

Flow Measuring Instrument

Product Line TD 32500

Operating Manual



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1 Operating Manual, Description

The Sika flow measuring instrument is a digital indicator of the product line TD 32500.

The operating manual is intended for skilled and semi-skilled workers.

Read the relevant notes carefully before every move and keep the pre-set sequence.

Read the section "notes on safety" with special attention. Remember well the signs (pictograms) and their importance.

The operating manual is divided into nine chapters:

1. General
2. Safety instructions
3. Description of TD 32500
4. Storage and installation
5. Starting up and configuration
6. Measuring
7. Maintenance
8. Trouble shooting
9. Technical data

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2 Safety Instructions

The TD 32500 is technically advanced with time with regard to measuring accuracy, function, and save operation. To operate the instrument properly requires competent and safety-observing personnel.

You find relevant instructions in this chapter. Warnings which are specially related to individual function modes or activities, can be found in the respective passages of this manual. Warnings are marked with special signs.



Caution: High temperature!

This sign points to danger to persons due to high temperature.



Attention: Material damage!

This sign points to an action which can cause instruments damage.



Note: This sign points to important remarks.

3 Description of TD 32500

3.1 Assemblies and operating elements

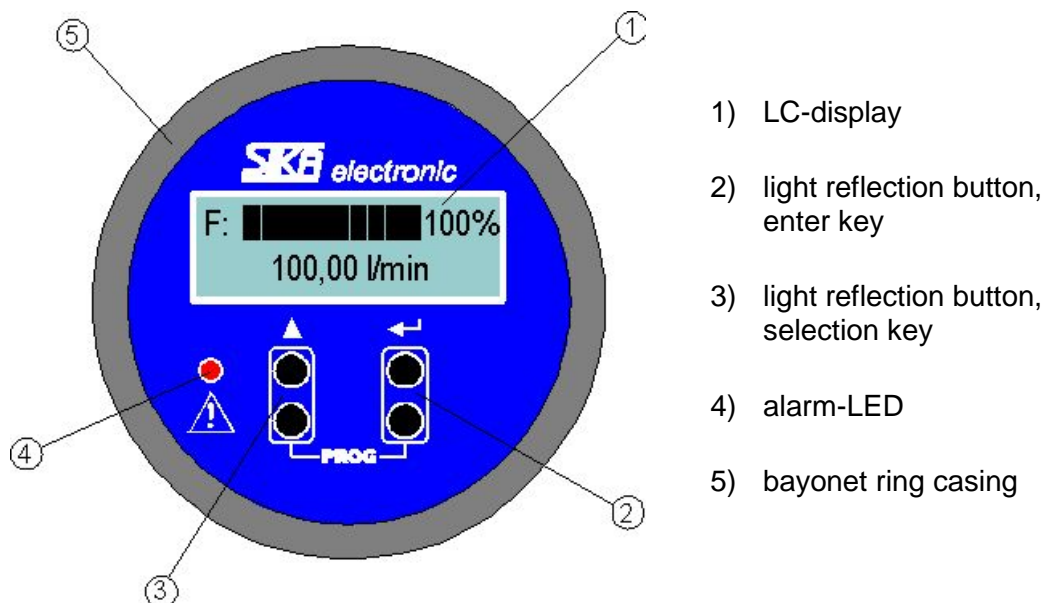


Figure 1: Front side of TD 32500

3.2 Construction and operation of TD 32500

The digital indicator is equipped with a programmable measuring input for flow rate and for summarizing the total volume. The instrument is designed for use with SIKA flow sensors.

Optionally the measuring instrument can be also equipped with a measuring input for resistance thermometers Pt100, two Open-Collector alarm outputs, one TTL frequency divider output and analogue outputs 0/4-20 mA or 0-10 V.

Depending on set-up, the display ① views in numerical values the flow rate of the connected flow sensor, the summarized value of a resettable total volume, the summarized value of a non-resettable total volume or the temperature of a Pt100 resistance thermometer.

In addition the flow rate, the resettable total volume or the temperature is displayed as percentage reading in a bargraph, depending on programming.

Programming the instrument is carried out with the operating keys ② and ③. These keys are designed as light reflection buttons. You can configure the instrument with the keys and set it up for the required measuring function.

The alarm-LED ④ indicates overstepping or falling short of adjusted limit values.

The electronics are dust and watersplash safe installed in the bayonet ring casing ⑤. The casing is installed onto the SIKA flow sensor and can be rotated by 180°, thus providing through individual adjustment free view to the instrument.

The electrical connection is completed via a multicore supply cable or a round multipoint plug-and-socket M12x1, depending on customer requirements.

3.3 Components of TD 32500

3.3.1 Sensor inputs

The following measuring inputs for SIKA flow sensors are provided for the instrument:

VTI / VTH / VTP 15 ... VTI / VTH / VTM 25 ... VTI / VTH / VTM 40 ...
VZ ... AL
VTR ...

The instrument is already screwed onto the flow sensor and completely wired-up by the manufacturer.

The frequency generated by the sensors must not exceed 2000 Hz.

Instruments with a Pt100 resistance thermometer for temperature measurement are delivered with sensor screwed into the tube and completely wired-up.

Measurement range of the Pt100 sensor is between -10 °C up to +150 °C, or 14 °F up to 302 °F.



Attention: Material damage!

The instrument must not be unscrewed or unplugged from the SIKA flow sensor, because this could damage the electronics or the instrument sealing.

3.3.2 Alarm output

As an option, TD 32500 is equipped with two Open-Collector alarm outputs. These can provide a current of 30 mA for switching a load. This current is sufficient to switch a power relay of 24 VDC / 1000 Ω . Depending on programming, with a set-off alarm is the load through the alarm output of the open-collectorswitched against (working current alarm) or separated from the supply voltage (closed circuit alarm).

For these alarm outputs, the following settings can be selected, in each case independently from each other:

1. Alarm source: flow rate, total flow (resettable), or temperature alarm
2. Alarm type: minimum or maximum alarm
3. Alarm set value
4. Hysteresis of the alarm set value

3.3.3 Analogue output

The TD 32500 is optionally equipped with an analogue output. The analogue output can be set in the following way:

1. Source of the analogue output: flow rate, total flow (resettable), or temperature analogue output
2. Type of analogue output: 0-20 mA, 4-20 mA or 0-10 V
3. Range of analogue output

In mode 0-20 mA or 4-20 mA a current is driven through the working resistance against the negative pole of the supply voltage. The working resistance must be smaller than 500 Ω if the supply voltage is 12 VDC, and 1000 Ω if the supply voltage is 24 VDC.

In mode 0-10 V a supply voltage of at least 15 VDC is required.

3.3.4 Frequency divider output

TD 32500 is optional equipped with a frequency divider output. The generated frequency can either be the same as with flow sensor or the frequency of the flow sensor is divided by a free selectable integer factor. The frequency divider output is designed as Open-Collector-Output and switches a maximum load of 200 Ω between +5 VDC and 0 VDC.

The programmable deviding rate must be selected in such a way that a maximum output frequency is kept below 1000 Hz.

3.3.5 Power supply

Power supply of TD 32500 is 12 VDC up to 24 VDC.



Note: Using the analogue output 0 up to 10 V requires a supply voltage of at least 15 VDC.

4 Storage and Installation

4.1 Storage

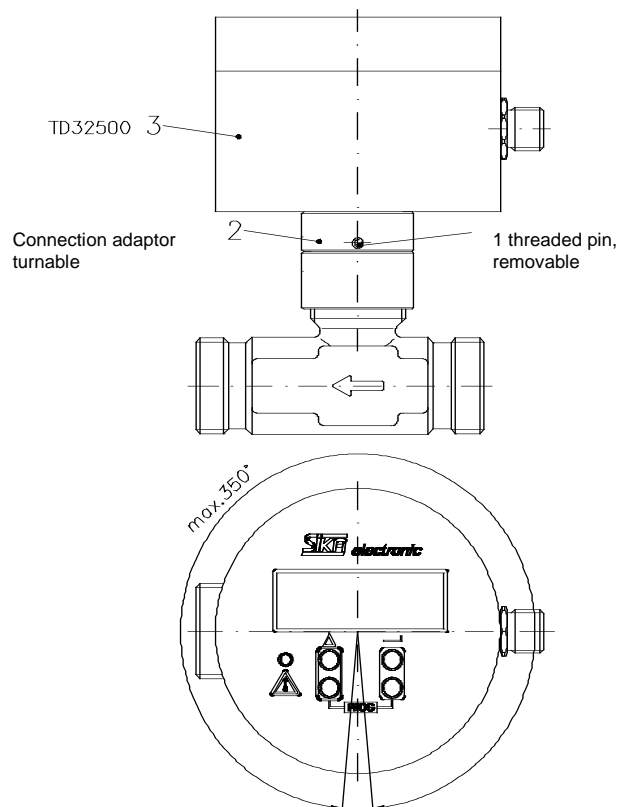
TD 32500 must be stored dust-protected and dry. The ambient temperature for storage must be between $-10\text{ }^{\circ}\text{C}$ and $+80\text{ }^{\circ}\text{C}$.

4.2 Installation

The measurement instrument TD 32500 is attached to a SIKA flow sensor. As an option, the unit is equipped with a Pt100 temperature sensor. Note the installation instructions of the delivered flow sensor when fixing the unit to the pipeline.

In addition note the following instructions:

- TD 32500 ③ is mounted onto the flow sensor and can be rotated by 180° . You can adjust the instrument to the required position by loosening the threaded stud ① in the adapter ②. The bottom part of the adapter ②, which is firmly attached to the flow sensor, must on no account be twisted, because this would lead to damage of the flow sensor. In addition, TD 32500 ③ must not be turned beyond the stop, this would also cause damage to the flow sensor.



- Make sure that in the direct vicinity of the measuring unit magnetic stray fields do not affect the function of the instrument.

5 Commissioning and Configuration of TD 32500

5.1 Commissioning

5.1.1 Use as directed

The TD 32500 is exclusively intended for flow measurement with SIKA flow sensors or technically comparable flow sensors as well as for temperature measurement with Pt100 resistance thermometers within the specified limits given in the technical data.

5.1.2 Connecting TD 32500

Checks before starting-up:

- Check technical data.
- Check type panel for technical data.

The annexed wiring diagram shows how to connect the electrical supply and, if available, alarm points of the analogue output and of frequency divider output.

Sensor inputs of flow sensor and, if available, of Pt100 temperature input are already wired-up in the factory.



Attention: Material damage!

Do not switch on electrical supply, before TD 32500 is completely wired.



Caution: High temperature!

If the medium to be measured has reached a very high temperature level, then also the piping and TD 32500 are getting hot. Avoid any physical contact and do not place temperature sensitive devices in its vicinity.

5.2 Configuration of TD 32500

To set up the TD 32500 to perform a requested measurement function, it must be programmed via a configuration menu.

To call up the configuration menus proceed in the following way:

- Press simultaneously key ▲ and key ↓ for about 3 seconds. The display switches to : „SET CONFIG-MENU“ and displays then: „? ACCESS-CODE ? – 9999“. A cursor appears onto the 9 at the very left.
- By pressing the ▲ key, set the digit at the cursor position to the same value as with the stored access code.. Then confirm the digit with the ↓ key. The cursor moves forward one position.
- Set digit by digit in the same manner. After entry of the last digit the instrument is in the configuration menu, provided that the entered number is equal to the stored number. If the entered number is wrong, the TD 32500 switches back to measuring operation.

To quit the configuration menu or to switch back to the beginning of the configuration menu, proceed as follows:

- Press simultaneously the keys ▲ and ↓ at any point within the configuration menu. The display changes to: „QUIT CONFIG-NO“.
- If you want to go back to the beginning of the configuration menu, confirm the display with the key ↓.
- If you want to quit the configuration menu, change over to "YES" with the s key and confirm with the key ↓.
- You may also quit the configuration menu through simultaneously pressing the keys ▲ and ↓ with the display „QUIT CONFIG-NO“.



Note: No customer specific access code is stored by maker. In this case switch into the configuration menu by confirming numerically the default number „9999“ with the ↓ key.



Note: The instrument will switch back to measuring operation, if you do not press a key within a period of 60 seconds.



Note: When the ▲- and ↓-key is pressed for longer than 7 seconds, the device automatically reverts to measuring operation.

5.2.1 Setting configuration data

In this menu item, you define language, access code, flow unit, total volume unit, temperature unit, pulse rate, and gate time.

Proceed as follows:

- Switch over to configuration menu.
- The message appears „SET CONFIG DATA – NO“.
- Switch with the ▲ key to „YES“ and confirm it with the ↓ key

5.2.1.1 Language selection

- The message „SET D/GB/F – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↓ key.
- The following messages appear „DEU/GER/ALL – JA“ – text messages in German, „ENGLISH/ANGLAIS – YES“ – text messages in English, or "FRAN/FREN – OUI" – text messages in French.
- Select the currently displayed language by pressing the ↓ key.
- Continue to configure the access code, return to the menu start, or quit the configuration menu.

5.2.1.2 Programming the access code

- The message appears „SET ACCESS CODE – NO“.
- Change with the ▲ key to „YES“ and confirm with the ↵ key.
- Set each digit of the new access code with the ▲ key and confirm with the ↵ key.
- Continue to configure the flow unit, return to the menu start, or quit the configuration menu.



Note: Keep the new access code in mind. From now on the configuration menu can only be called-up through entering this code. Unauthorized persons can no longer change the set parameters.



Note: If you have forgotten your access code, please refer to your local supplier or to SIKA directly.

5.2.1.3 Select physical flow unit

- The message „SET FLOW-UNIT – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- Select with the ▲ key one of the following units:

| | |
|-------------------|------------------------------------|
| l/min | liters per minute |
| l/h | liters per hour |
| USGPM | gallons per minute (USA) |
| UKGPM | gallons per minute (Great Britain) |
| m ³ /h | cubic meters per hour |

- Confirm the currently displayed unit by pressing the ↵ key.
- Continue to configure the total flow unit, return to the menu start, or quit the configuration menu.

5.2.1.4 Select physical total flow unit

- The message „SET TOTAL -UNIT – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- Select with the ▲ key one of the following units:

| | |
|--------|-----------------------------|
| l | liters |
| m3 | cubic meters |
| US-GAL | gallons (USA) |
| UK-GAL | gallons per (Great Britain) |

- Confirm the currently displayed unit by pressing the ↵ key.
- Continue to configure the temperature unit, return to the menu start, or quit the configuration menu.

5.2.1.5 Select physical temperature unit

This setting is only possible with instruments which are equipped with a temperature measuring input.

- The message „SET TEMP-UNIT – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- Select with the ▲ key one of the following units:

| | |
|----|--------------------|
| °C | Celsius degrees |
| °F | Fahrenheit degrees |

- Confirm the currently displayed unit by pressing the ↵ key.
- Continue to configure the pulse rate, return to the menu start, or quit the configuration menu.

5.2.1.6 Programming pulse rate



Note: The pulse rate of the installed flow sensors was already set in the factory before delivery.

- The message „SET PULSE RATE – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- The message „VALUE OK ?“ along with the last set pulse rate appears.
- Switch with the ▲ key to „CHANGE VALUE ?“ and confirm with the ↵ key.
- A cursor appears. Set with the ▲ key each digit of the new pulse rate of the connected flow sensor and confirm with the ↵ key.
- Continue to configure the gate time, return to the menu start, or quit the configuration menu.

5.2.1.7 Programming gate time

Proceed as follows to program a new gate time (sampling time):

- The message „SET GATE TIME – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- Select with the ▲ key one of the following measuring rates:

| |
|---------------------|
| SAMPL. RATE = 0,3 s |
| SAMPL. RATE = 0,5 s |
| SAMPL. RATE = 1,0 s |
| SAMPL. RATE = 1,5 s |
| SAMPL. RATE = 2,0 s |

- Confirm the currently displayed sampling rates by pressing the ↵ key.
- Quit the configuration menu, return to the menu start or continue to configure the successive parameters.



Note: Gate time is the period which the instrument TD 32500 needs to measure the flow.

With long gate times is the calculated flow signal very precise but flow changes prolong response time.

With short gate time is the calculated flow signal more imprecise, but with flow changes the response is shortened.



Note: If the frequency generated by the flow sensor is below 20 Hz, TD 32500 switches automatically from gate time measuring process to a pulse-length measuring process. This improves measuring precision with low frequencies.

The duration of one oscillation period is measured by the TD 32500 in a pulse-length measuring process. Thus the response time for flow changes is equal to the duration of one oscillation.

This is calculated by: $t_R = 1/f_S$:



| Sensor-Frequency f_S | Response Time t_R |
|---------------------------|------------------------|
| 10 Hz | 0,1 s |
| 5 Hz | 0,2 s |
| 0,5 Hz | 2 s |

5.2.2 Programming operating parameters

With this menu item, you can reset the total volume counter and activate a volume-quick-reset and a key lock. Proceed as follows:

- Switch over to configuration menu
- The message „SET USAGE“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.

5.2.2.1 Reset total volume

By calling-up this menu item you can reset the resettable volume counter (total flow) to zero and start a new summary of volume.

Proceed as follows:

- The message „RES TOTAL – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- Continue to configure the volume-quick-reset, return to the menu start, or quit the configuration menu.



Note: The resettable volume counter starts summarizing the flow volume, beginning with zero, after return to measuring operation. The non-resettable volume counter remains unaffected by this reset process.

5.2.2.2 Select reset mode for total volume

The setting back of the readjustable volume counter by means of the configuration menu could in some specific instances become cumbersome.

In this case you can initiate a quick-reset of the readjustable volume counter directly in one measuring operation, provided that this mode has been included in the configuration menu.

Proceed as follows to release a quick-reset of the readjustable volume counter:

- The message „QUICK-RES TOTAL – NO“ appears.
- Switch with the ▲ key to "YES" and confirm with the ↵ key.
- Continue to configure the key lock, return to the menu start, or quit the configuration menu.

Quick-reset for the readjustable volume counter is now released. See chapter "Measuring Operation" how to reset the readjustable volume counter in measuring mode. After leaving the configuration menu, the TD 32500 is in measuring operation again.



Note: Please note that in operating mode „Quick Reset“ of the resettable volume counter no access code is required, consequently a reset can also be triggered by unauthorized persons.

5.2.2.3 Select key lock

To protect the configuration of TD 32500 and to avoid a „Quick-Reset“ of the resettable volume counter by unauthorized persons, a key lock can be activated in the configuration menu which denies it access and „Quick-Reset“.

In this case, only current measuring values can be read.

Proceed as follows to activate the key lock:

- The message „KEY LOCK – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- Quit the configuration menu, return to the menu start or continue to configure the successive parameters.

The key lock is now enabled. After leaving the configuration menu, the TD 32500 is in measuring operation again.



Note: To disable the key lock, switch off the supply voltage of TD 32500 and then switch it on again for a restart of the instrument.

5.2.3 Programming the percentage reading (bargraph)

This program selects the source (flow rate, total flow (resettable), or, if available, temperature) as well as the measuring range of the percentage reading. Proceed as follows:

- Switch over to configuration menu.
- Press the ↵ key until the message „SET BARGRAPH“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.

5.2.3.1 Select source for bargraph

- The message „SET MEAS-SOURCE“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- Select with the ▲ key one of the following sources:

| |
|-----------------------------------|
| FLOW |
| TOTAL (resettable volume counter) |
| TEMPERATURE (if available) |

- Confirm the currently displayed source for percentage reading by pressing the ↵ key.
- Continue to configure the start value of reading range, return to the menu start, or quit the configuration menu.



Note: When the percentage display source is changed, the initial and final values are reset to the preset values.

5.2.3.2 Select start value of reading range for bargraph

- The message „SET RANGE LO-VAL – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- The message appears „VALUE OK ?“ together with the last set low value of the measuring range.
- Switch with the ▲ key to „CHANGE VALUE ?“ and confirm with the ↵ key.
- A cursor appears. Set with the ▲ key the respective digits of the new low value of the measuring range and confirm it with the ↵ key.
- Continue to configure the end value of reading range, return to the menu start, or quit the configuration menu.

5.2.3.3 Select end value of reading range for bargraph

- The message „SET RANGE HI-VAL – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- The message appears „VALUE OK ?“ together with the last set end value of the measuring range.
- Switch with the ▲ key to „CHANGE VALUE ?“ and confirm with the ↵ key.
- A cursor appears. Set with the ▲ key the respective digits of the new end value of the reading range of the bargraph and confirm it with the ↵ key.
- Quit the configuration menu, return to the menu start or continue to configure the successive parameters.

5.2.4 Programming alarms

You can only carry out this configuration if TD 32500 is equipped with alarm outputs.

- Switch over to configuration menu.
- Press the ↵ key until the message „SET ALARM – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.

5.2.4.1 Programming operating mode 'alarm output':

With this programming you define whether alarm 1 or 2 shall serve as closed or open circuit current outputs.

If the alarm output 1 (2) is set as open-circuit current alarm, it will be switched to the voltage supply in the case of an alarm, thus switching-on a connected consumer, e.g. a relay. If no alarm is present, the alarm output 1 (2) is separated from the voltage supply and the connected consumer is switched-off.

If the alarm output 1 (2) is set as closed-circuit current alarm, it will be separated from the voltage supply in the case of an alarm, thus switching-off a connected consumer. If no alarm is present, the alarm output 1 (2) is switched to the voltage supply and the connected consumer is switched-on.

Proceed as follows:

- The message „SET ALARM MODE – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- Select with the ▲ key one of the following operating modes:

| |
|------------------------|
| OPEN CIRCUIT CURRENT |
| CLOSED CIRCUIT CURRENT |

- Confirm the currently displayed operating mode of Alarm 1 and 2 by pressing the ↵ key.
- Continue to configure the individual parameters of Alarm 1 (2), return to the menu start or quit the configuration menu.

This programming defines the source (flow rate, total flow (resettable), or -if available- temperature), the type of alarm (minimum or maximum alarm), the alarm point and the alarm hysteresis.

Parameters of alarm 1 and 2 are completely independent from each other and can be individually configured. The programming process is identical for the two alarms – consequently only programming alarm 1 is described in the following, alarm 2 is shown in brackets.

Proceed as follows:

5.2.4.2 Programming alarm 1 (2):

- The message „SET ALARM 1 (2) – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.

5.2.4.2.1 Programming alarm source 1 (2):

- The message „SET ALARMSOURCE1 (2) – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- Select with the ▲ key one of the following sources:

| |
|-----------------------------------|
| ALARM OFF (disable Alarm 1 (2)) |
| FLOW |
| TOTAL (resettable volume counter) |
| TEMPERATURE (if available) |

- Confirm the currently displayed source of Alarm 1 (2) by pressing the ↵ key.
- Continue to configure the alarm type of Alarm 1 (2), return to the menu start or quit the configuration menu.



Note: If you have chosen Alarm 1 (2) as „ALARM OFF“, the following programming items Type of Alarm, Alarm Point, and Alarm Point-Hysteresis are skipped.
Then no alarm monitoring is carried out in measuring operation.



Note: If Alarm 1 (2) is set as "VOLUME", the programming items for alarm type and alarm point hysteresis are skipped.



Note: When the alarm source is changed, the alarm point and the hysteresis are reset to the preset value.



Note: If Alarm 1 (2) is set as "TEMPERATURE" and a sensor open-circuit or a sensor cable short-circuit occurs, this is generated as an alarm.

5.2.4.2.2 Programming the type of Alarm 1 (2):

- The message „SET AL 1 (2) MIN/MAX – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- Select with the ▲ key

| |
|---------------|
| MINIMUM-ALARM |
|---------------|

| |
|---------------|
| MAXIMUM-ALARM |
|---------------|

- Confirm the currently displayed type of Alarm 1 (2) by pressing the ↵ key.
- Continue to configure the alarm point of Alarm 1 (2), return to the menu start or quit the configuration menu.

5.2.4.2.3 Programming the point of Alarm 1 (2):

- The message „SET ALARMPOINT 1 (2)– NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- The message appears „VALUE OK ?“ together with the last entered alarm point.
- Switch with the ▲ key to „CHANGE VALUE ?“ and confirm with the ↵ key.
- A cursor appears. Set with the ▲ key the respective digit of the new Alarm point and confirm it with the ↵ key.
- Continue to configure the hysteresis point of Alarm 1 (2), return to the menu start or quit the configuration menu.

5.2.4.2.4 Programming the point of hysteresis 1 (2):

- The message „SET HYSTERESIS 1 (2)– NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- The message appears „VALUE OK ?“ together with the last entered hysteresis point.
- Switch with the ▲ key to „CHANGE VALUE ?“ and confirm with the ↵ key.
- A cursor appears. Set with the ▲ key the respective digit of the new hysteresis point and confirm it with the ↵ key.
- Quit the configuration menu, return to the menu start or continue to configure the successive parameters.

5.2.5 Programming analogue output

You can only carry out this programming if TD 32500 is equipped with an analogue output.

With this programming you select the source (flow rate, total flow (resettable), or -if available- temperature), the type of the analogue output (0-20 mA, 4-20 mA or 0-10 V) and the range of the analogue output.

Proceed as follows:

- Switch over to configuration menu.
- Press the ↵ key until the message „SET ANALOG-OUT – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.

5.2.5.1 Programming the source of the analogue output:

- The message „SET ANALOGSOURCE – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- Select with the ▲ key one of the following sources:

| |
|-----------------------------------|
| ANALOG-OUT OFF |
| FLOW |
| TOTAL (resettable volume counter) |
| TEMPERATURE (if available) |

- Confirm the currently displayed source for the analogue output by pressing the ↵ key.
- Continue to configure the type of analogue output, return to the menu start, or quit the configuration menu.



Note: If you have selected for the analogue output „ANALOG-OUT OFF“, the following programming items of type and range of the analogue output are skipped.
The analogue output is unoperational during measuring.



Note: When the analogue output source is changed, the lower and upper range limits are reset to the preset values.

5.2.5.1.1 Programming the type of analogue output:

- The message „SELECT ANALOGOUT – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- Select with the ▲ key:

| |
|---------|
| 0-20 mA |
| 4-20 mA |
| 0-10 V |

- Continue to configure the lower limit of analogue output (value which corresponds with 0 mA / 4 mA / 0 V), return to the menu start or quit the configuration menu.

5.2.5.1.2 Programming the lower limit of the analogue output range:

- The message „SET 0mA/4mA/0V – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- The message appears „VALUE OK ?“ together with the last entered lower limit of the analogue output range.
- Switch with the ▲ key to „CHANGE VALUE ?“ and confirm with the ↵ key.
- A cursor appears. Set with the ▲ key the respective digit of the new lower limit and confirm it with the ↵ key.
- Continue to program the upper limit of analogue output, return to the menu start or quit the configuration menu.

5.2.5.1.3 Programming the upper limit of the analogue output range:

- The message „SET 20mA/10V – NO“ appears.
- Switch with the ▲ key to „YES“ and confirm with the ↵ key.
- The message appears „VALUE OK ?“ together with the last entered upper limit of the analogue outputs.
- Switch with the ▲ key to „CHANGE VALUE ?“ and confirm with the ↵ key.
- A cursor appears. Set with the ▲ key the respective digit of the new upper limit and confirm it with the ↵ key.
- Quit the configuration menu, return to the menu start or continue to configure the successive parameters.

5.2.6 Programming frequency divider

You can only carry out this configuration, if TD 32500 is equipped with a frequency divider output.

With this programming you determine the factor by which the input pulse rate generated by the flow sensor is divided in order to allow output at a smaller pulse rate.



Note: If the built-in flow sensor provides for example a pulse rate of 855 pulses/liter (printed on type plate) and a factor "6" is programmed, a pulse rate of 142,5 pulses/liter is quoted at the outlet.

Proceed as follows:

- Switch over to configuration menu.
- Press the \downarrow key until the message „SET PULSE DIVIDE – NO“ appears.
- Switch with the \blacktriangle key to „YES“ and confirm with the \downarrow key.
- The message appears „VALUE OK ?“ together with the last entered factor.
- Switch with the \blacktriangle key to „CHANGE VALUE ?“ and confirm with the \downarrow key.
- A cursor appears. Set with the \blacktriangle key the respective digit of the new factor and confirm it with the \downarrow key.

5.2.7 Quit configuration menu

- The message „QUIT CONFIG – NO“ appears.
- Switch with the \blacktriangle key to „YES“ and confirm with the \downarrow key.
- The configuration menu is quit. TD 32500 switches back to measurement operation.
- If you confirm with "NO", the system returns to the beginning of the configuration menu.



Note: By simultaneous pressing the keys \blacktriangle and \downarrow at any position in the configuration menu, the instrument switches to the menu item "Quit configuration menu".

Temperature (if available):

| | | | | | | | | | | | | | | |
|--|--|--|--|---|---|---|---|--|---|---|--|--|--|--|
| | | | | 2 | 5 | , | 0 | | ° | C | | | | |
|--|--|--|--|---|---|---|---|--|---|---|--|--|--|--|

Non-resettable total counter:

| | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|--|--|
| | | F | I | X | - | V | O | L | U | M | E | N | | |
| | 2 | 5 | 0 | 0 | 0 | 0 | 0 | | I | | | | | |



Note: With the appearance of the non-resettable volume counter (total flow), is the bargraph in the top line of the display replaced by the message "TOTAL (FIX)".

6.2 Switching the measuring value display

If TD 32500 is in measurement mode, you can call up the current measuring values one by one by pressing the **s** key. The values are viewed in the lower line of the display:

| |
|----------------------------|
| Flow |
| Resettable Total |
| Temperature (if available) |
| Non-resettable Total |

The bargraph in the upper line remains unchanged, with the exception of the display of the non-resettable volume counter.

6.3 Resetting the volume counter (total flow)

In measurement mode, the resettable total flow can put to zero at any time, if the following conditions are met:

- The mode „Quick-Reset“ was released in the configuration menu (see chapter: „Select reset mode for total flow“).
- The key lock was not enabled in the configuration menu (see chapter: „Enable key lock“).

If these conditions are met, you can reset the readjustable total counter to zero as follows:

- Press the **↓** key until the message „RES VOLUME – NO“ appears.
- Switch with the **▲** key to „YES“ and confirm with the **↓** key.
- Now the resettable total is set to zero. TD 32500 switches to measuring operation and the summation of the measured flow starts again with zero.

7 Maintenance

7.1 Cleaning



Attention: Keep TD 32500 clean. This is especially important for the reading surface to ensure both, a good legibility of the LC-display and a proper operation of the light reflection buttons.

7.2 Maintenance

No special maintenance is required for TD 32500.

7.2.1 Disposal

SIKA will take care for proper disposal.
Return the TD 32500 freight prepaid.

8 Troubleshooting



Attention:
The following table contains remedy actions.

| malfunction | cause | remedy |
|--|--|---|
| TD 32500 does not work properly | <ul style="list-style-type: none"> • ambient influences, e.g. magnetic fields. • wrong supply voltage • incorrect installation • wrong programming | <ul style="list-style-type: none"> • screen the instrument from magnetic fields • check the supply voltage • check the installation • check the programming |
| Display of useless characters and measuring values | | <ul style="list-style-type: none"> • switch the instrument off and on |



Note: If the device does not operate correctly after the above items have been checked, please contact your supplier or Sika. Where necessary, the TD 32500 must be checked at the factory.

9 Technical Data

Sensor input:

frequency input for Sika flow sensors:

VTI / VTH / VTP 15 ...

VTI / VTH / VTM 25 ...

VTI / VTH / VTM 40 ...

VZ ... AL

VTR ...

user-programmable pulse rate

Sensor frequency range:

0.5 Hz to 2000 Hz

Sensor supply:

12 VDC

Measurable signal amplitude of the sensor:

50 mV_{ss} to 12 V_{ss}

Measuring dynamics:

adjustable measuring rate (gate time) to:

300 ms

500 ms

1000 ms

1500 ms

2000 ms

below a sensor frequency of 20 Hz is:

measuring rate = 1/sensor frequency

Display:

2 line LC-display with 16 digits each,
5,55 mm digit height

Measuring value display:

rate of flow in floating point presentation

total flow (resettable) in floating point presentation

total flow (non-resettable) in floating point presentation

temperature (optional)

Bargraph:

graduation range from 0 up to 100%,
 resolution: 2%,
 applicable to flow rate, total flow, or temperature (optional)

Selectable physical measurement units for measuring values:

| | |
|---------------|-------------------|
| Rate of flow: | l/min |
| | l/h |
| | m ³ /h |
| | GPM(US) |
| | GPM(UK) |
| Total flow: | l |
| | m ³ |
| | GAL(US) |
| | GAL(UK) |
| Temperature | °C |
| | °F |

Operating buttons:

2 infrared light reflex buttons, screened against outside light

Programming protection:

1. programmed parameters protected by access code
2. adjustable key lock

Alarm output (optional):

2 PNP open-collector transistor outputs:
 applicable to flow rate, total flow, or temperature (optional),
 adjustable as minimum or maximum alarm
 adjustable alarm point
 adjustable hysteresis

capacity: 1000 Ω with 24 VDC / 30 mA

alarm-signaling via LED with 3 mm diameter at front plate

Analogue output (optional):

adjustable as:

0-20 mA / 4-20 mA, based on 0 V, maximum load: 800 Ω with 24 VDC
0-10 V, minimum voltage supply > 15 VDC

applicable to flow rate, total flow, or temperature (optional)

graduation range

accuracy mA output: +/-0,1 mA

accuracy Volt output: +/-0,05 V

Frequency divider (optional):

PNP open-collector transistor output

programmable separation rate

capacity: 25 mA / 200 Ω

signal: square wave signal with level 5 VDC

generated output frequency: < 1000 Hz

accuracy: +/- 0,5% of the maximum generated output frequency

Temperature input (optional):

Pt100 3-lead measuring input

measuring range: -10 to +150 °C / 14 to 302 °F

resolution: +/-0,5 K

accuracy: +/-0,5 K

A sensor open-circuit or sensor cable short-circuit is detected.

Supply voltage:

12 VDC to 24 VDC, +/-10%, not galvanically insulated

(the analogue output 0-10 V requires a supply voltage >15 VDC)

Casing:

bayonet ring casing of stainless steel with glass window,

80mm diameter, 55 mm height

rotational up to 180° installed at flow sensor

connection with concentric plug-and-socket M12x1 or multi-lead cable

protection class IP65

Ambient service temperature:

-10 to +60 °C

Medium service temperature:

Depending on sensor type, max. -10 to +90 °C

