

Alarm Unit Type M3118

OPERATING MANUAL



Warranty:

Mostec warrants this product to be free of manufacturing defects for a 2-year period after the original date of purchase. Within this period, defective products will be repaired free of charge provided that the defect occurred during normal operation. This warranty does not cover damage to the product resulting from ordinary usage such as front panel scratches, broken control elements and corrosion, etc. The customer is responsible for shipping and packing charges for products returned under warranty to Mostec. Mostec warrants this product beyond the 2-year warranty period for an additional 2 years in case of long term damages due to improper manufacturing. Such damages as poorly soldered joints or other assembly problems are also covered by the warranty. Transportation damages are not covered by the warranty and should be referred to the respective delivery service.

Technical data

The alarm unit M3118 is used to check or control any type of signal current or voltage. It converts the input signal to an internal standard signal of for example 0 to 100.0%. In this range two alarm contacts can be set independently. The 4-digit measuring value, as well as the status of the alarm contacts, is shown on an easy to read LCD-Display.

All settings as alarm values, hysteresis, range and operating mode of the floating contacts can be set with a link cable, connected to a personal computer or a laptop.

Both limit values can also be changed directly on the device using push buttons.

A typical application would be to measure and monitor pressure in a process vessel. The pressure transmitter converts the pressure of 1 to 10 bar to a current signal of 4 to 20mA. The M3118 monitors under and overpressure in the vessel. It converts the 4... 20mA signal current to 1.00bar...10.00bar. The alarm contacts can be set between 1bar and 10bar. With these floating alarm contacts, overpressure valves, compressors, etc. are driven directly.

Optionally, an isolated galvanic output signal of 0...20mA or 4...20mA is available.

The alarm unit M3118 uses a universal supply from 20 to 253VAC/DC.

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1. Safety Instructions



Observe the local regulations and safety regulations for electrical, low-voltage and high-voltage systems.



Please read this document carefully before using this product.



The device must be protected against inadmissible humidity, vibrations and severe soiling.



During an installation, all off the cables that are connected to the device must be free of electrical power.



The limit values for the measured quantities specified in the specification must not be exceeded under any circumstances.



The wiring, commissioning and operation of the devices must be carried out by appropriately qualified personnel in accordance with local regulations.



If it is to be assumed that the device can no longer be operated safely, it must be put out of operation and secured by means of identification before further commissioning.

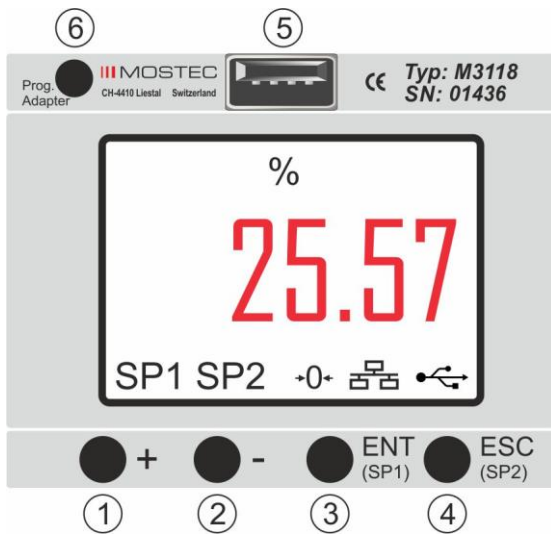


Failure to observe the safety instructions may result in damage to the device and injury to the operator.

2. Operating Regulations

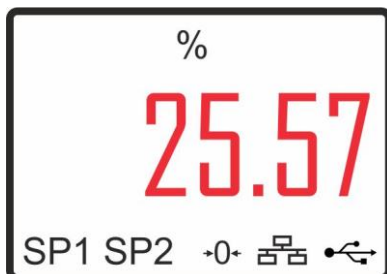
1. Connect the device according to the wiring diagram.
2. After everything has been correctly connected, turn on the system power.
3. Press **[ENT]** and **[ESC]** simultaneously for about 1 second to open the customer menu and make all required settings.

3. Front Panel Controls



1. Key **[+]**
2. Key **[-]**
3. Key **[ENT]** / SP1
4. Key **[ESC]** / SP2
5. USB socket type A for logging data (optional)
6. Interface for MOSTEC programming adapter

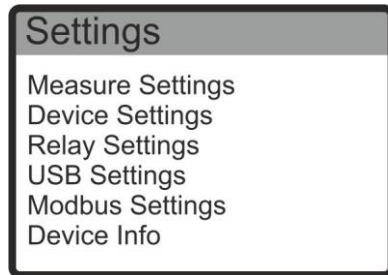
4. Display Screen



After the startup process, the display switches to measuring mode.

The main screen displays the most important information such as the current display value and the status of the limit values. The tare symbol indicates whether the display has been tared. The icons for USB and Modbus shows the status of the peripherals.

5. User Menu



The user menu is divided into different submenus. In these, device-specific manipulations can be made.

To enter the menu, press **[ENT]** and **[ESC]** simultaneously for about 1 second.

| Menu item | Submenu items | Section |
|---|--|---|
| Measure Settings Messeinstellungen | Adjust input zero Adjust gain in % Adjust output min. value Adjust output max. value Set tare | 5.2. Measure Settings |
| Device Settings Geräteeinstellungen | Select language Activate locking code Adjust backlight Factory settings | 5.3. Device Settings |
| Relay Settings Grenzwerteinstellungen | Relay 1 & 2: Set set-point Setting the hysteresis Setting the logic of the relays LED adjustment Set-point optical: Set display value Set limit value active Set set-point | 5.4. Relay Settings 5.4.1. Relay 1 & 2 5.4.2. Set-Point Optical |
| USB Settings USB Einstellungen | Set log interval Setting the time Setting the date Exit log | 5.5. USB Settings |
| Modbus Settings Modbus Einstellungen | Available soon! | 5.6. Modbus Settings |
| Device Info Geräteinfo | Firmware version Serial number | 5.7. Device Info |

5.1. Operating the user menu

The menu is operated with the keys **[ENT]**, **[ESC]**, **[+]** and **[-]**. Use **[+]** and **[-]** to navigate through the menu items. Press **[ENT]** to enter the respective submenu and press **[ESC]** to exit the submenu. In the submenu you can navigate through the individual points with **[+]** and **[-]**. Press **[ENT]** to activate the parameters which can be changed with **[+]** and **[-]**. Pressing **[ENT]** saves the value, **[ESC]** discards the changes.

5.2. Measure Settings

The menu is operated with the keys **[ENT]**, **[ESC]**, **[+]** and **[-]**. Settings can be made as described in section 5.1. Operating the user menu.

| Measure Settings | |
|------------------|--------|
| Input Zero: | 0000 |
| Input Gain %: | 100.00 |
| Output Min.: | 00.00 |
| Output Max.: | 20.00 |
| Set Tare: | Off |

| Menu item | Function/comment | Possible values |
|--------------------------------------|---|-----------------------------------|
| Input Zero Nullablage | Fine-adjustment of zero input | Adjustable from -40 to +40 parts |
| Input Gain % Verstärkung % | Fine-adjustment of the range | Adjustable from 60% to 140% |
| Output Min. Ausgang min. | Fine-adjustment of the minimum signal output. | Adjustable from 0.00mA to 21.00mA |
| Output Max. Ausgang max. | Fine-adjustment of the maximum signal output. | Adjustable from 0.00mA to 21.00mA |
| Set Tare Tara setzen | Taring the display value | Settable over the whole range |

5.3. Device Settings

| Device Settings | |
|-----------------|------|
| Language: | GER |
| Code: | Off |
| Backlight: | 50 % |
| Factory Reset | No |

The menu is operated with the keys **[ENT]**, **[ESC]**, **[+]** and **[-]**. Settings can be made as described in section 5.1. **Operating the user menu.**

| Menu item | Function/Comment | Possible values |
|--|--|--|
| Language Sprache | Set the user language | - GER (Deutsch) - ENG (English) - FRA (Français) |
| Code Sperrcode | Set a lock code for the menu to prevent manipulation of the settings. It is still possible to view all menu items. | - 4-digit from 0001 bis 9999 - 0000 => no code (=factory) Note: Please contact us if you miss the code |
| Backlight Helligkeit | Set the display brightness | Adjustable from 5% to 100%. Attention: 100% brightness leads to faster LED wear! |
| Factory Reset Gerät zurücksetzen | Reset all settings of the device to factory values | Set to "Yes" and confirm with [ENT] . |

5.4. Relay Settings

| Relay Settings | |
|-------------------|--|
| Relay 1 | |
| Relay 2 | |
| Set-Point Optical | |

The two potential-free changeover contacts and the optical limit value can be configured in the **relay settings** submenu.

Use the **[+]** and **[-]** keys to navigate through the limit values. Press **[ENT]** to access the submenu of the respective limit value and press **[ESC]** to exit the submenu.

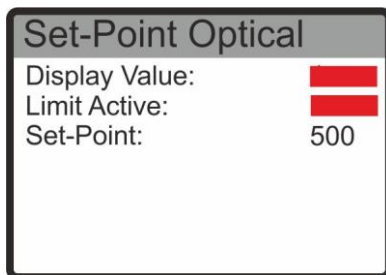
5.4.1. Relay 1 & 2

| Relay 1 | |
|-------------|-------|
| Set-Point: | 250 |
| Hysteresis: | 10 |
| Behavior: | norm. |
| LED: | norm. |

The menu is operated with the keys **[ENT]**, **[ESC]**, **[+]** and **[-]**. Settings can be made as described in section 5.1. **Operating the user menu.**

| Menu item | Function/comment | Possible values |
|--------------------------------|--|---|
| Set-Point Sollwert | Set the set-point of relay 1 or 2 | Between display min. and max. adjustable (= range) |
| Hysteresis Hysterese | Setting the hysteresis of relay 1 or 2 | Adjustable between 0 and half range |
| Behavior Verhalten | Set the logic of relay 1 or 2 | <ul style="list-style-type: none"> - Normal (relay is activated when the measured value is higher than the set-point) - Inverted (relay is activated when the measured value is lower than the set-point) |
| LED LED | Set the logic of the LEDs | <ul style="list-style-type: none"> - Normal (display when the measured value is higher than the set-point) - Inverted (display when the measured value is lower than the set-point) |

5.4.2. Set-Point optical



The menu is operated with the keys **[ENT]**, **[ESC]**, **[+]** and **[-]**. Settings can be made as described in section 5.1. **Operating the user menu.**

| Menu item | Function/comment | Possible values |
|---|--|--|
| Display Value Anzeigewert | Display color of the measured value | Various colors selectable in the menu |
| Limit Active Grenzwert aktiv. | Display color of the measured value with activated limit | Various colors selectable in the menu |
| Set-point Sollwert | Set-point of the optical limit value | Between display min. and max. adjustable (= range) |

5.5. USB Settings

| USB Settings | |
|---------------|------------|
| Log Interval: | 1s |
| Time: | 12:15 |
| Date: | 01.01.2017 |
| Stop Logging | |

The menu is operated with the keys **[ENT]**, **[ESC]**, **[+]** and **[-]**. Settings can be made as described in section 5.1. **Operating the user menu.**

| Menu item | Function/comment | Possible values |
|--|---|---|
| Log Interval Log Intervall | Set the storage interval of the USB logger | Adjustable from 1s to 7200s (2h) |
| Time Zeit | Set the current time for the USB logger (time is stored for 3 hours in case of power failure) | - Hours: 0...23 - Minutes: 0...59 - Seconds are set to 0 when setting the minutes |
| Date Datum | Set the current date for the USB logger (date is saved for 3 hours in case of power failure) | - Day: 1...31 - Month: 1...12 - Year: 2010...2099 |
| Stop / Start Logging Log beenden / starten | Terminates the log and saves the log file on the USB storage medium with time and date / Starts the logging | Press [ENT] to confirm |

5.5.1. USB Characteristics

- The device only accepts USB sticks which are FAT32 formatted and empty.
- The time and date must be set before switching on the recording function. These settings remain in the de-energized state (power failure) for a period of < 3h. After this period, the date and time must be adjusted.
- In the menu item **Log Interval** you can set the interval time in which the data are recorded.
- As soon as a valid storage medium is detected by the device, the USB symbol appears on the display and the logging process starts.
- The data is written to the USB stick every 30s, if **Log Interval** < 30s. Otherwise, after the **log interval** has expired. While writing to the USB stick, the USB symbol is displayed in red. **Meanwhile, the USB stick must not be removed!**
- If a USB stick is connected, the menu item **Exit logging** appears. Confirm with **[ENT]** to end the logging process. The menu item changes to **Start logging**. Confirm with **[ENT]** to restart the logging process and the logger will create a new file on the USB stick.
→ If no USB stick is connected, this menu item is not displayed.

5.5.2. Data Format

The data is saved in CSV format under the following name key:

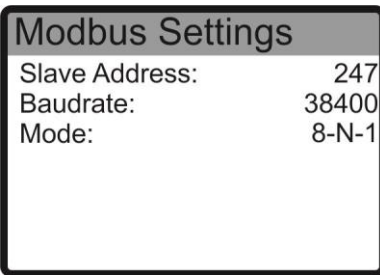
„JJMMDDXX.csv“

- JJ = last 2 digit of current year (z.B. 2018 = „18“)
- MM = current month
- DD = current day
- XX = file counter (0-99)

The CSV format can be interpreted with common spreadsheet programs:

| Date | Time | Value |
|------------|----------|-------|
| 12.12.2017 | 13:10:45 | 55.5 |
| 12.12.2017 | 13:10:46 | 55.5 |
| 12.12.2017 | 13:10:47 | 55.5 |

5.6. Modbus Settings

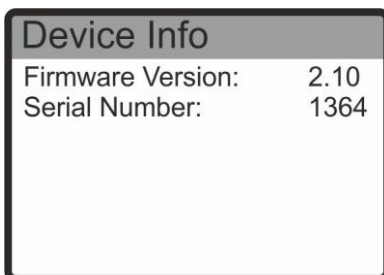


The menu is operated with the keys [ENT], [ESC], [+] and [-]. Settings can be made as described in section 5.1. **Operating the user menu.**

Further information about the Modbus refer section 6.


| Menu item | Description | Possible values |
|---------------------------------------|---|--|
| Slave address Slave Adresse | Set the Modbus address for the RS485 interface. | Adjustable from 1 to 247 |
| Baudrate Baudrate | Set the baudrate for the RS485 interface. | 4800, 9600, 19'200, 38'400, 57'600, 115'200 Baud |
| Mode Modus | Set the communication settings for the RS485 interface. | Data: 8bit Parity bit: None, Even, Odd Stopp bit: 1, 2 8-N-1, 8-N-2 |

5.7. Device info



The submenu **Device Info** shows the current firmware version and the serial number of the device.

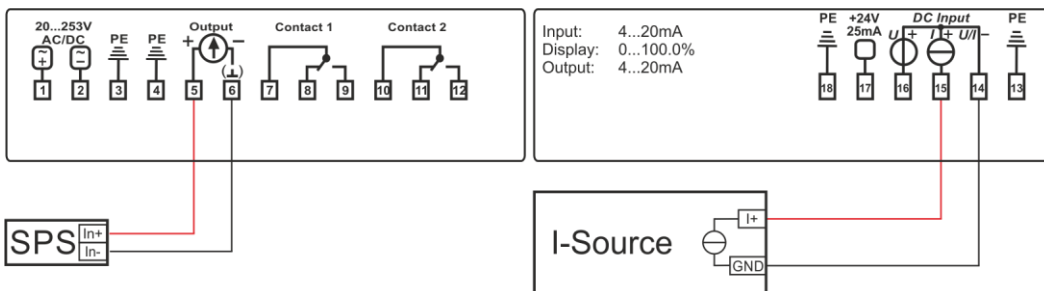
6. Modbus-RS485

The Display shows the symbol  if the device is equipped with an optional Modbus module. The RS485 receive activity is shown as small green box. The device is delivered with a 130 ohm termination resistor. The termination resistor is necessary at the beginning and at the end of a RS485 bus. The device is equipped with a “Failsafe” receiver.

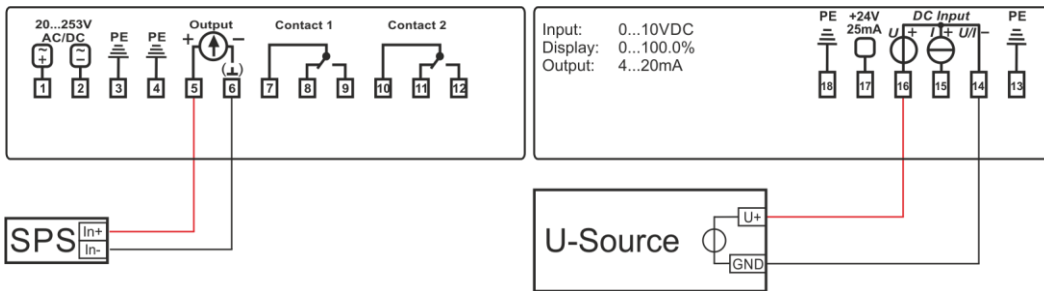
More information about the Modbus implementation refer the document "M3118_M3136_M3329_Modbus_UserGuide_Vx.xx.pdf" on the [Mostec](http://www.mostec.ch) website.

7. Wiring

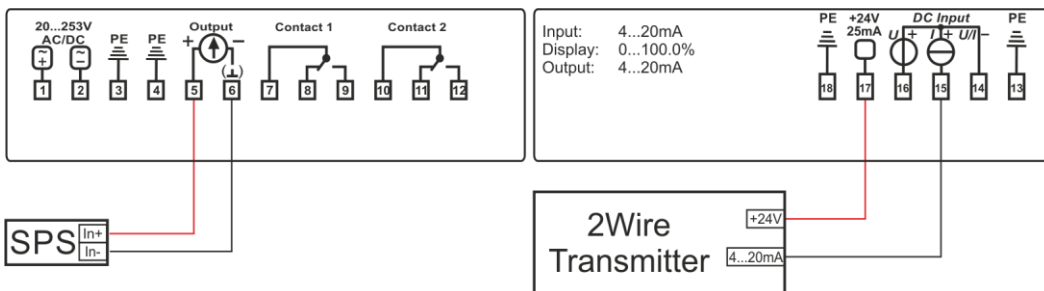
Current input:



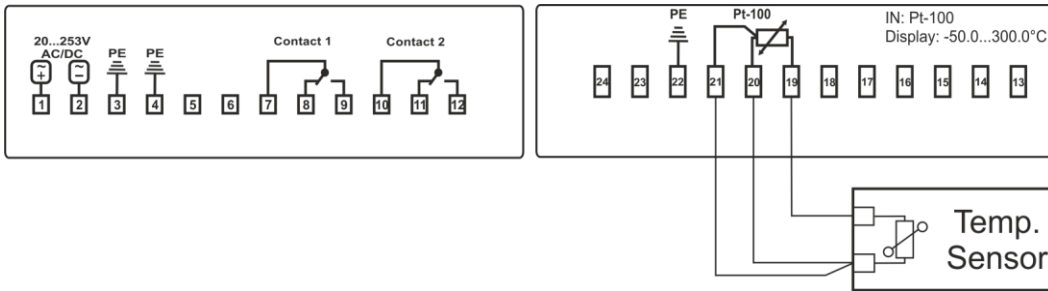
Voltage input:



2-Wire input:



Temperature input:



8. Terminals

| | | | | | |
|---|---------------------------|---|----------------------------------|----|----------------------------------|
| 1 | Supply voltage: AC~/DC(+) | 5 | Signal output: + | 9 | Alarm contact 1: normally open |
| 2 | Supply voltage: AC~/DC(-) | 6 | Signal output: - | 10 | Alarm contact 2: change over |
| 3 | Supply voltage: PE | 7 | Alarm contact 1: change over | 11 | Alarm contact 2: normally closed |
| 4 | Signal output: PE | 8 | Alarm contact 1: normally closed | 12 | Alarm contact 2: normally open |

M3118-AR:

| | | | | | |
|----|------------------|----|------------------------|----|--------------------------------|
| 13 | Signal input: PE | 15 | Signal input current + | 17 | 2-Wire transmitter supply +24V |
| 14 | Signal input - | 16 | Signal input voltage + | 18 | 2-Wire transmitter supply PE |

M3118-TR:

| | | | | | |
|----|------------------------|----|------------------------------|----|------|
| 19 | Signal input: sensor + | 21 | Signal input: sensor sense - | 23 | n.c. |
| 20 | Signal input: sensor - | 22 | Signal input: sensor PE | 24 | n.c. |

Bei Versionen mit Modbus:

| | | | | | |
|---|--------------------|---|------------------|---|------------------|
| 4 | Modbus RS485 – GND | 5 | Modbus RS485 – A | 6 | Modbus RS485 – B |
|---|--------------------|---|------------------|---|------------------|

9. Technical Data

| | |
|----------------------------|---|
| Input signal: | M3118-AR: 0/4...20mA; 0...1/10V, other values in these ranges are free programmable M3118-TR: Platinum-/Nickelsensors, 2- or 3-wire connection 100Ω, 200 Ω, 500Ω or 1000Ω at 0°C (DIN 43 760) Other input signals on request |
| Input load / impedance: | Current signal = 51Ω ; voltage signal = 1MΩ |
| 2-Wire transmitter supply: | 24VDC, max. 25mA |
| Display: | LCD-Display, 4-digit, 15mm height, color adjustable |
| Display range: | -9999...9999, optional -99999...99999 |
| Accuracy: | ±0.1% at 23°C ambient temperature |
| Reproducibility: | ±0.1% |
| Temperature coefficient: | Zero drift: 30ppM/°C typical Gain drift: 25ppM/°C typical |
| Long-term stability: | ±0.1% |
| Working temperature range: | -5°C to +45°C |
| Maximum humidity: | 95%, non-condensing |
| Range adjustment: | Programmable by PC / laptop with programming unit |
| Zero-/Gain adjustment: | Programmable by PC / laptop or directly on the device with small keys |
| Limit contacts: | Two floating change-over contacts may be adjusted over the full range. Each can be defined as normally open or normally closed contact in the menu via the keys. |
| Status: | on easy to read LCD-Display |
| Hysteresis: | Adjustable, factory settings is ±5 digit |
| Contacts rating: | 1A with resistiv load / 230VAC |
| Max. contact load: | 100'000 operations at max. load |
| Max. contact lifecycle: | 10'000'000 operations mechanically, without load |
| Display unit: | on easy to read LCD-Display, 8 units programmable |
| Option signal output: | 0/4...20mA, galvanically isolated |
| Max. load: | 500Ω |
| Output impedance: | >1MΩ typical |
| Power supply: | 20 to 253VAC or DC |
| Power supply load: | 4.5W to 7.0W at 230VAC |
| CE-conformity: | Fulfilled |
| Terminals: | Plug-in screw terminals |
| Mounting: | 35mm mounting rail, EN50022-35 |
| Weight: | 200g |
| Warranty: | 2 years |
| Options: | <ul style="list-style-type: none"> - USB programming unit, with cable and software - Other, user-specific in- and output signals - USB-logger (without I-Output) - Modbus (without I-Output) - 5-digit LCD-display |