

The logo for HydroMet, featuring a white diagonal slash followed by the text "HydroMet" in a bold, white, sans-serif font.

**/ HydroMet**

User Manual

**HyComm**

The KISTERS logo, consisting of a white stylized 'K' symbol followed by the word "KISTERS" in a bold, white, sans-serif font. Below the logo is the tagline "Empowering decisions of tomorrow" in a smaller, white, sans-serif font.

**KISTERS**  
Empowering decisions of tomorrow

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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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This document is public.

# 1 Introduction

Thank you for choosing our product. We hope you will enjoy using the device.

KISTERS manufactures, sells, installs and operates quality instrumentation, data loggers and communication technology. Products are designed with passion for environmental monitoring and with a deep understanding of the quality, accuracy and robustness needed to fulfil the requirements of measurement practitioners in the field.

The present User Manual will help you understand, install and deploy the device. If, however, you feel that a particular information is missing, incomplete or confusing, please do not hesitate to contact us for further support!

HyComm is a KISTERS software tool to configure digital sensors and data loggers. It provides a unique, harmonised user experience across the range of supported digital instruments and data loggers. The use of a unique GUI makes the learning curve smoother; habits once adopted are likely to work on the next supported device.

The software is a free-of-charge add-on that is made available via download links on the KISTERS web pages. HyComm will be made available for various digital instruments and data loggers.

As of February 23, 2022, the following devices are supported:

- IoTa SensorNode LTE-M
- IoTa SensorNode LoRa
- IoTa Rain Gauge LTE-M
- IoTa Rain Gauge LoRa
- iLevel-GW 4G
- More to come ...

For more information, see the following subsections:

- [Base functionality](#) 

## 1.1 Base functionality

**Note:** HyComm provides a series of general features. However, the actual availability and implementation of these features are adapted to the technical features and supported functionality of each individual device.

- Configuration and settings
  - General Device Settings
  - Communication Settings
  - Data Logging Settings
  - Sensor Configuration
  - Date and Time Settings
  - Firmware Update
- Visualization of
  - Device Settings
  - Device Status
  - Error messages related to connected sensors and disruptive settings
- For data transmission devices: integration with datasphere
- For logging devices: local data download

## 2 IoTa LORA/LTE

This chapter contains the following subsections:

- [Downloading Configuration Software](#) <sup>6</sup>
- [HyCommunicator](#) <sup>5</sup>

### 2.1 Downloading Configuration Software

In order to configure the device, download the HyComm device configuration client. You will need a USB Micro-B cable in order to connect the device to the computer on which the configuration client 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)	<a href="https://hyconnect.kisters.de/config/electron/HyCommunicator.exe">https://hyconnect.kisters.de/config/electron/HyCommunicator.exe</a>

#### Functionality

- Device information overview
- Visualize 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

### 2.2 HyCommunicator

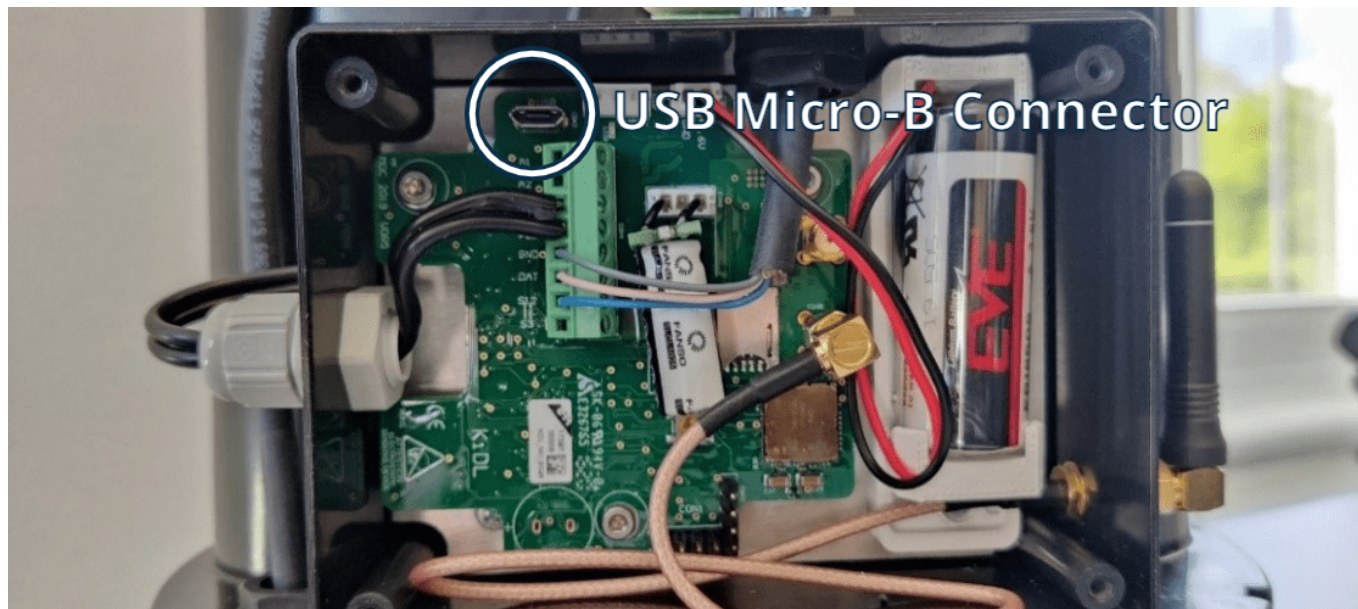
This chapter contains the following subsections:

- [Connecting to the Device](#) <sup>6</sup>
- [Device Selection Screen \(start-up\)](#) <sup>7</sup>
- [Device Overview](#) <sup>8</sup>
- [Device Measurement Testing and Visualisation](#) <sup>9</sup>
- [Device Integrations](#) <sup>10</sup>
- [Device Configuration](#) <sup>10</sup>

## 2.2.1 Connecting to the Device

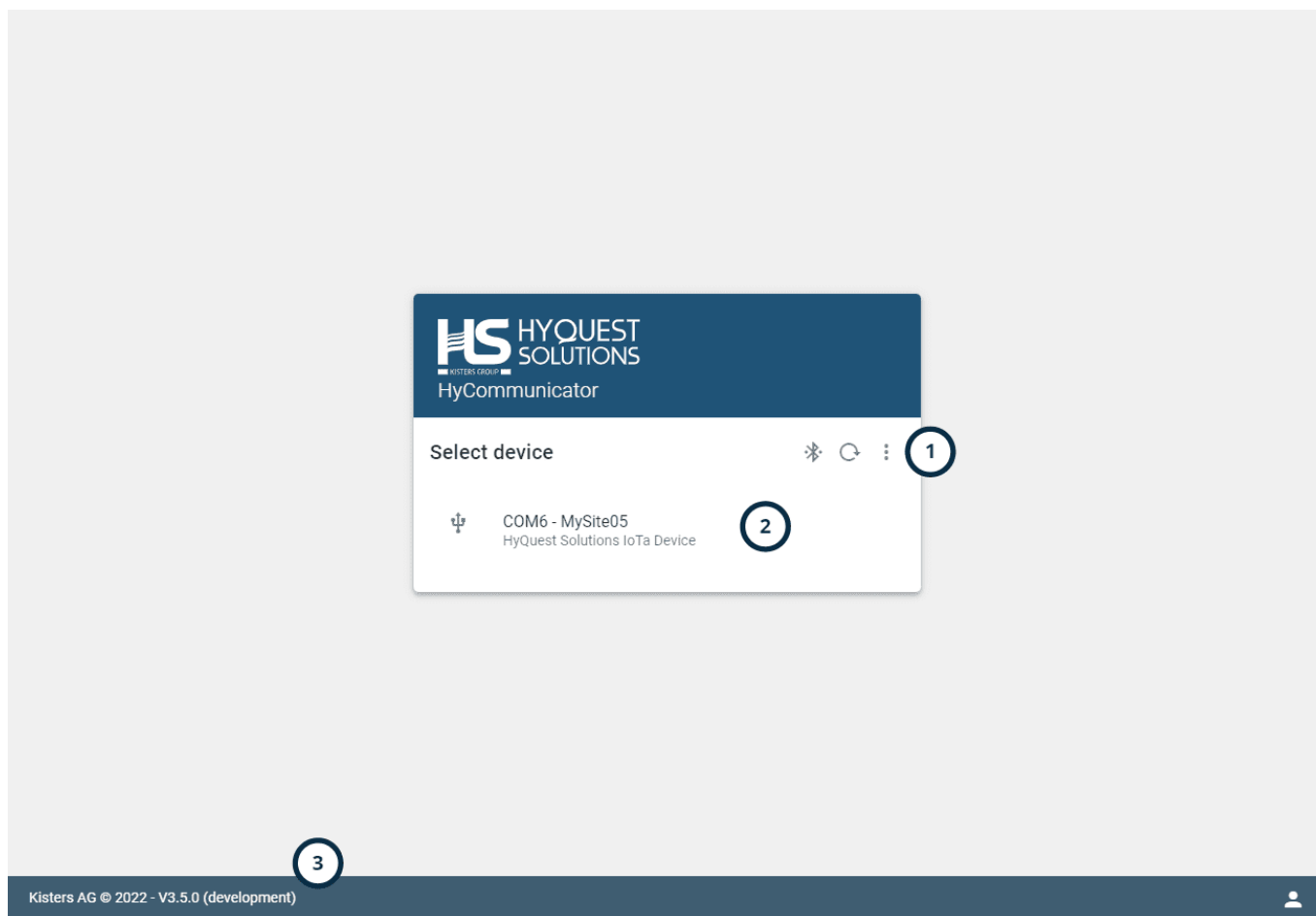
Simply run the provided Windows installer and connect the IoTa device through a USB Micro-B cable to the computer running HyComm.

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.



**Note:** 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.

## 2.2.2 Device Selection Screen (start-up)



Note	Description
1	Buttons left to right: <ul style="list-style-type: none"> <li>▪ Scan for Bluetooth devices</li> <li>▪ Scan for USB/Wi-Fi devices: Click to scan USB/Wi-Fi devices.</li> <li>▪ Options <ul style="list-style-type: none"> <li>▪ Device connection guide: Guide on things to check when a device is not found.</li> <li>▪ Offline configurations: Allow for the creation of configurations while not connected to any devices.</li> <li>▪ Settings: Menu to configure the automatic device configuration features of HyComm.</li> </ul> </li> </ul>
2	Found devices are displayed here; select one to connect to that device.
3	HyComm version info

## 2.2.3 Device Overview

**1** Overview

**2** COM6 - bxtqpc7 Device Overview

HyQuest Solutions IoTa Device

**3** Data Acquisition

**4** Memory

**5** Data Transmission

**6** HyConnect Integration

**General**

Device ID	bxtqpc7
Time	01/01/2000 00:00:29 Likely out-of-sync
Battery Voltage	3.65V
Firmware version	0x01000209

**Data Acquisition**

Enabled interfaces	SDI-12, Pulse Counter, Internal Voltage
Measurement interval	5 minutes

**Memory**

Flash size	7340032 bytes
Total data stored	0 bytes
Unsent data stored	0 bytes

**Data Transmission**

Transmissions are paused while USB-cable is connected.

Transmission method	IoTa Server (TCP/IP)
Transmission interval	5 minutes
IoTa server	hyconnect-upload.kisters.de:7782
GSM APN	iot.1nce.net

**HyConnect Integration**

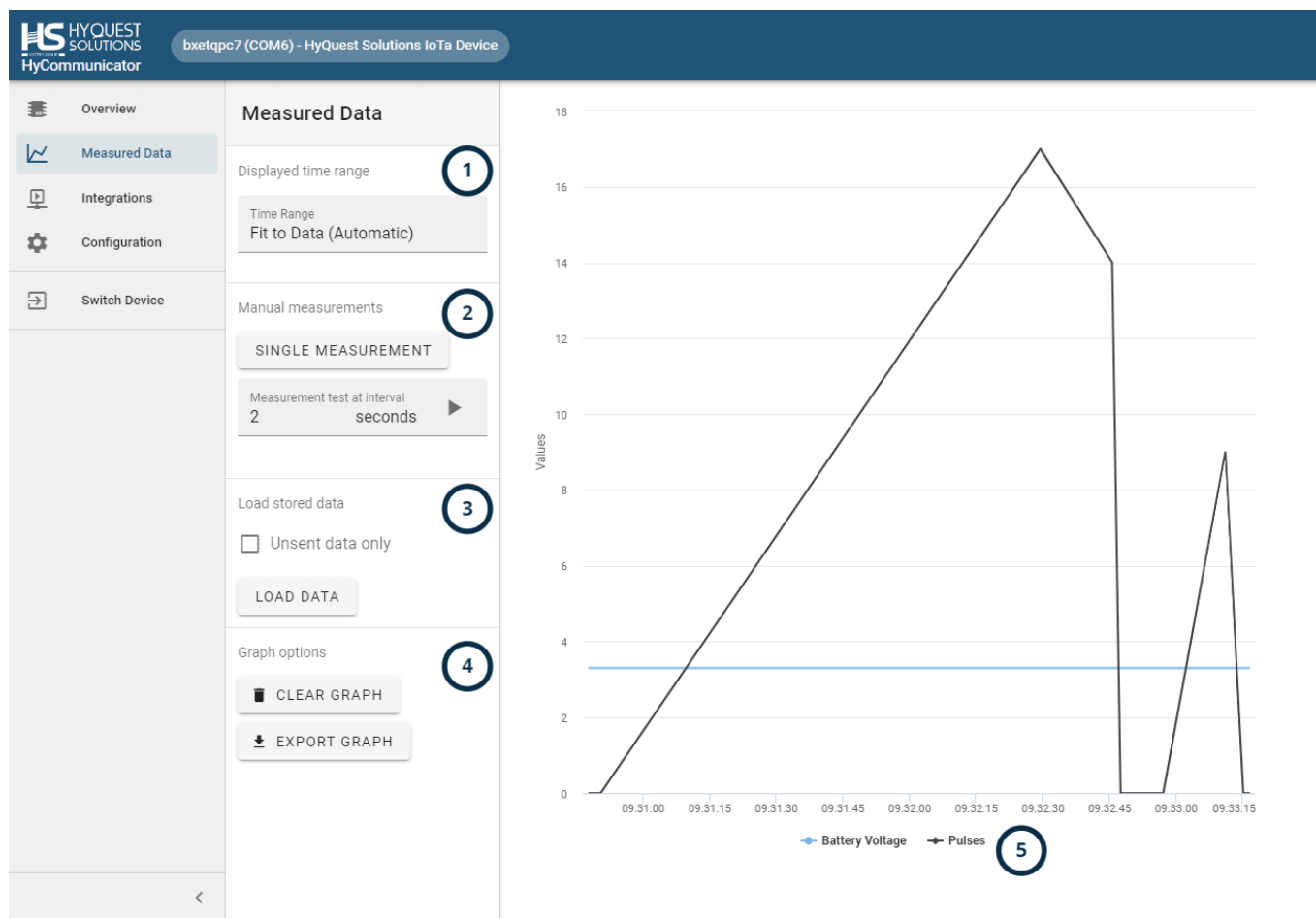
Registration status	Registered
Site name	IoTa Station 2022-02-16T15:31:05.505Z
Last received transmission	2 days ago

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	Information 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 device's data transmissions.

**Note:** Measurement and transmission intervals of both 30 minutes mean that every 30 minutes the enabled interfaces are read out, and this data is instantly transmitted.



## 2.2.4 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: <ul style="list-style-type: none"> <li>Single one-time measurement of all enabled interfaces.</li> <li>Series of measurements at specific intervals.</li> </ul> <b>Note:</b> 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.

## 2.2.5 Device Integrations

The screenshot shows the 'Integrations' section of the HyQuest Solutions IoTa Device management interface. The device is identified as 'bxetqpc7 (COM6) - HyQuest Solutions IoTa Device'. The interface includes a sidebar with navigation options: Overview, Measured Data, Integrations (selected), Configuration, and Switch Device. The main content area displays two integration cards for 'datasphere'. The first card is for 'Datasphere (LoRa)' and the second is for 'Datasphere (LTE)'. Both cards show a green checkmark for 'Device Compatible' and a green checkmark for 'Internet', along with a blue '▶ SETUP' button. A circled '1' is placed above the 'Integrations' header.

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/>

## 2.2.6 Device Configuration

This chapter contains the following subsections:

- [Saving and loading](#) <sup>[ 11 ]</sup>
- [Inspect Configuration Issues](#) <sup>[ 12 ]</sup>
- [Configuration: General](#) <sup>[ 13 ]</sup>
- [Configuration: Measurements](#) <sup>[ 14 ]</sup>
- [Configuration: LoRa Transmissions](#) <sup>[ 16 ]</sup>
- [Configuration: LTE Transmissions](#) <sup>[ 18 ]</sup>
- [Configuration: GSM](#) <sup>[ 19 ]</sup>
- [Configuration: Radio Access Technology](#) <sup>[ 20 ]</sup>
- [Configuration: Time and Date](#) <sup>[ 21 ]</sup>
- [Configuration: Firmware Updates](#) <sup>[ 22 ]</sup>

### 2.2.6.1 Saving and loading

Note	Description
1	<p>Click on the <b>FOLDER</b> button to load a configuration from either:</p> <ul style="list-style-type: none"> <li>▪ The connected device.</li> <li>▪ A configuration file on your computer.</li> <li>▪ The device type defaults (reset).</li> </ul> <p>Click on the <b>SAVE</b> button to save the current configuration to either:</p> <ul style="list-style-type: none"> <li>▪ The connected device.</li> <li>▪ A configuration file on your computer.</li> </ul>
2	<p>Inspect configuration issues automatically detected by HyComm with your configuration. See <a href="#">Inspect Configuration Issues</a> chapter for more information.</p>
3	<p>Click to access pages for various parts of the configuration.</p>

## 2.2.6.2 Inspect Configuration Issues

The screenshot shows the HyQuest Solutions HyCommunicator interface for a device named 'MyDevice (COM6) - HyQuest Solutions IoTa Device'. The 'Configuration' section is active, and a notification indicates '2 problem(s) in configuration'. An 'INSPECT' button is highlighted with a circled '1'. A 'Configuration Errors' dialog box is open, listing two errors: 'Measurements: Too many measurements (>8) enabled for LoRa communication.' and 'Date & Time: Device clock is likely out of sync.' A green 'FIX' button is next to the second error, and a 'CLOSE' button is at the bottom right of the dialog. A circled '2' is next to the dialog box.

Note	Description
1	When you see this notification appear, the configuration you have opened has one or more settings that can cause the device to not operate as you intended. Clicking on the <b>INSPECT</b> button will open a detailed dialog.
2	<ul style="list-style-type: none"> <li>Issues, along with a brief explanation, are shown here.</li> <li>Some issues will have a <b>[FIX]</b> button that can automatically edit your configuration to resolve the issue.</li> </ul>

### 2.2.6.3 Configuration: General

#### Device Identification

Device ID Device ID  
MyDevice 1

8 / 8

#### Measurement & Transmission

Measurement interval Measure every  
30 minutes 2

Transmission interval Transmit every  
1 measurement intervals  
30 minutes

Note	Description
1	The ID of the device, used for identifying transmissions from this device. Changing this value can cause transmissions to be discarded on remote systems.
2	Configure how often the device measures and transmits data. Measurement Interval: <ul style="list-style-type: none"> <li>▪ Value given in minutes.</li> </ul> Transmission interval: <ul style="list-style-type: none"> <li>▪ Decides how many measurements are done before the device sends out its data.</li> <li>▪ Value given in number of measurement intervals, below the calculated transmission interval is shown in minutes.</li> <li>▪ IoTa LORA: This value must be set to 1 due to LoRa package length limits.</li> <li>▪ IoTa LTE-M: This value can be increased to save power and transmit multiple stored measurements in one go.</li> </ul>

## 2.2.6.4 Configuration: Measurements

**SDI12**

Enabled

SDI12 Device Scan

**Sensor discovery** 🔍

No new SDI-12 devices found, press on 🔍 to scan.

SDI12 Measurements (12 max)

**SDI-12 Measurement** ✎ ✕

Command: 0 M 0 (1)

+ CONFIGURE MEASUREMENT

Delay between power-on and measurement Delay 0 seconds

Note	Description
1	<p>Enable/Disable the SDI-12 interface.</p> <p>Having this disabled will make the device not record any SDI-12 data</p>
2	<p>Clicking on the magnifier will start an SDI-12 device scan. The device will automatically detect any connected SDI-12 sensors.</p> <ul style="list-style-type: none"> <li>Once the device scan is started, and you have found all the devices you need, you can click <b>FINISH</b> to stop the scan and show your sensors.</li> <li>Supported discovered SDI-12 sensors will allow you to perform a quick setup. Clicking the button will open a dialog to configure the measurement:</li> </ul> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p>SDI12 Device Scan</p> <p><b>Sensor discovery</b> 🔍</p> <p>113EP100G-12 01200724114141 SDI12 Address 1</p> <p style="text-align: right;">+ CONFIGURE MEASUREMENT</p> <p style="background-color: #28a745; color: white; padding: 2px 5px; display: inline-block;">Supported Soil moisture probe</p> </div>
3	<p>Both manually and automatically (supported sensor) added SDI-12 measurements will be displayed here.</p> <p>Add SDI-12 measurements manually by clicking the + button.</p>
4	<p>Some SDI-12 sensors will require being 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.</p>

## Battery

1

Enabled



## Counter

2

Enabled



Pulse conversion

Factor

0.2

Offset

0

Every pulse adds 0.20 with 0.00 added on top of the total reading.

Decimal Places / Precision

2

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

### 2.2.6.5 Configuration: LoRa Transmissions

#### Transmission Method 1

Transmission Method	Transmission method used <b>LoRaWAN</b>
---------------------	--

---

#### Transmission interval

Transmission interval	Transmit every <b>1</b> measurement intervals 15 minutes
-----------------------	--

---

#### LoRa

LoRa DEUI	LoRa DEUI <b>3330313763397105</b> <small>Assigned by device.</small>	<span style="border: 2px solid black; border-radius: 50%; padding: 5px;">2</span>
Join Procedure	Using <b>OTAA</b>	<span style="border: 2px solid black; border-radius: 50%; padding: 5px;">3</span>
Application ID	Application ID <b>749A65803EE92BDD</b>	<span style="border: 2px solid black; border-radius: 50%; padding: 5px;">4</span>
Application Key	Application Key <b>9770BDFCEAFD267807FC363EFC912D9B</b>	<span style="border: 2px solid black; border-radius: 50%; padding: 5px;">5</span>
Data rate	Data rate <b>SF12 BW125</b>	<span style="border: 2px solid black; border-radius: 50%; padding: 5px;">6</span>

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.



Note	Description
1	LoRa port to use for uplinks. 1 is the default.
2	Whether to enable adaptive data rates.
3	Whether LoRa Confirmed Mode should be enabled, if set, the device will attempt failed transmissions up to three times.
4	LoRa Class, only A is supported
5	Whether the device is connecting to a public network or a 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)

## 2.2.6.6 Configuration: LTE Transmissions

### Transmission Method

Transmission Method Transmission method used  
 IoTa Server (TCP/IP) 1

### Transmission interval

Transmission interval Transmit every  
 1 measurement intervals  
 15 minutes

### IoTa Server

Server Server address Server port  
 hyconnect-upload.kisters.de 7782 2

Retries on failure Retry  
 3 times 3

Connection timeout Give up after  
 10 seconds 4

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	Timeout on connecting to the server, increase in cases of low bandwidth due to bad network coverage.

## 2.2.6.7 Configuration: GSM

## GSM

APN	APN iot.1nce.net	1
Credentials	Username _____ Password _____	2
GSM Always on mode	<input type="checkbox"/>	
Power Cycle Interval	GSM power cycle performed every 1440 _____ transmission intervals	3
Maximum Connection Time	GSM Connection expires after 10 _____ minutes	4

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

## 2.2.6.8 Configuration: Radio Access Technology

### Radio Access Technology

Preset	Load preset Automatic	1
Operation Mode	Operating LTE CAT M1 & NB1	2
Network Scan Mode	Will search for Automatic	
Network Scan Sequence	Network Scanning Sequence 00	3
LTE Cat M1 Band	LTE Cat M1 Band 400a0e189f	4
LTE Cat NB1 Band	LTE Cat NB1 Band a0e189f	
GSM Band	GSM Band to be used Any frequency band	5

Note	Description
1	In this section, more advanced parts of the LTE/GSM network to use are set. Normally, the preset can be left to <b>AUTOMATIC</b> to allow the device to use any network available. There are a number of presets 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
5	Allows the specification of any or a specific GSM band.

## 2.2.6.9 Configuration: Time and Date

### Date & Time

Current time Current time on device

Saturday, January 1, 2000 01:25:09 1

---

Sync time with PC on save. 2

Only send UTC time.

### Time Server Sync 3

Enabled

NTP Server NTP server address NTP server port

time.windows.com 123

---

NTP Offset NTP timezone offset

0 minutes

---

NTP Sync Interval Time sync every

0 transmission intervals

Sync time with NTP on save.

Note	Description
1	The current time on the device. It can be changed by syncing the device 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.

## 2.2.6.10 Configuration: Firmware Updates

### Update Firmware

Firmware version

**HyQuest Solutions IoTa Device** 1

Version 0x01000209

🕒 14/10/2021 09:17:29

**SELECT FIRMWARE FILE**

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

## 3 iLevel GW 4G

This chapter contains the following subsections:

- [Downloading Configuration Software](#) <sup>23</sup>
- [HyCommunicator](#) <sup>23</sup>

### 3.1 Downloading Configuration Software

In order to configure the device, download the HyComm device configuration client. You will need a Bluetooth-capable phone or computer in order to connect the device with the computer on which the configuration client is installed.

Operating System	Download Link
Windows 7, 8, 10, 11 (x64)	<a href="https://hyconnect.kisters.de/config/electron/HyCommunicator.exe">https://hyconnect.kisters.de/config/electron/HyCommunicator.exe</a>
Web version (mobile & desktop)	<a href="https://hyconnect.kisters.de/config">https://hyconnect.kisters.de/config</a>

#### Functionality

- Device information overview
- Visualize 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

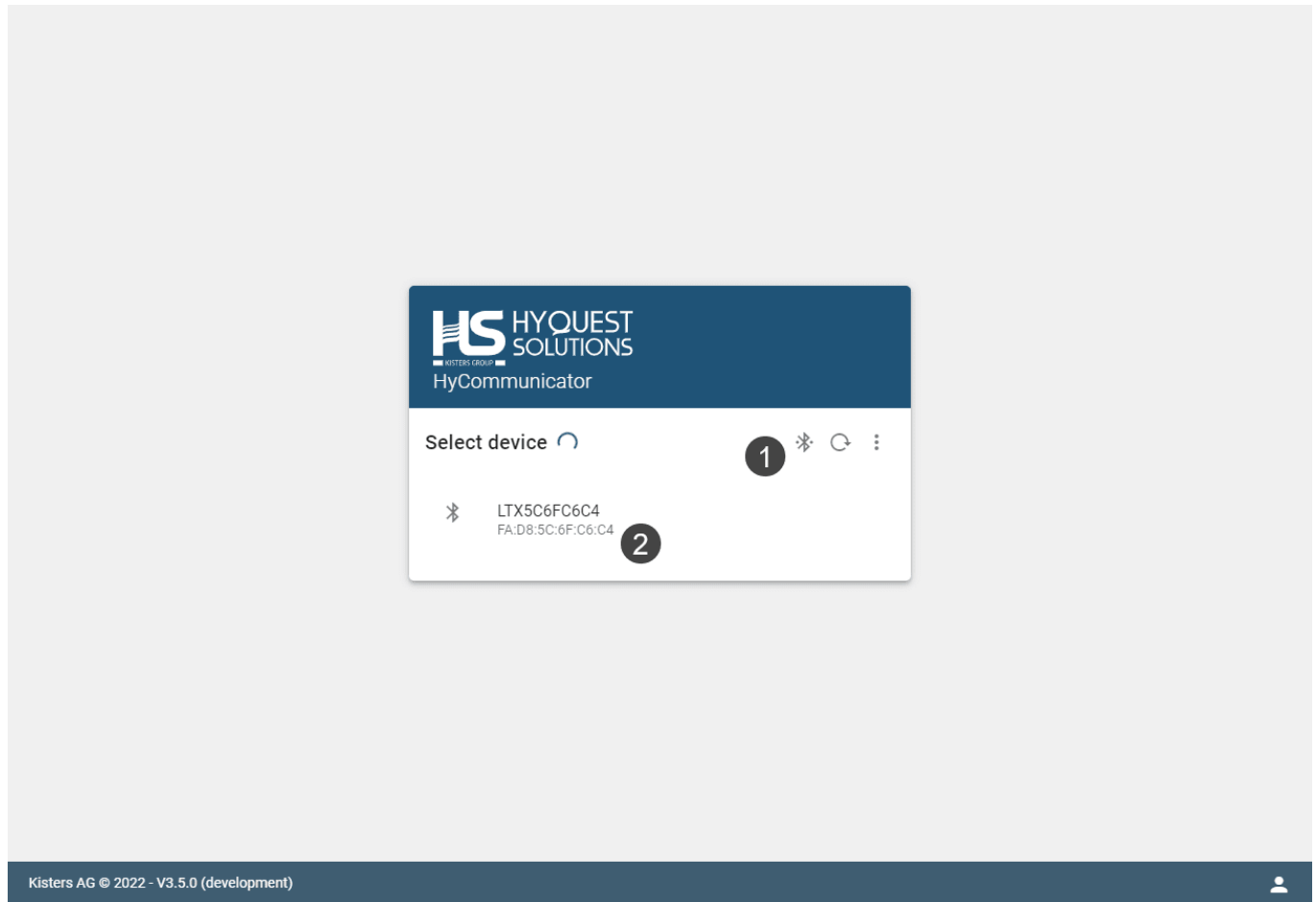
### 3.2 HyCommunicator

This chapter contains the following subsections:

- [Connecting to the Device](#) <sup>24</sup>
- [Device Overview](#) <sup>25</sup>
- [Device Measurement Testing and Visualisation](#) <sup>26</sup>
- [Device Integrations](#) <sup>27</sup>
- [Device Configuration](#) <sup>27</sup>

### 3.2.1 Connecting to the Device

In order to connect to the device, make sure you have enabled Bluetooth on your phone or computer and open the HyComm website or windows client. Connected devices are automatically recognised. In the event 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.



Note	Description
1	Click to scan for nearby Bluetooth devices.
2	Once the device is found, click on the device to connect to it.



### 3.2.2 Device Overview

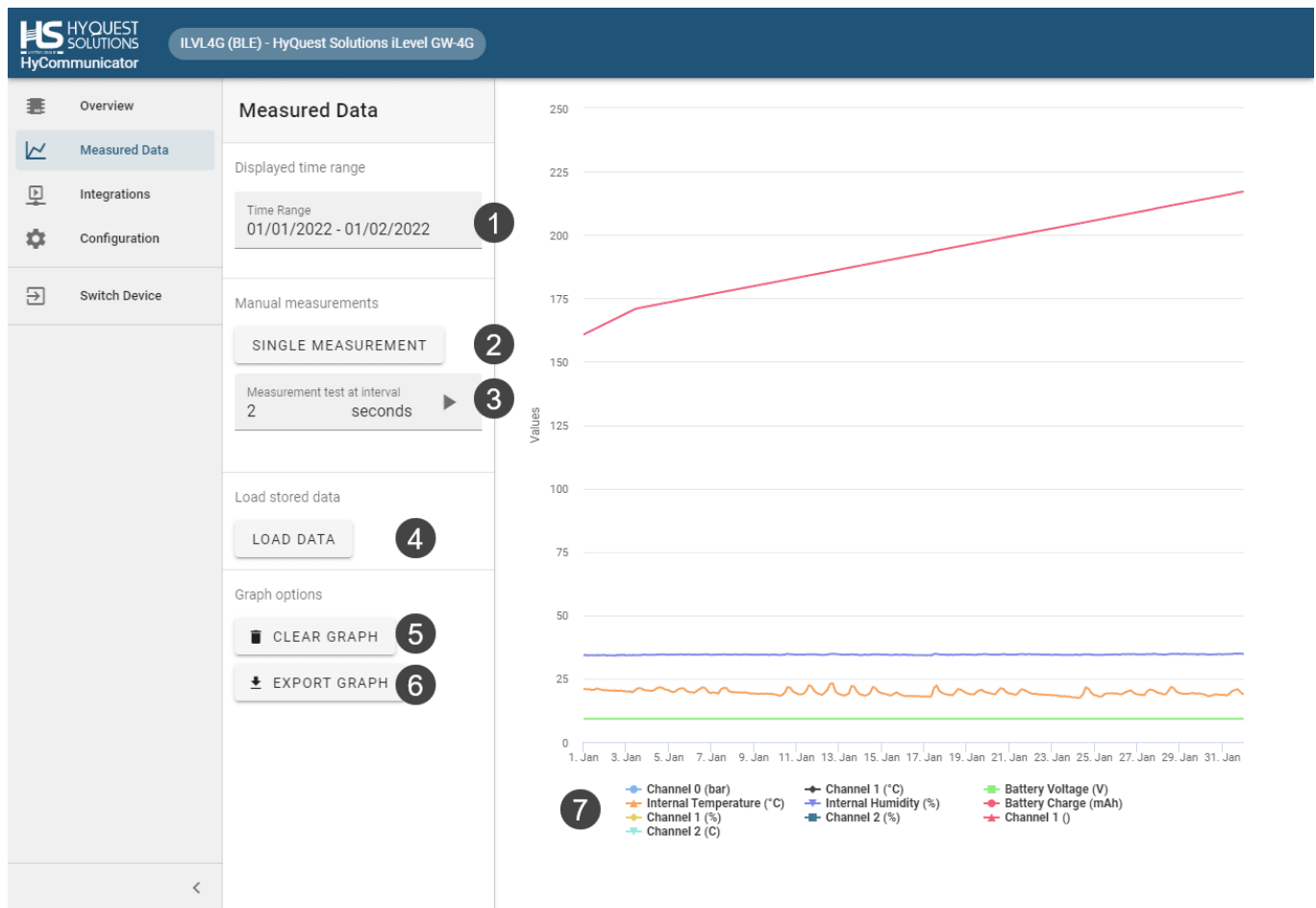
The screenshot displays the 'BLE -iLVL4G Device Overview' page. On the left is a sidebar menu with five items: Overview, Measured Data (marked with a '5'), Integrations, Configuration, and Switch Device. The main content area is divided into several sections:

- General:** Device ID (iLVL4G), Time Sync (1644484698 seconds difference), Firmware version (0.7), and Bluetooth RSSI (-49 dBm).
- Data Transmission:** Transmission method (iLevel Server - 4G), Transmission interval (10800 seconds), iLevel Server (hyconnect-devupload.kisters.de:80, marked with a '1'), and GSM APN (iot.1nce.net).
- Data Acquisition:** Enabled interfaces (Battery Voltage, Battery Charge, Internal Temperature, Internal Humidity, SDI-12, marked with a '2') and Measurement interval (1800 seconds).
- Memory:** Storage used (12.5%, marked with a '3') and Total storage size (2097152 bytes, marked with a '4').
- HyConnect Integration:** Registration status (Not Found, marked with a red 'x').

Note	Description
1	How and when data is transmitted.
2	What and when data is measured.
3	Information on the device's internal storage.
4	Click on the bin to clear the internal device measurement data storage.
5	Menu sidebar, click to access other pages.

**Note:** When the measurement interval is 1800 seconds (30 minutes) and the transmission interval is 10800 seconds (3 hours), this means the device performs a measurement every 30 minutes and transmits this data every 3 hours.

### 3.2.3 Device Measurement Testing and Visualisation



Note	Description
1	Click to adjust the time range displayed on the graph.
2	Click to trigger a manual one-off measurement.
3	Click to start/stop a manual test measurement at a specific interval.
4	Click to visualize the data stored on the device.
5	Click to clear the graph; internal data is not wiped.
6	Click to export the graph to various formats (PDF, JPEG, PNG, CSV, EXCEL, Printer)
7	Legend with the measured interfaces listed; click on an item here to hide/show that interface's data in the graph.

### 3.2.4 Device Integrations

The screenshot shows the HyQuest Solutions HyCommunicator interface. The top header displays the logo and the device model 'iLVL4G (BLE) - HyQuest Solutions iLevel GW-4G'. The left sidebar contains navigation options: Overview, Measured Data, Integrations (highlighted), Configuration, and Switch Device. The main content area is titled 'Integrations' and features a card for 'Datsphere'. The card includes the Datsphere logo, a checkmark indicating 'Device Compatible', a Wi-Fi icon for 'Internet', a circled '1' indicating a step, and a blue 'SETUP' button.

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

### 3.2.5 Device Configuration

This chapter contains the following subsections:

- [Saving and loading](#) <sup>28</sup>
- [Configuration: General](#) <sup>29</sup>
- [Configuration: Measurements](#) <sup>30</sup>
- [Configuration: Transmission](#) <sup>33</sup>
- [Configuration: Time and Date](#) <sup>36</sup>
- [Configuration: Firmware Updates](#) <sup>37</sup>

### 3.2.5.1 Saving and loading

The screenshot displays the HyQuest Solutions HyCommunicator interface for an iLevel GW 4G device. The top navigation bar includes the logo and the device name. A left sidebar contains menu items: Overview, Measured Data, Integrations, Configuration (highlighted), and Switch Device. The main content area is divided into two sections: Configuration and Device Identification. The Configuration section has a sub-menu with General, Measurements, Transmission, Date & time, and Firmware updates. The Device Identification section shows the Device ID as ILVL4G. Three numbered callouts are present: 1 points to the Folder icon, 2 points to the Save icon, and 3 points to the Transmission menu item. A page number '6 / 12' is visible in the bottom right corner of the interface.

Note	Description
1	Click on the <b>FOLDER</b> button to load the configuration from the device, or from a configuration file on your computer.
2	Click on the <b>SAVE</b> button to save the configuration to the device, or to a configuration file on your computer.
3	Click to access pages for various parts of the configuration.

### 3.2.5.2 Configuration: General

#### Device Identification

Device ID

1

Device ID  
ILVL4G

6 / 12

Note	Description
1	The ID of the device, can be used to give the device a name.

### 3.2.5.3 Configuration: Measurements

#### Measurement Interval

Measurement interval **1** Measure every **1800** seconds  
 30 minutes

#### SDI12

SDI-12 Devices

**SDI-12 Device** **2** ✎ ✕

Address: 2  
 Command: M (1 values logged)

+

Note	Description
1	Decides how often the device measures. Value given in seconds.
2	SDI-12 devices can be added by clicking on the +. Configuration is done in three steps: Devices <ul style="list-style-type: none"> <li>▪ Measurements               <ul style="list-style-type: none"> <li>▪ Values</li> </ul> </li> </ul>

×
Editing SDI12 device

---

### Device

Address 1 SDI-12 Address 2

---

### Measurements

MEASUREMENT (M) 2 ADD MEASUREMENT +

Command 3 Command M

Power up delay 4 Power up delay (ms) 1800 milliseconds

Returned data

Value at index 2M!->0 ×

Index in returned data

0

Unit

°C

CANCEL
EDIT

Note	Description
1	Address of the SDI-12 device.
2	Measurements (Commands) to perform.
3	The command to issue.
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.

**Value at index 2M!->0** ✕

---

Index in returned data  
0

---

Unit  
°C

---

Conversion factor                      Conversion offset  
1    0

---

Precision (decimals)  
2

---

Alarming

Values returned by the SDI-12 command, each value must be specified. Optionally, alarms with an upper and lower threshold can be specified.

## Internal Parameters

Internal measurements

- Battery Voltage
- Battery Charge
- Internal Temperature
- Internal Humidity

1

Note	Description
1	Internal interfaces can be enabled to collect maintenance data every transmission, example: Enable/Disable the battery interface. Having this disabled will make the device not record any battery data.



### 3.2.5.4 Configuration: Transmission

#### Transmission interval

Transmission interval **1** Transmit every 10800 seconds  
3 hours

#### iLevel Server

MAC Address **2** MAC Address 633CBAD85C6FC6C4

Server **3** Server address hyconnect-devupload.kisters.de Server port 80

URL Path **4** URL Path upload/ilevel/4g

Server Key **5** API Key LX1310

Note	Description
1	Interval at which the device transmits, specified in seconds.
2	MAC Address of the device, used to identify the device on the data upload server, can not be changed.
3	Hostname / IP and port used of the HTTP data upload server.
4	Path of the script that handles the data uploads from the device.
5	API key to authenticate with the data upload server.

## GSM

APN

1

APN  
iot.1nce.net

Credentials

2

Username

Password

Pin

3

Pin  
0

Note	Description
1	SIM card APN.
2	If required, username and password for SIM.
3	If required, pin of the SIM card.

## Radio Access Technology

- Modem Power Mode **1** Modem Power Mode  
Internet transfer, turn on and off for each transmissi... ▼
- Retries for Network Errors **2** Retry mode  
No retries. ▼
- Modem Reload **3** Restart modem every  
300 transmissions
- Roaming **4**  Roaming
- Local Logging **5**  Log to file
- 6**  Log to UART

Note	Description
1	How and if the device should power up its modem, default is to only turn on the modem briefly for an internet transmission.
2	Configures how many retries should be attempted in the case that the device cannot find the server.
3	Repowers the modem every x number of transmissions, used for maintenance.
4	Whether to use roaming for the SIM.
5	Whether to log to a file on the iLevel's file system. Leave it on for data transmissions.
6	Whether to log to the internal UART port.

### 3.2.5.5 Configuration: Time and Date

#### Date & Time

Current time difference to  
computer

1

seconds difference  
1644484698

Sync time with PC on save.

#### Time Server Sync

Timezone

2

Timezone offset  
0

minutes

Note	Description
1	The current time on the device, can be changed by syncing it to the PC.
2	Time zone offset in minutes, recommended leaving this at UTC (+0) when visualizing data through an online data viewer like datasphere.

### 3.2.5.6 Configuration: Firmware Updates





#### Update Firmware

Firmware version

The screenshot shows a firmware update interface. On the left, the text 'Firmware version' is displayed. To its right is a white box containing the following information: a large black circle with the number '1' is positioned to the left of the text 'HyQuest Solutions ILevel GW-4G' and 'Version 0.7'. Below this, a grey pill-shaped button with a clock icon and the text '06/07/2021 11:03:57' is shown. At the bottom right of the white box, a large black circle with the number '2' is positioned to the left of a dark blue button with the white text 'SELECT FIRMWARE FILE'.

Note	Description
1	The current firmware version.
2	Click this button to open a dialog where you can select a new firmware file. The device will reboot once the process is complete.

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