Universal Digital Display Type M3329

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 digital display M3329 is used to indicate or monitor any sensor signal. 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 M3329 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 digital display M3329 uses a universal supply from 20VAC/DC to 253VAC/DC.

Index   **Page**

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.
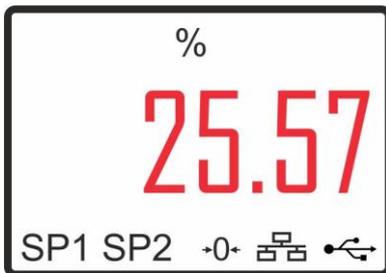
2. Operating Regulations

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
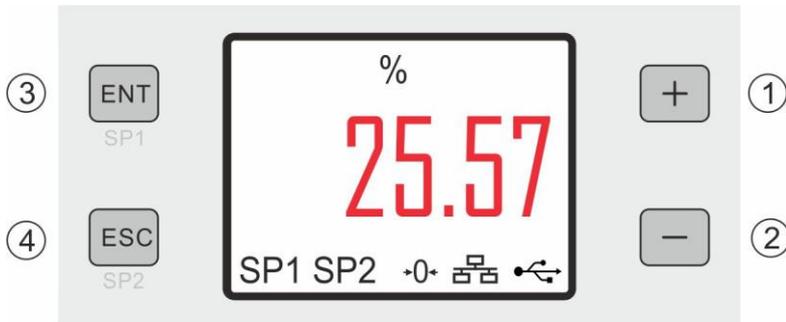
1. Key **[+]**
2. Key **[-]**
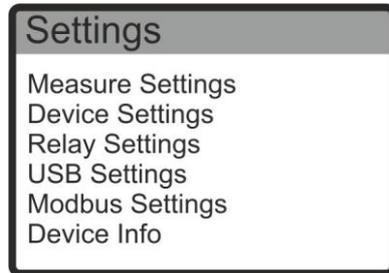3. Key **[ENT]** / SP1
4. Key **[ESC]** / SP2

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

Settings

Measure Settings
Device Settings
Relay Settings
USB Settings
Modbus Settings
Device Info

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 set-tings. 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.
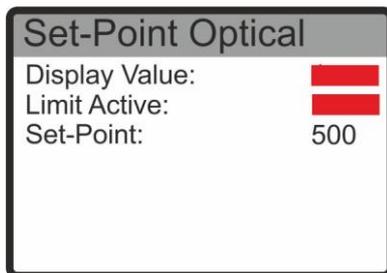
5.4.1.   Relay 1 & 2

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	- 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	- 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

Set-Point Optical

Display Value:
Limit Active:
Set-Point: 500

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

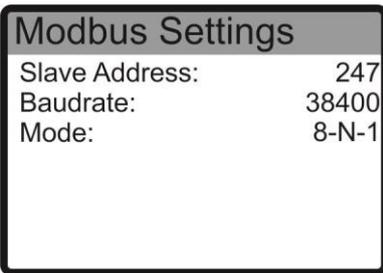The data is saved in CSV format under the following name key:

„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
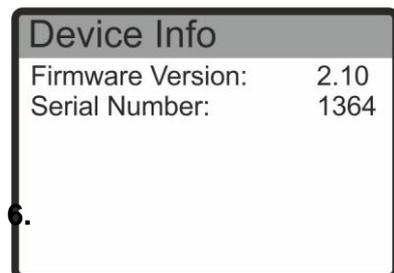
The submenu **device info** shows the current firmware version and the serial number of the device.

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.
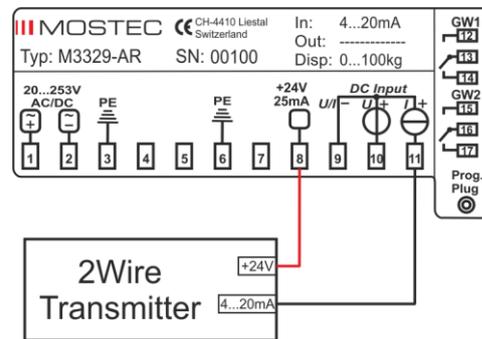
More information about the Modbus implementation refer the document
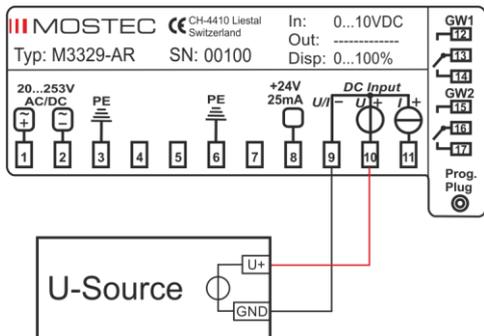"M3118_M3136_M3329_Modbus_UserGuide_Vx.xx.pdf" on the Mostec website.

7. Wiring

Current input:
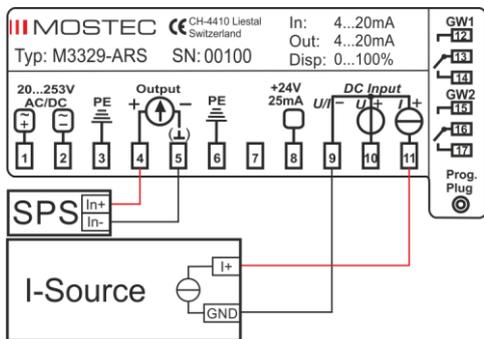
2-Wire input:

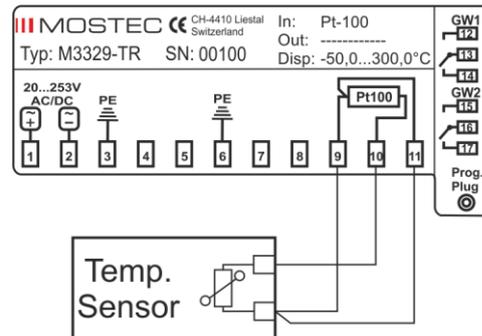
Voltage input:

Temperature input:

8. Terminals

1	Supply voltage: AC~/DC(+)	5	Signal output: -	9	Signal input(-) / sensor(-)
2	Supply voltage: AC~/DC(-)	6	Signal output: PE	10	Signal input voltage (+) / sensor (+)
3	Supply voltage: PE	7	n.c.	11	Signal input current (+) / sensor sense (-)
4	Signal output: +	8	2-Wire transmitter supply +24V		

With option alarm contacts:

12	Alarm contact 1: normally open	14	Alarm contact 1: normally closed	16	Alarm contact 2: change over
13	Alarm contact 1: change over	15	Alarm contact 2: normally open	17	Alarm contact 2: normally closed

For Modbus versions:

19	Modbus RS485 – A	20	Modbus RS485 – B	21	Modbus RS485 – GND

9. Technical Data

Input signal:	M3329-A: 0/4…20mA; 0…1/10V, other values in these ranges are free programmable M3329-T: 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 on the device with small keys
Option alarm contacts: Status: Hysteresis: Contacts rating: Max. contact load: Max. contact lifecycle:	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. Easy to read LCD-Display Adjustable, factory settings is ±5 digit 1A with resistive load / 230VAC 100'000 operations at max. load 10'000'000 operations mechanically, without load
Display unit:	Easy to read LCD-Display, 8 units programmable
Option signal output: Max. load: Output impedance:	0/4…20mA, galvanically isolated 500Ω >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:	2 mounting clamps
Weight:	200g
Warranty:	2 years
Options:	- 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