

ETT 736

Touch Operating Terminal

Instruction Manual

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Translation of the Original Instructions

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Touch Operating Panel

ETT 736

The ETT 736 is an intelligent panel for visualizing, operating and monitoring automated processes. Process diagnosis, operating and monitoring automated functions are simplified using this terminal.

An analog 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 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 Manual

This operating manual contains all information required to operate this product.

This 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

- HW IP Address Settings

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

1.3 Contents of Delivery

ETT 736

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 all guidelines.

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

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

WARNING



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

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

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

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

CAUTION



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

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

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

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



Information

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



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

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 LASAL CLASS 2 and LASAL SCREEN software.

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 736 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 keyword “EU Declaration of Conformity”.

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 (RAM)	512-Mbyte DDR3
Internal remnant data memory	512-kbyte SRAM (battery buffered)
Internal storage device	512-Mbyte microSD
Internal I/O	yes
Interfaces	1x USB 2.0 (Type A) 1x USB-OTG (host/device), type Mini B 2x Ethernet 10/100 (RJ45) 1x CAN bus (6-pin Weidmüller) 8x dig. I/Os (8-pin Phoenix)
Internal interfaces	1x TFT-LCD color display 1x Touch
Display	7" TFT color display
Resolution	WVGA 800 x 480 pixels
Operating panel	4-wire touch screen (analog resistive)
Signal generator	no
Real-time clock	yes (battery buffered)
Cooling	passive (fanless)

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

4.2 Digital Inputs

Number	8	
Input voltage	typically +24 V	maximum +30 V
Signal level	low: < +4.5 V	high: > +14 V
Switching threshold	typically +11 V	
Input current	typically 5 mA at +24 V	
Input delay	typically 5 ms	

4.3 Digital Outputs

Number	8
Short-circuit proof	yes
Maximum permissible continuous load current/channel	0.5 A
Maximum total current (all 8 channels)	2 A (100 % of on time)
Voltage drop over power supply (output active)	≤ 1 V
Residual current output (off)	≤ 12 μ A
Turn-on delay	< 400 μ s
Turn-off delay	< 400 μ s
Max. braking energy of inductive loads	1 channel 0.12 [Joules]

4.4 Electrical Requirements

Supply voltage	typically +24 V DC $\pm 20\%$ (SELV/PELV) UL: Class 2 or LVLC	
Protection class	III	
Current consumption of (+24 V) power supply	typically 350 mA (without externally connected de- vices)	maximum 560 mA (with external devices connected)
Inrush current	maximum 2 A (for 10 μ s)	

USA and Canada:

The supply must be limited to:

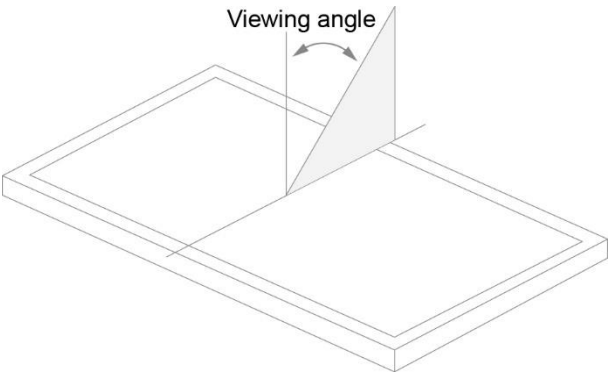
- a) max. 5 A at voltages from 0-20 V DC, or
- b) 100 W at voltages from 20-60 V DC.

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

4.5 Display

Type	7" TFT LCD color display
Resolution	WVGA 800 x 480 pixels
Color depth	16 Bit RGB (65K colors)
LCD mode	normal 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	typically 500:1
Brightness	typically 280 cd/m ²
Angle CR ≥ 10	left and right 70°, 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

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



1) If no display data is available, 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.

4.6 Input

Input	resistive touch screen
-------	------------------------

4.7 Control Unit

Operating panel	touch screen (analog resistive)
Maximum number of fingers	1
Operation with thin gloves	yes
SIGMATEK touch pen (passive)	yes
Handwriting recognition	no
Palm recognition	no
spray water detection ¹⁾	yes
moisture detection ²⁾	no
Cleaning	see chapter: Cleaning and Disinfecting the Touch Screen



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

¹⁾ Detects single water droplets on the touch screen and remains operable.
²⁾ Detects larger amounts of fluids on the touch screen and deactivates it.

4.8 Environmental Conditions

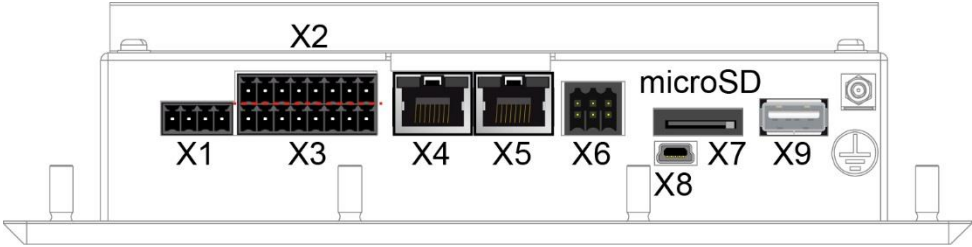
Storage temperature	-10 ... +85 °C	
Environmental temperature	0 ... +45 °C	
Humidity	10-95 %, non-condensing	
Installation altitude above sea level	0-2000 m without derating > 2000 m up to a maximum of 5000 m with derating of the maximum environmental temperature by 0.5 °C per 100 m	
Operating conditions	pollution degree 2	
EMC resistance	according to EN 61000-6-2:2007 (industrial area)	
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 (147.15 m/s ²)
Protection type	EN 60529 protected through the housing	front: IP65 cover: IP20

4.9 Miscellaneous

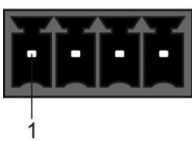
Article number	01-230-736
Operating system	Salamander
Default IP address	10.10.150.1
Standard	designed according to UL
Approvals	CE

5 Interfaces

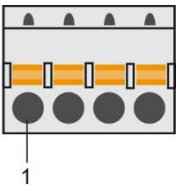
5.1 Bottom Connections



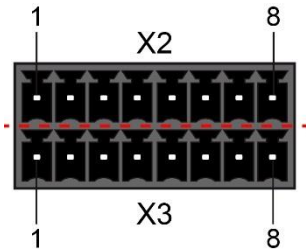
5.1.1 X1: Supply (4-pin Phoenix RM 3.5)



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



5.1.2 X2, X3: 8 Digital In- and Outputs (8-pin Phoenix RM 3.5 mm)



X2: Pin Assignment

Pin	Function
1	output 1
2	output 2
3	output 3
4	output 4
5	input 1
6	input 2
7	input 3
8	input 4

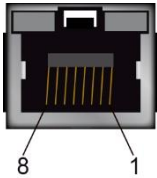
OUTPUTS : INPUTS

1	2	3	4	1	2	3	4
5	6	7	8	5	6	7	8

X3: Pin Assignment

Pin	Function
1	output 5
2	output 6
3	output 7
4	output 8
5	input 5
6	input 6
7	input 7
8	input 8

5.1.3 X4, X5: Ethernet 10/100 (RJ45)



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



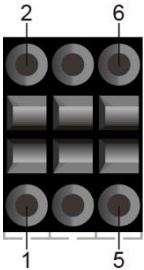
Problems can arise if a control is connected to an IP network, which contains devices that are not running with a SIGMATEK operating system. With such devices, Ethernet packets could be sent to the control with such a high frequency (i.e. broadcasts), that the high interrupt load could cause a real-time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

For use in local networks only, not in telecommunication circuits!

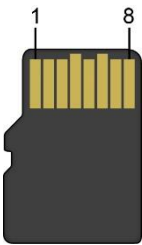
5.1.4 X6: CAN (6-pin Weidmüller RM 3.5 not galvanically separated)



Pin	Function
1	CAN A (LOW)
2	CAN B (HIGH)
3	CAN A (LOW)
4	CAN B (HIGH)
5	GND
6	GND



5.1.5 X7: microSD Card



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

Size	Order Number
512-Mbyte	12-630-055

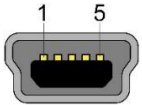


It is recommended that only storage media provided by SIGMATEK be used.

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

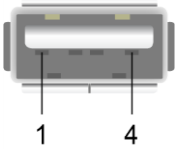
The microSD card is not intended as an exchangeable medium and should therefore be removed from the card holder for maintenance purposed only.

5.1.6 X8: USB 2.0 (Type Mini B) (can be used with OTG cable as USB host, otherwise USB Device for service purposes)



Pin	Function
1	+5 V, I _{out max.} = 500 mA
2	D ⁻
3	D ⁺
4	ID
5	GND

5.1.7 X9 USB 2.0 (Type A)



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

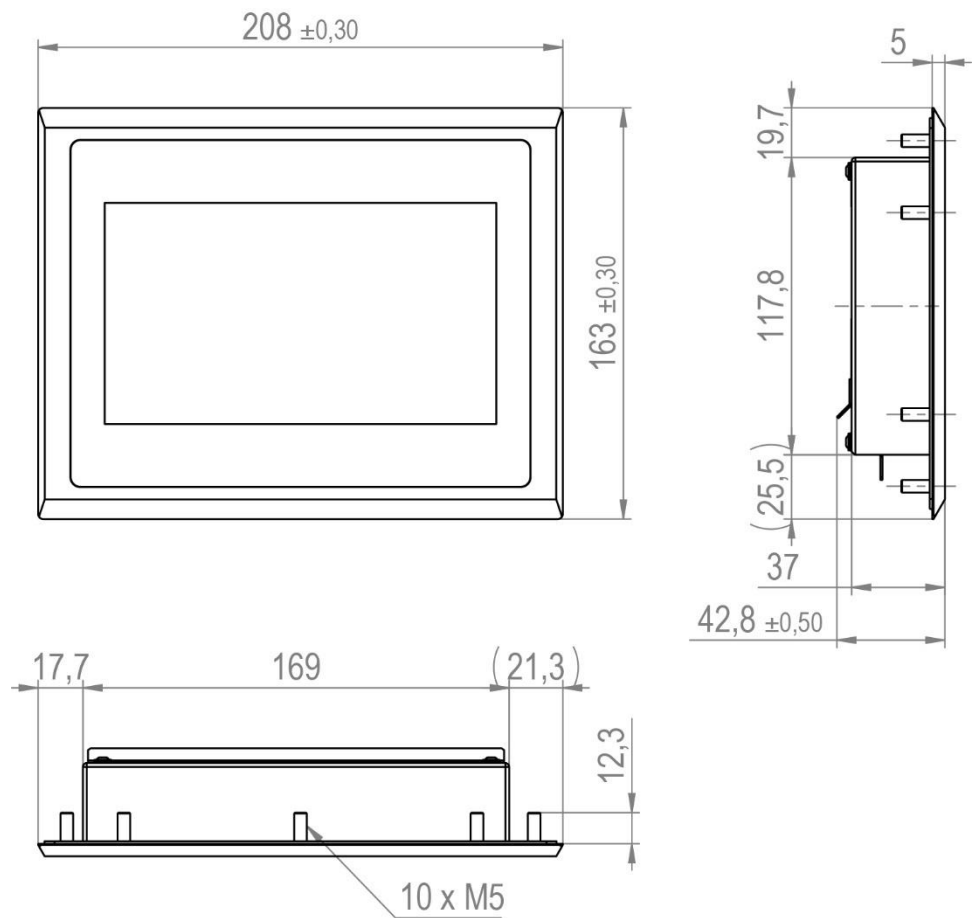


It should be noted that many of the USB devices on the market do not comply with USB specifications; this can lead to device malfunctions. It is also possible that these devices will not be detected at the USB port or function correctly. It is therefore recommended that the respective USB stick be tested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

5.2 Applicable Connectors

- X1:** 4-pin Phoenix plug with spring terminal FK-MCP 1.5/ 4-ST-3.5 (included with delivery)
- X2, X3:** 2x 8-pin Phoenix plug with spring terminal FMC 1.5/ 8-ST-3,5 (not included with delivery)
- X4, X5:** 8-pin RJ45 (not included with delivery)
- X6:** 6-pin Weidmüller plug B2L3.5/6 (not included with delivery)
- X8:** USB Type Mini B to USB Type A cable (device) (no included with delivery)
- X9:** USB 4-pin, Type A (downstream connector) (not included with delivery)

6 Mechanical Dimensions



Dimensions	208 x 163 x 42.8 mm (W x H x D)
Material	front plate: Front foil with underlying touch sensor in glass-beaded stainless steel frame housing: stainless steel
Weight	1.15 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 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.

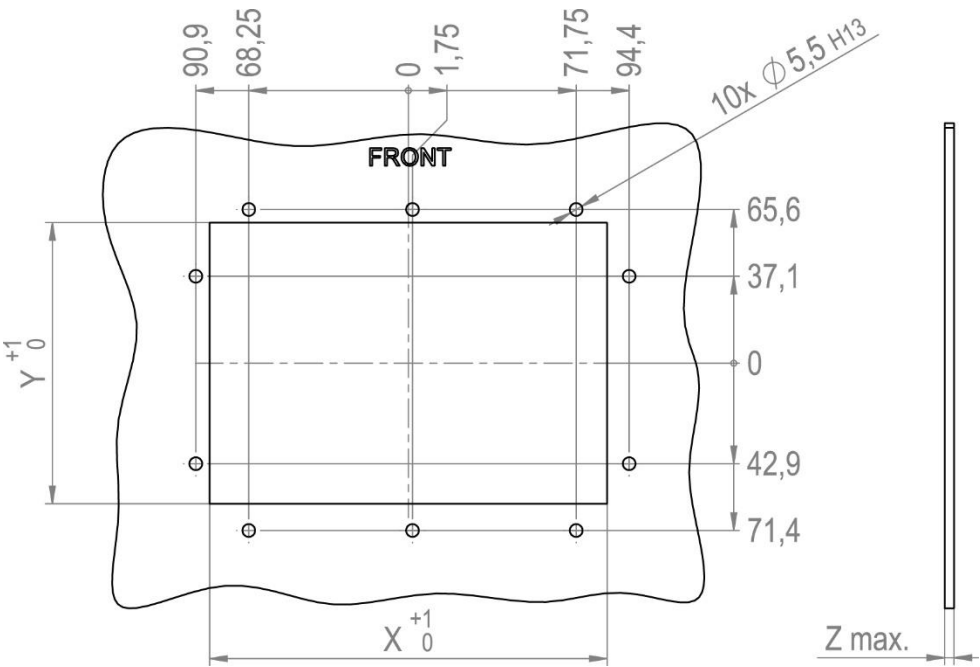
Damaged components can disrupt or damage the system.

7.2 Installation

The following instructions must be followed when installing the terminal:

- To avoid damage to the stainless steel frame, it is important to ensure that during installation, the contact surface is clean (free of debris, uneven areas). Unevenness can lead to contamination from dust and water.

7.3 Required Cutout for Mounting the Terminal



General positional tolerance for boreholes: ± 0.1

Hexagonal nut: ISO4032-M5-8

Washers: ISO7091-5-100HV

Tightening torque: 5-6 Nm

Control cabinet cutout width X	170 mm
Control cabinet cutout height Y	120 mm
Maximum thickness of control cabinet wall Z	4 mm

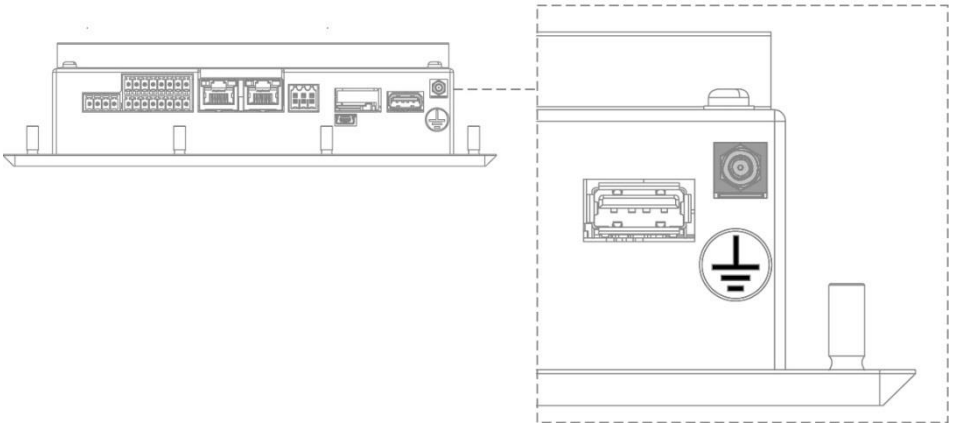
8 Wiring

8.1 Protective Earth Connection

WARNING



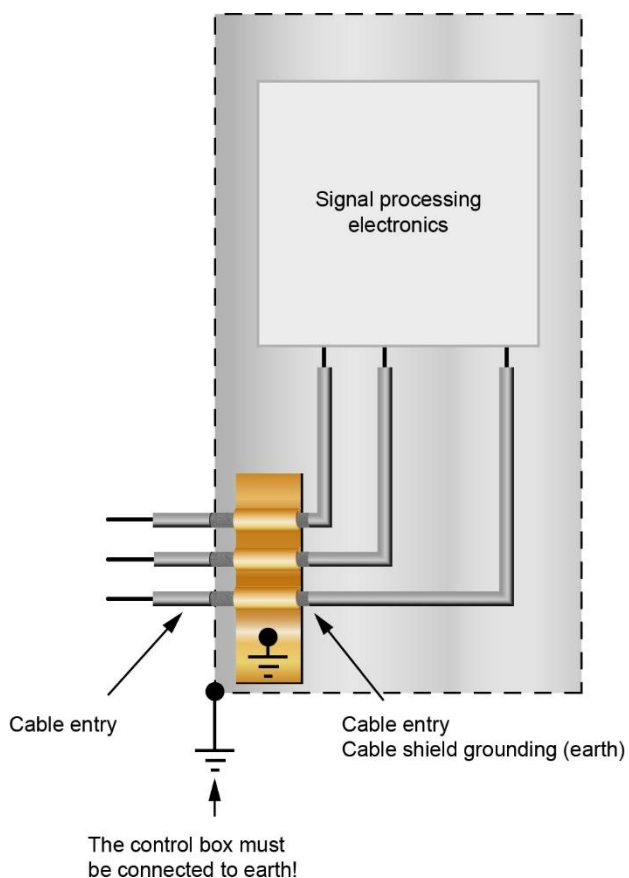
The terminal must be grounded to protective earth (PE) via the M3 threaded bolts. In addition, ensure that when installing into the control cabinet, a large grounding surface is provided. It is essential to establish a low-Ohm connection with ground to ensure error-free function. The ground connection must be made with the maximum wire cross-section and largest (electrical) surface possible. The cable length of the ground connection must also be kept as short as possible.



8.2 Shielding

For Ethernet, CAT5e-compliant cables (STP - Shielded Twisted Pair) are recommended. The cable shielding is connected to ground via the RJ45 connector. Noise signals can then be prevented from reaching the electronics and affecting the function.

All cable shielding should also be placed 10 cm before the remote station or device over wide surface.



8.3 ESD Protection



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.

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.

8.4 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 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.

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 120 Ω , 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 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 Mbit/s	30 m

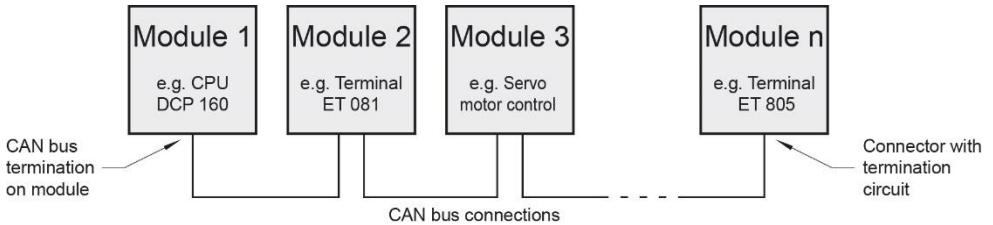
(1)only between devices with EDGE2 technology

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

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

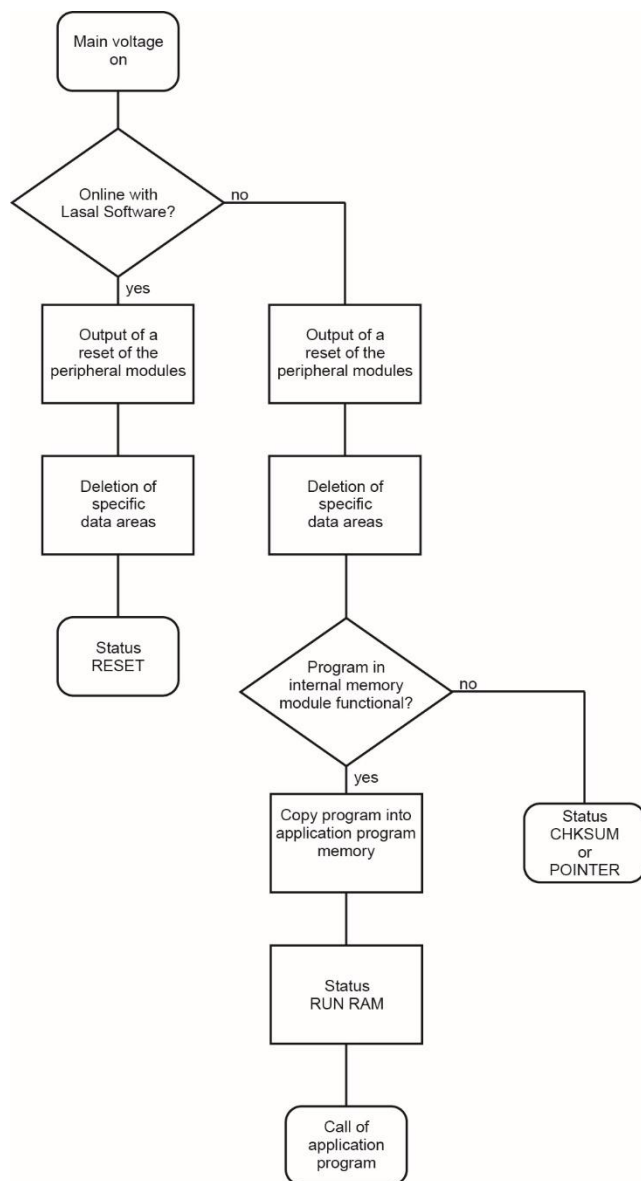
9.4 CAN Bus Termination

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).

10 Process Diagram



11 Status and Error Messages

Status and error messages are displayed in the LASAL CLASS software status test. POINTER or CHKSUM messages are 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 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 over 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-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	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 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: 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		

12 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 by letting the device climatize to the room temperature while turned off.

13 Storage



When not in use, store the operating panel according to the storage conditions. See chapter 12.

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

14 Maintenance



During maintenance as well as servicing, the safety instructions from chapter 2 must be observed.

14.1 Cleaning and Disinfecting the Touch Screen

CAUTION



Before cleaning and disinfecting the 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.

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!

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

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.

The calibration can be run either with the following CLI command or via the application (as long as it is provided by the application engineer).

```
calib
```

14.3 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.

15 Buffer Battery

A lithium battery is installed at the manufacturer.

The battery has enough capacity to preserve data in the absence of a supply voltage for approximately 5 years.

	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!

15.1 Data Retention Battery Exchange

The exchangeable buffer battery ensures that the following data are preserved in the absence of a supply voltage:

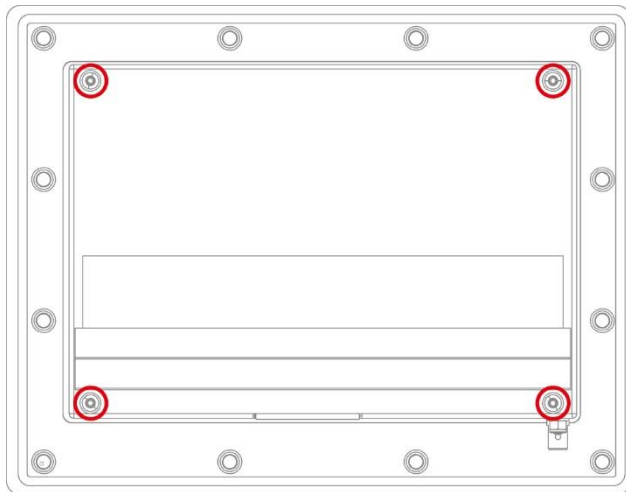
- Time:
- SRAM data

If the battery is empty, the following settings are reset or data deleted.

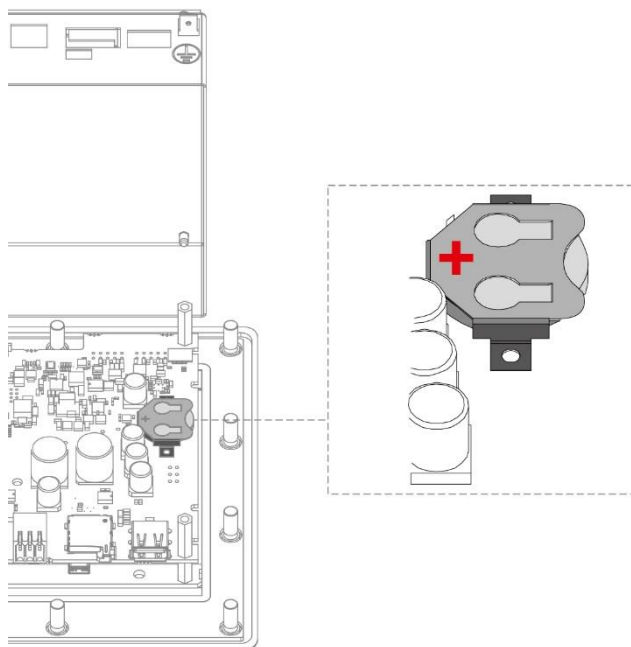
- Clock time (reset to default value)
- SRAM data (deleted)

15.2 Exchanging the Battery: Option 1

1. Disconnect the ETT 736 supply



2. Loosen the four locking screws (Torx) on the back of the terminal with a TX9 screwdriver.



3. Lift the rear panel of the terminal.

4. Reconnect supply.

CAUTION


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. Insert the new battery with the correct polarity (plus side facing the back of the terminal) Disconnect the supply, replace the back panel of the terminal and tighten the locking screws.

7. Connect ETT 736 supply

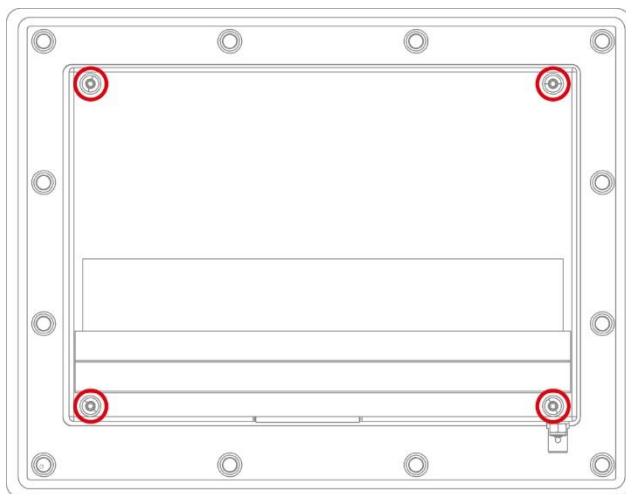
15.3 Exchanging the Battery: 2. Option

1. The SRAM data are saved in the Flash using the CLI command SRAM Save.

CAUTION

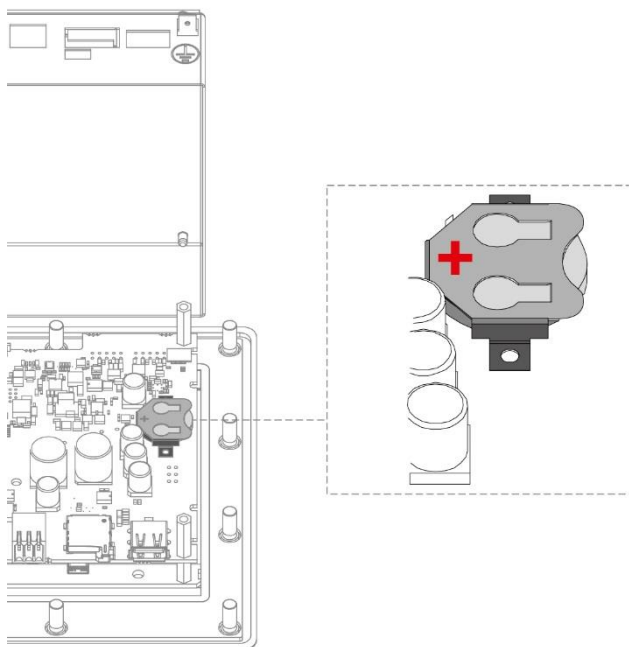
If the data is not previously saved, the settings in the terminal are lost

2. Disconnect the ETT 736 supply



2. Loosen the four locking screws (Torx) on the back of the terminal with a TX9 screwdriver.

3. Lift the rear panel of the terminal.



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

6. Insert the new battery with the correct polarity (plus side facing the back of the terminal) and replace the back panel of the terminal and tighten the screws.

7. Load the SRAM data from the Flash using the CLI command SRAM Load and set the time. The time and date can be set via set Time and set Date.

16 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
- Continuously changing screen content (e.g. video)

17 Accessories

17.1 Buffer Battery

Description	Order Number
Renata CRC2032 (225 mAh)	01-690-028

18 Disposal



When disposing of the panel, the national electronic scrap regulation must be observed.

The panel cannot be discarded with domestic waste.



Documentation Changes

Change date	Affected pages	Chapter	Note
13.11.2023	22	5.2 Applicable Connectors	X1: included in delivery X2, X3 plug corrected
04.11.2024	43	15 Buffer Battery	Battery data changed

