SIGMATEK

HGT 1035

Handheld Operating Panel

Instruction Manual

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Translation of the Original Instruction

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10.4“ Handheld Operating Panel HGT 1035

The HGT 1035 is an intelligent handheld operating panel used for programming and visualization of automated processes. Process diagnostics, operating and monitoring of processes are thereby simplified.

A touch screen serves as the input medium for process data and parameters. The output is shown on a 10.4" XGA TFT color display.

With the LSE mask editor, graphics can be created on the PC, then stored and displayed on the handheld control panel.

The available interfaces can be used to exchange process data or configure the handheld operating panel. On the Flash card, the operating system, application and application data are stored.

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1 Essential Components

- 10.4" XGA TFT color display with backlighting
- 10.4" Touchscreen
- Confirmation switch (mounted on the rear side), 2-channel configuration
- Key switch (mounted top-center), two channel wiring.
- Emergency stop button (mounted top-center), two channel wiring.
- USB socket with cover
- M16 connector with special cable (swivels 90°)
- Applicable Safety controls:
  - SCP XXX

2 Introduction

2.1 Target Group/Purpose of this Manual

This operating manual contains all information required for operating the product.

This operating manual is intended for:

- Project planners
- Technicians
- Commission engineers
- Machine operators
- Maintenance/test technicians

General knowledge of automation technology is required.

Further help and information on training, and the appropriate accessories can be found on our website www.sigmatek-automation.com.

Our support team is happily available to answer your questions.
Please see our website for our hotline number and business hours.

2.2 Important Reference Documentation

- Safety System Handbook
- Operating Panel Connection Cables

This and additional documents can be downloaded from our website or obtained through support.

2.3 Contents of Delivery

1x HGT 1035

3 Basic Safety Guidelines

3.1 Symbols Used

The following symbols are used in the operator documentation for warning and danger messages, as well as informational notes:

DANGER

Danger indicates that death or serious injury **will occur**, if the specified measures are not taken.

⇨ To avoid death or serious injuries, observe all guidelines.

Danger indique une situation dangereuse qui, faute de prendre les mesures adéquates, **entraînera** des blessures graves, voire mortelles.

⇨ Respectez toutes les consignes pour éviter des blessures graves, voire mortelles.

WARNING

Warning indicates that death or serious injury **can** occur, if the specified measures are not taken.

⇨ To avoid death or serious injuries, observe all guidelines.

Avertissement d’une situation dangereuse qui, faute de prendre les mesures adéquates, **entraînera** des blessures graves, voire mortelles.

⇨ Respectez toutes les consignes pour éviter des blessures graves, voire mortelles.

CAUTION

Caution indicates that moderate to slight injury **can** occur, if the specified measures are not taken.

⇨ To avoid moderate to slight injuries, observe all guidelines.

Attention indique une situation dangereuse qui, faute de prendre les mesures adéquates, **peut** entraîner des blessures assez graves ou légères.

⇨ Respectez toutes les consignes pour éviter des blessures graves, voire mortelles.

Information

Provides important information on the product, handling or relevant sections of the documentation, which require particular attention.

Danger for ESD-sensitive components.

Les signes de danger pour les composants sensibles aux décharges électrostatiques.

3.2 Disclaimer

The contents of this operating manual were prepared with the greatest care. However, deviations cannot be ruled out. This operating manual is regularly checked and required corrections are included in the subsequent versions. The machine manufacturer is responsible for the proper assembly and device configuration. The machine operator is responsible for safe handling and proper operation.

The current operating manual can be found on our website. If necessary, contact our support.

Subject to technical changes, which improve the performance of the devices. The following operating manual is purely a product description. It does not guarantee properties under the warranty.

Please thoroughly read the corresponding documentation and this operating manual before handling a product.

SIGMATEK GmbH & Co KG is not liable for damages caused through non-compliance with these instructions or applicable regulations.

3.3 General Safety Guidelines

The safety guidelines in the other sections of this operating manual must be observed. These instructions are visually emphasized by symbols.

According to EU Guidelines, the operating instructions are a component of a product.

This operating manual must therefore be accessible in the vicinity of the machine since it contains important instructions.

This operating manual should be included in the sale, rental or transfer of the product, or its online availability indicated.

Maintain this operating manual in readable condition and keep it accessible for reference.

Regarding the requirements for Safety and health connected to the use of machines, the manufacturer must perform a risk assessment by machine guidelines 2006/42/EG before introducing a machine to the market.

Before commissioning this product, check that conformance with the provisions of the 2006/42/EG guidelines is correct. As long as the machine with which the product should be used does not comply with the guideline, operating this product is prohibited.

Operate the unit with devices and accessories approved by SIGMATEK only.

CAUTION

Handle the device with care and do not drop or let fall. Prevent foreign bodies and fluids from entering the device. The device must not be opened, otherwise it could be damaged!
If the device does not function as properly or is damaged in a way that could pose a hazard, it must no longer be used!
Regularly check the housing for mechanical damage.
The handheld operating device can only be used in the visible area for the application to control, the system integrator must perform a risk analysis.
The module complies with EN 61131-2. In combination with a machine, the machine builder must comply with EN 60204-1 standards. For your safety and that of others, compliance with environmental conditions is essential. The control cabinet must be connected to ground correctly. To perform maintenance or repairs, disconnect the system from the power supply.

3.4 Designated Use

The Safety functions implemented in the product are designed for use with safety applications in a PLC control and meet the required conditions for safe operation in compliance with SIL 3, HFT 1 according to EN IEC 62061 and in compliance with PL e. Cat. 4 in accordance with EN ISO 13849-1.

CAUTION

The instructions contained in this operating manual must be followed.

For error-free operation, proper transport and storage are essential.

Installation, mounting, programming, initial start-up, operation, maintenance and decommissioning can only be performed by qualified personnel.

Qualified personnel in this context are people, who have completed training or have trained under the supervision of qualified personnel and have been authorized to operate and maintain safety-related equipment, systems and facilities in compliance with the strict guidelines and standards of safety technology (functional safety).

For your safety and that of others, use the product for its designated purpose only.

Correct EMC installation is also included under designated use.

Non-designated use consists of:

- any changes made to the module or the use of damaged modules.
- use of the module inconsistent with the technical margins described in this manual or the specifications defined in the technical data.

As required by EN ISO 13850, section 4.1 and EN 60204-1, section 10.7.1, confusion between a functioning and non-functioning handheld operating panel is possible and must be prevented.

3.5 Software/Training

The application is created with the software LASAL CLASS 2 and LASAL SCREEN Editor, the safety application is created using the LASAL SAFETYDesigner. Basic safety information (functional safety) can be found in the Safety System Handbook.

Training for the LASAL development environment, with which the product can be configured, is provided. Information on our training schedule can be found on our website.

4 Norms and Guidelines

4.1 Residual Risks

CAUTION

In the system integrator’s risk analysis, the following residual risks must be taken into consideration for the product:

- Release of environmentally harmful substances, emissions and undesired temperatures
- dangerous contact voltages
- effects of electrical, magnetic and electromagnetic fields produced during operation
- possible effects of information technology devices

4.2 Safety of the Machine or Equipment

Observe all on-site rules and regulations for accident prevention and occupational safety.

4.3 Regular Technical Inspection of the Safety-Related Switches

CAUTION

According to the machine guideline, mechanical and electromechanical safety-oriented components (e.g. relays, switches, etc.) must be regularly checked for correct function.

Emergency stop switch: at least 1x/month

Key switch: at least 1x/year

Confirmation switch: at least 1x/year

Please note the requirements of your machine. Due to Type C standards or other guidelines, requirements could differ regionally.

4.4 Guidelines

The product was constructed in compliance with the following European Union guidelines and tested for conformity.

4.4.1 Functional Safety Standards

EN IEC 62061	Safety of machinery - Functional safety of safety-related control systems
EN ISO 13849-1	Safety of machinery - Safety-related components of controls - Part 1: General Design Principles
EN ISO 13849-2	Safety of machinery - Safety-related components of controls - Part 2: Validation
EN ISO 13850	Safety of machines - Emergency stop function - design principles

4.4.2 EU Conformity Declaration

CE

EU Conformity Declaration

The HGT 1035 conforms to the following European guidelines:

- **2006/42/EG** Machine Guideline
- **2014/30/EU** Electromagnetic Compatibility (EMC guideline)
- **2011/65/EU** “Restricted use of certain hazardous substances in electrical and electronic equipment” (RoHS Guideline)

The EU Conformity Declarations are provided on the SIGMATEK website. They can be found in the download area of the respective product.

4.5 Safety-Relevant Parameters

The use of the specified parameters requires a risk analysis of the end application.

Input Module	Safety Ratings (SIL 3, HFT 1, PL e / Cat. 4)[1)]
HGT 1035 Including Safe CPU (SCP XXX)	PFH = 1.1E-11 (1/h) MTTFd = 306 years DC = 99 %

Confirmation Switch	B_{10D} = 100,000
Key switch	B_{10D} = 10,000
Emergency stop switch	B_{10D} = 325,000

[1)] Depending on the application, the probability of failure must be determined for the electromechanical components included based on the B_{10D} values listed here and integrated into the calculation for the entire system.

5 Type Label

Exemplary nameplate (symbol image)

HW: Hardware version
SW: Software version

6 Technical Data

6.1 Performance Data

Processor	EDGE2 Technology
Processor cores	2[1)]
Internal cache	32-kbyte L1 Instruction Cache 32-kbyte L1 Data Cache 512-Kbyte L2 Cache
Internal program and data memory (DDR3 RAM)	256-Mbyte
Internal remnant data memory	128-kbyte MRAM
Internal storage device	8-Gbyte microSD card (3D-TLC pSLC technology)[2)]
Internal I/O	no
Interfaces	1x Ethernet 1x USB 2.0 Type A 1x Safety interface[3)] 1x VARAN
Internal interface connections and devices	1x TFT LCD color display 1x Touch
Operating panel	touch screen (analog resistive) Confirmation switch (2 normally open, 3-stage) key switch (2 normally open) Emergency stop switch (2 normally closed contacts)
Display Resolution	10.4" TFT color display 1024 x 768 pixels
Operating panel	5-wire touch screen (analog resistive)
Signal generator	no
Real-time clock	yes (buffering approximately 10 days)
Cooling	passive (fanless)

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

[2)] The 8 Gbyte microSD card is formatted to 1 Gbyte in order to achieve the lifetime of a standard SLC card. A format change to the full 8 Gbyte is not allowed and will result in a massive reduction of the microSD card's lifetime.

[3)] The Safety interface must be used exclusively with the SIGMATEK SCP XXX! The status of the Safety-related inputs (confirmation, key, emergency stop switches) is sent to the SCP XXX.
The function of the confirmation, key and emergency stop switches must be tested at least once per month!

6.2 Electrical Requirements

Supply voltage	typically +24 V DC (PELV)	
	minimum +24 V DC (PELV)	maximum +30 V DC (PELV)
Supply voltage (UL)	+24-30 V DC (NEC Class 2 or LVLC)	
Current consumption Power supply +24 V	typically 0.5 A (without externally connected devices)	typically 0.6 (with external devices connected)
Protection class	III	
Inrush current	maximum 10 A for < 50 µs	
USB current load	maximum 0.5 A	

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).

6.3 Terminal

Dimensions	264 x 226 x 73.3 mm (W x H x D) (without emergency/key switch)
Material	housing: PC/ASA Color: RAL7024
Weight	typically, circa 1.1 kg without connector cable

6.4 Environmental Conditions

Storage temperature	-10 ... +60 °C	
Environmental temperature	0 … +50 °C	
Humidity	10-95 %, non-condensing	
Operating conditions	pollution degree 2 altitude up to 2000 m	
Noise emissions	≤ 70 dB	
EMC stability	EN 61000-6-2 (industrial area) (increased requirements according to EN IEC 62061)	
Shock resistance	EN 60068-2-27	150 m/s²
Vibration tolerance	10 m/s²	
Protection type	EN 60529	IP54 (only with all protective caps in place)
Free fall (without packaging)	DIN EN 60068-2-31	500 mm

6.5 Display

Type	10.4” TFT LCD color display
Resolution	XGA, 1024 x 768 pixels
Color depth	18-bit RGB (262K colors)
LCD mode	normal black
LCD Polarizer	transmissive
Pixel size	0.0685 x 0.2055 mm
Backlighting	LED
Contrast	typically 1000: 1
Brightness	typically 350 cd/m²
Angle CR ≥ 10	88° from all sides

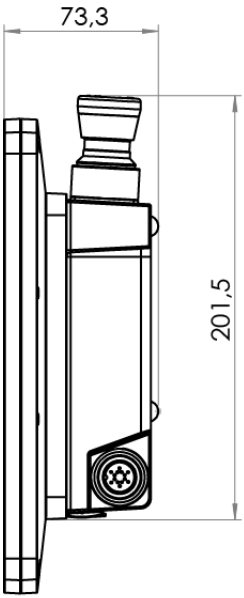
6.6 Terminal Requirements

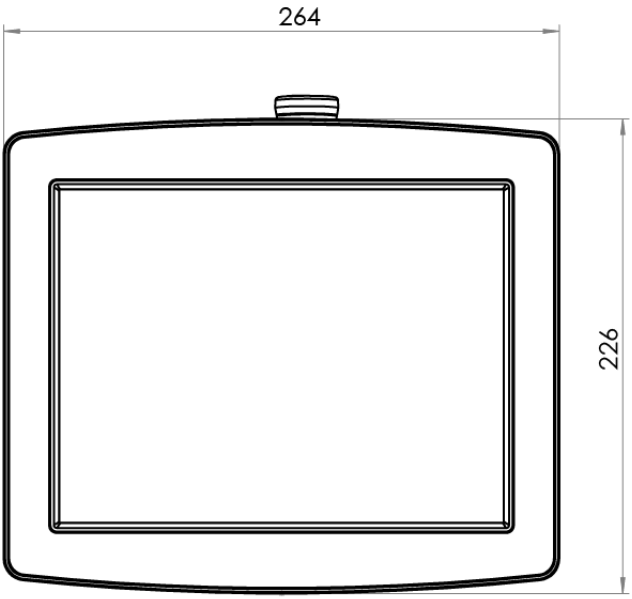
Connection technology	M16 plug (see X2 on page 24)
	Special connector cable minimum bend radius: 147 mm

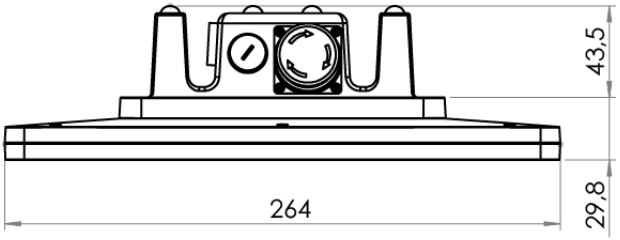
6.7 Miscellaneous

Article number	01-245-1035
Connector cable	optionally available (see documentation Connection Cables for Operating Devices)
Standard	UL 508 (E247993)
Approvals	CE, TÜV EG type tested, cULus
Mission time	20 years

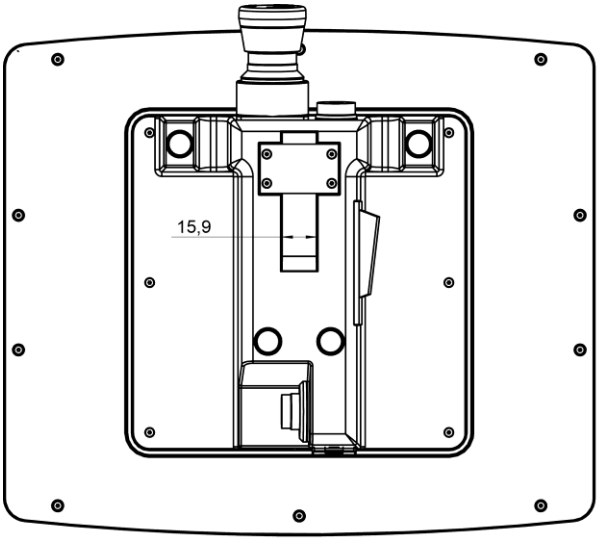
7 Mechanical Dimensions

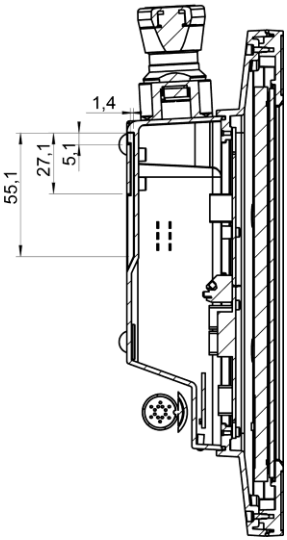






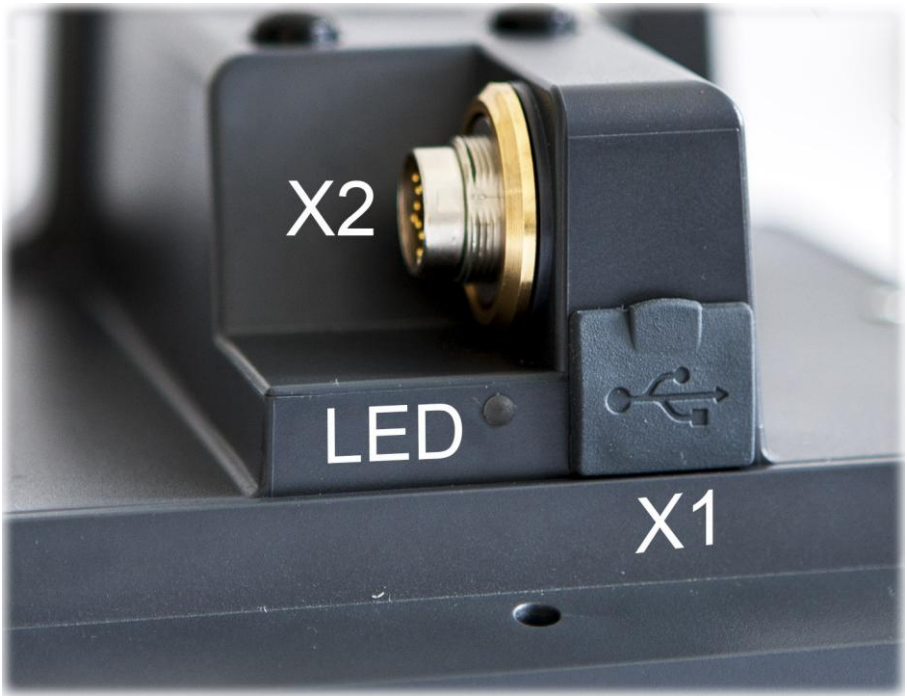
7.1 Wall Mount



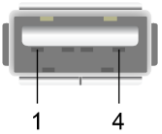


8 Interfaces

8.1 Rear Connectors



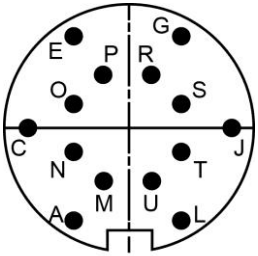
X1: USB interface 2.0 type A



Pin	Function
1	+5 V
2	D
3	D+
4	GND

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.

X2: Cable Connector M16



Pin	Wire Color	Function
L	Yellow	Safety interface H
J	Green	Safety interface L
G	Black	Safety interface shield
E	Red	+24 V DC
C	Black	GND
A	shield	ETH shield
U	White	ETH_Tx+
T	Red	VAR_Rx+
S	Blue	VAR_Rx-
R	Pink	VAR_Tx+
P	Gray	VAR_Tx-
O	Yellow	ETH_Rx-
N	Green	ETH_Rx+
M	Brown	ETH_Tx-

The appropriate connector cables are available as accessories. See documentation Connection Cables for Operating Devices.

LED

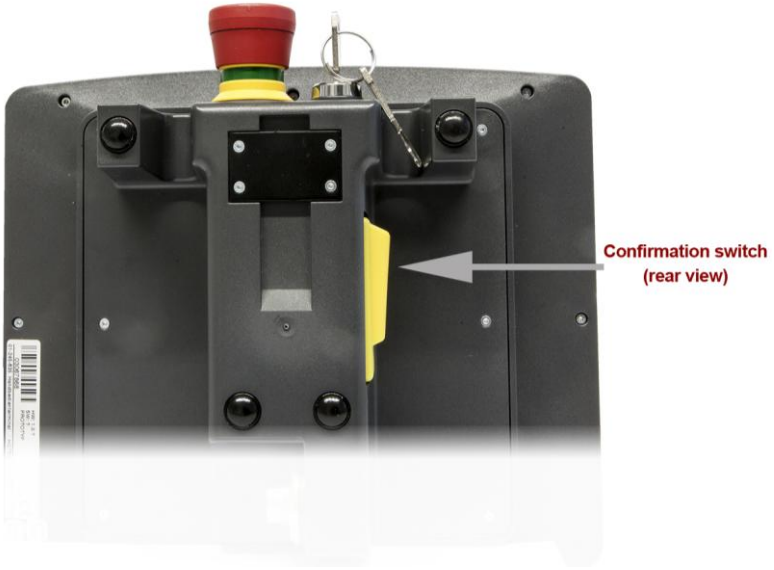
LED Status	Meaning
LED lights green	DC OK

8.2 Key Switch

The key switch is two-stage and read via the SCP XXX connected to the Safety interface. In the SCP XXX the "HBG0811_K" module is used; inputs 5 and 6 are assigned to the key switch.

8.3 Confirmation Switch

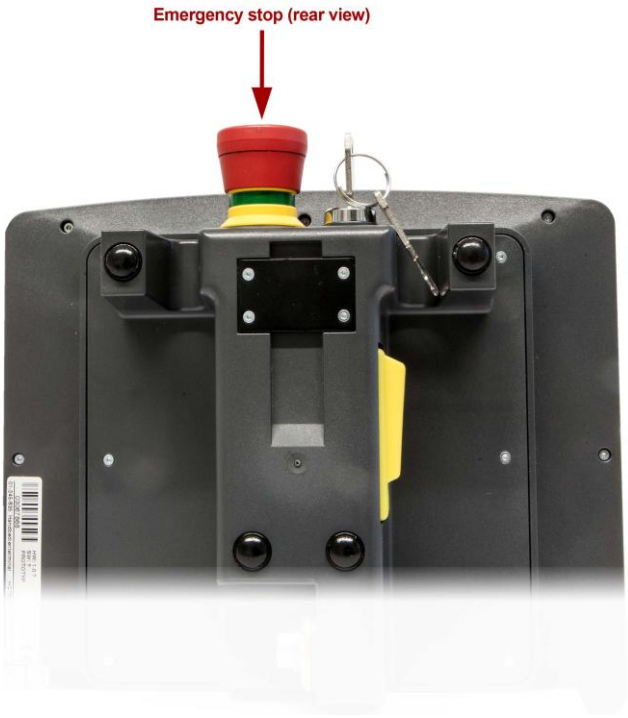
The confirmation switch is three-stage. If the switch is not pressed or pressed only partially, it is inactive. The switch is active when simply pressed (middle stage). In the SCP XXX, the “HBG0811_K" module is used and inputs 1 and 2 are used for the confirmation switch.



With the “HGT1035" hardware class, it is possible among other things, to evaluate the Safety number of the connected SCP XXX on the HGT 1035.

8.4 Emergency Stop

The Emergency Stop is two-stage. In the SCP XXX, the “HBG0811_K" module is with the inputs 3 and 4.



9 Assembly/Installation

9.1 Check Contents of Delivery

Ensure that the contents of the delivery are complete and intact. See chapter 2.3Contents of Delivery for more information.

On receipt and before initial use, check the device for damage. If the device is damaged, contact our customer service and do not install the device in your system.

Damaged components can disrupt or damage the system.

10 Wiring

10.1 ESD Protection

The operator must ensure that no ESD disturbances affect the product.

10.2 USB Interface

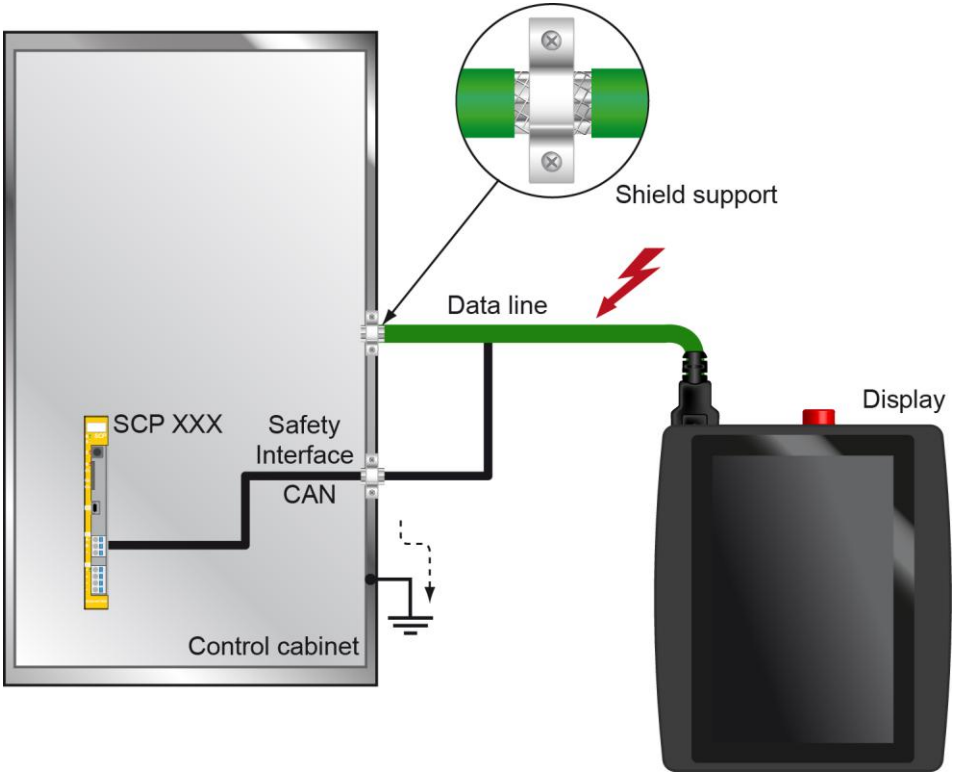
The handheld operating panel has a USB interface. This interface has a USB interface connection that can be used to connect various USB devices (keyboard, mouse, storage media, hubs, etc.).

10.3 Recommended Cable Shielding

For applications in which the bus is operated outside the control cabinet, the correct shielding is required. Especially when for structural reasons, the bus line must be placed next to sources of strong electromagnetic interference. It is recommended that wiring the connector cable in parallel with power cables be avoided whenever possible.

10.3.1 Connection from the Control Cabinet to the HGT

It is recommended that the shielding be mounted at the entry point of the control cabinet housing. Noise can then be deflected from the electronic components before reaching the module.



11 Transport/Storage

This device contains sensitive electronics. During transport and storage, high mechanical stress must therefore be avoided.

For storage and transport, the same values for humidity and vibration as for operation must be maintained!

During transport, temperature and humidity fluctuations may occur. Ensure that no moisture condenses in or on the device, by allowing the device to acclimate to the room temperature while turned off.

When sent, the device should be transported in the original packaging if possible. Otherwise, packaging should be selected that sufficiently protects the product from external mechanical influences, such as cardboard filled with air cushioning.

12 Storage

When not in use, store the operating panel according to the storage conditions. See Chapter 11.

During storage, ensure that all protective covers are placed correctly, so that no contamination, foreign bodies or fluids enter the device.

13 Maintenance

During maintenance and service, observe the safety guidelines in Chapter 3.

13.1 Cleaning and Disinfection of the Touchscreen

CAUTION

Before cleaning and disinfecting the touch screen, the ETV must be turned off in order to prevent triggering functions or commands unintentionally!

The touch screen can only be cleaned with a soft, damp cloth. To dampen the cloth, a mild cleaning solution such as an anti-static foam cleaner is recommended. To avoid fluids/cleaning solutions from getting into the housing, the device must not be sprayed directly. To clean, no erosive cleaning solutions, chemicals, abrasive cleansers or hard objects that can scratch or damage the touch screen may be used. The use of steam jets or compressed air is prohibited.

Alcohol-based surface disinfectants, which do not contain any refatting agents, can be used for disinfection. For error-free function of the touch screen, the disinfectant cannot leave residue on the screen.

WARNING

If the device is contaminated with toxic or erosive chemicals, it must be carefully cleaned as quickly as possible to prevent personal injury and machine damage!

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

To avoid damaging the touch screen, using either the fingers or a stylus to operate the panel is recommended.

13.2 Service

This product was constructed for low-maintenance operation.

13.3 Repair

In the event of a defect/repair, send the panel with a detailed error description to the address listed at the beginning of this document.

For transport conditions, see chapter Transport/Storage.

14 Storage Media

Only storage media approved by SIGMATEK may be used.

If non-approved storage media are used, there is no entitlement to support or warranty coverage.

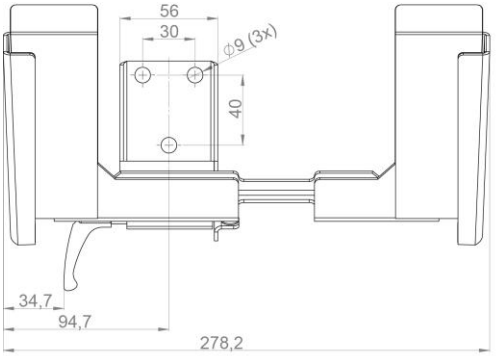
The number of read and write actions have a significant influence on the lifespan of the storage media.

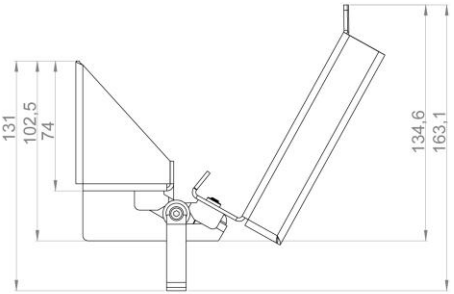
The microSD card is not intended as an exchangeable medium and should therefore be removed from the cardholder for maintenance purposes only.

15 Wall Mount Accessory

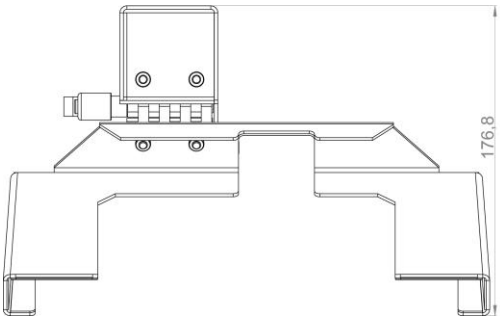
The appropriate wall mount is available at SIGMATEK under the article number 01-245-1035-Z2.

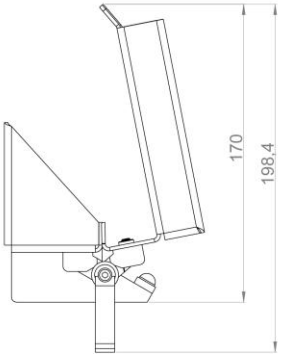
15.1 Mechanical Dimensions





Ansicht geschlossen





16 Accessories

16.1 microSD Card

Description	Order Number
8 GByte	12-630-805

The microSD card is delivered empty and unformatted. For actual memory usage and formatting format, see performance data.

17 Application Information

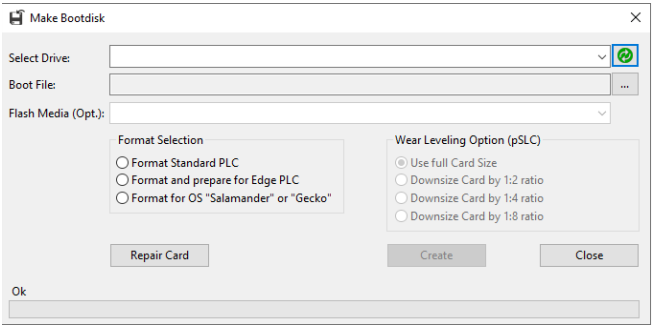
17.1 Storage Media

The operating system and customer application are stored on the internal storage device.
To ensure longevity of the memory, writing cyclic data to the internal storage medium should be avoided (lifespan drastically reduced). For cyclic writing, an external storage medium (e.g. microSD card or USB stick, depending on the respective device) from SIGMATEK must be used.
Errors resulting from the use of storage media from other manufacturers are excluded from support.

17.1.1 Create Boot Media (Make Bootdisk)

To create a boot medium with a SIGMATEK operating system, the PlcDiag function “Make Bootdisk” must be used. For the corresponding formatting of the storage medium, the storage medium identifier must be entered in addition to the operating system image.

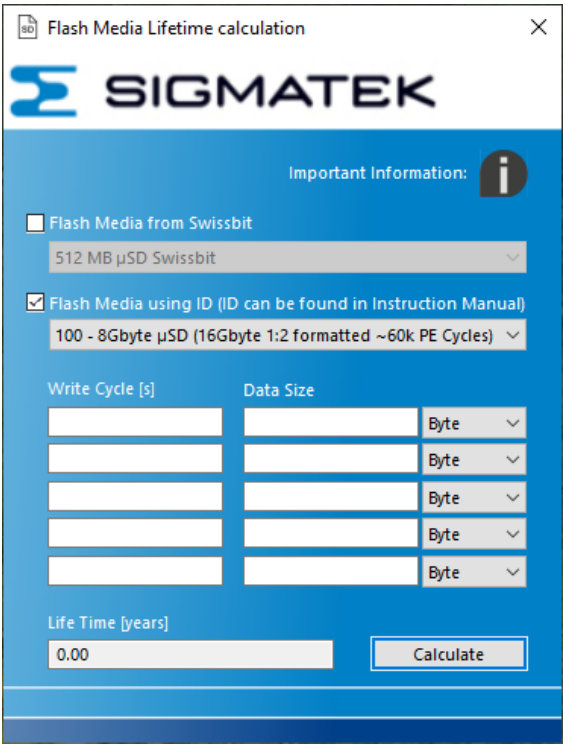
HW version	Storage media identification	Storage media designation
≥ 2.60	102 (microSD)	1 GByte microSD (8 GByte 1:8 formatted ≥120k P/E cycles)



Customer-specific data can then be copied to the storage medium.

17.1.2 Lifetime Calculation (Flash Media Lifetime Calculation)

The life span of the internally installed storage medium can be calculated using the Flash Media Lifetime Calculation Tool. This is a theoretical guideline value. The storage medium ID must be entered to ensure the correct selection. The current status of the storage medium can be read out via the hardware class “PLC_Info” using the “SDCardHealth” server.



These extended functions of Make Bootdisk and Flash Media Lifetime Calculation are available from LASAL CLASS 2 version 02.02.244.

Starting with hardware version ≥ 2.60, operating system version Salamander 3 ≥ 09.04.140 is required for the correct reading of the microSD card parameters. Hardware version < 2.60: Use "Flash Media from Swissbit".

18 Disposal

Should you need to dispose of the device, the national electronic waste regulations must be observed.

The device appliance must not be disposed of as household waste.

Documentation Changes

Change date	Affected page(s)	Chapter	Note
29.09.2014	12 14	3.2 Electrical requirements 3.7 Miscellaneous	Supply voltage (UL) and note added in grey box Standards added
29.12.2014	16	4.1 Wall Mount	Wall mounting added
09.03.2015	23	8. Wall Mount Accessories	Wall Mount Accessories newly added
12.03.2015	12 5	3.2 Electrical requirements 2.1 Symbols Used	Supply voltage (UL) changed Safety notes formatted
24.03.2015	20-21 15 15	5.2 Connector Cable Layout 3.6 Terminal Requirements 3.7 Miscellaneous	Connector cable layout added Special connector cable added Connector cable added
08.09.2015			Changed to general SCP
29.09.2015	13	3.2 Electrical requirements	LVLC added in the supply voltage (UL) line of the table
05.10.2015	15	3.7 Miscellaneous	UL, cUL, CE added
19.04.2016	12	3.1 Performance Data	Table updated
27.06.2016			CAN -> safety interface
13.09.2016	24	6 storage media	microSD note
08.02.2017	20	5.2 Connector Cable Layout	Graphic article number
26.09.2017	15 20	3.6 Terminal Requirements 3.7 Miscellaneous 5.2 Connector Cable Layout	Cable expanded Article number expanded Length specification removed; graphic replaced
29.09.2017	27	8.1 Mechanical Dimensions	Chapter added
08.03.2018	 10 14	Document 2.8 Safety-Relevant Parame-ters 3.6 Terminal Requirements 3.7 Miscellaneous 5.2 Connector Cable Layout	Safety recertification Emergency stop switch changed Connection technology: Connector cable removed

16.08.2018	11	3.1 Performance Data	Note corrected
17.12.2019		10.1 Connection from the Control Cabinet	Graphic expanded
08.09.2020	12 13	3.2 Electrical Requirements 3.4 Environmental Conditions	Protection class added For protection type (only with all protective caps in place) added
18.11.2020	11	3.1 Performance Data	Core footnote (programming) added
26.02.2021	10	2.8 Safety-Relevant Parameters	PFH and DC values changed
04.06.2021	23	8 Wall Mount Accessories	Updated to wall mount Z2
07.06.2024	7	3 Basic Safety Guidelines	Norms specified
	17	6.1 Performance Data	microSD card updated
	20	6.7 Miscellaneous	Mission time added
	33	13.2 Service	Chapter added
		Document	Documentation expanded Wording of standards corrected
29.10.2026	17	6.1 Performance Data	microSD card chapters updated
	37 38	15 Accessories 16 Application Information	chapters added