threaded pin for mounting the device
1	Sealing strip for mounting the device
1	Power supply connector
1	Stylus

Tab. 4 Package contents for 7.0" devices

2.5 Accessories

Different accessories are available.

☞ **Order the accessories required from your supplier.**

2.6 Designation

Nameplate

A nameplate is fixed on the rear of the device in order to identify it. The nameplate contains the following information:

- Manufacturer address
- Type designation
- Power supply required
- Part no.
- Serial no.
- Time of manufacturing (week/year)
- Approval marks
- Arrangement of interfaces and operating elements
- Permissible mounting options (top edge «Top»)

Support

To ensure fast and optimum support always provide the support personnel with the following information on the nameplate:

- Part no. (Part-No or Art.-No)
- Serial no.

9 Technical data

9.1 Dimensions and weights

9.1.1 3.5" devices

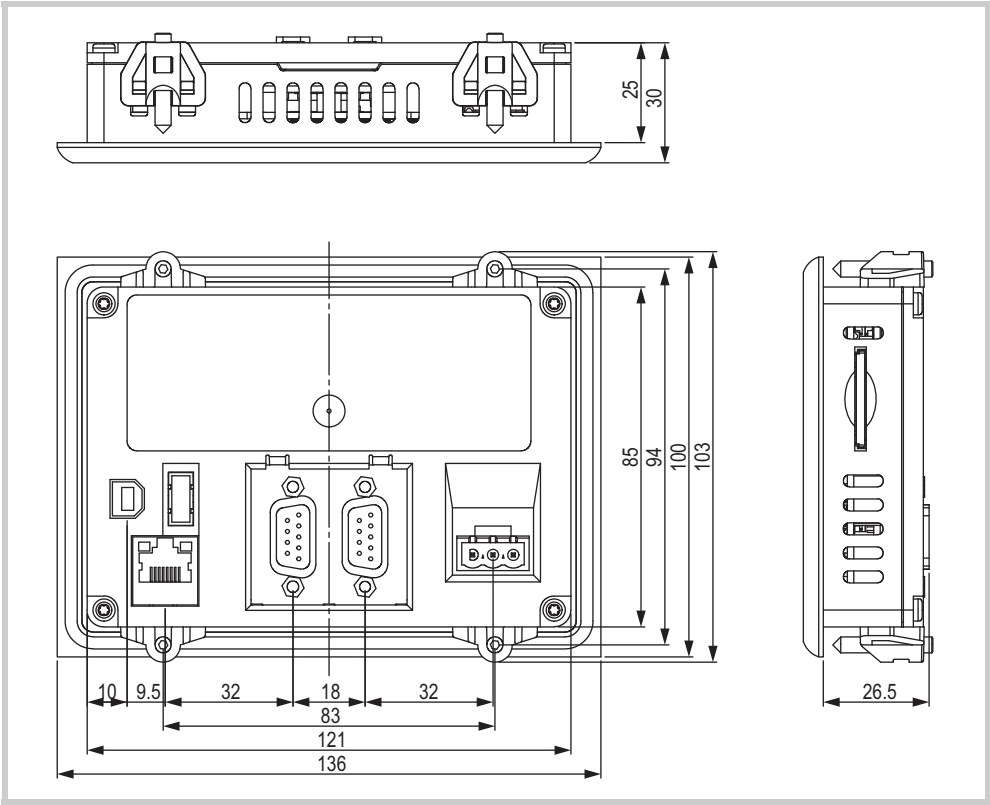

Fig. 33 Mechanical dimensions of the 3.5" devices in mm

Property	XV-102 3.5"
Height	100 mm
Width	136 mm
Depth	30 mm
Thickness of front plate	5 mm
Mounting depth	25 mm
Mounting cutout	123 mm × 87 mm (±1 mm)
Weight	Approx. 0.3 kg

Tab. 23 Dimensions and weights of the 3.5" devices

9.1.2 5.7" devices

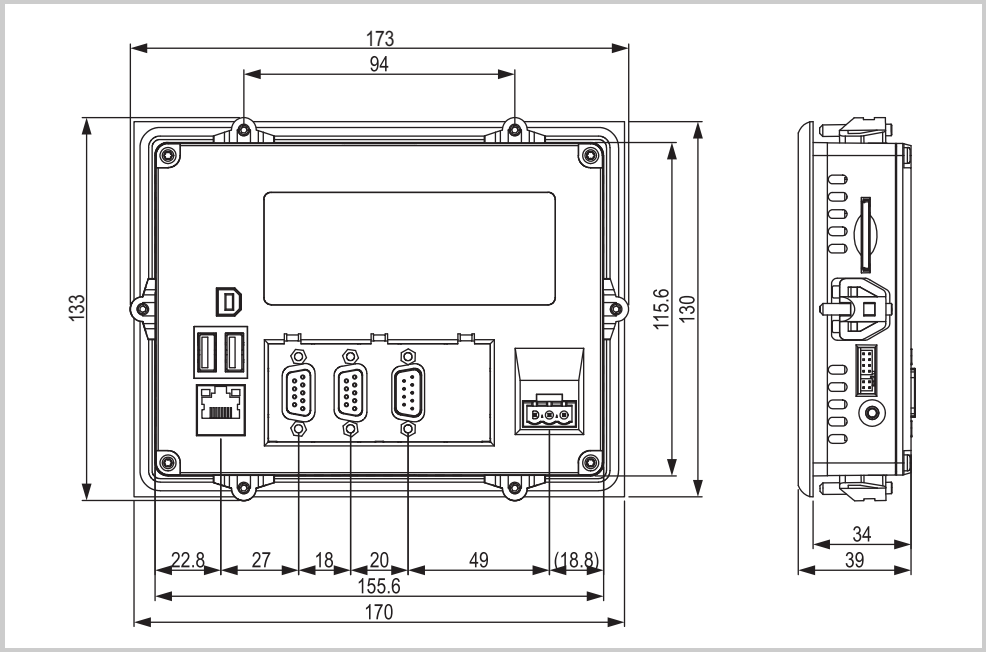

Fig. 34 Mechanical dimensions of the 5.7" devices in mm

Property	XV-102 5.7"
Height	130 mm
Width	170 mm
Depth	39 mm
Thickness of front plate	5 mm
Mounting depth	34 mm
Mounting cutout	157 mm × 117 mm (±1 mm)
Weight	Approx. 0.6 kg

Tab. 24 Dimensions and weights of the 5.7" devices

9.1.3 7.0" devices

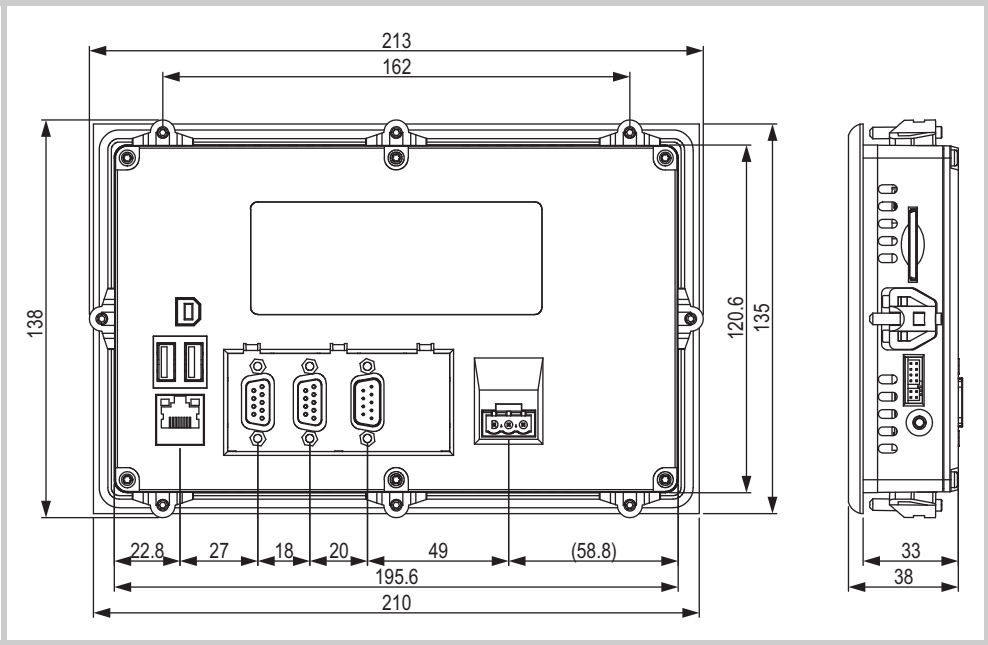

Fig. 35 Mechanical dimensions of the 7.0" devices in mm

Property	XV-102 7.0"
Height	135 mm
Width	210 mm
Depth	38 mm
Thickness of front plate	5 mm
Mounting depth	33 mm
Mounting cutout	197 mm × 122 mm (±1 mm)
Weight	Approx. 0.6 kg

Tab. 25 Dimensions and weights of the 7.0" devices

9.2 Display

Property	XV-102
Type	TFT-LCD
Resolution (W × H)	
3.5" devices	QVGA (320 × 240 pixels)
5.7" devices	VGA (640 × 480 pixels)
7.0" devices	WVGA (800 × 480 pixels)
Visible display area	
3.5" devices	70 mm × 53 mm (3.5" screen diagonal)
5.7" devices	115 mm × 86 mm (5.7" screen diagonal)
7.0" devices	152 mm × 91 mm (7.0" screen diagonal)
Color resolution	
3.5" devices	
XV-102-…-35MQR…	32 grayscales
XV-102-…-35TQR…	64k colors
5.7" and 7.0" devices	64k colors
Contrast ratio	Normally 300:1
Brightness	Normally 250 cd/m^2
Backlight	
Technology	LED, dimmable via software
Lifespan	Normally 40 000 h
Resistive touch back panel	Touch sensor (glass with foil)

Tab. 26 Display

9.3 Touch sensor

Property	XV-102
Type	Resistive touch
Technology	4-wire

Tab. 27 Touch sensor

9.4 System

Property	XV-102
Processor	RISC, 32-bit, 400 MHz
Internal memory	
DRAM	64 MByte
NAND Flash	64 MByte
NVRAM	
XV-102-A…	–
All device versions except XV-102-A…	125 KByte
NOR Flash	
3.5" devices	–
5.7" and 7.0" devices	2 MByte
External memory	
SD memory card slot	1× SDA specification 1.00 Suitable for SD cards (**not** for SDHC cards or cards of newer standard)
Real-time clock (battery backup)	
Battery type	CR2032 (190 mA/h), maintenance-free (soldered)
Backup time in de-energized state	Normally 10 years

Tab. 28 System

9.5 Interfaces

Property	XV-102
Ethernet	100Base-TX / 10Base-T
USB Device	USB 2.0, not electrically isolated
Interfaces, depending on the device version:	
USB Host	USB 2.0 (1.5 / 12 Mbit/s), not electrically isolated
RS232 (System Port)	RS232, not electrically isolated
CAN	CAN, not electrically isolated
Profibus	Profibus, not electrically isolated, max. 1.5 Mbit/s
RS485	RS485, not electrically isolated
Power supply	→ Chapter 9.5.1, 60
DIAG	Only for service tasks
Jumper UPD/RUN	Only for service tasks

Tab. 29 Interfaces

9.5.1 Power supply

Property	XV-102
Rated voltage	24 VDC SELV (safety extra low voltage)
Permissible voltage	■ RMS value: 19.2 … 30.0 VDC (rated voltage -20 % / +25 %) ■ Absolute with ripple: 18.0… 31.2 VDC ■ Battery operation: 18.0… 31.2 VDC (rated voltage -25 % / +30 %) ■ 35 VDC for a period < 100 ms
Voltage dips	■ 10 ms from rated voltage (24 VDC) ■ 5 ms from undervoltage (20.4 VDC)
Power consumption	
3.5" devices	Max. 5 W
5.7" and 7.0" devices	
Basic device	Max. 7 W
USB stations on USB host	Max. 2.5 W
Total	Max. 9.5 W

Property	XV-102
Current consumption	
Continuous current	Max. 0.4 A (24 VDC)
Continuous current	
3.5" devices	Max. 0.2 A (24 VDC)
5.7" and 7.0" devices	Max. 0.4 A (24 VDC)
Starting current inrush	1.5 A^2s
Protection against reverse polarity	Yes
Fuse	Yes (replacement only by the manufacturer or by an authorized repair center)
Potential isolation	No

Tab. 30 Power supply

9.6 Enclosure ratings

Property	XV-102
Front	IP65
Rear	IP20

Tab. 31 Enclosure ratings

9.7 Agency approvals and standards

Property	XV-102
EMC	2004/108/EC
Explosion protection	II 3D Ex II T70°C IP5x (ATEX 94/9/EC): ■ Zone 22, category 3D
UL	■ UL 508 (approval pending): File no. E205091 ■ UL 60950 (only 3.5" devices): File no. E208621

Tab. 32 Agency approvals and standards

9.8 Applicable standards and regulations

Property	XV-102
EMC (in relation to CE)	
EN 61000-6-2	Immunity for industrial areas
EN 61000-6-4	Emission for industrial environments
EN 61131-2	Programmable logic controllers, equipment requirements and tests
Explosion protection (in relation to CE)	
ATEX 94/9/EC: Zone 22, Category 3D (II 3D Ex II T70°C IP5x):	
EN 60079-0	Electrical apparatus for explosive gas atmospheres
EN 61241-1	Electrical apparatus for use in the presence of combustible dust
EN 13463	Non-electrical equipment for use in explosion hazardous areas
Safety	
EN 60950 UL 60950 (only 3.5" devices)	Safety of information technology equipment
UL 508	Industrial Control Equipment
Product standards	
EN 50178	Electronic equipment for use in power installations
EN 61131-2	Programmable logic controllers, equipment requirements and tests

Tab. 33 Applicable standards and regulations

9.9 Ambient conditions

Property	XV-102
Temperature	
Operation	0 … 50°C
Storage / Transport	-20 … 60°C
Relative air humidity	10 … 95%, non-condensing
Vibration	According to IEC68-2-6
Shock	According to IEC68-2-27
Fall test	According to IEC68-2-32

Tab. 34 Ambient conditions