SIGMATEK

TSY 033

Trainings System Extension HMI 7"

Instruction Manual

Date of creation: 16.08.2023 | Version date: 16.08.2023 | Article number: 12-100-033-E

Publisher: SIGMATEK GmbH & Co KG
A-5112 Lamprechtshausen
Tel.: +43/6274/4321
Fax: +43/6274/4321-18
Email: office@sigmatek.at
WWW.SIGMATEK-AUTOMATION.COM

Translation of the Original Instructions

Trainings System Extension HMI 7" TSY 033

The TSY 033 training system is an application assembly that is used for training. The TSY 033 is the extension for the basic application TSY 021. The application consists of a 7 inch multi-touch panel, which is integrated in a device rack. The Ethernet interface serves for the data exchange between the TSY 033 and the basic module TSY 021.

Additionally the application has a low voltage connection cable for supplying the application. It is simply connected to the basic module TSY 021 and so needs no own desktop power supply.

Additionally a RJ45 network cable for establishing an online connection is part of the application.

The following system components are integrated in the TSY 033:

- 1x Low Volt Connection Cable (cable length: 2.5 m)
- 1x RJ45 to Tyco Mini I/O cable 1 m
- 1x multi-touch panel TSY 033

Table of Contents

1 Technical Data 4
1.1 Performance Data 4
1.2 Electrical Requirements 5
1.3 Display 6
1.4 Control Unit 7
1.5 Minimum Distance between Operating Elements for Multi-touch Applications 8
1.6 Input 9
1.7 Environmental Conditions 9
1.8 Miscellaneous 9
2 Interfaces 10
2.1 Rear Connectors 10
2.1.1 X1: Supply (4-pin Phoenix RM 3.5) 10
2.1.2 X2, X3: Ethernet 1, 2 (10/100/1000 Mbit/s) (RJ45) 10
2.1.3 X4, X5: USB 2.0 (Type A) 11
2.1.4 X6: microSD 12
2.1.5 X7: USB Online OTG 2.0 (Type Mini-B) 12
2.2 Status Display LEDs 13
3 Mechanical Dimensions 14

1 Technical Data

1.1 Performance Data

Processor	EDGE3-Technology
Processor cores	4[1)]
Internal program and data memory (RAM)	2-Gbyte (DDR4)
Internal remnant data memory	128-kByte FRAM
Internal storage device	8-Gbyte eMMC[2)]
Optional memory expansion	microSD[2)]
Graphic	integrated in EDGE processor
Interfaces	2x Ethernet (10/100/1000) 2x USB 2.0 Type A 1x USB 2.0 Type Mini-B OTG 1x microSD card holder (SD 3.0)
Internal interface connections and devices	no
Operating components	no
Signal generator	no
Display Resolution	7“ TFT color display WSVGA 1024 x 600 pixels
Operating field	Touch screen (multi-touch, projective capacitive)
Status LEDs	yes (1x red/1x green)
Real-time clock	yes (battery buffered)
Cooling	passive

1) Attention: When programming on multi-core CPUs (with LASAL), particular focus must be placed on thread security!

2) The internal storage device (eMMC) is only available from later operating system versions and is currently mapped via an 8 Gbyte microSD card. The microSD card is no longer part of the scope of delivery once this functionality is implemented in the operating system.

1.2 Electrical Requirements

Supply voltage	+24 V DC ±20 % (SELV/PELV) UL: NEC Class 2	
Protection class	III	
Current consumption of (+24 V) power supply	typically 320 mA (with no external devices connected)	maximum 530 mA (with external devices connected)
Inrush current without current-limiting supply	30 A for max. 20 µs	
Inrush current with 24 V/10 A fixed voltage supply	1 A for max. 30 ms	

INFORMATION

For USA and Canada:

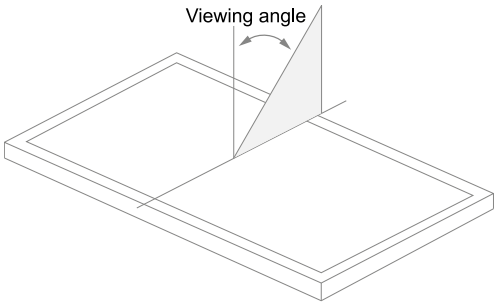
The supply must be limited to:
a) max. 5 A at voltages from 0-20 V DC, or
b) 100 W at voltages from 20-60 V DC

The limiting component (e.g. transformer, power supply or fuse) must be certified by an NRTL (Nationally Recognized Testing Laboratory).

1.3 Display

Type	7” TFT color display
Resolution	WSVGA 1024 x 600 pixels
Color depth	24-Bit RGB
LCD mode	normally black[1)]
LCD Polarizer	transmissive[2)]
Pixel size	0.1506 x 0.1432 mm
Active range	154.21 x 85.92 mm
Backlighting	LED
Contrast ratio	typically 800:1
Brightness	typically 400 cd/m²
Angle CR ≥ 10	left, right, top, bottom typically 80°[3)]
Life span	By compliance with the ambient conditions, the brightness of the display sinks after 20,000 operating hours to 50 % of the original brightness.

Due to the manufacturing process, individual pixel errors cannot be excluded to 100 % and therefore do not constitute a reduction in quality.



1) If there is no display data, the display remains black when the backlighting is on.

2) Display technology, with which display backlighting is used.

3) The viewing angle is measured from the normal to the display surface.

1.4 Control Unit

Operating field	Touch screen (multi-touch, projective capacitive)
Maximum number of fingers	5
The operation with thin gloves	yes
SIGMATEK Touch pen (passive)	yes
Handwriting recognition	no
Ball of the thumb recognition	no
Water spray recognition[1)]	no
Water detection[2)]	no
Cleaning	see chapter Cleaning and Disinfecting the Touch Screen

INFORMATION

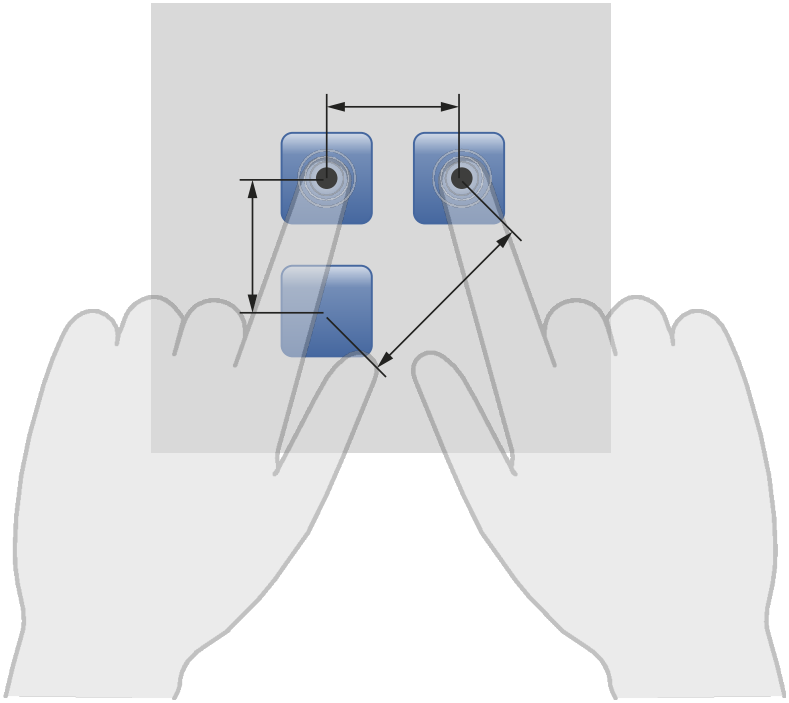
The device must always be grounded or with cable-connected devices, the mass must be connected correctly to ensure stable function of the touch screen. The touch function may still have to be individually adapted to the respective environmental conditions.

1) Detects individual water droplets on the touch screen and remains operable.

2) Detects a large amount of water on the touch screen and deactivates it.

1.5 Minimum Distance between Operating Elements for Multi-touch Applications

To guarantee smooth operation with multi-touch applications, buttons and control elements that should be operated at the same time must have a realistic minimum clearance.



INFORMATION

The size of the buttons and operating elements directly affect the operability of the application. Small operating elements should therefore be avoided.

1.6 Input

Input	Multi-touch screen (PCAP)

1.7 Environmental Conditions

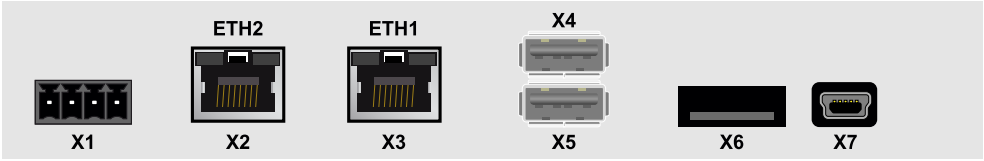
Storage temperature	-10 … +70 °C	
Environmental temperature	0 … +60 °C	
Humidity	10-95 %, non-condensing	
Installation altitude above sea level	0-2000 m without derating > 2000 m up to a maximum of 5000 m with derating of the maximum environmental temperature by 0.5 °C per 100 m	
Operating conditions	pollution degree 2	
Noise emissions	≤ 70 dB	
EMC resistance	according to EN 61000-6-2 (industrial area)	
EMC noise generation	according to EN 61000-6-3 (residential area) according to EN 61000-6-4 (industrial area)	
Vibration resistance	EN 60068-2-6	3.5 mm from 5-8.4 Hz 1 g from 8.4-150 Hz
Shock resistance	EN 60068-2-27	15 g (147.15 m/s²)
Protection type	EN 60529 protection through housing	front: IP65 cover: IP20 (not evaluated by UL)

1.8 Miscellaneous

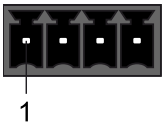
Article number	12-100-033
Operating system	Gecko
Default IP address	10.10.150.1
Standard	designed according to UL
Approvals	CE, UKCA

2 Interfaces

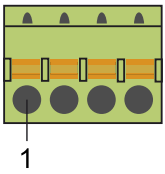
2.1 Rear Connectors



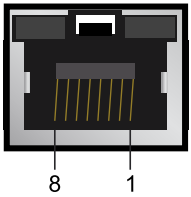
2.1.1 X1: Supply (4-pin Phoenix RM 3.5)



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



2.1.2 X2, X3: Ethernet 1, 2 (10/100/1000 Mbit/s) (RJ45)



Pin	Function
1	DA+
2	DA-
3	DB+
4	DC+
5	DC-
6	DB-
7	DD+
8	DD-

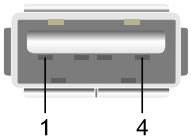
INFORMATION

Only for use in LAN, not for connection to telecommunication circuits.

INFORMATION

Problems can arise if a control is connected to an IP network, which contains modules that are not running with a SIGMATEK operating system. With such devices, Ethernet packets could be sent to the control with such a high frequency (i.e. broadcasts), that the high interrupt load could cause a real-time runtime error or runtime error. By configuring the packet filter (Firewall or Router) accordingly however, it is possible to connect a network with SIGMATEK hardware to a third party network without triggering the error mentioned above.

2.1.3 X4, X5: USB 2.0 (Type A)

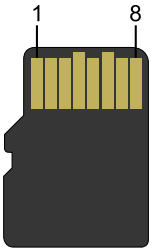


Pin	Function
1	+5 V, $I_{out,max}$ = 500 mA
2	D-
3	D+
4	GND

INFORMATION

It should be noted that many of the USB devices on the market do not comply with USB specifications; this can lead to device malfunctions. This may cause the device to malfunction. It is also possible that these devices will not be detected at the USB port or function correctly. It is therefore recommended that every USB stick or USB supply be tested before actual use.

2.1.4 X6: microSD



Pin	Function
1	DAT2
2	CD/DAT3
3	CMD
4	+3V3
5	CLK
6	GND
7	DAT0
8	DAT1

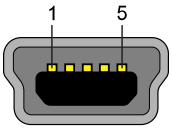
INFORMATION

It is recommended that only storage media provided by SIGMATEK be used.

The number of read and write actions have a significant influence on the lifespan of the storage media.

The microSD card is not intended as an exchangeable medium and should therefore be removed from the card holder for maintenance purposed only.

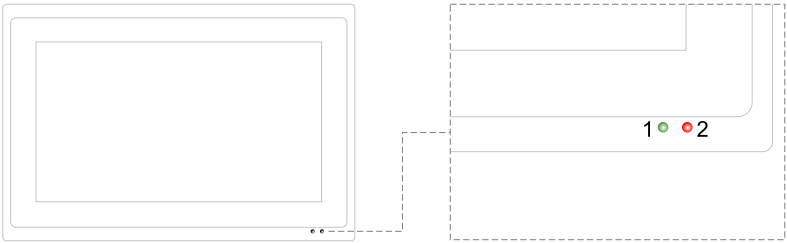
2.1.5 X7: USB Online OTG 2.0 (Type Mini-B)



Pin	Function
1	+5 V, $I_{out,max}$ = 500 mA
2	D-
3	D+
4	ID
5	GND

2.2 Status Display LEDs

Two status LEDs for diagnostics are located on the front.



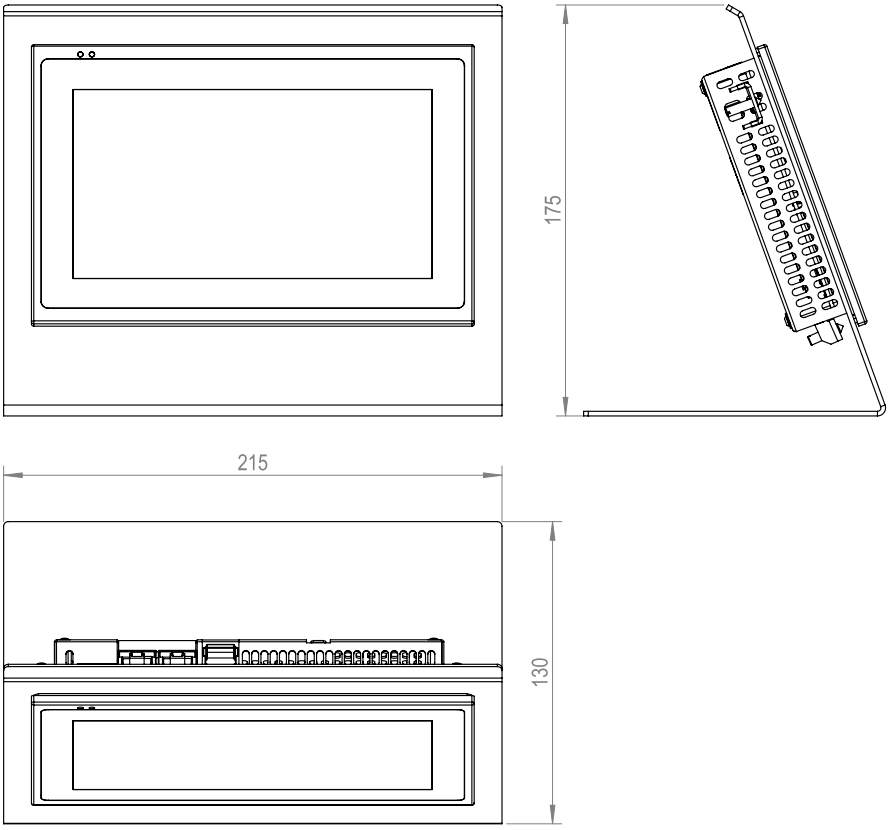
Symbol Image 7“

LED Green (1)	LED Red (2)	Status
Lights	Off	- Supply voltage OK - During operating system start - Application running
Off	Lights	- Supply voltage NOT OK
Lights	Lights	- Supply voltage OK - Operating system not started or still in Start mode
Off	Blinks	- Application error or reset

INFORMATION

Within the application, the LEDs (red/green) can be controlled as desired.

3 Mechanical Dimensions



Dimensions	215 x 175 x 130 mm (W x H x D)
Material	Housing: aluminium/steel chromated Color: silver (mount) Front: 2 mm (mount)
Weight	ca. 0.85 kg

Changes Chart

Change date	Affected page(s)	Chapter	Note