

# **HZS 351**

## **Touch Room Unit**

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## Touch Room Unit

## HZW 351

The HZS 351 is an intelligent terminal for programming and visualization of automated processes. As a room operating device, the terminal is equipped with a temperature sensor (starting with HW 3.0 with a temperature and humidity sensor).

A resistive touch screen serves as the input medium for process data and parameters. The output is shown on a 3.5" TFT color display. To save energy, the display is deactivated in sleep mode. When the screen surface is touched, the terminal is activated and then deactivated a few minutes after the last input.



With the LSE mask editor, graphics can be created on the PC, then stored and displayed on the terminal. Data is exchanged over a CAN bus.

The two-part HZS 351 is mounted on the wall in a flush-mounted box or with screw bosses in the corners of the operating terminal in a panel.

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# 1 Technical Data

## 1.1 Performance Data

|                      |                                        |
|----------------------|----------------------------------------|
| SDRAM                | 8 Mbyte                                |
| (Flash)              | 1 Mbyte                                |
| Interfaces           | 1x CAN bus (fixed terminal strip)      |
| Terminating resistor | 120Ωsettable with DIP-Switch           |
| Data rate            | maximum 1 Mbits/s                      |
| Display              | 3.5" TFT color display                 |
| Resolution           | 320 x 240 pixels                       |
| Control panel        | 4-wire touch screen (analog resistive) |

## 1.2 Temperature Sensor (until HW 2.xx)

|                               |         |
|-------------------------------|---------|
| Number                        | 1       |
| Resolution                    | 12-bit  |
| Temperature resolution        | 0.1 °C  |
| Accuracy                      | ±0.5 °C |
| Temperature measurement range | 0-50 °C |

### 1.3 Temperature and Humidity Sensor (since HW 3.00)

|                                  |                             |
|----------------------------------|-----------------------------|
| Number                           | 1                           |
| Resolution                       | 12-bit                      |
| Temperature resolution           | 0.1 °C                      |
| Temperature measurement accuracy | ±0.5 °C                     |
| Temperature measurement range    | 0-50 °C                     |
| Humidity resolution              | 0.1 % RH                    |
| Humidity measurement accuracy    | ±3 % RH (*)                 |
| Humidity measurement range       | 10-80 % RH (non-condensing) |

(\*) Maximum error at 20 to 80 % RH, without hysteresis error to errors due to long-term drift.

### 1.4 Electrical Requirements

|                     |                       |               |
|---------------------|-----------------------|---------------|
| Supply voltage      | 230 V AC ±10 %, 50 Hz |               |
| Current consumption | typically 15 mA       | maximum 25 mA |

### 1.5 Terminal

|                                                                         |                                                                                                   |  |
|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--|
| Operating unit dimensions                                               | 93.3 x 93.3 x 12.1 mm (W x H x D)                                                                 |  |
| Installation depth of the supply for wall mounting in flush-mounted box | 44 mm (installation of supply in flush-mounted box D = 65 mm)<br>in accordance with ÖNORM E8606-1 |  |
| Installation dimensions with panel mount                                | 52 x 52 x 44 mm (W x H x D)<br>Corner hole spacing 81.3 mm                                        |  |
| Material                                                                | Plastic<br>color: RAL9010                                                                         |  |
| Weight                                                                  | circa 220 g                                                                                       |  |

## 1.6 Environmental Conditions

|                     |                                                   |      |
|---------------------|---------------------------------------------------|------|
| Storage temperature | -10 ... +70 °C                                    |      |
| Ambient temperature | 0 ... +55 °C                                      |      |
| Humidity            | 10-80 %, non-condensing                           |      |
| EMV product norm    | EN 60730-1                                        |      |
| EMC stability       | in accordance with EN 61000-6-2 (industrial area) |      |
| EMC stability       | in accordance to EN 61000-6-3 (living area)       |      |
| Protection type     | EN 60529                                          |      |
|                     | Supply unit in the flush-mounted box              | IP20 |
|                     | Complete unit installed                           | IP30 |
|                     | Mounting in a panel                               | IP30 |

## 1.7 Display

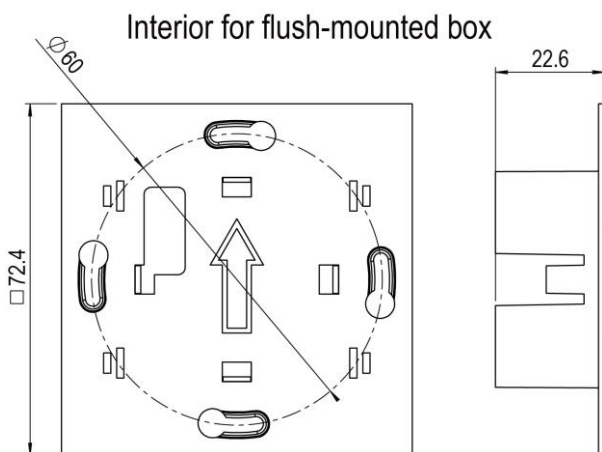
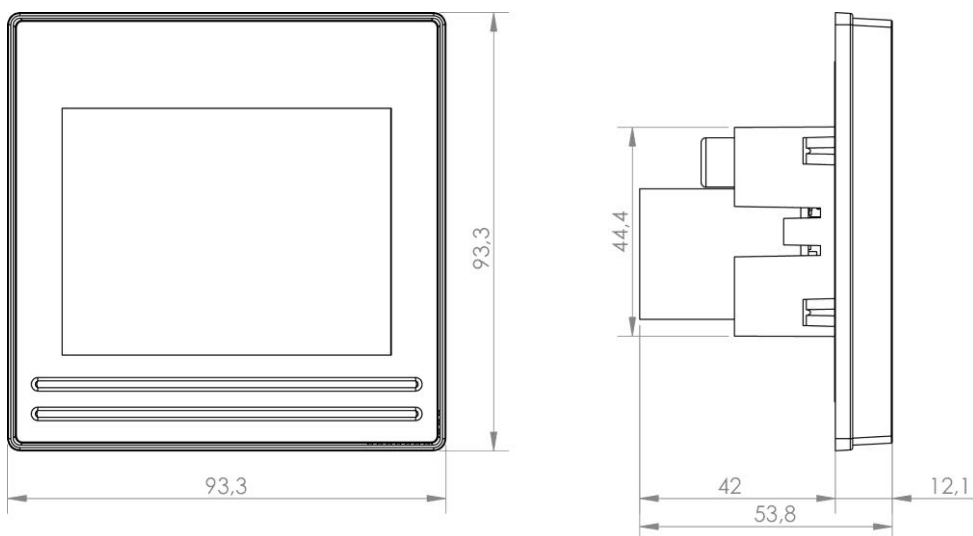
|                  |                                          |
|------------------|------------------------------------------|
| Type             | 3.5" LC graphics display                 |
| Resolution       | 320(RGB) x 240                           |
| Pixel size       | 0.219 x 0.219 mm                         |
| Number of pixels | 320*3 (RGB) x 240 pixels                 |
| Active surface   | 70.08 x 52.56 mm                         |
| Color depth      | 24-bit                                   |
| Backlighting     | 6x LED, white, adjustable                |
| Contrast         | 400:1                                    |
| TOUCH            | resistive                                |
| Brightness       | typically 350 cd/m²                      |
| Visible field    | left and right 70°, below 70°, above 60° |

## 1.8 Miscellaneous

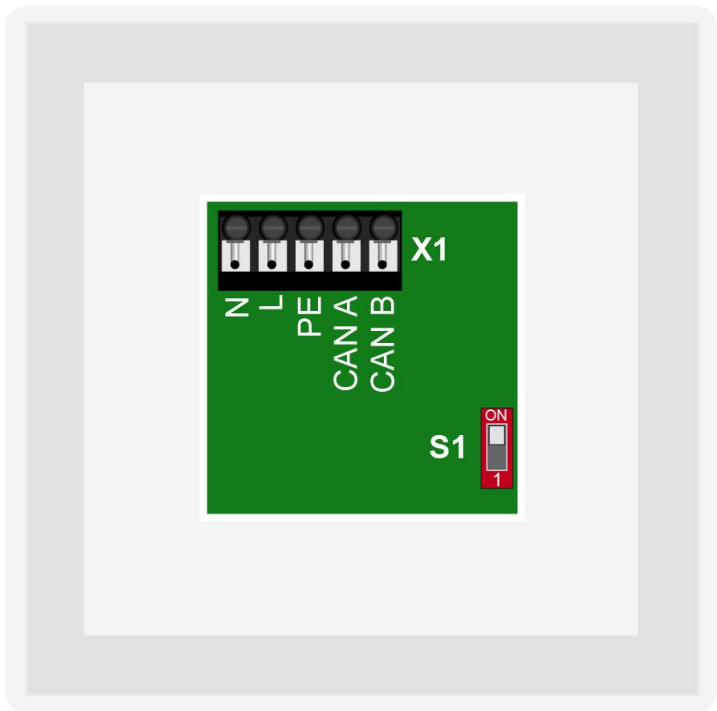
|                  |            |
|------------------|------------|
| Article number   | 05-895-351 |
| Hardware version | 1.x-3.x    |



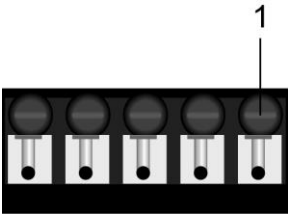
## 2 Mechanical Dimensions



### 3 Connector Layout



X1: Supply Terminal (Weidmüller LSF-SMT 5.00/05/180 3.5SN BK TU)



| Pin | Function     |
|-----|--------------|
| 1   | CAN B (HIGH) |
| 2   | CAN A (LOW)  |
| 3   | PE           |
| 4   | L            |
| 5   | N            |

Connectible Leads

| Wiring                        | Min.     | max.     |
|-------------------------------|----------|----------|
| Connection dimensions         | 0.13 mm² | 1.5 mm²  |
| Conductor cross-section AWG   | AWG 24   | AWG 16   |
| Single wire                   | 0.2 mm²  | 1.5 mm²  |
| Fine-stranded with end sleeve | 0.25 mm² | 1.5 mm²  |
| End sleeve with collar        | 0.25 mm² | 0.75 mm² |

S1: CAN Bus Termination (1-pin DIP-Switch)



ON => CAN bus termination with 120 Ω

## 4 Mounting Instructions

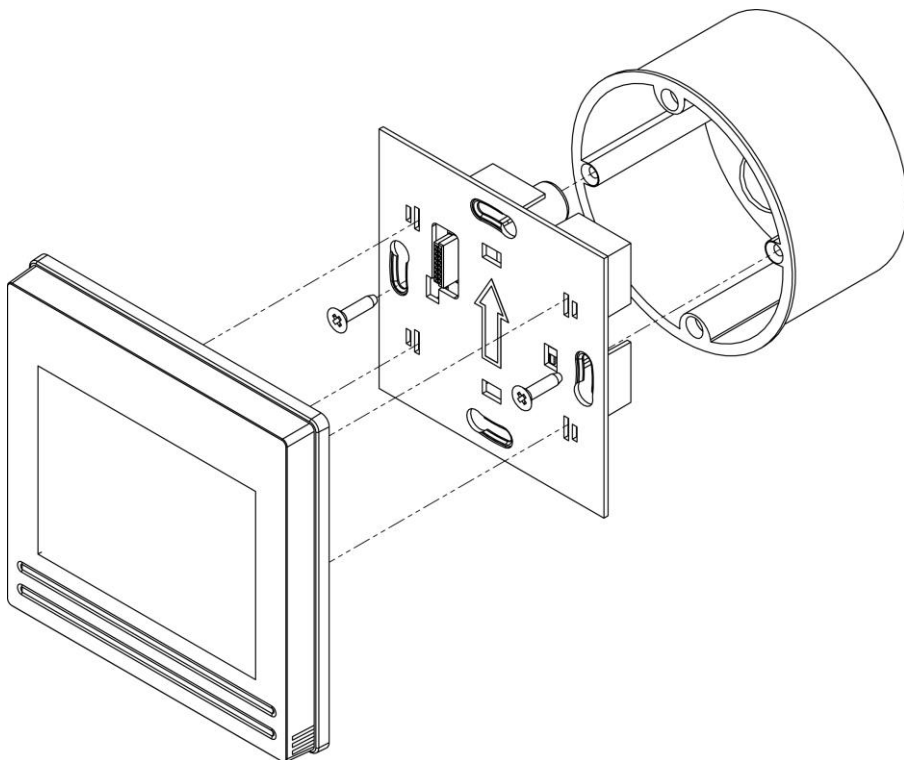
### 4.1 Wall Mount

The supply component is installed and wired in a flush-mounted box with a diameter of 65 mm. It is thereby important to ensure the flush-mounted box is mounted flush with the wall.

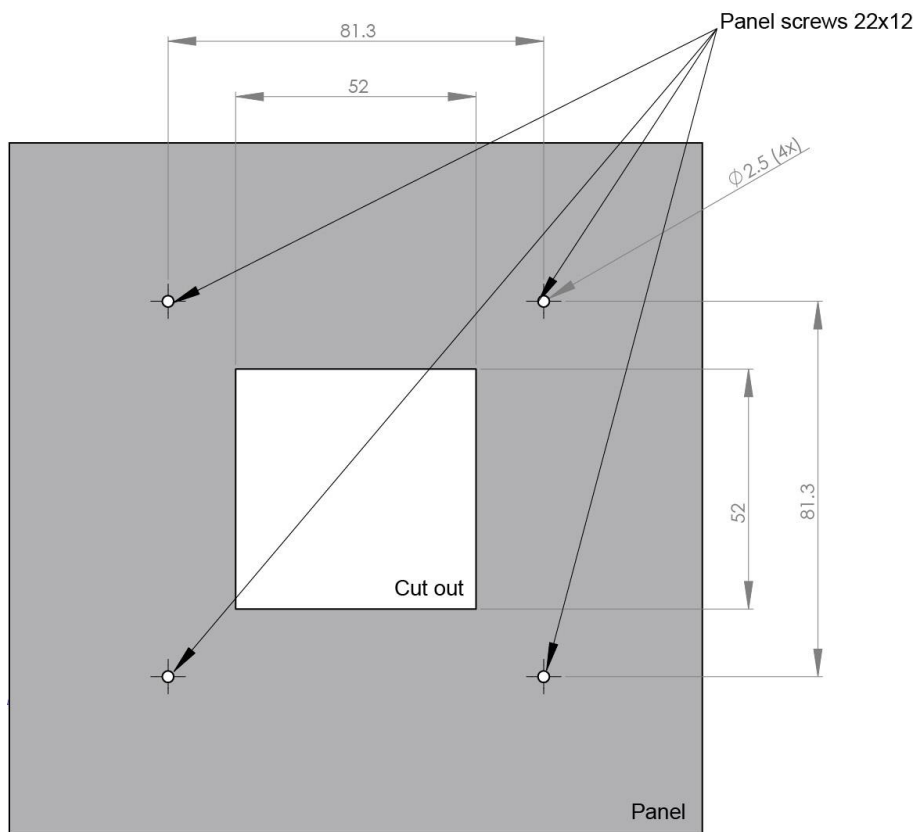
It must also be ensured that the arrow engraved on the insert plate point upward (see diagram).

Before installing, check whether the CAN bus (termination resistance switchable via the DIP switch) is required. After the electrical installation, the supply unit is mounted at the location using countersunk screws.

The operating terminal is the simply inserted into the flush-mounted box.



## 4.2 Panel Mount

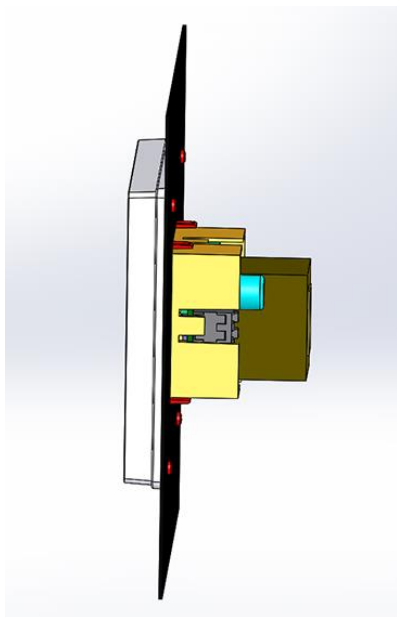


Panel screw length for a  
panel thickness of 2 mm:

**Panel screw 22x12**

Panel screw length for a  
panel thickness > 2 mm:

**Panel thickness + 10 mm = Panel screw length**



The touch room unit is inserted through the cutaway of the panel and secured from the back using 4 screws.

Scheme

## 5 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.

### 5.1 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!

During the initial start-up of the terminal, the setup is activated (see following image), in which the station number is set. This value must match the configuration in the software project.

### 5.2 CAN Bus Data Transfer Rate

Various data transfer rates (baud rates) can be set on the CAN bus. As with the station number, the baud rate is defined in the setup during the initial start-up (see the following image). This value must match the configuration in the software project.

The longer the bus line is, the lower the data transfer rate that must be selected.

| Value | Baud Rate   | Maximum Length |
|-------|-------------|----------------|
| 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           |

These values apply to the following cable: 120  $\Omega$  Twisted Pair.

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



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CanNode: 1 - +

CanBaud: 4 [100] - +

CanRxMsgID: 0x20 CanTxMsgID: 0x40

RET

### 5.3 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  $\Omega$ , at least 100 participants are possible.

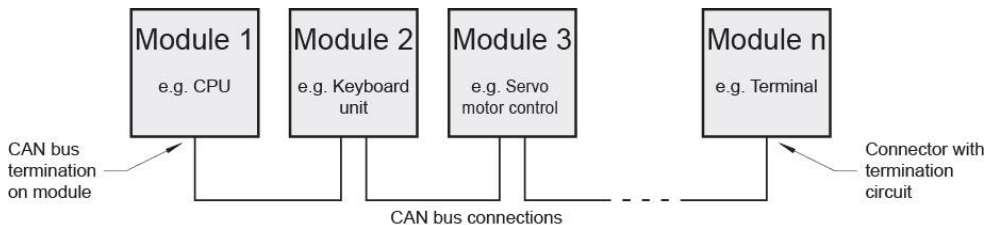
### 5.4 Wiring the CAN Bus

For the CAN bus wiring, a shielded cable containing two twisted pairs is used. The wires serve to transmit the CAN-A and CAN-B signals, while the shielding provides the reference potential CAN\_GND. Since the HZS 351 has no connection for CAN\_GND, it is sufficient in this case, to connect the shielding on one side at the opposite end.



## 6 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  $\Omega$  resistor between CAN A (LOW) and CAN B (HIGH).**

## 7 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 onto 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 into 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                                                    |
|-------------|------------------|----------------------------------------------------------|---------------------------------------------------------|
| 24.04.2014  | 4                | 1.4 Terminal                                             | Data updated                                            |
|             | 9                | 4.2 Panel Mount                                          | Chapter added                                           |
|             | 10               | 5.1 CAN Bus Station Number                               | Text updated                                            |
|             |                  | 5.2 Number of CAN Bus Participants                       | Text updated                                            |
| 18.06.2014  | 3                | 1.1 Performance Data                                     | Table updated                                           |
|             |                  | 1.2 Temperature Sensor                                   |                                                         |
|             | 5                | 1.6 Display                                              |                                                         |
| 25.03.2016  | 5                | 1.6 Display                                              | Table updated                                           |
| 03.03.2017  | 4                | 1.5 Environmental Conditions                             | Correction of temperature description                   |
|             | 6                | 2 Mechanical Dimensions                                  | Dimensional drawing of flush-mounted box expanded.      |
|             | 9                | 4.1 Wall Mount                                           |                                                         |
|             | 12, 13           | 5.1 CAN Bus Station Number                               | Notes and installation diagrams expanded                |
|             |                  | 5.2 CAN Bus Data Transfer Rate                           | Note on the setup expanded<br>Screenshot setup expanded |
|             | 13               | 5.3 Number of CAN Bus Participants<br>5.4 CAN Bus Wiring | Chapter moved<br>Chapter expanded                       |
| 07.02.2019  | 12               | 5.2 CAN-Bus Data Transfer Rate                           | Value 0 - Baudrate 615 kBit/s deleted                   |
| 15.07.2019  | 3                | 1.3 Temperature and Humidity Sensor                      | Chapter added                                           |

