Product Manual / User Instruction

CLINKTWIN Satellite & Data Hub Model 2

Industrial **Data tracking** Solutions

Satellite **CS-TD** Model 2
Satellite **CS-U** Model 2
Satellite **CS-I** Model 2
Data Hub **CH** Model 2

ENG

Product Manual / User Instruction

1.   Safety Instruction

- Please read these Product manual / User Instruction carefully prior to start the usage of **CLINKTWIN** Technology.
- Disregarding of application instructions or technical information (mounting, electric connection, usage etc.) can lead to damage to property and / or personal injury.
- Use **CLINKTWIN** only in the foreseen suitable non security and / or safety related use cases.
- To start installation of **CLINKTWIN** without setting the equipment and the surrounding safe in advance is strictly forbidden!
- Even if **CLINKTWIN** should have no influence on Sensors and / or equipment Functions: The re-start of any equipment which was equipped with **CLINKTWIN** have to happen carefully and with highest priority for personnel and equipment safety!

2.   Installation Instruction

In order to ensure a proper function and reliable **CLINKTWIN** Signal transfer, it is important and necessary, to observe and understand the installation instructions described in these document!

Please keep in mind, that **CLINKTWIN** Data Tracker were presumably installed since years, prior to the day one detect any equipment or Sensor malfunction etc.. A proper installation is essential to guarantee a reliable Signal transfer as base to minimize bad surprises.

In order to avoid **CLINKTWIN** damages, f.e. to the housing, the use of mechanical tools for mounting reasons must be carried out carefully and with minimized mechanical load.
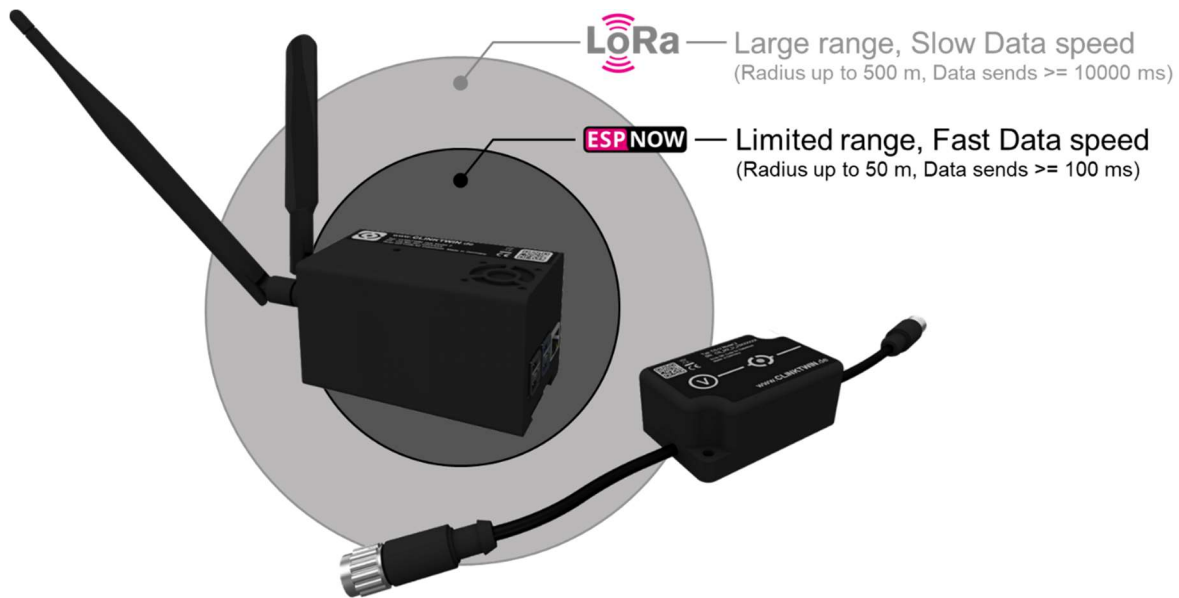
How to decide for a suitable position?

To guarantee a proper safe **CLINKTWIN** Data acquisition it is mandatory, to detect and decide for a suitable position for Satellites and Data Receiver, the Hub.

CLINKTWIN Satellites Model 2
(Sensor connection for Signal acquisition)

CLINKTWIN Hub Model 2
(Satellite Data Receiver & Interface)

To make the for you ideal choice to install your **CLINKTWIN** Technology, one can differ generally between 2 **CLINKTWIN** Data acquisition scenarios:

A. LoRa - Large Range by using slow data send rate
B. ESP NOW - Limited range by using by using fast data send rate

LoRa — Large range, Slow Data speed
(Radius up to 500 m, Data sends >= 10000 ms)

ESP NOW — Limited range, Fast Data speed
(Radius up to 50 m, Data sends >= 100 ms)

Even the option to cover a wide range by using fast data speed is possible, only ends up in the need for additional Hub´s.

The first decision to be made: What speed of data sends is really needed, to build benefit out of my data, and what is the range of acquisition I want to cover?

Further frame conditions to position it?

CLINKTWIN is a technology, which is using options for wireless data transfer. Electric conductive materials have in general a shielding effect. This frame condition is something one need to have in mind, while looking for the perfect **CLINKTWIN** position too. Run the Technology within a high-see container is something, which is not meaningful, as long as the Hub, as Transfer Technology, is not in the same one.
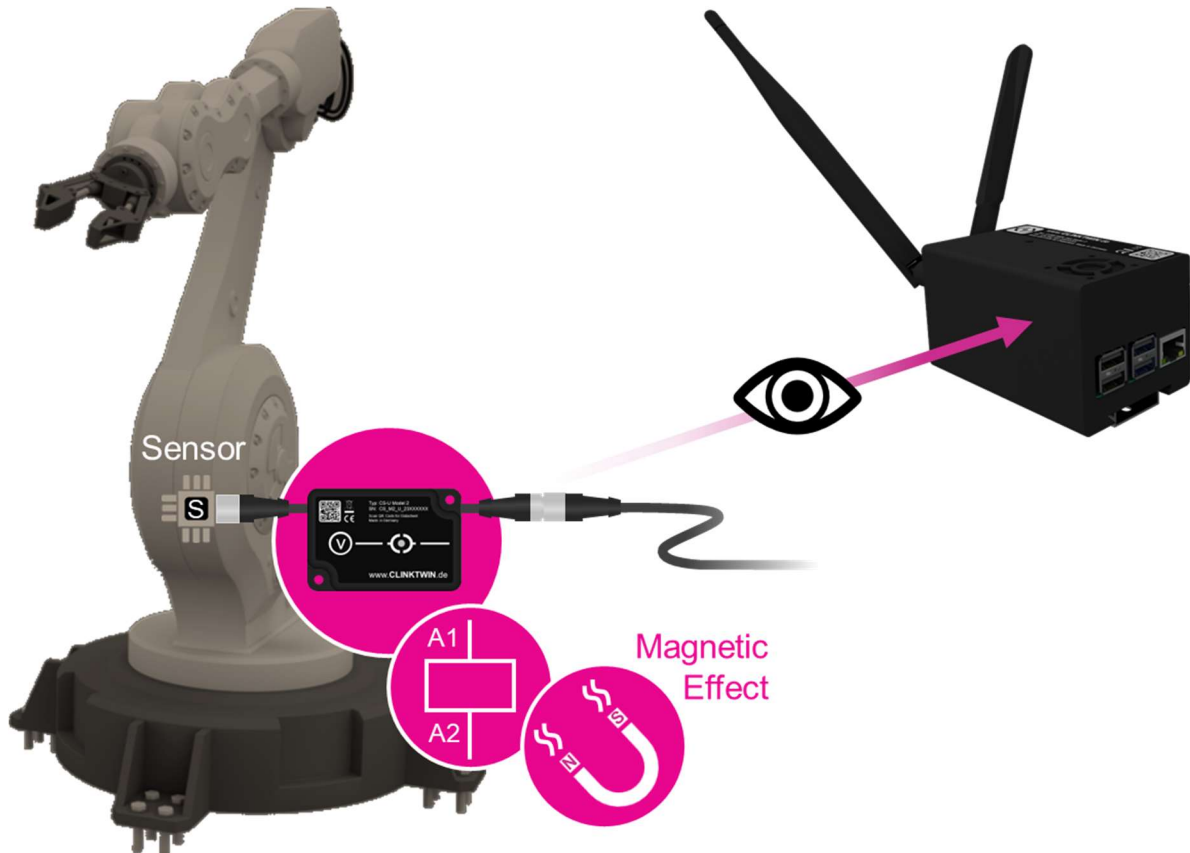
👁 The ideal Scenario? Direct View from Satellites (Sender) to Data Hub (Receiver).

Note: Try to avoid large shielding components around the **CLINKTWIN** Hub - Shielding Effect

Do not install **CLINKTWIN** Satellites in terminal boxes etc. - Shielding Effect!

Do not install any **CLINKTWIN**s in direct environment or next to magnetic components as Electric Relays – Could cause in worst-case malfunctions!

How to fix it mechanically?

CLINKTWIN CS Satellites can be easily installed by using the 2 x M4 Screws, or, if the direct installation to any wall is preferred, the available SPAX Screws solution (+ Dowel).

The **CLINKTWIN** CH Hub housing is designed to fit to standardized DIN rail. Rail and Hub, clean environments assumed, can be mounted by fixing the DIN rail with 2 x SPAX Screw (+Dowel) direct to any building wall, or, by use of the further available metric M4 Screws, to any other underground.

Note: All above pictured mounting solutions for Hub and Satlelites (Metric, SPAX etc.) are scope of delivery. Tighten Screws careful and without high mechanical forces!

3. Import comments for Electric Connection

The electric installation / connection of **CLINKTWIN** CS Satellites into any machinery or equipment, as well as the **CLINKTWIN** CH Hub installation, is only allowed for qualified electrician who have the needed official qualification to work in and with these environments. Follow the national and international regulations for the installation of electrotechnical systems.

For those, who have not the needed permission to work in electric environments, it is strictly forbidden, to make the installation works explained in the following. If needed, please look for qualified support by a qualified electrician.

CLINKTWIN CS Satellite Devices work only by use of DC (Direct Current) Power Supply Units. Do not direct connect AC (Alternating Current) Power Supply Units. **CLINKTWIN** CS Devices are not designed for direct AC Power Supply Units!

For further Details on how to connect Hub and Satellites, read attentive the following explanation "How to connect **CLINKTWIN** electrically". You will find further Technical Details in Chapter 6 "Technical Data".

4. How to connect **CLINKTWIN** electrically?

CLINKTWIN CS Satellites works by using 24 Volts DC Power Supply. Lower Voltages (f.e. 12 V DC) will not destroy a CLINKTWIN, but can cause malfunctions.

Direct connection of a **CLINKTWIN** CS to 230 V DC is, provided that the correct specified Plug-in Power supply is used, possible too (details see below).
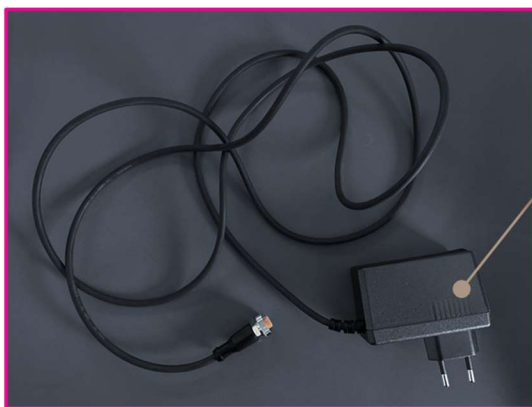
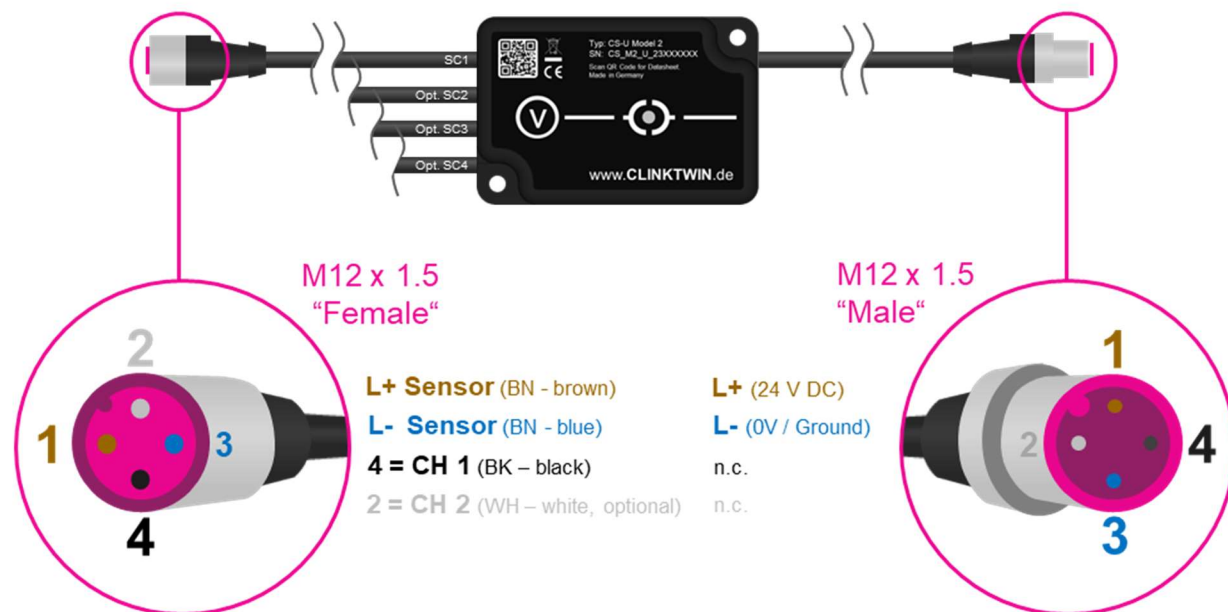**CLINKTWIN** CS Plug-in
Power supply 24 V DC 1 A

Output voltage:	24 Volt (V) DC
Output current:	1 Ampere (A)
Input Voltage range:	90…264 V AC
Frequency range:	47…63 Hz
Connection Plug:	M12 x 1.5 (Socket)
Cable length:	2000 mm

Note: Do not connect CLINKTWIN Technology direct to 230 V AC or similar AC Voltage! Direct AC connection will destroy any CLINKTWIN technology irreversible!

All **CLINKTWIN** Satellite Solutions are using M12 x 1,5 Sensor Plug ("Male", picture below right hand) to get connected to any 24 V DC Power Supply.

Senor / Signal

Power Supply

M12 x 1.5 "Female"

L+ Sensor (BN - brown)
L- Sensor (BN - blue)
4 = CH 1 (BK – black)
2 = CH 2 (WH – white, optional)

M12 x 1.5 "Male"

L+ (24 V DC)
L- (0V / Ground)
n.c.
n.c.

The Sensor Connection of all available **CLINKTWIN** Satellites is realized by using M12 x 1.5 Sensor Socket too ("Female", picture below left hand). Further connection Details as PIN assignment 1 to 4, colouring of cables as well as Plug assignment the can be taken from the illustration as well as from the List below:

1 = BN (brown)   L+ (24 Volt DC)

3 = BU (blue)   L- (0V / Ground)

4 = BK (white)   CH 1 (Channel 1 / Sensor Signal 1)

2 = WH (white)   CH 2 (Channel 2 / Sensor Signal 2, option only!)

Note: Standard M12 x 1.5 Plug / Socket. Contact us for any deviating requirements. Do not disconnect any Sensors from Controls, prior to make the equipment safe!

Different **CLINKTWIN** CS Satellite Solution are capable to forward different sensory signals. A detailed overview, about what Type of Satellite is forwarding which sensory signals, is shown in the simplified Product explanation below:

CS-U - **Analoge Voltage** Signal

Connect up to 4 Sensors (suitable for 24 V DC Power Supply) having analoge Voltage output in range of 0 - 30 V DC.

24 V DC Power Supply

Typ: CS-U Model 2
SN: CS_M2_U_XXXX….
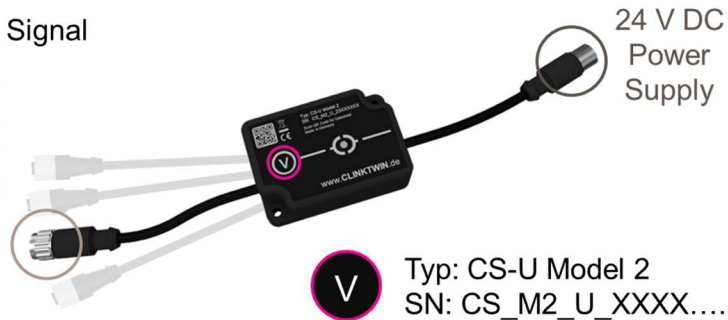
CS-I - **Analoge Current** Signal

Connect up to 4 Sensors (suitable for 24 V DC Power Supply) having analoge Current output in range of 0 – 20 mA.

24 V DC Power Supply

Typ: CS-I Model 2
SN: CS_M2_I_XXXX….
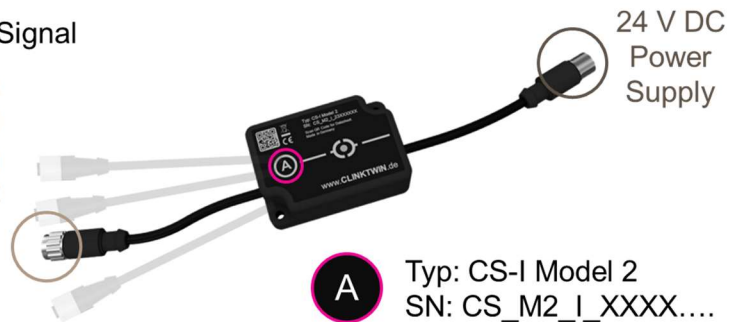
CS-TD - **Digital Temperature** Signal

Connect up to 4 Digital Temperature Sensors using a digital one-wire BUS Signal, range - 55 to + 125 °C (available as accessoires).

24 V DC Power Supply

Typ: CS-TD Model 2
SN: CS_M2_TD_XXXX…

Note: Always check, that the Sensor you want to connect / combine with a **CLINKTWIN** Satellite, fits to each other! As mentioned already, do never disconnect any Sensors from Controls, prior to make the equipment safe! Do not disconnect and use any Sensors and use it for CLINKTWIN, when machinery Control need it as well! Safety must have always and everywhere highest priority!

Each **CLINKTWIN** Satellite solutions can be ordered in Versions for to connect 1, 2, 3 or 4 Sensors to a single Satellite. Choose the Type of sensory signals you want to bring f.e. to your Cloud environment, and pick the **CLINKTWIN** Satellite solution with corresponding number of Sensor Cables that fits best.

CLINKTWIN is in general from interest, but it fit´s not exactly to your demands? For any special requirements do not hesitate to contact us. All shown Satellite solutions are adaptable and offer by far more options, as in its standardized Basic Version.

The **CLINKTWIN** CH Hub can be easily connected to Power by using the delivered CLINKTWIN CH Plug-in Power Supply 5 V DC 4 A. Just connect the USB-C to your Hub and plug-in the Power Supply to 230 V AC. That´s it.
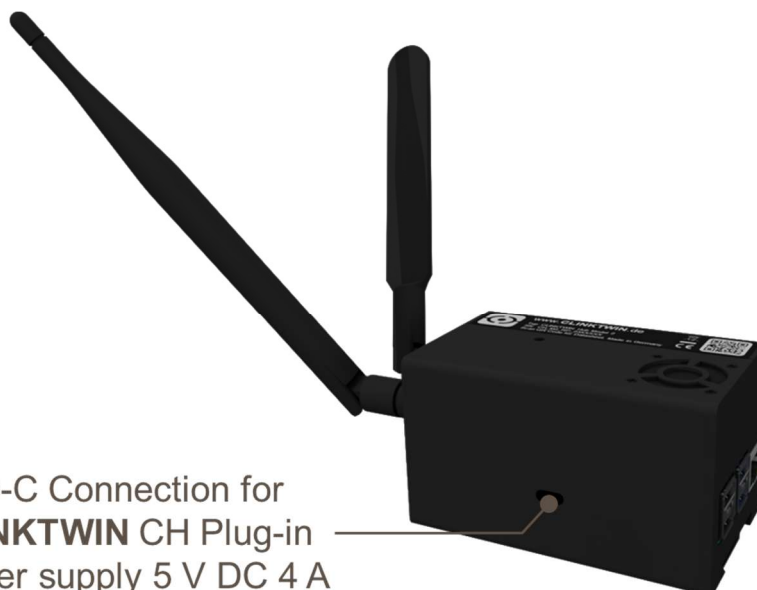
USB-C Connection for
CLINKTWIN CH Plug-in
Power supply 5 V DC 4 A

5. Setup Satellite, Hub and Data Graph?

When CLINKTWIN Hub and Satellites have Power Supply available, the process to bind both, so Satellites to Hub, is pretty easy. If you ordered both at the same time, so Satellites and Hub for a single Application, binding is already done by home.

If you want to bind a satellite to a Hub on your own, or receive new Satellites you want to bind to an existing Hub, just follow the short pictured "Step-by-Step" instruction:

1 Binding Ring

Switch off power supply and lay down Binding Ring on **CLINKTWIN** CS Satellite. *Opening of Binding Ring needs to be on V, A or °C of corresponding CLINKTWIN (see picture 1).*
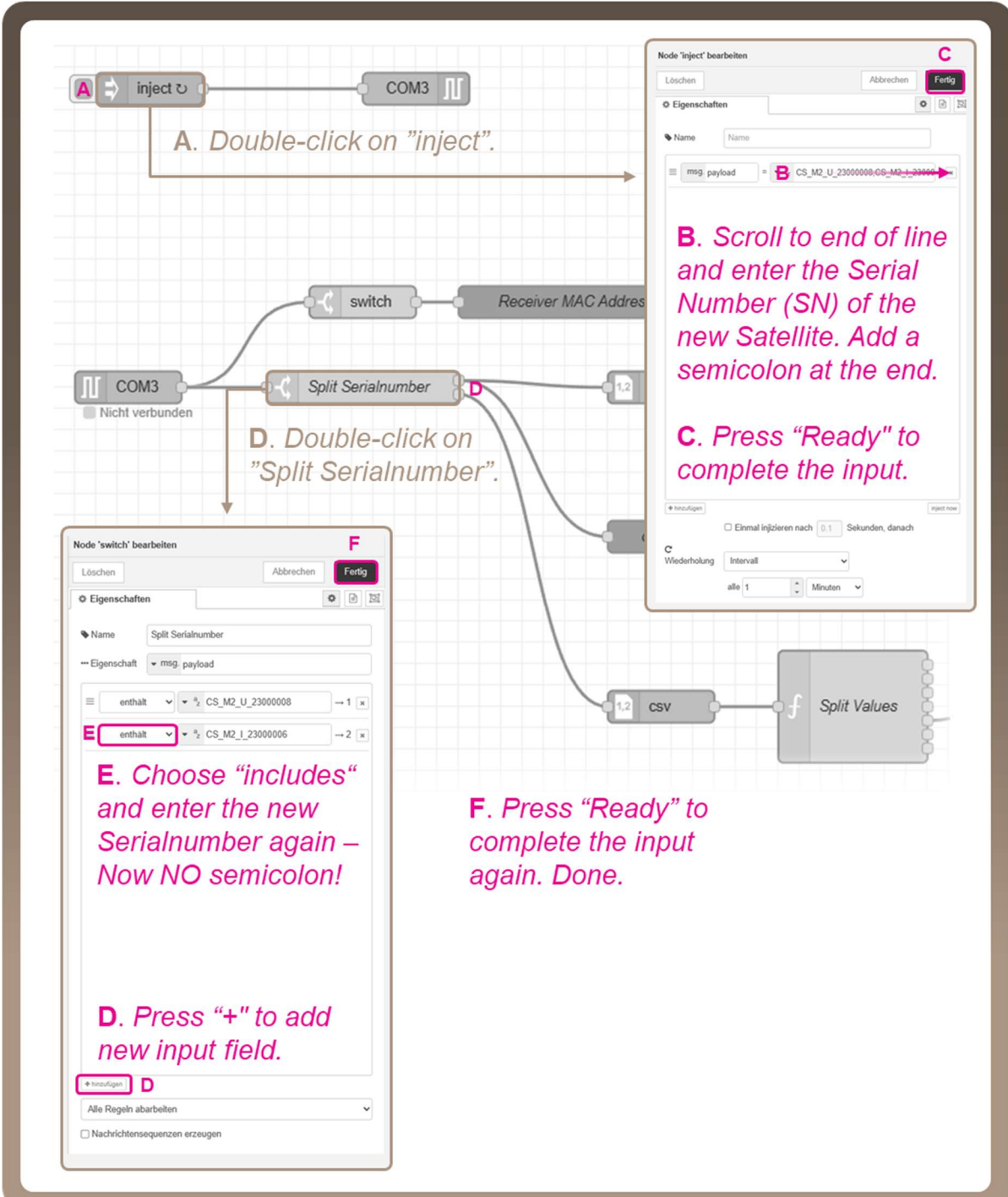
2

Connect / plug in **CLINKTWIN** to Power Supply and remove Binding Ring seconds afterwards. *Green LED in CLINKTWIN Logo is flashing fast – CLINKTWIN internal WLAN for setup is active.*

3 Serial Nr. WLAN

Search with Mobile Device or Notebook for new WLAN connection. Choose Network which fits to the Serial Number (SN) of your **CLINKTWIN** CS Satellite, f.e. "CS_M2_U_23000008". Enter Password *(see personal access Data)* . Your *Device is now connected to CLINKTWIN internal Wireless LAN.*

4 Hub MAC

Start Internet Browser, f.e. Safari (Apple Devices) or EDGE (Windows Devices). Enter Web Address http://192.168.4.1:82/config . Configuration page will open up. *Enter MAC Address of the CLINKTWIN Hub, to which you want to send you Satellite data (MAC see personal access Data).*

5 Finish Setup

If entering of correct Hub MAC Address is done, push "store and restart" to finish setup and restart your **CLINKTWIN** Satellite. *Binding of Satellite to Hub done. Start now to configure your Hub, to use your new CLINKTWIN Satellite Data.*

After the setup steps mentioned before are sucessfully done, one can start to add the new Satellite(s) to your **CLINKTWIN** Hub. The following instruction will give you an step-by-step overview, how you can add new Satellite Signals via your low-code environment. At first start your Low-Code application and follow step **A** to **F**:

A. Double-click on "inject".

B. Scroll to end of line and enter the Serial Number (SN) of the new Satellite. Add a semicolon at the end.

C. Press "Ready" to complete the input.
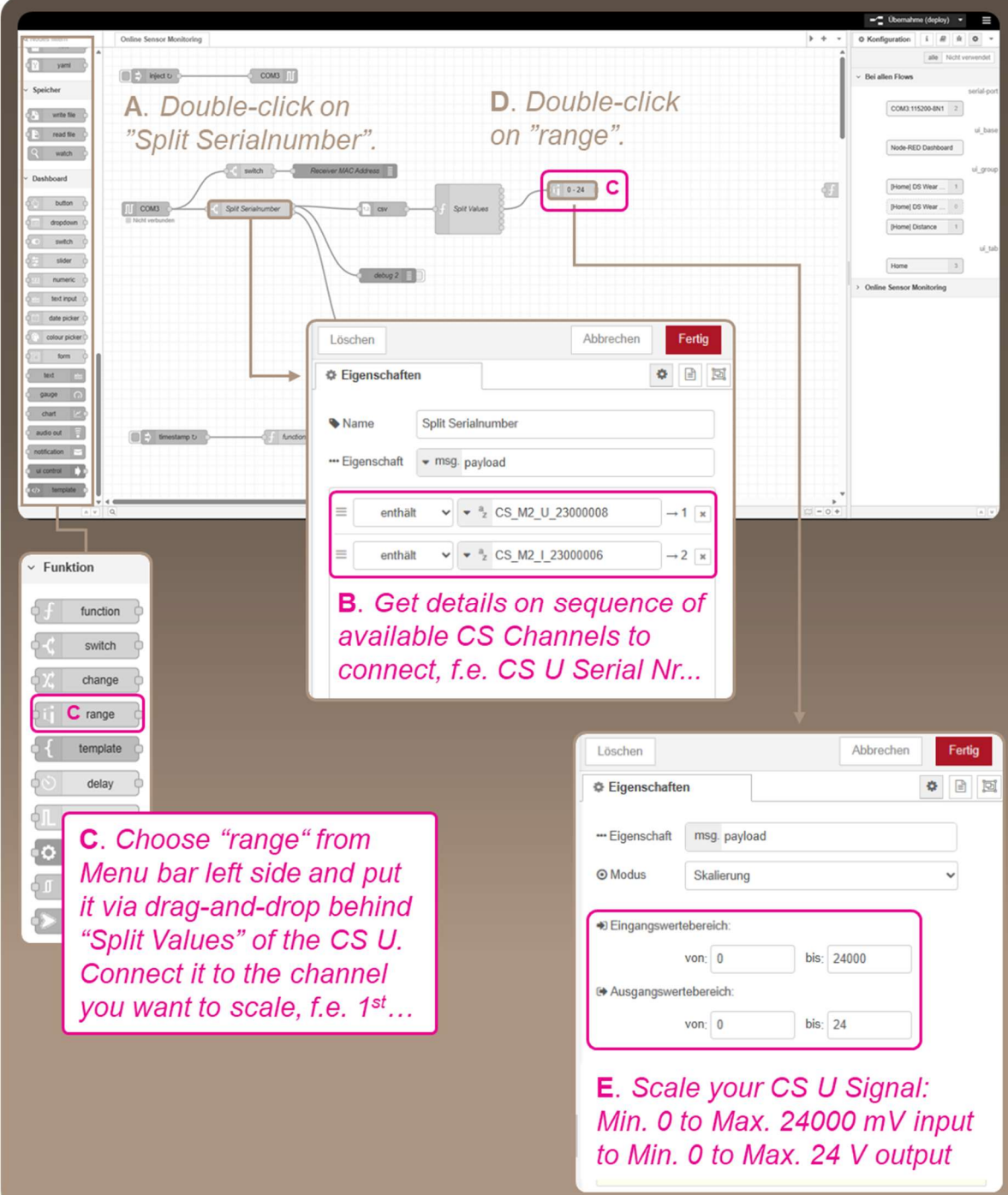
D. Double-click on "Split Serialnumber".

E. Choose "includes" and enter the new Serialnumber again – Now NO semicolon!

D. Press "+" to add new input field.

F. Press "Ready" to complete the input again. Done.

Time to setup a first **CLINKTWIN** Dashboard! The environment is still the same, as in our setup step before. Most of it will be for sure self-explaining, and a basic example for "copy-and-paste" is available too. Anyhow; Follow first step **A** to **E** to scale an exemplary signal for a CLINKTWIN Satellite CS U (24 DC Signal) first:

A. *Double-click on "Split Serialnumber".*

D. *Double-click on "range".*
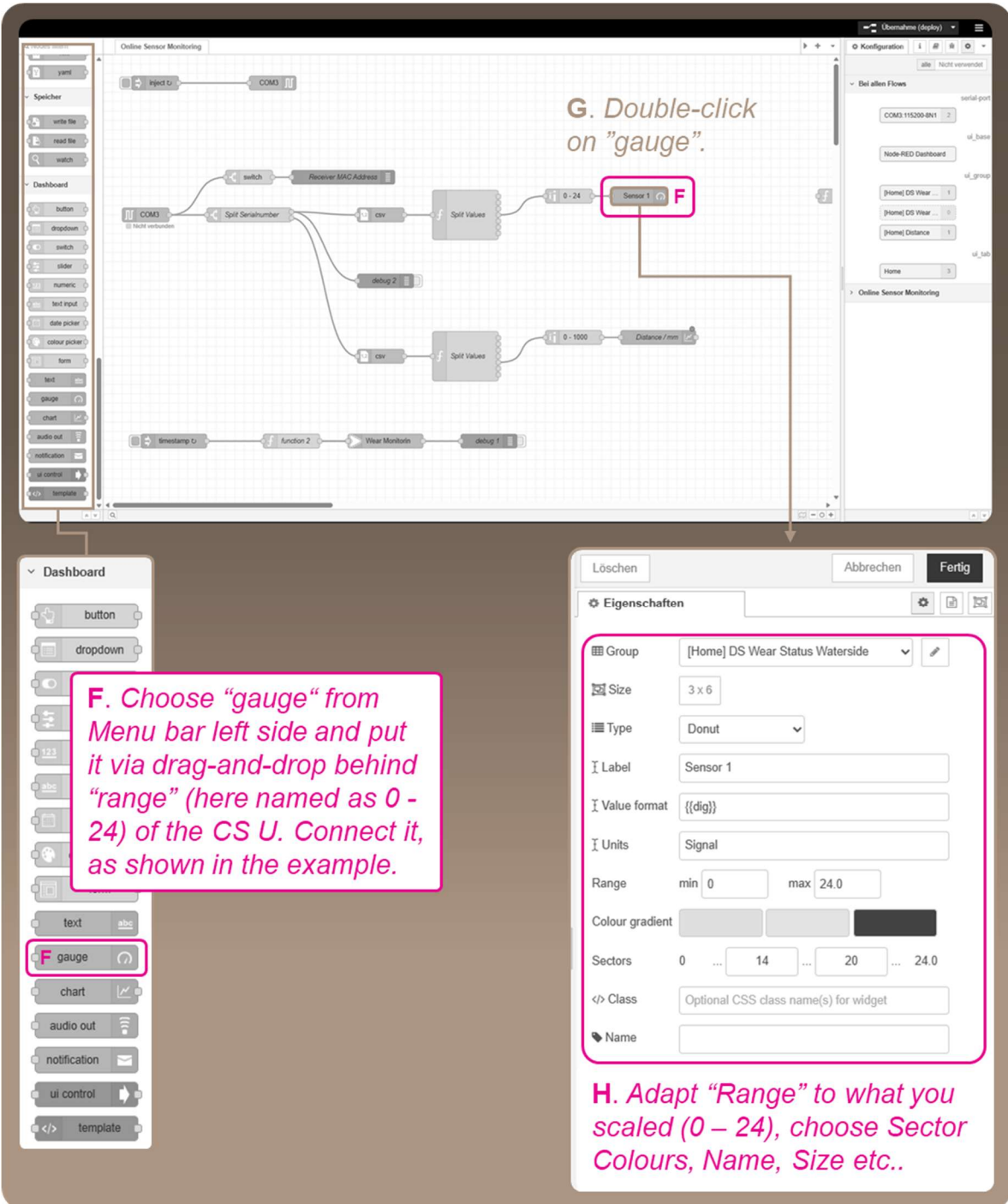
B. *Get details on sequence of available CS Channels to connect, f.e. CS U Serial Nr...*

C. *Choose "range" from Menu bar left side and put it via drag-and-drop behind "Split Values" of the CS U. Connect it to the channel you want to scale, f.e. 1st...*

E. *Scale your CS U Signal: Min. 0 to Max. 24000 mV input to Min. 0 to Max. 24 V output*

Now, as the scaling of the first **CLINKTWIN** CS U Signal is done, we can start to visualize it in a first Dashboard. Please go step-by-step from **F** to **H**, to build a first visualization of the **CLINKTWIN** signal you did scale with "range" funcion before:

G. *Double-click on "gauge".*
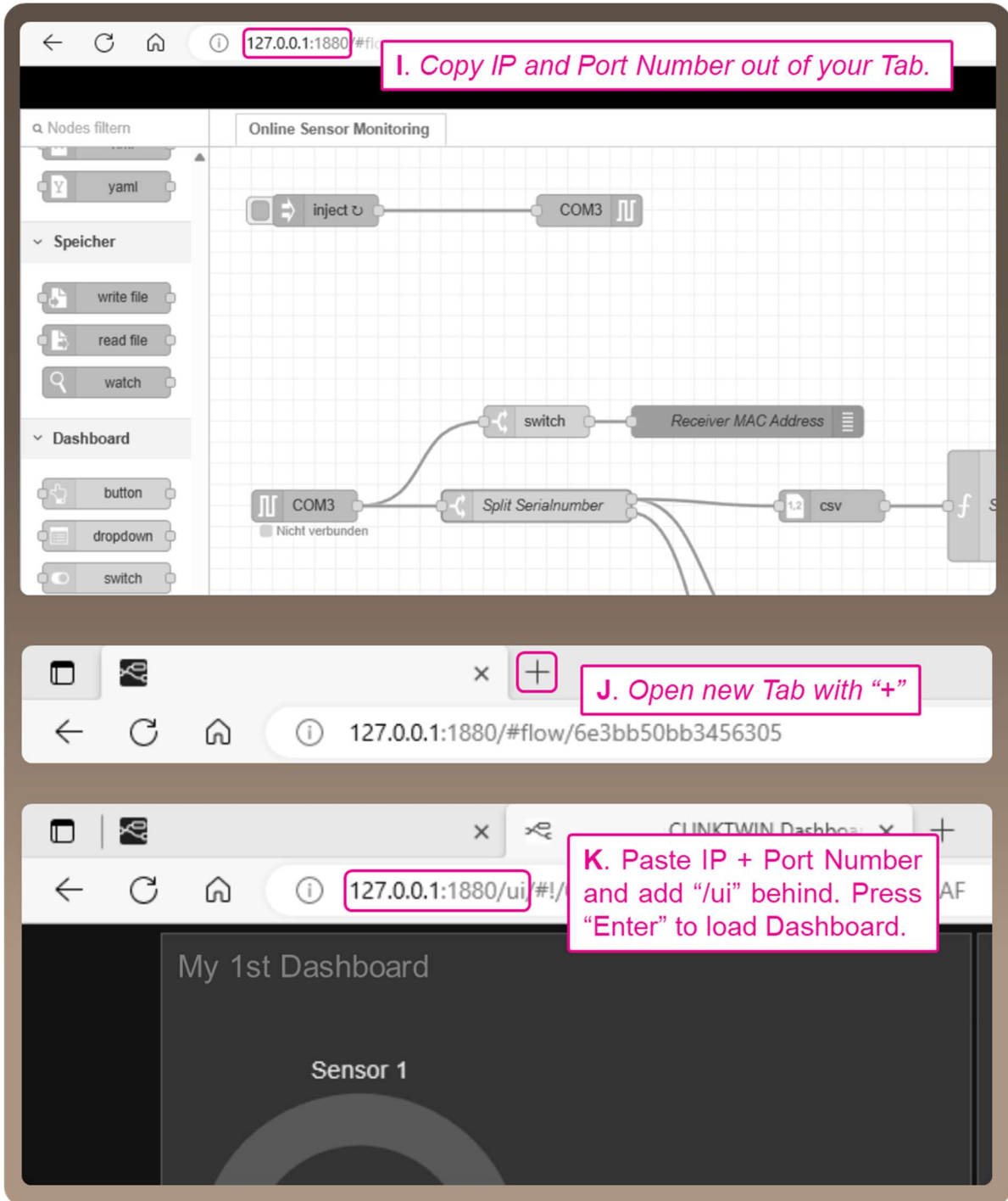
F. *Choose "gauge" from Menu bar left side and put it via drag-and-drop behind "range" (here named as 0 - 24) of the CS U. Connect it, as shown in the example.*

H. *Adapt "Range" to what you scaled (0 – 24), choose Sector Colours, Name, Size etc..*

To see the Dashboard of your scaled and visualized 1st **CLINKTWIN** CS U Signal, follow step **I** to **K** below. An additional example, how to scale and visualize an anolge Current signal of a CS I and visualize it by using a Graphh is shown afterwards. Many more options to handle and show your **CLINKTWIN** Data are available too!

How does "range" and Dashboard setup look like, while we want to use instead of **CLINKTWIN** CS U a CS I Version, f.e. for a 4 to 20 mA DC Current Signal. The Sensor itself is a 0 to 1000 mm Position Sensor. Please find the exeplaryx setup for scaling (left hand) as well as the dashboard Setup of the Graph (right hand) below:

*Scale your CS I Signal: Min. 4 to Max. 20 mA input to Min. 0 to Max. 1000 mm output Signal*

Adapt "chart" to what you scaled (0 – 1000), choose Time range, Name, Size…

6. Setup Hub Interface?

A simple way to use **CLINKTWIN** Satellite Data in the environment of your choice? Get in touch with us to release data access based on f.e. OPC-UA or MQTT. The option to use CS data in AWS, AZURE, or Google Cloud is just a simple step away!

7. Technical Data

CLINKTWIN Hub Model 2...……………………….…………CH_M2_RP_23XXXXX

Power supply….………………………………5 V DC (230 V Plug-in Power Supply)

Maximum operating temperature….……………………………………………50 °C
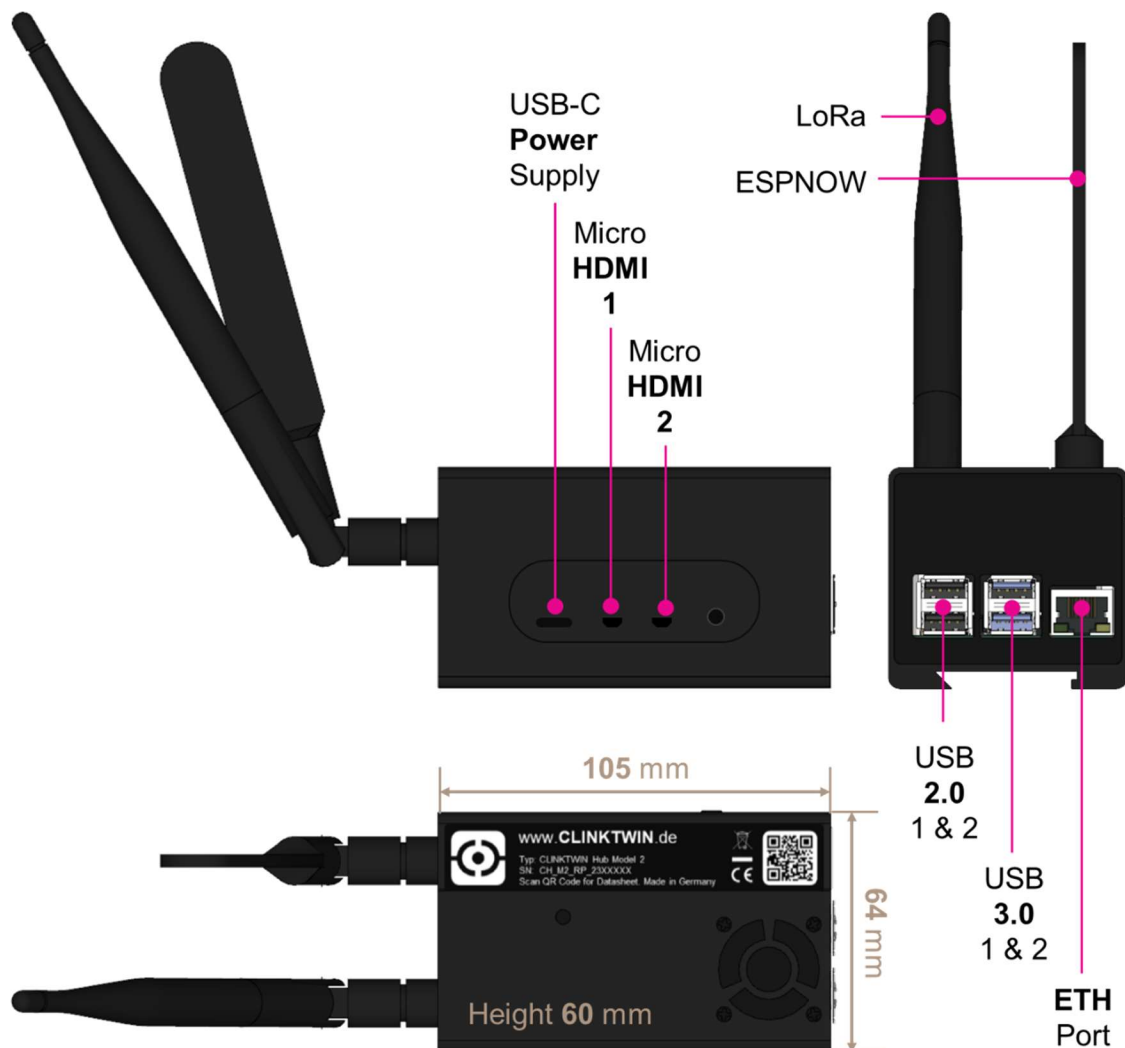
CLINKTWIN Satellite Model 2.…..………………….CS_M2_U(I, TD)_23XXXXXX

Power supply………………………………………………………....24 V DC

Data Channels...…………………...…..……SC 1, optional SC 2, 3 and 4)

Data Type CS_U……………………….….…Analogue Voltage 0 to +30 V DC

Data Type CS_I…………………………... ….Analogue Current 0 to 30 mA DC

Data Type CS_TDU………………………..…...Digital Temperature -55 to +125°C

Transfer Technology…………………….………….…..…...ESPNOW, LoRa

Min. measurement frequency / max. range ESPNOW…….…...............100 ms / 50 m

Min. measurement frequency / max range LoRa.......................10000 ms / 500 m

Maximum operating temperature…………………………..……………….60 °C
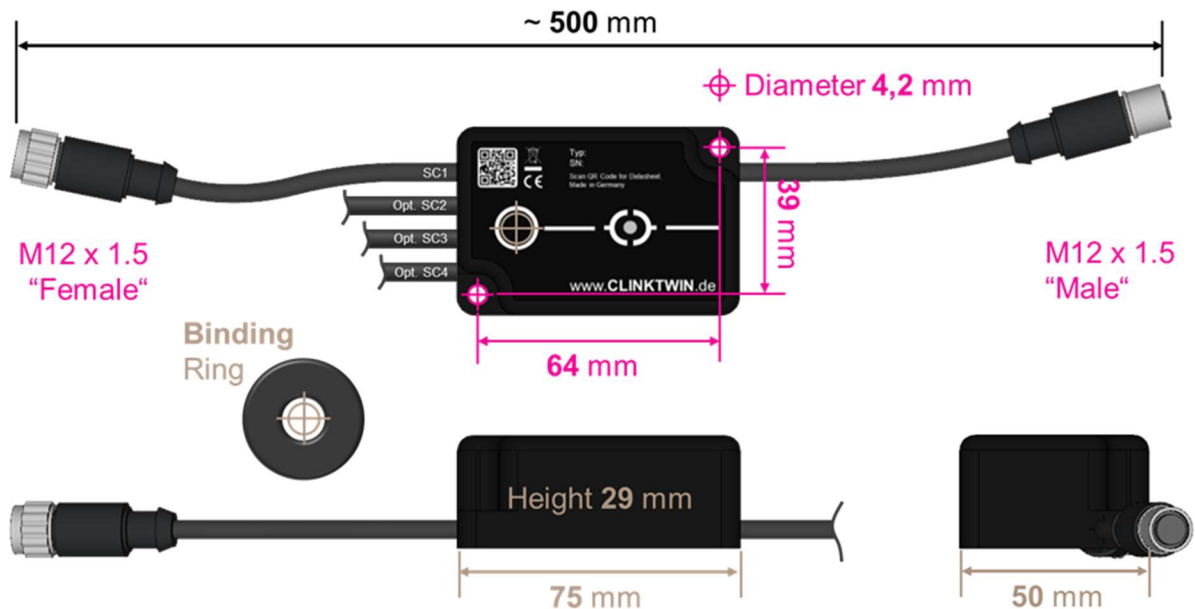
You have questions not yet answered? Do not hesitate to contact us via www.**CLINKTWIN**.de or info@**CLINKTWIN**.com.