HydroMet



User Manual

IoTa SensorNode

KISTERS
Empowering decisions of tomorrow

06-2026 – 01-03-004

Table of Contents

I Disclaimer 3

II Glossary + Abbreviations 4

III Scope of Delivery 5

IV Safety Instructions 6

V Specific Safety Instructions 7

Part I Introduction 8

Part II Installation 9

Part III Configuration 10

3.1 HyComm – General Description ... 10

3.2 HyComm for IoTa SensorNode ... 10

3.2.1 Downloading Configuration Software ... 10

3.2.2 Connecting to the Device ... 11

3.2.3 Device Selection Screen (start-up) ... 11

3.2.4 Device Overview ... 12

3.2.5 Device Measurement Testing and Visualisation ... 13

3.2.6 Device Integrations ... 14

3.2.7 Device Configuration ... 14

Part IV Operation 27

4.1 Power Supply ... 27

4.2 Connecting an SDI-12 Sensor ... 28

4.3 Connecting a Pulse Signal to the Counter Input ... 28

4.4 Connecting an Antenna ... 28

4.5 Data Transmission ... 29

4.5.1 LoRa ... 29

4.5.2 LTE-M ... 29

Part V Maintenance 30

Part VI Troubleshooting 31

6.1 Device Stops Operating ... 31

6.2 Device Stops Transmitting Data ... 31

Part VII Repair 32

Part VIII Technical Data 33

Part IX Obligations of the Operator and Disposal 34

9.1 Obligations of the Operator ... 34

9.2 Dismantling / Disposal ... 34

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I Disclaimer

The information provided in this manual was deemed accurate as of the publication date. However, updates to this information may have occurred.

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II Glossary + Abbreviations

Term	Explanation
LoRa	from “Long Range”, a proprietary low-power wide-area network modulation technique
LoRaWAN	LoRa Wide Area Network, networking protocol built on top of the LoRa radio modulation technique
LTE-M	Long Term Evolution for Machines, a type of low power wide area network (LPWAN) radio technology standard
LPWAN	Low Power Wide Area Network, both LoRa/LoRAWAN and LTE-M are LPWAN technologies
SDI-12	Serial Digital Interface at 1200 baud, an asynchronous serial communications protocol for smart sensors, SDI-12 sensors reply to commands send by the data logger, the standard also specifies supply voltage and current and including modes for low-power operation
USB	Universal Serial Bus, an asynchronous serial communication protocol for peripheral devices

III Scope of Delivery

- IoTa SensorNode
- Pole Mount
- 2 × Cable Ties for pole mounting

IV Safety Instructions

- Read the user manual including all operating instructions prior to installing, connecting and powering up the KISTERS IoTa SensorNode. The manual provides information on how to operate the product. The manual is intended to be used by qualified personnel, i.e. personnel that have been adequately trained, are sufficiently familiar with installation, mounting, wiring, powering up and operation of the product.
- Keep the user manual on hand for later reference!
- If you encounter problems understanding the information in the manual (or part thereof), please consult the manufacturer or its appointed reseller for further support.
- KISTERS IoTa SensorNode is intended to be used in hydrometeorological or environmental monitoring applications.
- Before starting to work, you have to check the functioning and integrity of the system.
  - Check for visible defects on the IoTa SensorNode, this may or may not include any or all of the following: mounting facilities, connectors and connections, mechanical parts, internal or external communication devices, power supplies or power supply lines, etc.
  - If defects are identified that could compromise operational safety, work must be stopped immediately. This applies to defects detected both before work begins and during operation.
- Do not use the KISTERS IoTa SensorNode in areas where there is a danger of explosion.
- The present user manual specifies environmental/climatic operating conditions as well as mechanical and electrical conditions. Installation, wiring, powering up and operating the KISTERS IoTa SensorNode must strictly comply with these specifications.
- Perform maintenance only when tools or machinery are not in operation.
- If guards are removed to perform maintenance, replace them immediately after servicing.
- Never make any electrical or mechanical diagnostics, inspections or repairs under any circumstances. Return the product to the manufacturer's named repair centre. You can find information on how to return items for repair in the relevant section of the KISTERS website.



Disposal instructions: After taking the KISTERS IoTa SensorNode out of service, it must be disposed of in compliance with local waste and environmental regulations. The KISTERS IoTa SensorNode is never to be disposed of in household waste!



Inputs and outputs of the device are protected against electric discharges and surges (so-called ESD). Do not touch any part of the electronic components! If you need to touch any part, please discharge yourself, i.e. by touching grounded metal parts.

V Specific Safety Instructions

Warning! The lithium-ion battery may only be used under the conditions specified in this user manual. Using the lithium-ion battery under conditions outside the limits specified in this user manual may result in personal injuries and damage to the battery.

The lithium-ion battery must always be kept in a well ventilated, dry, clean and dust-free environment. Never expose the battery to fire, water or solvents.

The lithium-ion battery is installed and used in an enclosed housing. The housing is equipped with a pressure-compensation gland. Make sure that nothing prevents the pressure compensation gland from operating. Especially do not clog or block the gland, remove the gland and replace it with a closed cap or similar.

Overvoltage, wrong wiring, reverse polarity of the terminals or short circuits between the terminals may damage the lithium-ion battery which can be extremely dangerous.

The hazard symbols and safety instructions on the battery label must be observed and must never be removed from the battery.

In case of exceptional heat development during operation, the lithium-ion battery must be disconnected and removed.

In case of battery leakage, the leaking electrolyte must never come into contact with skin or eyes. In case of skin contact, the affected area has to be cleaned with water and soap immediately. In case of eye contamination, the affected eye must be thoroughly rinsed with clean water immediately. In both cases, a doctor must be consulted without delay.

In case of swallowing of leaking electrolyte, a doctor must be consulted immediately.

Please note the markings of the polarities on battery terminals and connection terminals

Dirty battery terminals must be cleaned with a dry and clean cloth.

At the end of its service life, the lithium-ion battery must be disposed of according to legal provisions.

Warning! The lithium battery must not be mechanically damaged. A damaged lithium-ion battery must never be installed or used.

Warning! The battery terminals must not come into contact with electroconductive objects.

1 Introduction

In an Internet of Things (IoT) network, a sensor node collects data from one or several sensors. KISTERS' IoTa SensorNodes interconnect sensors with data management software by means of adding modern wireless connectivity to digital sensors.

IoTa SensorNodes are available in two variants: one for LTE-M and one for LoRaWAN communication.

IoTa SensorNodes are battery-powered and operate autonomously for several years on a single battery charge. IoTa SensorNodes collect data from sensors connected via SDI-12 and Counter inputs. Between readings of the input channels, the integrated low-power microprocessor falls into hibernation. To further reduce power consumption, SDI-12 sensors are powered only to make a reading and then switched off.

2 Installation

Installation is easy: IoTa SensorNodes are equipped with a removable pole mount bracket and mounting holes for wall mount applications. UV-proof cable ties are delivered for quick installation on vertical poles and horizontal rods. The IoTa SensorNode can be installed in portrait or landscape position.



Figure 1 – IoTa SensorNode in portrait view with labelled connectors at the bottom

The device is equipped with 3 connectors:

- SMA: standard male SMA connector for SMA antennas, see Connecting an Antenna 28 for details
- Counter: connector M12 A-coded male 4-pin screw-connection; use for a device that generates pulses, such as a rain gauge, see Connecting a Pulse Signal to the Counter Input 28 for details
- SDI-12: connector M12 A-coded male 8-pin screw-connection; use for a device with a SDI-12 output, see Connecting an SDI-12 Sensor 28 for details

Note: The fourth item is a pressure-compensation gland. It ensures pressure equalization through controlled venting. Avoids build-up of moisture due to negative pressure/vacuum inside the housing when air cools down. Do not modify, perforate or otherwise mechanically alter the gland!



Figure 2 – Connecting a signal cable(left) and the antenna (right)

3 Configuration

The IoTa SensorNode can be configured locally or remotely using KISTERS' HyComm Windows software (free of charge).

- HyComm – General Description 10
- HyComm for IoTa SensorNode 10

3.1 HyComm – General Description

HyComm provides a framework for implementing on-site device (data logger/sensor) configuration.

3.2 HyComm for IoTa SensorNode

HyComm is a desktop application that can be used to configure the IoTa LTE-M or LoRa devices through their USB-ports.

Connected devices are automatically recognised. In case that your device is not showing up, click on the (?) button in the connection screen, this will open up a guide on how to ensure a device connection.

While the USB cable is connected the device will be in configuration mode and will not transmit any data. Upon disconnecting the device will resume data transmission.

- Downloading Configuration Software 10
- Connecting to the Device 11
- Device Selection Screen (start-up) 11
- Device Overview 12
- Device Measurement Testing and Visualisation 13
- Device Integrations 14
- Device Configuration 14

3.2.1 Downloading Configuration Software

To configure the device, download the HyComm configuration software. You will need a computer with an USB port to connect the device with the computer on which the configuration software is installed.

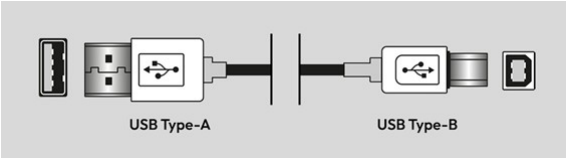
Note: The first time you connect to the device, you will need access to the internet, as your computer might have to download/update additional USB drivers. Subsequent connections do require this.

Operating System	Download Link
Windows 7, 8, 10, 11 (x64)	https://hydrometproducts.kisters.eu/products/software/monitoring-software/hycomm (international) https://hydrometproducts.kisters.eu/de/produkte/software/monitoring/hycomm (for German customers)

Functionality

- Device information overview
- Visualise stored measurement data
- Run integrations to automatically bind the device to **DATASPHERE** or other services
- Easy SDI-12 configuration for supported sensors
- Diagnose error messages related to sensors/manually trigger measurements
- Change the device's configuration:
  - Measured parameters
  - Measurement intervals
  - Etc.
- Save/load configuration files
- Perform firmware upgrades

3.2.2 Connecting to the Device

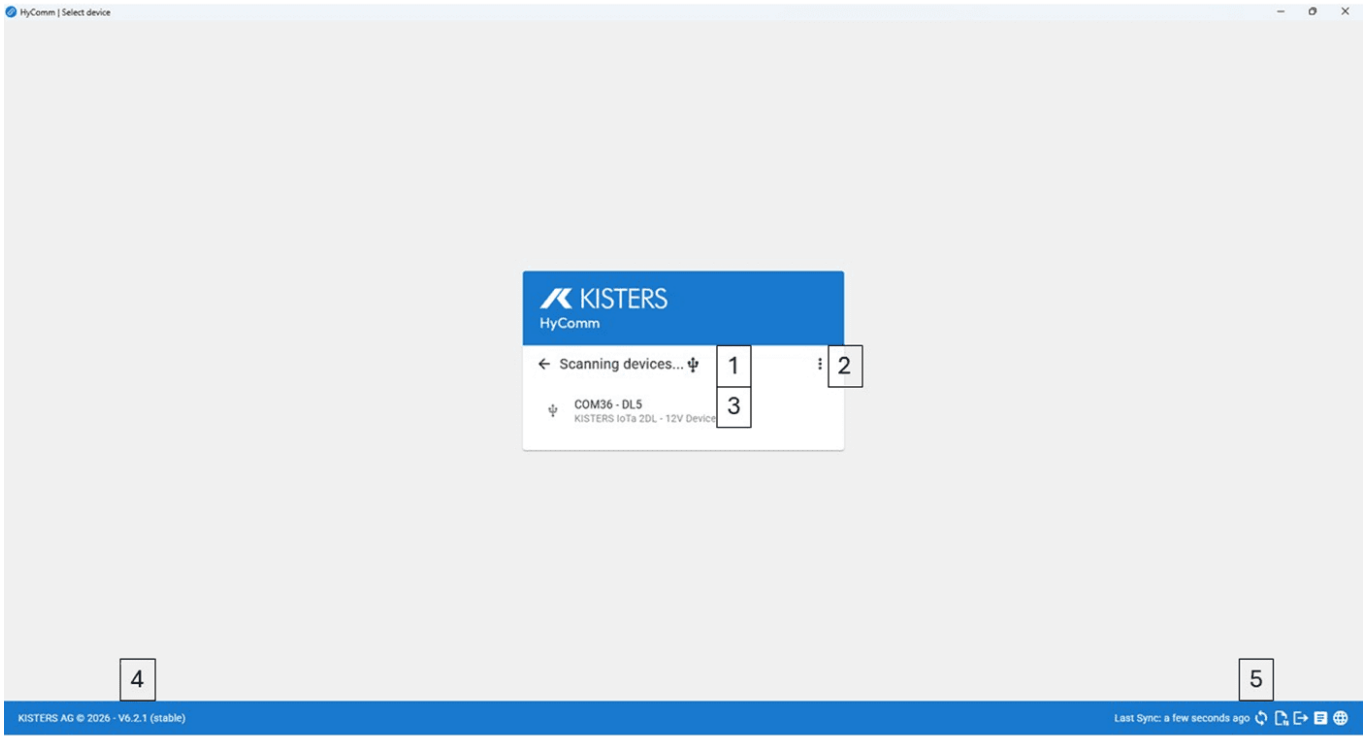


Simply run the provided Windows installer and connect the IoTa device through a USB Micro-B cable to the computer running HyComm.

Once connected, you might see a notification that your computer is updating its drivers. Once this automatic installation is complete you will be able to see the device in HyComm.

While the USB cable is connected the device will be in configuration mode and will not transmit any data. Upon disconnecting the device will resume data transmission.

3.2.3 Device Selection Screen (start-up)

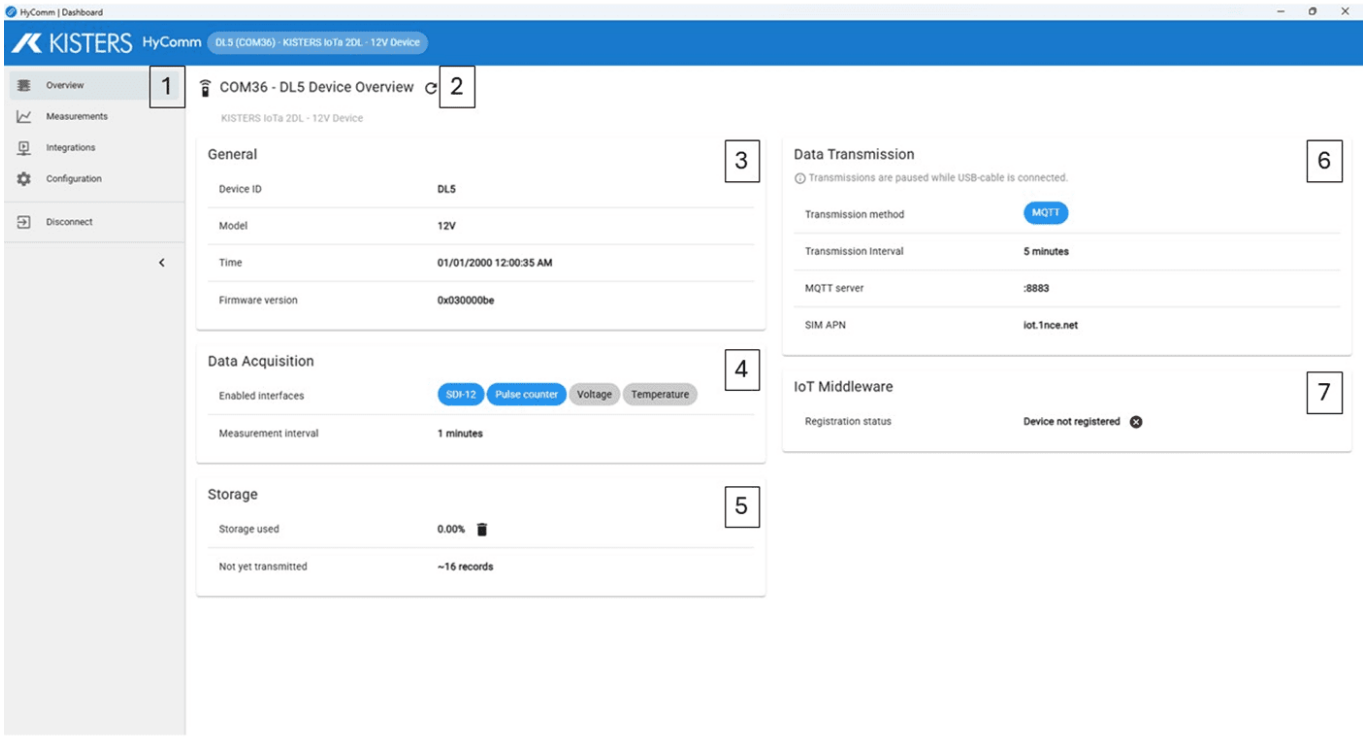


Note	Description

1	Buttons left to right:
	▪ Scan for Bluetooth devices
	▪ Scan for Wi-Fi devices
	▪ Scan for USB devices
	▪ Options
	  ▪ Device connection guide: Guide on things to check when a device is not found.
	  ▪ Offline configurations: Allows for the creation of configurations while not connected to any devices.
	  ▪ Settings: Menu to configure the automatic device configuration features of HyComm.

2	Found devices are displayed here, select one to connect to that device.
3	HyComm version info

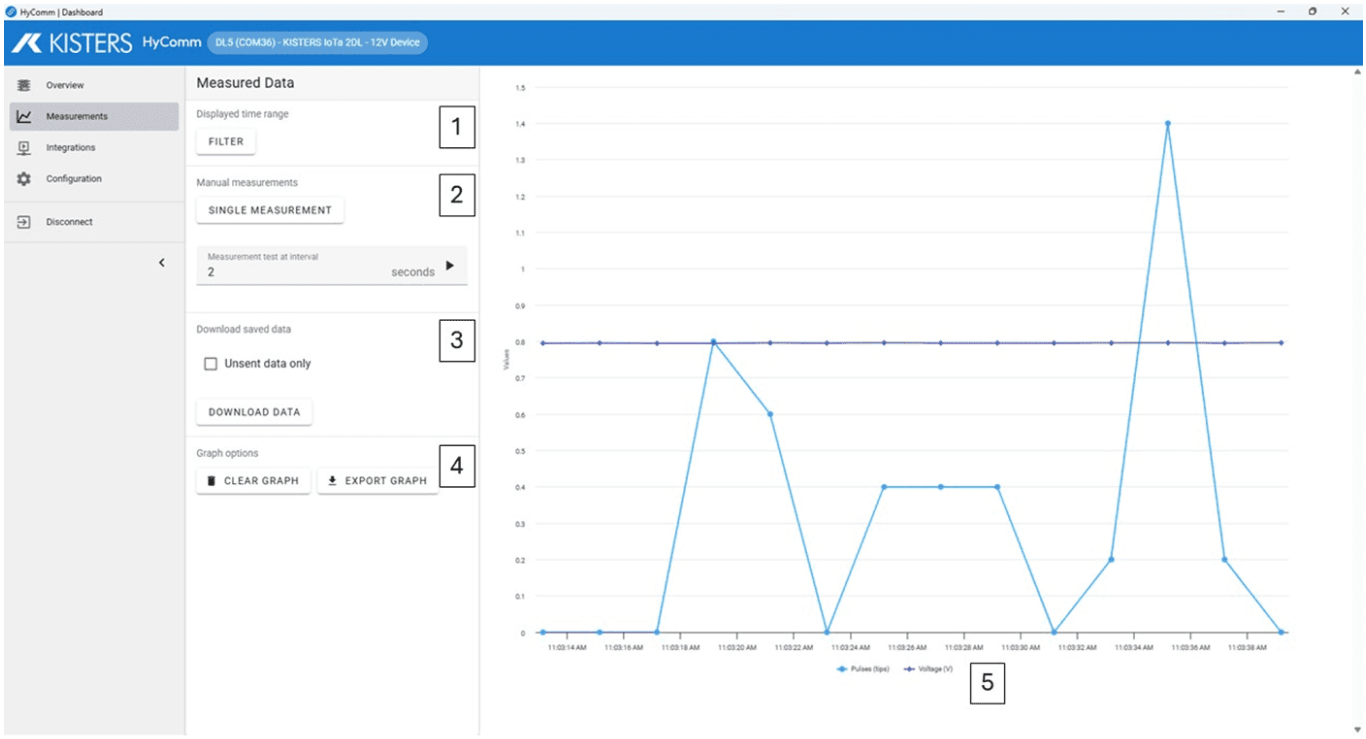
3.2.4 Device Overview



Measurement and transmission intervals of both 30 minutes means that every 30 minutes the enabled interfaces are read out and this data is instantly transmitted.

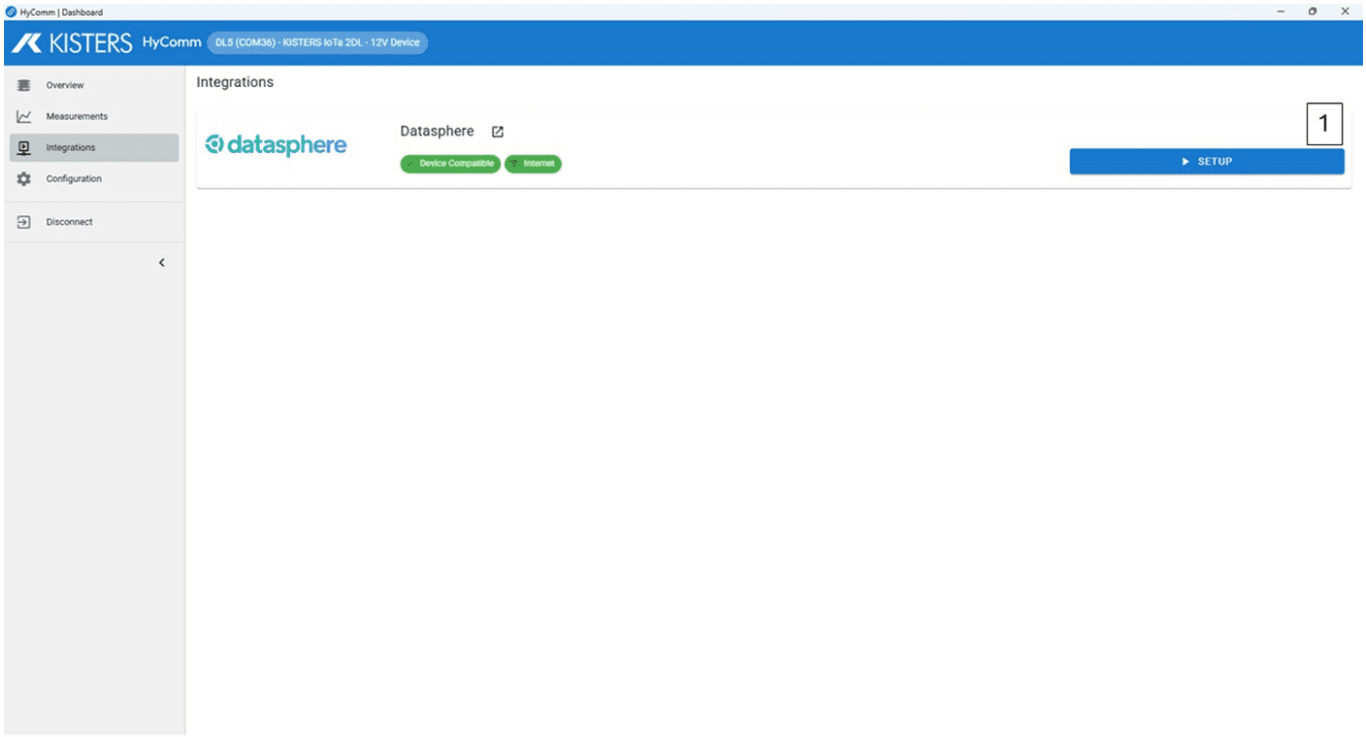
Note	Description
1	Menu sidebar, click to access other pages.
2	Found devices are displayed here, select one to connect to that device.
3	What and when data is measured.
4	Info on the device's internal storage. Click on the bin to clear the internal device measurement data storage.
5	How and when data is transmitted.
6	If enabled, some upload servers can be contacted to retrieve information on the data transmissions of the device.

3.2.5 Device Measurement Testing and Visualisation



Note	Description
1	Adjust the time range displayed on the graph. Click to open a selection menu.
2	Trigger manual measurements: ▪ Single one-time measurement of all enabled interfaces. ▪ Series of measurements at specific intervals, note: this does not affect the normal measurement cycle as configured on the device.
3	Load stored data from the device. Enabling “unsent data only” will only display the values that were not transmitted yet when loading stored data.
4	Click to clear the graph. Internal data is not wiped.
5	Legend with the measured interfaces listed, click on a time series name to hide/show that interface’s data in the graph.

3.2.6 Device Integrations



Note	Description
1	Devices can be integrated with certain platforms. In order to access these, you must be registered with the platform and have a registration key.

Supported Platforms:

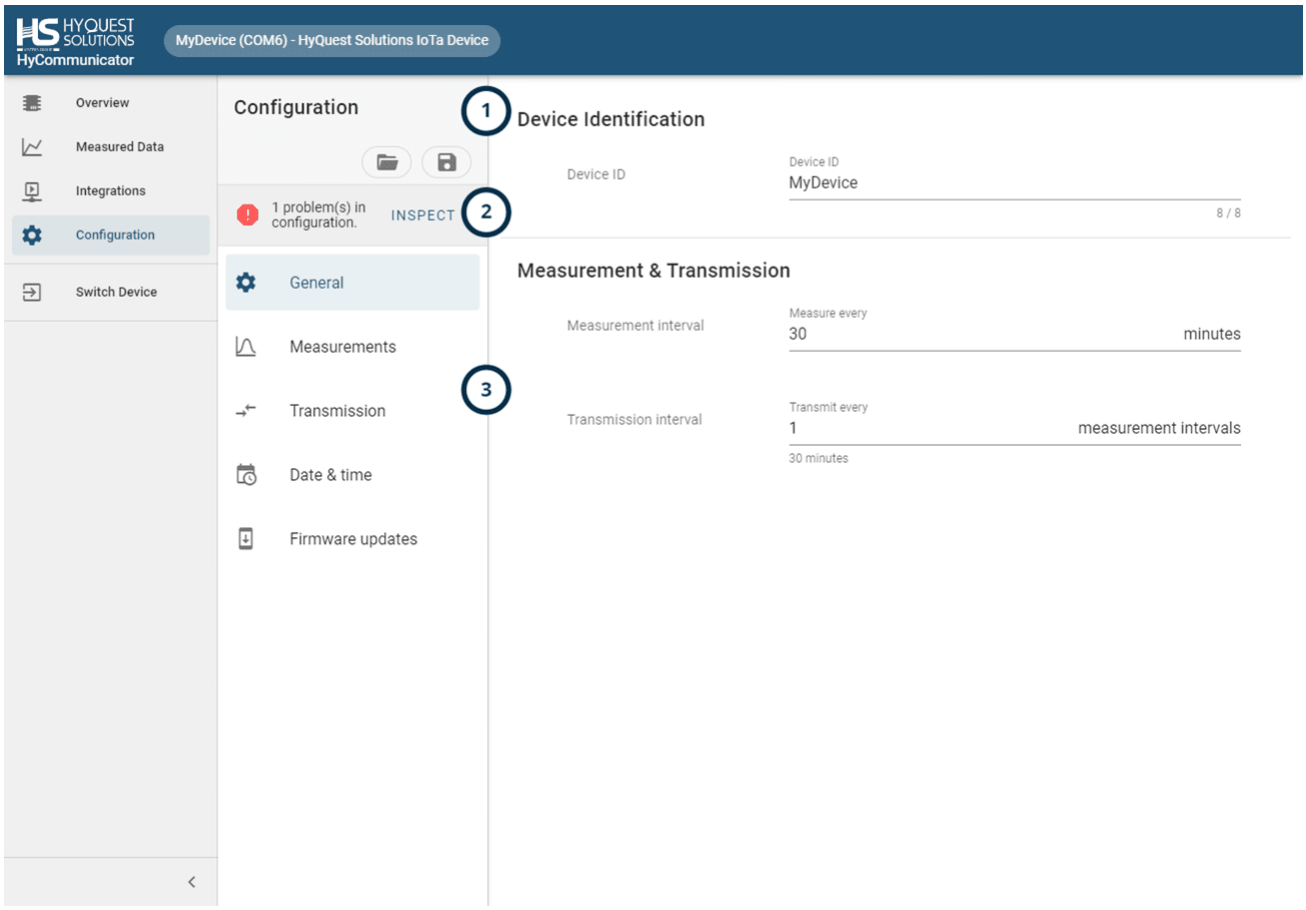
- **datasphere**:
  - data management system, cloud-based, operated by KISTERS. https://www.datasphere.online

3.2.7 Device Configuration

This chapter contains the following subsections:

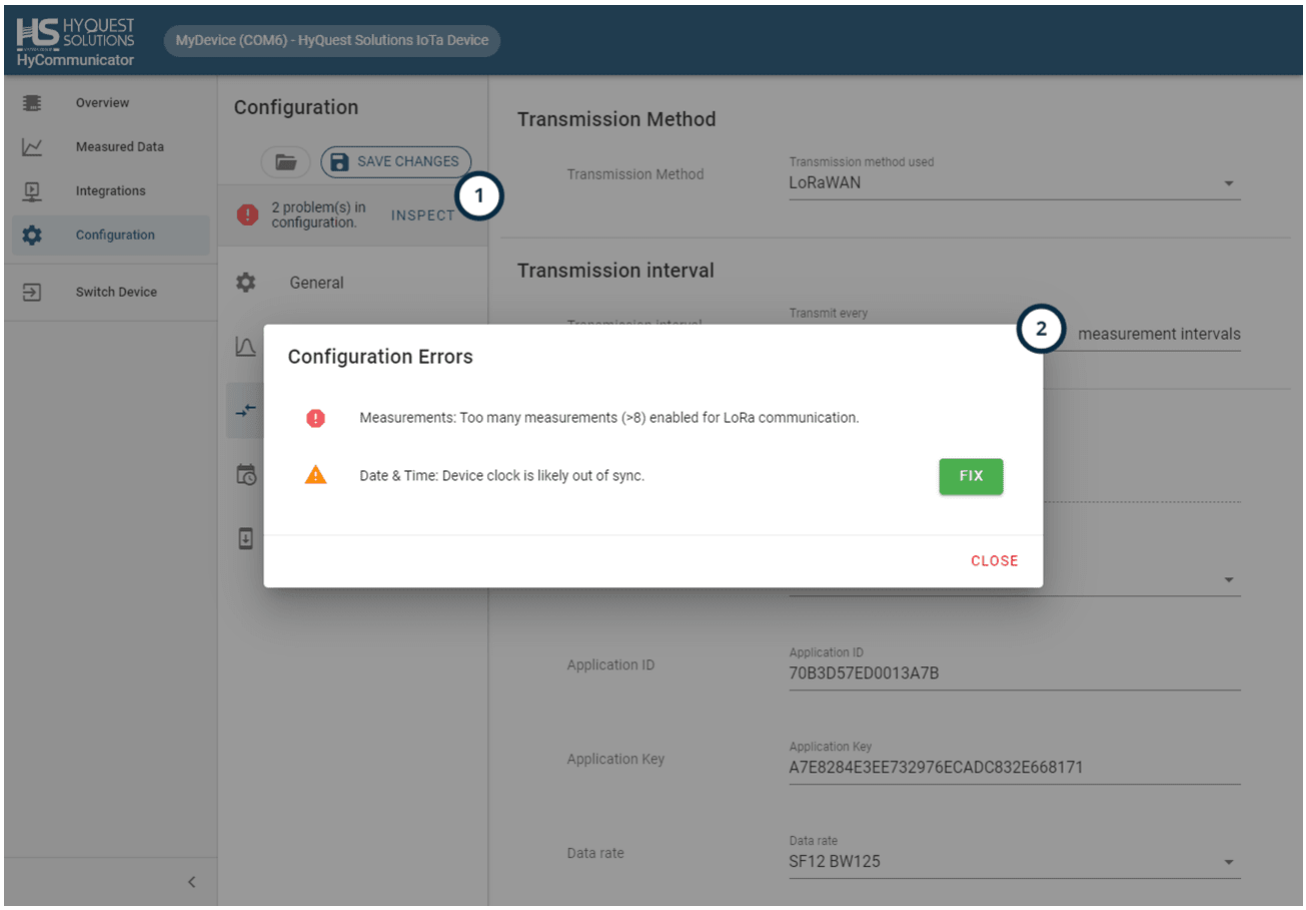
- Saving and Loading 15
- Inspect Configuration Issues 16
- Configuration: General 17
- Configuration: Measurements 18
- Configuration: LoRa Transmissions 20
- Configuration: LTE Transmissions 22
- Configuration: GSM 23
- Configuration: Radio Access Technology 24
- Configuration: Time and Date 25
- Configuration: Firmware Updates 26

3.2.7.1 Saving and Loading



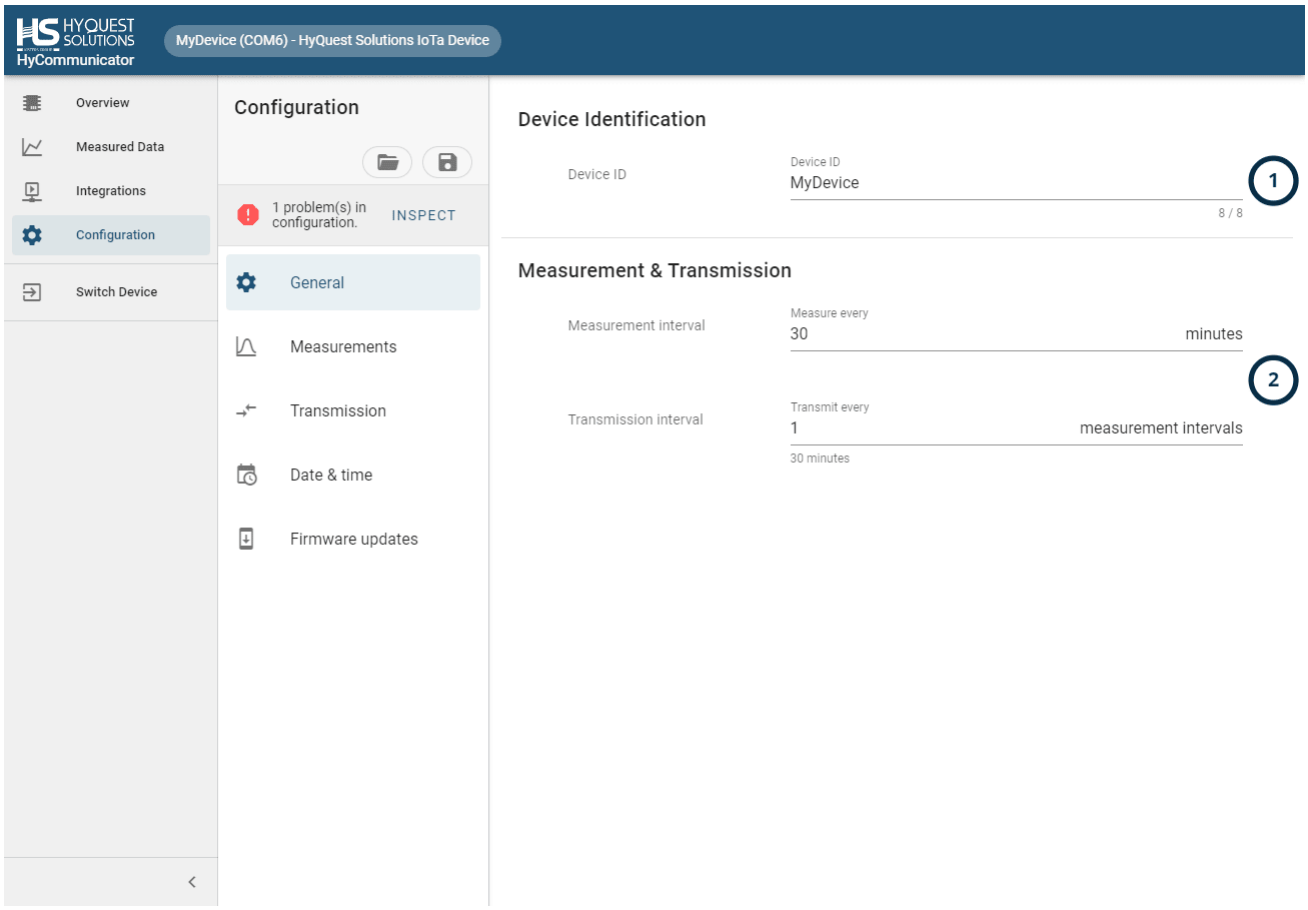
Note	Description
1	Click on the folder button to **load** a configuration from either: ▪ The connected device ▪ A configuration file on your computer. ▪ The device type defaults (reset) Click on the **save** button to save the current configuration to either: ▪ The connected device ▪ A configuration file on your computer.
2	Inspect configuration issues automatically detected by HyComm with your configuration. See chapter Inspect Configuration Issues 16 for more information.
3	Click to access pages for various parts of the configuration.

3.2.7.2 Inspect Configuration Issues



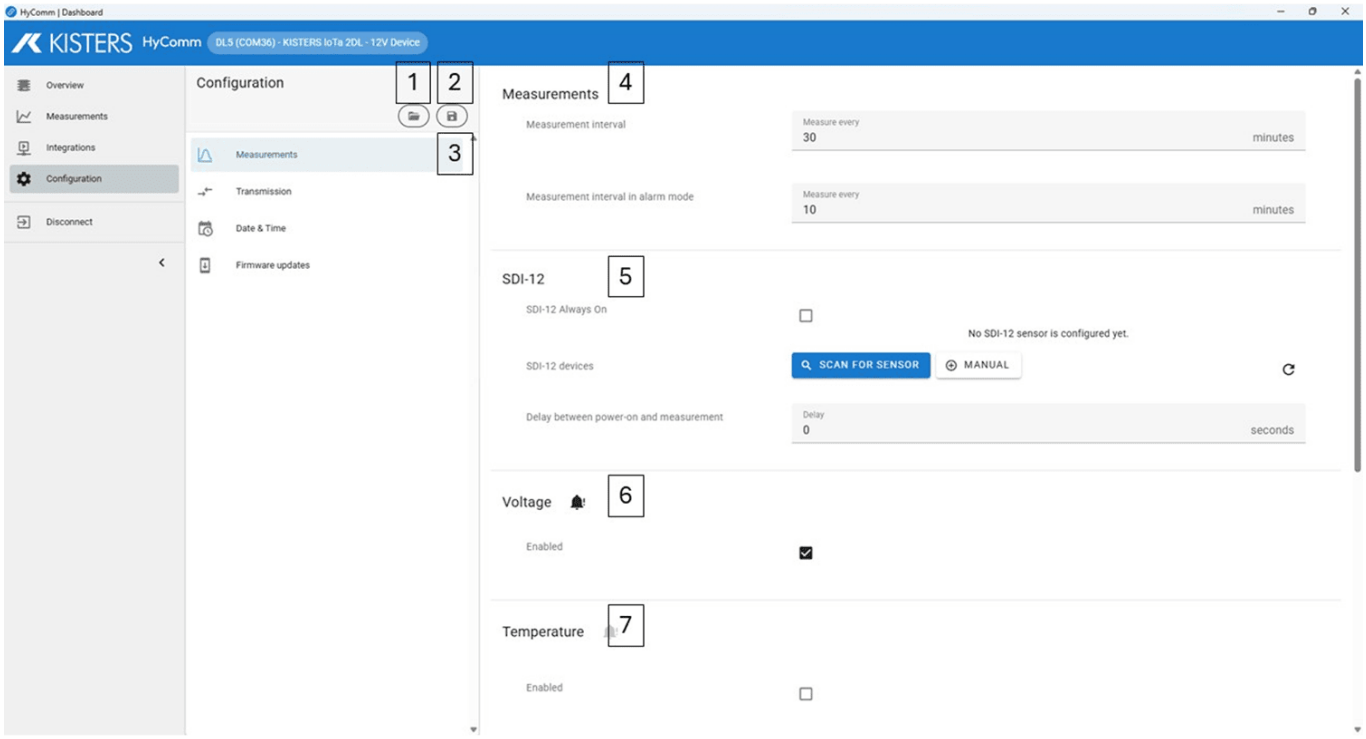
Note	Description
1	When seeing this notification appear, the configuration you have open has one or more settings that can cause the device to not operate as you intended. Clicking on the **INSPECT** button will open a detailed dialog.
2	▪ Issues along with a brief explanation are shown here. ▪ Some issues will have a **FIX** button that can automatically edit your configuration to resolve the issue.

3.2.7.3 Configuration: General

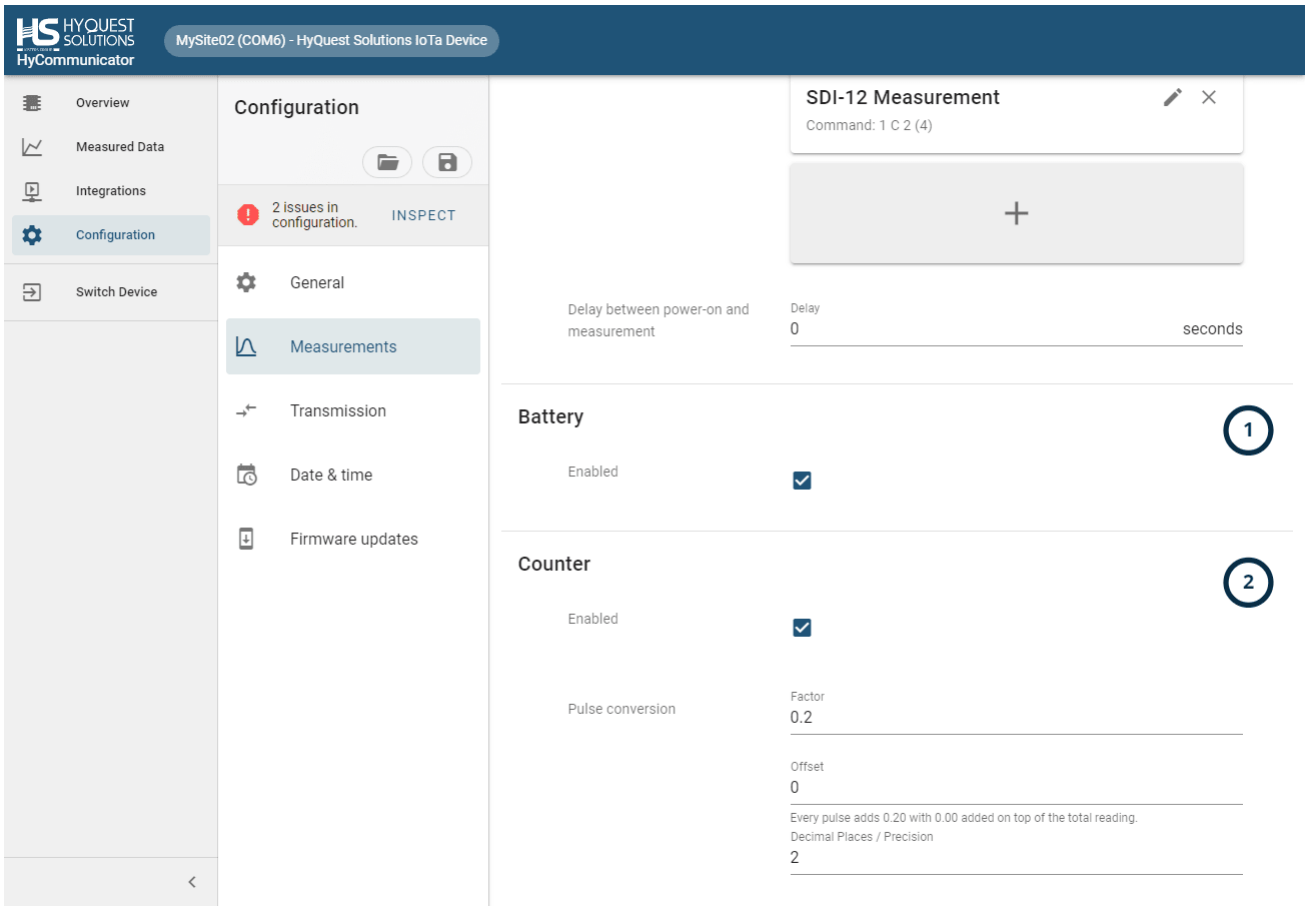


Note	Description
1	The ID of the device, used for identifying transmissions from this device. Changing this value can cause transmission to be discarded on remote systems.
2	Configure how often the device measures and transmits data. Measurement Interval: ▪ Value given in minutes Transmission interval: ▪ Decides how many measurements are done before the device sends out its data. ▪ Value given in number of measurement intervals, below the calculated transmission interval is shown in minutes. ▪ IoTa LORA: This value must be set to 1 due to LoRa package length limits. ▪ IoTa LTE-M: This value can be increased to save power and transmit multiple stored measurements in one go.

3.2.7.4 Configuration: Measurements

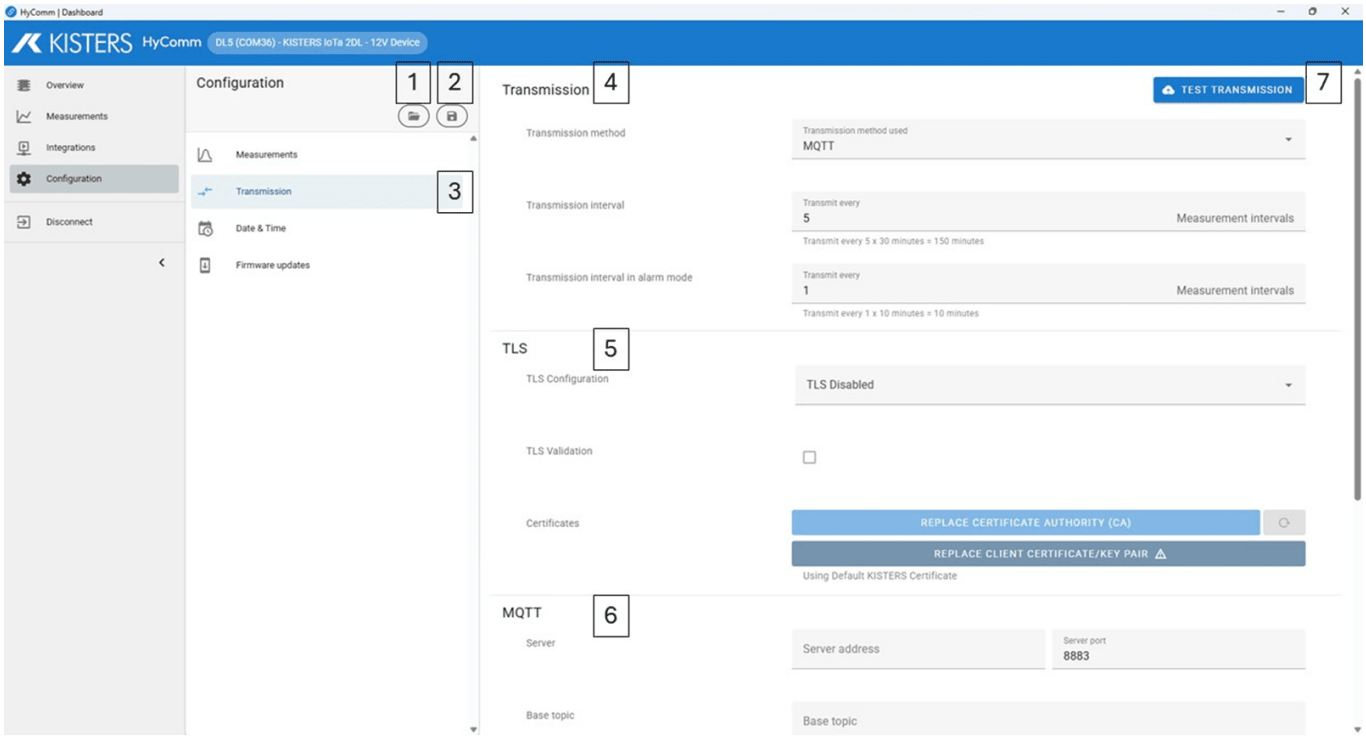


Note	Description
1	Enable/Disable the SDI-12 interface. Having this disabled will make the device not record any SDI-12 data
2	Clicking on the magnifier will start an SDI-12 device scan. The device will automatically detect any connected SDI-12 sensors. ▪ Once the device scan is started, and you have found all the devices you need, you can click FINISH to stop the scan and show your sensors. ▪ Supported discovered SDI-12 sensors will allow you to perform a quick-setup. Clicking the button will open a dialog to configure the measurement: 
3	Both manually and automatically (supported sensor) added SDI-12 measurements will be displayed here. Add SDI-12 measurements manually by clicking the + button.
4	Some SDI-12 sensors will require to be powered for some time before being able to perform a measurement, here the time in seconds between power-on and starting a measurement can be set.



Note	Description
1	Enable/Disable the battery interface. Having this disabled will make the device not record any battery data.
2	Enable/Disable the pulse counter interface. Having this disabled will make the device not record any pulse counter data. Every pulse on the pulse input will increase the value by 1*<factor>+<offset> Each time the device performs a measurement, the value is reset to 0.

3.2.7.5 Configuration: LoRa Transmissions

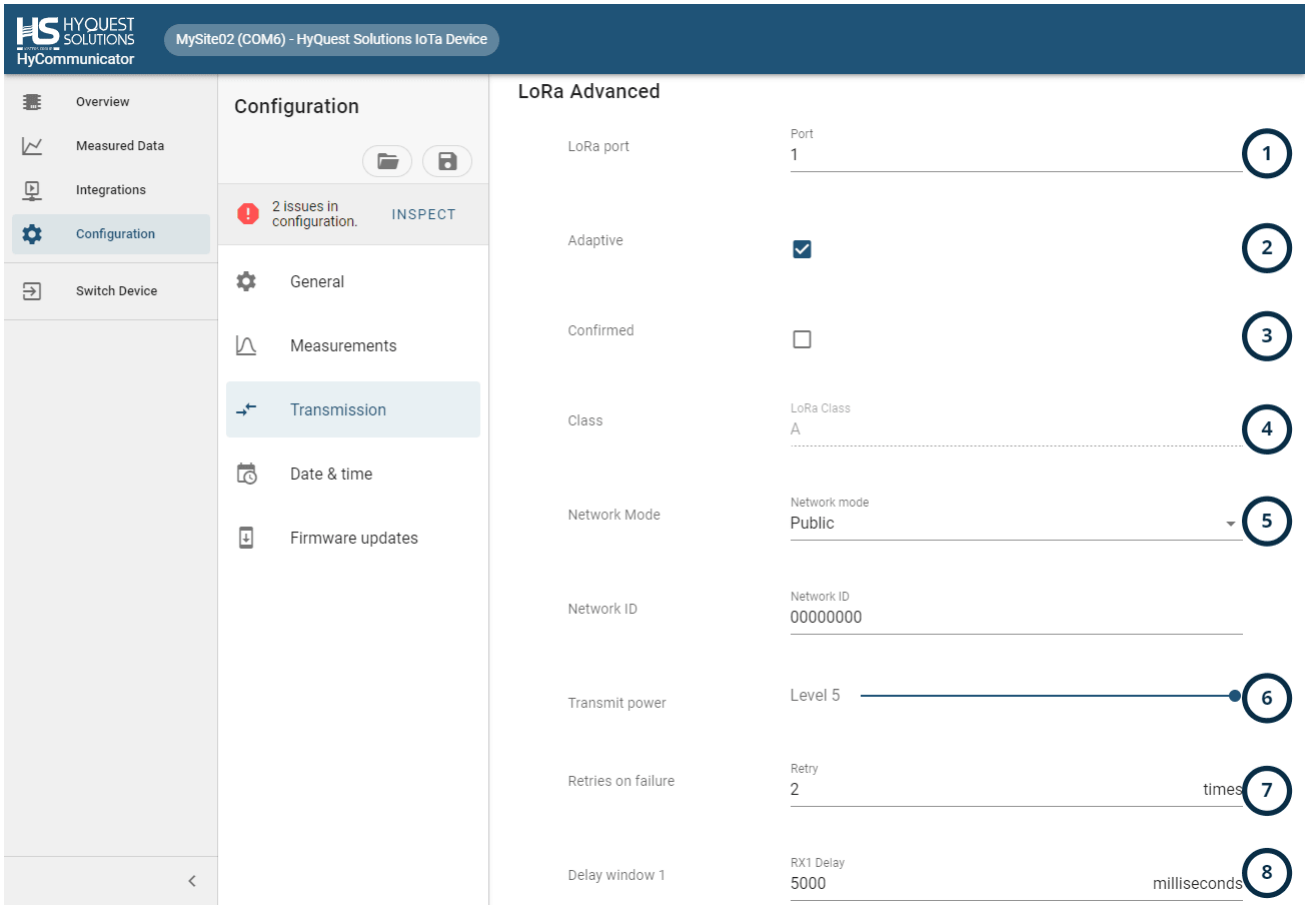


Note	Description
1	Device set to use LoRa transmission
2	LoRa device EUI, unique generated token used for registration.
3	Use OTAA (recommended) or ABP LoRa Modes.
4	App / Join EUI key for OTAA registration.
5	Application key for OTAA registration.
6	Which data rate to use, see LoRa Advanced for enabling adaptive data rates.

In order to manually register the device through OTAA to a LoRa Network you will need to pro-vide the network the device's LoRa DEUI (Note 2). If unsure how to do this, consult your LoRa Network's manual or support. The network in return will hand you an Application Key (AppKey) and Application EUI (AppEUI), which will need to be filled in at their appropriate fields in the device configuration software (Note 4 and 5). Also note the additional information in the table below, as you might be required by your LoRa network to provide this information.

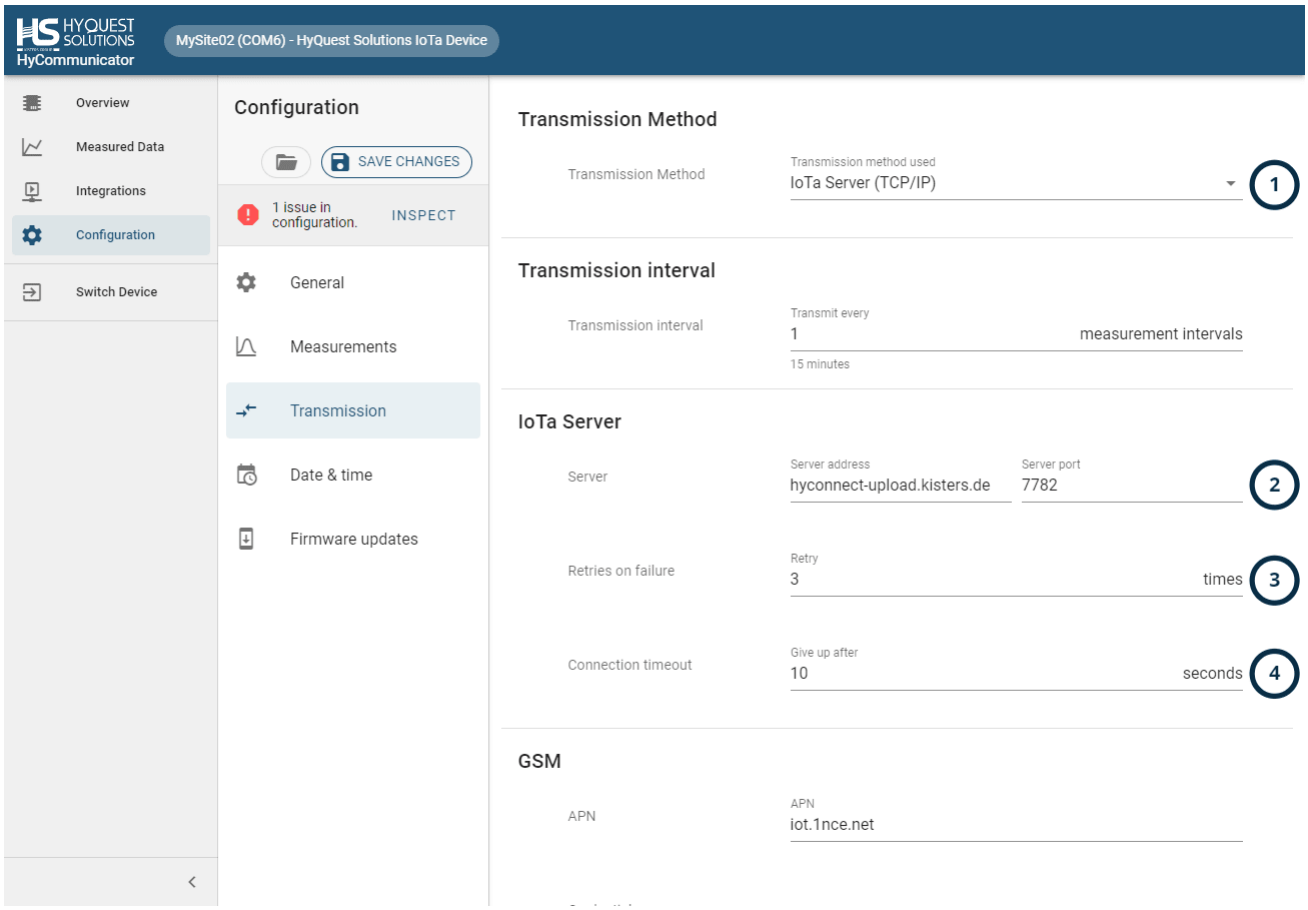
LoRa Version	V1.0.2
Regional Parameters Version	V1.0.2-Rev B
Activation Mode	OTAA, ABP
Class	A
Confirmed Mode	Yes, 3 retries

Frequency Plan	Europe 863-870 MHz



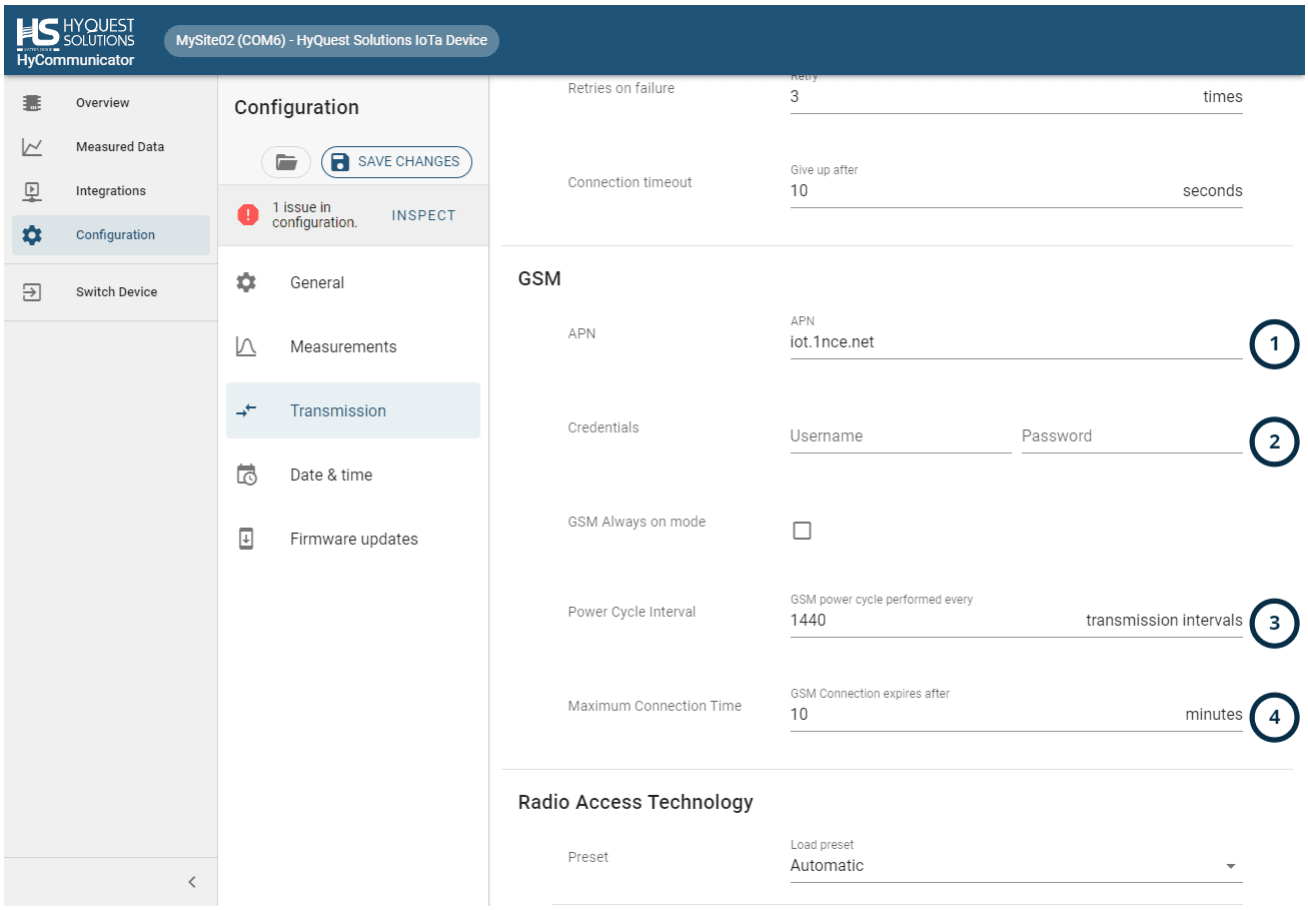
Note	Description
1	LoRa port to use for uplinks. 1 is default.
2	Whether to enable adaptive data rates.
3	Whether LoRa Confirmed mode should be enabled, if set device will attempt failed transmissions up to 3 times.
4	LoRa Class, only A is supported.
5	Whether device is connecting to a public network or private network. LoRa Network ID, must be 8 hex digits or empty.
6	Power level on transmissions, 5 is default.
7	How many times LoRa confirmed messages should be retried.
8	Delays for Transmission windows 1 (max. 10000 ms) and 2 (max. 12000 ms)

3.2.7.6 Configuration: LTE Transmissions



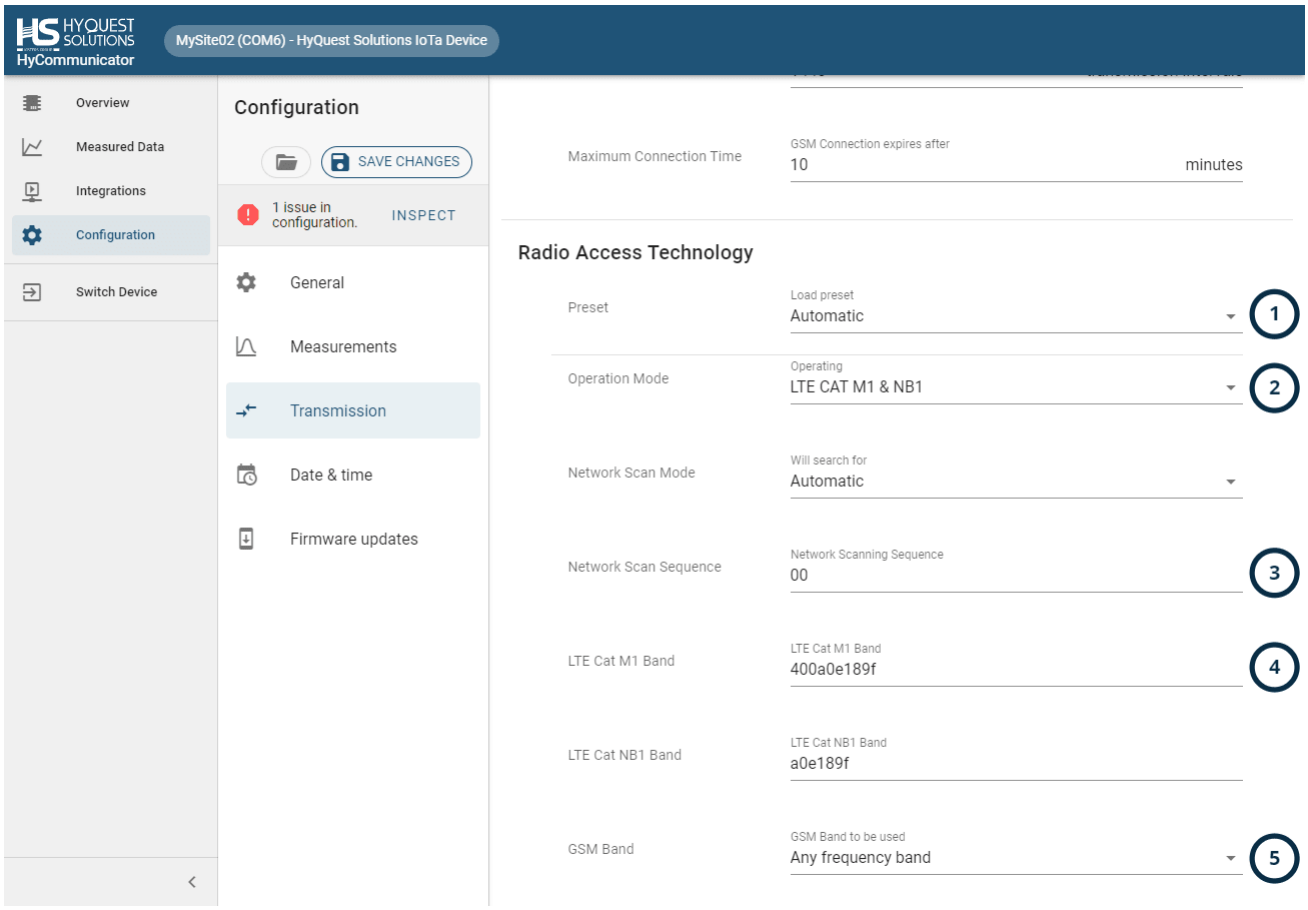
Note	Description
1	Device set to use LTE transmission.
2	Hostname/ IP and port used for data uploads.
3	How many times to attempt to retry a transmission on failing. Default: 3
4	Time out on connecting to the server, increase in case of low bandwidth due to bad network coverage.

3.2.7.7 Configuration: GSM



Note	Description
1	SIM Card APN
2	If required, username and password for SIM.
3	Restart the GSM module every set number of transmission intervals.
4	The maximum time the GSM module can be online / attempt to search for a network.

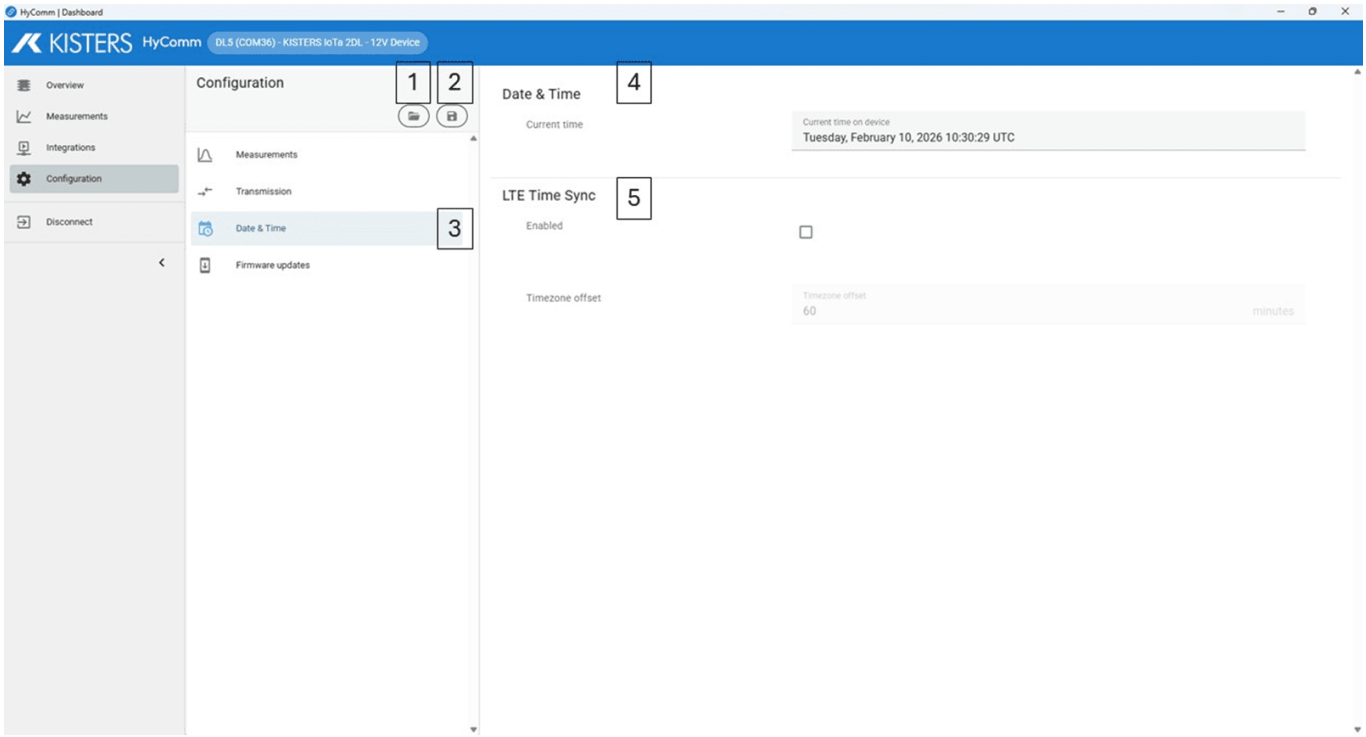
3.2.7.8 Configuration: Radio Access Technology



Note	Description
1	In this section, more advanced parts of the LTE/GSM network to use are set. Normally the pre-set can be left to **AUTOMATIC** to allow the device to use any network available. There are a number of pre-sets available to quickly get started.
2	Allows setting whether LTE CAT M1 / NB IoT / GSM or both should be used.
3	Sequence in which networks are scanned. 00: Automatic 01: GSM 02: LTE Cat M1 03: NB-IoT Example: 020301 for a sequence.
4	Bands to use for LTE Cat M1/NB-IoT in hex format, examples: 15= Band 1 + Band 3 + Band 5 Any LTE-Cat M1 Band: 400A0E189F Europe LTE-Cat M1: 80084 Any LTE NB-IoT Band: A0E189F Europe NB-IoT: 80084

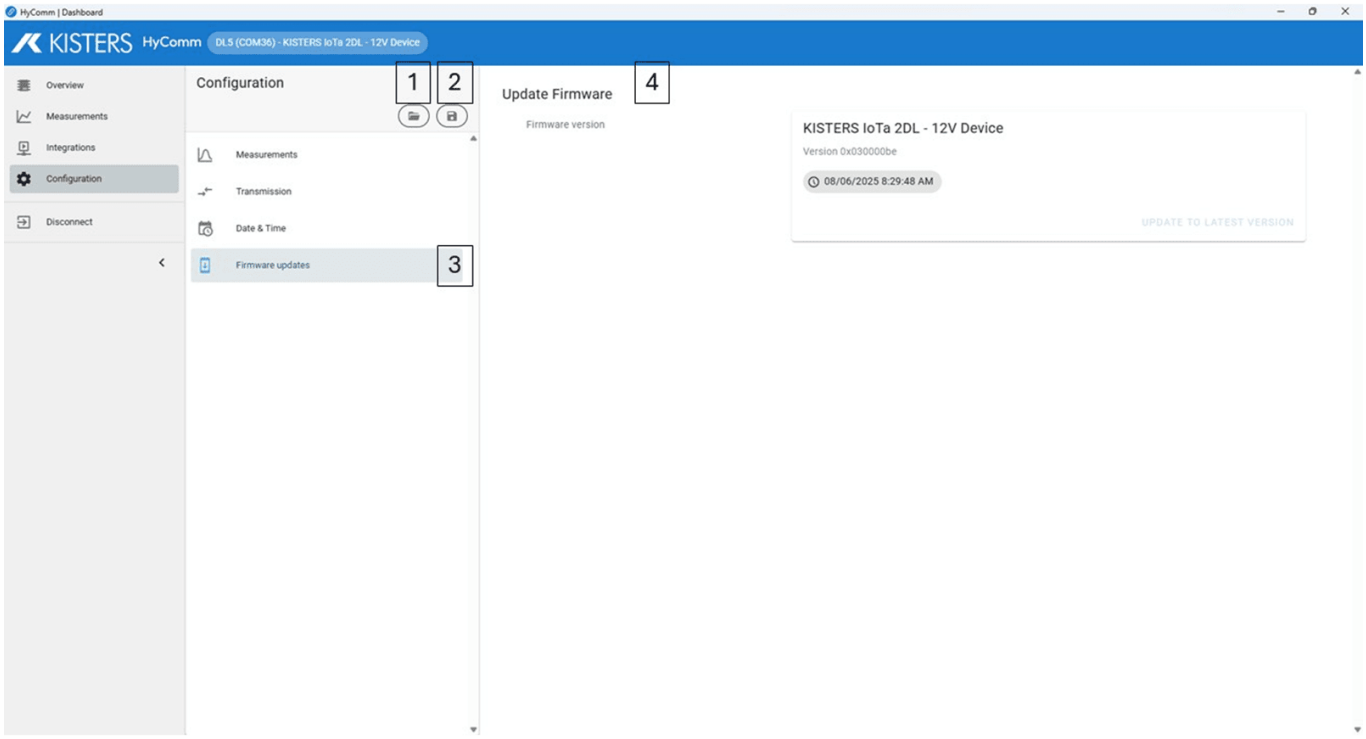
Note	Description
5	Allows specification of any or a specific GSM band.

3.2.7.9 Configuration: Time and Date



Note	Description
1	Current time on the device, can be changed by syncing this to the PC.
2	Enabled: Sync sends the current UTC time Disabled: Sync sends the local time.
3	IoTa LTE ONLY: Enabling this will sync the time on the device during transmissions.

3.2.7.10 Configuration: Firmware Updates



Note	Description
1	Current firmware version. Click the **SELECT FIRMWARE FILE** button to open a dialog where you can select a new firmware file. The device will reboot once process is complete.

4 Operation

Operation of a IoTa SensorNode is straightforward.

It may help to have a basic understanding of the data communication technology used.

Note that the use of data transmission infrastructure – whether it is a provider-supplied network or a shared public network may be subject to both technical and regulatory restrictions. Please keep yourself about these rules to ensure proper operation of the devices.

- Power Supply 27
- Connecting an SDI-12 Sensor 28
- Connecting a Pulse Signal to the Counter Input 28
- Connecting an Antenna 28
- Data Transmission 29

4.1 Power Supply

IoTa SensorNode is a battery-powered device.

The battery is help in a battery holder suitable for D-cell/Mono-cell battery formats.

Inserting a sufficiently charged battery will start the device.

The batteries typically used in a IoTa SensorNode are not rechargeable. No provisions are made in the device to recharge batteries.

Warning:

- A power supply connected in reverse can destroy the device.
- A power supply with a voltage greater than 3.8 V can destroy the device.

- The device is designed to operate with a 3.6 V Lithium Thionyl Chloride (LiSOCL2) battery.
- For proper operation in all conditions, the battery voltage should be > 3.25 V
- Below 3.25 V, GSM communication cannot operate reliably.
- Below 3.00 V, the device and USB communication cannot operate.

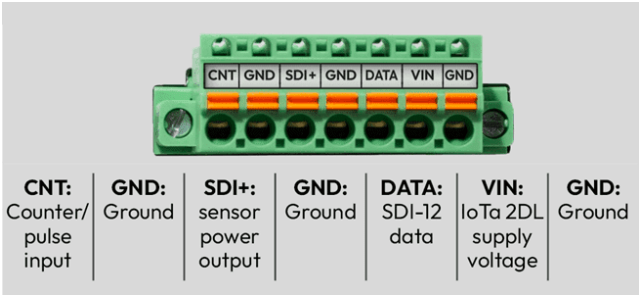


Figure 3 – Access to 4 bolts to open the lid of the housing (marked red)

The front lid must be opened to access the battery in the battery holder.

4.2 Connecting an SDI-12 Sensor

M12 8-pin connector.

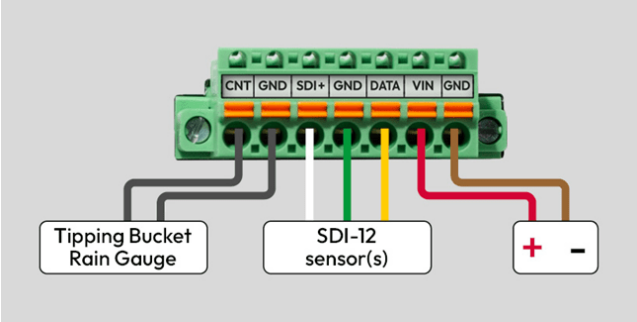


Figure 4 – Pin-Out of the M12 8-pin Connector

IoTa SensorNode LoRa: LoRa operates with a limited payload per message. This payload is fixed to 8 values.

4.3 Connecting a Pulse Signal to the Counter Input

M12 4-pin connector.

4CON (COUNTER)

Pin #	Colour		Signal
1	Brown		GND
2	White		N/A
3	Blue		N/A
4	Black		PUL

Figure 5 – Pin-Out of the M12 4-pin Connector

Refer to Technical Data 33 for Technical Specifications of the Pulse/Counter input.

Only a single pulse signal can be connected.

4.4 Connecting an Antenna

IoTa is equipped with an SMA connector compatible with most LoRa and LTE-M antennas.

The SMA connector (Sub-Miniature Version A) is a radio-frequency coaxial connector with a screwing coupling feature.

- Female connector on the IoTa housing: The female connector has a threaded barrel.
- Male connector on the antenna or on the antenna cable: male SMA connectors have a hex nut that fits securely around the female barrel for a tight coupling.

In most applications, an omnidirectional antenna will serve you best.

Choice of Antenna: In most applications, an omnidirectional antenna will serve you best. LoRa and LTE-M do not operate in the same frequency bands. Use an antenna that is tuned to the appropriate frequency range. Depending on location and network coverage, an amplifying antenna may be preferred. Caution: check with national regulations for the maximum amplification allowed for the transmission. This may differ between LoRa and LTE-M.

IoTa SensorNode LoRa: LoRaWAN operates in ISM (Industrial, Scientific and Medical) band of the radio spectrum. Subsequently, the permitted power levels are very low, typically only +14 dBm in Europe. This means that you will get better results from using an antenna that is tuned to operate in the ISM spectrum. In Europe the LoRaWAN profile operates in several channels close to 868 MHz.

IoTa SensorNode LoRa: LTE-M is a sub-band of the 4G or 5G. Usually, any antenna tuned to the frequency range of LTE will do.

4.5 Data Transmission

This chapter contains the following subsections:

- LoRa 29
- LTE-M 29

4.5.1 LoRa

Network Coverage: Check network coverage for LoRa/LoRaWAN at the monitoring site.

The maximum number of values transmitted per message is 8.

These 8 values can be obtained from a single multi-parameter SDI-12 sensor. They may also be the sum of up to 7 SDI-12 values plus the counter value. In any case, the total number may never exceed 8.

4.5.2 LTE-M

Network Coverage: Check network coverage for LTE-M at the monitoring site.

5 Maintenance

- Clean the IoTa SensorNode by wiping with light cleaning solution and a soft cloth.
- Replace battery as needed.

6 Troubleshooting

This chapter contains the following subsections:

- Device Stops Operating 31
- Device Stops Transmitting Data 31

6.1 Device Stops Operating

Test the voltage of the inserted battery. A simple method for checking your battery's voltage involves using a voltmeter, which measures the electrical potential difference between two points in an electric circuit, i.e. the voltage. We recommend you opt for a digital voltmeter as they are much easier to use.

1. Extract the battery from the battery holder.
2. Check the terminals on both ends for corrosion and clean it off if necessary.
3. Put the positive lead on the batteries positive pole and the negative lead on the negative pole. Positive (+) and negative (-) poles are indicated on the battery.
4. Check the voltmeter readings: make sure the voltage ranges specified in Power Supply 27 are respected.
5. Insert a new battery if the voltage is outside the specified range.
6. Caution: the battery voltage may drop once a load is put on the battery. Only qualified technicians should make a battery voltage test when the battery is under load.

6.2 Device Stops Transmitting Data

Main causes are loss of connectivity to the transmission network either due to a change made by the provider in its infrastructure, a faulty or defective or missing antenna, an obstacle acting as a shield to the electromagnetic signals, false or changed communication settings in the device. Proceed by checking the simple things first: antenna condition, shielding, etc. Try a system restart: extract and re-insert the battery (wait approximately 15 - 20 seconds before re-inserting the battery). For LTE-M systems, it may be worthwhile to have the data SIM checked – typically these SIMs have limited capacity and stop working once the limit has been exceeded. a Next check the communication settings. Finally get in touch with the network infrastructure provider.

7 Repair

KISTERS precision instruments and data loggers are produced in quality-controlled processes. All KISTERS production and assembly sites in Australia, New Zealand and Europe are ISO 9001 certified. All equipment is factory tested and/or factory calibrated before it is shipped to the client. This ensures that KISTERS products perform to their fullest capacity when delivered.

Despite KISTERS most rigorous quality assurance (QA), malfunction may occur within or outside of the warranty period. In rare cases, a product may not be delivered in accordance with your order.

In such cases KISTERS' return and repair policy applies. For you as a customer, this means the following:

- Contact KISTERS using the Repair Request Form and the Declaration of Contamination made available online:

Region (Language)	Download Link
Asia-Pacific (English)	Repair Request Form (APAC) Declaration of Contamination (APAC)
Europe, the Middle East and Africa (English)	Repair Request Form (EMEA) Declaration of Contamination (EMEA)
Germany (German)	Repair Request Form (DE) Declaration of Contamination (DE)

  In response you will receive a reference number that must be referenced on all further correspondence and on the freight documents accompanying your return shipment.
- Please provide as much information and/or clear instructions within the return paperwork. This will assist our test engineers with their diagnosis.
- Please do not ship the goods prior to obtaining the reference number. KISTERS will not reject any equipment that arrives without reference number; however, it may take us longer to process.

Custom requirements for items sent to KISTERS for warranty or non-warranty repairs: Check with your national customs/tax authorities for details, processes and paperwork regarding tax exempt return of products. Typically, special custom tariff codes are available (such as HS Code = 9802.00) that verify the item is being returned for repair and has no commercial value. Please note that the customs invoice / dispatch documents should also clearly state: "Goods being returned to manufacturer for repair – No Commercial value". It is mandatory to have any returned goods accompanied by a commercial invoice on headed paper. KISTERS reserves the right to charge the customer for time spent rectifying incorrect customs documents.

Note: Please ensure that your goods are packed carefully and securely. Damage that occurs during transit is not covered by our warranty and may be chargeable.

8 Technical Data

Inputs	SDI-12: max. 8 devices or parameters; max. power drain: 50 mA@12 VDC via external M12 8-pin connector Counter/Pulse: pull to GND; max.: 200 Hz; pulse width > 1 ms via external M12 4-pin connector
Data Transmission	IoTa LTE-M: 4G LTE-M – requires Nano SIM (frequency plans available on demand) IoTa LoRa: LoRaWAN, Regional Parameters: V1.0.2 Rev-B. OTAA and ABP. Class A. EU 863-870MHz. External SMA antenna connector
Local Communication	USB accessible via internal Micro-B port for data downloads, configuration and firmware upgrades
Memory	8 MB data flash
Real-Time Clock	Precision: 3 ppm
Housing	ASA LURAN UV IP 66/EN 60529 / IP 67/EN 60529 Dimension (L × W × H): 160 × 110 × 70 mm
Supply Power	3.6 … 3.7 VDC, 1 × D-size LiSOCL2 Lithium Battery (non-rechargeable), ~17000 mAh capacity
Operating Temperature	-10 °C … +50 °C
Ingress Protection	IP66
Compliance	CE, RoHS, WEEE pending

9 Obligations of the Operator and Disposal

This chapter contains the following subsections:

- Obligations of the Operator 34
- Dismantling / Disposal 34

9.1 Obligations of the Operator

European Union

In the Single European Market it is the responsibility of the operator to ensure that the following legal regulations are observed and complied with: national implementation of the framework directive (89/391/EEC) and the associated individual directives, in particular 2009/104/EC, on minimum safety and health requirements for the use of work equipment by employees at work.

Worldwide

Regulations: If and where required, operating licences must be obtained by the operator. In addition, national or regional environmental protection requirements must be complied with, regardless of local legal provisions regarding the following topics:

- Occupational safety
- Product disposal

Connections: Local regulations for electrical installation and connections must be observed.

9.2 Dismantling / Disposal

When disposing of the units and their accessories, the applicable local regulations regarding environment, disposal and occupational safety must be observed.

Before dismantling

- Electrical Devices:
  - Switch off the units.
  - Disconnect electrical appliances from the power supply, regardless of whether the appliances are connected to the mains or to another power source.
- Mechanical devices:
  - Fix all loose components. Prevent the device from moving independently or unintentionally.
  - Loosen mechanical fastenings: Please note that appliances can be heavy and that loosening the fastenings may cause them to become mechanically unstable.

Disposal

Operators of old appliances must recycle them separately from unsorted municipal waste. This applies in particular to electrical waste and old electronic equipment.

Electrical waste and electronic equipment must not be disposed of as household waste!

Instead, these old appliances must be collected separately and disposed of via the local collection and return systems.

Integrated or provided batteries and accumulators must be separated from the appliances and disposed of at the designated

collection point. At the end of its service life, the lithium-ion battery must be disposed of according to legal provisions.

EU WEEE Directive

As players in the environmental market, KISTERS AG is committed to supporting efforts to avoid and recycle waste. Please consider:

- Avoidance before recycling!
- Recycling before disposal!

This symbol  indicates that the scrapping of the unit must be carried out in accordance with Directive 2012/19/EU. Please observe the local implementation of the directive and any accompanying or supplementary laws and regulations.

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