Pixsys®
ELECTRONICS

STR581

Counter / Tachometer
Contatore / Tachimetro

User manual - Manuale d'uso - Manuel utilisateur

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Indice degli argomenti

1 Safety guidelines

Read carefully the safety guidelines and programming instructions contained in this manual before connecting/using the device.

Disconnect power supply before proceeding to hardware settings or electrical wirings to avoid risk of electric shock, fire, malfunction.

Do not install/operate the device in environments with flammable/explosive gases.

This device has been designed and conceived for industrial environments and applications that rely on proper safety conditions in accordance with national and international regulations on labour and personal safety. Any application that might lead to serious physical dama ge/ life risk or involve medical life support devices should be avoided.

Device is not conceived for applications related to nuclear power plants, weapon systems, flight control, mass transportation systems.

Only qualified personnel should be allowed to use device and/or service it and only in accordance to technical data listed in this manual.

Do not dismantle/modify/repair any internal component.

Device must be installed and can operate only within the allowed environmental conditions. Overheating may lead to risk of fire and can shorten the lifecycle of electronic components.

1.1 Organization of safety notices

Safety notices in this manual are organized as follows:

Safety notices	Description
Danger!	Disregarding these safety guidelines and notices can be life-threatening.
Warning!	Disregarding these safety guidelines and notices can result in severe injury or substantial damage to property.
Information!	TThis information is important for preventing errors.

1.2 Safety Precautions

This product is classified as front panel process control equipment	**Danger!**
If the output relays are used past their life expectancy, contact fusing or burning may occasionally occur. Always consider the application conditions and use the output relays within their rated load and electrical life expectancy. The life expectancy of output relays varies considerably with the output load and switching conditions.	**Danger!**
A malfunction in the Digital Controller may occasionally make control operations impossible or prevent alarm outputs, resulting in property damage. To maintain safety in the event of malfunction of the Digital Controller, take appropriate safety measures, such as installing a monitoring device on a separate line.	**Warning!**

1.3 Precautions for safe use

Be sure to observe the following precautions to prevent operation failure, malfunction, or adverse affects on the performance and functions of the product. Not doing so may occasionally result in unexpected events. Do not handle the Digital Controller in ways that exceed the ratings.

- The product is designed for indoor use only. Do not use or store the product outdoors or in any of the following places.
  - Places directly subject to heat radiated from heating equipment.
  - Places subject to splashing liquid or oil atmosphere.
  - Places subject to direct sunlight.
  - Places subject to dust or corrosive gas (in particular, sulfide gas and ammonia gas).
  - Places subject to intense temperature change.
  - Places subject to icing and condensation.
  - Places subject to vibration and large shocks
- Installing two or more controllers in close proximity might lead to increased internal temperature and this might shorten the life cycle of electronic components. It is strongly recommended to install cooling fans or other air-conditioning devices inside the control cabinet.
- Always check the terminal names and polarity and be sure to wire properly. Do not wire the terminals that are not used.
- To avoid inductive noise, keep the controller wiring away from power cables that carry high voltages or large currents. Also, do not wire powerlines

together with or parallel to Digital Controller wiring. Using shielded cables and using separate conduits or ducts is recommended. Attach a surge suppressor or noise filter to peripheral devices that generate noise (in particular motors, transformers, solenoids, magnetic coils or other equipment that have an inductance component). When a noise filter is used at the power supply, first check the voltage or current, and attach the noise filter as close as possible to the Digital Controller. Allow as much space as possible between the Digital Controller and devices that generate powerful high frequencies (high-frequency welders, high-frequency sewing machines, etc.) or surge.

- A switch or circuit breaker must be provided close to device. The switch or circuit breaker must be within easy reach of the operator, and must be marked as a disconnecting means for the controller.
- The device must be protected by a fuse 1A (cl. 9.6.2)
- Wipe off any dirt from the Digital Controller with a soft dry cloth. Never use thinners, benzine, alcohol, or any cleaners that contain these or other organic solvents. Deformation or discoloration may occur.
- The number of non-volatile memory write operations is limited. Therefore, use EEprom write mode when frequently overwriting data, e.g.: through communications.
- Chemicals/solvents, cleaning agents and other liquids must not be used.
- Non-respect of these instructions may reduce performances and safety of the devices and cause danger for people and property.

1.4   Environmental policy and waste disposal/ WEEE

Do not dispose electric tools together with household waste material.
According to European Directive 2012/19/EU on waste electrical and electronic equipment and its implementation in accordance with national law, electric tools that have reached end of life must be collected separately and returned to an environmentally compatible recycling facility.

2   Model identification

Supply 24..230 VAC/VDC 50/60 Hz – 8 Watt/VA	
STR581-1ABC-T128R	4 digital inputs 2 relays 2A 2 digital outputs PNP 1 RS485 Rfid communication

3   Technical data
3.1   General data

Display	2.42" monochrome (yellow) OLED graphical display
Operating temperature	Temperature 0-40 °C - Humidity 35..95 uR% Max. altitude: 2000m
Sealing	IP54 (front panel) (su frontale) with gasket IP20 (box and terminals)
Material	Box: polycarbonate V0 Front mask: silicon rubber
Weight	Approx. 165 g

3.2   Hardware data

Power supply	Extended power supply 24..230 Vac/Vdc ±15% 50/60 Hz	Consumption: 8 VA.
COM1 Serial	Galvanically isolated RS485 interface	Modbus RTU slave Speed 1200..115200 bps
Micro USB port	USB device interface	To connect to PC and memory card management.
+12/24 Vdc Output	Voltage for sensor and digital inputs power supply selectable by parameter	12Vdc/24Vdc
Outputs	2 relais Q1, Q2	Contacts 2 A - 250 Vac. Resistive load 1/8Hp.
	2 digital outputs Q3, Q4	PNP 12/24 Vdc Outputs
Digital inputs	2 counting inputs I1, I2	PNP/NPN/Push-Pull/ Line-Driver configurable
	2 general inputs I3, I4.	PNP/NPN configurable
Display	OLED 2.42" technology monochrome yellow	Life time 150,000 hours (lifetime is specified as reaching 50% of initial brightness)
Front keys	4 front keys	To browse and data modification.

3.3   Software data

Multilingual menu	English/Italian/German/French/Spanish
COM1 slave serial	Modbus RTU Slave protocol
Number of displayed data	Max. 12 display values selectable from counter values, tachometer value, setpoint values, output duration.
Data display	Display configurable via parameter from 1 to 4 values per page. Automatic selection of maximum display font size for better data reading.
Configuration display of data	For each data you can set • Description (max 16 characters) • Unit of measurement (max 5 characters) • Numbers of selectable decimals
Automatic page scrolling	Possibility of enabling automatic timed scrolling of size display pages.
Output management	4 outputs are configurable to various operating modes and can be linked to one of the two counters or to tachometer value.
Voltage output	Configurable by parameter
USB port	Virtual Com Port with Modbus RTU slave protocol. Memory Card connection for parameter configuration.

3.4   Configuration mode

from keyboard	see paragraph *10.1*
App MyPixsys	by downloading the App, see paragraph *10.3* When detected by a reader supporting the NFC-V protocol, the device is considered a VICC (Vicinity Inductively Coupled Card) according to ISO/IEC 15693 and operates at a frequency of 13.56 MHz. The device does not intentionally emit radio waves.
Memory card	see paragraph *10.4*

4   Dimensions and Installation
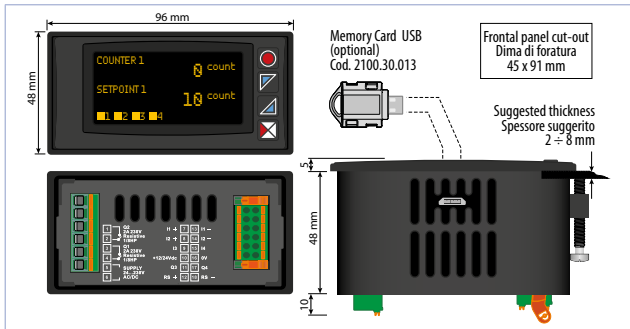
5   Electrical wirings

This device is designed and manufactured in accordance with Low Voltage Directive 2006/95/EC, 2014/35/EU (LVD) and Electromagnetic Compatibility Directive 2004/108/EC and 2014/30/EU (EMC) for installation in industrial environments.

Please notice the following safety guidelines

- Separate control lines from the power wires
- Avoid the proximity of remote control switches, electromagnetic meters, powerful engines
- Avoid the proximity of power groups, especially those with phase control.
- The use of appropriate mains filters on the power supply of the machine in which the device will be installed is recommended, particularly in the case of 230VAC power supply.

  The device is designed to be assembled to other machines, and therefore its CE marking does not exempt the plant manufacturer from the safety and compliance obligations of the machine as a whole.

- To wire terminals 1...6, use crimped tube ferrules or flexible or rigid copper wire between 0.2 and 2.5 mm^2 (min. AWG24, max. AWG16; Minimum

temperature rating of wire to be connected to field wiring terminals, 70°C). The stripping length is 10 mm
- To wire terminals 7...18, use crimped tube ferrules or flexible or rigid copper wire between 0.2 and 1.5 mm^2 (min. AWG24, max. AWG16; Minimum temperature rating of wire to be connected to field wiring terminals, 70°C). The stripping length is 10 mm.

5.1 Wiring diagram

5.1.a Power supply

5 SUPPLY 24...230 Vac/dc 6	Switching supply with extended range 24…230 Vac/dc ±15% 50/60Hz – 8 VA (galvanic isolated)
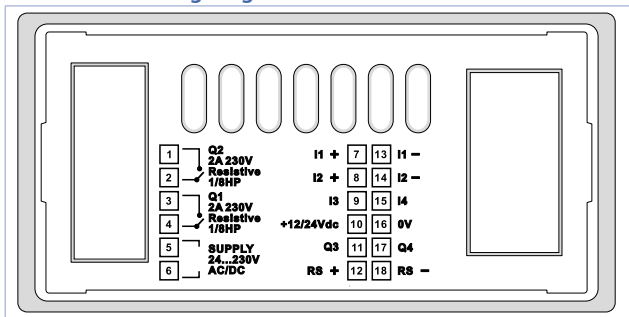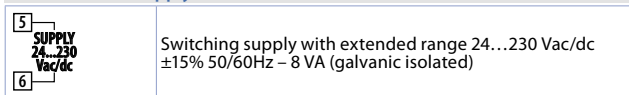
5.1.b   Serial COM1 (Modbus slave)

12 RS+ ⊕ RS485 18 RS- ⊖	Connect to a Modbus master device - RS485 interface - 1/4 line load (up to 128 nodes on the bus) - Common mode voltage +/-25V - +/-60V fault protection - Modbus slave RTU protocol

5.1.c   DI.1 digital input
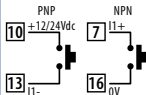
PNP NPN 10 +12/24Vdc ⊕ 7 I1+ 13 I1- 16 0V	**NPN configuration**, to activate the input, short the terminals I1+ (7) and 0V (16). Terminal I1- (13) must remain free. (Activation Vi < 3.7V Deactivation Vi > 3.7V) **PNP configuration**, to activate the input, short-circuit terminals I1- (13) and +12/24 Vdc (10). Terminal I1+ (7) must remain free. (Activation Vi > 5.0V Deactivation Vi < 5.0V)
10 +12/24Vdc ⊕ Sensor 16 0V ⊖ OUT 7 I1+	**Push-Pull configuration**, to activate the input, connect a positive signal (Vi > 9.2V) to terminal I1+ (7), to deactivate it connect a ground signal (Vi < 9.2V) to terminal I1+ (7). Terminal I1- (13) must remain free
10 +12/24Vdc ⊕ 7 I1+ A 13 I1- Ā Encoder 16 0V ⊖	**Line-driver configuration**, the input for the connection of two complementary signals read in differential mode. Signal A positive is connected to terminal I1+ (7). Signal A negative is connected to terminal I1- (13).
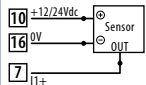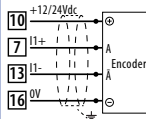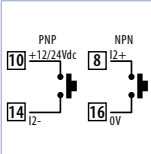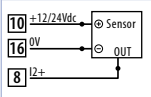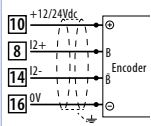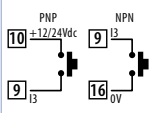
5.1.d   DI.2 digital input

PNP 10 +12/24Vdc 14 I2- **NPN** 8 I2+ 16 0V	• **NPN configuration**, to activate input, short-circuit terminals I2+ (8) and 0V (16). Terminal I2- (14) must remain free. (Activation Vi < 3.7V Deactivation Vi > 3.7V) • **PNP configuration**, to activate input, short-circuit terminals I2- (14) and +12/24 Vdc (10). Terminal I2+ (8) must remain free. (Activation Vi > 5.0V Deactivation Vi < 5.0V)
10 +12/24Vdc 16 0V 8 I2+ ⊕ Sensor ⊖ OUT	• **Push-Pull configuration**, to activate input, bring a positive signal (Vi > 9.2V) to terminal I2+ (8), to deactivate it, bring a ground signal (Vi < 9.2V) to terminal I2+ (8). Terminal I2- (14) remains free.
10 +12/24Vdc 8 I2+ 14 I2- 16 0V B Encoder	• **Line-driver configuration**, input provides for the connection of two complementary signals read in differential mode. Signal B positive is connected to terminal I2+ (8). Signal B negative is connected to terminal I2- (14).

5.1.e   DI.3 digital input

PNP 10 +12/24Vdc 9 I3 **NPN** 9 I3 16 0V	• **NPN configuration**, to activate input, short-circuit terminals I3 (9) and 0V (16). (Activation Vi < 6.4V Deactivation Vi > 7.7V)) • **PNP configuration**, to activate input, short-circuit terminals I3 (9) and +12/24 Vdc (10). (Activation Vi > 7.7V Deactivation Vi < 6.4V)

5.1.f   DI.4 digital input
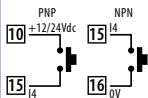
- **NPN configuration**, to activate input, short-circuit terminals I4 (15) and 0V (16).
  (Activation Vi < 6.4V Deactivation Vi > 7.7V)
- **PNP configuration**, to activate input, short-circuit terminals I4 (15) and +12/24 Vdc (10).
  (Activation Vi > 7.7V Deactivation Vi < 6.4V)

5.1.g   Sensor power output +12/24Vdc

Through +12/24Vdc terminal (10) and 0V terminal (16) the device provides a voltage for activating the digital inputs and for supplying power to encoders, proximity sensors, etc. The output voltage is selectable via parameter 231 (Group "*Output setting*" parameter "*Output voltage*").

Depending on the supply voltage and output setting, the deliverable currents are as follows:

Supply	OUT +12 Vdc	OUT +24 Vdc
24 Vdc	50 mA	20 mA
24 Vac	50 mA	20 mA
115 Vac	50 mA	50 mA
230 Vac	50 mA	50 mA

5.1.h   Q1 Relais Output

Contact rating 2 A / 250 Vac for resistive loads.
NB: see diagram below

5.1.i   Q2 Relais Output

Contact rating 2A/250 Vac for resistive loads.
NB: see diagram below
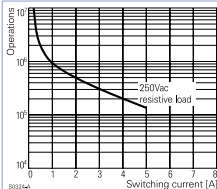
Electrical endurance Q1 / Q2.
2 A, 250 Vac, resistive load, 10^5 operations.
20/2 A, 250 Vac, $\cos\varphi = 0.3$, 10^5 operations.

5.1.j   Q3 Digital Output

When acivated, the PNP digital output provides a positive +12Vdc or +24Vdc voltage depending on the setting of parameter 231 (Group "*Output Setting*" parameter "*Output Voltage*") on terminal Q3 (11).
The output voltage reference is terminal 0V (16).

Depending on the supply voltage and output voltage setting, the currents that can be delivered by the Q3 output are as follows:

Supply	OUT +12 Vdc	OUT +24 Vdc
24 Vdc	25 mA	5 mA
24 Vac	25 mA	5 mA
115 Vac	25 mA	25 mA
230 Vac	25 mA	25 mA

⊕ 17 Q4 ⊖ 16 0V	When activated, the PNP digital output provides a positive +12Vdc or +24Vdc voltage depending on the setting of parameter 231 (Group "*Output Setting*" parameter "*Output Voltage*") on terminal Q4 (17). The output voltage reference is terminal 0V (16).

Depending on the supply voltage and output voltage setting, the currents that can be delivered by the Q4 output are as follows:

Supply	OUT +12 Vdc	OUT +24 Vdc
24 Vdc	25 mA	5 mA
24 Vac	25 mA	5 mA
115 Vac	25 mA	25 mA
230 Vac	25 mA	25 mA

6   Display and Key Functions
6.1   Key
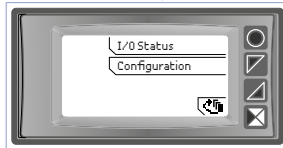
Keys are multifunction: in correspondence of each key its meaning is displayed. If no description is showed, press a key to visualize it. Some menus will be only displayed, when activated.

6.2   Display

Displays values of meters, tachometer, alarm setpoints, and all configuration parameters. The multilingual interface makes navigation and access to various features intuitive.
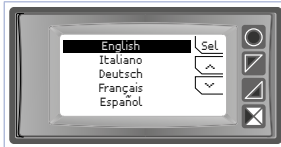
English / Italiano / Deutsch / Français / Español	At first starting, display shows language selection.

6.3   Display mode
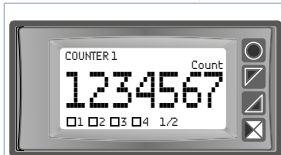
COUNTER 1 — 1234567 Count — □1 □2 □3 □4 1/2	Displays the first data value enabled with its description and unit and the outputs status. The picture shows the display related to "*1 val. per page*" setting in the "*Display -> Display*" parameter. The inscription 1/12 at the bottom indicates that the first of 12 pages (maximum) used for the representation of enabled variables is being displayed..
COUNTER 1 — 1234567 Count — SETPOINT1 — 39321.60 Count — □1 □2 □3 □4 1/6	Displays the first two enabled data value with its description and unit of measurement and the outputs status. The picture sh ows the display related to the setting "*2 val. per pag.*" in the parameter "*Display -> Display*"
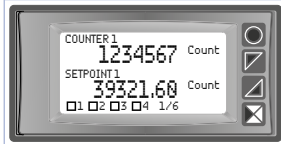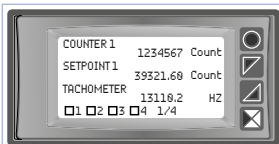
COUNTER 1 1234567 Count SETPOINT 1 39321.60 Count TACHOMETER 13110.2 HZ ☐1 ☐2 ☐3 ☐4 1/4	Displays the first three enabled data value with its description and unit of measurement and the outputs status. The picture shows the display related to the setting "*3 val. per pag.*" in the parameter "*Display -> Display*"
COUNTER 1 1234567 Count SETPOINT 1 39321.60 Count TACHOMETER 13110.2 HZ OUTPUT DURATION 5.0 S	Displays the first four enabled data value with its description and unit of measurement. In this type of display, the outputs status is visible in a dedicated screen that can be reached from the device menu. The picture shows the display related to the setting "*4 values per page*" in the parameter "*Display -> Display*"
1234567 Count 39321.60 Count 13110.2 HZ ■1 ■2 ☐3 ☐4 1/4	Displays the first three enabled data value, in expanded display mode. This mode, which can be enabled only in the 3- or 4-variable-per-page display, allows data values to be displayed in a larger font than is normally used for such representation, omitting the display of the data description and leaving only the unit of measurement. This mode is enabled by setting the description of the relevant data item as a sequence of spaces (null description).
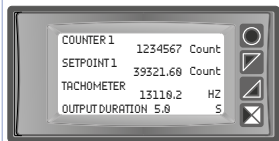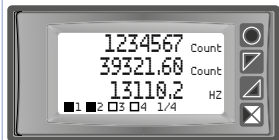
7 Device functions
7.1 Variables display
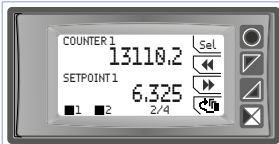
If the set variables require more than one screen for their full display, there are two ways to perform the screen change.

- **Automatic mode**. Setting Scroll Time parameter with a selection other than Disabled, with no action on the keys, the screens will be displayed in a cyclic timed mode, with the interval set in the parameter. The display will then switch from one page to another in automatic mode.
- **Manual keyboard mode**. Pushing any of the keyboard buttons during normal variable display will display the navigation menu at the buttons. Pushing (◀◀) and (▶▶) you can scroll forward and backward through the variable display screens. The bottom of the screen will show the number of the currently displayed page along with the total number of pages.

7.2 Modifying setpoint values
On screens with setpoints enabled for modification, the button (Sel) will also be present in the navigation menu. To modify a variable, refer to the procedure in the table below.

	Premere	Effetto	Eseguire
1	(Sel)	Select the first variable to be modified. The value to be modified will be highlighted. The edit menu substitutes the the navigation one.	(△) and (▽) to modify the value. Through (▯▮▯) it is possible to modify digit-by-digit.

	Premere	Effetto	Eseguire
2	Ok	Confirms the modified value; if another variable to be modified is present on the page, selects it. If there are no other variables to change, see step 3.	See point 1.
3	Ok	$\wedge$ and $\vee$ of the editing menu disappear and navigation menu will appaear again.	For new editing see point 1.

Exiting the edit menu is also timed 5 seconds after the last action on the keys. Again, the modified data is saved.

7.3 I/O Status
This function, accessible via the main menu button I/Ostatus, allows monitoring digital inputs status, outputs and communication on the COM1 port.
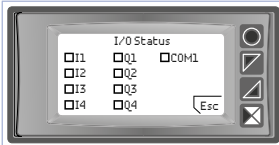
This screen displays the active/disactive status of each digital input, output and communication related to the serial port COM1.

8 COM1 Serial Communication
The STR581 has serial COM1 (RS485) on which the Modbus RTU slave protocol is active. This allows the device to be connected to a supervisory system or more generally to a Modbus RTU master device. Each device will respond to a the Master only if it contains the same address as the one contained in the parameter Serial *COM1 -> Slave Address*.

Allowed addresses range from 1 to 254, and there must be no devices with the same address on the same line. Address 255 can be used by the master to communicate with any connected device, regardless of its address, while with address 0 all devices receive the command, but no response is expected (broadcast mode).

The STR581 can introduce a delay (in milliseconds) before responding to the master's request. This delay must be set in the parameter Serial COM1 -> Delay responsive. For the complete list of parameters related to serial COM1, refer to the "*Serial COM1*" section in the "*Configuration Parameter Table*" chapter.

NB: Changes to the device configuration parameters are also possible via serial COM1.

ATTENTION: each time the parameters change, the device saves the value in EEPROM memory (100000 write cycles). This means that continuous writing with ever-changing values of the parameters can damage the EEPROM memory after exceeding the allowed number of writing cycles.

NB: Changes made to word other than those shown in the table below may cause malfunction of the device.

Features Modbus RTU slave protocol	
Baud-rate	Selectable from par. **Serial COM1 -> Baud rate**: 1.200 baud 9.600 baud 38.400 baud 2.400 baud 19.200 baud 57.600 baud 4.800 baud 28.800 baud 115.200 baud
Formato	Selectable from par. **Serial COM1 -> Serial format**: 8, N, 1 (8 bit, no parity, 1 stop) 8, E, 1 (8 bit, parity even, 1 stop) 8, O, 1 (8 bit, parity odd, 1 stop) 8, N, 2 (8 bit, no parity, 2 stop) 8, E, 2 (8 bit, parity even, 2 stop) 8, O, 2 (8 bit, parity odd, 2 stop)
Funzioni supportate	WORD READING (max 20 word) (0x03, 0x04) SINGLE WORD WRITING (0x06) MULTIPLE WORDS WRITING (max 20 word) (0x10)

A list of all available addresses and supported functions is given below:

RO	Read Only	R/W	Read / Write	WO	Write Only

8.1   Notes for parameter access

Access: data accessible via Modbus protocol that refer to parameters or 32-bit data (2 words) must be modified by writing two consecutive Modbus addresses (lowest address first and then highest address). It is not sufficient to write only one word even if the other should remain unchanged.

Alphanumeric strings are stored in the relevant parameters, using the ascii codes of the characters used.
Each parameter (32 bits) contains 4 characters (each character 8 bits), so to store strings with more than 4 characters, multiple contiguous parameters are used, based on the number of characters used, according to the following scheme:

Stored string *"ABCDEFGHIJKLMNOP"*

Parameter number	Parameter value	String
Parameter n	0x44434241	ABCD
Parameter n+1	0x48474645	EFGH
Parameter n+2	0x4C4B4A49	IJKL
Parameter n+3	0x504F4E4D	MNOP

0x41 ascii code *"A"*
0x42 ascii code *"B"*
...
0x4F ascii code *"O"*
0x50 ascii code *"P"*

Modbus Address	Description	Read Write	Reset value
0	Device type	RO	EEPROM
1	Software version	RO	EEPROM
5	Address slave	R/W	EEPROM

Modbus Address	Description	Read Write	Reset value
500	Reload factory data (default) The following values (commands) are accepted: 9999 Reloads all factory parameters 9998 Reloads all factory parameters, leaving baud rate and format of COM1 serial and device address (Slave address) unchanged 9997 Reloads all factory parameters, leaving the baud rate and format of the COM1 serial unchanged 9996 Reloads all factory parameters, leaving the device address (Slave address) unchanged *Once the received command is executed, the device restart to allow proper initialization.*	R/W	0
600	Counter value 1 H	RO	?
601	Counter value 1 L	RO	?
602	Counter counts 1 H	RO	?
603	Counter counts 1 L	RO	?
604	Direction status, lock, hold counter 1 Bit 0 = Direzione (0=Up, 1=Down) Bit 1 = Lock (0=Unlock, 1=Lock) Bit 2 = Hold (0=Update, 1=Hold)	RO	0
605	Counter direction 1 0=Up, 1=Down	RO	0
606	Lock counter status 1 0=Unlock, 1=Lock	RO	0
607	Hold counter status 1 0=Update, 1=Hold	RO	0
608	Serial command from counter 1 Indicates the value of the last serial command executed.	RO	0
609	Counter hold status 1 H	RO	?
610	Counter hold status 1 L	RO	?

Modbus Address	Description	Read Write	Reset value
620	Serial command counter 1 0=Nº command 1=Load command 2=Command enable/disable lock function 3=Command enable/disable hold function 4=Command reverse count direction 5=Command set count direction UP 6=Command set count direction DOWN	WO	0
630	Counter value 2 H	RO	?
631	Counter value 2 L	RO	?
632	Counter counts 2 H	RO	?
633	Counter counts 2 L	RO	?
634	Direction status, lock, hold contatore 2 Bit 0 = Direzione (0=Up, 1=Down) Bit 1 = Lock (0=Unlock, 1=Lock) Bit 2 = Hold (0=Update, 1=Hold)	RO	0
635	Counter direction 2 0=Up, 1=Down	RO	0
636	Counter lock status 2 0=Unlock, 1=Lock	RO	0
637	Counter hold status 2 0=Update, 1=Hold	RO	0
638	Serial command from counter 2 Indicates the values of the last serial command executed	RO	0
639	Counter hold value 2 H	RO	?
640	Counter hold value 2 L	RO	?
650	Serial command counter 1 The commands available are those reported for word 620.	WO	0
700	Tachometer value H	RO	0
701	Tachometer value L	RO	0

Modbus Address	Description	Read Write	Reset value
702	Minimum pick tachometer value H	RO	?
703	Minimum pick tachometer value L	RO	?
704	Maximum pick tachometer value H	RO	?
705	Maximum pick tachometer value L	RO	?
706	Serial command from tachometer Indicates the values of the last serial command executed	RO	0
707	Out-Enable status tachometer 0=Tachometer outputs disabled 1=Tachometer outputs enabled	RO	0
708	Tachometer hold status 0=Tachometer hold function disabled 1=Tachometer hold function enabled	RO	0
709	Tachometer hold value H	RO	?
710	Tachometer hold value L	RO	?
720	Serial command tachometer 0=Nº command 1=Command enable/disable tachmeter outputs 2=Command enable/disable hold function 3=Minimum & maximum peak reset command-d4=Command reset output (if in latch)	WO	0
900	Outputs status (0 = Off, 1 = On): Bit 0 = Relais **Q1** Bit 2 = Digital output **Q3** Bit 1 = Relais **Q2** Bit 3 = Digital output **Q4**	RO	0
901	Digital inputs status (0 = Off, 1 = Active): Bit 0 = **I1** Bit 1 = **I2** Bit 2 = **I3** Bit 3 = **I4**	RO	?
902	Key status (0 = released, 1 = pressed): Bit 0 = ☒ Bit 1 = ◁ Bit 2 = ▽ Bit 3 = ●	RO	0

Modbus Address	Description	Read Write	Reset value
903	Errors Flags Bit 0 = Incorrect calibration data Bit 1 = Incorrect parameters Bit 2 = Incorrect status data Bit 3 = EEProm memory writing error Bit 4 = EEProm memory writing error Bit 5 = Missing calibration error Bit 6 = Parameter out of range Bit 7 = FRam memory access error	RO	0
2001	Parameter 1 (H)	R/W	EEPROM
2002	Parameter 1 (L)	R/W	EEPROM
2003	Parameter 2 (H)	R/W	EEPROM
2004	Parameter 2 (L)	R/W	EEPROM
...	...		
2597	Parameter 299 (H)	R/W	EEPROM
2598	Parameter 299 (L)	R/W	EEPROM
2599	Parameter 300 (H)	R/W	EEPROM
2600	Parameter 300 (L)	R/W	EEPROM
4001	Parameter 1 (H)*	R/W	EEPROM
4002	Parameter 1 (L)*	R/W	EEPROM
4003	Parameter 2 (H)*	R/W	EEPROM
4004	Parameter 2 (L)*	R/W	EEPROM
...	...		
4597	Parameter 299 (H)*	R/W	EEPROM
4598	Parameter 299 (L)*	R/W	EEPROM
4599	Parameter 300 (H)*	R/W	EEPROM
4600	Parameter 300 (L)*	R/W	EEPROM

*   Parameters changed using serial addresses 4001 to 4600 are saved in the Eeprom only after 10" from the last write of one of the parameters.

9 Error messages

The device provides for fault/anomaly reporting through display messages.
The possible messages are as follows:
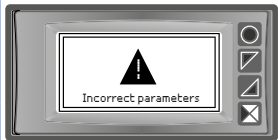
	Incorrect parameters Error detenction in the device configuration parameters
	Incorrect status data Detected an error in the device status save data. .
	Eeprom read error An error was detected in the Eeprom memory read sequence.
	Err. eeprom write **An error was detected in the Eeprom memory write sequence.**
	FRam error **Detected an error in the read/write sequence of FRam memory.**
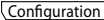
In all these cases, the device may no longer be able to function properly. Turn off and on again, if the problem persists contact the assistance.

10 Configuration
10.1 Modifying configuration parameters
See par. 11 for configuration parameters.

	Press	Effect	Do
1	Configuration	Shows 0000 with the 1st digit selected	
2	△ and ▽	Changes the selected digit and moves to the next one using ▥	Enter password 1234
3	Sel to confirm	The name of the parameter groups appear on the display	
4	△ e ▽	Shows the names of the parameter groups	
5	Sel to enter parameter group	Shows the parameters of the selected group.	Press △ and ▽ to select parameter to be modified.
6	Sel to enter parameter modification	Shows all parameters possible selections or parameter numeric value	Press △ and ▽ to modify parameter. For numeric parameters, pressing ▥ it is possible to modify digit-to-digit.Press Sel to confirm modification. Press ← to exit without modify.

10.2 Loading default values
Enter password 9999 to restore device factory settings. The device will restart to allow proper initialization.

10.3 Reading and configuration through NFC

	Android®	iOS®
Scan the Qr-Code to download the App on Google Play Store:		

STR581 is supported by the App MyPixsys: using an ANDROID smartphone with NFC connection it is possible to program the device without using a dedicated equipment*.

*With iOS App, communication between the smartphone and the device is through the RFID Programmer > Bluetooth (2000.35.099), which must be placed on the device's NFC connection point.

MyPixsys allows to read and view data already on the device, modify its parameters and setpoints, save and send (via email) complete configurations, reload backups and factory settings.
Procedure:
- Make sure that the NFC sensor of the Android® phone is enabled and that there are no metallic materials between the smartphone and the device (e.g., aluminum covers or magnetic stands);
- Place the NFC antenna of the smartphone / RFID Programmer > Bluetooth at the antenna of the device (located on the front);
- Enable system sounds on your phone, as the notification sound confirms that the device has correctly been detected

The App interface is provided with four tabs: SCAN, DATA, WRITE, EXTRA.
Select the first tab "*SCAN*" to read data stored into the internal memory of the device; place the smartphone in contact with its frontal panel, making sure that the phone's antenna matched with that of the device.
Once detected the device, the App emits a notification sounds and proceeds with the model identification and the reading of the parameters.
The graphic interface shows the advancement and switches to the second tab "*DATA*". It is now possible to move the smartphone away from the controller to make the required modifications more easily.
The device parameters are divided into collapsible groups and are displayed

with name, current value and reference index to the manual.

Click on a row to open the setting screen of the related parameter with the detailed view of available options (in case of multiple choice parameters) or of the minimum/maximum/decimals limits (for numeric parameters). Once selected the chosen value, the related row will be updated and underlined into the tab "*DATA*" (hold down the line to undo changes).

To download the new configuration on your device, select the third tab "*WRITE*", place again the smartphone in contact with the device and wait for the operation to complete. The device will show a restart request, necessary to update the configuration with the new written modifications; if it does not restart, the STR581 will continue to work with the previous configuration.

In addition to the classic operation of parameters reading->- modification->writing, MyPixsys is provided with additional functions which can be accessed by the tab "*EXTRA*", as save/upload and email the entire configuration and restore factory values.

10.4   Configuration through memory card

The device can be configured through a memory card (2100.30.013). This one is linked to the micro-USB port on the upper side of the device.

10.4.a Creation memory card	
	To save a parameter configuration to the memory card, with device switched on, connect it to the micro-USB connector, enter configuration, set parameters as required, and exit configuration. At this point, the device recognises the memory card and saves the configuration to this one. A message on the display will notify the saving.

To load a previously made configuration and saved on a memory card, connect it to the micro-USB connector and power the device. At this point, if the memory card is detected and the data on it are considered valid, the display will show the request to load data from memory. User has two options, Load parameters from memory or cancel the operation without changing current configuration.

11   Table of configuration parameters
Below is the complete list of parameters divided into various subgroups.

11.1   Display
Display and visualisation configuration parameters.

1   Language
Language selection
English (**Default**)
Italiano
Deutsch
Francais
Español

2   Display
Selects the display mode of the variables values used.
1 value per page (**Default**)
2 values per page
3 values per page
4 values per page
As a consequence of setting this parameter, if more variables are used than can be displayed on a page, multiple pages will be used to complete the display of all values.

3   Scroll time
In the case of displaying multiple pages of variables, automatic scrolling between pages can be set. This parameter defines the time interval for

Disabled	4 sec.	30 sec.
1 sec.	5 sec. (**Default**)	1 min.
3 sec.	10 sec.	
	20 sec.	

which each page is displayed before moving to the next one. Any button press, restart the time.

| **4** | **Update time** |

Determines the interval for updating the displayed quantities.
If the value of the counter or tachometer changes faster than this interval, the displayed value in each case will not be updated before this interval expires.
0,1..5,0 s (**Default**: 0,1 s)

| **5** | **Contrast** |

Determines the contrast value for the OLED display.
0%..100% (**Default**: 80%)

| **7** | **Standby time** |

Determines the time after which the display goes into standby mode if no button presses are detected. Reduces brightness in low-light environments and extends the display life cycle.

Always on (**Default**)	5 minutes
15 seconds	10 minutes
30 seconds	30 minutes
1 minute	1 hour
2 minutes	

9	**Data vis. n°1**
10	**Data vis. n°2**
11	**Data vis. n°3**
12	**Data vis. n°4**
13	**Data vis. n°5**
14	**Data vis. n°6**
15	**Data vis. n°7**
16	**Data vis. n°8**
17	**Data vis. n°9**
18	**Data vis. n°10**
19	**Data vis. n°11**
20	**Data vis. n°12**

Defines for each display position what the associated magnitude is. Through these parameters it is possible to customize the device user interface by choosing which data to display.

11.2 Digital input 1..2

Parameters to configure digital input 1 and 2, dedicated to counting.

31 Hardware type
36 Hardware type

Selects the digital input hardware type.

NPN	Input suitable for sensors with NPN output. Activation is initiated by short-circuiting the input to ground (0V).
PNP (**Default**)	Input suitable for sensors with PNP output. Activation starts by bringing a positive signal (+12/24 Vdc) to digital input.
Push-Pull	Input suitable for sensors with Push-Pull output.
Line-Driver	Input suitable for sensors with line-driver output. This solution uses a pair of complementary signals read in differential mode for each input.

32 Hardware filter
37 Hardware filter

Selects digital input hardware filter.

Disabled (**Default**)	Hardware input filter is disabled.
Enabled	Hardware input filter limiting the input signal bandwidth to 1 KHz is enabled

33 Software filter
38 Software filter

Selects digital input software filter.

OFF (**Default**)	Nº software filter applied to input signal.
0,5..100,0 ms	Software filter applied to input signal cuts any pulses with a duration shorter than the time set in the filter.

34 Active status
39 Active status

Selects input signal active state.

Up front (**Default**)	Counting action will take place on the input signal up front
Down front	Counting action will take place on the input signal down front.

11.3 Digital input 3..4

Parameters for configuring digital input 3 and 4, dedicated to activating auxiliary functions.

41 Hardware type
46 Hardware type

Select type of digital input hardware.

NPN	Input suitable for sensors with NPN output. Activation is initiated by short-circuiting the input to ground (0V)
PNP (**Default**)	Input suitable for sensors with PNP output. Activation starts by bringing a positive signal (+12/24 Vdc) to the digital input.

43 Software filter
48 Software filter

Select software filter for digital input.

OFF (**Default**)	Nº software filter applied to the input signal.
0,5..100,0 ms	Software filter applied to the input signal cuts any pulses with a duration shorter than the time set in the filter.

44 Active state
49 Active state

Select input signal active state.

Up front (**Default**)	Action will take place on the input signal up front
Down front	Action will take place on the input signal down front.

| High-level | Action will take place on the input signal high level. |
| Low-level | The action will take place on the inout signal low level. |

45 Input function
50 Input function

Select function related to the input.

Disabled (**Default**)	Nº action related to the input.
Encoder Z	Input establishes the encoder Z signal connection for resetting.
Enable encoder Z	Input when activated enables the resetting function via the encoder's Z signal.
Counter charge 1	Input when activated allows the loading of counter 1 with its preset value.
Counter charge 2	Input when activated allows the loading of counter 2 with its preset value.
Counter charge 1&2	When activated, the input enables the loading of counter 1 and counter 2 with their preset value.
Enables tachometer outputs	Input, when activated, enables the techometer-related outputs if the output enable is set by input.
Hold tachometer	Input when activated enables/disables the tachometer hold function.

11.4 Counter 1..2

Counter 1 and 2 configuration parameters.

58 Clock sorgent *(Counter 1)*
78 Clock sorgent *(Counter 2)*
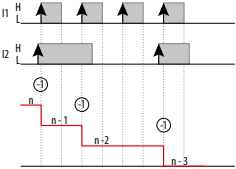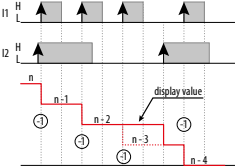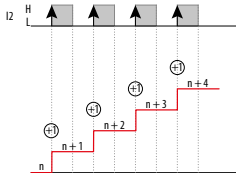
Select the counting source of counter
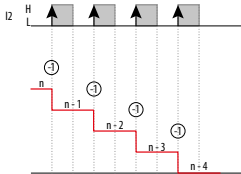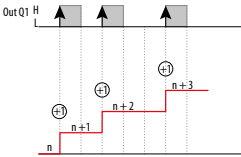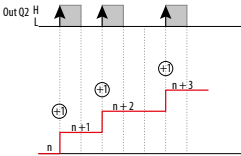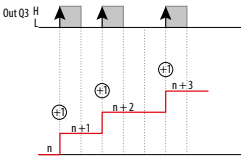
Disabled (**Default** 2)	Counter disabled, no counting input.	

Encoder		Counter count derives from the encoder connected to inputs I1 and I2.
I1 Up-I2 Off (**Default** 1)		Counter count in Up (increment) mode comes from input I1. Input I2 remains free for other uses.
I1 Up-I2 Down		Counter count in Up (increase) mode comes from input I1, and in Down (decrease) mode from input I2.
I1 Up-I2 In/Dec		Counter count derives from input I1. Input I2 switches from Up (increment) to Down (decrement) counting mode

I1 Up-I2 En/Loc		Counter count in Up (increment) mode derives from input I1. Input I2 enables or locks (Lock) the counting
I1 Up-I2 En/Hol		Counter count in Up (increment) mode derives from input I1. Input I2 enables updating of the counter display or activates the hold function of the current counter value
I1 Down-I2 Off		Counter count in Down (decrement) mode derives from input I1. Input I2 remains free for other uses

I1 Do-I2 En/Loc		Counter count in Down (decrement) mode derives from input I1. Input I2 enables or locks (Lock) the counting
I1 Do-I2 En/Hol		Counter count in Down (decrement) mode derives from input I1. Input I2 allows the counter display to be updated or activates the Hold function of the current counter value
I1 Off-I2 Up		Counter count in Up (increment) mode comes from input I2. Input I1 remains free for other uses.

I1 Off-I2 Down		Counter count in Down (decrement) mode is derived from input I2. Input I1 remains free for other uses.
OutputQ1		Counter count in Up (increment) mode occurs each time output Q1 is activated.
OutputQ2		Counter count in Up (increment) mode occurs each time output Q2 is activated.
Output Q3		Counter count in Up (increment) mode occurs each time output Q3 is activated.

Output Q4		Counter count in Up (increment) mode occurs each time output Q4 is activated.
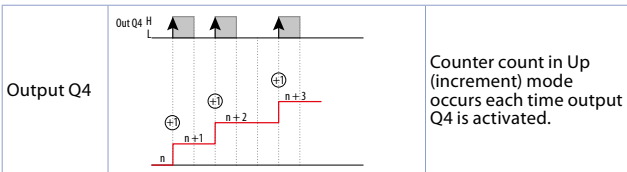
51　**Description** *(Counter 1)*
71　**Description** *(Counter 2)*

Defines the counter description text string (max. 16 characters) that will be displayed together with the counter value and its unit. If you do not wish to display the description, set the text as null string (16 spaces).
"COUNTER 1　　　" (**Default**)

56　**Unit of measurement** *(Counter 1)*
76　**Unit of measurement** *(Counter 2)*

Defines the counter unit text string (max. 5 characters) that will be displayed together with the counter value and its description. If you do not want to display the unit of measurement, set the text as null string (5 spaces).
"count" (**Default**)

59　**Multiplier** *(Counter 1)*
79　**Multiplier** *(Counter 2)*

Sets the value by which to multiply the value in counter counts to transform it into a rescaled quantity useful for display.

-99999...99999 (**Default** 1)	Set the correct value of multiplier which, together with Divisor, allows a rescaled value to be obtained from the counted value.

60　**Divisor** *(Counter 1)*
80　**Divisor** *(Counter 2)*

Set the value by which to divide the counter count value into a rescaled value useful for display.

1...99999 (**Default** 1)	Set the correct divisor value, which in combination with the Multiplier allows a rescaled value to be obtained from the counted value.

61 **Decimal point** *(Counter 1)*
81 **Decimal point** *(Counter 2)*

Defines the number of decimal digits with which the counter value will be displayed.

0 (**Default**)	no decimal	0,0000	4 decimal digits
0,0	1	0,00000	5 decimal digits
0,00	2 decimal digits	0,000000	6 decimal digits
0,000	3 cdecimal digits		

62 **Automatic loading** *(Counter 1)*
82 **Automatic loading** *(Counter 2)*

Selects the event that determines the counter automatic loading with the preset value.

Disabled (**Default**)	Automatic counter loading is disabled
Set1	Counter is automatically loaded when the value reaches the Set1 value (Counter = Set1).
Set2	Counter is automatically loaded when the value reaches Set2 (Counter = Set2).
Set3	Counter is automatically loaded when the value reaches Set3 (Counter = Set3).
Set4	Counter is automatically loaded when the value reaches the value Set4 (Counter = Set4).
Set1+Out duration 1	Counter is automatically loaded when the value reaches the value Set1+Out duration 1 (Counter = Set1+Out duration 1).
Set2+Out duration 2	Counter is automatically loaded when the value reaches the value Set2+Out duration 2 (Counter = Set2+Out duration 2).

Set3+Out duration 3	Counter is automatically loaded when the value reaches the value Set3+Out duration 3 (Counter = Set3+Out duration 3).
Set4+Out duration 4	Counter is automatically loaded when the value reaches the value Set4+Out duration 4 (Counter = Set4+Out duration 4).
Set1-Out duration 1	Counter is automatically loaded when the value reaches the value Set1-Out duration 1 (Counter = Set1-Out duration 1).
Set2-Out duration 2	Counter is automatically loaded when the value reaches the value Set2-Out duration 2 (Counter = Set2-Out duration 2).
Set3-Out duration 3	Counter is automatically loaded when the value reaches the value Set3-Out duration 3 (Counter = Set3-Out duration 3).
Set4-Out duration 4	Counter is automatically loaded when the value reaches the value Set4-Out duration 4 (Counter = Set4-Out duration 4).

63   Preset value *(Counter 1)*
83   Preset value *(Counter 2)*

Sets the value that is loaded onto the counter at each load event (Load).

-9999999 ... 9999999 (**Default** 0)	Set the preset value to be loaded into the counter at the time of the load event.

64   Power-off memory *(Counter 1)*
84   Power-off memory *(Counter 2)*

Defines whether the counter value is to be retained in the device's internal memory so that the value is retained even in the event of a power failure and the next time it is switched back on, the last value recorded is displayed.

Disabled (**Default**)	Counter value is not stored. When switched on, the counter value is initialised with the value 0.

Enabled	Counter value is stored in the device's internal memory when no more count pulses are detected for more than 100ms. This implies that a 'running' switch-off, i.e. during the counting phase, may not guarantee the integrity of the stored data. At switch-on, the counter is preloaded with the value stored before switch-off.

11.5 Tachometer 1

Tachometer configuration parameters.

91   Description

Defines the tachometer description text string (max. 16 characters), which will be displayed together with the tachometer value and its unit. If you do not want to display the description, set the text as a null string (16 spaces).

"*FREQUENCY 1   *" (**Default**)

96   Unit measuring

Defines the tachometer unit of measurement text string (max. 5 characters) that will be displayed together with the tachometer value and its description. If you do not want to display the unit of measurement, set the text as a null string (5 spaces).

"*Hz *" (**Default**)

98   Min. frequency

Sets the minimum frequency value to be detected by the device. Lower frequency values will be ignored and the tachometer value set to 0.

0,01...10,00 Hz (**Default** 1,00)	Set the correct value for the minimum input frequency to be detected.

99 Software filter

Sets the software filter value applied to the acquired frequency magnitude.

OFF (**Default**)	№ software filter applied to the input signal detected frequency.
0,01...1,00 s	All input frequency samplings detected in the set software filter range will be used to calculate the mathematical average.

100 Acquisition mode

Defines frequency acquisition mode used.

Mode 1 (**Default** 1)	Frequency is determined by measuring each pulse period duration.

101 Multiplier

Sets the value by which to multiply the measured frequency value to transform it into a rescaled quantity useful for visualisation.

1...99999 (**Default** 1)	Set the multiplier correct value which, in combination with the Divisor, allows a rescaled value to be obtained from the frequency value.

102 Divider

Sets the value by which the measured frequency value is to be divided into a rescaled quantity useful for display.

1...99999 (**Default** 1)	Set the correct divisor value that, associated with the Multiplier, allows a rescaled value to be obtained from the frequency value.

103 Time base

Sets the time base used to transform the detected frequency into rescaled magnitude useful for visualisation.

Second (**Default** 1)	The rescaled value will be calculated as a physical quantity measured in the time unit of second.
Minute	Rescaled value will be calculated as a physical quantity measured in the time unit of minute.

Hour	Rescaled value will be calculated as a physical quantity measured in the time unit of hour

104 Decimal point
Defines the number of decimal digits with which the tachometer value will be displayed.

0 (**Default**)	no decimal	0,0000	4 decimal digits
0,0	1 decimal digit	0,00000	5 decimal digits
0,00	2 decimal digits	0,000000	6 decimal digits
0,000	3 decimal digits		

105 Fixed zeros
Defines the number of least significant digits that are automatically fixed to 0 not to have a display with continuously changing digits due to an unstable measured signal.

###### (**Default**)	no digit set at 0
#####0	last digit always at 0
####00	last two digits always at 0
###000	last three digits always at 0
##0000	last four digits always at 0

106 Peak visualisation
Defines whether or not the button for access to the dedicated page for displaying the minimum and maximum peaks, detected by the tachometer, should appear in the device menu. This page allows these peaks to be reset to start a new acquisition.

Disabled (**Default**)	The peak display screen is not enabled.
Enabled	The screen is enabled and accessible from the device's main menu.

107 Power-off memory
Defines whether the peak values detected by the tachometer are to be retained in the device's internal memory. The values, therefore, are retained even in the event of a power failure and the next time the device is switched back on, the stored values are re-presented.

Disabled (**Default**)	Minimum and maximum peak values of the tachometer are not stored. When switched on, the peak values are initialised with value 0.
Maximum peak	Only maximum peak value is retained even in the event of a power failure. The minimum peak is initialised with value 0.
Minimum peak	Only minimum peak value is retained even in the event of a power failure. The maximum peak is initialised with value 0.
All peaks	Both maximum peak value and minimum peak value are maintained in the event of a power failure.

11.6 Output Q1..4

Output Q1..Q4 configuration parameters.

111 **Source value** *(Output Q1)*
141 **Source value** *(Output Q2)*
171 **Source value** *(Output Q3)*
201 **Source value** *(Output Q4)*

Defines the data used to manage the output.

Nºne (**Default**)	Output is disabled.
Counter 1	The data used to manage the output logic is the value of counter 1.
Counter 2	The data used to manage the output logic is the value of counter 2
Tachometer 1	The data used to manage the output logic is the value of counter 1.

112 **Output mode** *(Output Q1)*
142 **Output mode** *(Output Q2)*
172 **Output mode** *(Output Q3)*
202 **Output mode** *(OutputQ4)*

Defines the related output operation mode.

▌ These parameters are visible only if the corresponding Source Value parameter is set to Counter 1 or Counter 2.

Count>=Set (**Default**)		Output is active when counter value is >= at the setpoint.
Count>=-Set*Od-T		Output is active for the output duration time when counter value is >= at the setpoint.
Count>=-Set*Od-C		Output is active when counter value is >= at the setpoint and is deactivated when counter value is >= at setpoint + Output duration.

113   **Output duration** *(Output Q1)*
143   **Output duration** *(Output Q2)*
173   **Output duration** *(Output Q3)*
203   **Output duration** *(Output Q4)*

Defines the output activation duration.

These parameters are only visible if the corresponding Source Value parameter is set to Counter 1 or Counter 2.

Input from user (**Default**)	Output duration value can be set directly from the user screen.
Latch	Output, when activated, remains active until the counter is loaded.
0,1..99,9 s 1..999 counts	Depending on the selected output mode, it will be possible to set an activation duration in time (s) or for a quantity of the same magnitude as the counter value.

115 **Output enable** *(OutputQ1)*
145 **Output enable** *(OutputQ2)*
175 **Output enable** *(OutputQ3)*
205 **Output enable** *(OutputQ4)*
Defines the output activation mode.
These parameters are only visible if the corresponding Source Value parameter is set to Tachometer.

Always enabled (**Default**)	Output is always enabled.
Automatic enabling	Output enabling is automatic.
Enabling from input	Output enabling occurs from configured digital input.

116 **Output mode** *(Output Q1)*
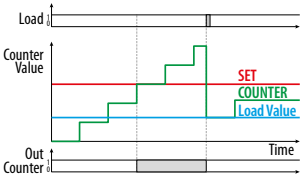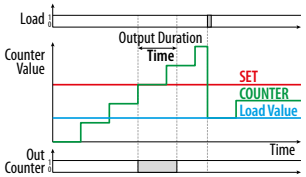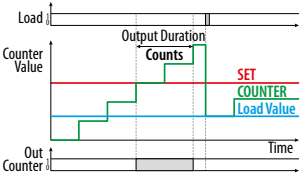**146** **Output mode** *(Output Q2)*
176 **Output mode** *(Output Q3)*
206 **Output mode** *(Ouput Q4)*
Defines the related output operation mode.
These parameters are visible only if the corresponding Source Value parameter is set to Tachometer 1.

Upward deviation (**Default**)		Output is active in case of upward deviation. (The tachometer value exceeds the setpoint).
Lower deviation		Output is active in case of downward deviation. (The tachometer value falls below the setpoint).
Inside band		Output results active within a band defined by the setpoint value and the band

| Out band | | Output is active outside a band defined by the setpoint value and the band. |

117 **Output duration** *(Output Q1)*
147 **Output duration** *(Output Q2)*
177 **Output duration** *(Output Q3)*
207 **Output duration** *(Output Q4)*

Defines the output activation duration.

▌ These parameters are visible only if the corresponding Source Value parameter is set to Tachometer 1.

Automatic (**Default**)	Output reset occurs automatically as soon as the trigger condition fails.
Latch	Output, once activated, remains active until a Clear command from appropriately configured digital input.
0,1..99,9 s	Output once activated will be active for the set time.

118 **Activation delay** *(Output Q1)*
148 **Activation delay** *(Output Q2)*
178 **Activation delay** *(Output Q3)*
208 **Activation delay** *(Output Q4)*

Defines the output activation delay.

▌ These parameters are visible only if the corresponding Source Value parameter is set to Tachometer 2.

0,0..999,9 s (**Default** 0,0)	When activation condition occurs, you can delay the output actual activation by setting a delay.

119 **Activation delay** *(Output Q1)*
149 **Activation delay** *(Output Q2)*
179 **Activation delay** *(Output Q3)*
209 **Activation delay** *(Output Q4)*

Defines the output deactivation delay.

▌ These parameters are visible only if the corresponding Source Value parameter is set to Tachometer 1.

0,0..999,9 s (**Default** 0,0)	When deactivation condition occurs, it is possible to delay the output deactivation by setting a delay.

120 **Band value** *(Output Q1)*
150 **Band value** *(OutputQ2)*
180 **Band value** *(Output Q3)*
210 **Band value** *(Output Q4)*

Defines the band value related to output management in case management in In-band or Out-band mode is selected.
These parameters are visible only if the corresponding parameter
Source Value is set to Tachometer 1 and Output Mode is set to In-band or Out-of-band.

1 ..9999999 (**Default** 10)	Sets the band value. Display of this number takes its formatting from the source quantity it refers to (Tachometer 1).

121   **Setpoint management** *(Output Q1)*
151   **Setpoint management** *(Output Q2)*
181   **Setpoint management** *(Output Q3)*
211   **Setpoint management** *(Output Q4)*

Defines the setpoints operation mode related to output management.

Visible only	Setpoint value can be viewed in the user screens but changing the value is not allowed. Setpoint setting is only possible during configuration.
Modifiable (**Default**)	Setpoint value can be viewed and changed in the user screens.

122   **Description** *(Output Q1)*
152   **Description** *(Output Q2)*
182   **Description** *(Output Q3)*
212   **Description** *(Output Q4)*

Defines the setpoint description text string (max 16 characters) related to the output that will be displayed along with the setpoint value and its unit of measurement. If you do not want to display the description, set the text as a null string (16 spaces).
"*SETPOINT 1*   *"* (**Default**)

127   **Lower limit** *(Output Q1)*
157   **Lower limit** *(Output Q2)*
187   **Lower limit** *(Output Q3)*
217   **Lower limit** *(Output Q4)*

Defines the setpoint value input range inferior limit.

-9999999 .. 9999999 (**Default** 0)	Indicates the minimum value to which the setpoint can be set. The display of this number takes formatting from the source data to which it refers.

128 **Upper limit** *(Output Q1)*
158 **Upper limit** *(Output Q2)*
188 **Upper limit** *(Output Q3)*
218 **Upper limit** *(Output Q4)*

Defines the setpoint value input range inferior limit.

-9999999 .. 9999999 (**Default** 1000)	Indicates the maximum value to which the setpoint can be set. The display of this number takes formatting from the source data to which it refers.

129 **Setpoint value** *(Output Q1)*
159 **Setpoint value** *(Output Q2)*
189 **Setpoint value** *(Output Q3)*
219 **Setpoint value** *(Output Q4)*

Defines the setpoint value related to output management.

-9999999 .. 9999999 (**Default** 0)	Sets the setpoint value. The display of this number takes formatting from the source quantity to which it refers..

130 **Output status** *(Output Q1)*
160 **Output status** *(Output Q2)*
190 **Output status** *(Output Q3)*
220 **Output status** *(Output Q4)*

Defines the output state in its inactive phase.

Normally open (**Default**)	Output with normally open contact (Q1 e Q2). Output normally deactivated (Q3 e Q4)
Normally close	Output with normally closed contact (Q1 e Q2). Output normally actived (Q3 e Q4)

11.7　　　　Output setting

Parameters to manage the voltage output for supply inputs and sensors and digital outputs Q3 and Q4.

231　　Output voltage

Defines the output voltage available at terminal 10 and the output voltage of the two digital outputs Q3 and Q4. Reference Terminal 16 (0V).

12 VDC (**Default**)	A voltage of 12 VDC is available at terminal 10. Outputs Q3 and Q4 provide this voltage when active.
24 VDC	A voltage of 24 VDC is available at terminal 10. Outputs Q3 and Q4 provide this voltage when active.

11.8　　　　Serial COM1

Parameters to configure the Modbus slave serial.

291　　Slave address

Defines the device Modbsus address for communication on serial COM1.1..254 (**Default**: 240)

292　　Baud rate

Selects the baud rate for the serial communication

1,200 baud
2,400 baud
4,800 baud
9,600 baud
19,200 baud

28,800 baud
39,400 baud
57,600 baud (**Default**)
115,200 baud

293　　Serial format

Selects the format for serial communication

8,N,1 (**Default**)	8 bit, Nº parity, 1 Stop bit
8,E,1	8 bit, Even parity, 1 Stop bit
8,O,1	8 bit, Odd parity, 1 Stop bit
8,N,2	8 bit, Nº parity, 2 Stop bit
8,E,2	8 bit, Even parity, 2 Stop bit

| 8,O,2 | 8 bit, Odd parity, 2 Stop bit |

<table>
<tr><td>294</td><td>Answer delay</td></tr>
</table>

294   **Answer delay**

Defines the minimum delay in ms, which the device introduces between the reception of the Modbus master's query, and the beginning of th transmission of the reply.

0..100 ms (**Default**: 2 ms)0..100 ms (**Default**: 2 ms)

Note / Updates

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CE   **RoHS** Compliant