Operating instructions

Simulators TARAsim

SIM4

Content

1   Information about these operating instructions

1.1   Symbols and displays in the text

Symbol	Meaning
🛈	This symbol indicates tips and helpful information for optimum and economic use of the product.
➢	This symbol indicates actions to be performed by the personnel.
✍	This symbol indicates the result of an action.
•	This symbol indicates individual bullet points.
✓	This symbol indicates a precondition before performing an action.

1.2   Associated documents

Data sheets on the simulators can be found at the following Internet address:
http://www.reiss-gmbh.com/english/datasheets.htm

2   Product description

Advice	Please carefully read this manual completely before commissioning the simulator. Do not discard. The operator shall be liable for any damage caused by installation or operating errors.

Simulator TARAsim SIM4 is designed for checking the analog input for amperometric sensors of the brand TARAbase / TARAline / TARAtec / TARAsens (in the following TARA-sensor) of a controller. The simulator is supplied with power by the controller and it outputs the signals set at the switch.

i   The displayed value on the controller depends on the current zero-point adjustment and slope calibration.

i   It is not possible to conduct a calibration with the simulator because every amperometric sensor has another slope.

This manual primarily refers to the simulator. Please pay attention to the corresponding manual of the peripheral devices.

2.1   <u>Function</u>

Simulators of the type TARAsim SIM4 generate different output signals as a substitute for a TARA-sensor with voltage signal output of 0…-/+2000 mV or 4-20 mA current signal output. Depending on the switch setting three constant voltages or currents can be output:

TARAsim SIM4.0-n-M12, SIM4.0-p-M12	TARAsim SIM4.0-MA / SIM4.0-MA-M12
• 0 mV • ±100 mV • ±1000 mV	• 4 mA • 4.8 mA • 12 mA

The difference between TARAsim SIM4.0-MA and SIM4.0-MA-M12 is the electrical connection:

TARAsim	Electrical connection
SIM4-MA	2-pole terminal
SIM4-MA-M12	5-pole M12 connector

With TARAsim SIM4 generally the function of the controller can be checked, e. g.

- general function of the input.
- zero-point setting of the controller by simulation of 0 mV or 4 mA.
- setting of slope at the controller by simulation of ±100 mV / ±1000 mV or 4.8mA / 12 mA.

The controller shall comply with the following requirements for the analog input of amperometric sensors:

TARAsim	requirement
SIM4.0-n-M12	• Dual power supply ±5 … ±15 V DC, approx. 10 mA • output resistance 1 kΩ • processing of a negative voltage signal
SIM4.0-p-M12	• Single power supply 12 … 30 V DC, approx. 10 mA • output resistance 1 kΩ • processing of a positive voltage signal
SIM4.0-MA SIM4.0-MA-M12	• Single power supply 10 … 30 V DC • R_L 50Ω…R_L 900Ω • processing of a 4 … 20 mA current signal

3   Intended use

Only trained and authorised staff should operate the simulator.
Each application beyond this manual is a not intended use so the warranty becomes void and the liability is disclaimed.
We do not accept liability for injury to persons or damage to property if the operating instructions in this manual have not been followed, or the original state of the simulator has been changed, or the simulator has been used under conditions other than those specified.

If using the simulator outside Germany, please comply with the corresponding local regulations.

4   <u>Scope of supply</u>

Keep the packaging for the simulator completely. In case of repair or warranty return the simulator in this package.
Check that the delivery is intact. In case of damage please contact your supplier.
Check that the delivery is complete by comparing with the below mentioned scope of supply.

Component	number	Simulator with voltage output	Simulator with 4-20 mA-signal output	
			(2-pole terminal connection)	(5-pole M12-connector)
Simulator (according to type)	1	✓	✓	✓
mA-cap with O-ring 20x1.5	1	-	✓	-
Operating instructions	1	✓	✓	✓

5   <u>Commissioning</u>

- ✓ the electrical connection of TARAsim SIM4 fits to the electrical connection of the controller.
- ✓ the controller complys with the above mentioned requirements (chapter 2.1, page 4)
- ✓ Sensor is unscrewed or disconnected from the sensor cable.

If the power supply of the controller is incorrect the simulator will output wrong values.

5.1   Electrical connection

5.1.1   Connection with 0…+/-2000-mV signal output
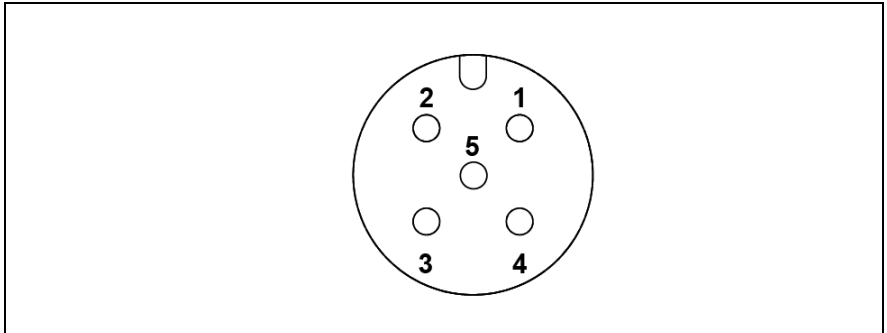
	Analog signal processing		**Digital signal processing**
	0…-2000 mV	0…+2000 mV	0…+/-2000 mV
1	Measuring signal	Measuring signal	Measuring signal
2	+U	+U	+U
3	-U	Power GND	Power GND
4	Signal GND	Signal GND	Signal GND
5	(not assigned)	(not assigned)	(not assigned)

5.1.2   Connection with 4…20 mA signal output

M12 screwed plug
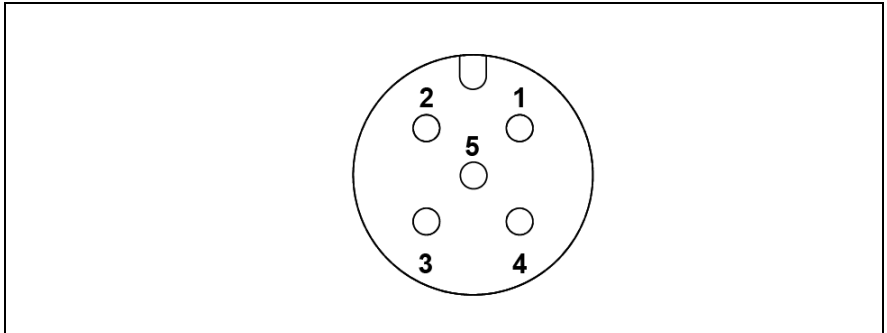
1   (not assigned)
2   +U
3   -U
4   (not assigned)
5   (not assigned)

Connection with a 2-pole screwed terminal block

TARAsim SIM4…-MA is provided with a 2-pole screwed terminal block.

> ➢ Insert the sensor cable through the cable gland in the hood of TARAsim SIM4…-MA.
> ➢ Connect the cores to the terminals in the simulator electronics.
> ➢ Screw the hood finger-tight into the simulator body until the O-ring seal is made.
> ➢ Tighten the cable gland so as to secure the cable.

i If the display of the controller doesn't show any value after connecting the wires, locate the error, e. g.
  - ➢ interchange wires at the terminal
  - ➢ check sensor cable
  - ➢ check input of the controller

5.2   <u>Application of the simulator</u>

  - ✓ no zero-point adjustment (0 mV or 4 mA correspond to 0 ppm).
  - ✓ adjusted calibration factor at the controller 100%.

  - ➢ Screw the sensor cable onto TARAsim SIM4 or connect it to TARAsim SIM4.
  - ➢ Adjust the required output signal simulation at TARAsim SIM4 with the switch.
  - ➢ Select the column with the measuring range adjusted at the controller.
  - ➢ In the row with the selected switch setting at TARAsim SIM4 the concentration is indicated which should be displayed by the controller.

i By changing the switch setting the other output signal can be adjusted.

Switch setting SIM4.0-n-M12	Adjusted measuring range at the controller (dual power supply, negative mV-input signal)					
	2 ppm	**20 ppm**	**200 ppm**	**2000 ppm**	**2 %** (20000 ppm)	**20 %**
0 mV	0 ppm	0 ppm	0 ppm	0 ppm	0 %	0 %
-100 mV	0.1 ppm	1.0 ppm	10.0 ppm	100 ppm	0.1 %	1 %
-1000 mV	1.0 ppm	10.0 ppm	100.0 ppm	1000 ppm	1 %	10 %

Switch setting	Adjusted measuring range at the controller (single power supply, positive mV-input signal)					
SIM4.0-p-M12	**2 ppm**	**20 ppm**	**200 ppm**	**2000 ppm**	**2 %** (20000 ppm)	**20 %**
0 mV	0 ppm	0 ppm	0 ppm	0 ppm	0 %	0 %
+100 mV	0.1 ppm	1.0 ppm	10.0 ppm	100 ppm	0.1 %	1 %
+1000 mV	1.0 ppm	10.0 ppm	100.0 ppm	1000 ppm	1 %	10 %

Switch setting	Adjusted measuring range at the controller (4 … 20 mA input, incl. Power supply)					
SIM4.0-MA or **SIM4.0-MA-M12**	**2 ppm**	**20 ppm**	**200 ppm**	**2000 ppm**	**2 %** (20000 ppm)	**20 %**
4 mA	0 ppm	0 ppm	0 ppm	0 ppm	0 %	0 %
4,8 mA	0.1 ppm	1.0 ppm	10.0 ppm	100 ppm	0.1 %	1 %
12 mA	1.0 ppm	10.0 ppm	100.0 ppm	1000 ppm	1 %	10 %

5.3   Check of the signal input of the controller with SIM4.0-n-M12

Example:
- ✓ no zero-point adjustment: 0 mV = 0 ppm
- ✓ Calibration factor at the controller: 100%
- ✓ adjusted measuring range at the controller: 20 ppm
- ✓ switch setting SIM4.0-n-M12:   -100 mV

- ✍ Target value to be displayed at the controller: 1.0 ppm

If the controller displays a different value, the adjusted calibration factor has to be checked or corrected and/or the input for amperometric sensors at the controller has to be checked.

5.4 Check of the zero-point display at the controller with SIM4.0-n-M12

Example:
- ✓ Calibration factor at the controller: 100%
- ✓ adjusted measuring range at the controller: 2 ppm
- ✓ switch setting SIM4.0-n-M12:   0 mV

- ✎ Target value to be displayed at the controller: 0 ppm

If the value displayed by the controller is divergent from 0 ppm, the zero-point setting of the controller has to be checked or corrected and/or the input for amperometric sensors at the controller has to be checked.

6 Storage

The simulator can be stored in the original packing at a dust-free place.

7 Technical data

Please find information about the technical data at the following internet address:
http://www.reiss-gmbh.com/english/datasheets.htm

8 Disposal

- ➢ Follow the locally valid waste disposal regulations.

9   Warranty

We grant a manufacturer's warranty of two years on the simulator subject to appropriate application.
Should there be mechanical damage or should the serial number be illegible, the warranty becomes void.

Return of a simulator for check/reconditioning:

Only shipments are accepted that are returned with carriage paid. Otherwise they will be returned to the sender.

On checked/reconditioned simulators we grant a warranty of one year from the date of check/reconditioning. Should there be mechanical damage or should the serial number be illegible, this warranty becomes void.

10   Liability disclaimer

The simulator is manufactured with the greatest care.
Should any malfunctions occur in the simulator despite this, no liability claims may be lodged against the manufacturer in case of damage resulting from this malfunction.

Reiss GmbH
Eisleber Str. 5
D – 69469 Weinheim
Germany