

## TTrig

12C100000



TTrig is a measurement interval switch for the TriOS G2 sensors OPUS and NICO. Due to its low standby power (<1 mW), it is ideally suited for operation with a battery as power supply. It is designed to minimize energy consumption between measurements.

The TTrig features an additional connection for commissioning and controlling a wiper (W55).

Remote or self-sufficient measuring stations can thus be operated maintenance-free for several months.

An RJ-45 Ethernet interface provides access to the sensor's G2 web interface for downloading the measurement data from the data logger with a notebook.

### Technical Specifications

#### POWER SUPPLY

<b>Voltage supply</b>	12...24 VDC, max. 4A
<b>Power in standby</b>	<1mW

#### SENSOR INTERFACES

<b>Connection</b>	M12 for TriOS G2 sensors; 1x RJ-45
<b>Standard</b>	RS-485
<b>Protocol</b>	Modbus RTU
<b>Analog interfaces</b>	No

#### OTHER INTERFACES

<b>Connection</b>	1x M8 connector for wiper W55 Trigger output
-------------------	---

#### ENVIRONMENT

<b>Operating temperature</b>	0...+40 °C
<b>Storage temperature</b>	-10...+70 °C
<b>Relative air humidity</b>	0...95 % (non-condensing)
<b>Protection type</b>	IP64

#### MECHANICAL SYSTEM

<b>Dimensions (width x height x depth)</b>	140 x 80 x 60 mm
<b>Weight</b>	0.5 kg

# Short Guide

## Compatibility

The TTrig can only be used with one sensor and one wiper at the same time and can only be used for sensors with integrated data logger (OPUS, NICO).

## Scope of Delivery



TTrig

## Connections



Cable bushing    M8 connection    M12 connection

## Control panel

2 rotary encoders for setting measurement interval and delay

5 buttons with the following functions:

- Start automatic measurement\*
- Service (switch on sensor permanently for data download)
- Sensor single measurement
- Wiper activation
- Reset (reset program)

\*If the red power fail LED flashes, this button can be pressed to start a manual attempt to restore normal operation.

## LEDs

Description	Colour	Function	Behaviour
Start	white	Measurement interval active	LED flashes briefly once every 20 seconds
	white	Sensor initialisation	LED flashes continuously
Wiper	white	Wiper active	LED lights up permanently
Sensor	white	Sensor active	LED lights up permanently 2 minutes before measurement
			LED flashes three times briefly during measurement
			LED lights up permanently 1 minute after measurement
Service	yellow	Service active	LED lights up permanently
	yellow	Sensor initialisation failed	LED flashes briefly once every 20 seconds
Power fail	red	Critical power supply (<11 V)	LED flashes briefly once every 20 seconds

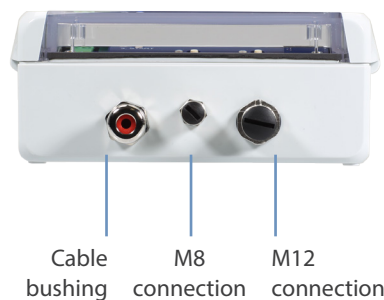
# Commissioning

## Electrical installation

After opening the protective cover, the TTrig is first connected to a power supply (12..24 VDC). A 2-pin Phoenix connector is located on the left-hand side for this purpose.

## Sensor connection and wiper connection

The sensor must then be connected to the M12 socket and optionally a wiper to the M8 socket. The following table shows the configuration options.



## Function test

The WIPER and SENSOR buttons should be operated manually one after the other for the subsequent function test. The function of the wiper is visible by its movement. For OPUS it is recommended to download the data logger and check the completeness of the measurements.

## Configuration of automatic measurement

The measurement interval is set on site on the TTrig (rotary encoder "1. INTERVAL"). In addition, a start delay (rotary encoder "2. DELAY") can be activated. The following table shows the configuration options.

Rotary encoder position	1.Interval
0	15 minutes
1	30 minutes
2	1 h
3	2 h
4	3 h
5	4 h
6	6 h
7	8 h
8	12 h
9	24 h

Rotary encoder position	2. Delay
0	No delay time
1	1 h
2	2 h
3	3 h
4	4 h
5	6 h
6	8 h
7	10 h
8	15 h
9	20 h

## Start of automatic measurement

Pressing the start button ("3. START") starts the automatic measurement. This function of the start button is only available again after a reset or disconnection of the power supply.

**NOTICE** The settings of the rotary encoders are queried once. Later adjustment has no effect on the measuring intervals or the delay!

The following procedure should be observed after the start of the automatic measurement:

Sequence of the first measurement after activation by pressing the start button.

	START LED	WIPER LED	SENSOR LED	Function
1.	Flashes quickly	OFF	OFF	Sensor initialisation
2.	Flashes quickly	ON	OFF	Wiper cleans
3.	Flashes quickly	OFF	ON	Sensor boots
4.*	Flashes every 20 s	OFF	Flashes 3 x fast	Measurement
5.	Flashes every 20 s	OFF	ON	Data backup
6.	Flashes every 20 s	OFF	OFF	Automatic measurement running

During active automatic measurement, the start LED lights up once every 20 seconds.

\* If instead the yellow service LED flashes every 20 s, please refer to the section Troubleshooting/Sensor not found.

## Data storage and retrieval

All measurement data is only stored on the internal 2GB SD card of the sensor.

A notebook can be connected via an RJ-45 socket on the TTrig so that the stored measurement data can be downloaded via the web interface. Press the "Service" button on the TTrig to supply the sensor with power for the entire period. In service mode the automatic measurements are interrupted, "Skipped" is entered in the comment line of the next measurement.

## Establishing a connection to the sensor

- Step 1 Connect a notebook/PC to the TTrig via the RJ-45 socket.
- Step 2 Press the "Service" button on the TTrig to activate the service mode.
- Step 3 Open a web browser. The following URL establishes the connection to your sensor: <http://192.168.77.1/> (see also manual of the respective sensor)

## Comments

Each record has a comment function with four comment lines.

They can be found in the web interface under the menu "Measurement" → "Settings".

Lines 1 and 2 are freely available to the user.

Lines 3 and 4 are overwritten by TTrig.

In comment line 3 each measurement is assigned a consecutive number.

Failed measurements, e.g. due to service or power fail, are internally incremented in TTrig.

In this case, the number of the subsequent measurement is not consecutive.

The numbering of the measurements enables the user to subsequently correct fluctuations of the sensor-internal RTC (Real Time Clock).

Comment line 4 contains additional event information such as timeout, power fail, etc.

In the case of omitted measurements, their number can be read at "EVENT-SKIPPED #".

## Troubleshooting

### Power fail:

A power fail occurs when the power supply is no longer sufficient for the next measurement. The red POWER FAIL LED flashes and no more measurement is triggered in the following 12 hours. Every 12 hours, the TTrig will automatically check the performance of the power supply.

The start button can be used to trigger a manual check of the voltage source.

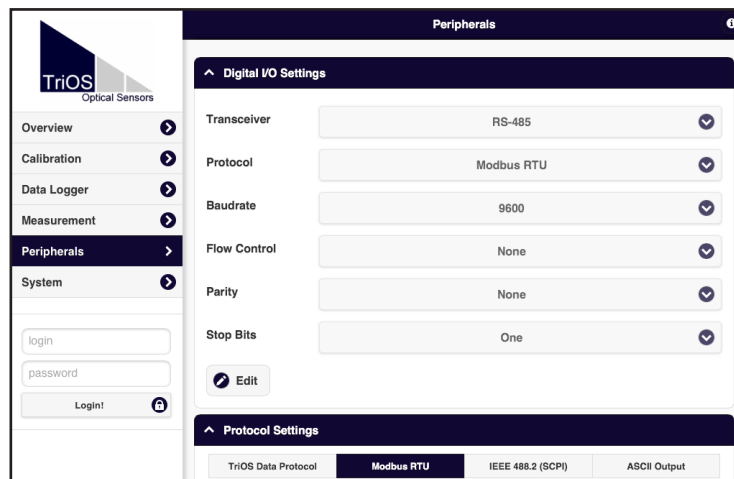
The TTrig resumes automatic measurement when sufficient power is available.

### Sensor not found:

Check the connector and the cable of the sensor. Carry out a reset and press the start button again after one minute.

Sensor detected → Measurements are carried out fully automatically.

Sensor not detected → Connect to the G2 interface of the sensor and check the settings of the serial interface under the menu "Peripherals".



If the web interface is also not available, please contact us at [support@trios.de](mailto:support@trios.de).

## TTrig Reset

Reset resets the TTrig to its initial position.

Automatic measurement is stopped and the numbering of the measurements is reset to 1.

1. INTERVAL and 2. DELAY can now be reconfigured. By pressing the start button the TTrig takes over the settings of the rotary encoders into the new automatic measurement.

All stored data of the sensor is retained!