Quick Start Manual

Read the user's manual carefully before starting to use the unit or software.
Producer reserves the right to implement changes without prior notice.

Symbol Explanation ⚠️

This symbol denotes especially important guidelines concerning the installation and operation of the device. Not complying with the guidelines denoted by this symbol may cause an accident, damage or equipment destruction.

Basic Requirements | User Safety

⚠️

- Do not use the unit in areas threatened with excessive shocks, vibrations, dust, humidity, corrosive gasses and oils.
- Do not use the unit in areas where there is risk of explosions.
- Do not use the unit in areas with significant temperature variations, exposure to condensation or ice.
- The manufacturer is not responsible for any damages caused by inappropriate installation, not maintaining the proper environmental conditions and using the unit contrary to its assignment.
- If in the case of a unit malfunction there is a risk of a serious threat to the safety of people or property additional, independent systems and solutions to prevent such a threat must be used.
- The unit uses dangerous voltage that can cause a lethal accident. The unit must be switched off and disconnected from the power supply prior to starting installation of troubleshooting (in the case of malfunction).
- Do not attempt to disassemble, repair or modify the unit yourself. The unit has no user serviceable parts.
- Defective units must be disconnected and submitted for repairs at an authorized service center.

Specifications

General	
Display	LED	4 x 57mm High	Adjustable Color	Adjustable Brightness
Displayed Values	-999 ± 9999	-99999 ± 999999*
Stability	50 ppm	°C
Transmission Parameters	1200...115200 bit/s, 8N1 / 8N2
Protection Class	NEMA 4X	IP67

Input Signal	Supply	
Standard	Current: 4-20mA	0-20mA	0-5V*	0-10V*
Voltage	85 - 260V AC/DC	16 - 35V AC, 19 - 50V DC*

Output Signal	Supply	
Standard	2 x Relays (5A)	1 x Relay (5A) + 4-20mA
Voltage	24VDC
Passive current output *	4-20mA	(Operating Range Max. 2.8 - 24mA)

Performance	
Accuracy	0.1% @ 25°C One Digit
Accuracy According to IEC 60770 - Limit Point Adjustment	Non-Linearity	Hysteresis	Repeatability	

Temperatures	
Operating Temperatures	-40 - 158°F	-40 - 70°C

Materials	Wetted	
Housing	Polycarbonate

Part Number	Input	Input
TVL-550-1821	4-20mA	2 Relay
TVL-550-1829	4-20mA	4-20mA + 1 Relay

*Contact Factory for different options

Front Panel Description

Thresholds exceeding LED indicators (R)

Bright Large Display

Infrared Receiver

Programming Buttons

Function of Push Buttons

ESC MENU

Symbol used in the manual : [ESC/MENU]
Functions:
- Enter to main menu (press and hold for at least 2 sec.)
- Exit the current Screen and Enter to previous menu (or measure mode)
- Cancel the changes made in parameter being edited

ENTER

Symbol used in the manual : [ENTER]
Functions:
- Start to edit the parameter
- Enter into the sub-menu
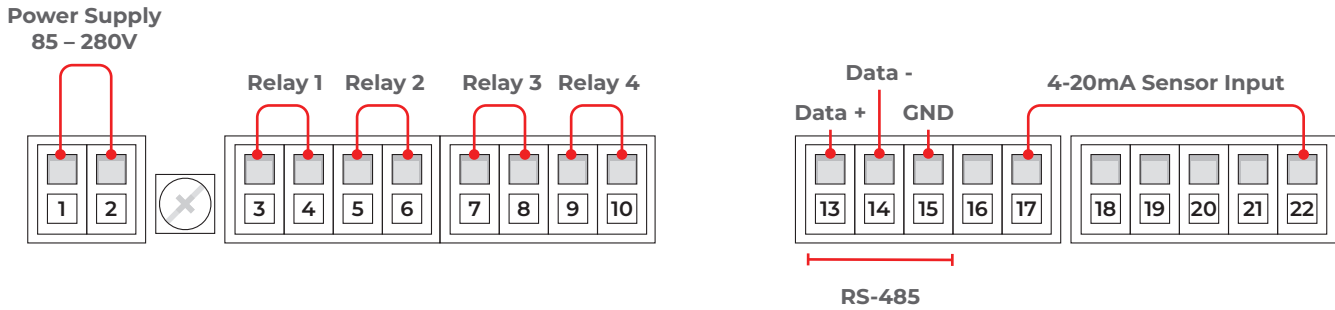- Confirmation of changes made in parameter being edited

Symbol used in the manual : [^] [v]
Functions:
- Change of the present menu
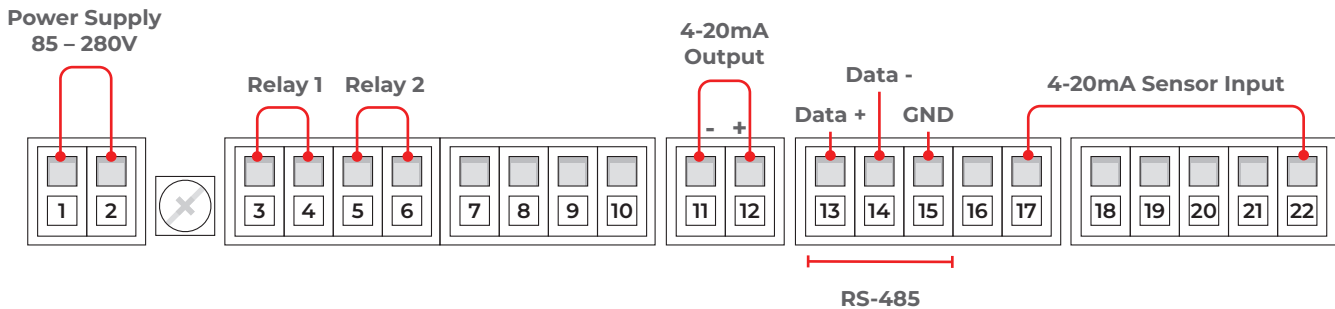- Modification of the parameter value
- Change of the display mode

Wiring Diagram

4 RELAY CONFIGURATION

Power Supply
85 – 280V

Relay 1   Relay 2   Relay 3   Relay 4

Data -
Data +   GND

4-20mA Sensor Input

| 1 | 2 | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

| 13 | 14 | 15 | 16 | 17 | | 18 | 19 | 20 | 21 | 22 |

RS-485

2 RELAY CONFIGURATION

One 4-20mA OUTPUT

Power Supply
85 – 280V

Relay 1   Relay 2

4-20mA
Output

Data -
Data +   GND

4-20mA Sensor Input

| 1 | 2 | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

- +
| 11 | 12 |

| 13 | 14 | 15 | 16 | 17 | | 18 | 19 | 20 | 21 | 22 |

RS-485

WIRE INSTALLATION

· Carefully remove wire terminal from socket

· Loosen set screw

· Insert wire

· Tighten set screw

· Replace wire terminal into socket

Due to possible significant interference in industrial installations, appropriate measures assuring correct operation of the unit must be applied.

The unit is not equipped with an internal fuse or power supply circuit breaker.

For this reason, an external time-delay cut-out fuse with a small nominal current value must be used (recommended bipolar, max. 2A) and a power supply circuitbreaker located near the unit.

In the case of using a monopolar fuse it must be mounted on the phase cable.

Programming 4-20mA Input

STEPS	DISPLAY	OPERATION
1 Press **ESC/MENU** Button — ESC MENU 3 SEC	r.EL.1	Press & Hold **ESC/MENU** Button | 3 Sec (**Relay 1** Appears on Display)
2 Press **DOWN** Arrow — 2x	i.n.P.t	Press **DOWN** Arrow (5x) (**Input** Appears on Display)
3 Press **ENTER** Button — ENTER	t.y.P.E	Press **ENTER** Button (**Type** Appears on Display)
4 Press **DOWN** Arrow — 4x	Lo. C	Press **DOWN** Arrow (4x) (**Lo C** Appears on Display | 4mA Set Point)
5 Press **UP** or **DOWN** Arrow — ENTER +	0.0.0.0	Press **ENTER** Button to set Lo C | 4mA | Std = 0 Press **UP** or **DOWN** Arrows to Change Value *(Use the ENTER button to advance to the next digit)*
6 Press **ENTER** Button — ENTER 2 SEC + ENTER	S.E.t.?	When desired number appears Press & Hold **ENTER** for 2 Sec to lock in the set point. (**SET?** appears on display) Press **ENTER** to confirm
7 Press **DOWN** Arrow —	H.i. C	Press **DOWN** Arrow ("Hi C" will appear on Display | 20mA Set Point)
8 Press **ENTER** Button — ENTER +	4.0.8.0	Press **ENTER** Button to set Hi C | 20mA* Press **UP** or **DOWN** Arrows to Change Value *(Use the ENTER button to advance to the next digit)*
9 Press **ENTER** Button — ENTER 2 SEC + ENTER	S.E.t.?	When desired number appears Press & Hold **ENTER** for 2 Sec to lock in the set point. (**SET?** appears on display) Press **ENTER** to confirm
10 Press **ESC/MENU** Button — ESC MENU 2x	0.0.0.0	Press **ESC/MENU** Button (2x) (Home Screen | Current Level Reading appears on display)

Programming 4-20mA Output

STEPS	DISPLAY	OPERATION
1 — Press **ESC/MENU** Button — ESC MENU — 3 SEC	`r.EL.1`	Press & Hold **ESC/MENU** Button | 3 Sec (**Relay 1** Appears on Display)
2 — Press **DOWN** Arrow — 3x	`o.ut.P`	Press **DOWN** Arrow (6x) (**Output** Appears on Display)
3 — Press **ENTER** Button — ENTER	`o.ñ.o.d`	Press **ENTER** Button (**Output Mode** Appears on Display)
4 — Press **DOWN** Arrow — 1x	`o.ut.L`	Press **DOWN** Arrow (1x) (**Out L** Appears on Display | 4mA Set Point)
5 — Press **UP** or **DOWN** Arrow — ENTER +	`0.0.0.0`	Press **ENTER** Button to set Out L | 4mA | Std = 0 Press **UP** or **DOWN** Arrows to Change Value *(Use the ENTER button to advance to the next digit)*
6 — Press **ENTER** Button — ENTER 2 SEC + ENTER	`S.E.t.P`	When desired number appears Press & Hold **ENTER** for 2 Sec to lock in the set point. (**SET?** appears on display) Press **ENTER** to confirm
7 — Press **DOWN** Arrow — 1x	`o.ut.H`	Press **DOWN** Arrow (1x) (**Out H** will appear on Display | 20mA Set Point)
8 — Press **ENTER** Button — ENTER +	`4.0.8.0`	Press **ENTER** Button to set Out H | 20mA* Press **UP** or **DOWN** Arrows to Change Value *(Use the ENTER button to advance to the next digit)*
9 — Press **ENTER** Button — ENTER 2 SEC + ENTER	`S.E.t.P`	When desired number appears Press & Hold **ENTER** for 2 Sec to lock in the set point. (**SET?** appears on display) Press **ENTER** to confirm
10 — Press **ESC/MENU** Button — ESC MENU 2x	`0.0.0.0`	**Press** ESC/MENU Button (2x) (Home Screen | Current Level Reading appears on display)

Programming Relays

STEPS	DISPLAY	OPERATION
1 Press **ESC/MENU** Button — ESC MENU	3 SEC	r.E1.1	<u>Press & hold</u> **ESC/MENU** button	3 Sec (Relay 1 appears on display)
2 Press **ENTER** Button — ENTER	S.E.t.P	Press **ENTER** button (**SETP** appears on display)
3 Press **ENTER** Button — ENTER	020.0	Press **ENTER** Button (Relay Set-Point Number appears on display with first digit flashing)
4 Press **UP** or **DOWN** Arrows — ⌄ ⌃	020.0	Press **UP** or **DOWN** arrows to increase or decrease number to desired setpoint *(Use the ENTER button to advance to the next digit)*
5 Press **ENTER** Button — ENTER 2 SEC + ENTER	S.E.t.P	When desired number appears <u>Press & Hold</u> **ENTER** for 2 Sec to lock in the set point. (**SET?** appears on display) Press **ENTER** to confirm (**SETP** appears on display)
6 Press **DOWN** Arrow — ⌄	H.Y.S.t	Press **DOWN** arrow to select relay parameters *(ON-OFF, HYSTERISIS, Mode, Time, Unit, Alarm)* Repeat steps 3-5 for each parameter ☞
7 Press **ENTER** Button — ENTER 2 SEC + ENTER	S.E.t.P	Once Relay Parameters are Set, <u>Press & Hold</u> **ENTER** for 2 Sec to lock in the set point. (**SET?** appears on display) Press **ENTER** to confirm
8 Press **ESC/MENU** Button — ESC MENU **2x**	000.0	Press ESC/MENU Button (2x) (Home Screen | Current Level Reading appears on display)

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Programming Display Color

STEPS	DISPLAY	OPERATION
1 Press **ESC/MENU** Button — ESC MENU — 3 SEC	`rEL.1`	Press & Hold **ESC/MENU** Button | 3 Sec (Relay 1 Appears on Display)
2 Press **DOWN** Arrow — 7x	`CoL.`	Press **DOWN** Arrow (7x) (**Color** Appears on Display)
3 Press **ENTER** Button — ENTER	`SCoL`	Press **ENTER** Button (**Standard Color** Appears on Display)
4 Press **UP** or **DOWN** Arrow — ENTER +	`coL9`	Press **ENTER** Button Press **UP** or **DOWN** Arrows to Change Value *(display color will change with each different value 1-9)*
5 Press **ENTER** Button — ENTER 2 SEC + ENTER	`SEt.?`	When desired number appears Press & Hold **ENTER** for 2 Sec to lock in the set point. (**SET?** appears on display) Press **ENTER** to confirm
6 Press **UP** or **DOWN** Arrow	`Co.r.1`	Press **DOWN** Arrow to select color for relay 1 (**Color Relay 1** Appears on Display)
7 Press **DOWN** Arrow	`coL9`	Press **ENTER** Button Press **UP** or **DOWN** Arrows to Change Value *(display color will change with each different value 1-9)*
8 Press **ENTER** Button — ENTER +	`SEt.?`	When desired number appears Press & Hold **ENTER** for 2 Sec to lock in the set point. (**SET?** appears on display) Press **ENTER** to confirm. *Repeat steps 6-7 for each relay color* 👈
9 Press **ESC/MENU** Button — ESC MENU 2x	`00.0.0`	Press ESC/MENU Button (2x) (Home Screen | Current Level Reading appears on display)

Selected colour proportions

Color Number	Red [%]	Green [%]	Color Number	Red [%]	Green [%]	Color Number	Red [%]	Green [%]
coL1	100	0	coL4	62.5	37.5	coL7	25	75
coL2	87.5	12.5	coL5	50	50	coL8	12.5	87.5
coL3	75	25	coL6	37.5	62.5	coL9	0	100