SIGMATEK

HGW 1033-3

Wireless Handheld Operating Panel

Operating Manual

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Translation from German

Wireless Handheld Operating Panel HGW 1033-3

In combination with a BWH base station and a safety-related PLC, the HGW 1033-3 is a wireless, intelligent handheld operating unit with an emergency stop function that enables the programming, visualization and diagnosis of processes and systems control.

Process data, procedures and parameters are comfortably presented on the 10.1” display and can be entered or changed via the touch screen.

The HGW 1033-3 can be coupled with machines via base stations, which allows the flexible application of the operating unit.

The interfaces can be used to configure the terminal. The integrated battery pack allows 2 hours of operation at full capacity.

Table of Contents

1 Introduction

1.1 Target Group/Purpose of this Operating Manual

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

This operating manual is intended for:

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

General knowledge of automation technology is required.

Further help and training information, as well as 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.

1.2 Important Reference Documentation

- Safety System Handbook
- HGW 1033-X_Maintenance Manual
- HGW_BWH_Configuration Manual
- WLAN Configuration
- HW IP Address Settings

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

1.3 Contents of Delivery

1x HGW 1033-3
2x keys

2 Basic Safety Guidelines

2.1 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 the 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 the 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 the 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.

DANGER

Danger for persons with pacemakers, implanted defibrillators or other active implants.

Danger pour les personnes portant un stimulateur cardiaque, un défibrillateur implanté ou d'autres implants actifs

WARNING

Magnetic field warning

Alerte au champ magnétique

CAUTION

Non-ionizing radiation

Rayonnement non ionisant

INFORMATION

INFORMATION

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

2.2 Disclaimer

INFORMATION

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, as well as device configuration. The machine operator is responsible for safe handling, as well as 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 documents 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.

2.3 General Safety Guidelines

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

INFORMATION

According to EU Guidelines, the operating manual is 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.

This device contains a Li-Ion battery. For this reason, we refer you to the manufacturer's specification (battery safety data sheet). This can be found on our website.

Regarding the requirements for Safety and health connected to the use of machines, the manufacturer must perform a risk assessment in accordance with 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!

Manipulez l'appareil avec précaution et ne le laissez pas tomber.
Empêchez les corps étrangers et les liquides de pénétrer dans l'appareil.
L'appareil ne doit pas être ouvert, sinon il risque d'être endommagé!

Regularly check the housing for mechanical damage.

Vérifier régulièrement l'absence de dommages mécaniques sur le boîtier.

The module complies with EN 61131-2.
In combination with a machine, the machine builder must comply with EN 60204-1 standards.
For your own safety and that of others, compliance with the 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.

Le module est conforme à la norme EN 61131-2.
En combinaison avec une machine, le constructeur de la machine doit respecter la norme EN 60204-1.
Pour votre propre sécurité et celle des autres, le respect des conditions environnementales est essentiel.
L'armoire de commande doit être raccordée correctement à la terre.
Pour l'entretien et les réparations, débranchez le système de l'alimentation.

2.4 Designated Use

The Safety functions implemented in the Safety modules are designed for use with safety applications in a PLC control and meet the required conditions for safe operation according to SIL 3 in compliance with EN 62061 and according to PL e / CAT 4 in compliance 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 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).

Les instructions contenues dans ce manuel technique doivent être suivies. Pour un fonctionnement sans erreur, le transport et le stockage appropriés sont essentiels.
L'installation, le montage, la programmation, la mise en service initiale, l'exploitation, la maintenance et la mise hors service ne peuvent être effectués que par une personne qualifiée.
Dans ce contexte, on entend par personnel qualifié les personnes qui ont suivi une formation ou qui ont été formées sous la supervision d'un personnel qualifié et qui ont été autorisées à utiliser et à entretenir l'équipement, les systèmes et les installations de sécurité conformément aux directives et aux normes strictes de la technique de sécurité (Sécurité fonctionnelle).

For your own safety and that of others, the safety modules should be used for their designated purpose only.
Correct EMC installation is also included under designated use.

Pour votre propre sécurité et celle des autres, les modules de sécurité ne doivent être utilisés qu'à des fins prévues.
Une installation CEM correcte est également incluse dans l'utilisation prévue.

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 operating manual or the speciation's defined in the technical data.

L'utilisation non désignée consiste en:

- toute modification apportée au module ou l'utilisation des modules endommagés.
- sation du module non conforme aux marges techniques décrites dans ce manuel ou aux spécifications définies dans les données techniques.

CAUTION

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 must be prevented.

Conformément à la norme EN ISO 13850, section 4.1 et EN 60204-1, section 10.7.1, la confusion entre un panneau de commande portatif fonctionnel et non fonctionnel doit être évitée.

If an operating panel is not coupled and not in use, keep it in a location with restricted access.

Si un panneau de commande n'est pas couplé et n'est pas utilisé, conservez-le dans un endroit à accès restreint.

Before delivering the module, the machine manufacturer must ensure that it is in “delivery condition”. See chapter12 Transport/Storage for more information.

Avant de livrer le module, le constructeur de la machine doit s'assurer qu'il est en "état de livraison". Voir le chapitre12 Transport/Storage pour plus d’informations.

INFORMATION

Hardware and software features (application-specific data) can be found in chapter 18 Application Information.

2.5 Software/Training

The application is created with the software LASAL CLASS 2 and LASAL SCREEN Editor, the Safety application is created using the SAFETYDesigner. Basic information on Safety (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.

3 Standards and Guidelines

3.1 Residual Risks

CAUTION

According to the EU guideline 2006/42/EG (machine guideline), the machine manufacturer must perform a risk assessment, which includes the possible residual risks posed by the product. These include:

- unwanted movements of driven machine components
- unwanted temperatures, emissions of gas, particles, smell and light
- dangerous contact voltages
- the effects of electrical, magnetic and electromagnetic fields produced during operation (for example, on pacemakers and implants)
- possible effects of information technology devices (cell/smart phones etc.)
- release of non-environmentally compatible substances and emissions

3.2 Safety of the Machine or Equipment

Strict compliance with the safety guidelines is required, otherwise all warranties and claims are invalid.

INFORMATION

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

3.3 Regular Technical Inspection of the Emergency Stop

CAUTION

The emergency stop should be regularly checked for manipulation and damage.

L'arrêt d'urgence doit être vérifié régulièrement pour vérifier qu'il n'a pas subi de manipulations ou de dommages.

The emergency stop illumination must be regularly checked for clear recognition. In addition, the illumination must also be visible in adverse conditions (e.g. effects of sunlight or clouding of the plastic). If this is no longer ensured, the emergency stop must be exchanged. To exchange the emergency stop, the device must be sent to SIGMATEK.

L'éclairage d'arrêt d'urgence doit être vérifié régulièrement pour une reconnaissance claire. L'éclairage doit également être clairement reconnaissable dans des conditions défavorables (p. ex. effets de la lumière du soleil ou de l'obscurcissement du plastique).Si l'éclairage n'est plus fonctionnel, l'arrêt d'urgence doit être remplacé. L'appareil doit être envoyé à SIGMATEK pour un échange de l'arrêt d'urgence.

The HGW 1033-3 has a defined internal testing interval of 30 days for the mechanical input and optical elements (emergency stop incl. illumination, confirmation switch and 7-segment display). The user is prompted by the system to perform a test before coupling to a machine, operation can only continue after the test was run successfully. The test interval can be manually shortened or initialized via the application. If this does not happen, the internal check interval is triggered every 30 days at the latest.

3.4 Guidelines

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

3.4.1 Functional Safety Standards

EN 62061:2005	SIL 3
EN ISO 13849-1:2015	PL e / CAT 4
EN ISO 13849-2:2012	
EN ISO 13850:2015	

3.4.2 EU Conformity Declaration

CE

EU Declaration of Conformity

The product HGW 1033-3 conforms to the following European guidelines:

- → **2006/42/EG** Machine Guideline
- → **2014/30/EU** Electromagnetic Compatibility (EMC Guideline)
- → **2014/53/EU** Wireless Device 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. See Products/Downloads or use the search function and the keyword “EU Declaration of Conformity”.

3.5 Safety-Relevant Parameters

Input Module	Safety Parameters[1)]
HGW 1033-3	PFH_D = 2.7E-09 (1/h) $MTTF_D$ = 766 years DC = 99 % SFF = 99 %
Confirmation switch	B_{10D} = 100,000
Emergency stop switch	B_{10D} = 250,000
Key switch	B_{10D} = 10,000
Transmission route (WLAN) between the HGW 1033-3 and Safe CPU. Worst-Case Calculation.	PFH_D = 1.8E-10

3.6 Wireless System Operation

INFORMATION

Technical changes to the device (such as different antennae), as well as improper use can lead to the loss of the FCC license and generate interference, which can affect the function of nearby devices.

Les changements techniques apportés à l'appareil (comme les différentes antennes), ainsi qu'une utilisation incorrecte peuvent entraîner la perte de la licence FCC et générer des interférences, ce qui peut affecter le fonctionnement des appareils voisins.

Please note the national regulations and standards when operating the wireless device!

Veuillez respecter les prescriptions et normes nationales lors de l'utilisation de l'appareil radio !

1) Depending on the application, the probability of failure must be determined for the included electromechanical components based on the B_{10D} values listed here and included in the calculation for the entire system. The Safe CPU SCP 111 must also be calculated in.

4 Technical Data

4.1 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	2048 Mbytes (DDR3 RAM)
Internal remnant data memory	512-kbyte MRAM
Internal storage device	512-Mbyte microSD card, expandable[2)]
Internal I/O	no
Battery	Capacity: 4170 mAh Lithium-Ion at 10.8 V Runtime: > 2 h continuous operation with new battery Chart/Status display via On/Off button
Charging time	< 3 h via USB-C as well as base station at 25 °C with a rising temperature and active use of the device, the charge time may increase
Interfaces	1x USB 2.0 Type-A (Host) 1x USB 2.0 Type-C (Dual Role Port, Charging: USB-PD Profile 4: 20 V, 3 A, 60 W) 1x WLAN Dual-Band (2.4 GHz, 5 GHz simultaneous)
Internal interface connections and devices	1x TFT color display 1x USB (touch connection)
Control Elements	confirmation switch (2 closers, 3-stage) key switch (2 closers) emergency stop switch illuminated (2 openers) on/off button (illuminated, with application interface)
Display Resolution	10.1“ TFT LCD color display WXGA 800 x 1280 pixels

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

2) For safety reasons, the device may only be extended by trained personnel.

Operating field	Touch screen (multi-touch, projective capacitive)
Status LEDs	3x front (controllable via application) 1x back (boot status/controllable via application) 1x power switch (shows power and charge status)
Signal generator	yes (at least 83 dB at 30 cm)
Real-time clock	yes (circa 3 days buffered with 100 % charge, ca. 1 day in RTC buffer)
Temperature sensors	4 (2x LP, 1x CPU, 1x battery)
Cooling	passive (fanless)
Coupling display	7-segment LED, two-digit
Input voltage measurement	yes

4.2 Electrical Requirements

Charging voltage	typically +19 V DC	
	minimum +15 V DC	maximum +24 V
Protection class	III	
Charging current	up to 2.5 A at 15.5 V	
USB Host current load	maximum 0.5 A	

INFORMATION

The specified charging time applies to the charging process when the panel is not simultaneously in use. If the device is in use while charging, the charging time can increase.

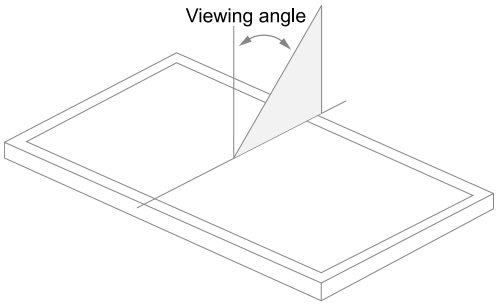
To protect the battery, the intelligent charging circuit monitors the ambient temperature. For this reason, the charging time can be extended at high ambient temperatures.

The specified current consumption applies to the status without connected peripherals (USB stick ...).

4.3 Display

Type	10.1" TFT LCD color display
Resolution	WXGA 800 x 1280 pixels
Color depth	18-bit RGB (16.7 million colors)
LCD mode	normally black[1)]
LCD Polarizer	transmissive[2)]
Pixel size	0.1695 x 0.1695 mm
Active range	135.6 (V) x 216.96 (H) mm
Backlighting	LED, adjustable
Contrast ratio	typically 800:1
Brightness	typically 300 cd/m²
Angle CR ≥ 10	85° from all sides[3)]
Life span	By compliance with the ambient conditions, the brightness of the display sinks after 15,000 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.

4.4 Control Unit

Operating field	Touch screen (multi-touch, projective capacitive)
Maximum number of fingers	10
The operation with thin gloves	yes
SIGMATEK Touch pen (passive)	yes
Handwriting recognition	no
Ball of the thumb recognition	no
Water spray recognition[1)]	yes
Water detection[2)]	no
Cleaning	see chapter 14.1 Cleaning and Disinfecting the Touch Screen

INFORMATION

The touch function may still have to be individually adapted to the respective environmental conditions.

4.5 Input

Input	Multi-touch screen (PCAP)
Emergency stop switch	1
Confirmation switch	1 (3 switch positions with panic function)
Key switch	1 (2 switch positions)
On/off button	1

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.

4.6 Environmental Conditions

Storage temperature	-5 … +50 °C (in transport mode)	
Environmental temperature, discharging	0 … +50 °C	
Environmental temperature charging	0 ... +40 °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	
EMC resistance	according to EN 61000-6-2:2007 (industrial area) according to EN 61000-6-7:2015 (noise immunity industry functional safety) (increased requirements according to EN 62061)	
EMC noise generation	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 (14.15 m/s^2)
Protection type	EN 60529	IP54 (only with all protective caps fitted)
Free fall (with rough handling)	DIN EN 60068-2-31	1000 mm
Free fall (with packaging)	IEC 60068-2-32	1000 mm

INFORMATION

The HGW 1033-3 has an intelligent charging circuit, which ensures optimal charging of the integrated battery pack. For this reason, the HGW 1033-3 can remain docked to the base station.

The HGW 1033-3 is delivered with a partially charged battery and should be completely charged by the customer before use.

With a 30 % charge, the device can be stored in transport mode for 6 months at 25 °C. After 6 months, the battery must be recharged to avoid damage to the battery.

4.7 Wireless

INFORMATION

The devices can only be used in the country designated or configured for this purpose, as the maximum permitted transmission power, as well as approved channels can greatly differ.
Please note that DFS/TPC is inactive on our devices and we therefore do not recommend the corresponding channels!
Non-compliance with these specifications can result in legal consequences, for which SIGMATEK accepts no liability!

Already during the planning stage, caution must be taken to ensure that the radio channels are configured so that interference with other products is prevented.

The document "WLAN Configuration" must be used for the configuration. All channels currently supported by the software and hardware are described there.

CAUTION

The device transmits WLAN signals in the frequency range of 2.4 and 5 GHz.

L'appareil émet des signaux WLAN dans la gamme de fréquences de 2,4 et 5 GHz.

4.7.1 WLAN 2.4 GHz

Frequency range	2399.5-2484.5 MHz
Transmission power max.	20 dBm (100 mW) EIRP
Channels	1-13 (2412-2472 MHz)
Standards	IEEE 802.11 b/g/n

4.7.2 WLAN 5 GHz

Frequency range	5150-5350 MHz 5470-5725 MHz
Transmission power max.	23 dBm (200 mW) EIRP
Channels	36-48 (5180-5240 MHz) 149-165 (5745-5825 MHz)
Standards	IEEE 802.11 a/n/ac

4.7.3 Antennae

Number	2
Frequency range	2.4/5 GHz (Dual-Band)
Transmission power max.	25 W
Antenna gain	2,4 GHz-4 dBi Peak Gain 5 GHz-5,2 dBi Peak Gain
Impedance	50 Ω
Transmission angle/characteristic	transmission characteristic: omnidirectional polarization: linear

INFORMATION

Only antennae approved by SIGMATEK can be used.
See chapter 17.1 Antennae.

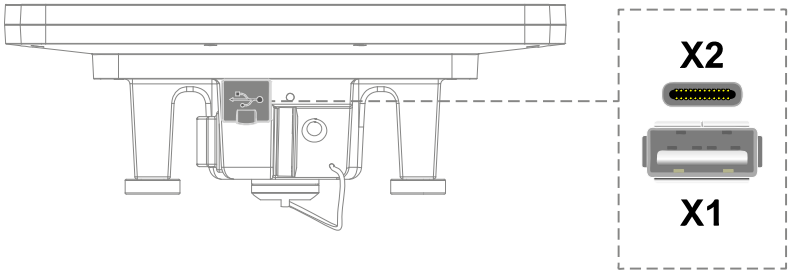
Regularly check the screw fitting for the antennae. If necessary, manually tighten them or use a torque wrench (1 Nm) for RP-SMA sockets.

4.8 Miscellaneous

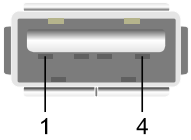
Article number	12-246-1033-3
Operating system	Salamander
Default IP address	see chapter Configuration
Approvals	CE, TÜV-Austria EG-type-examined

5 Interfaces

5.1 Connections Bottom



5.1.1 X1: USB 2.0 (Type A)



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

The Type-A interface can be used for various USB devices (keyboard, mouse, storage media, hubs, ...).

This interface can be used with a boot stick.

CAUTION

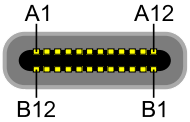
Do not use the HGW 1033-3 to charge mobile phones or other devices. The close proximity of these devices to the HGW 1033-3 can disrupt the wireless connection, as well as the function of the handheld operating panel.

N'utilisez pas la HGW 1033-3 pour charger des téléphones portables ou d'autres appareils. La proximité de ces appareils par rapport au HGW 1033-3 peut perturber la connexion sans fil ainsi que le fonctionnement du panneau de commande portatif.

INFORMATION

Connected external devices (USB sticks or similar devices) can reduce the battery life.

5.1.2 X2: USB 2.0 DualRole (Type C)



Pin	Function
A1, B1	GND
A2, B2	n.c.
A3, B3	n.c.
A4, B4	VBUS
A5, B5	CC1, CC2
A6, B6	USB2.0 D+
A7, B7	USB2.0 D-
A8, B8	SBU1, SBU2
A9, B9	VBUS
A10, B10	n.c.
A11, B11	n.c.
A12, B12	GND

The USB Type C interface can be used to charge or configure (via LASAL) the panel. Thus, interface can also be used for USB memory.

This interface can be used with a boot stick.

CAUTION

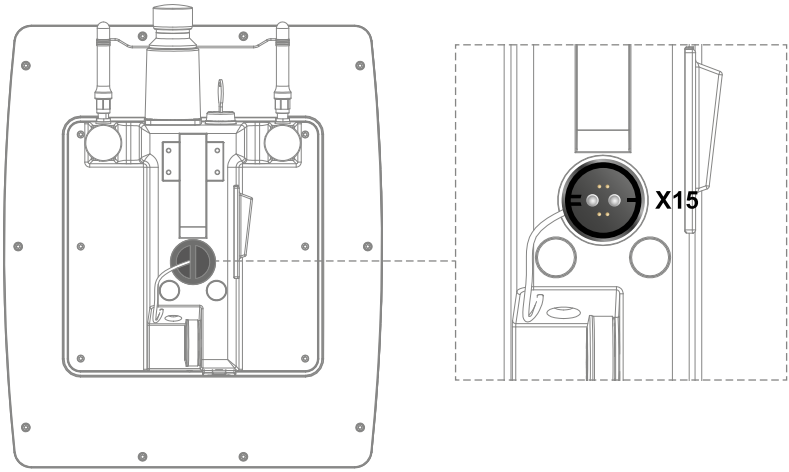
Charging via this interface is not permitted if the operating panel has a Safety connection with the SCP 111.

Le chargement via cette interface n'est pas autorisé si le panneau de commande dispose d'une connexion de sécurité avec le SCP 111.

INFORMATION

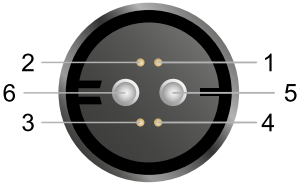
It should be noted that many of the USB devices on the market do not comply with USB specifications; this can lead to device malfunctions. This may cause the device to malfunction. It is also possible that these devices will not be detected at the USB port or function correctly. It is therefore recommended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

5.2 Rear Connectors



5.2.1 X15: Power/Data

Installed connector: Rosenberger M4S102-16C003A5-Y
Mating connector: Rosenberger M4K105-16C003B5-Y



Pin	Function
1	HGW COM H
2	HGW COM L
3	Plugin detection
4	n.c
5	Charging voltage
6	GND

CAUTION

Ensure that the X15 connector and its pins are always clean, since contamination (e.g. in environments with iron dust) can lead to leakage current while charging. This would result in short circuits and unexpected heating of the connector.

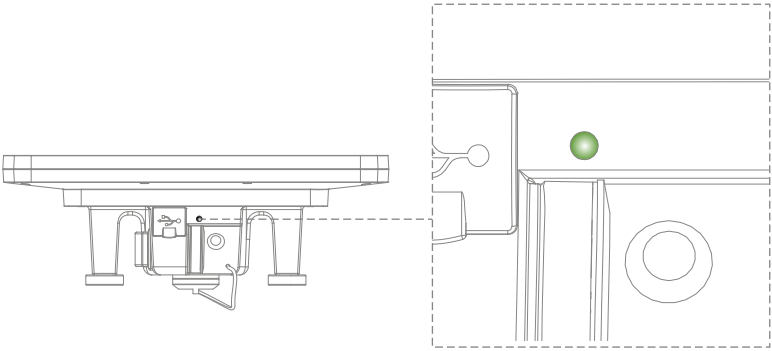
Veillez à ce que le X15 et ses broches soient toujours propres, car la contamination (par ex. dans des environnements avec de la poussière de fer) peut entraîner une fuite de courant pendant la charge. Cela provoquerait des courts-circuits et un échauffement inattendu du connecteur.

To avoid damaging the device, use the cover provided during wireless operation!

Pour éviter d'endommager l'appareil, utilisez le capot fourni lors du fonction-nement sans fil!

5.3 Display

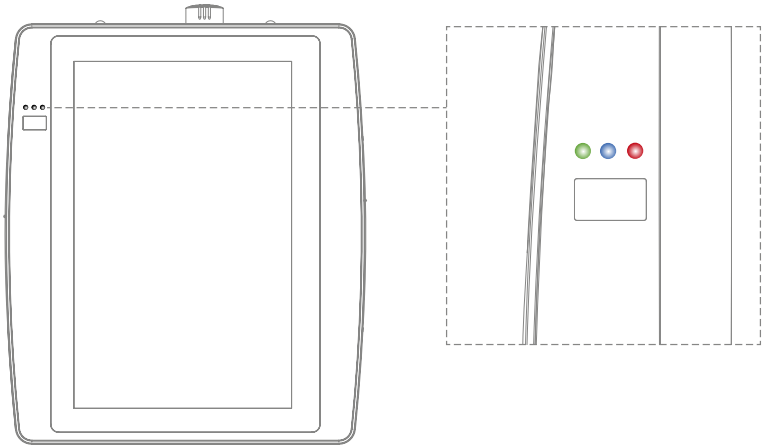
5.3.1 Underside



LED Status	Definition
LED off	Panel is off or LED was disabled via the application
LED lights green	Device in RUN mode, freely configurable via application

5.3.2 Front

5.3.2.1 Status LEDs



LED	Position	Color	Definition
User LED	left	green red	configurable, for example: battery warning
User LED	center	blue	configurable, for example: WLAN connection
User LED	right	red	configurable, for example: safety status

5.3.2.2 7-Segment (Safety)

The 7-segment display is used to uniquely assign the HGW 1033-3 to the machine it should operate.

CAUTION

The machine number must be visibly located on the machine installation and clearly readable (2-digit number placed on the machine).

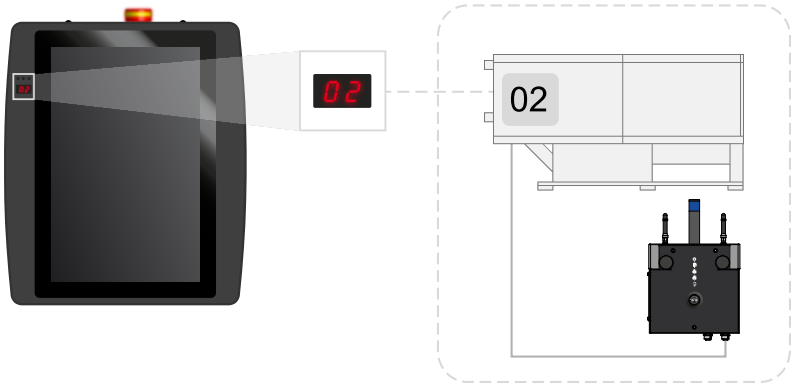
Le numéro de la machine doit se trouver visiblement sur l'installation de la machine et être clairement lisible (numéro à 2 chiffres placé sur la machine).

When coupling the HGW 1033-3 with a machine, the “operator” must confirm that the machine number located on the respective machine matches that in the 7-segment display on the HGW 1033-3. This is achieved via blink codes on the base station.

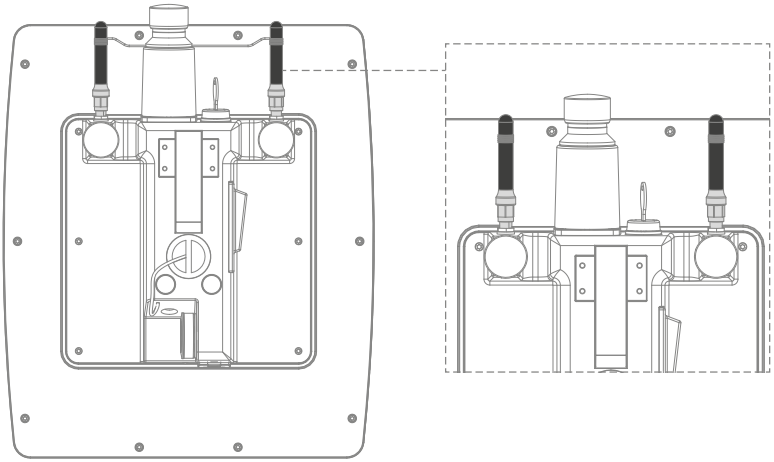
Lors de l'attelage de l'HGW 1033-3 à une machine, l'"opérateur" doit confirmer que le numéro de la machine se trouvant sur la machine correspondante correspond à celui de l'affichage 7 segments sur l'HGW 1033-3. Ceci est réalisé par des codes clignotants sur la base de la station de base.

Each time the HGW 1033-3 is started, whether the number on the 7-Segment display of the HGW 1033-3 matches the machine number must be checked.

Chaque fois que le HGW 1033-3 est démarré, il faut vérifier si le numéro sur l'afficheur à 7 segments du HGW 1033-3 correspond au numéro de la machine.



5.4 WLAN



CAUTION

This device has sensitive antennae. These must be handled carefully and kept free from sources of interference (metal, hand). Otherwise, the error free function of the WLAN connection cannot be guaranteed.

Cet appareil est équipé des antennes sensibles. Elles doivent être manipulées avec précaution et maintenues à l'abri de toute source d'interférence (métal, main). Dans le cas contraire, la fonction sans erreur de la connexion WLAN ne peut pas être garantie.

DANGER

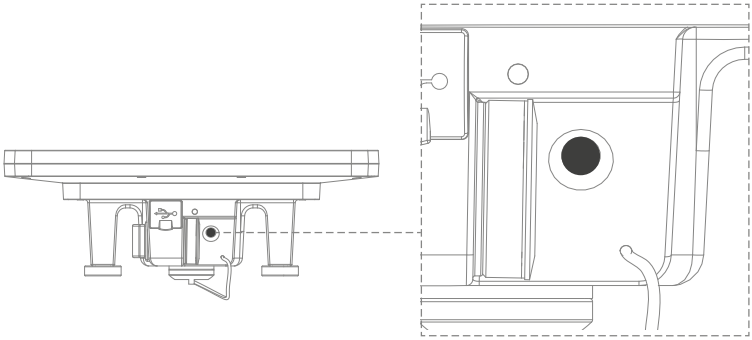
This device contains wireless technologies, which can pose a danger to people with implants such as pacemakers! These individuals must comply with their implant's specifications.

Cet appareil est doté de technologies sans fil, ce qui peut présenter le danger pour les personnes portant un stimulateur cardiaque! Ces personnes doivent se conformer aux spécifications du stimulateur cardiaque.

INFORMATION

Only antennae approved by SIGMATEK can be used. Other antennae can damage the device, as well as invalidate the radio permits.

5.5 Acoustics

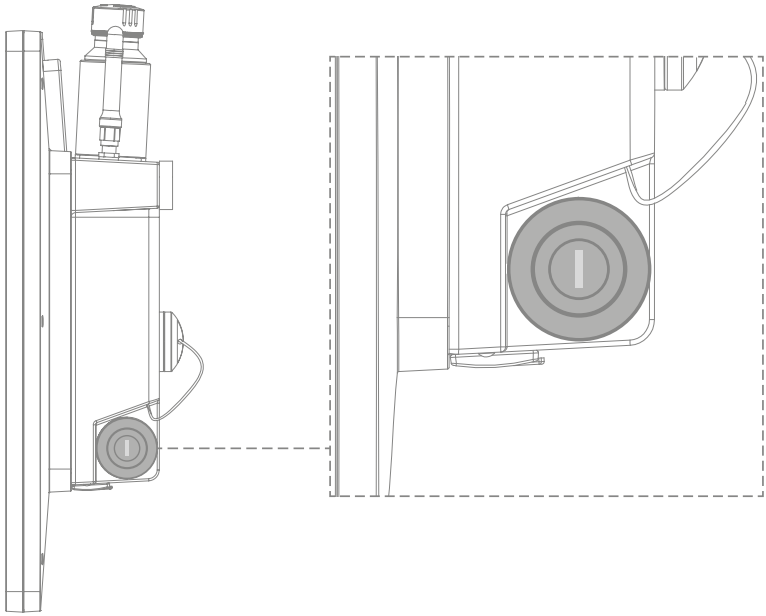


The operating panel is equipped with an alarm signal (Piezzo). To avoid minimizing the specified volume, the sound outlet must be kept free of obstacles (finger...).

5.6 On/Off Button (illuminated)

In addition to switching the device on and off, the On/Off button is also used for user-defined functions. These can be individually configured with LASAL CLASS 2.

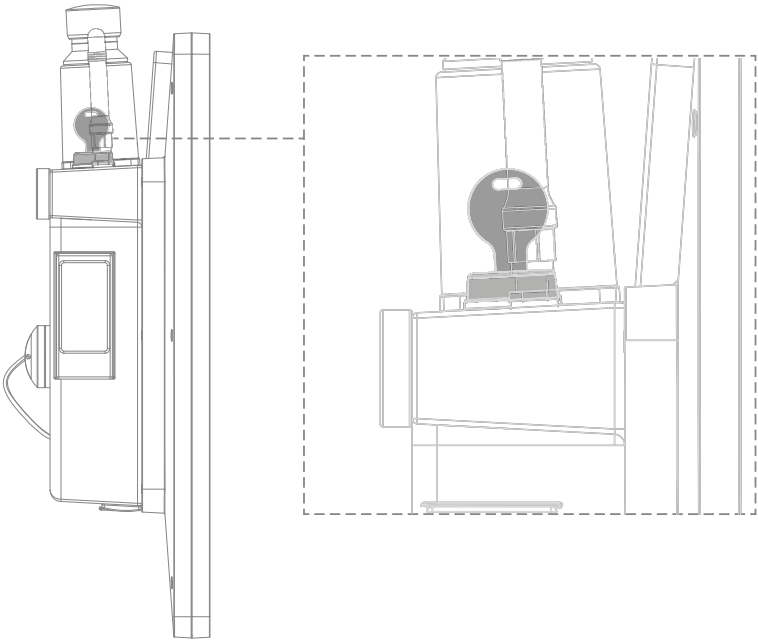
Pressing the on/off button for longer than 3 seconds while on shuts the device down immediately (Hard-OFF).



On/Off Button	Definition
Continuous light	Device active
Fast blinking	Supply/battery error, e.g. battery level too low
Long ON with short OFF phases	Charging mode and device off
Long OFF with short ON phases	Device in standby

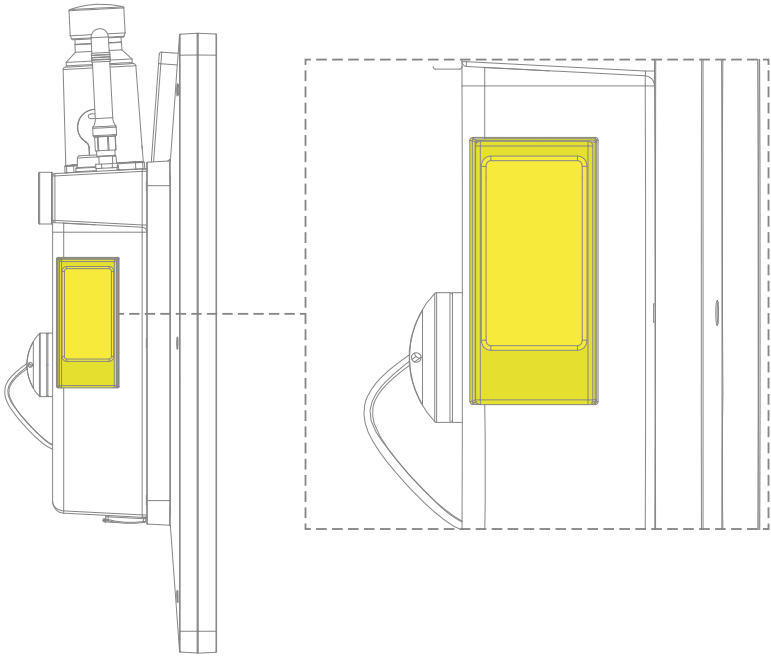
5.7 Key Switch

The key switch is two-stage and evaluated via the SCP 111 connected with the HGW 1033-3.
For application info, see 18.2.4 Key Switch.



5.8 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 with a single press (middle stage). For application info, see 18.2.5 Confirmation Switch.



CAUTION

Activating the confirmation switch is a deliberate action. Do not press the confirmation switch for longer than required to confirm the affected operation.

L'activation du bouton de confirmation est une action délibérée. N'appuyez pas plus longtemps que nécessaire sur le bouton de confirmation pour confirmer l'opération concernée.

The confirmation switch is part of the safety-related feature. Only the person activating the confirmation switch may work in the danger zone.

L'interrupteur de confirmation fait partie de la fonction de sécurité. Seule la personne qui actionne le bouton de confirmation peut travailler dans la zone dangereuse.

The confirmation switches are connected in parallel and therefore cannot/must not be used as a two-hand circuit.

Les interrupteurs de validation sont connectés en parallèle et ne peuvent/doivent donc pas être utilisés comme un circuit bimanuel.

INFORMATION

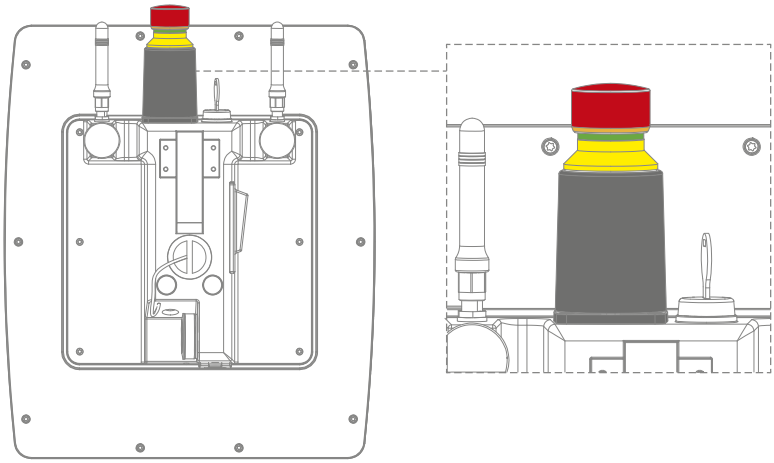
The confirmation switch is then only effective when the HGW 1033-3 is coupled with a machine and the user is logged in.

The confirmation switch can be operated with the hand used to hold the operating panel.

The confirmation switch can be used as dead-man switch with a panic function.

5.9 Emergency Stop (illuminated)

The emergency stop has 2-channel construction. The top of the emergency stop is illuminated when it is active. For application info see 18.2.6 Emergency Stop.



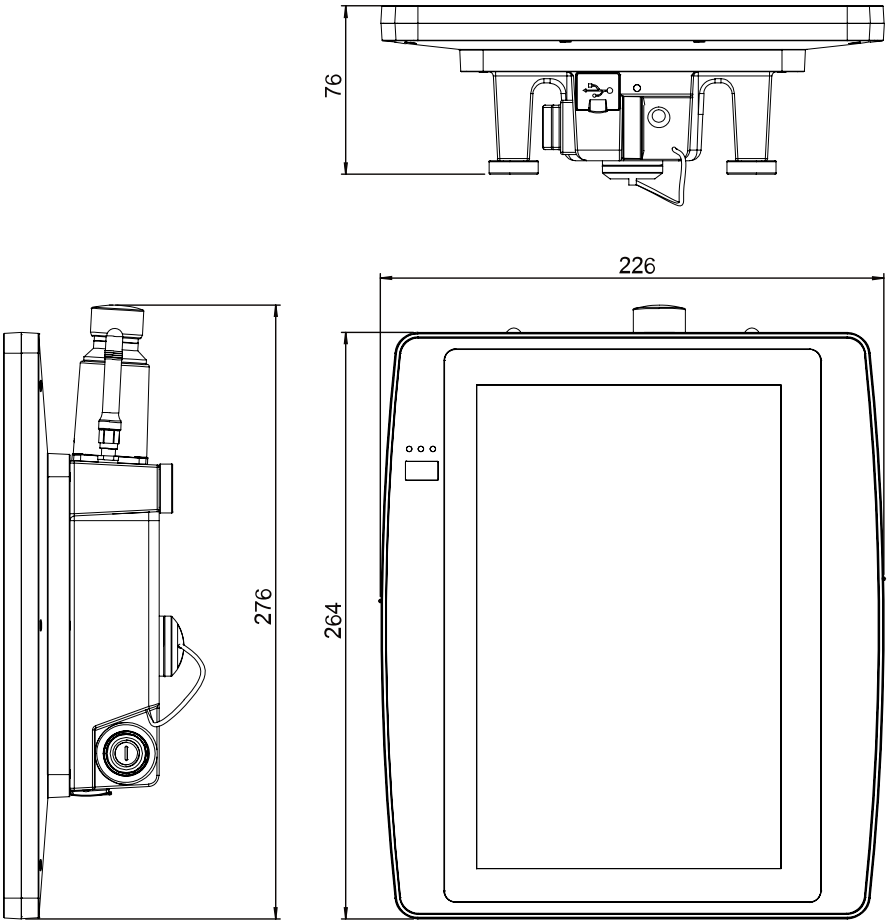
CAUTION

Please note that the emergency stop switch of the HGW 1033-3 is simply an additional emergency stop switch. It cannot be installed as the only emergency stop on a machine.

Veuillez noter que l'interrupteur d'arrêt d'urgence HGW 1033-3 est un simple interrupteur d'arrêt d'urgence supplémentaire. Il ne peut pas être installé comme seul arrêt d'urgence sur une machine.

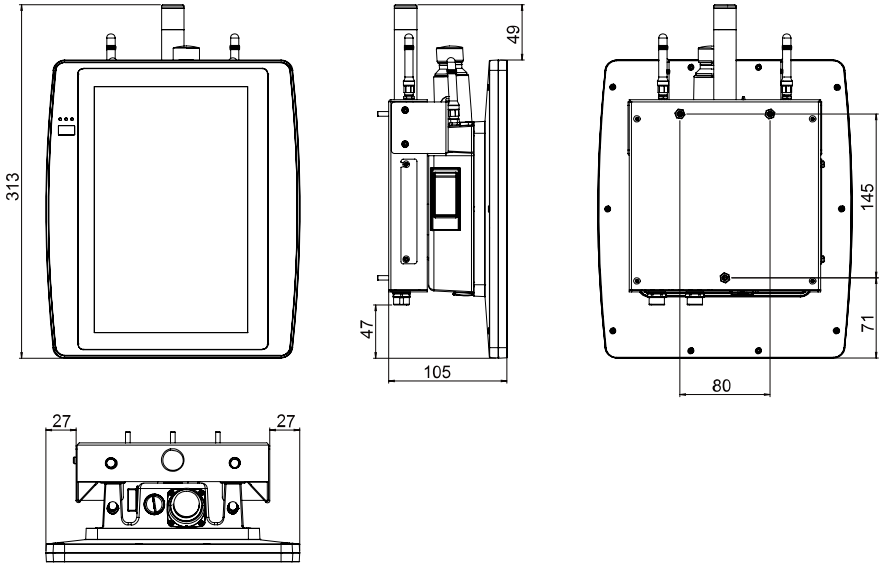
6 Mechanical Dimensions

6.1 HGW



Dimensions	226 x 276 x 76 mm (W x H x D)
Material	housing: PC/ASA color: RAL7024 front: glass 1.1 mm
Weight	1.35 kg

6.2 HGW with BWH



Dimensions	226 x 313 x 105 mm (W x H x D)
Weight	2.85 kg

7 Assembly/Installation

7.1 Check Contents of Delivery

Ensure that the contents of the delivery are complete and intact. See chapter 1.3 Contents of Delivery.

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.

7.2 Preparing the Hardware

Before the HGW and BWH can be started, the following factors must be ensured:

☐ The BWH is securely mounted.

☐ The machine was clearly identified; see chapter 5.3.2.2 7-Segment (Safety).

☐ The BWH and the machine are connected with the proper cables and the connection was checked.

8 Status and Error Messages

Status and error messages are shown in the status test of the LASAL CLASS software. POINTER or CHKSUM messages can also be shown on the screen.

Number	Message	Definition	Cause/Solution
00	**RUN RAM**	The user program is currently running in RAM. The display is not affected.	Info
01	**RUN ROM**	The user program stored in the program memory module was loaded into the RAM and is currently running. The display is not affected.	Info
02	**RUNTIME**	The total time for all cyclic objects exceeds the maximum time; the time can be configured using 2 system variables: ■ Runtime: Remaining time ■ SWRuntime: Preset value for runtime counter	Optimize the application's cyclic task. Use higher capacity CPU. Configure preset value
03	**POINTER**	Incorrect program pointers were detected before running the user program	Possible Causes: ■ The program memory module is missing, not programmed or defective. ■ The program in the user program memory (RAM) is not executable. ■ The buffer battery has failed. ■ The user program has overwritten a software error. Solution: ■ Reprogram the memory module, if the error reoccurs exchange the module. ■ Exchange the buffering battery ■ Correct programming error

Number	Message	Definition	Cause/Solution
04	**CHKSUM**	An invalid checksum was detected before running the user program.	Cause/Solution: s. POINTER
05	**WATCHDOG**	The program was interrupted via the watchdog logic.	Possible Causes: ■ User program interrupts blocked over a longer period of time (STI command forgotten). ■ Programming error in a hardware interrupt. ■ INB, OUTB, INW, OUTW instructions used incorrectly. ■ The processor is defective. Solution: ■ Correct programming error. ■ Exchange CPU
06	**GENERAL ERROR**	General error An error has occurred while stopping the application via the online interface.	This error occurs only during the development of the operating system.
07	**PROM DEFECT**	An error has occurred while programming the memory module.	Causes: ■ The program memory module is defective. ■ The user program is too large. ■ The program memory module is missing. Solution: ■ Exchange the program memory module
08	**RESET**	The CPU has received the reset signal and is waiting for further instructions. The user program is not processed.	Info

Number	Message	Definition	Cause/Solution
09	**WD DEFECT**	The hardware monitoring circuit (watchdog logic) is defective. After power-up, the CPU checks the watchdog logic function. If an error occurs during this test, the CPU deliberately enters an infinite loop from which no further instructions are accepted.	Solution: ■ Exchange CPU
10	**STOP**	The program was stopped by the programming system.	
11	**PROG BUSY**	Reserved	
12	**PROGRAM LENGTH**	Reserved	
13	**PROG END**	A memory module was successfully programmed.	Info
14	**PROG MEMO**	The CPU is currently programming the memory module.	Info
15	**STOP BRKPT**	The CPU was stopped by a breakpoint in the program.	Info
16	**CPU STOP**	The CPU was stopped by the programming software.	Info
17	**INT ERROR**	The CPU has triggered a false interrupt and stopped the user program or has encountered an unknown instruction while running the program.	Causes: ■ A nonexistent operating system was used. ■ Stack error (uneven number of PUSH and POP instructions). ■ The user program was interrupted by a software error. Solution: ■ Correct programming error.

Number	Message	Definition	Cause/Solution
18	SINGLE STEP	The CPU is in single step mode and is waiting for further instructions.	Info
19	READY:	A module or project has been sent to the CPU and it is ready to run the program.	Info
20	LOAD	The program is stopped and the CPU is currently receiving a new module or project.	Info
21	INVALID MODULE	The CPU has received a module that does not belong to the project.	Solution: ■ Recompile and download the entire project
22	MEMORY FULL	The operating system memory (heap) is too small. No memory could be reserved while calling an internal function or an interface function is called from the application.	Causes: ■ Memory is only allocated but not released. Solution: ■ Clear memory
23	NOT LINKED	When starting the CPU, a missing module or a module that does not belong to the project was detected.	Solution: ■ Recompile and download the entire project
24	DIV BY 0	A division error has occurred.	Possible Causes: ■ Division by 0. ■ The result of a division does not fit in the result register. Solution: ■ Correct programming error.
25	DIV BY 0	A division error has occurred.	Possible Causes: ■ Division by 0. ■ The result of a division does not fit in the result register. Solution: Correct programming error.

Number	Message	Definition	Cause/Solution
25	DIAS ERROR	While accessing a DIAS module, an error has occurred.	Hardware problem
26	WAIT	The CPU is busy.	Info
27	OP PROG	The operating system is currently being reprogrammed.	Info
28	OP INSTALLED	The operating system has been reinstalled.	Info
29	OS TOO LONG	The operating system cannot be loaded; too little memory.	Restart, report error to SIGMATEK.
30	NO OPERATING SYSTEM	Boot loader message, no operating system found in RAM.	Restart, report error to SIGMATEK.
31	SEARCH FOR OS	The boot loader is searching for the operating system in RAM.	Restart, report error to SIGMATEK.
32	NO DEVICE	Reserved	
33	UNUSED CODE	Reserved	
34	MEM ERROR	The operating system loaded does not match the hardware configuration.	Solution: ■ Use the correct operating system version
35	MAX IO	Reserved	
36	MODULE LOAD ERROR	The LASAL Module or project cannot be loaded.	Solution: ■ Recompile and download the entire project
37	BOOTIMAGE FAILURE	A general error has occurred while loading the operating system.	Contact SIGMATEK
38	APPLMEM ERROR	An error has occurred in the application memory (user heap).	Solution: ■ Correct allocated memory access error

Number	Message	Definition	Cause/Solution
39	**OFFLINE**	This error does not occur in the control.	This error code is used in the programming system to show that there is no connection to the control.
40	**APPL LOAD**	Reserved	
41	**APPL SAVE**	Reserved	
44	**VARAN MANAGER ERROR**	An error number was entered in the VARAN manager and stopped the program.	Solution: ■ Read LogFile
45	**VARAN ERROR**	A required VARAN client was disconnected or a communication error has occurred.	Solution: ■ Read LogFile error tree
46	**APPL-LOAD-ERROR**	An error has occurred while loading the application.	Cause: ■ Application was deleted. Solution: ■ Reload the application into the control.
47	**APPL-SAVE-ERROR**	An error has occurred while attempting to save the application.	
50	**ACCESS-EXCEPTION-ERROR**	Read or write access of a restricted memory area. (I.e. writing to the NULL pointer).	Solution: ■ Correct application errors
51	**BOUND EXCEEDED**	An exception error has occurred while accessing arrays. The memory area was overwritten by accessing an invalid element.	Solution: ■ Correct application errors
52	**PRIVILEDGED INSTRUCTION**	An unauthorized instruction for the current CPU level was given. For example, setting the segment register.	Cause: ■ The application has overwritten the application program code. Solution: ■ Correct application errors

Number	Message	Definition	Cause/Solution
53	**FLOATING POINT ERROR**	An error has occurred during a floating-point operation.	
60	**DIAS-RISC-ERROR**	Error from the Intelligent DIAS Master.	Restart, report error to SIGMATEK.
64	**INTERNAL ERROR**	An internal error has occurred, all applications are stopped.	Restart, report error to SIGMATEK.
65	**FILE ERROR**	An error has occurred during a file operation.	
66	**DEBUG ASSERTION FAILED**	Internal error	Restart, report error to SIGMATEK.
67	**REALTIME RUNTIME**	The total duration of all real-time objects exceeds the maximum time; the time cannot be configured. 2 ms for 386 CPUs, 1 ms for all other CPUs	Solution: ■ Optimize the application's real-time task (RtWork). ■ Reduce the clock time for the real-time task of all objects. ■ Correct application errors ■ CPU is overloaded in real-time => use a higher capacity CPU.
68	**BACKGROUND RUNTIME**	The total time for all background objects exceeds the maximum time; the time can be configured using 2 system variables: - BTRuntime: - SWBTRuntime: pre-selected value for the runtime counter	Solution: ■ Optimize the application's background task (background) ■ Use higher capacity CPU ■ Set SWBTRuntime correctly
70	**C-DIAS ERROR**	A connection error with a C-DIAS module has occurred.	Cause: ■ The cause of the error is documented in the log file Solution: ■ This depends on the cause

Number	Message	Definition	Cause/Solution
72	S-DIAS ERROR	A connection error with an S-DIAS module has occurred.	Possible Causes: ■ Real network does not match the project, S-DIAS client is defective Solution: ■ Analyze log file
75	SRAM ERROR	An error occurred while initializing, reading or writing SRAM data.	Possible Causes: ■ SRAM configured incorrectly ■ Battery for powering the internal program memory is empty Solution: ■ Analyze log file (Event00.log, Event19.log) ■ Check configuration ■ Exchange battery for powering the internal program memory
95	USER DEFINED 0	User-definable code.	
96	USER DEFINED 1	User-definable code.	
97	USER DEFINED 2	User-definable code.	
98	USER DEFINED 3	User-definable code.	
99	USER DEFINED 4	User-definable code.	
100	C_INIT	Initialization start; the configuration is run.	
101	C_RUNRAM	The LASAL project was successfully started from RAM.	
102	C_RUNROM	The LASAL project was successfully started from ROM.	
103	C_RUNTIME		
104	C_READY	The CPU is ready for operation.	
105	C_OK	The CPU is ready for operation.	

Number	Message	Definition	Cause/Solution
106	C_UNKNOWN_CID	An unknown object from a stand-alone or embedded object, or an unknown base class was detected.	
107	C_UNKNOWN_CONSTR	The operating system class cannot be created; the operating system is probably wrong.	
108	C_UNKNOWN_OBJECT	Indicates an unknown object in an interpreter program; more the one DCC080 object.	
109	C_UNKNOWN_CHNL	The hardware module number is greater than 60.	
110	C_WRONG_CONNECT	No connection to the required channels.	
111	C_WRONG_ATTR	Wrong server attributes.	
112	C_SYNTAX_ERROR	Non-specific error. Recompile and download all project sections.	
113	C_NO_FILE_OPEN	An attempt was made to open an unknown table.	
114	C_OUTOF_NEAR	Memory allocation failed	
115	C_OUT OF_FAR	Memory allocation failed	
116	C_INCOMAPTIBLE	An object with the same name already exists but has a different class.	
117	C_COMPATIBLE	An object with the same name and class exists but must be updated.	
224	LINKING	The application is currently linking.	
225	LINKING ERROR	An error has occurred while linking.	

Number	Message	Definition	Cause/Solution
226	LINKING DONE	Linking is complete.	
230	OP BURN	The operating system is currently being burned into the Flash memory.	
231	OP BURN FAIL	An error has occurred while burning the operating system.	
232	OP INSTALL	The operating system is currently being installed.	
240	USV-WAIT	The power supply was disconnected; the UPS is active. The system is shutdown.	
241	REBOOT	The operating system is restarted.	
242	LSL SAVE		
243	LSL LOAD		
252	CONTINUE		
253	PRERUN	The application is started.	
254	PRERESET	The application is ended.	
255	CONNECTION BREAK		

9 Battery

9.1 Introduction

Rechargeable batteries are consumable components.

With increasing age, a lithium-ion battery loses its ability to hold a charge. The battery must therefore be recharged more often and the available capacity sinks.

9.2 Charge Status and Aging

There are two charge statuses available in the battery:

- Battery level with protective reserves
- Charge status displayed for the user

9.2.1 BatteryLevelAbsolute

The absolute charge status corresponds to the actual battery charge. here, the reserves (20 % absolute) for buffering the real-time clock and protecting the battery are included. The reserves are not available to the user.

To evaluate the operating ranges, the absolute charge is used in the chapter “Battery Operating Ranges”, as well as for Transport Mode.

9.2.2 BatteryLevel

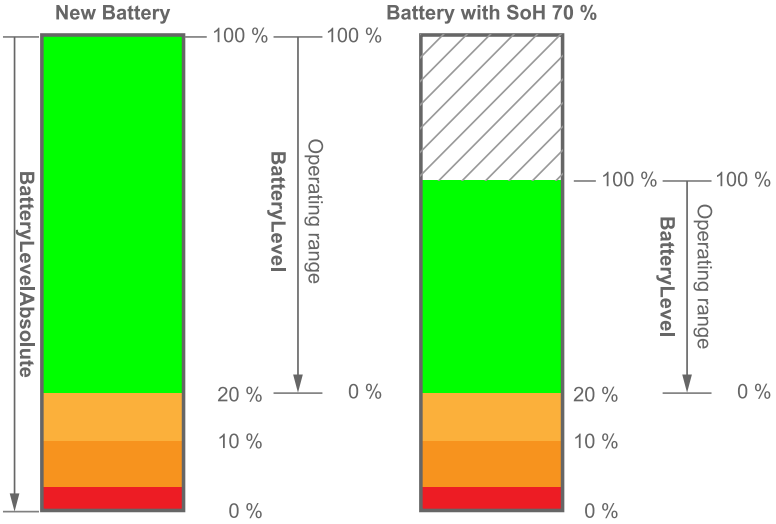
The BatteryLevel shows the battery capacity available for the end user and can therefore be used in the application.

The 0-100 % of the BatteryLevel is scaled from the BattteryLevelAbsolute (20-100 %).

9.2.3 BatteryStateofHealth

The State of Health is indicates the battery age. Battery aging is caused be electrochemical processes and reduces the usable capacity of the battery. This value is used to calculate the remaining lifespan of the battery and is an evaluation criterion for the battery exchange.

The State of Health is evaluated in the BatteryLevel, so that the battery display is between 0 and 100 %. As the battery ages, the operating range becomes smaller. The lower 20 % remains unchanged regardless of the SoH.



9.3 Versions

So that all battery functions and parameters can be called, the following software versions are required.

System Component	From Version	Note
Operating system	09.03.187	starting with HW 2.50 in series
PMC Firmware	5.00	starting with HW 2.50 in series
HWK HGW1033_PMC	1.5	
HWK BWH 001	1.6	
HWK BWH 001-I	1.1	
HGW NT1	1.10	Firmware

INFORMATION

If a lower software version is used, contact SIGMATEK Support for an update.

9.4 Battery Transport/Storage

CAUTION

During transport, observe the applicable national regulations.

The device must be set to “Transport Mode” before shipping. See 9.10 Transport Mode.

Due to the battery’s self-discharge, we recommend that it first be charged or discharged to a BatteryLevel of 30 % (absolute) for transport mode.

Deep discharge, as well as damage to the battery is thereby avoided. With a charge of 30%, the device can be stored in transport mode at 25 °C for at least six months.

After 6 months, the device must be charged to avoid damaging the battery via deep discharge! The battery must be recharged within the maximum storage time after transport or storage of the device for an extended period of time.

9.5 Commissioning and Charging Options

INFORMATION

During the initial startup after transport, the transport mode is ended when the device is charging. In the case, the device must be charged for the time specified in the table. While charging, no battery parameters can be called. The battery is calibrating during the time. The user must end the transport mode, see chapter Transport Mode.

Do not interrupt this initial charging process, this can falsify the battery parameters!

A Transpormode/DeepSleep is implemented by the battery with a delay of ca. 10 seconds.

HW version	Battery wake time
2.00	360 seconds (6 minutes)
starting with 2.10	5 seconds

To charge the device, use the charging options provided and available for the respective product (mounting the device on the BWH XXX base station, HGW NT1 charger (12-246-001-Z4, ...)).

INFORMATION

When charging for the first time, we recommend letting the device fully charge.

Please note that depending on the quality of the USB-C charger or its output, the charging process could take considerably longer.

Observe the minimum requirement for the external USB-C supply of 20 V (profile 4).

9.5.1 Monitoring of the Charging Source

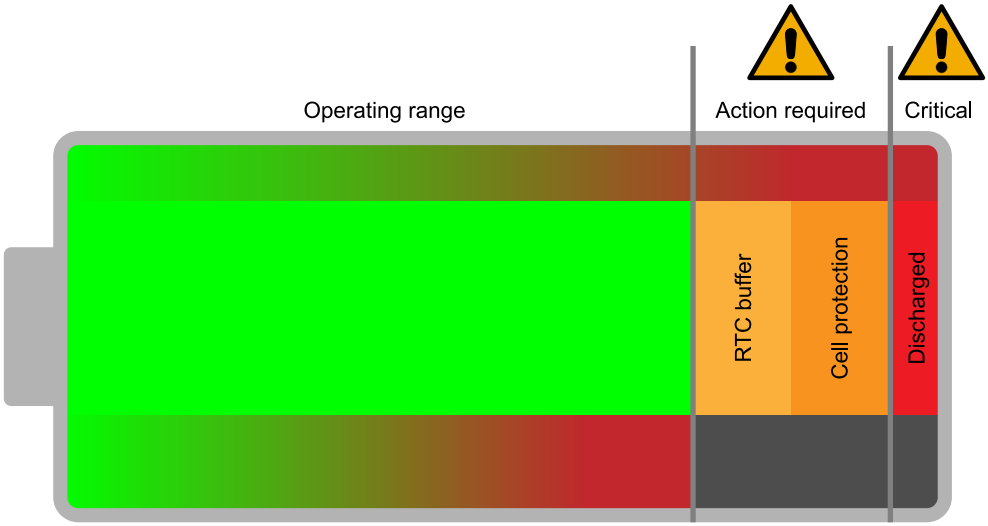
The HGW permanently checks the quality of the charging source. If an error is detected, charging is interrupted until the error is corrected and the device is reconnected to the charging source. If charging is interrupted during an active error, the device may discharge until it switches off automatically, see chapter 9.6 Battery Operating Ranges.

The error state will be output via the hardware class server "BatteryChargingSource". A description of the states can be found in the hardware class documentation. We recommend visualizing this state in the application.

If an error is detected when the device is switched off, the operating system issues a corresponding error message at startup. This can be acknowledged by the user or is automatically closed when the correct load function is restored.

Monitoring of charging sources is available from PMC firmware 5.20 in conjunction with operating system version 09.03.188.

9.6 Battery Operating Ranges

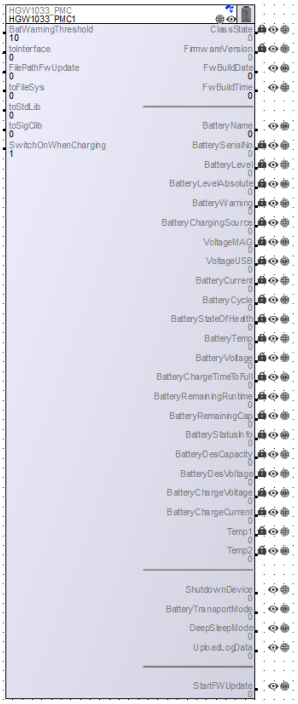


BatteryLevel	BatteryLevel Absolut	Range	Runtime[1)]	Description	Solution
100 % ... ... 1 %	100 % ... ... 21 %	**1** **Operating**	**2 h**	Operating range of the device. Recommended: Low battery warning < 10 % (BatteryLevel). The hardware class provides the server (configurable) for this purpose. In the operating system CLI, the battery status is RED as soon as the relative charge goes below 10 %.	- The device must be charged to at least 25 % of the absolute charge before battery operation is possible again. - Display battery warning at 10 % relative charge.
-	20 % ... ... 11 %	**2** **RTC buffer**	**24 h**	The device shuts down. In this range, the clock time is buffered.	- Device must be charged.
-	10 % ... ... 1 %	**3** **Cell protection**	**2 months**	In this range, the battery is protected from a deep discharge for a period of 2 months without recharging. In this state, the device clock time is lost.	- The device must be charged. - The real-time clock must be reset.
-	≤ 0 %	**4** **Discharge**	**1 month**	In this start, permanent damage to the battery can already occur.	- Charge device. - The real-time clock must be reset. - If the device has not been charged within 1 month, the battery must be exchanged.

1) The runtime parameters are based on a new battery, as well as a normal system load without external power consumption, such as USB sticks for example, and can be lower over the service life.

9.7 Hardware Class

The hardware class HGW10xx_PMC provides all battery-relevant information and functions. In this document, only the most important parameters required for using the device are explained. Detailed documentation of the class can be found in LASAL CLASS 2.



Parameter	Description
BatteryLevel	Battery status for the end user
BatteryLevelAbsolute	Battery status incl. reserves
BatteryWarning	Give a warning for battery status when the value set in the BatWarningThreshold server has been exceeded. This value is set to 10 % (relative) by default.
BatteryStateofHealth	Battery state of health in % see “Battery Lifespan”
BatteryCycle	Number of charging cycles, each cycle corresponds to a duty cycle of 90 % – also in multiple steps (ex. 9x10 % charging and discharging)
BatteryTemp	Measured battery temperature
Shutdown Device	Turns the device off, this corresponds to a shutdown via button
BatteryTransportmode	Activates the transport mode, see chapter “Transport Mode”
DeepSleepMode	Activates the power-save mode, see chapter “DeepSleepMode”
UploadLogData	Cals all battery-relevant log data from the system for SIGMATEK support
SwitchOnWhenCharging	Activates or deactivates the automatic start with a battery level > 25 % absolute, while the device is charging

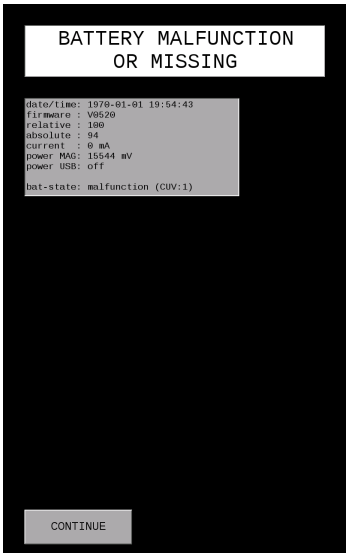
9.8 Exchanging the Battery

The battery **must** be exchanged when a deep discharge has occurred. The battery can be exchanged by a qualified service technician.

9.8.1 Deep Discharged Battery

If this state is reached, the battery can no longer be charged due to safety reasons. The device can only be started or operated when connected to an external power source, such as the base station for example (see 9.5 Commissioning and Charging Options).

In the operating system, a warning is output and the application is prevented from starting. The user can end the warning and start the application.



Information on the defect of the battery indicated can be read from the log files.

9.8.2 Recommendation

Depending on the respective end application, exchanging the battery is recommended under the following conditions.

- State of Health (BatteryStateofHealth): is below 70 %
- Charging cycle (BatteryCycle): greater than 300
- Battery age: 2 years

With these values, the battery is still usable but with reduced performance (shortened run time,...).

9.9 DeepSleepMode

The device has a power-save mode, in which the lowest possible battery discharge is achieved.

INFORMATION

This function is not designed for transport; use transport mode for this purpose.

A Transpormode/DeepSleep is implemented by the battery with a delay of ca. 10 seconds.

After activating the DeepSleep mode, the device must be disconnected from the charging source for at least 10 seconds for it to become active. Premature supply can lead to incorrect battery values.

The DeepSleepMode can be ended when the device is connected to an appropriate power source. See chapter 9.5 Commissioning and Charging Options.

9.9.1 Conditions

- The device is turned on and the DeepSleep function is called via the application.
- The absolute battery level (BatteryLevelAbsolut) is greater than 20 %.

INFORMATION

The RTC time is lost during activation and must be reset.

9.10 Transport Mode

The device has a transport mode. Via the transport mode, the device can be set in a power-save mode to minimize battery discharge to ensure transport and storage times.

Please see the chapter 9.4 Battery Transport/Storage.

9.10.1 Activating the Transport Mode

To enable the transport mode, enter the following command in the CLI:

```
BATTERY TRANSPORTMODE
```

Alternatively, the transport mode can be activated via the application when the appropriate server is set.

If the charge of the device is above or below 30 % absolute, the battery is prepared for the upcoming transport mode and is charged or discharged automatically.

After activating the transport mode, an information window is displayed that shows the current status. In this window, preparation for the transport mode can be stopped via the “Cancel” button.

After activating the Transport mode, the application is ended and the device can no longer go online.

In the displayed window, the estimated time until activating the transport mode is shown.

9.10.1.1 Conditions

- At a batter charge > 30 %, the transport mode can also be activated without a charging device.
- Device is turned on and the transport mode is activated via the application or the operating system command (CLI).

9.10.1.2 Note

- The real-time clock is lost when activating this function.
- If the device must be **charged**, (battery < 30 % BatteryLevelAbsolut) and it is not connected to a power source, transport mode is not activated.

  Possible Causes:

  - The base station is off
  - The device is not connected to the base station
  - The base station application is not started
  - Incorrect operating system version (HGW, BWH...)

- If the device must be **discharged** (battery charge > 30 % BatteryLevelAbsolut) and the power source is cannot be deactivated. the process is stopped after 1 minute.

  Possible Causes:

  - Base station hardware class version incorrect
  - Incorrect operating system version (HGW, BWH...)
  - External charging device is not turned on

9.10.2 Ending the Transport Mode

As described in the Chapter Commissioning, the transport mode can be ended by charging the device. With the next device start, a dialog window appears in which the transport mode can be ended with the “Leave Transportmode” button.

If the process is interrupted by disconnecting the power source or cancelation via the user over the window, the device automatically returns to transport mode.

While the window is open, the battery is charged to a capacity of maximum 30 % (BatteryLevelAbsolut).

INFORMATION

A Transpormode/DeepSleep is activated by the battery with a delay of approx. 10 seconds.

After successful activation of the transport mode (30 % BatteryLevelAbsolut), the device must be disconnected from the charging source for at least 10 seconds for this to become active. Premature supply can lead to incorrect battery values.

9.11 Log Data

Over the lifespan of the battery, all relevant battery parameters are recorded. These can be exported for analysis by SIGMATEK support.

To ensure the analysis of the log data, the internal real-time clock (RTC) must always be set via the application. In transport mode, Deep Sleep and when the battery cell protection mode is triggered, the real-time clock data is lost.

The log data can be read out using the "HGW1033_PMC" hardware class. More detailed information can be found in the documentation of the "HGW1033_PMC" class in the Special Functions section under "Upload Log Data".

10 Operation/Start-up

10.1 Note

INFORMATION

For safety reasons, the HGW 1033-3 is set to transport mode. During the initial start-up, the HGW 1033-3 is still in this mode which can be cancelled by the user with the first charging process.

WARNING

The operating panel can be mounted onto magnetic components, for example, directly on the machine.
Caution must be taken to ensure that no magnetically sensitive objects are located in the immediate vicinity of the HGW 1033-3 (e.g. credit / magnetic stripe cards).

Le panneau de commande peut être monté sur des composants magnétiques, par exemple directement sur la machine.
Veiller à ce qu'aucun objet magnétiquement sensible ne se trouve à proximité immédiate de HGW 1033-3 (p. ex. cartes de crédit / cartes à bande magnétique).

DANGER

This device is equipped strong magnets, which can pose a danger to people with implants such as pacemakers!

Cet appareil est équipé d'aimants puissants, ce qui peut représenter un danger pour les personnes porteuses d'implants tels que les stimulateurs cardiaques!

INFORMATION

Please observe the installation guidelines in the BWH base station operating manual.

10.2 WLAN Channels and Settings

The WLAN channels and settings supported by the hardware and software can be found in the "WLAN Configuration" document. Only the channels and settings released there may be used.

INFORMATION

The information contained in the document "WLAN Configuration" does not release the user from the obligation to observe national standards and laws as well as special regional regulations.

10.3 Configuration

The operating panel can be configured in LASAL via the USB-C interface or WLAN.

INFORMATION

Never operate the panel without antennae. This can result in damage to the device.

At the time of delivery, the panel is configured as an access point and the network is accessible with the following parameters.

The serial number is contained in the network name (SSID). This can be found on the reverse side of the panel on the product label.

10.3.1 Example

Serial number HGW 1033-3: 12345678

SSID 2.4 GHz network: SN12345678_SIG_11

SSID 5 GHz network: SN12345678_SIG_10

Parameters	Default value
SSID 2.4 GHz network	SN<serial number>_SIG_11
SSID 5 GHz network	SN<serial number>_SIG_10
Password for both networks	12345678
IP address / mask 2.4 GHz network	192.168.2.1 / 255.255.255.0
IP address / mask 5 GHz network	192.168.1.1 / 255.255.255.0

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.

10.4 Testing the Operating Area

CAUTION

Test the function in the operating area. Ensure the operating panel can control the machine throughout the entire operating area.

Tester la fonction dans la zone d'utilisation. S'assurer que le panneau de commande peut commander la machine dans toute la zone de travail.

10.5 Operation

10.5.1 General

The Safety functions (key switch, confirmation switch, emergency stop) are not functional at the time of delivery and must be defined by the applications engineer via programming. In order to use the Safety functions, a safety-related SCP 111 CPU is required. See chapter 18 Application Information.

The HGW 1033-3 is operated via the touch screen.

INFORMATION

To avoid damage to the touch screen, it can only be operated using the fingers or an appropriate stylus. Suitable gloves are also permitted for the touch technology, as long as they do not damage the device (e.g. via chips, pointed or similar objects).

CAUTION

Do not lay the operating panel on its touch screen. Also avoid laying anything on top of the touch screen.
This can cause operating errors, undesired triggering of functions or damage to the device.

Ne posez pas le panneau de commande sur son écran tactile. Évitez également de poser quoi que ce soit sur l'écran tactile.Cela peut entraîner des erreurs de fonctionnement, des déclenchements intempestifs de fonctions ou des dommages sur l'appareil

Do not place the panel on loose or unstable surfaces. It could fall onto the floor and be subsequently damaged.

Ne placez pas le panneau sur des surfaces lâches ou instables. Il pourrait tomber sur le sol et être endommagé par la suite.

The operating panel is constructed to that it can be operated by right and left handers equally.

The HGW 1033-3 can, when mounted in the base station, also be used as a stationary unit. It should be noted that accessibility to the confirmation, as well as the key switch is thereby restricted.
The emergency stop remains active.

CAUTION

Typically, USB devices (keyboard, mouse etc.) are equipped with non-shielded cables. These devices are disrupted by ESD and in some instances, no longer function.

Généralement, les périphériques USB (clavier, souris etc) ne sont pas équipés de câbles blindés. Ces dispositifs sont perturbés par des décharges électrostatiques et, dans certains cas, ne fonctionnent plus.

Before any device is connected to, or disconnected from the product, the potential should be equalized (by touching the control cabinet or ground terminal). Electrostatic loads (through clothing and shoes etc.) can thereby be dissipated.

Avant de connecter ou de déconnecter un appareil à le produit, le potentiel doit être égalisé (en touchant l'armoire électrique ou la borne de terre). Les charges électrostatiques (à travers les vêtements et les chaussures etc.) peuvent ainsi être éliminées.

10.5.2 Turning On

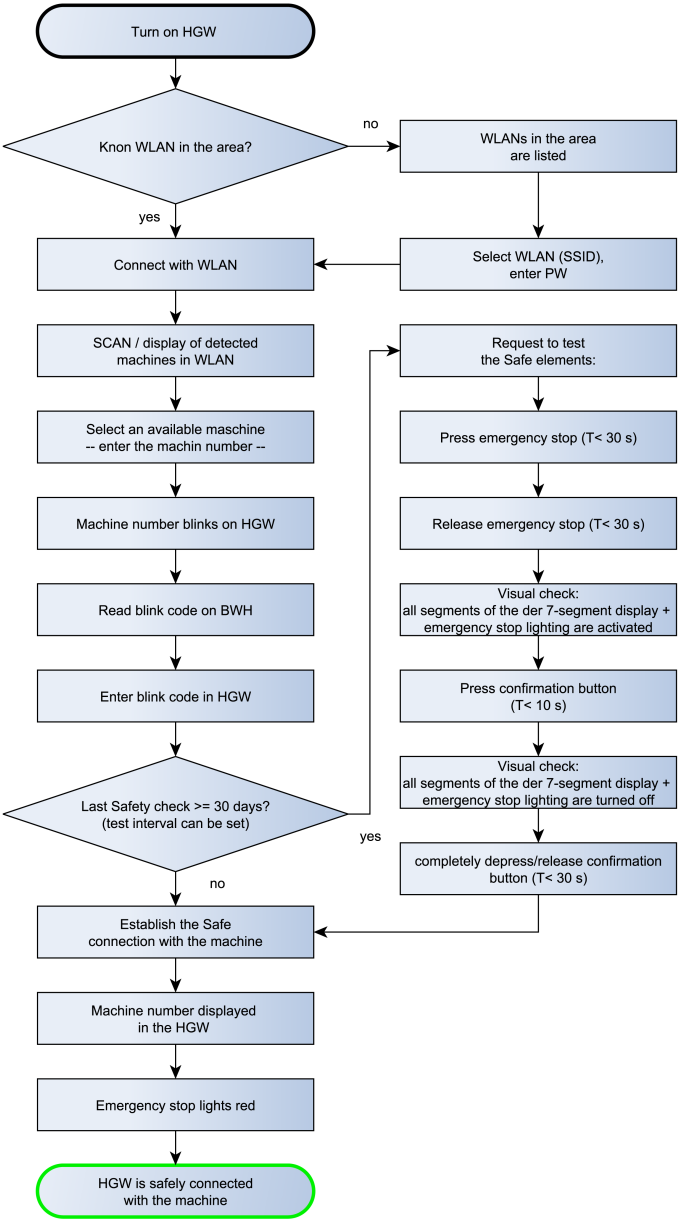
The HGW 1033-3 is activated with short press of the On button.

10.5.3 Coupling

To couple the operating panel with a base station or machine, a functioning WLAN connection is required.

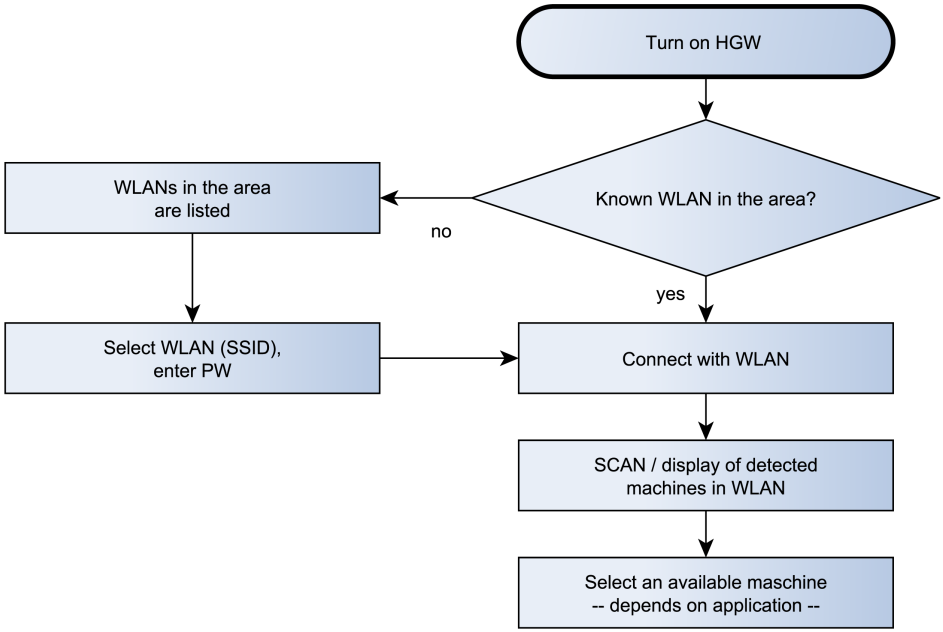
As soon as the operator is located in the operational range of the base station or machine with the HGW 1033-3, the operating panel can be coupled with the machine. For this purpose, see the documentation of the corresponding class.

If the operating panel has Safety functions and the base station is coupled with a safety-related control, it is indicated via the activated 7-segment display which shows the machine number.


Turn on HGW
Knon WLAN in the area?
no
WLANs in the area are listed
yes
Connect with WLAN
Select WLAN (SSID), enter PW
SCAN / display of detected machines in WLAN
Request to test the Safe elements:
Select an available maschine -- enter the machin number --
Press emergency stop (T< 30 s)
Machine number blinks on HGW
Release emergency stop (T< 30 s)
Read blink code on BWH
Visual check: all segments of the der 7-segment display + emergency stop lighting are activated
Enter blink code in HGW
Press confirmation button (T< 10 s)
Last Safety check >= 30 days? (test interval can be set)
Visual check: all segments of the der 7-segment display + emergency stop lighting are turned off
yes
completely depress/release confirmation button (T< 30 s)
no
Establish the Safe connection with the machine
Machine number displayed in the HGW
Emergency stop lights red
HGW is safely connected with the machine

10.5.4 Non-Safety Mode

A connection to the machine is established via WLAN. Depending on the application, machine data can be visualized.

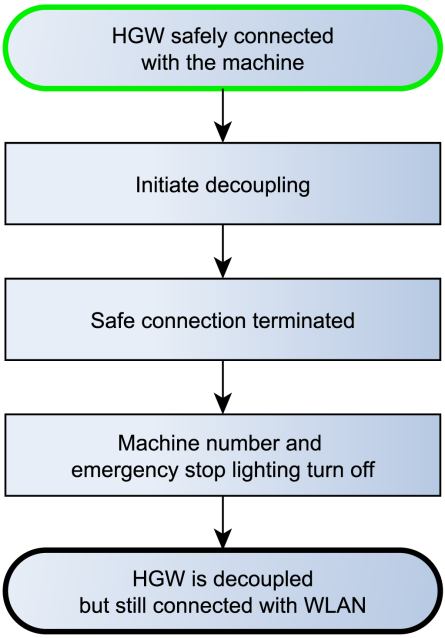


10.5.5 Decoupling

The operating device can be separated from the machine in several ways.

1. Separating the Safety functions only: In this case, the operating panel can be further used as a control unit without Safety.
2. Decoupling the operating panel from the machine: The panel has no operating function and is therewith not a part of the system control unit.
3. Deactivating the WLAN connection: In this case, the panel is used offline only and has no connection to the machine.

To avoid an unwanted emergency stop, perform a controlled decoupling of the HGW 1033-3.



10.5.6 Safety Functions

The following Safety functions are implemented with the HGW 1033-3.

- Emergency stop switch with illumination
- Confirmation switch
- Key switch

INFORMATION

If the HGW 1033-3 detects a serious internal error in the safety-related component, the Safe mode is then activated and the operating panel locks. In this event, send the panel to SIGMATEK for testing and repair!

If you leave the operating area of the machine, ensure that the HGW 1033-3 is decoupled.

If you no longer need the operating panel, decouple it and place the device in the base station. See chapter 13 Storage, and observe the 30-day testing interval.

If the connection between the base station and HGW 1033-3 is interrupted, the emergency stop lighting as well as the 7-segment display turn off.

WARNING

To avoid faulty operation, an active operating panel can only be mounted in the corresponding base station.

Pour éviter un fonctionnement défectueux, un panneau de commande actif ne peut être monté que sur la station de base correspondante.

10.5.6.1 Reasons for an active safe mode

1. Connection failure with safety-related coupling:

   → The cause of this error is not immediately identifiable or cannot be attributed to the operating panel. When reactivated, the coupling process must be rerun to ensure that the entire system is functioning properly (e.g. cable break in the installation).

2. Internal HGW hardware error (e.g. switch error)

   → If an internal or Safety error is found, the panel must be returned to SIGMATEK.

10.5.7 Turning Off

The On/off switch can be configured via LASAL CLASS 2. The application engineer can define procedures for turning the operating panel off. Alternatively, a hard shutdown is possible by pressing the On button for at least 3 seconds (see 5.6 On/Off Button (illuminated)). To avoid an undesired emergency stop, the operating panel must be decoupled before actively shutting down.

10.5.8 Evaluating Operating Elements

The operating panel sends all statuses to the control, through which further actions can be set. Display (display, LEDs...) are initiated by the control.

The HGW 1033-3 sends the following operating element statuses to the safety-related control SCP 111, which can evaluate and process the information.

- Key switch
- Emergency stop
- Confirmation switch

11 Help with Disruptions/Troubleshooting

Problem	Cause	Solution
HGW does not function, display remains dark, HGW does not turn on	HGW not charging from the base station	Check whether the base station is powered correctly.
	Battery empty	Mount HGW in the base station. The HGW is then charged.
	Battery defective	Return the device to SIGMATEK. See chapter 14.3 Repair
	Defective backlight	Call SIGMATEK customer service.
	Panel in transport mode	See chapter 12 Transport/Storage
HGW functional range limited	Emergency stop triggered	See chapter 18.2.6 Emergency Stop.
Touch screen malfunction	Operation using gloves	Operate the HGW with the fingers directly or with suitable gloves.
Offset of touch screen press-points	Touch screen uncalibrated	Recalibrate the touch screen See chapter 14.2.1 Calibrating the Touch Screen
Unintended triggering of the emergency stop	Wireless connection failure due to distance from base station	Observe the warning for weak WLAN signal
	Internal device error	Please return the device for.
Undesired triggering of the touch screen	Panel placed with touch screen face down	Lay the panel on its base.
	Something has been placed on the touch screen	Remove the object from the touch screen.
Device does not go into transport mode	Device charging	Disconnect the device from all supplies

12 Transport/Storage

INFORMATION

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!

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

CAUTION

The product HGW 1033-3 has an integrated battery. During transport, observe the applicable national regulations.

Le produit HGW 1033-3 est équipé d'une batterie intégrée. Pendant le transport, re-specter les réglementations nationales en vigueur.

The product HGW 1033-3 must be set to “Transport Mode” before shipping. See chapter Transport Mode.

Le produit HGW 1033-3 doit être réglé sur "Transport Mode" lors de l'expédition.

INFORMATION

Important information regarding transport and storage of the battery can be found in the chapter Transport/Storage of the Battery.

13 Storage

INFORMATION

When not in use, store the device according to the storage conditions. See chapter 12 Transport/Storage.

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

DANGER

After use, store the HGW 1033-3 in a secure location to prevent confusion with a panel that is coupled or in use. We recommend storing panels that are not being used in a lockable cabinet or similar container.

Après utilisation, entreposer le HGW 1033-3 dans un endroit sûr pour éviter toute confusion avec un panneau qui est couplé ou en cours d'utilisation. Nous recommandons de ranger les panneaux qui ne sont pas utilisés dans une armoire verrouillable ou un conteneur similaire.

14 Maintenance

INFORMATION

During maintenance as well as servicing, observe the safety instructions from chapter 2 Basic Safety Guidelines.

Lors de l'entretien et de la maintenance, respectez les consignes de sécurité du chapitre 2 Basic Safety Guidelines.

14.1 Cleaning and Disinfecting the Touch Screen

CAUTION

Before cleaning and disinfecting the touch screen, it must first be deactivated; either by turning off the terminal or by disabling the touch screen via the application to avoid unintentionally activating functions or commands!

Avant de nettoyer et de désinfecter l'écran tactile, il faut d'abord le désactiver; soit en éteignant le terminal, soit en désactivant l'écran tactile via l'application pour éviter d'activer involontairement des fonctions ou des commandes!

The touch screen can only be cleaned with a soft, damp cloth. To dampen the cloth, a mild cleaning solution such as antistatic 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.

For disinfection, surface disinfectants on alcohol basis, which do not contain re-fattening agents, can be used. The disinfectant used must not leave any residues on the touch screen to ensure proper functioning of the touch 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!

Si l'appareil est contaminé par des produits chimiques toxiques ou érosifs, il doit être soigneusement nettoyé le plus rapidement possible afin d'éviter des dommages corporels et matériels!

INFORMATION

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

14.2 Service

This product was constructed for low-maintenance operation.

14.2.1 Calibrating the Touch Screen

The touch screen is calibrated at the factory. You should therefore only recalibrate the touch screen when press-point changes are noticed.

This can be achieved via the following command (depending on the operating system) or the application, if the application engineer has provided the option.

```
calib
```

14.3 Repair

INFORMATION

When sent for repair, 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.

CAUTION

It is particularly important to observe the transport regulations for devices with batteries, as well as national regulations.

Il est particulièrement important de respecter les réglementations de transport pour les appareils à piles ainsi que les réglementations nationales.

Before shipping the HGW 1033-3, it must be set to the so-called “transport mode”. See chapter 12 Transport/Storage for more information.

Avant d'expédier le HGW 1033-3, il faut le régler sur le "mode de transport". Voir le chapitre 12 Transport/Storage pour plus d'informations.

CAUTION

Danger of injury from damaged components!

→ Damage to the device, especially the touch screen, poses a cut hazard. In such a case, use safety gloves.

Risque de blessure par des composants endommagés !

→ Les dommages à l'appareil, en particulier à l'écran tactile, présentent un risque de coupure. Dans ce cas, utilisez des gants de sécurité.

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

15 Display „Burn-In“ Effect

The “Burn-In” effect describes a pattern burned into the display after displaying the same contents over a longer period of time (e.g. a single screen).

This effect is also described mostly as “image sticking”, “memory effect/sticking” or “ghost image”.

Here, a distinction is made between a temporary and permanent effect, while the temporary effect is eliminated by switching off the screen for a longer period of time or by displaying dynamic content, serious cases of burn-in can lead to permanent damage to the display.

This effect can have the following causes:

- Operation without a screen saver
- The same contents displayed over a longer time period (e.g. a single screen)
- Operation at high environmental temperatures
- Operation above specifications

The effect can be avoided/reduced by the following actions:

- Using a screen saver
- Deactivating the display when not in use (e.g. screen display black)
- Continuously changing screen content (e.g. video)

INFORMATION

Deactivating the display backlighting only does not prevent Burn-In!

16 Disposal

INFORMATION

The device contains a Li-Ion battery. Should you need to dispose of the device, the national electronic scrap regulation must be observed.

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

You can dispose of the device by sending it to the address listed at the beginning of this document. When shipping, the transport regulations for devices with Lithium-Ion batteries must be observed!

17 Accessories

17.1 Antennae

Description	Order Number
HGW 1033-E2	12-246-1033-E2

17.2 Touch Pen

Description	Order Number
Touch pen with holder V3	01-690-059-3

17.3 Edge Protection

Description	Order Number
Edge protector 10“	12-246-1033-Z1

18 Application Information

18.1 Visualization

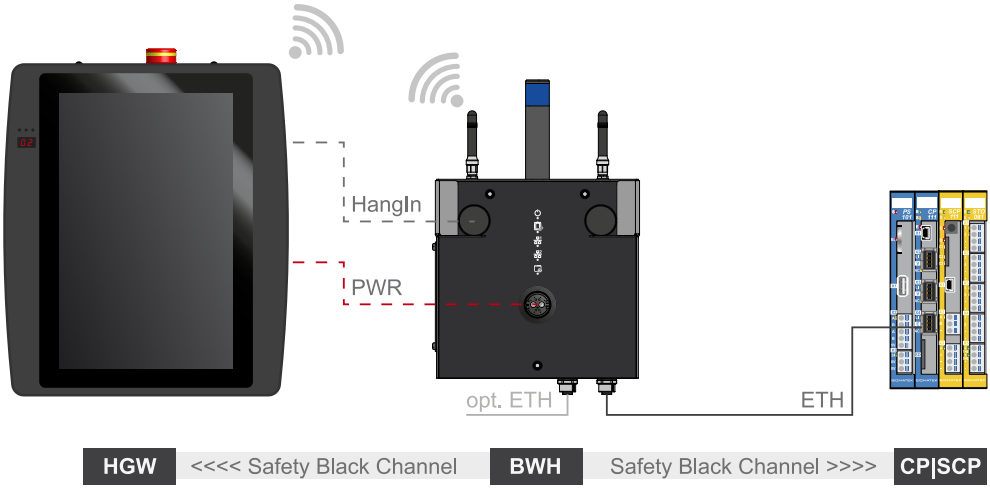
INFORMATION

In the application/visualization, the battery status can be indicated acoustically and visually (in this case, a configurable server is available in the hardware class). It is recommended that a warning is triggered with a remaining charge of 10 %. The device shuts down when the power level reaches 0 % and the safety controller goes into a safe status.

The HGW and BWH form a communications unit, which must be configured by trained personnel. Among other things, careful allocation of the wireless channels must be ensured. Complete, seamless availability must be guaranteed over the entire area of operation to ensure that no dead spots exist at any location within. The WLAN serves as a Black-Channel and must have a certified Safety protocol.

18.1.1 Example Application

Basic HGW-BWH-PLC configuration



For Safety examples, see the Safety System Handbook.

A configuration help can be found in the document HGW_BWH_Configuration Manual.

18.2 Configuring Safety Components

18.2.1 Minimum System Requirements

Component	Version
SAFETYDesigner	≥ 01.01.056 (Build: 2058)
SCP 111 firmware version	≥ 00.1049.448

INFORMATION

The actual time-out configured in the SCP 111 must be included in your risk assessment!

Note that when coupled, the HGW 1033-3 is automatically decoupled after 30 days at the latest. This triggers an emergency stop in the coupled machine. To avoid this, decouple and recouple the operating panel within 30 days. One hour before the regular test, a warning message appears that reminds the user to recouple.

CAUTION

If the panel goes into safe mode, the application must deactivate the emergency stop light.

Si le panneau passe en mode de sécurité, l'application doit désactiver le signal lumineux d'arrêt d'urgence.

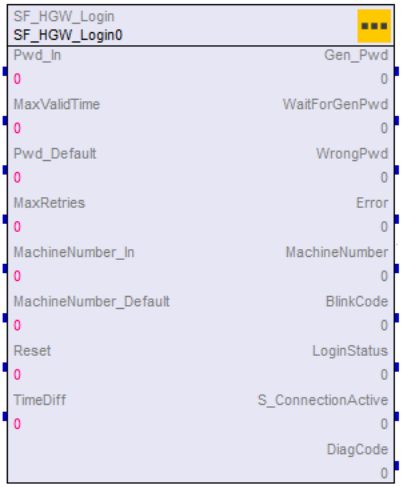
18.2.2 Adding the HGW 1033-3 to a SAFETYDesigner Project

To use the HGW 1033-3 in a Safety project, it must be integrated as follows:

1. Create a new project or open an existing one.
2. Add an “SCP 111” to the “hardware tree” if not already available.
3. Right-click on **“0-SAFETY WIRELESS”**, then via Add-Device, add the **“HGW_1033_3 (HGW-WLAN)”**.

18.2.3 “SF_HGW_Login” Function Block

A function block is provided in the SAFETYDesigner, which must be implemented for the configuration and use of the HGW 1033-3.



18.2.4 Key Switch

In the SAFETYDesigner, in the”HGW_1033_3” module, **Safe_Input5** and **Safe_Input6** are used fort he two-channel application of the key switch.

18.2.5 Confirmation Switch

In the SAFETYDesigner, in the”HGW_1033_3” module, **Safe_Input3** and **Safe_Input4** are used for the two-channel application of the confirmation switch.

18.2.6 Emergency Stop

In the SAFETYDesigner, in the”HGW_1033_3” module, **Safe_Input1** and **Safe_Input2** are used for the two-channel application of the emergency stop switch.

The emergency stop LED must be operated in compliance with the emergency stop standard EN ISO 13850:2015.

WARNING

If the panel is not coupled or is off, the emergency stop switch has no function! The application must ensure that in such a case, the emergency stop switch is not illuminated.

Si le panneau n'est pas couplé ou est éteint, l'interrupteur d'arrêt d'urgence n'a aucune fonction! L'application doit s'assurer que, dans un tel cas, l'inter-rupteur d'arrêt d'urgence n'est pas allumé.

After the emergency stop has been triggered, the emergency stop switch can then only be unlocked if:

- the cause for triggering the emergency stop has been corrected
- the machine can be safely restarted

Après le déclenchement de l'arrêt d'urgence, l'interrupteur d'arrêt d'urgence ne peut être déverrouillé que si:

- la cause du déclenchement de l'arrêt d'urgence a été corrigée
- la machine peut être redémarrée en toute sécurité

DANGER

Unlocking the emergency stop switch cannot trigger an automatic restart of the machine.

Le déverrouillage de l'interrupteur d'arrêt d'urgence ne peut pas déclencher un redémarrage automatique de la machine.

After the application unlocks the emergency stop switch, the operator must be prompted to run a defined activation process.

Après que l'application ait déverrouillé l'interrupteur d'arrêt d'urgence, l'opé-rateur doit être invité à exécuter un processus d'activation défini.

18.3 HW Facts

INFORMATION

The Safety functions must be used with the SIGMATEK SCP 111 exclusively! The status of the safety-related inputs (confirmation switch, key switch, emergency stop switch) is sent to the SCP 111, which decodes these functions and makes them available for further use.

The key switch must be tested at least once per year. For the emergency stop and confirmation switches, the operator must be prompted every 30 days to run a test!

18.4 Updates

INFORMATION

Operating system updates can only be performed when battery has at least 50 % capacity and the HGW 1033-3 is being charged.

Non-compliance can lead to data loss and malfunction.

Changes Chart

Change date	Affected page(s)	Chapter	Note
13.08.2018	94	18.4 Updates	Chapter added
28.08.2018	19	3.5 Safety-Relevant Parameters	Values changed
	88	4.6 Environmental Conditions	Operating conditions added
	88	17.1 Antennae	Order number added
29.08.2018	17	3.4 Guidelines	Low-voltage guideline removed
	19	3.5 Safety-Relevant Parameters	Values changed, text expanded
	36	5.4 WLAN	Warning for pacemaker expanded
	69	10 Operation/Start-up	Warning for pacemaker expanded BWH information text added
19.10.2018	20	4.1 Performance Data	Battery capacity changed
	44	6 Mechanical Dimensions	Expanded
	88	17.2 Touch Pen	Added
14.12.2018		Document	Revision of documentation to HW 2.0
25.01.2019	47	8 Status and Error Messages	Added
29.04.2019	17	3.3 Regular Technical Inspection of the Emergency Stop	Manual adjustment of the time interval expanded time interval and emergency stop test conditions modified
	20	4.1 Performance Data	Expansion of internal memory device
	44	6.1 HGW	mechanical dimensions corrected
	32	5.2.1 X15: Power/Data	Iron dust warning modified
	34	5.3.2 Front	Table formatted
	36	5.4 WLAN	SIGMATEK syntax modified
	71	10.3 Configuration	Infopoint USB Interface removed
	78	10.5.6 Safety Functions	Testing interval adapted

Change date	Affected page(s)	Chapter	Note
	80	11 Help with Disruptions/Troubleshooting	Unwanted time trigger expanded
	88	17 Accessories	Shortened by microSD card and replacement battery; edge protections added
	91	18.2.1 Minimum System Requirements	Time intervall testing changed
09.05.2019	88	17 Accessories	Images added
23.05.2019	1	Product description	Image edited, text modified
	20	4.1 Performance Data	Table expanded (USB)
	44	6.1 HGW	Front: Glass addes
	45	6.2 HGW with BWH	Weight adapted
	32	5.2.1 X15: Power/Data	SiHis in Layout changed
	35	5.3.2.2 7-Segment (Safety)	Graphic replaced
	39	5.6 On/Off Button (illuminated)	Table expanded, Hard-OFF instead of Hard-Reset
		Battery/Power Supply	SiHi weakend
	71	10.3 Configuration	Spelling
	83	14.1 Cleaning and Disinfecting the Touch Screen	WaHi expanded
	85	14.3 Repair	WaHi shortened
	89	18 Application Information	Grammar changed, headings changed
27.05.2019	27	4.8 Miscellaneous	“TÜV-Austria EG Type Tested” added
04.06.2019	19	3.5 Safety-Relevant Parameters	SFF added
	24	4.6 Environmental Conditions	EMC noise immunity added
20.08.2019	17	3.3 Regular Technical Inspection of the Emergency Stop	Infor exchange added

Change date	Affected page(s)	Chapter	Note
	28	5.1 Connections Bottom	Boot stick info
	74	10.5.3 Coupling	Process Diagram added
	76	10.5.4 Non-Safety Mode	Chapter added
	77	10.5.5 Decoupling	Diagram added
	90	18.1.1 Example Application	Info configuration help added
05.03.2020	24	4.6 Environmental Conditions	Free fall (with packaging) corrected to 1000 mm
16.07.2020	25	4.7 Wireless	Info note document “WLAN Configuration“
	26	4.7.1 WLAN 2.4 GHz	
	26	4.7.2 WLAN 5 GHz	
	70	10.2 WLAN Channels and Settings	Chapter added
30.07.2020	83	14.1 Cleaning and Disinfecting the Touch Screen	Notes on disinfection added
08.09.2020	20	4.1 Performance Data	Battery capacity updated
	21	4.2 Electrical Requirements	Protection class added
	24	4.6 Environmental Conditions	Added for Protection type (only with all protective caps fitted)
	26	4.7.1 WLAN 2.4 GHz	Standards added
	26	4.7.2 WLAN 5 GHz	Standards added
09.09.2020	Document		Restructuring
27.11.2020	20	4.1 Performance Data	Footnote cores (programming) added
	25	4.7 Wireless	Info text changed
	26	4.7.1 WLAN 2.4 GHz	Channels changed
	26	4.7.2 WLAN 5 GHz	Channels changed
02.12.2020	80	11 Help with Disruptions/Troubleshooting	Point Transport mode added
03.03.2021	19	3.5 Safety-Relevant Parameters	PFH_D, DC changed

Change date	Affected page(s)	Chapter	Note
28.04.2021	23	4.4 Control Unit	Chapter added
14.05.2021	27	4.8 Miscellaneous	Default IP address added
20.10.2021	85	14.3 Repair	Note cut hazard added
16.11.2021	20	4.1 Performance Data	Real time clock information changed
		Battery/Power Supply	removed
	57	9 Battery	Chapter added
	69	10 Operation/Start-up	Information regarding transport mode changed
26.11.2021	22	4.3 Display	Chapter expanded
03.12.2021	59	9.5 Commissioning and Charging Options	Monitoring of the charging source added
28.01.2022	19	3.5 Safety-Relevant Parameters	SFF, PFHD Radio link rounded
28.01.2022	25	4.7 Wireless	Caution radiation added
22.02.2022	63	9.8 Exchanging the Battery	OS message added
	67	9.11 Log Data	HW class added
19.08.2022	20	4.1 Performance Data	Accu capacity from 3780 mA to 4170 mA changed
19.08.2022	32	5.2.1 X15: Power/Data	Pinning corrected, additional information added
04.10.2022	86	15 Display „Burn-In“ Effect	Chapter added