

HZS 771

Touch Operating Panel

Instruction Manual



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Touch Operating Panel

HJS 771

The HJS 771 is an intelligent terminal for programming and visualization of automated processes. Process diagnostics as well as operating and monitoring automated procedures are simplified using this terminal.

A resistive touch screen serves as the input medium for process data and parameters. The output is shown on a 7" WVGA TFT color display.

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

The available interfaces can be used to exchange process data or configure the terminal. In the internal Flash memory, the operating system, application and application data are stored.



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1 Technical Data

1.1 Performance Data

| | |
|---|--|
| Processor | EDGE2 Technology |
| Processor core | 1 |
| Internal cache | 32-kbyte L1 Instruction Cache 32-kbyte L1 Data Cache 512-kbyte L2 Cache |
| Internal program and data memory (DDR3 RAM) | 256-Mbyte |
| Internal remnant data memory | 256 kbyte SRAM (battery buffered) |
| Internal storage device | 4 GB microSD card (3D-TLC pSLC technology) ¹⁾ |
| Internal I/O | no |
| Interfaces | 1x USB 2.0 (Type A front) 1x USB device 1.1, Type Mini-B (back) 1x Ethernet 10/100 (RJ45) 1x CAN bus (6-pin Weidmüller) 1x RS485/Modbus (6-pin Weidmüller) 1x RS232 (9-pin D-Sub) |
| Internal interface connections and devices | 1x TFT LCD color display 1x touch |
| Display | 7“ TFT color display |
| Resolution | 800 x 480 Pixel |
| Control panel | 4-wire touch screen (analog resistive) |
| Signal generator | no |
| Status LEDs | 1x front LED bi-color RED/GREEN (controllable through the application) |
| Real-time clock | yes |
| Cooling | Passive (fanless) |

¹⁾ The 4 GByte microSD card is formatted to 1 GByte in order to achieve the lifetime of a standard SLC card. A format change to the full 4 GByte is not allowed and will result in a massive reduction of the microSD card's lifetime.

1.2 Electrical Requirements

| | | |
|---|--|---|
| Supply voltage | typically +24 V DC | |
| | minimum +18 V DC | maximum +30 V DC |
| Current consumption of power supply at +24 V | typically 180 mA (without externally connected devices) | maximum 290 mA (with external devices connected) |
| Current consumption of standby voltage at +24 V | typically 110 mA (without externally connected devices) | maximum 180 mA (with external devices connected) |
| Inrush current | 600 mA (1 ms) | |

1.3 Terminal

| | |
|------------|--|
| Dimensions | 180 x 135 x 50 mm (W x H x D) |
| Material | front plate: until HW 2.x: 3 mm plastic, RAL 9006 since HW 3.00: 3 mm aluminum, unadulterated |
| Weight | until HW 2.x: circa 550 g since HW 3.00: circa 591 g |

1.4 Environmental Conditions

| | | |
|---------------------------|--|--|
| Storage temperature | -10 ... +80 °C | |
| Environmental temperature | 0 ... +60 °C | |
| Humidity | 10-90 %, non-condensing | |
| EMC stability | in accordance with product standard EN 60730-1 | |
| Vibration resistance | EN60068-2-6 | 2-9 Hz: amplitude 3.5 mm 9-200 Hz: 1 g (10 m/s ²) |
| Shock resistance | EN60068-2-27 | 15 g (150 m/s ²) duration 11 ms, 18 Shocks |
| Protection type | EN 60529 protection through housing | front: IP54 cover: IP20 |

1.5 7" WVGA Display incl. Touch

| | |
|------------------|-----------------------------------|
| Type | 7" TFT LCD color display |
| Resolution | WVGA 800 x 480 Pixel |
| Color depth | 16 Bit RGB (65K colors) |
| LCD mode | normal white ⁽¹⁾ |
| LCD Polarizer | transmissive ⁽²⁾ |
| Pixel size | 0.1926 x 0.1790 mm |
| Number of pixels | 800*3 (RGB) x 480 |
| Active surface | 154.08 x 85.92 mm |
| Backlighting | LED |
| Contrast | 500:1 |
| Brightness | typically 280 cd/m ² |
| Visible field | left, right, below 70°, above 50° |

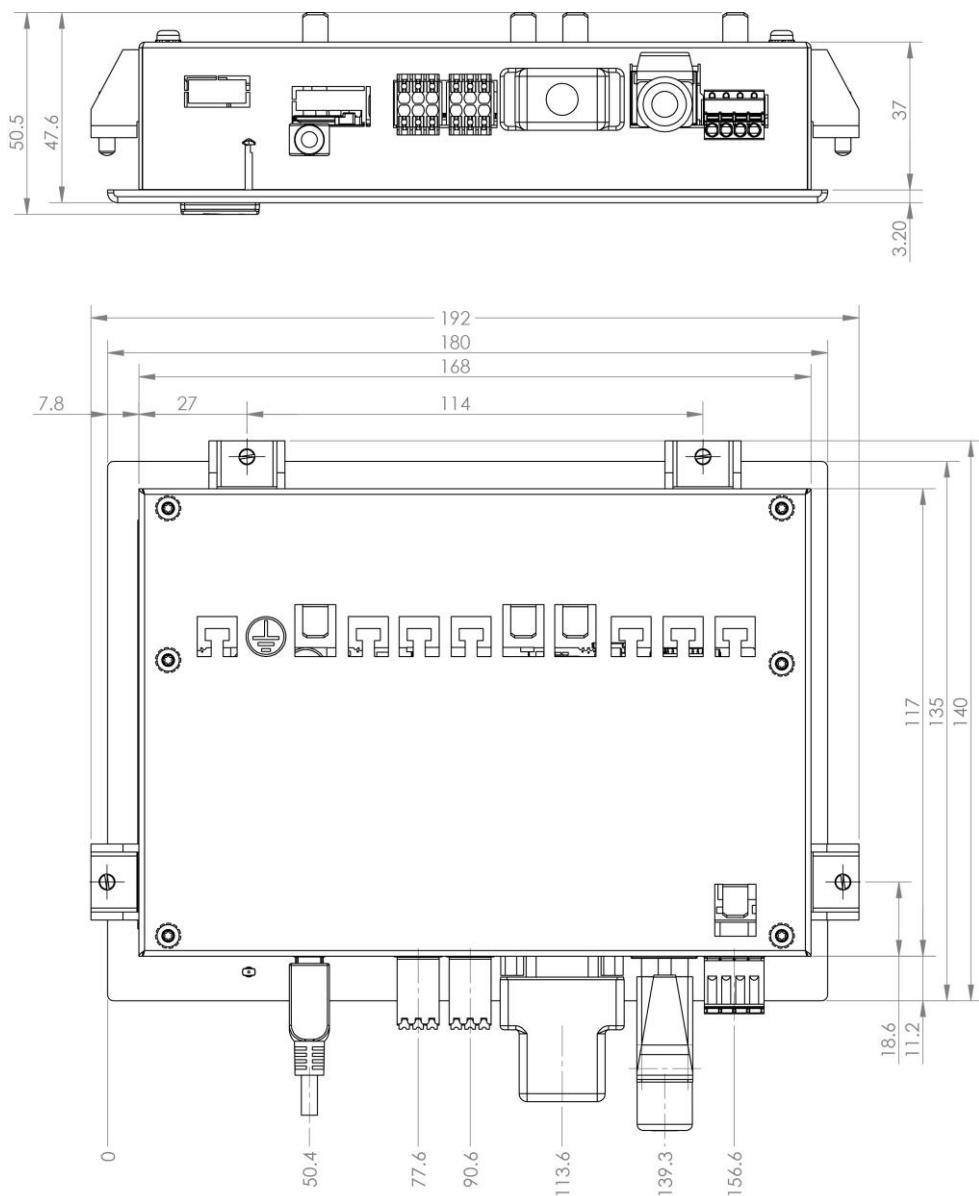
⁽¹⁾ If there is no display data, the display is white (LED backlight visible)

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

1.6 Miscellaneous

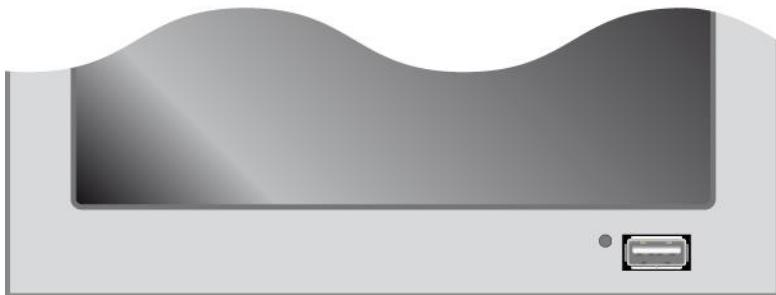
| | |
|--------------------------------|----------------|
| Article number | 05-895-771 |
| Hardware version | 8.x |
| Article number in-wall housing | 05-895-555-SZ1 |

2 Mechanical Dimensions

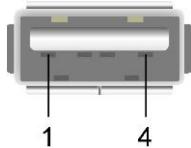


3 Connector Layout

3.1 Front



X8: USB Host 2.0 (Type A)



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

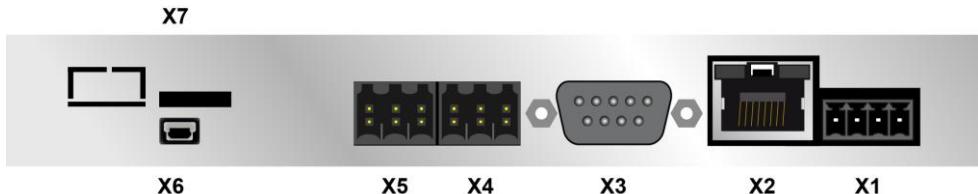
It should be noted that many of the USB devices on the market do not comply with USB specifications; this can lead to device malfunctions. It is also possible that these devices will not be detected at the USB port or function correctly. Therefore, it is recommended that every USB stick be tested before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

Il faut souligner que la plupart des périphériques USB sur le marché ne sont pas conformes aux spécifications USB, ce qui peut entraîner des dysfonctionnements de l'appareil. Il est également possible que ces dispositifs ne seront pas détectés par le port USB ou qu'ils ne fonctionnent pas correctement. Par conséquent, il est recommandé que chaque clé USB soit testée avant l'utilisation sur l'automate.

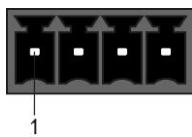
3.1.1 Status LED

| | | | |
|-------|-------|---|--|
| Run | green | ON | from activation of the voltage supply until processing of the autoexec.lsl |
| | | BLINKS | when the application is running (except when controlled through application differently) |
| | | OFF | when error occurs or reset |
| | | can be set from the application (ON, BLINKING, OFF) | |
| Error | red | BLINKS | when error occurs or reset |
| | | OFF | during start process during RUN status (application running) |
| | | can be set from the application (ON, BLINKING, OFF) | |

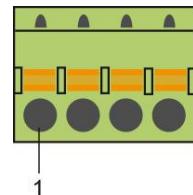
3.2 Backside



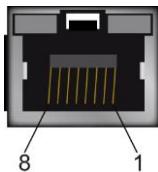
X1: Power Supply (4-pin Phoenix Contact)



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



X2: Ethernet 10/100 (RJ45)



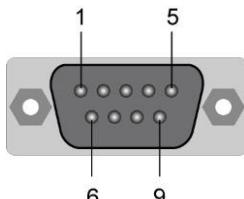
| Pin | Function |
|-----|----------|
| 1 | Tx + |
| 2 | Tx - |
| 3 | Rx + |
| 4 | n.c. |
| 5 | n.c. |
| 6 | Rx - |
| 7 | n.c. |
| 8 | n.c. |

n.c. = do not use

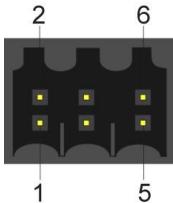
Problems can arise if a control is connected to an IP network, which contains modules that do not contain a SIGMATEK operating system. With such devices, Ethernet packets could be sent to the control with such a high frequency (i.e. broadcasts), that the high interrupt load could cause a real-time runtime 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.

Des problèmes peuvent survenir si un automate est connecté à un réseau IP contenant des modules qui ne fonctionnent pas sous un système d'exploitation SIGMATEK. Avec de tels dispositifs, les paquets Ethernet peuvent être envoyés à l'automate avec une fréquence tellement élevée (càd. diffusion), que les interruptions ainsi générées peuvent provoquer une erreur d'exécution. En configurant d'une façon appropriée le filtre de paquets (pare-feu ou un routeur) il est toutefois possible de connecter un réseau avec le matériel SIGMATEK à un réseau tiers sans déclencher l'erreur mentionnée ci-dessus.

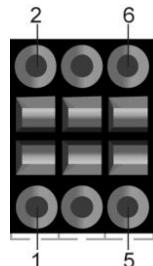
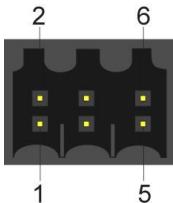
X3: COM 1 (D-Sub)



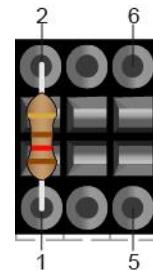
| Pin | Function RS232 |
|-----|----------------|
| 1 | DCD |
| 2 | Rx |
| 3 | Tx |
| 4 | DTR |
| 5 | GND |
| 6 | DSR |
| 7 | RTS |
| 8 | CTS |
| 9 | RI |

X4: CAN 1 (6-pin Weidmüller)

| Pin | Function |
|-----|--------------|
| 1 | CAN A (LOW) |
| 2 | CAN B (High) |
| 3 | CAN A (LOW) |
| 4 | CAN B (High) |
| 5 | CAN GND |
| 6 | n.c. |

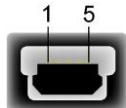
**X5: COM 3 (6-pin Weidmüller)**

| Pin | Function RS485/ModBus |
|-----|-----------------------|
| 1 | RS485/Modbus-A |
| 2 | RS485/Modbus-B |
| 3 | RS485/Modbus-A |
| 4 | RS485/Modbus-B |
| 5 | RS485/Modbus-GND |
| 6 | n.c. |

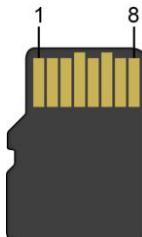


The RS485/Modbus interface is protected against external voltages of ± 30 V DC, there is no function for an error voltage!

Starting from HW version 1.10, the bus termination is made by an 120R resistor placed on the X5 connector between the RS485/Modbus-A and RS485/Modbus-B lines.

X6: USB Device 1.1 (Type Mini-B)

| Pin | Function |
|-----|----------|
| 1 | +5 V |
| 2 | D- |
| 3 | D+ |
| 4 | n.c. |
| 5 | GND |

X7: microSD Card

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

**It is recommended that only storage media provided by SIGMATEK
(CompactFlash cards, microSD cards etc.) be used.**

Order number for the 4 Gbyte EDGE2 microSD card: 12-630-105

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

**The microSD card is not meant to be used as a removable media and thus only
should be removed from the card holder for maintenance purposes.**

**Il est recommandé de n'utiliser que les supports de stockage approuvés par
SIGMATEK (compact flash, microSD, etc.).**

Numéro de commande pour la carte microSD 4 Go Edge2 est le: 12-630-105

**Le nombre de cycles de lecture et d'écriture a l'influence notable sur la durée de vie
des supports de stockage.**

3.2.1 Applicable Connectors

- X1: 1x 4-pin Phoenix Contact plug with spring terminals FK-MCP 1.5/4-ST-3.5 (included in delivery)
- X2: 8-pin RJ45 (not included in delivery)
- X3: 9-pin D-Sub (not included in delivery)
- X4, X5: 6-pin Weidmüller plug B2L/B2CF 3.5/6 (included in delivery)
- X6: USB 1.1 (Mini-B) (not included in delivery)
- X7: microSD card
- X8: USB 2.0 (Type A) (not included in delivery)

4 Cooling

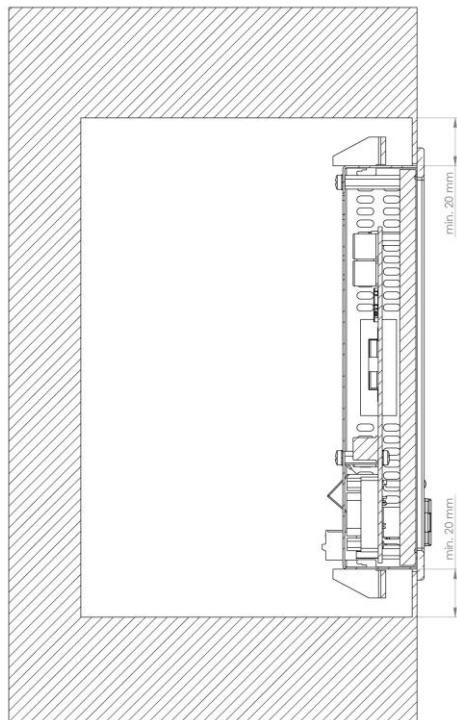
The terminal's power loss can reach up to 7.5 Watts. To ensure the necessary air circulation for cooling, the following mounting instructions must be followed!

5 Mounting Instructions

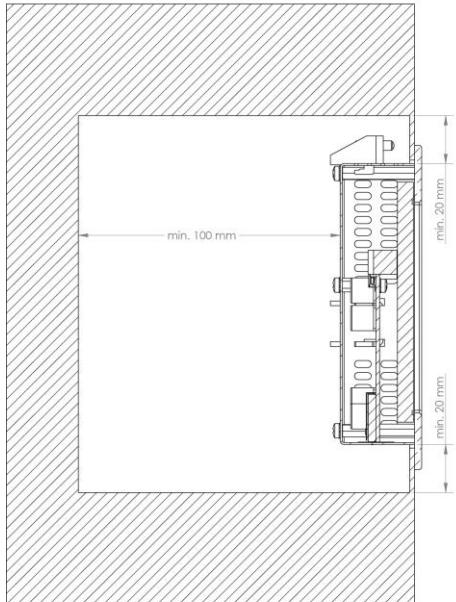
The following distance from the housing should be maintained:

- Left, right, below, above 2 cm
- In the rear, 10 cm

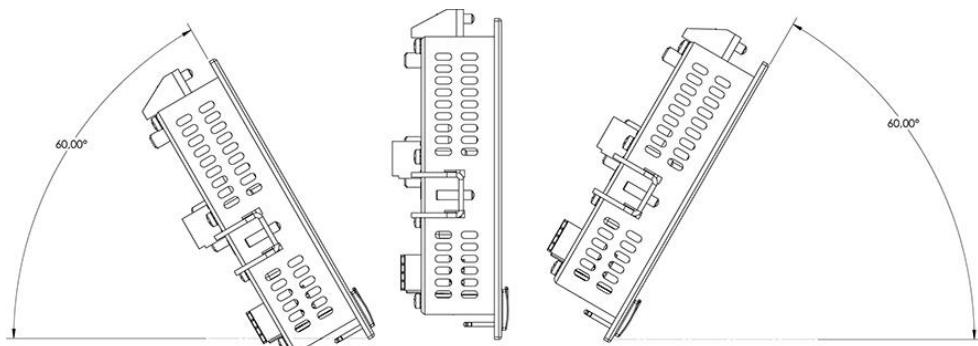
Top view:



Side View:



A mounting position of 60° to 120° is also required.



6 Buffer Battery

The exchangeable buffer battery ensures that the clock time (RTC) and SRAM data of the HZA 771 is preserved in the absence of a supply voltage. A lithium battery is installed at the manufacturer.

After delivery of the HZA 771 and storage of one year, the lifespan of the battery reaches 10 years, if you make sure, that the device mainly is in operation (supply voltage is on).

We recommend however, that the battery be replaced every 8 years to ensure optimal performance.

ATTENTION: If the device is not supplied for 2 years, the battery is empty.

Battery order number: 01-690-055

| | MANUFACTURER | DATA |
|-----------------|--------------|---------------|
| Lithium battery | RENATA | 3.0 V/235 mAh |

Use batteries from RENATA with the label CR2032 only!

WARNING! Incorrect use of the batteries could result in fire or explosion! Do not recharge, disassemble or throw batteries into fire!

Utilisez seulement des piles de RENATA CR2032!

ATTENTION! La pile peut exploser si elle n'est pas manipulée correctement! Ne pas recharger, démonter ou jeter au feu!

When the battery voltage is in between the supervisor circuit thresholds, it may happen that the battery is detected "good" during operation, but "low" after a power cycle. If this happens, it is recommended to replace the battery.

6.1 Exchanging the Battery: 1st Option

1. Connect power supply
2. Using the correct torx screw driver, loosen and remove the battery cover.



When exchanging the battery, caution must be taken to avoid a short circuit. Otherwise, a defect can be caused in the terminal!

3. Using the strap, remove the battery from the holder.



4. Insert the new battery with the correct polarity (plus side facing the back of the terminal) and remount the battery cover.

6.2 Exchanging the Battery: 2nd Option

1. The SRAM data are saved in the flash or the microSD card using the CLI command "sramsave FILENAME".

Example: sramsave C:\sram_backup

The commands can be executed via the Remote CLI of LASAL Class 2 or via direct input on the device.

CAUTION: If the data is not previously saved, the settings in the heat controller are lost

2. Disconnect the HZN 773 supply.

3. Using the correct torx screw driver, loosen and remove the battery cover.



4. Using the strap, remove the battery from the holder.



5. Insert the new battery with the correct polarity (plus side facing the back of the terminal) and remount the battery cover.

7. Load the SRAM data from the flash using the CLI command "sramload FILENAME" and set the time. The time and date can be set through set Time and set Date.

Example: sramload C:\sram_backup

7 Wiring Guidelines

7.1 Ground

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

7.2 Shielding

For the Ethernet, CAT5 cables with shielded RJ45 connectors must be used. The shielding on the CAT5 cable is connected to ground over the RJ45 plug connector. Noise signals can therefore be prevented from reaching the electronics and affecting the function.

7.3 ESD Protection

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

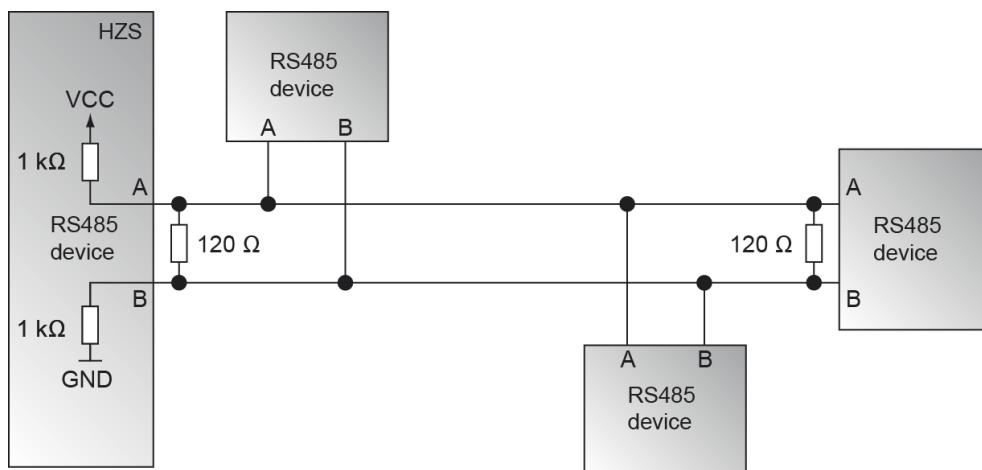
Before any device is connected to, or disconnected from the terminal, the potential should be equalized (by touching the control cabinet or ground terminal). This will allow the dissipation of electrostatic loads (caused by clothing/shoes).

7.4 USB Interface Connections

The terminal has a USB interface connection that can be used to connect various USB devices (keyboard, mouse, storage media, hubs, etc.) in LASAL. Using a hub, several USB devices can be connected that are then fully functional in LASAL.

7.5 RS485

- Because the RS485 requires a defined quiescent point, a pull-up and pull-down resistor is required in addition to the termination resistor. These resistors are already integrated into the device.
- The terminating resistors with $120\ \Omega$ must be placed on each end of the bus
- Star wiring should be avoided



8 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 fades after the screen has been turned off for some time or when dynamic content is displayed, damage from the permanent effect is irreversible.

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 ambient temperatures
- Operation above specifications

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

- Use of a screen saver with continuous content change (e.g. video)
- ATTENTION: Switching off the backlight does not prevent this effect but only increases the life of the backlight

9 CAN Bus Setup

This section explains how to correctly configure the CAN bus. The following parameters must first be set: Station number and data transfer rate.

9.1 CAN Bus Station Number

Each CAN bus station is assigned its own station number. With this station number, data can be exchanged with other stations connected to the bus. In a CAN bus system however, each station number can only be assigned once!

9.2 Number of CAN Bus Participants

The maximum number of participants on the CAN bus depends on the cable length, termination resistance, data transfer rate and the drivers used in the participants.

With a termination resistance of 120Ω , at least 100 participants are possible.

9.3 CAN Bus Data Transfer Rate

Various data transfer rates (baud rates) can be set on the CAN bus. The longer the bus line is, the lower the data transfer rate that must be selected.

| Value | Baud rate | Maximum length |
|-------|--------------|----------------|
| 0 | 615 kbits/s* | 60 m |
| 1 | 500 kbits/s | 80 m |
| 2 | 250 kbits/s | 160 m |
| 3 | 125 kbits/s | 320 m |
| 4 | 100 kbits/s | 400 m |
| 5 | 50 kbits/s | 800 m |
| 6 | 20 kbits/s | 1200 m |
| 7 | 1 Mbit/s | 30 m |

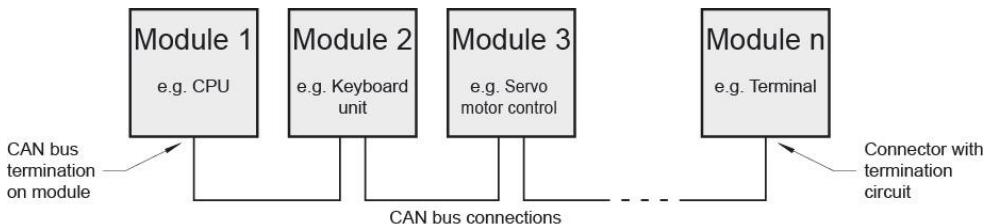
*only between devices with EDGE2 technology

These values apply to the following cable: 120Ω Twisted Pair.

Note: For the CAN bus protocol: $1 \text{ kbit/s} = 1 \text{ kBaud}$.

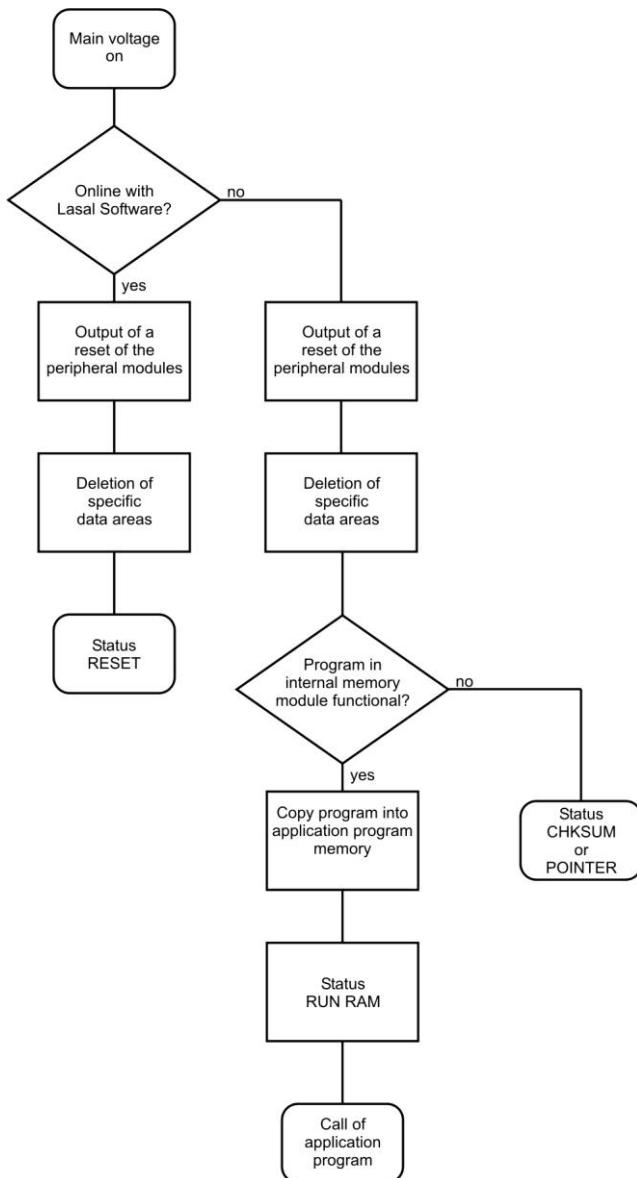
10 CAN Bus Termination

In a CAN bus system, both end modules must be terminated. This is necessary to avoid transmission errors caused by reflections in the line.



The termination is made by an internal 120R resistor between CAN A (LOW) and CAN B (HIGH).

11 Process Diagram



12 Status and Error Messages

Status and error messages are displayed in the LASAL Class software status test. POINTER or CHKSUM messages can also be shown on the terminal 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 loaded into the RAM is currently running. The display is not affected. | Info |
| 02 | RUNTIME | The total time for all cyclic objects exceed the maximum time; the time can be configured using two system variables: - Runtime: time remaining - SWRuntime: pre-selected value for the runtime counter | Solution: <ul style="list-style-type: none"> - 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: <ul style="list-style-type: none"> - The program memory module is missing, not programmed or defective. - The program in the user program memory (RAM) is not executable. - The buffering battery has failed. - The user program has overwritten a software error. Solution: <ul style="list-style-type: none"> - Reprogram the memory module, if the error reoccurs exchange the module. - Exchange the buffering battery - Correct programming error |
| 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: <ul style="list-style-type: none"> - 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 defect. Solution: <ul style="list-style-type: none"> - Correct programming error. - Exchange CPU. |
| 06 | GENERAL ERROR | General error An error has occurred while stopping the application over the online interface. | The error occurs only during the development of the operating system. |
| 07 | PROM DEFECT | An error has occurred while programming the memory module. | Cause: <ul style="list-style-type: none"> - The program memory module is defect. - The user program is too large. - The program memory module is missing. Solution: <ul style="list-style-type: none"> - 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 |
| 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: <ul style="list-style-type: none"> - 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. | <p>Cause:</p> <ul style="list-style-type: none"> - A non-existent operating system was used. - Stack error (uneven number of PUSH and POP instructions). - The user program was interrupted through a software error. <p>Solution:</p> <ul style="list-style-type: none"> - Correct program error |
| 18 | SINGLE_STEP | The CPU is in single step mode and is waiting for further instructions. | Info |
| 19 | READY | A module or project was sent to CPU and it is now 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 | UNZUL_MODULE | The CPU has received a module that does not belong to the project. | <p>Solution:</p> <ul style="list-style-type: none"> - 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 or interface function from the application. | <p>Cause:</p> <ul style="list-style-type: none"> - Memory is only allocated but not released. <p>Solution</p> <ul style="list-style-type: none"> - Clear memory |
| 23 | NOT_LINKED | When starting the CPU, a missing module or a module that does not belong to the project was detected. | <p>Solution:</p> <ul style="list-style-type: none"> - Recompile and download the entire project |
| 24 | DIV_BY_0 | A division error has occurred. | <p>Possible Causes:</p> <ul style="list-style-type: none"> - Division by 0. - The result of a division does not fit in the result register. <p>Solution:</p> <ul style="list-style-type: none"> - Correct program error |
| 25 | DIAS_ERROR | While accessing a DIAS module, an error has occurred. | Hardware problem |
| 26 | WAIT | The CPU is busy. | Info |

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|----|----------------------------|---|---|
| 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. | Solution: - Contact SIGMATEK |
| 38 | APPLMEM ERROR | An error has occurred in the application memory (user heap). | Solution: - Correct allocated memory access error |
| 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 communication error has occurred. | Solution: - Read logfile - Error Tree |

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| 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 when accessing arrays. The memory area was overwritten through accessing an invalid element. | Solution: - Correct application errors |
| 52 | PRIVILEGED 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 |
| 53 | FLOATING POINT ERROR | An error has occurred during a floating-point operation. | |
| 60 | DIAS-RISC-ERROR | Error from the Intelligent DIASMaster. | 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 time for all real time objects exceeds the maximum time allowed. 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 exceed the maximum time; the time can be configured using two system variables: -BTRuntime: time remaining SWBTRuntime: pre-selected value for the runtime counter | Solution: - Optimize the application's background task (background) - Use higher capacity CPU - Set SWBTRuntime correctly |

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| 70 | C-DIAS ERROR | A connection error with a C-DIAS module has occurred. | <p>Cause:</p> <ul style="list-style-type: none"> - The cause of the error is documented in the log file <p>Solution:</p> <ul style="list-style-type: none"> - This depends on the cause |
| 72 | S-DIAS ERROR | A connection error with a S-DIAS module has occurred. | <p>Possible causes:</p> <ul style="list-style-type: none"> - real network does not match the project - S-DIAS client is defective <p>Solution:</p> <ul style="list-style-type: none"> - analyze logfile |
| 75 | SRAM ERROR | An error occurred while initializing, reading or writing SRam data. | <p>Possible Causes:</p> <ul style="list-style-type: none"> - SRam configured incorrectly - Battery for the internal program memory supply is empty <p>Solution:</p> <ul style="list-style-type: none"> - Analyze log file (Event00.log, Event19.log) - Check configuration - Change internal program memory supply battery |
| 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. | |

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| 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 | No specific error, recompile all project components and reload the project. | |
| 113 | C_NO_FILE_OPEN | An attempt was made to open an unknown table. | |
| 114 | C_OUTOF_NEAR | Memory allocation error | |
| 115 | C_OUT_OF_FAR | Memory allocation error | |
| 116 | C_INCOMPATIBLE | An object with the same name already exists but has a different class. | |
| 117 | C_COMPATIBLE | An object with the same name and class already exists but must be updated. | |
| 224 | LINKING | The application is currently linking. | |
| 225 | LINKING_ERROR | An error has occurred while linking. An error message is generated in the LASAL status window. | |
| 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 | | |

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|-----|-------------------------|-----------------------------|--|
| 243 | LSL LOAD | | |
| 252 | CONTINUE | | |
| 253 | PRERUN | The application is started. | |
| 254 | PRERESET | The application is ended. | |
| 255 | CONNECTION BREAK | | |

13 Cleaning the Touch Screen

CAUTION!

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

ATTENTION!

Avant de nettoyer l'écran tactile, le terminal doit d'abord être éteint afin d'éviter un déclenchement involontaire des commandes!

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

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

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

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

Pour garantir le fonctionnement optimal du terminal, le terminal doit être nettoyé régulièrement!

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

Pour prolonger la durée de vie de l'écran tactile on recommande d'utiliser les doigts pour l'opérer.

Documentation Changes

| Change date | Affected page(s) | Chapter | Note |
|-------------|------------------|--|---|
| 27.02.2014 | 6 11 | 1.5 3.2 | Added number of pixels in table Added resistor at opposing connector X5: RS485/Modbus and added notice in grey box |
| 16.04.2014 | 9 21 22 | 3.1.1 7.5 8.1 CAN Bus Station Number 8.2 Number of CAN Bus Participants | Changed Status LED description Added chapter RS485 Changed text Changed text |
| 04.06.2014 | 30 | 11 Status- and Error Messages | S-DIAS Error added |
| 02.02.2015 | 21 | 7.5 RS485 | Added graphic and the sentences, these resistors are already integrated into the device. |
| 24.03.2015 | 12 | 3.2 Backside | Expanded description of the notice in the grey box |
| 15.06.2015 | 22 | 8.3 CAN Bus Data Transfer Rate | Note added |
| 28.10.2015 | 15 | 6 Buffer battery 6.1 Exchanging the battery 6.2 Exchanging the battery | Description adapted to actual hardware |
| 19.04.2016 | 4 | 1.1 Performance Data | Table updated |
| 05.09.2016 | 7 12 | 2 Mechanical Dimensions 3.2 Backside | Updated microSD hint added |
| 14.11.2016 | 28 | 11 Status and Error Messages | Error code 75 added |
| 28.11.2016 | 6 | 1.5 7" WVGA Display incl. Touch | Pixel size updated |
| 05.12.2016 | 15 | 6 Buffer Battery | Battery monitoring added |

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|------------|---------|--------------------------------------|-----------------------------------|
| 06.03.2017 | 6 | 1.6 Miscellaneous | Article number in-wall housing |
| 09.05.2019 | 20 | 8 Display "Burn-In" Effect | Chapter added |
| 16.07.2019 | 5 | 1.3 Terminal | Aluminum front instead of plastic |
| 05.12.2019 | | 8 Display "Burn-In" Effect | Corrected |
| 15.07.2020 | | 6.2 Exchanging the Battery: Option 2 | Chapter adjusted |
| 17.12.2020 | 6 | 1.6 Miscellaneous | Hardware version changed to 8.x |
| 14.12.2023 | 12 | 3.2.1 Applicable Connectors | B2CF added |
| 13.03.2024 | 4 12 | 1.1 Performance Data 3.2 Backside | microSD card updated |