FACTORY AUTOMATION

MANUAL

TC-V6S-V, TC-V6S-C1

TACHOMETER

PEPPERL+FUCHS

The general terms of delivery for products and services produced or provided by the electrical industry as published by the Zentralverband Elektrotechnik und Elektroindustrie (ZVEI) e.V.
in its most recent edition as well as the supplementary proviso: "Extended property proviso" are applicable.

We at Pepperl+Fuchs feel obligated to contribute to the future;
this publication is, therefore, printed on paper bleached without the use of chlorine.

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1 General Information

1.1 Explanation of used symbols

Warning

This symbol warns the user of possible danger. Failure to heed this warning can lead to personal injury or death and/or damage to equipment.

Attention

This symbol warns the user of a possible failure. Failure to heed this warning can lead to total failure of the equipment or any other connected equipment.

Note

This symbol gives the user important hints.

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2 Safety

2.1 Intended use

The devices TC-V6S-V, TC-V6S-C1 from Pepperl+Fuchs are electronic tachometers for use in MC plants/systems and automation engineering. The tachometers are designed to be installed in control panels in dry, weather-resistant rooms.

Use in the following areas is not permitted:

- Areas with explosive atmospheres
- Medical applications

Warning

The safety of the operating personnel and the system are not guaranteed when the device is not used in accordance with its intended use.

The devices TC-V6S-V, TC-V6S-C1 *must only be operated by trained personal in accordance with this operating manual.*

2.2 General safety information

Warning

Safety and correct functioning of the device cannot be guaranteed if operated in any way other than that described in this operating manual.

The connection of the equipment and any maintenance work to be carried out with voltage applied to the equipment must only be performed by appropriately qualified electro-technical personnel.

In the case that a failure cannot be repaired, the device must be taken out of operation and protected against inadvertently being put back into operation.

Repair work must only be carried out by the manufacturer. Additions or modifications to the equipment are not allowed and void the warranty.

The responsibility for the adherence to local safety standards lies with the operator.

2.3 Functional safety / monitoring

The tachometers TC-V6S-V, TC-V6S-C1 function on a microprocessor basis. They are internally monitored for proper function and component failure.

Device malfunctions and errors are, when possible, displayed in the device display.

More detailed information can be found in Chapter 'Fault Diagnostics' (see chapter 8).

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3 Product Description

3.1 Scope of delivery

The following are included with the delivery of the device:

- 1 operating manual
- 1 tachometer TC-V6S-V or TC-V6S-C1
- 1 control-panel fastening frame

3.2 Device variants

Code	Description	Type No.
TC-V6S-V	tachometer with 6-character LCD and supply voltage of 100 ... 240 V AC	51283
TC-V6S-C1	tachometer with 6-character LCD and supply voltage of 12 ... 24 V DC	51284

3.3 Device description

The tachometers of types TC-V6S-V, TC-V6S-C1 are devices for displaying and monitoring rotational speeds in almost all areas of automation and process engineering, e.g. rotational speeds of drives, pumps, fans etc.

One input is provided for rotational-speed impulses. The display range is from 0 ... 999999 (6-character display). The current rotational speed and the rotational-speed limit value, which can be set on the device, are displayed in the device's 6-character display. It is possible here to scale the displayed value using an adjustable factor $M \times 10^N$ (where M = 0 ... 999999 and N = 0 ... -9). In addition to the rotational-speed limit value, a prewarning value can also be set.

1 changeover relay output and 1 pnp-OpenCollector transistor output are provided for the reporting of rotational speed values above or below the set limit value. With respect to the switching characteristics, the outputs can also be configured as hold outputs.

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4 Installation

4.1 Storage and transport

The tachometer must be packed for storage and transport so that it is shock-resistant and protected against humidity. The original packaging offers optimal protection.

The necessary environmental conditions also must be satisfied (see “Technical Data” on page 30.).

4.2 Unpacking

Check that the contents are not damaged. In case of damage, notify the postal service or the forwarding agent and inform the deliverer.

Check the contents of delivery with respect to your order and the delivery papers for:

- quantity delivered
- device type and version according to the name plate
- accessories
- manual(s)

Keep the original packaging in case the device must be repacked and stored or re-shipped.

For any further questions please contact Pepperl+Fuchs GmbH.

4.3 Installation

Plug the tachometer into a standard opening (48 x 48 mm²) in the control panel. Then slide the fastening frame from behind onto the device until the position where the device is securely held is reached.

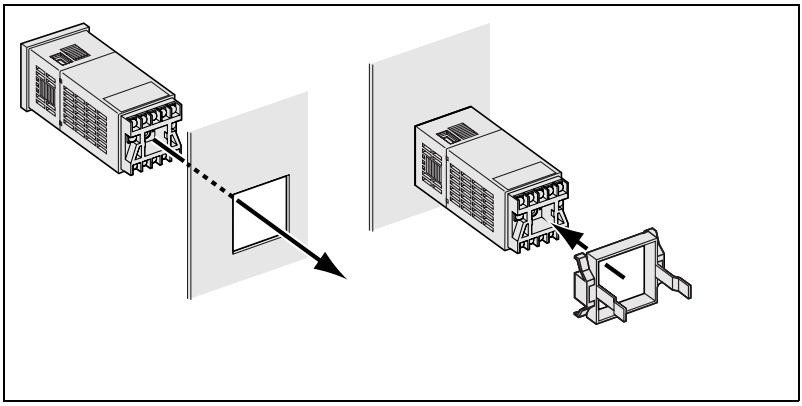

Fig. 4.1: Mounting

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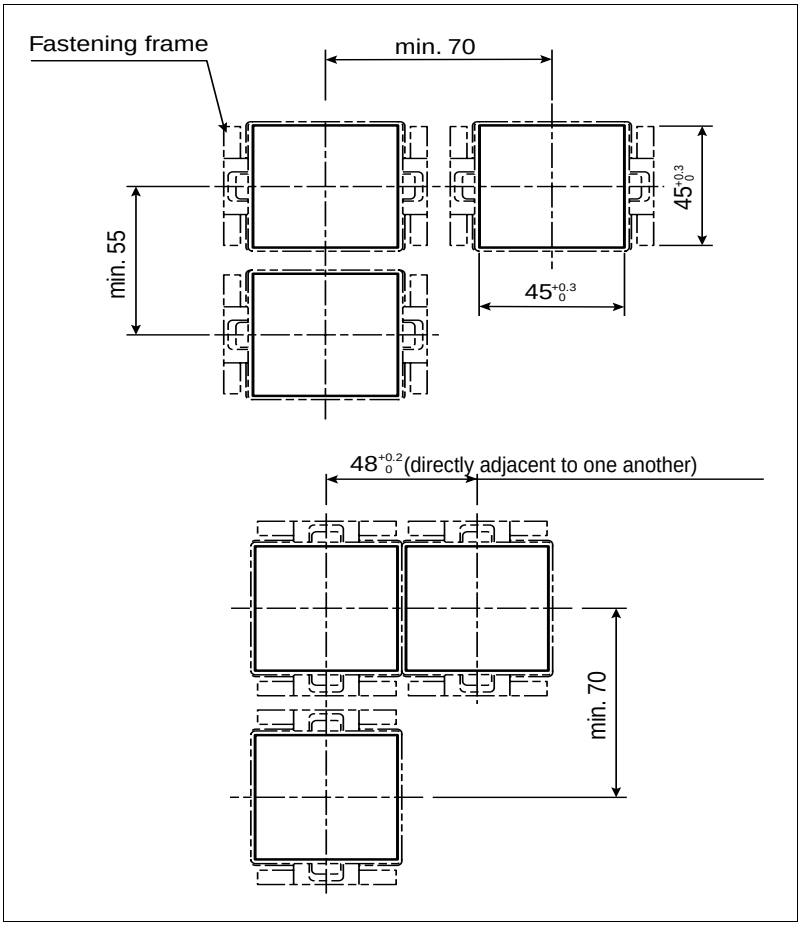

Fig. 4.2: Control panel fitting, required spaces

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4.4 Electrical connection

Warning

Only qualified personnel are permitted to carry out work under voltage and make electrical connection to mains.

Ensure that the correct voltage is applied according to the value permitted for the device.

Before making electrical connections and carrying out service work, the device must be disconnected from all voltage sources.

4.4.1 Device connection

Connection of the tachometer can be simplified by removing the terminal block from the device. Remove the cover prior to wiring. Make certain that the cables are connected as illustrated.

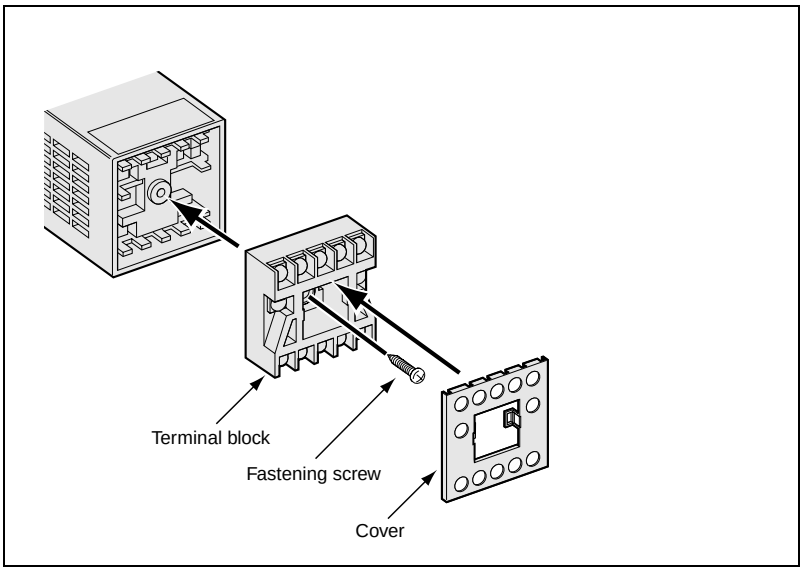

Fig. 4.3: Terminal block and cable connection

The positions of the connection terminals are given in the following illustration:

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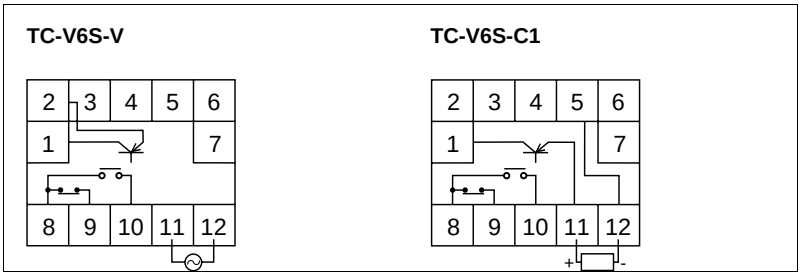

Fig. 4.4: Positions of the connection terminals

4.4.2 Terminal assignments on the terminal block

Terminal	TC-V6S-V	TC-V6S-C1
1	DC-open-collector output **OUT** (pnp)	
2	24 V DC, 60 mA (transmitter supply)	Not wired
3	Rotational speed impulse - input **IN**	
4	Not wired	
5	**0V**	
6	Not wired	
7	Reset input **R**	
8	Relay-output central contact, **COM**	
9	Relay-output normally closed contact, **N.C.**	
10	Relay-output normally open contact, **N.O.**	
11	Power 100 ... 240 V AC	Power 12 ... 24 V DC
12		

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4.4.3 Connection diagrams

Inputs

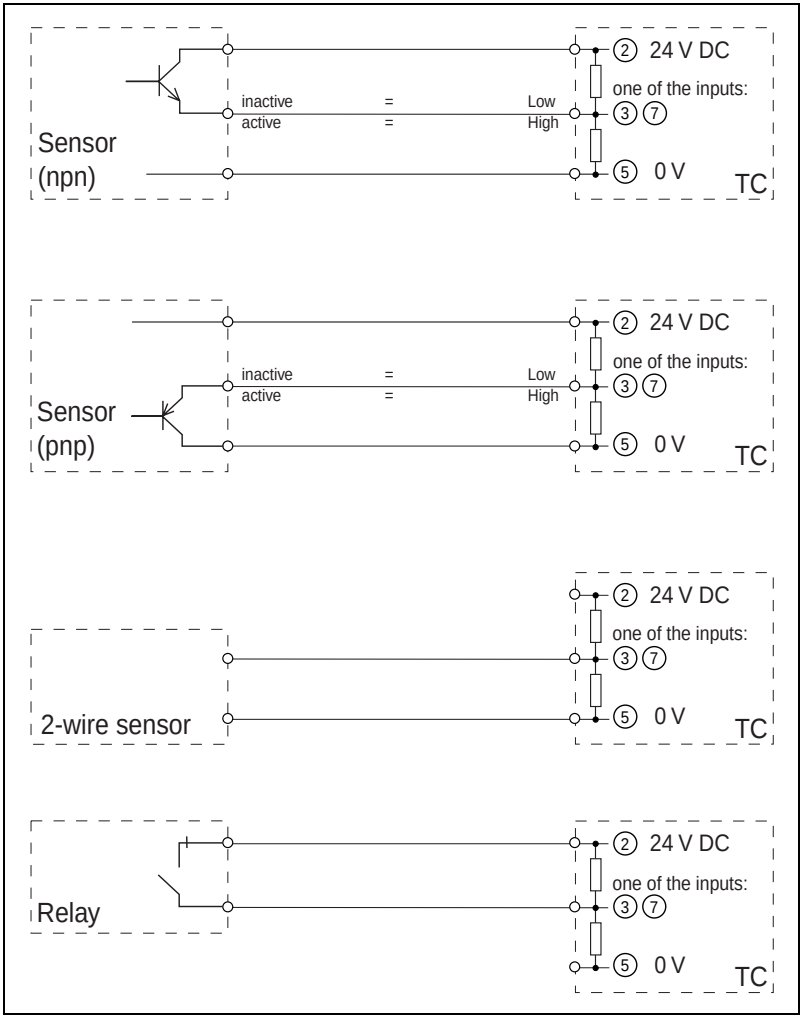

Fig. 4.5: "Inputs"

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Outputs

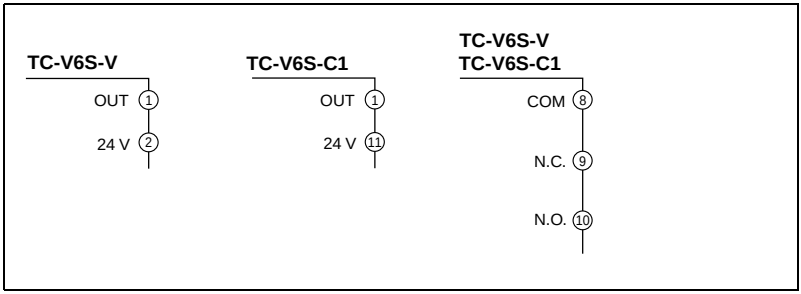

Fig. 4.6: "Outputs"

4.5 Disassembly, packing and disposal

The following apply for all procedures described in this chapter:

- First de-energize the device.
- Remove the cover on the terminal block.
- Disconnect all connections.

Disassembly

If you would like to remove the device from the control panel, you must remove the fastening frame. To do this, press the two levers on the fastening frame approx. 2 - 3 mm outwards, then pull the fastening frame from the device. The device can now be removed from the front of the control panel.

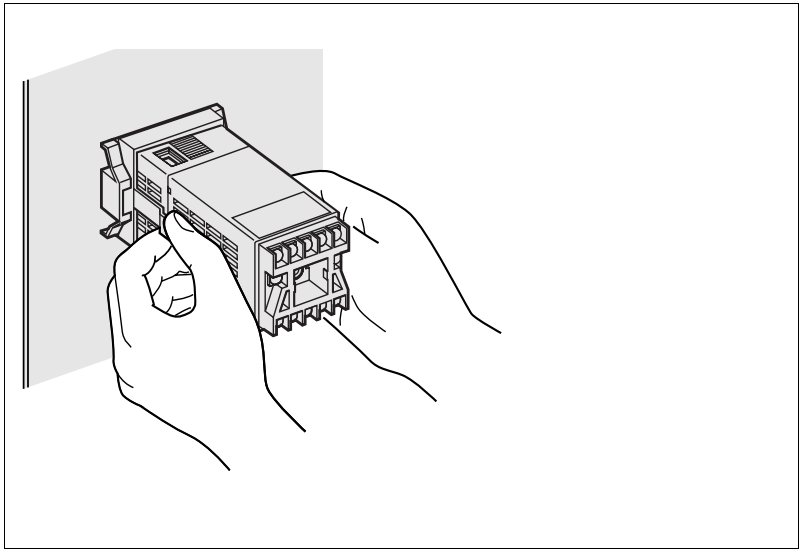

Fig. 4.7: Disassembly

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Packing

The device must be protected against humidity and shock when packing for later use. The original packaging offers optimal protection.

Disposal

Note

Electronic waste can be hazardous. Pay attention to local regulations when disposing of the device.

The tachometers TC-V6S-V, TC-V6S-C1 contain no batteries which would need to be removed prior to disposal.

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5 Commissioning

Warning

Prior to commissioning, ensure that the system in which the tachometer is integrated cannot be placed in danger, e.g. through unmonitored, controlled processes.

Attention

Recheck all connections and hardware settings before proceeding with the commissioning.

Make certain that at the installation site the function of the tachometer cannot be influenced by elevated temperatures and electromagnetic fields.

Before commissioning, become familiar with the operation and configuration of the tachometer (Chapters 6 and 7 of this handbook).

5.1 Hardware settings

Prior to commissioning, use the DIP switches to make the desired settings. Changes take effect after switching the device off, then back on.

Attention

Make changes to the DIP-switch settings only when the device is in a de-energized state.

Use a small, pointed object (e.g. safety pin or mechanical pencil) to make changes to the switch settings. Use great care when making changes, as the switches are very sensitive.

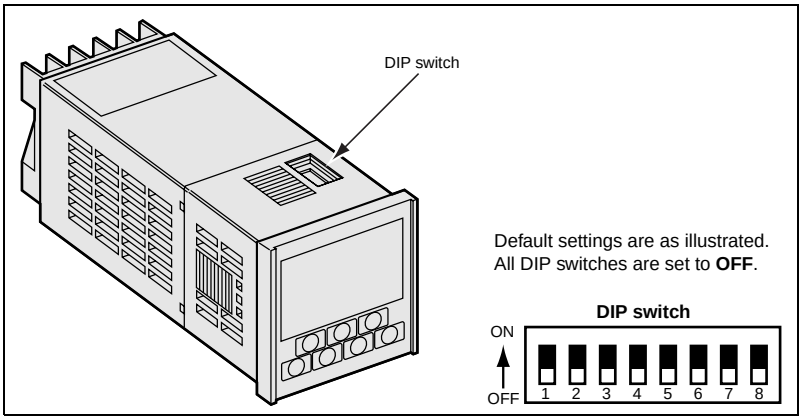

Fig. 5.1: DIP switches

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DIP-switch settings

This table contains an overview of all hardware adjustment options. All settings listed here are described in detail in the next chapter.

Note

In addition to the hardware settings described here, the configuration menu can be used to make additional settings, some of which supplement the parameters listed here (see chapter 7 'Configuration').

Function	DIP switch (●=On / ❍=Off)								Description
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	
Input frequency (Measurement impulses per second)	●	-	-	-	-	-	-	-	10 cps (counts per second)
	❍	-	-	-	-	-	-	-	20 kcps*
Sampling time	-	❍	❍	-	-	-	-	-	0.2 s*
	-	❍	●	-	-	-		-	0.5 s
	-	●	❍	-	-	-	-	-	1.0 s
	-	●	●	-	-	-	-	-	2.0 s
Break time for output	-	-	-	❍	❍	❍	-	-	6.0 s*
	-	-	-	❍	❍	●	-	-	2.0 s
	-	-	-	❍	●	❍	-	-	1.0 s
	-	-	-	❍	●	●	-	-	0.5 s
	-	-	-	●	❍	❍	-	-	0.2 s
Key lock	-	-	-	-	-	-	●	-	Keys locked
	-	-	-	-	-	-	❍	-	Keys not locked*
Operating mode	-	-	-	-	-	-	-	●	Configuration mode
	-	-	-	-	-	-	-	❍	Operating mode*

*) default setting (all DIP switches on OFF)

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5.2 Function description

5.2.1 Input frequency

The input frequency must be set with respect to the maximum expected rotational speed. If the low setting is selected (10 cps), high frequencies (above 10 Hz or 10 rpm) cannot be measured. In this case, the device displays the last measured rotational speed.

5.2.2 Sampling time

The tachometer samples the rotational speed at set intervals. The duration of an interval can be set using DIP switches 2 and 3.

5.2.3 Break time for output

After the input signal has stopped, the output remains active for a prespecified time. This time can be set using the three DIP switches 4, 5 and 6.

During this time, the last measurement value is displayed on the display.

5.2.4 Key lock

Keys locked (DIP 7 = ON)

From the configuration menu (Key lock reset 'rPro'/ Numbers'PPro'" see chapter 7.2.5 and chapter 7.2.6), you can lock individual numerical keys as well as the reset key. The lock is, however, only active when DIP switch "7" has been set to ON.

If a locked key is pressed while in operating mode, the corresponding LED flashes.

Keys not locked (DIP 7 = OFF)

Regardless of what settings have been made in the configuration mode, all keys are available for input when this setting has been made.

5.2.5 Operating mode

When you switch between configuration mode and operating mode using the DIP switch, you must note the following:

- When DIP switch 8 is set to ON, the device starts in the configuration mode when switched on.
- When DIP switch 8 is set to OFF, the device starts in the operating mode when switched on.

Configuration mode (DIP 8 = ON)

In addition to the hardware settings, the device can also be configured via the display (see chapter 7 'Configuration').

Operating mode (DIP 8 = OFF)

In this mode, the device is ready for operation.

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5.3 Special operating conditions

5.3.1 Outputs

Only the DC output reacts to and is activated by the preactivation value. The relay output is only activated when the preset value or, as the case may be, "0" is reached. When the device is switched on, the outputs are, under normal circumstances, deactivated.

Attention

Depending on the DIP switch and configuration settings, the outputs may be active immediately after the device is switched on.

The following states are possible:

- Depending on the set (stored) preactivation value, measurement value and preset value, it is possible that the DC output is activated immediately after the tachometer is switched on (e.g. measurement value = 0, preset value = 10 and preactivation = 10).
- If the preactivation value or preset value is smaller than the measurement value immediately after the device is switched on, the DC output or relay output is immediately activated (e.g. measurement value = 20, preset value = 10).
  For this reason, the preactivation value/ preset value should be set to a value greater than the expected initial measurement value.

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6 Operation

6.1 Operation and display elements

The operation and display field of the tachometer is designed for 6-character entry.

Information is displayed via a 2-line, 7-segment display and a row of control LEDs. The operation and display elements of the tachometer are named and explained in the illustration.

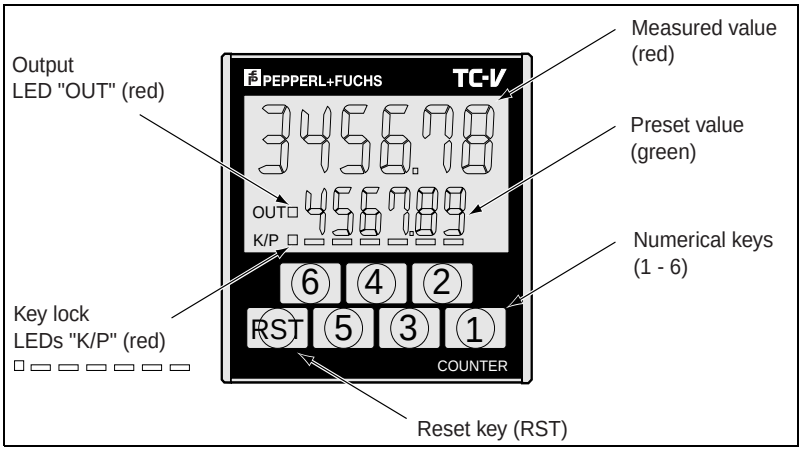

Fig. 6.1: Location of the control and display elements

6.1.1 Display elements

Output LED "OUT" (red)

OFF: None of the outputs is activated.

FLASHES: The preactivation value has been reached.
The DC output is activated.

ON: The preset value has been reached; both the DC output and the relay output are activated.

Key lock LEDs "K/P" (red)

- In "operating mode", the corresponding LED flashes when a locked key is pressed (only when DIP switch 7 is set to ON). The square LED to the left is assigned to the reset key, the flat LEDs are assigned to the respective numerical keys.
- In "configuration mode" the corresponding LEDs light up for the keys which are lokked in operating mode (only for the key lock parameters).

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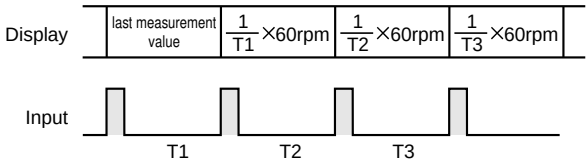
Rotational speed value (red)

- In "operating mode", the current measured rotational speed value (multiplied by the scaling factor) is displayed.
- The current measurement value is displayed as:

  Rotational speed value = $\frac{1}{T}$ x 60 rpm

- The following graphic should make clear sequence of the measurement value display:



rpm - rounds per minute
T - measuring cycle (sampling time)

The last measurement value is displayed during the following measurement cycle (see chapter 5.2.2).
If the input is deactivated, the value remains displayed for the period of time set in "Break time for output" (see chapter 5.2.3).

- In the "configuration mode", the current value or option for the selected parameter is displayed.

Preset value (green)

- In the "operating mode", the current preset value is displayed.
- In the "configuration mode", the current selected parameter is displayed.

6.1.2 Operating elements

Reset key (RST)

- In "operating mode", this deactivates the outputs (DC and relay output) with the output function "hold". If, following the reset, the measurement value is larger than the preset value or preactivation value, the relay or DC output switches immediately back to ON.
  The reset key cannot be used for the output function "compare". This is due to the fact that when the measurement value falls below the preset value or preactivation value, the relay or DC output is automatically deactivated. If the reset key is nevertheless pressed, the outputs remain switched off for the duration of the reset.
- In the "configuration mode", you cycle through the available parameters with this key.

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Numerical keys (1 - 6)

- In the "operating mode", the current preset value is set. The entered preset value is taken over 1 sec. after the last keystroke.
- In the "configuration mode", these keys are used to select the respective values/ options for the currently selected parameter. Depending on the parameter, one, several or all numerical keys may be used.

6.2 Switching on and operating

Make certain that all hardware settings have been made at the DIP switches and that the connections are appropriately wired.

Switch on the device by applying the operating voltage. When DIP switch 8 is set to ON, the device starts in the configuration mode. For further information, refer to chapter 7 . If you are in operating mode, (DIP 8 on OFF), you can set the desired preset value.

6.2.1 Setting the preset value

After switching on, the tachometer is in the input mode for the preset value. You can use the numerical keys to directly enter the desired preset value.

Proceed as follows:

To set the preset value, press the numerical keys 1 - 6. Each
key can be used to change the corresponding digit in the display. Each time a key is pressed, the respective digit increases by one (1-2-3-4-5-6-7-8-9-0-1...).

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7 Configuration

As previously mentioned, in additional to the hardware settings, you can also custom configure the tachometer for your individual requirements using the configuration mode.

Note

The configuration settings made via the control panel remain stored in nonvolatile memory even after the device has been disconnected from the operating voltage for long periods of time (max. 10 years).

7.1 Working in the configuration mode

To access the configuration mode, DIP switch 8 must be set to ON when the device is switched on.

Use the reset and numerical keys to make changes to individual parameters.

- **Reset key (RST):**
  Advances to the next parameter.

Note

Only after the next parameter is called up with the reset key are the previously made setting stored.

- **Numerical keys:**
  Use these keys to select the desired values/options for a parameter.

Note

When you have concluded the configuration, de-energize the tachometer and reset DIP 8 switch to OFF. When switched back on, the tachometer is again in the operating mode.

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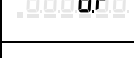
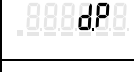
7.2 Overview and description of the adjustable parameters

Parameter	Display	Values
Scaling value		*1 - 999999* *(explanations see chapter 7.2.1)*
Scaling index		*-9 ... 0* *(explanations see chapter 7.2.1)*
"Output" function		*Output functions* *"hold" and "compare"* *(explanations see chapter 7.2.2)*
Decimal point		*Between 0 and 0.00000 freely selectable* *(explanations see chapter 7.2.3)*
Preactivation		*0.00001 - 999999* *(explanations see chapter 7.2.4)*
Key lock, reset key (RST)		*Locks the reset key for the operating mode (DIP 7 must be set to ON)*
Key lock, digits		*Locks the numerical keys for the operating mode (DIP 7 must be set to ON)*

7.2.1 Scaling factor, scaling value and scaling index

You have the option of multiplying the measurement value by a scaling factor.

The scaling factor is calculated using the scaling value and scaling index, both of which can be set under SCL.1 or SCL.2. The relationship between the three parameters is shown in the following equation:

$$\text{scaling factor} = \text{scaling value} \times 10^{\text{scaling index}}$$

First enter a scaling value (e.g. 1666) and then specify the scaling index (e.g. -5). According to the above equation, the resulting scaling factor for the measurement value is 0.01666. So, if the device has displayed the value "60", the value after the scaling is now "1".

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Note

Note that when using a scaling factor, the digits to the right of the decimal point are not displayed!
The displayed value is not rounded off; the decimal places are cut off! Move the decimal point with the decimal point parameter (dP) (see chapter 7.2.3) one or more positions in order to read the correct value. It is possible that the error message "E02" appears in the display. This means that the measurement value is too small to be displayed. In this case, move the decimal point one or more positions.

Example:

Measurement value:	*60*		
Scaling factor:	*0.0166666*		
Decimal point:	*0;*	*0.0;*	*0.00*
Display:	E02;	0.9;	0.99

7.2.2 "Output" function

With this function, you can set the behavior of the device output.

There are two output functions:

"Hold" output

In the first output function, "hold", the DC output remains activated after the preactivation value is reached until the reset key is pressed.

The relay output is activated between the time at which the preset value is reached and the time at which the reset occurs.

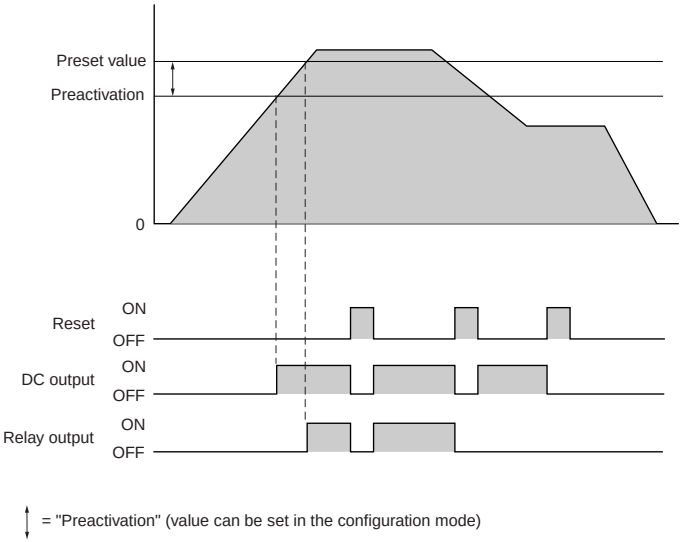

Fig. 7.1: "Hold" signal

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"Compare" output

With the output function "compare", the DC output or relay output remains activated while at or above the preactivation value or preset value. The output is switched off automatically when the measurement value drops below the respective value.

If the reset key is pressed while the DC output or relay output is activated, the respective output remains deactivated for the duration of the reset. If the measurement value has not dropped below the preactivation value or preset value during this time, the DC output or relay output is reactivated after the reset key is released.

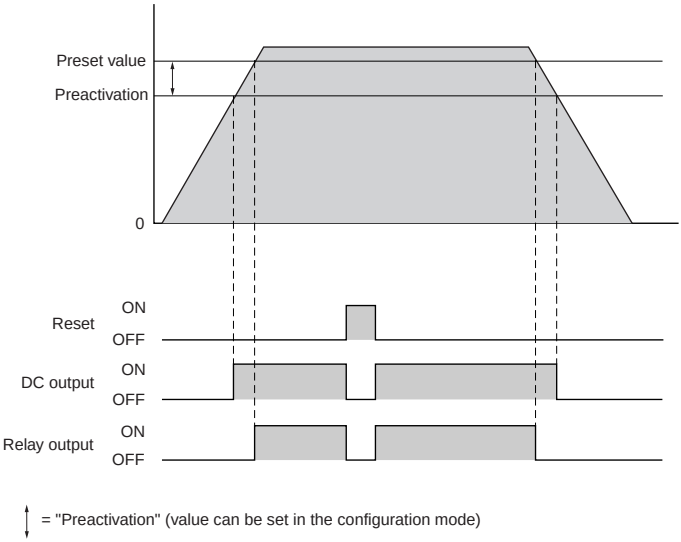

Fig. 7.2: "Compare" signal

7.2.3 Decimal point

The position of the decimal point can be set between "0." and "0.00000".

In particular with set scaling factors, note that no rounding up or rounding down is performed. The remaining decimal places of the display value are cut off.

7.2.4 Preactivation

The entered value is a relative value. For example, with preset value "200" and preactivation value "10", the DC output is active after the rotational speed value of 190 is reached. Values between 0.00001 and 999999 can be set here. These value are, however, dependent on the set decimal point (see chapter 7.2.3).

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7.2.5 Key lock - reset key

With this parameter, you can lock the reset key in operating mode.
The lock is set by pressing the "1" key and deactivated by pressing the "2" key. The lock is indicated by the red, square LED "K/P".

The reset key can be locked only when DIP switch "7" is switched on.

7.2.6 Key lock - numerical keys

With the previous function you could lock only the reset key.

The "Key lock - numerical keys" parameter is used to lock individual numerical keys. You can lock either an individual key or several keys. Proceed as follows:

- press the first key to be locked (e.g. 6)
- the LED which corresponds to the key lights up
- press the other keys which are to be locked (the respective number LEDs light up)

Numerical keys can also only be locked when DIP switch "7" is switched on.

If one of the locked keys is now pressed while in operating mode, the corresponding LED lights up briefly, indicating that it is locked.

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7.3 Tachometer - configuring

In the following table, all parameters which can be set via the control panel as well as their respective values/options are listed again in tabular form.

Moreover, you will also find information regarding the keys which can be used to switch between the individual values/options.

Note

Each parameter's default value is indicated in the table by an asterisk (*).

The values/options of the displayed parameter can be changed by pushing the indicated key.

All keys which are not listed have no function for the given parameter.

Parameter		**Values / options**		
Display	**Meaning**	**Display**	**Meaning**	**Key**
SCL.1	*Scaling value,* *first part of the scaling factor* *The factor is determined with the next parameter.* *(Factor =SCL.1*10$^{SCL.2}$)*	1 *	*Decimal position 1 (0 - 9)*	1
			Decimal position 2 (0 - 9)	2
			Decimal position 3 (0 - 9)	3
			Decimal position 4 (0 - 9)	4
			Decimal position 5 (0 - 9)	5
			Decimal position 6 (0 - 9)	6
Next parameter				RST
SCL.2	*Scaling index,* *the scaling factor is completed with this index, i.e. the position of the decimal point is set* *(Factor=SCL.1*10$^{SCL.2}$)*	0 *	*Index (0 to -9)*	1
Next parameter				RST
C-oP	*"Output" function*	1	*"Hold" output*	1
		2 *	*"Compare" output*	2
Next parameter				RST

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Parameter		Values / options		
Display	**Meaning**	**Display**	**Meaning**	**Key**
dP	*Decimal point*	0 *	*Without decimal point*	1
		0.0	*Decimal point position 1*	2
		0.00	*Decimal point position 2*	3
		0.000	*Decimal point position 3*	4
		0.0000	*Decimal point position 4*	5
		0.00000	*Decimal point position 5*	6
Next parameter				RST
SEtU	*Preactivation,* *the set decimal point is taken over*	0 *	*Decimal position 1 (0 - 9)*	1
			Decimal position 2 (0 - 9)	2
			Decimal position 3 (0 - 9)	3
			Decimal position 4 (0 - 9)	4
			Decimal position 5 (0 - 9)	5
			Decimal position 6 (0 - 9)	6
Next parameter				RST
rPro	*Key lock, reset key (RST)* *(LED on = locked)*	rPro	*RST key locked*	1
		rPro *	*RST key not locked*	2
Next parameter				RST
PPro	*Key lock numerical keys (Default: no key locked)* *(LED on = locked)*	PPro	*Num. key 1 (ON/OFF)*	1
		PPro	*Num.key 2 (ON/OFF)*	2
		PPro	*Num. key 3 (ON/OFF)*	3
		PPro	*Num. key 4 (ON/OFF)*	4
		PPro	*Num. key 5 (ON/OFF)*	5
		PPro	*Num. key 6 (ON/OFF)*	6

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Note

When you have concluded the configuration, de-energize the tachometer and reset DIP 8 switch to OFF. When switched back on, the tachometer is again in the operating mode.

In Chapter 8 you will find two tables in which you can document the current DIP switch and parameter settings.

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8 Fault Diagnostics

8.1 Device errors

Error	Display
Memory error	E21

- Press the reset key to clear the error message from the display and reset the device.
- The count value is automatically set to "0" and the preset value to "5000".
- All modification made in the configuration mode are lost, as the device is reset to its default settings. Use the tables below to reconfigure the counter.

Error	Display
Exceeding the measurement range	E01
Falling below the measurement range	E02

- Press the reset key to clear the error message from the display.
  If the error message appears again following the reset, the scaling factor may be too large or too small or the number of decimal places may be too large or too small. Proceed as follows:
  - De-energize the device
  - Change to the configuration mode by switching the DIP switch "8".
  - Switch on the device.
  - To change the value of the scaling factor (SCL.1 and SCL.2), proceed as described in chapter 7.2.1.
  - The number of digits to the right of the decimal place is set in mode "Decimal point" (d.P) (see chapter 7.2.3).
  - After you have made the changes, de-energize the device again, set DIP switch "8" to OFF and switch the device on again.
- If the error message is still displayed, change (as described above) the individual values until a measurement value appears in the display.

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Error	Display
Input frequency is too high	E04

- The input frequency must be restricted via the device connected to the input.

8.2 Reconfiguring

In the following two tables you can document the current DIP switch and parameter settings. When a device must be replaced or the device must be reset to its default values due to an error, you can use these tables to unproblematically reconfigure the device.

DIP	1	2	3	4	5	6	7	8
ON								
OFF								

Parameter	Values					
"Output" function	1			2		
Scaling value						
Scaling index						
Decimal point	1	2	3	4	5	6
Preactivation						
Key lock, reset key (RST)	ON			OFF		
Key lock, digits	1 ON OFF	2 ON OFF	3 ON OFF	4 ON OFF	5 ON OFF	6 ON OFF

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9 Technical Data

Technical Data		
Code	**TC-V6S-V**	**TC-V6S-C1**
Nominal ratings:		
Type	Tachometer (rotational speed monitor)	
Display	2-line 1st line -6-character (char. height: 10mm)- red LEDs 2nd line -6-character (char. height: 7mm)- green LEDs	
Preset value	0 - 999999	
Scaling factor	Scaling value • $10^{\text{scaling index}}$ Scaling value ≤ 999999 -9 ≤ scaling index ≤ 0	
Precision	± 0.013% (except with 10 cps input frequency)	
Flash EEPROM memory	Can be written to 100,000 times; memory retention time, 10 years	
Environmental data:		
Operating temperature	-10 °C ... +50 °C	
Storage temperature	-20 °C ... +70 °C, non-ice-forming	
Max. rel. humidity	35 - 85%, non-condensing	
Shock resistance	98 m/s², 10G, for 11 ms in all three spatial axes	
Vibration resistance	Amplitude 0.35 mm, at 10 to 50 Hz in all three spatial axes	
Protection Class accord. to EN 60529	IP 65 (device front only)	
Mechanical data:		
Dimensions (W x H x D without fastening frame)	48 x 48 x 106	48 x 48 x 66
Mounting	Fastening frame for control panel (48 x 48 mm²)	
Weight	Approx. 150 g	Approx. 110 g
Perm. wire cross section	0.25 - 1.65 mm²	
Tightening torque, terminals	0.5 Nm	
Inputs:		
Input resistance	15 kΩ	
Input signal level	LOW = 0 - 6 V, HIGH = 16 - 30 V	
On/off delay	< 500 ms	
Pulse width	External reset: > 5 ms	
Outputs:		
Output types	1 x pnp-open-collector (24VDC, 100mA, max. 35V) 1 x relay, maximum contact rating 220 VAC, 2A	
Output functions	Compare, hold	

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Technical Data		
Code	**TC-V6S-V**	**TC-V6S-C1**
Power supply:		
Supply voltage range	100 ... 240 V AC -15%/+10%	12 ... 24 V DC -20%/+10%
Sensor supply	24 V DC, 60 mA	-
Current consumption	Approx. 11 VA	4 W

9.1 Dimensions

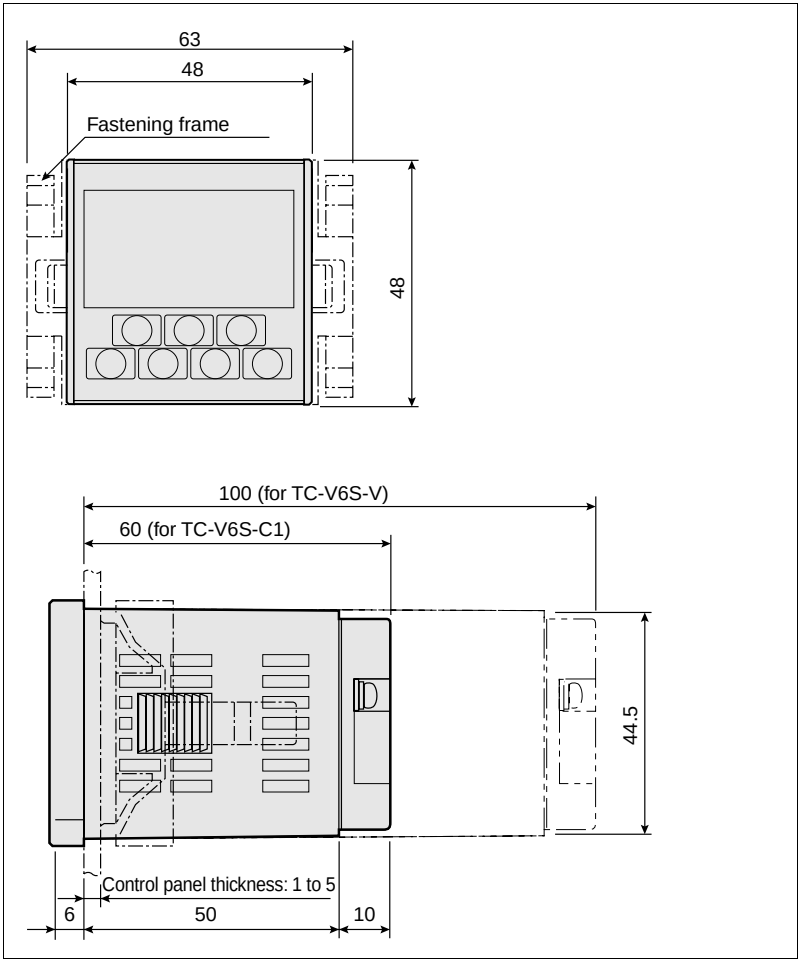

Fig. 9.1: Dimensions TC-V6S...

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One Company, Two Divisions.

Factory Automation Division

Product Range

- Binary and analog sensors
- in different technologies
  - Inductive and capacitive sensors
  - Magnetic sensors
  - Ultrasonic sensors
  - Photoelectric sensors
- Incremental and absolute rotary encoders
- Counters and control equipment
- ID systems
- AS-Interface

Areas of Application

- Machine engineering
- Conveyor or transport
- Packaging and bottling
- Automobile industry

Process Automation Division

Product Range

- Signal conditioners
- Intrinsically safe interface modules
- Remote process interface
- Intrinsically safe field bus solutions
- Level control sensors
- Process measuring and control systems engineering at the interface level
- Intrinsic safety training

Areas of Application

- Chemical industry
- Industrial and community sewage
- Oil, gas and petrochemical industry
- PLC and process control systems
- Engineering companies for process systems

Service Area

Worldwide sales, customer service and consultation via competent and reliable Pepperl+Fuchs associates ensure that you can contact us wherever or whenever you need us. We have subsidiaries worldwide for your convenience.

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