SIGMATEK

ETT 7321

Carrier Arm Touch Terminal

Instruction Manual

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Translation of the Original Instruction

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Carrier Arm Touch Terminal ETT 7321

The ETT 7321 is used to visualize automated process. Process diagnosis, operating and monitoring automated functions are simplified using this terminal.

A projective capacitive 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 LASAL visualization tool, 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 Introduction

1.1 Target Group/Purpose of this Operating Manual

This operating manual contains all information required to operate this 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

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

1.3 Contents of Delivery

1x ETT 7321
4x screws ISO7380-2 M5x8 10.9 ISK

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.

⇨ To avoid death or serious injuries, observe all guidelines

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

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

CAUTION

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

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

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

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

INFORMATION

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

Danger for ESD-sensitive components. Les signes de danger pour les composants sensibles aux décharges électrostatiques.

2.2 Disclaimer

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

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

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.

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

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

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

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

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

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.

2.4 Software/Training

The application is created with the software LASAL CLASS 2 and LASAL SCREEN Editor.

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 Norms and Guidelines

3.1 Guidelines

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

3.1.1 EU Declaration of Conformity

EU Declaration of Conformity

The product ETT 7321 conforms to the following European guidelines:

- **2014/35/EU** Low-voltage guideline
- **2014/30/EU** “Electromagnetic Compatibility” (EMC guideline)
- **2011/65/EU** “Restricted use of certain hazardous substances in electrical and electronic equipment” (RoHS Guideline)

The EU Conformity Declarations are provided on the SIGMATEK website. See Products/Downloads or use the search function and the keyword “EU Declaration of Conformity”.

4 Technical Data

4.1 Performance Data

Processor	EDGE2 Technology
Processor cores	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 Mbytes
Internal remnant data memory	256-kByte SRAM (battery buffered)
Internal storage device	512 Mbyte NAND-Flash
Internal I/O	no
Interfaces	1x USB 2.0 (Type A) 1x M12 connector supply, Ethernet and CAN
Internal interface connections and devices	1x TFT LCD color display 1x touch screen
Display Resolution	7“ TFT LCD color display 800 x 480 Pixels
Operating panel	touch screen (projective capacitive)
Signal generator	no
Status LEDs	no
Real-time clock	yes
Cooling	passive (fanless)

4.2 Electrical Requirements

Supply voltage	+24 V DC ±20 % (SELV/PELV)	
Protection class	III	
Current consumption of (+24 V) power supply	typically 270 mA	maximum 400 mA
Inrush current	700 mA (2 ms)	

4.3 Display

Type	7” TFT LCD color display
Resolution	800 x 480 Pixels
Color depth	16-bit RGB
LCD mode	normally white[1)]
LCD Polarizer	transmissive[2)]
Pixel size	0.1926 x 0.1790 mm
Active range	154.08 x 85.92 mm
Backlighting	LED
Contrast ratio	500:1
Brightness	typically 280 cd/m²
Angle CR ≥ 10	left, right, below 70°, above 50°[3)]
Life span	by compliance with the ambient conditions, the brightness of the display sinks after 50,000 operating hours to 50 % of the original brightness

[1)] If no voltage is applied, the display remains white when the backlighting is on.
[2)] Display technology, with which display backlighting is used.
[3)] The viewing angle is measured perpendicular to the display surface.

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

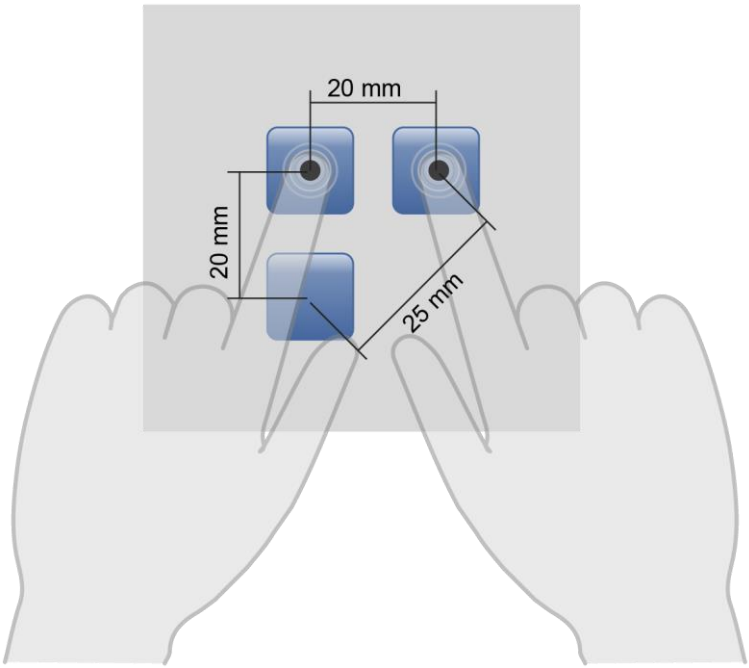
4.4 Control Unit

Touch panel	projective capacitive touch panel
Cleaning	see chapter 15.1.

A projective capacitive touch screen is built into the panel, with which 10-finger input, Zoom and gesture functions can be implemented. Data can be input using fingers, a project capacitive touch pen as well as with thin gloves. The device must always be grounded to ensure stable function of the touch screen. The touch function may still have to be individually adapted to the respective environmental conditions.

4.5 Minimum Distance between Operating Elements for Multi-touch Applications

To guarantee smooth operation with multitouch applications, buttons and control elements that should be operated at the same time must have the minimum clearance shown below (depending on the estimated touch point).



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

4.6 Environmental Conditions

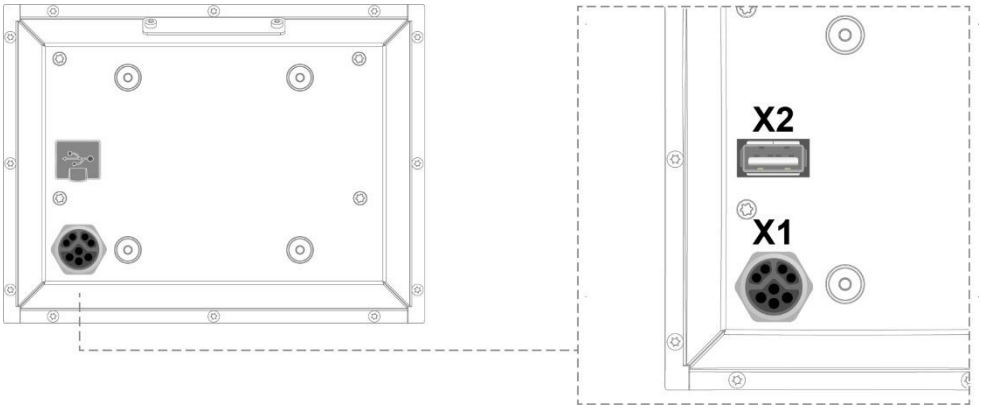
Storage temperature	-10 ... +80 °C	
Environmental temperature	0 ... +50 °C	
Humidity	10-95 %, non-condensing	
Installation altitude above sea level	0-2000 m without derating > 2000 m up to a maximum of 5000 m with derating of the maximum environmental temperature by 0.5 °C per 100 m	
Operating conditions	pollution degree 2	
EMC resistance	in accordance with EN 61000-6-2 (industrial area)	
EMC noise generation	in accordance with EN 61000-6-4 (industrial area)	
Vibration resistance	EN 60068-2-6	5-150 Hz: amplitude 3.5 mm Transition frequency: 8.42454 Hz acceleration: 1 g duration: 10 cycles cycle: 1 octave/minute
Shock resistance	EN 60068-2-27	15 g (147.15 m/s^2),
Protection type	EN 60529	front: IP65 cover: IP54 (only with all protective caps fitted)

4.7 Miscellaneous

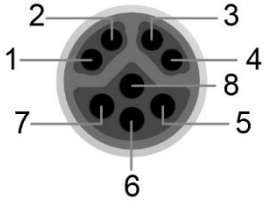
Article number	01-230-7321
Operating system	Salamander
Approvals	CE, UKCA

5 Pin Assignment

5.1 Rear Connectors



5.1.1 X1: M12 Y-coded (supply, Ethernet)

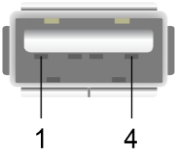


Pin	Function
1	Eth Tx+
2	Eth Tx-
3	Eth Rx+
4	Eth Rx-
5	VCC
6	CAN_L
7	CAN_H
8	GND

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.

5.1.2 X2: USB 2.0 (Type A)



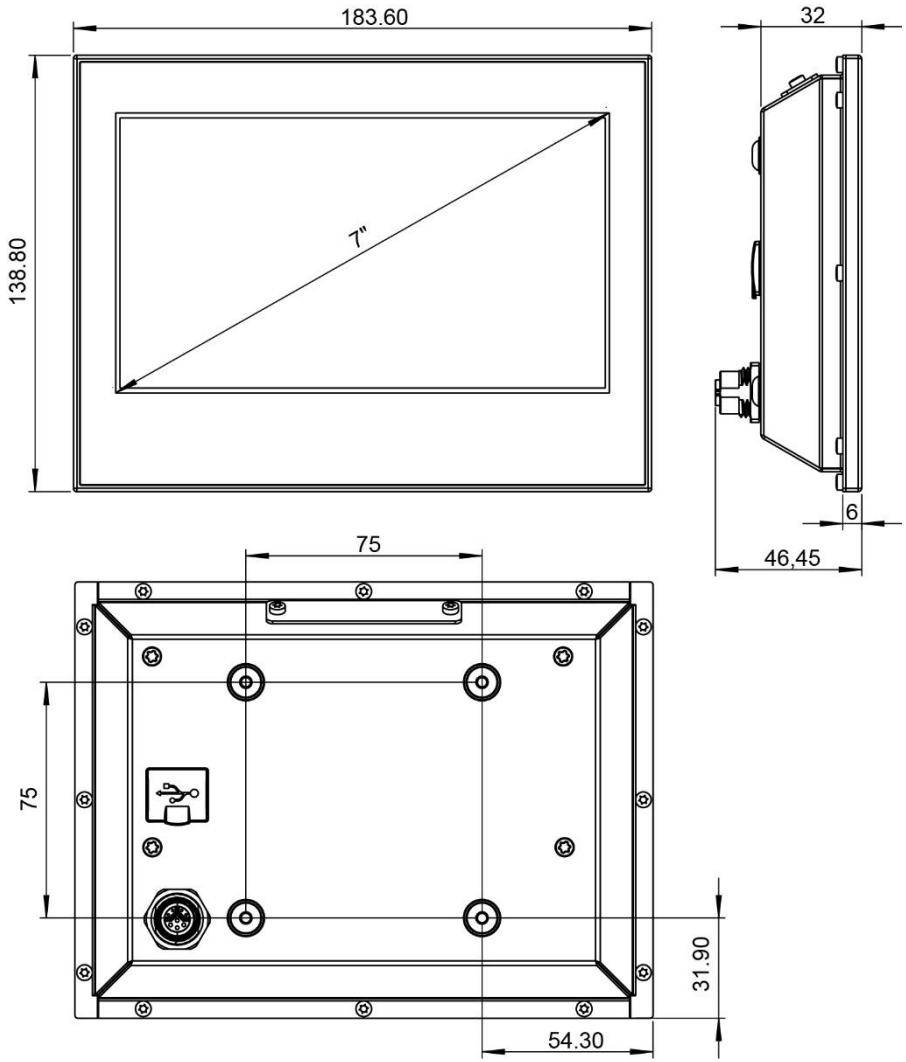
Pin	Function
1	+5 V, $I_{out,max}$ = 500 mA
2	D-
3	D+
4	GND

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.

5.2 Applicable Connectors

Connectors:
X1: M12 Y-coded (not included in delivery)
X2: USB 2.0 (Type A) (not included in delivery)

6 Mechanical Dimensions



Dimensions	183.6 x 138.8 x 46.45 mm (W x H x D)
Material	front: 5.0 aluminum anodized black 1 mm hardened glass front with black frame cover: sheet steel 1 mm powder coated RAL9005
Weight	740 g

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 for more information.

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

Damaged components can disrupt or damage the system.

7.2 Mounting Instructions

The device is designed for a carrier arm mount. It can be mounted on a carrier arm using a VESA75 bracket.

Locking screws: ISO7380-2 M5x8 10.9 ISK (included with delivery)
Minimum screw-in depth Screw depth 4 mm
Tightening torque: max. 4-4.2 Nm
Secure screws against loosening (e.g. screw-lock lacquer)

8 Wiring

8.1 Ground

The device is designed for the carrier arm mount. The ground is connected via the mount on the carrier arm or the cable shielding. It is therefore important to ensure that the carrier arm used has a connection to ground.

8.2 Wiring

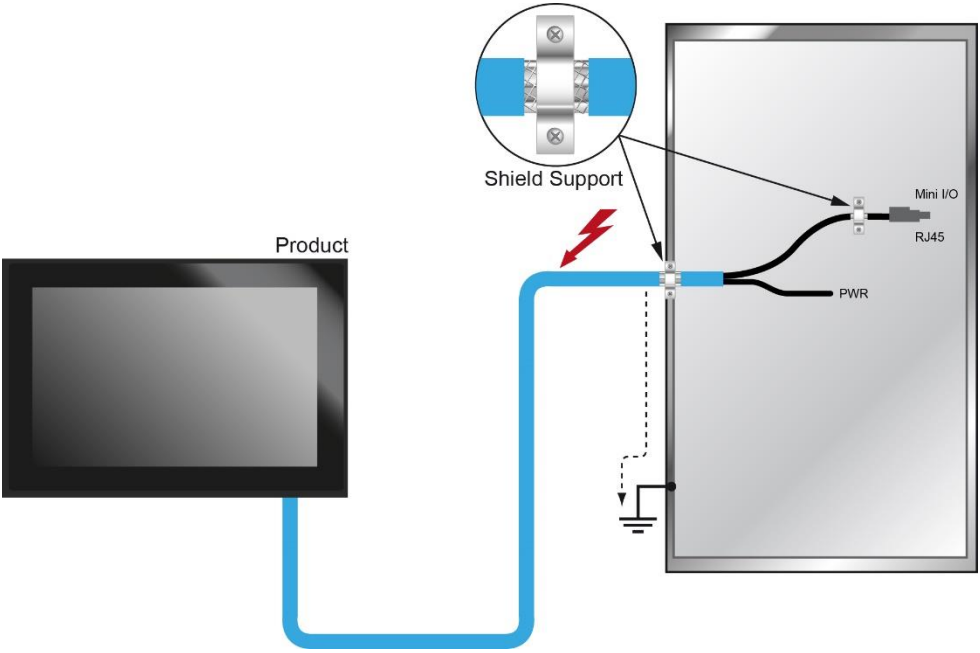
The ETT 7321 is connected using the M12 connector.
The connector socket is documented in chapter 5.1.1.

1) Turn off the current supply.
2) Install the wiring. Ensure the strands are equipped with ferrules and the shielding is connected (see 8.3).
3) Turn the supply on again.

For the dimensions of the wiring, the power loss / voltage drop in the supply lines must be taken into consideration. The voltage to the base station must be within the specified limits.

8.3 Shielding

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



8.4 ESD Protection

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

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

8.5 USB Interface Connections

The product has a USB interface. This interface can be used to connect various USB devices (keyboard, mouse, storage media, hubs, etc.). Several USB devices can be connected using a hub, which are then fully functional.

9 Operation/Start-up

9.1 Standard Configuration

Ethernet	X1	IP: 10.10.150.1	Subnet mask: 255.0.0.0

10 CAN Bus Setup

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

10.1 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!

10.2 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 2x 20 Ω, a minimum of 100 participants are possible.

10.3 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 kbit/s[1)]	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 Mbits/s	30 m

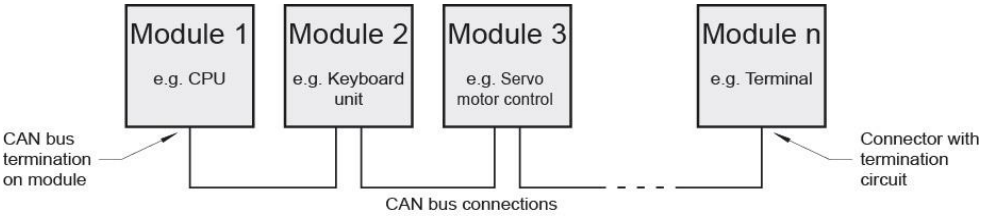
[1)] only between devices with EDGE2 technology

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

Note: For the CAN bus protocol: 1 kbits/s = 1 kBaud

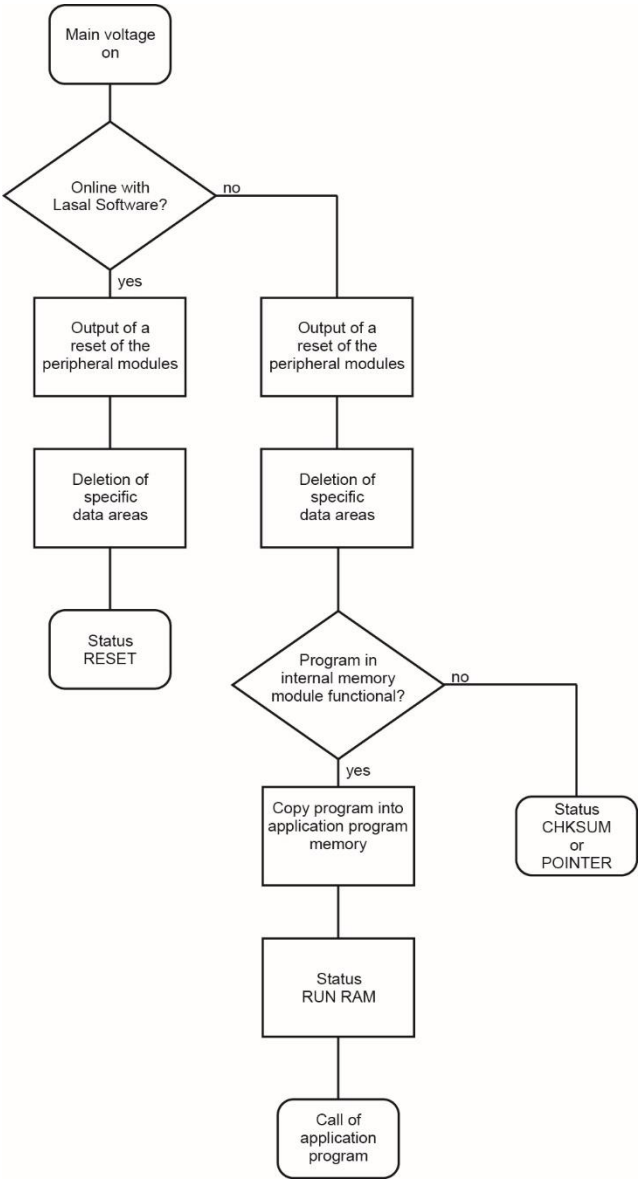
10.4 CAN Bus Termination

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 120 Ω resistor between CAN A (LOW) and CAN B (HIGH).

11 Process Diagram



12 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
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
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.
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	**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
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-EXCEP-TION-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 IN-STRUCTION**	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 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	Restsrt, report to error 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: Remaining time -SWBTRuntime: Preset value for 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
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.	

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.	
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**		

13 Transport/Storage

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

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

During transport, temperature and humidity fluctuations may occur. Ensure that no moisture condenses within or on the device be letting the device climatize to the room temperature while turned off.

14 Storage

When not in use, store the operating panel according to the storage conditions. See chapter 13.

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

15 Maintenance

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

15.1 Cleaning and Disinfecting the Touch Screen

CAUTION

Before cleaning and disinfecting he touch screen, it must be deactivated in order to prevent triggering functions or commands unintentionally; either by turning off the terminal or disabling the touch screen via the application!

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, an alcohol-based surface disinfectant free of lubricating agents can be used. For error-free function of the touch screen, the disinfectant cannot leave and residue on the screen.

WARNING

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

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

15.2 Service

This product was constructed for low-maintenance operation.

15.2.1 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 CLI command or the application, if the application engineer has provided the option.

```
calib
```

15.3 Repair

When sent for repair, the panel 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.

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

16 Buffer Battery

The exchangeable buffer battery ensures that the clock time (RTC) and SRAM data of the ETT 7321 is preserved in the absence of a supply voltage. A lithium battery is installed at the manufacturer.

After delivery of the ETT 7321 and storage of one year, the lifespan of the battery reaches 10 years, if the device is in operation (supply connected) most of the time.

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

	COMPANY	DATA
Lithium battery	RENATA	3.0 V/225 mAh

Battery order number: 01-690-028

Use type CR2032 batteries from RENATA only.

Disconnect the device from the supply before changing the battery.

WARNING

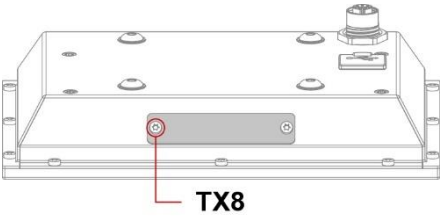
Danger of fire and explosion!

Slight to serious injuries can occur from incorrect use of the battery.

Do not recharge, disassemble or throw batteries into fire!

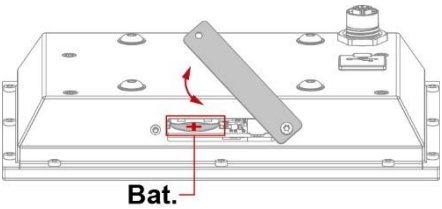
If the battery voltage is located between both thresholds of the monitoring switch, the battery can be detected as good during operation, but as low after turning off and on. If this is the case, it is recommended that the battery be replaced.

16.1 Exchanging the Battery: Option 1



1. Leave the device supply turned on.
2. Remove the locking screws on the battery cover with a TX8 Torx screwdriver.
3. Remove the battery cover.

When exchanging the battery, caution must be taken to avoid a short circuit since it could cause a defect in the terminal!



4. Using the strap, remove the battery from the holder.
5. Install the new battery with the correct polarity (+ pole facing up, toward cover).
6. Close the battery cover and tighten the locking screws.

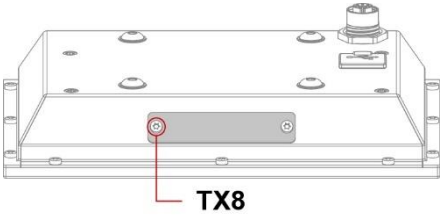
16.2 Exchanging the Battery: Option 2

1. The SRAM data are saved to the microSD card of Flash memory via the CLI command “sramsave *FILENAME”*.

Example: sramsave C: \sram.backup

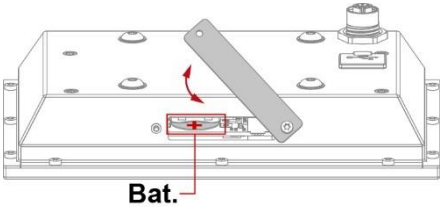
The command can be run via the remote CLI from LASAL CLASS 2 or direct input on the device.

ATTENTION: If the data are not saved first, the settings in the CPU module are lost!



2. Turn off the device supply.
3. Remove the locking screws in the battery cover with a TX8 Torx screwdriver.
4. Remove the battery cover.

When exchanging the battery, caution must be taken to avoid a short circuit since it could cause a defect in the terminal!



5. Using the strap, remove the battery from the holder.
6. Install the new battery with the correct polarity (+ pole facing up, toward cover).
7. Close the battery cover and tighten the locking screws.

8. Load the SRAM data from the Flash using the CLI command “sramload *FILENAME”* and set the time. The time and date can be set via set Time and set Date.

Example: sramload C: \sram.backup

17 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:

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

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

18 Disposal

Should you need to dispose of the device, the national electronic scrap regulation must be observed.

The panel cannot be discarded with domestic waste.

19 Accessories

19.1 Cable

See documentation Connection Cables for Operating Devices.

Documentation Changes

Change date	Affected page(s)	Chapter	Note
06.12.2022	15	4.7 Miscellaneous	UKCA conformity
12.07.2023	12 24	4.1 Performance Data 10 CAN Bus Setup	CAN added
21.08.2023	16	5.1.1 X1: M12 Y-coded (supply, Ethernet)	Pin assignment corrected
12.01.2024	24	10.4 CAN Bus Termination	deleted CAN Bus switchable
04.11.2024	38	16 Buffer Battery	Battery data changed