



DIS CONFIGURATOR SET CAN

Manual

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About DIS configurator set CAN

DIS configurator set CAN is a set of configuration tools for configuring following sensors:

- QG65D/QG76D CANopen series
- QG65N2/QG76N2 CANopen series

The configuration set consists of a configuration kit and PC software. The configuration kit can be ordered separately, and the software can be downloaded from our website.

The tool also displays live inclination data from the sensor. The configurator runs best in full HD display mode (1920x1080p)

System Requirements

- A vacant USB port (USB 1.1, USB 2.0 or USB 3.0) at the computer or at a self-powered USB hub connected to the computer.
- Operating system: Windows 10



Configuration kit

The DIS configurator set CAN comprises:

- Item 1: USB-CAN dongle. (Peak USB-CAN IPEH Interface adaptor)
- Item 2: CAN power box with power adapter connection
- Item 3: 0.3 m CAN cable for connecting the sensor
- Item 4: Power adaptor.

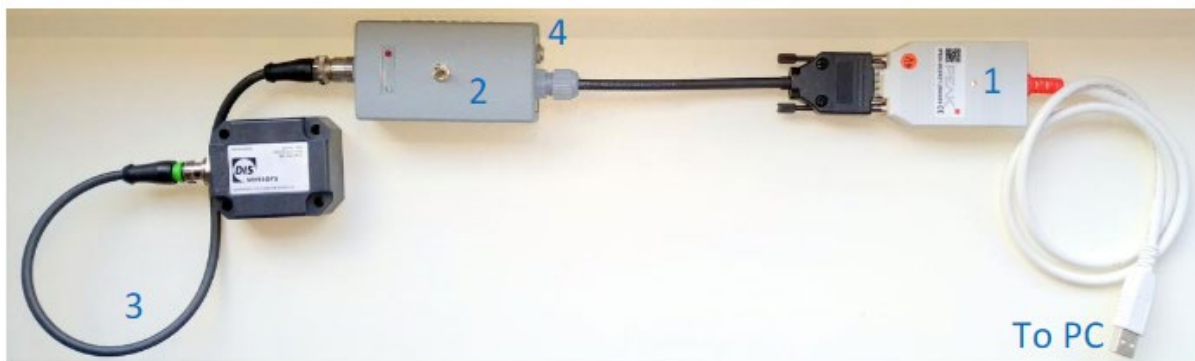


Figure 1 - Connection of QG65D configurator

The USB-CAN dongle (item 1) provides the communication between USB and CAN interface. Note that DIS has modified the Peak USB-CAN IPEH Interface adaptor to forward a 5 V power supply to the CAN power box (item 2). If a standard (unmodified) Peak USB-CAN adaptor is used, the included power adaptor (item 4) must be used.

The CAN power box (item 2) provides the voltage supply to the sensor devices. When only 1 sensor is connected, it can be powered via the USB-CAN dongle (item 1) by the 5 V USB power. If more than 1 sensor is connected, then the power adapter (item 4) must be used instead. This power adapter can support up to 32 Dynamic Inclinometers from DIS sensors.



Figure 2 - Power adapter for the CAN power box

The CAN power box is also equipped with a switch to control the internal CAN bus termination resistor within the CAN power box. The label clearly shows “on” and “off”.



Figure 3 - CAN power box

Two LEDs on the CAN power box indicate the power status. The green LED (connection indication) will be lit when it is connected correctly to the PC. The red LED (current overload indication) will be lit when the USB port is overloaded (max. 250 mA) to protect your PC or laptop. If you use the power adapter to supply the CAN power box, then the internal power supply and the current overload protection are disabled.



If the configurator is not used ‘stand-alone’ (i.e. only configurator + DIS sensor) but is connected to a powered CAN bus system, then this CAN bus system must be powered with Vcc > 20 V dc. Otherwise, the USB / DIS configurator will have to supply power to the entire CAN system chain, which can potentially harm the PC and connected items.



DIS configurator set CAN will supply 18Vdc on Vcc and Gnd to the connected CAN systems/CAN sensors. Connecting sensors from other brands could potentially harm the equipment.

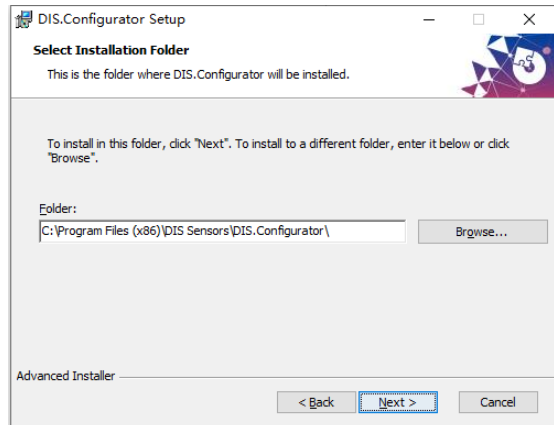
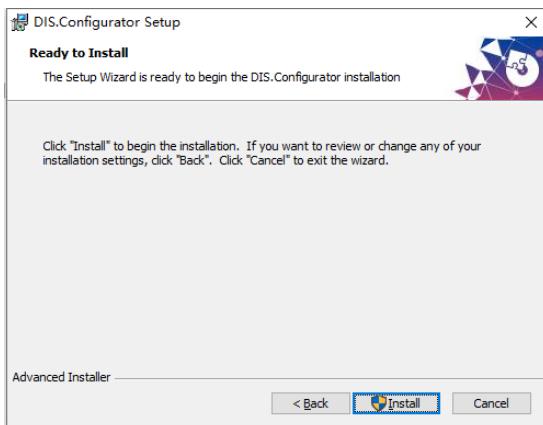
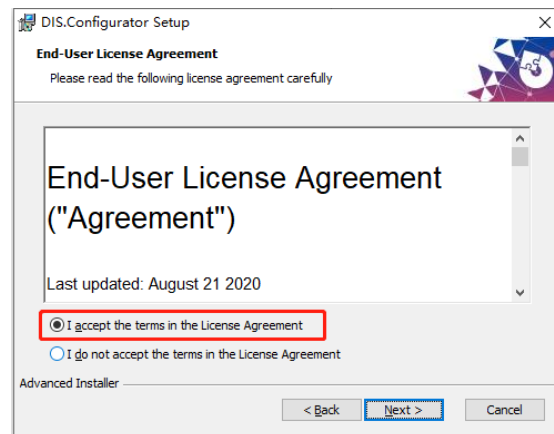
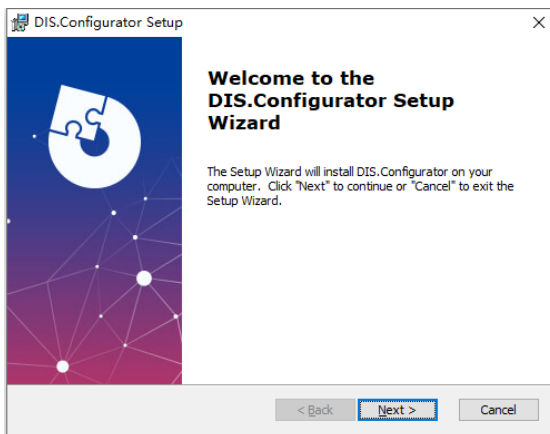


PC software

The PC software and a detailed manual can be download from the [DIS website](#) free of charge. The software provides a portal for both sensor configuration and live data monitoring.

Installation guide

This PC software can only be installed in Windows 10.



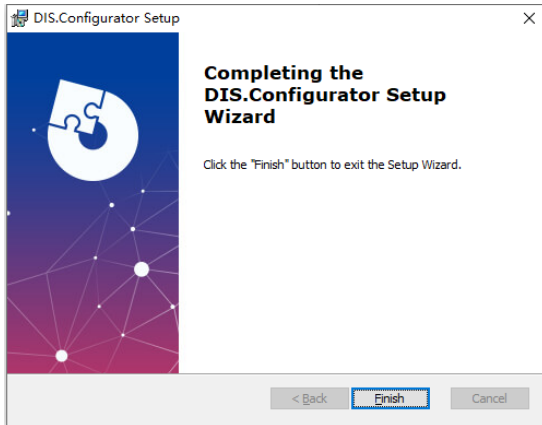


Figure 4 – Installation wizard.



The software window contains both information of the pc software and the sensor information.

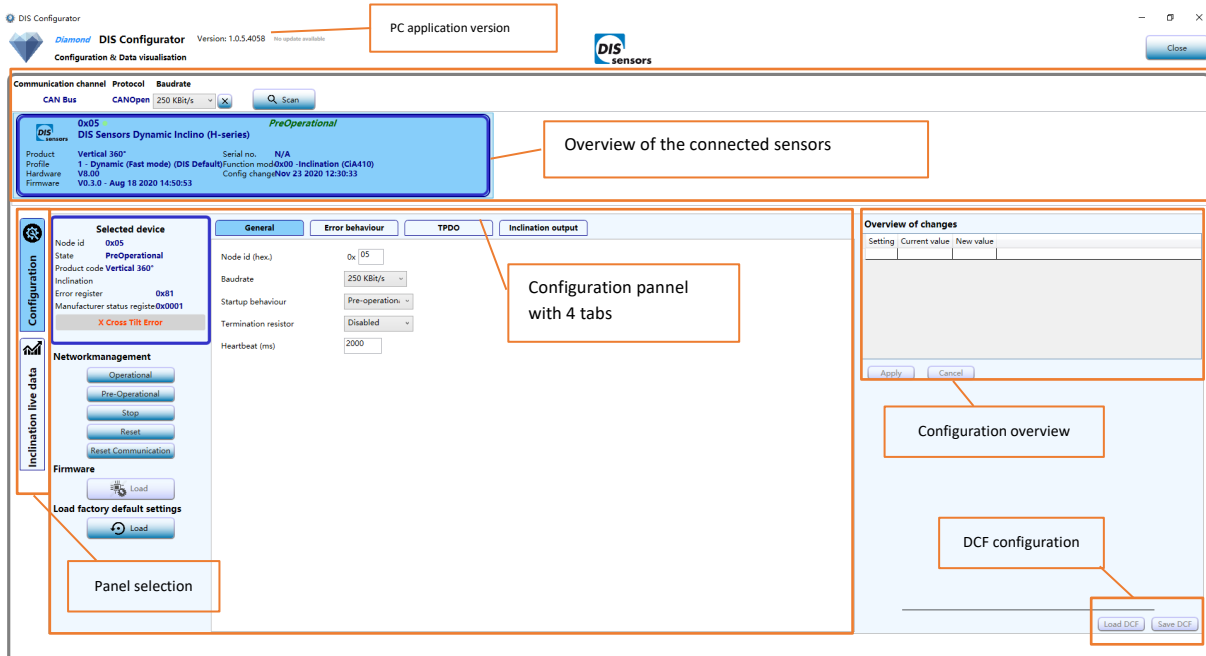



Figure 5 - Start page configuration software.

PC Software update

The version of the PC software is shown on the top of the window. The software can detect if updates are available.

 DIS Configurator



Diamond **DIS Configurator**

Version: 1.0.5.4058

No update available

Configuration & Data visualisation

Figure 6 - version of the PC software

Whenever a new version is available, the text “No update available” will be replaced with an “update” button.

Version: 1.0.4.4042

Update

Figure 7 - check for update

Update

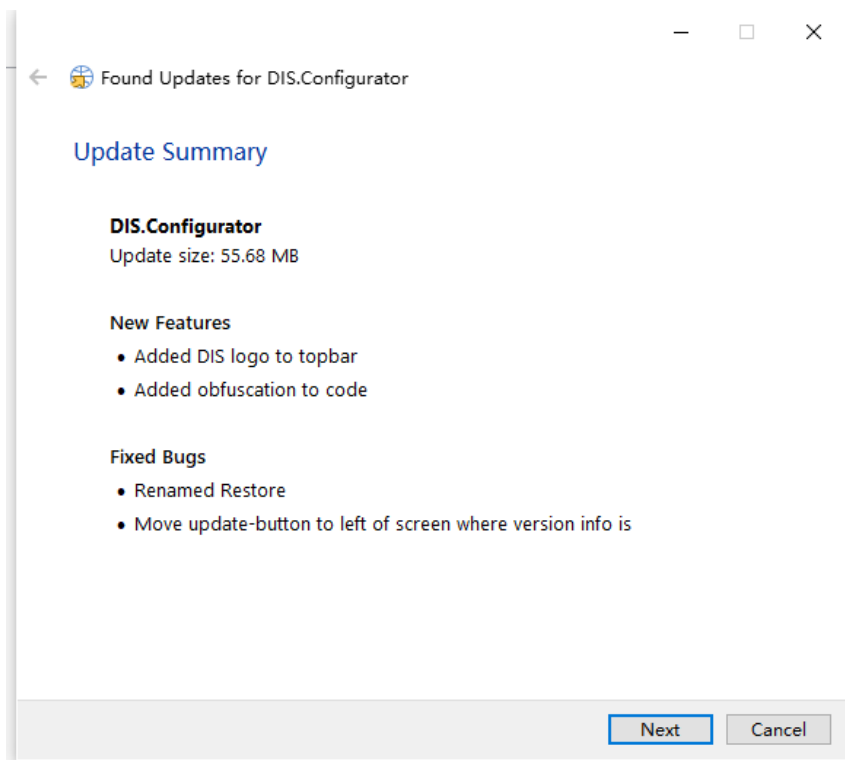


Figure 8 - Update summary

Next

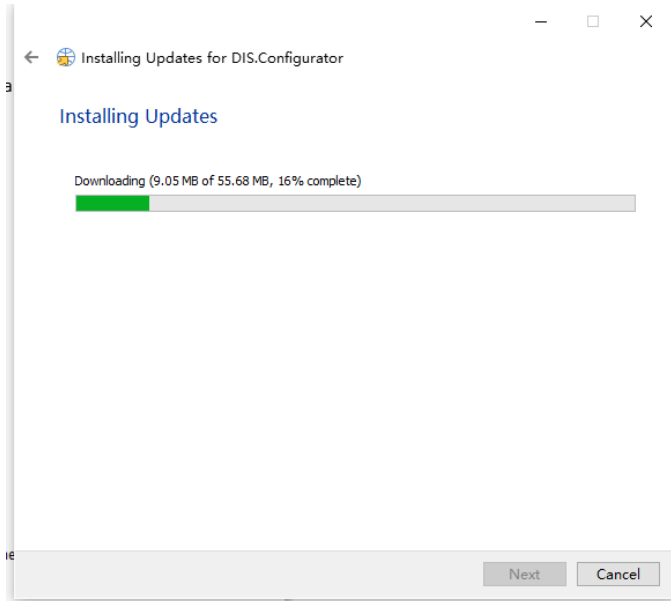


Figure 9 - status bar

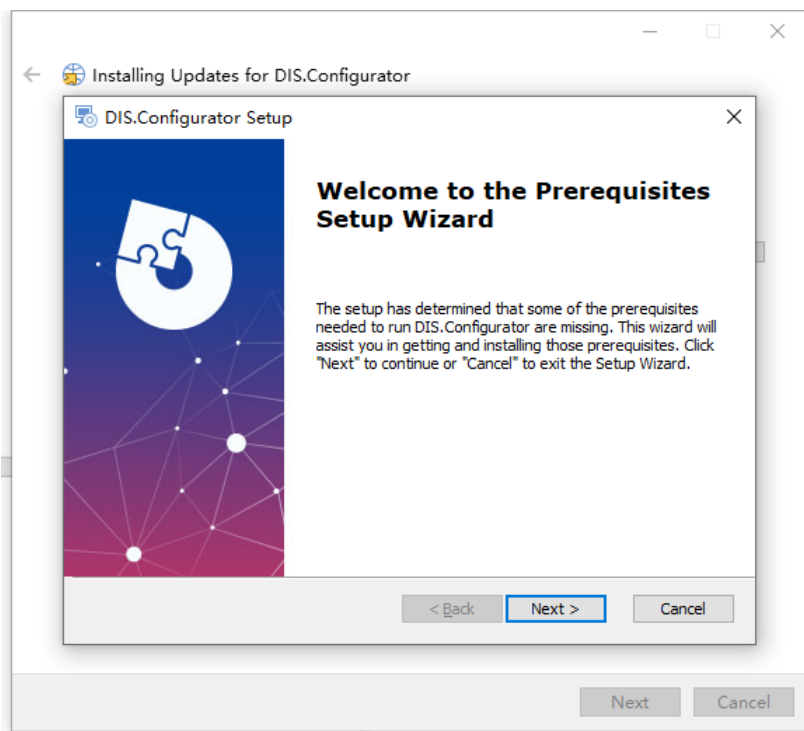


Figure 10 - setup wizard

The Peak Driver is included in the setup program to ensure your computer has the latest USB driver for the CAN communication, do not uncheck it to prevent driver problems..

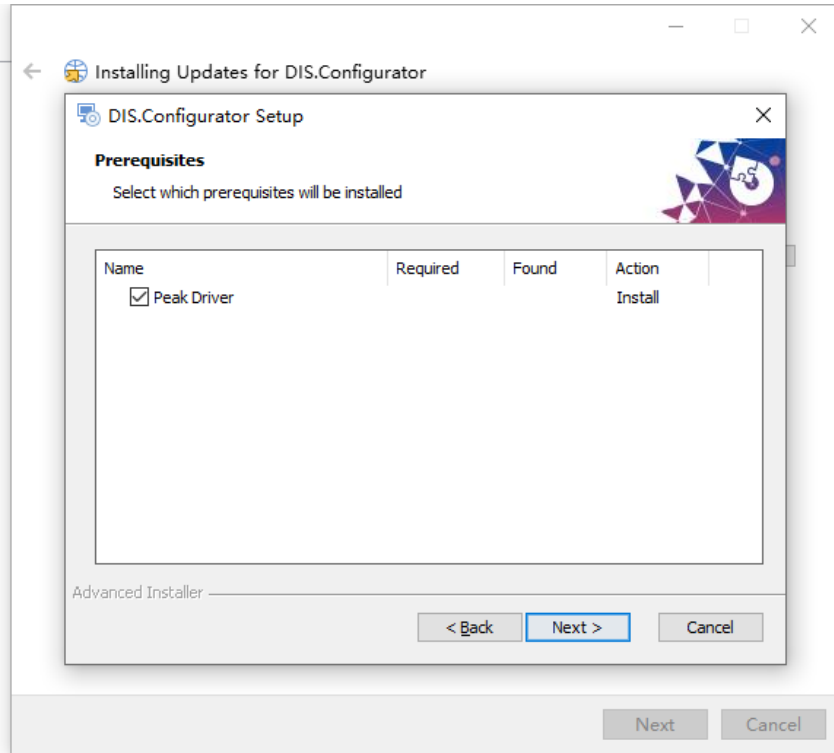


Figure 11 - Peak Driver

After the PEAK driver is installed, the Configuration software setup wizard will start. Follow the wizard to finish the installation for the new update.

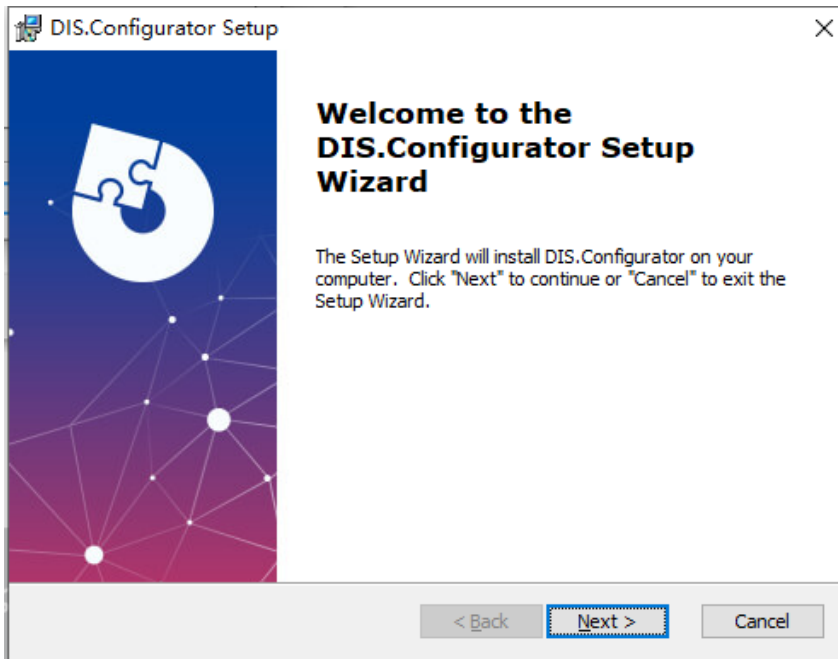


Figure 12 - Setup Wizard start page.

General steps for the sensor configuration

Follow the steps to configure your sensor. After the changes are saved to the sensor, it will be automatically restarted by the pc application.

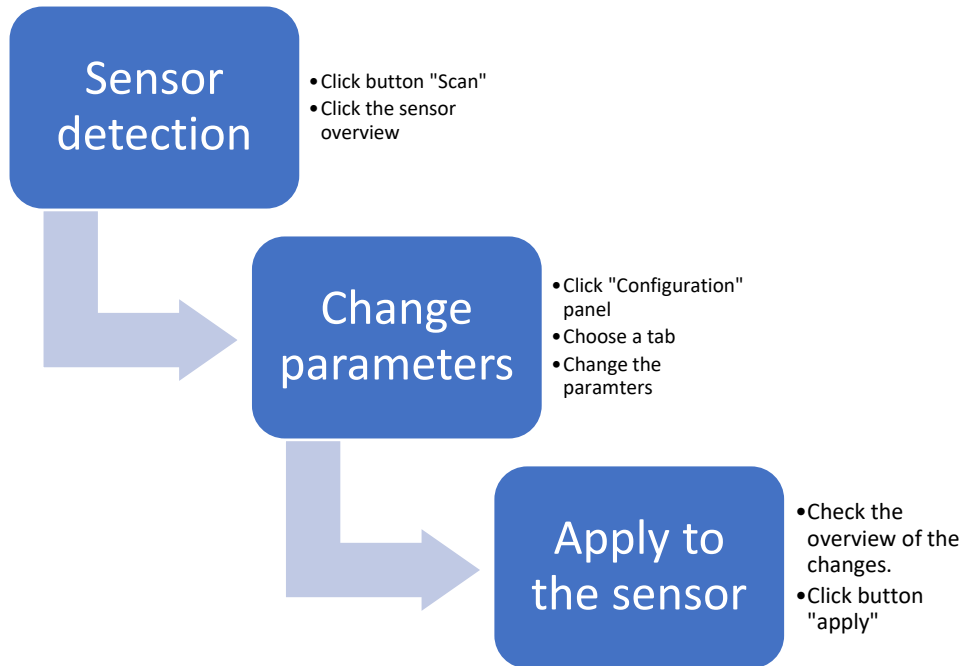


Figure 13 - General steps for the sensor configuration

When the button "Scan" is clicked, the software will scan the CAN bus and match the baudrate that your sensor is configured with.

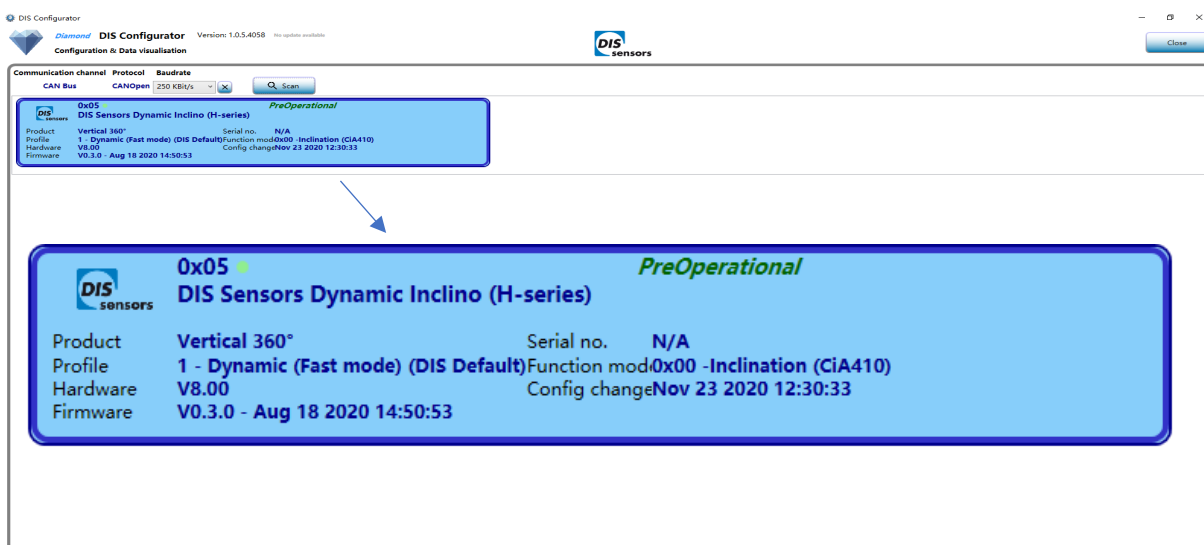


Figure 14 - Sensor overview

Name	Description	Example
Product	Product code showing the measuring axis and the range. (object 1018 _h)	Vertical 360° - 1 axis with measuring range 360° Horizontal plane 2x ±90° - 2 axis, measuring range ±90°
Serial No.	Batch number. (object 1018 _h)	77542822h= 2002004-002d
Profile	Application profile name (object 3004 _h)	Profile 1 –Dynamic (fast mode)
Function mode	Function mode (object 3007 _h)	Inclination (CiA410)
Hardware	Sensor hardware platform version (object 1009 _h)	V8.00
Config change	The last date and time when the configuration is changed (object 1020 _h)	000034A4 = Nov 23 2020 02AF28FD = 12:30:33
Firmware	Software of the sensor (object 100A _h)	V0.3.0

Table 1 – Sensor overview

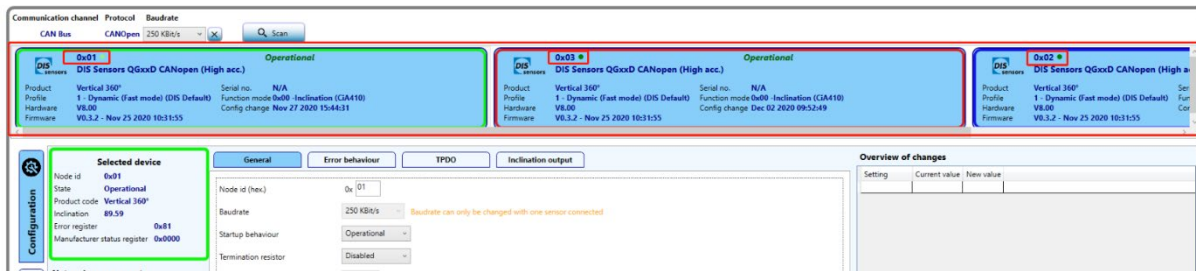


Figure 15 - Multiple sensors



Parameter tabs

General	Error behaviour	TPDO	Inclination output
Node id (hex.)	0x <input type="text" value="02"/>		
Baudrate	<input type="text" value="250 KBit/s"/> <small>v</small>	Baudrate can only be changed with one sensor connected	
Startup behaviour	<input type="text" value="Operational"/> <small>v</small>		
Termination resistor	<input type="text" value="Disabled"/> <small>v</small>		
Heartbeat (ms)	<input type="text" value="2000"/>		

Figure 16 – Tab General



Error behaviour

General **Error behaviour** **TPDO** **Inclination output**

General communication error settings:

Error behaviour

Manufacturer specific error settings

Error behaviour

Error masks :

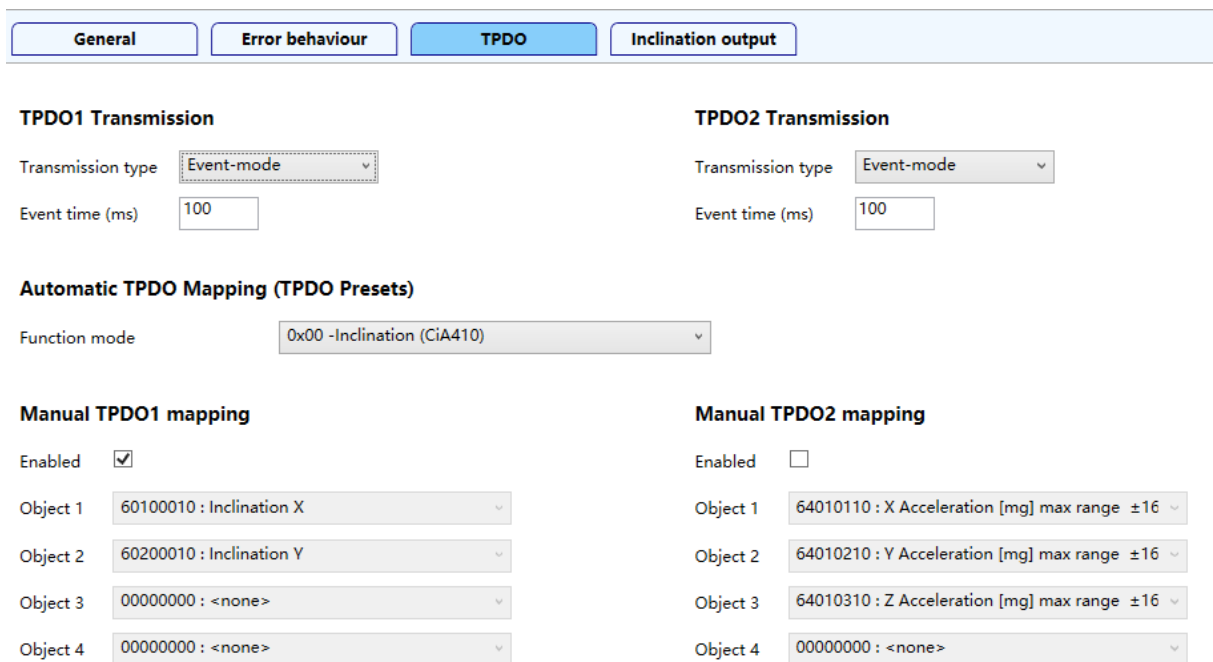
- X Cross Tilt Error
- Y Cross Tilt Error
- X Out Of Range
- Y Out Of Range
- Temperature Under Reach
- Temperature Over Reach
- Actual Power Error
- Since Last Reset Power Error
- Eeprom Error
- Flash Error
- Sensor Error
- Watchdog Error
- Error Handler
- Send Emergency

Figure 17 - Tab Error behaviour

TPDO

The communication parameters and mapping parameters of the TPDOs can be configured in this tab. TPDO is explained in the following chapters in the user manual QG65D CANopen Dynamic Inclinometer.

- 6.6 Output format
- 7.3 PDO (Reading sensor output)
- 8.1.11 Object 1800_h, 1801_h TPDO Communication parameter
- 8.1.12 Object 1A00_h, 1A01_h TPDO Mapping parameter



General | **Error behaviour** | **TPDO** | **Inclination output**

TPDO1 Transmission
 Transmission type: Event-mode
 Event time (ms): 100

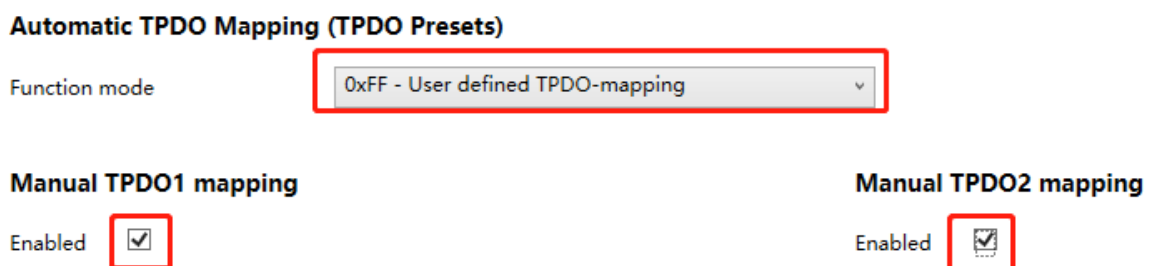
TPDO2 Transmission
 Transmission type: Event-mode
 Event time (ms): 100

Automatic TPDO Mapping (TPDO Presets)
 Function mode: 0x00 - Inclination (CiA410)

Manual TPDO1 mapping
 Enabled
 Object 1: 60100010 : Inclination X
 Object 2: 60200010 : Inclination Y
 Object 3: 00000000 : <none>
 Object 4: 00000000 : <none>

Manual TPDO2 mapping
 Enabled
 Object 1: 64010110 : X Acceleration [mg] max range ±16
 Object 2: 64010210 : Y Acceleration [mg] max range ±16
 Object 3: 64010310 : Z Acceleration [mg] max range ±16
 Object 4: 00000000 : <none>

Figure 18 - Tab TPDO



Automatic TPDO Mapping (TPDO Presets)
 Function mode: 0xFF - User defined TPDO-mapping

Manual TPDO1 mapping
 Enabled

Manual TPDO2 mapping
 Enabled

Figure 19 - Enable manual TPDO mapping

Inclination output

In this tab, all parameters related to the inclination measurement can be configured.

General	Error behaviour	TPDO	Inclination output
Zeroing	<input type="button" value="Zero"/>		
Inversion X inclination	<input type="text" value="Disabled"/>		
Inversion Y inclination	<input type="text" value="Disabled"/>		
Application profile			
Selected Application Profile	<input type="text" value="1 - Dynamic (Fast mode) (DIS Default)"/>		
Output Filter (ms)	<input type="text" value="0"/>		
Moving average filter TPDO1	<input type="text" value="0"/>		
Moving average filter TPDO2	<input type="text" value="0"/>		
<input type="button" value="Application Profile Defaults"/>			

Figure 20 - Tab Inclination output

Sensor configuration

How do I zero the sensor?

Configuration panel → Tab Inclination output → Zeroing

Zeroing



Figure 21 – zero adjustment

Set the sensor at a new zero position. Click the blue button “zero”. The sensor will be immediately zero adjusted without a click of “apply”.

How do I change the TPDO communication parameters such as TPDO event time?

Configuration panel → Tab TPDO → TPDO Transmission type

TPDO1 Transmission

Transmission type

Event time (ms)

TPDO2 Transmission

Transmission type

Event time (ms)

How do I change the CAN parameters such as Node ID and baudrate, etc?

Configuration panel → Tab General →

Node id (hex.)

Baudrate



Baudrate

Baudrate can only be changed with one sensor connected

How do I turn on/off the internal termination resistor?

Configuration panel → Tab General → Termination resistor

Termination resistor

Heartbeat (ms)

How do I inverse the output direction?

Configuration panel → Tab Inclination output → Inversion

Inversion X inclination	Disabled ▾
Inversion Y inclination	Disabled ▾



Figure 22 - DIS default measuring direction

If the inversion is enabled, the measuring direction will be inverted (\pm inverted).

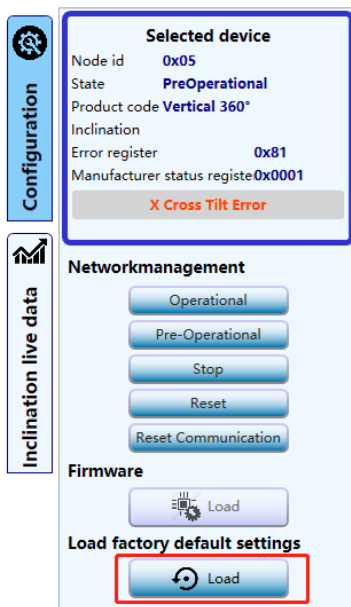


Figure 23 - Load factory default settings



Where can I select application profile?

Configuration panel → Tab Inclination output → Application profile

Application profile

Selected Application Profile **1 - Dynamic (Fast mode) (DIS Default)** ▾

Output Filter (ms) **0 - Static**

Moving average filter TPDO1 **1 - Dynamic (Fast mode) (DIS Default)**

Moving average filter TPDO2 **2 - Dynamic (Slow mode)**

3 - Dynamic (Platform leveling)

Application profile is explained in 6.5 Application profiles in the user manual QG65D CANopen Dynamic Inclinometer. How do I set the filters to improve the inclination output?

Application profile

Selected Application Profile **1 - Dynamic (Fast mode) (DIS Default)** ▾

Output Filter (ms) **0**

Moving average filter TPDO1 **0**

Moving average filter TPDO2 **0**

Application Profile Defaults

Output Filter

1st order LPF filter on the sensor slope output (angle)

Value range: any value (in ms) between 0ms (off) and 10000ms.

A higher filter time value results in a smoother reaction on peaks/accelerations, but also a slower reaction on actual movements.

Figure 24 – Output filter

Application profile

Selected Application Profile **1 - Dynamic (Fast mode) (DIS Default)** ▾

Output Filter (ms) **0**

Moving average filter TPDO1 **0**

Moving average filter TPDO2 **0**

Application Profile Defaults

Moving average

Moving average filter on the sensor slope output (angle).

Value range: between 0 (off) and 10

A higher value results in less noise and a smoother reaction on peaks/accelerations, but also a slower reaction on actual movements.

Figure 25 - Moving average filters.

Output filter and moving average filter are explained in 6.3.3. Digital filters in the user manual QG65D CANopen Dynamic Inclinometer.

How do I configure the sensor error behaviour?

Configuration panel → Tab Error behaviour

General communication error settings

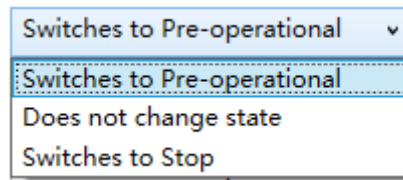
Error behaviour

Switches to Pre-operational ▾

Manufacturer specific error settings

Error behaviour

Switches to Pre-operational ▾



The error behaviour is explained in 8.1.10. Object 1029h Error behaviour in the user manual QG65D CANopen Dynamic Inclinometer.

How do I customise the sensor output?

Configuration panel → Tab TPDO → Manual TPDO mapping

1. Select function mode "0xFF – User defined TPDO-mapping".
2. Select the output for each object for the TPDO message.

Automatic TPDO Mapping (TPDO Presets)

Function mode

0xFF - User defined TPDO-mapping ▾

Manual TPDO1 mapping

Enabled

Object 1	60100010 : Inclination X ▾
Object 2	60200010 : Inclination Y ▾
Object 3	00000000 : <none> ▾
Object 4	00000000 : <none> ▾

Manual TPDO2 mapping

Enabled

Object 1	64010110 : X Acceleration [mg] max range ±16 ▾
Object 2	64010210 : Y Acceleration [mg] max range ±16 ▾
Object 3	64010310 : Z Acceleration [mg] max range ±16 ▾
Object 4	00000000 : <none> ▾

Figure 26 - TPDO mapping

Sensor outputs are defined in 8.3.4 Object 6401h Sensor outputs in the user manual QG65D CANopen Dynamic Inclinometer.

Inclination live data

Only inclination output can be live monitored with the configuration software.

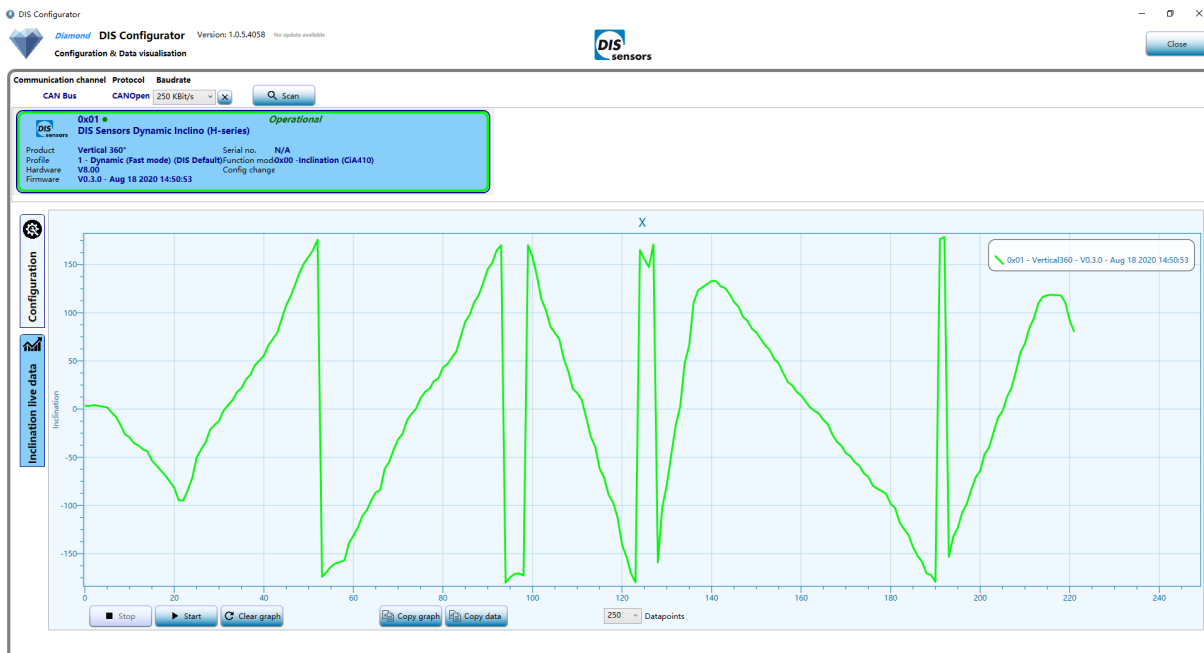
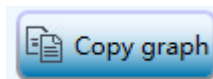
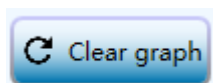
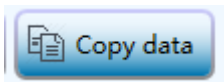
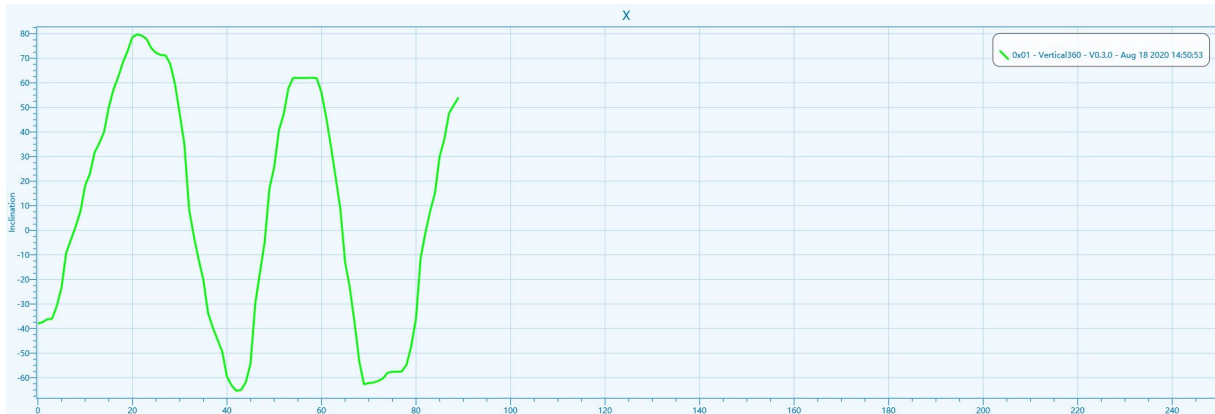


Figure 27 - Live data



To get to your clipboard history at any time, press **Windows logo key + V**. You can also **paste** and **pin** frequently used items by choosing an individual item from your clipboard menu.

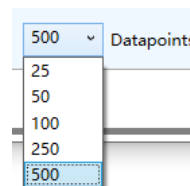


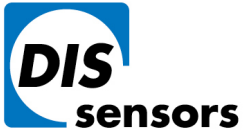
Node : 01 - Longitudinal

- 200
- 200
- 66.83
- 68.49
- 68.1
- 72.95
- 79.51
- 88.96
- 95.85
- 91.81
- 86.25
- 72.77
- 56.69
- 13.15
- 11.42
- 57.47
- 68.36
- 65.09
- 48.7
- 27.05
- 14.54
- 10.32
- 25.64
- 42.64
- 83.41



Figure 28 - output data





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