



Instruction Manual

Smart (Powered) Hub • weatherproof passive RS485 hub and optional power supply

Please check regularly for updates.

1. Important user information

Dear customer, thank you for purchasing a Kipp & Zonen instrument. It is essential that you read this manual completely for a full understanding of the proper and safe installation, use, maintenance and operation of your Smart (Powered) Hub.

We understand that no instruction manual is perfect, so should you have any comments regarding this manual we will be pleased to receive them at:

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Warranty and liability

Kipp & Zonen guarantees that the product delivered has been thoroughly tested to ensure that it meets its published specifications. The warranty included in the conditions of delivery is valid only if the product has been installed and used according to the instructions supplied by Kipp & Zonen.

Kipp & Zonen shall in no event be liable for incidental or consequential damages, including without limitation, lost profits, loss of income, loss of business opportunities, loss of use and other related exposures, however incurred, arising from the faulty and incorrect use of the product.

Modifications made by the user may affect the instrument performance, void the warranty, or affect the validity of the CE declaration or other approvals and compliances to applicable International Standards.

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Kipp & Zonen reserves the right to make changes to this manual, brochures, specifications and other product documentation without prior notice.

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Changes:

Updated connections to RaZON⁺

Declaration of Conformity



Kipp & Zonen B.V.
Delftechpark 36, 2628 XH Delft
P.O. Box 507, 2600 AM Delft
The Netherlands

declares under our sole responsibility that the product

Smart Powered Hub

to which this declaration relates, is in conformity with European Harmonised Standards
as published in the Official Journal of the EU, based on the following standard

[EMC - Emissions] **EN 61326-1:2013**
EN 61000-6-4
EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
EN 61000-4-11

following the provisions

EMC-directive **2014/30/EU**

LVD Directive **2014/35/EU**

also, this device complies to

[EMC - FCC] **Title 47CFR part 15**

Delft, 1 July 2018



E. Valks - CEO
Kipp & Zonen B.V.

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2. Introduction

Reading this entire manual is recommended for a full understanding of this product..



The triangle with exclamation mark is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the instrument.



This electrical equipment should only be serviced by authorized personnel, meaning people who have been trained and designated as “authorized” by their employers.



Useful information for the user

2.1. Safety precautions

Many hazards are associated with installing and maintaining instruments on towers or elevated structures. It is advised to use qualified personnel for installation and maintenance. The client is responsible for following the local safety regulations. The use of appropriate equipment and safety practices is mandatory. Check your company's safety procedure and protective equipment prior to performing any work. If the Smart (Powered) Hub is mounted at a high position, special care must be taken to secure both the person installing it and the instrument from falling during installation.

While every attempt is made to get the highest degree of safety in our products, the client assumes all risk from injuries resulting from improper installation, use or maintenance of the Smart (Powered) Hub.

2.2. Waste disposal



The pictogram showing a waste bin with a cross means that the product is subject to European Union regulations covering segregated waste disposal. This applies both to the product itself and to any accessories marked with the same symbol. Disposal of any such item as unsorted domestic waste is not allowed.

2.3. Customer support

In case you need support, please contact:

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2.4. Warranty and liability

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Kipp & Zonen shall in no event be liable for incidental or consequential damages, including without limitation, lost profits, loss of income, loss of business opportunities, loss of use and other related exposures, however incurred, arising from the incorrect use of the product. Modifications made by the user can affect the validity of the CE or FCC declaration.

3. Product overview

This manual, together with the instruction sheet, provides information related to the installation, maintenance, product specifications and applications of the Smart (Powered) Hub.

If any questions should remain, please contact your local Kipp & Zonen representative or e-mail the Kipp & Zonen customer and product support department at: support@kippzonen.com

Please go to www.kippzonen.com for information about other Kipp & Zonen products, or to check for any updates to this manual or software.

3.1. The Smart (Powered) Hub

The Smart (Powered) Hub instrument is a unique, weatherproof passive RS485 hub and when powered comes with 24V, 2.2A power supply.

The 24V output is useable for the Kipp & Zonen Smart instruments like the SMP-series, the SGR3 and 4, SUV-series and many more, as well as the RaZON+ Solar Monitoring System.

3.2. Intended use

The Smart Hub is a device to act as a passive RS485 hub for 6 inputs and 1 output. The Powered version adds the possibility to power instruments with 24V up to a maximum of 2.2A.

The Smart (Powered) Hub is meant to be mounted outside and in the shade. It is fully waterproof (IP65) and can be cleaned in the same way as solar instruments, both wet and dry.

3.3. Included with the product

Check the contents of the shipment for completeness (see below) and note whether any damage has occurred during transport. If there is damage, a claim should be filed with the carrier immediately. In the case of damage and/or the contents are incomplete, contact your local Kipp & Zonen representative or e-mail the Kipp & Zonen customer and product support department at: support@kippzonen.com

Contents of part number 0382440: Smart Powered Hub and Hirschmann CA3LD power plug



Contents of part number 0382445: Smart Hub



Contents of part number 0382446: Smart Pole Mount plate, 2x small \varnothing 50 - 370 mm and 2x large \varnothing 30-90 mm hose clamp, 4 screws M4 x 20



Although all Smart (Powered) Hubs are weatherproof and suitable for use in harsh environmental conditions, they have some delicate parts. Please keep the original packaging for safe transport of the instrument to the measurement site, or for use when returning the instrument for possible repair.

4. Installation

Please follow the instructions in this section carefully for the mechanical and electrical installation of the Smart (Powered) Hub.



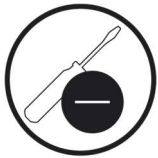
Do not turn on power to the Smart Powered Hub, do not connect the Smart (Powered) Hub to a computer, logger or SCADA system, until instructed to do so.

4.1. Tools required

The tools required to install the Smart (Powered) Hub are:



Phillips screwdriver

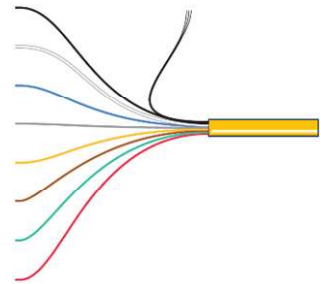


Flat blade screwdriver 3mm for wire connections
5mm for optional pole mount

4.2. Pre-installation

Prior to installation site it is wise to prepare all cables.

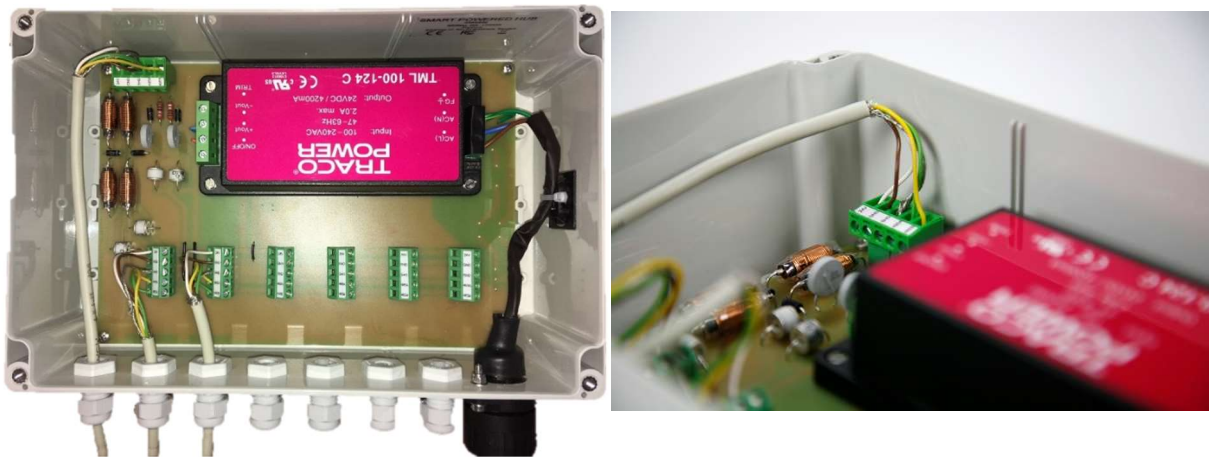
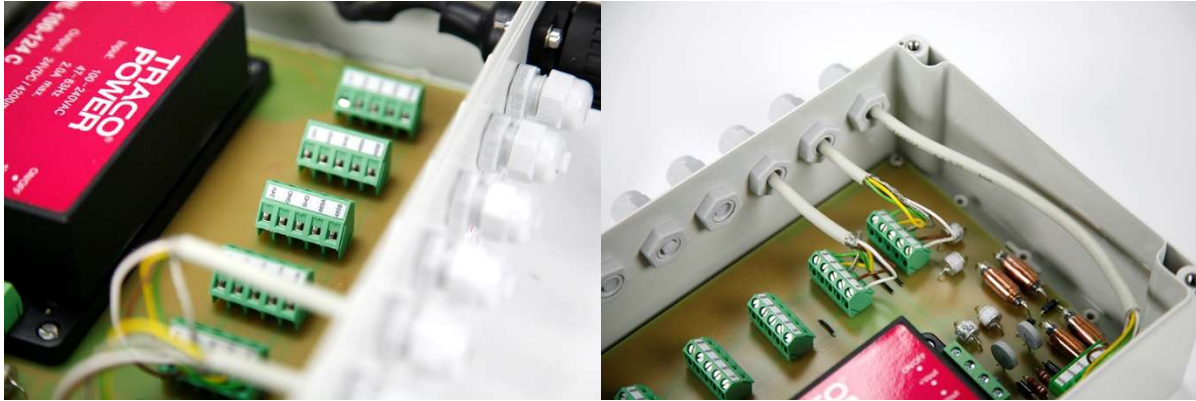
- Max. 6 data cables in and 1 data cable out
 - Supported data cable diameter 3.5 – 7mm
 - Look up the wire colours used by each instrument
 - Data +, Data -, RS485 GND, Power +, Power GND
 - Free these wires for about 6cm
 - Strip these wires for 5mm
 - Remove wires not used
-
- Supported power cable diameter by the Hirschmann CA3LD plug 6 – 12mm
 - The system is delivered with the plug and the user needs to supply his own power cord.
 - Make sure the cable is not attached to the mains
 - Free the 3 wires for about 4cm
 - Strip these wires for 5mm



4.3. Connecting the data cables to the Smart (Powered) Hub

Below is a wiring example of the Smart Powered hub. The 485A and B connections are passive and the only thing important is that all instruments and the data logger – SCADA system are connected the same way.

- All “A – Data–“ wires to 485A and all “B-Data+” wires to 485B
- All shields to SHD
- All power ground connections to GND
- All power + connections to 24V



Do not forget to tighten the cable glands to ensure a waterproof installation.



4.3.1. Cable connections for Kipp & Zonen and Lufft products:

Smart **Powered** Hub

SPH terminal	SMP/SHP/SGR SUV/DustIQ		RT1 (black data cable)		RaZON AUX t.b.a. (data only)		Power to RaZON	IMT panel temperature		Lufft WSx UMB	
+24V out		white	red	red		not used	pin 1	red	red		pin 1 brown
GND		black	blue	blue		black	pin 2		black		pin 2 white
SHE		shield		shield		shield			thick black		not used
A-		grey		grey		wit			orange		pin 4 yellow
B+		yellow		yellow		Brown			brown		pin 3 green

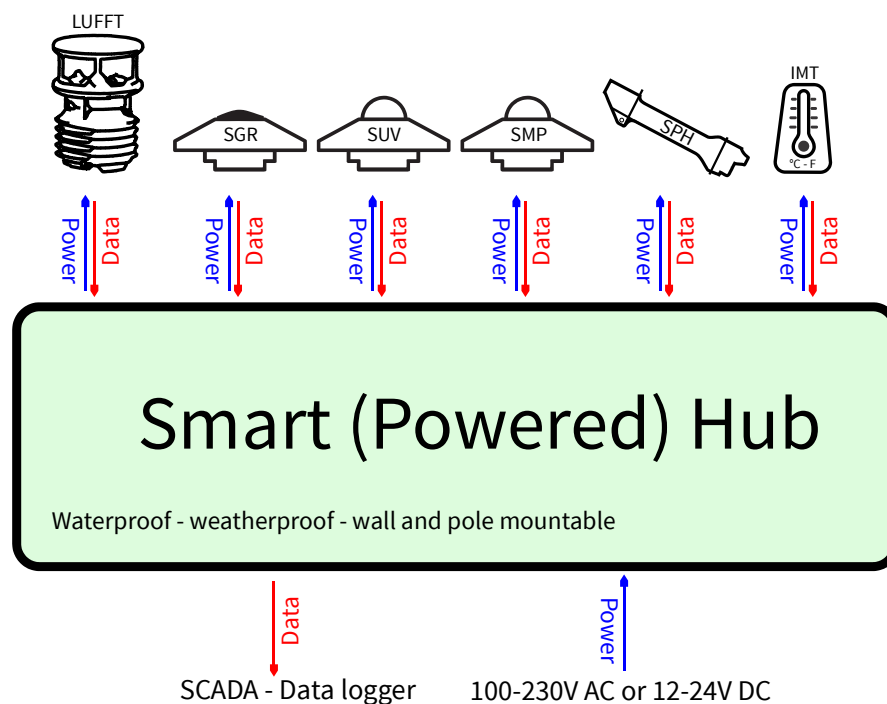
note: only connect shield when instruments are not properly grounded

Smart **Unpowered** Hub

Smart Hub Terminal	SMP/SHP SGR/SUV		RT1 (black data cable)		RaZON AUX (data and power) t.b.a.		IMT panel temperature		Lufft WSx UMB	
+24V in		white	red	red	green	green	red	red		pin 1 brown
GND		black	blue	blue		black		black		pin 2 white
SHE		shield		shield		shield		thick black		not used
A-		grey		grey		wit		orange		pin 4 yellow
B+		yellow		yellow		Brown		brown		pin 3 green

note: connect shield when instruments are not properly grounded

note: max. 400mA current from RaZON+ to instruments attached to the Smart Hub (end 2018)






Possible Kipp & Zonen cables for the SMP, SPH, SGR, SUV series.

- 2523146 Waterproof 8-pin plug only
- 0362621 10 m cable • pre-wired with waterproof 8-pin plug
- 0362623 25 m cable • pre-wired with waterproof 8-pin plug
- 0362624 50 m cable • pre-wired with waterproof 8-pin plug
- 0362625 100 m cable • pre-wired with waterproof 8-pin plug

4.4. Connecting the power cable to the Hirschmann CA3LD plug

The pin numbers and ground connection for the individual wires are visible when opening the connector.

AC power connections

Pin 1		Brown (Line)
Pin 2		Blue (Neutral)
Pin 3		Not used
Pin 4		Green/Yellow Earth

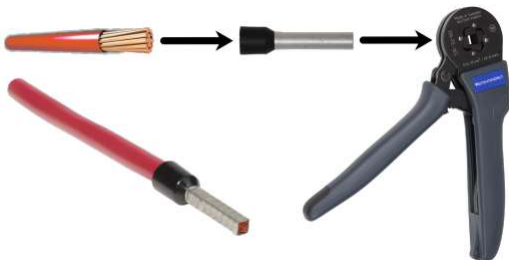


Make sure the cable is not attached to the mains.



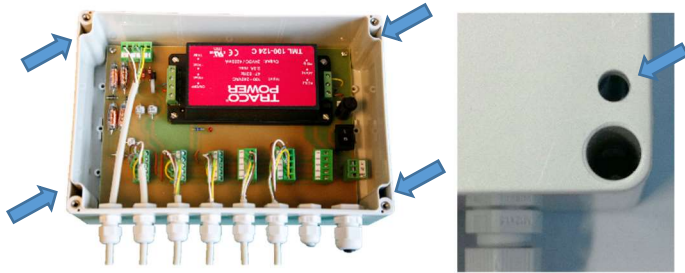
Care must be taken to connect the right wires to the right pins, making sure that the wires are sufficiently isolated right up to the pin. Also tighten the cap properly for a secure, waterproof installation.

Best practise is to use wire ferrules.



4.5. Mounting the Smart (Powered) Hub outside

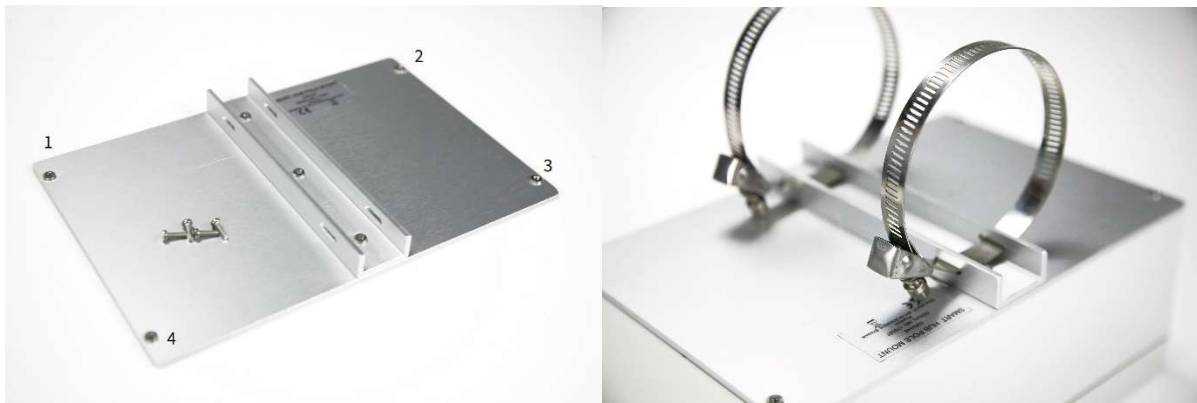
The Smart (Powered) Hub is wall mountable whilst remaining waterproof by using the 4 holes as indicated. Maximum screw diameter is 4mm.



Optionally a pole mount kit is available.

This mounts to the back of the housing with the 4 supplied M4x20 screws. The screws are inserted in the openings marked above with a blue arrow and go into the threads on the four corners of the pole mount.

The pole mount allows for two hose clamps to be fitted around an existing pole. (large clamps \varnothing 50 - 370 mm or small clamps \varnothing 30-90 mm)



Once everything has been connected and checked it's time to power the Smart Powered Hub and check if data is being received by the data logger – SCADA system or PC.

5. Maintenance

The Smart (Powered) Hub instrument is simple to maintain and doesn't require any special tools or training. There are no service items requiring scheduled replacement.

5.1. Yearly maintenance

Check all the electrical connections.

Check cables for damage caused by accident or by rodents.

Check the mounting.



Before opening the Smart Powered Hub, make sure to remove mains power.

5.2. Cleaning

As the Smart (Powered) Hub has been built using weatherproof materials there is no need to clean the unit. If wanted anyway a solution of water and washing up liquid is advised.

6. Specifications

Kipp & Zonen reserves the right to make changes to specifications and other product documentation without prior notice.

6.1. Electrical and environmental

Input	100-240V, 47-63Hz, 2A max
Power consumption	5- 80W depending on load, min. 90% efficiency
Connection	Hirschmann CA3LD plug
EMI	meets EN 55032, class B
Protection	class II prepared
Output voltage	7x 24V ± 1V
Output current	2200 mA max in total
Ambient working temperature	-20 to +50 °C
Storage temperature	-20 to +80 °C
IP Class	IP65
Cable gland support diameters	3.5-7mm for data and DC power, 4.5-10mm for AC power

6.2. Dimensions and weight

Dimensions Smart (Powered) Hub packed	29 x 20 x 15 cm
Dimensions unpacked	24 x 18 x 9 cm
Weight Smart Powered Hub packed	1.6 kg
Weight Smart Powered Hub unpacked	1.4 kg
Weight Smart Hub packed	1.1 kg
Weight Smart Hub unpacked	0.9 kg
Dimensions Pole Mount Kit packed	30 x 16 x 6.5 cm
Weight pole mount kit packed	0.7 kg

IP65 Protection against Dust	IP65 Protection against Water
First digit	Second digit
0 – no protection	0 – no protection
1 – protection against large foreign bodies	1 – protection against dripping water
2 - protection against medium foreign bodies	2 – protection against inclined dripping water
3 - protection against small foreign bodies	3 – protection against spray water
4 - protection against foreign bodies	4 – protection against splash water
5 – Dust protected	5 – protection against water jets
6 – Dust tight	6 – protection against powerful water jets
	7 – protection against immersion
	8 - protection against submersion



7. Trouble shooting

There are no user-serviceable parts within the Smart (Powered) Hub instrument and it must not be taken apart without the agreement and instruction of Kipp & Zonen and only by qualified personnel.

7.1. Output power not present or incorrect or data incorrect

The following contains a procedure for checking the Smart (Powered) Hub in case it appears that it does not function correctly:

1. Check the power supply (100 – 240V AC).
A small LED should be visible with opened case
2. Check the combined power consumption of the attached devices and make sure it doesn't exceed 2200 mA
3. Check if all instrument cables are properly connected.
All Data + to one point and all Data – to one point
4. Check that all instruments have a unique Modbus® address and the same and right communication parameters.
5. Check the connection to the data logger, SCADA system or host PC.

Any malfunction or visible damage should be reported to your Kipp & Zonen representative, who will suggest the appropriate action.

7.2. Frequently Asked Questions

The most frequently asked questions are listed below. For an update or further information refer to our website at www.kippzonen.com

Q: Question (t.b.a.)

A: Answer



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worldwide network of sales offices, sales representatives and distributors.

Meteorology Division of

