TAE 1941

Touch Display Unit

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Touch Display Unit TAE 1941

The TAE 1941 touch display unit is used to visualize automated processes. The operation and monitoring of automated procedures are simplified using this display unit.

A touch screen serves as the input medium for process data and parameters. The output is shown on a 19" SXGA TFT color display with LED backlighting.

On the PC side, a SIGMATEK HMI-Link of the second generation (G2) is required, which processes the display and USB signal feeds and transmits them to the terminal over a standard Ethernet cable (CAT-5e or CAT-6). A secure connection over distance of up to 100 m between the PC and terminal is therewith possible.

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1 Technical Data

1.1 Performance Data

Interfaces	1x HMI Remote IN (HMI-Link G2) 2x USB 2.0 Type A (front + back)
Internal interface connections and devices	1x TFT color display 1x touch
Control panel	Touch-Screen (resistive)
Display	19" TFT color display SXGA, 1280 x 1024 Pixel LED backlight
LEDs	Status Display (HMI-Link G2)

In order to use the HMI interface, a SIGMATEK HMI-Link of the second generation (G2) is required on the remote station.

1.2 Electrical Requirements

Supply voltage	typically +24 V DC (+18-30 V DC)	
Current consumption of power supply at +24 V	typically 1.45 A(1)	maximum 2 A(1)

(1) The current consumption is dependent on the connected load

For loading the internal capacitors, power consumption may be increased for a short time (in the microsecond range).
This value is dependent of the input voltage and impedance of the power source

1.3 Terminal

Dimensions	462 x 360 x 57 mm (H x W x D)
Weight incl. mounting bracket	typically 7 kg

1.4 Environmental Conditions

Storage temperature	-20 ... +60 °C	
Environmental temperature	0 … +50 °C	
Humidity	10-80 %, non-condensing	
EMC tolerance	EN 61000-6-2 (industrial area): EMV resistance EN 61000-6-4: noise emission	
Vibration resistance	EN 60068-2-6	2-9 Hz: amplitude 3.5 mm 9-200 Hz: 1 g (10 m/s²)
Shock resistance	EN 60068-2-27	15 g (150 m/s²), duration 11 ms, 18 Shocks
Protection Type	EN 60529: protected through the housing	front: IP54 cover: IP20

1.5 Display

Type	19" TFT color display
Resolution	SXGA, 1280 x 1024 pixels
Color depth	24 Bit (16 777 216 colors)
Pixel size	0.294 x 0.294 mm
Active surface	376.3 x 301.1 mm
Backlighting	LED
Contrast	typically 2000 : 1
Brightness	typically 350 cd/m²
Angle CR > 10 from	left and right 89°, above and below 89°
Life span	after 50,000 hours at an ambient temperature of 25 °C, the brightness reduces to 50 % of the original power.

1.6 Control Unit

Touch panel	analog resistive glass touch panel
Active surface	376.3 x 301.1 mm

1.7 Miscellaneous

Article number	12-200-1941
Hardware version	1.x

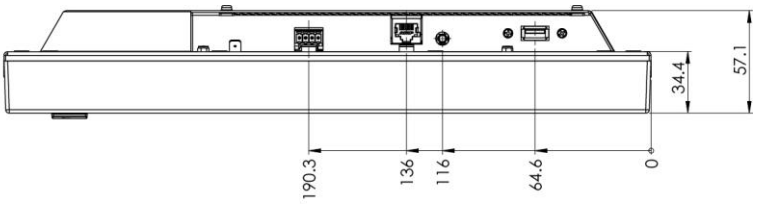
HMI-Link devices of the 2nd generation (G2) can only be operated with remote terminals of the same system family.
HMI-Link of the 1st and 2nd generation are not compatible!

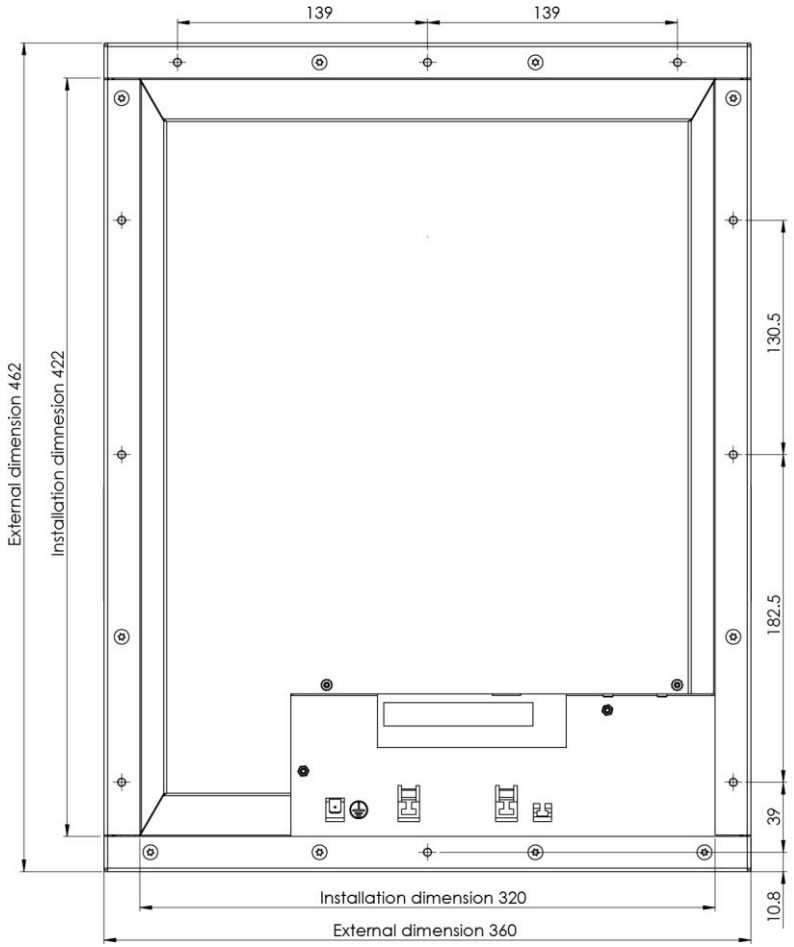
Before the PC is switched on, the terminal or manual control unit must be powered and the HMI cable connected, since otherwise correct initialization of the terminal or manual control unit cannot be guaranteed.

If a terminal or manual control unit connected to the PC with an HMI-Link cable is exchanged with a device that has a different resolution during operation, the PC must be restarted. So the new device with the different resolution is correctly identified and initialized.

2 Mechanical Dimensions

In mm





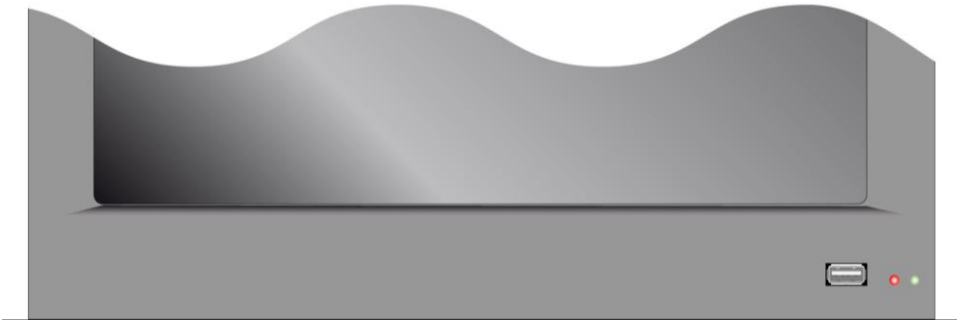
3 Chemical Resistance

3.1 Touch Pad

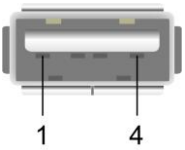
Solution	Visual Effect
Coal tar oil / toluene	none
Trichloroethylene	none
Acetone	none
Alcohol	none
Benzine	none
Machine oil	none
Ammonia	none
Glass cleaner	none
Mayonnaise	none
Ketchup	none
Wine	none
Salad oil	none
Vinegar	none

4 Connector Layout

4.1 Front



X5: USB 2.0 (Type A)



Pin	Function
1	+5 V
2	D0-
3	D0+
4	GND

4.2 Status Displays

Located on the front are one red and one green status LED.

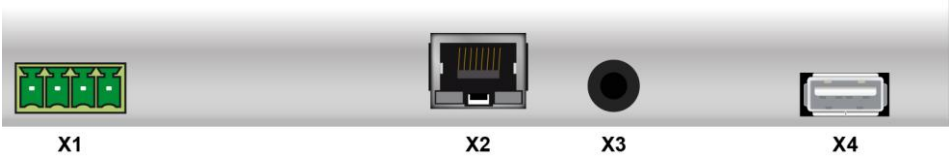
LED 1	red	ON	**No HMI-Link connection between PC and terminal**
LED 2	green	OFF	Check HMI-Link cable

LED 1	red	BLINKS	HMI-Link connection between PC and terminal available
LED 2	green	OFF	**No video signal available** Check display port cable

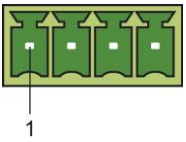
LED 1	red	ON	HMI-Link connection between PC and terminal available
LED 2	green	ON	Video signal available **No USB signal** HMI-Link connection between PC and terminal available

LED 1	red	OFF	**System ready**
LED 2	green	ON	

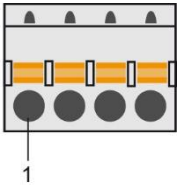
4.3 Backside



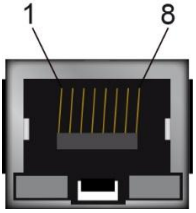
X1: Supply (4-pin Phoenix RM 3.5)



Pin	Function
1	+24 V supply
2	+24 V supply
3	GND
4	GND



X2: HMI Remote IN (HMI-Link G2, RJ45)



Pin	Function
1	HMI_P0
2	HMI_N0
3	HMI_P1
4	HMI_P2
5	HMI_N2
6	HMI_N1
7	HMI_P3
8	HMI_N3

X3: Service Interface (jack plug 3.5 mm 4-pin according to IEC 60603-11)

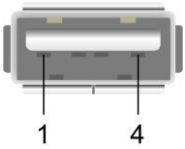
Pin	Function
1	GND
2	TxD
3	RxD
4	n.c.

n.c. = do not use

(for service purposed only)

On the interface X3, only a separate cable that can be ordered from SIGMATEK, may be used.
Using a different cable can lead to malfunction and damage.

X4: USB 2.0 (Type A)



Pin	Function
1	+5 V
2	D0-
3	D0+
4	GND

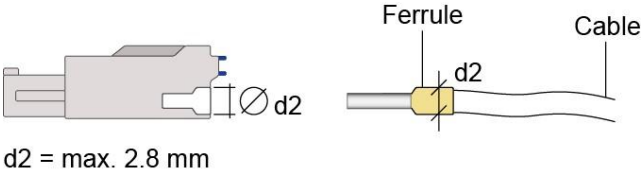
4.4 Applicable Connectors

Connectors:
X1: Phoenix Contact FK-MCP 1.5/ 4-ST-3.5 (not included with delivery)
X2: RJ45 connector plug, at least CAT5e 8-pin (not included in delivery)
X3: Service interface with 3.5 mm jack plug 4-pin according to EN 60603-11
X4: USB Type A connector

The complete plug set is available from SIGMATEK with the article number 12-600-216.

Connection guideline:

Stripping length:	10 mm
Mating direction:	parallel to the conductor axis or circuit board
Conductor cross section rigid:	0.2-1.5 mm^2
Conductor cross section flexible:	0.2-1.5 mm^2
Conductor cross section AWG/kcmil:	24-16
Conductor cross section flexible with ferrule without plastic sleeve:	0.25-1.5 mm^2
Conductor cross section flexible with ferrule with plastic sleeve:	0.25-0.75 mm^2 (reason for reduction d2 of the ferrule)



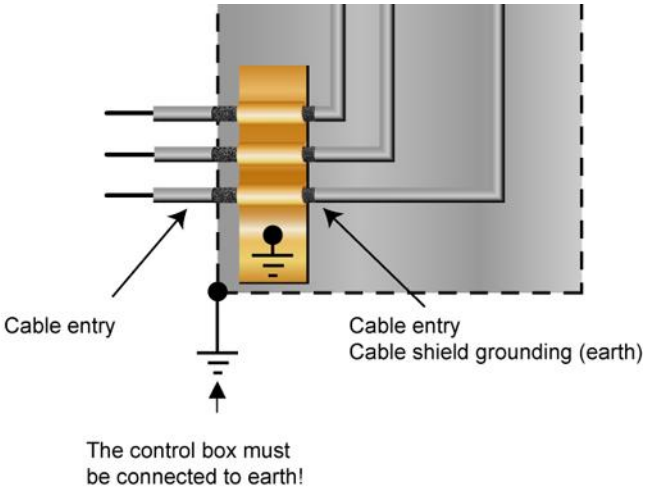
d2 = max. 2.8 mm

5 Wiring Guidelines

5.1 Ground

The terminal must be connected to ground through the assembly on the control cabinet or over the connection provided. It is important to create a low-ohm ground connection, only then can error-free operation be guaranteed. The ground connection should have a maximum cross section and the largest (electrical) surface possible.

Any noise signals that reach the terminal over external cables must be filtered through the ground connection. High frequency noise can also be dissipated with a large electrical surface (skin effect).



5.2 ESD Protection

Typically, USB devices (keyboard, mouse) are not equipped with shielded cables. These devices are disrupted by ESD and in some instances, no longer function.

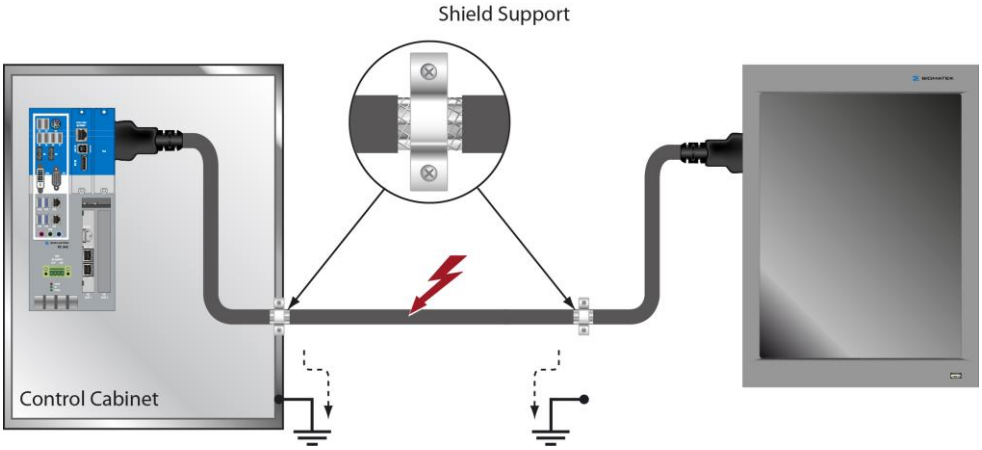
Before any device is connected to, or disconnected from the terminal, the potential should be equalized (by touching the control cabinet or ground terminal). This will allow the dissipation of electrostatic loads (caused by clothing/shoes).

6 HMI-Link G2 Wiring

6.1 Ground

For the HM Link G2 line, CAT5e or CAT6 cables with shielded RJ45 connectors must be used.

The cable shielding must be connected to ground on both sides to prevent noise signals from reaching the electronics and affecting the function.



6.2 HMI-Link G2 Cable Specifications

The RJ45 cable must be wired 1:1 in accordance with the EIA568A standard.

Self-fabricated cables must be tested for compliance with the limit values corresponding to the cable class (CAT5e/CAT6...).

For CAT5e cables, the total allowable length is limited to 90 m. To utilize the maximum 100 m length of the Link system, at least a CAT6 cable must be used.

STANDARD PATCH CABLE (568A - 568A)

EIA 568A

EIA 568A Pin Assignment		
Pin	**Wire Color**	**Signal**
1	White/green	HMI_P0
2	green	HMI_N0
3	White/orange	HMI_P1
4	blue	HMI_P2
5	White/blue	HMI_N2
6	Orange	HMI_N1
7	White/brown	HMI_P3
8	Brown	HMI_N3

6.3 HMI-Link G2 Wires in the Cable Strand

To guarantee correct function, it is important to ensure that in the cable strand, the wires do not run parallel over long distances. This especially applies to fast data lines such as Ethernet, VARAN, as well as the HMI-Link. Here, it is recommended to use a cable that is equal to or better than the CAT6A standard.

When multiple HMI-Link cables run in parallel, the following limit values for the maximum length of the parallel wiring apply:

Cable type	30 m	50 m	70 m	100 m
CAT5e/CAT6	6	4	2	1
CAT6a/CAT7	6	6	6	6

Crosstalk between the data lines and the interference it causes, which are coupled between the wires should be monitored. The highest number of cables allowed in a cable strand with multiple HMI-Link cables, which are run over a defined distance, is specified.

7 Cleaning the Touch Screen

CAUTION!
Before cleaning the touch screen, the terminal must first be turned off to avoid unintentionally triggering functions or commands!

The terminal's touch screen can only be cleaned with a soft, damp cloth. A screen cleaning solution such as an anti-static foam, water with a mild detergent or alcohol should be used to dampen the cloth. The cleaning solution should be sprayed onto the cloth and not directly onto the terminal. The cleaning solution should not be allowed to reach the terminal electronics, for example, through the ventilation slots.

No erosive cleaning solutions, chemicals, abrasive cleansers or hard objects that can scratch or damage the touch screen may be used.

If the terminal comes into contact with toxic or erosive chemicals, carefully clean the terminal immediately to prevent corrosion!

To ensure the optimal function of the terminal, the touch screen should be cleaned at regular intervals!

To extend the lifespan of the touch screen as much as possible, using the fingers to operate the terminal is recommended.

8 Disposal

To dispose of the product, the respective, possibly country-dependent, guidelines must be met and followed.

Documentation Changes

Change date	Affected page(s)	Chapter	Note
10.04.2017	12	4.4 Applicable Connectors	Added chapter
27.07.2017	1		Text addition „G2“
	4	1.1 Performance Data	Text corrections in table and note
	6	1.7 Miscellaneous	Text corrections in table and note
	11	4.3 Backside	Description X2 corrected Added note to service interface
	12	4.4 Applicable Connectors	Added Connection guideline
	14	6 HMI-Link Wiring 6.1 Ground	Text addition “G2” Text addition “G2”
	15	6.2 HMI-Link Cable Specifications	Text addition “G2”
	16	6.3 HMI-Link wires in the Cable Strand	Text addition “G2”
	18	8 Disposal	Chapter added
09.11.2026	5	1.4 Environmental Conditions	Humidity adjusted
		1.5 Display	Brightness adjusted