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Sontheim

Verona Gen 4 (COMhawk xt)

User Manual

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1. Topic:

This document is a brief description for the next generation telemetry node from Sontheim Industrie Elektronik GmbH. This document describes to put the device into operation.

2. Document Reference

Number	Author	Name	Version / Document number

Table 1 Document Reference

3. Author:

Roland Mader & Samuel Claeys& Markus Brormann & Steffen Doster

4. Date:

April 27th , 2022

5. History of the Document

Version	Description	Date
1.0	Build manual	14.03.2022
2.0	Document extended: Chapter 5:History of the document updated. Chapter 7.13 added Chapter 8 Operation, Service, Maintenance and Repair, Decommissioning added Chapter 7.13 Description of label added Chapter 10: HMN and HVIN added to technical data Chapter 11 frequency band and maximum power of WIFI and LTE bands described. Chapter 11.2 Used antenna and maximum allowable antenna gain – added HMN and HVIN: Verona Gen 4 consequently used in manual	27.04.2022
2.1	7.13. Figure 1 Label Information updated. 9. Table 3 HVIN corrected to Verona GEN4. 11.1 Table 5 Values corrected. 11.2. clarification for 0dBi antenna statement added.	09.05.2022
2.2	9. Table 3 FCC-ID corrected to Verona GEN4 chapter 7.15 and 7.15.1 added	13.05.2022

Table 2 History of the Document

6. Preliminary Note

This document applies to devices of the type COMhawk xt - Verona Gen 4. This document is intended for specialists. These specialists are people who are qualified by their appropriate training and their experience to see risks and to avoid possible hazards that may be caused during operation or maintenance of the device. The document contains information about the correct handling of the device.

Read this document before use to familiarize yourself with operating conditions, installation and operation. Keep this document during the entire duration of use of the device.

6.1. Symbols used

▶ Instructions

Reaction, result

[…] Designation of pushbuttons, buttons or indications

Cross-reference

Important note
Non-compliance can result in malfunction or interference

Information
Supplementary note

7. Safety instructions

7.1. General

These instructions contain texts and figures concerning the correct handling of the device and must be read before installation or use. Observe the operating instructions. Non-observance of the instructions, operation which is not in accordance with use as prescribed below, wrong installation or incorrect handling can seriously affect the safety of operators and machinery.

7.2. Target Group

These instructions are intended for authorized persons according to the EMC and low-voltage directives. The device must only be installed, connected and put into operation by a qualified person.

7.3. Electrical Connection

The connections may only be supplied with the signals indicated in the technical data and/or on the device label.

7.4. Tampering with the Device

In case of malfunctions or uncertainties please contact the manufacturer. Tampering with the device can seriously affect the safety of operators and machinery. It is not permitted and leads to the exclusion of any liability and warranty claims.

7.5. General Implementation Instructions

Reliable operation cannot be guaranteed if samples or prototypes are used in series systems.

The proposed circuits do not imply any technical liability for the system on the part of Sontheim Industrie Elektronik GmbH.

Incorrect connections could cause unexpected signals at the outputs of the ECU.

The ECU firmware/software must be installed and removed by Sontheim Industrie Elektronik GmbH or the system integrator in order to uphold the warranty.

It is not permissible to open the ECU or to modify or repair the ECU. Modification or repairs to the wiring could result in dangerous malfunctions. Repairs to the ECU may only be performed by Sontheim Industrie Elektronik GmbH.

The Verona Gen 4 / COMhawk xt may not used for functional safety purpose.

When the electronics are not energized, no pins must be connected to a voltage source. Thus, when the current supply is switched off, the supply for the electronics, the power outputs and the external sensor supply have to be switched off together.

While commissioning, flashing and maintenance, the ECU and the machine/vehicle may pose unforeseen hazards. Before commissioning the system, you must therefore ensure that the vehicle and the vehicle or machine are in a safe condition.

Make sure that nobody is in the system or vehicle or machine‘s danger zone.

No defective or incorrectly functioning components may be used. If the components should fail or demonstrate faulty operation, repairs must be performed immediately.

ECUs used to develop software may only be installed in series production machines if it can be guaranteed that these controllers have not been flash programmed with new software more than 500 times. Controllers that have been programmed more than 500 times must not be installed in series production machines!

7.6. Requirements on the Installation Point and Position

Do not install the ECU close to parts that generate considerable heat (e.g. exhaust).

Radio transmitting equipment and mobile telephones must not be used in the passenger or driver‘s cab without a suitable antenna or near the control electronics.

A sufficiently large distance to radio transmitting systems must be maintained.

The ECU meets the ECE R 10 requirement for electromagnetic immunity and emissions.

All connectors must be unplugged from the electronics during electrical welding and painting operations.

Cables/wires must be sealed individually to prevent water from entering the device.

The ECU must not be electrostatically charged, e.g. during painting operations.

Install the ECU in such a way that the electrical plug is not facing upwards. This ensures that any condensation water that may form can flow out. Also, consider and protect the wiring harness against water entry and especially in the area of the plugs.

Standing and permanently running water are not permitted anywhere near the circumferential groove (lid/base connector) or the pressure balance element.

7.7. Notes on Transport and Storage

If the ECU is dropped, the controller must not be used any longer as invisible damage could have a negative impact on reliability.

Control units must be stored with a mean relative humidity of 60% and at a temperature between -10 °C and +50 °C. Storage temperatures between -40 °C and +90 °C are briefly permissible, for up to 100 hours.

After a storage time of more than 5 years, the ECU must be examined by the manufacturer.

7.8. Notes on Wiring and Circuitry

The electronics and the power outputs of an ECU must be fed from the same power source.

When wiring the output stages, the maximum cumulative output current for each output stage group should be noted. The cumulative output current means a permanent, simultaneous actuation of the output stages.

The product may only be wired when it is de-energized.

Lines to the electronics must not be routed close to other power-conducting lines in the system, or vehicle.

The wiring harness should be fixated mechanically in the area in which the ECU is installed (spacing < 150 mm). The wiring harness should be fixated so that in-phase excitation with the controller occurs (e.g. at the controller bolting point).

If possible, lines should be routed in the vehicle interior.

If the lines are routed outside the vehicle, make sure that they are securely fixed.

Lines must not be kinked or twisted, must not rub against edges and must not be routed through sharp-edged ducts without protection.

Lines are to be routed with sufficient spacing to hot or moving vehicle parts.

Digital outputs must not be linked or bridged.

Digital outputs with current measurement must not be used to light bulbs (due to very low cold resistance).

The voltages supplies sources must not be pulled up by an external connection, e.g. the application of a higher voltage, because they operate only as a voltage source but not as a voltage sink. Pulling up a sensor supply may result in unexpected malfunctions and damage of the ECU in lasting operation.

The high side outputs must not be externally connected to battery.

7.9. Intended Use

The ECU is designed for use in automotive applications as vehicle, trucks, busses and trailer and mobile working machines provided no limitations / restrictions are made to certain application areas in this data sheet.

Operation of the ECU must generally occur within the operating ranges specified and released in data sheet, particularly with regard to voltage, current, temperature and other described environmental influences.

Use outside of the specified and released boundary conditions may cause damage to components, which could result in consequential damage to the vehicle, trucks, busses, trailer and mobile working machine.

7.10. Improper Use

Any use of the ECU other than that described in chapter „Intended use“ is considered to be improper.

Use in explosive areas is not permissible.

Damage resulting from improper use and/or from unauthorized interference in the component not described in this manual or data sheet render all warranty and liability claims void with respect to the manufacturer.

7.11. Further Information

In addition, the application-specific documents (software descriptions, software manuals, etc.) are to be observed.

7.12. Radio Frequency Safety Cautions

NOTICE:

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

NOTICE:

Changes or modifications made to this equipment not expressly approved by Sontheim Industrie Elektronik GmbH may void the FCC authorization to operate this equipment.

Radiofrequency radiation exposure Information according 2.1091 / 2.1093 / KDB 447498 / RSS-10:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un
environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps. Ce transmetteur ne doit pas être place au même endroit ou utilise simultanément avec un autre transmetteur ou antenne.

NOTE: *This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:*

- *Reorient or relocate the receiving antenna.*
- *Increase the separation between the equipment and receiver.*
- *Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- *Consult the dealer or an experienced radio/TV technician for help.*

7.13. Label information

Description:

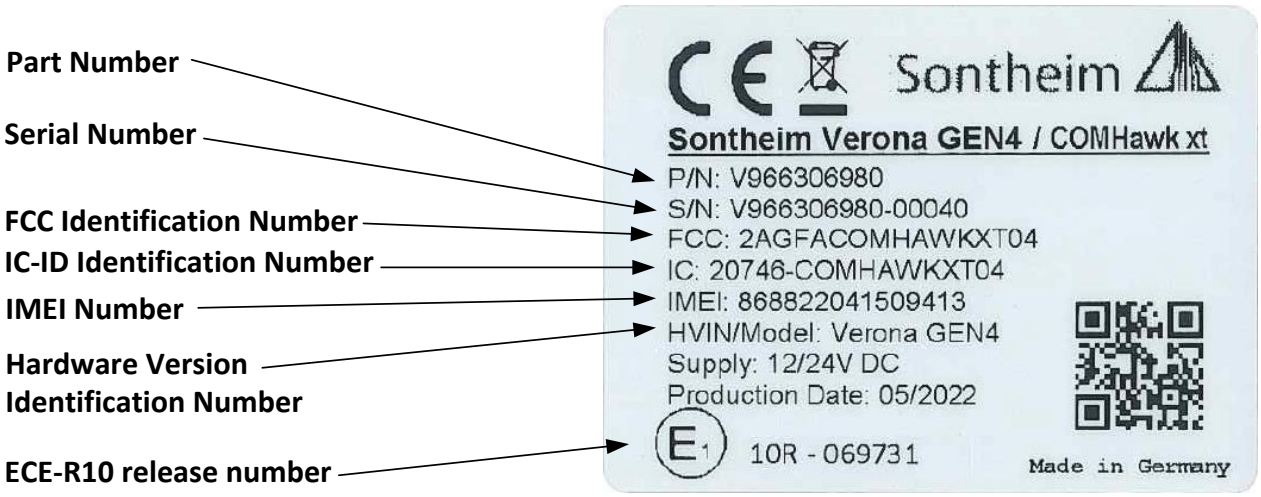


Figure 1 Label Information

7.14. ECU interfaces and vehicle integration aspects

The telemetry node has to be operated according to the environmental specification as mentioned in technical data, please see chapter 10 COMhawk xt / Verona Gen 4 – Technical Data.

7.15. Further Safety Cautions - Country Specific

7.15.1. Brazil

ADENDO AO MANUAL
MODELO: VERONA GEN4

ANATEL
Agência Nacional de Telecomunicações

Para maiores informações, consulte o site da ANATEL www.gov.br/anatel/pt-br

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.

8. Operation, Service, Maintenance and Repair, Decommissioning

8.1. Operation

Use the telemetry unit only as describe in 7.9 Intended Use within the performance range specified in 10 COMhawk xt / Verona Gen 4 – Technical Data.

8.2. Maintenance and Repair

8.2.1. Cleaning and Care

NOTICE:

Damage to seals and electronics/electrics due to mechanical effects!

Please consider the ingress protection class for the ECU, described in chapter 10 COMhawk xt / Verona Gen 4 – Technical Data.

The water jet of a high-pressure cleaner may damage the seals and electronics/electrics of the telemetry unit!

Do not point the high-pressure cleaner directly towards the control unit.

For cleaning and care of the telemetry unit, observe the following:

Check whether all the seals and fittings on the plug-in connections are securely seated to ensure that no moisture can penetrate into the telemetry unit and the installation space during cleaning.

Use only very small amounts of water and, if necessary, a mild cleaning agent to clean the telemetry unit. Never use solvents or aggressive cleaning agents.

8.2.2. Inspection and Maintenance

No special activities are necessary.

8.2.3. Repair

The telemetry unit cannot be repaired.

When replacing the telemetry unit, make sure that no contamination can penetrate the mating connector.

Only use an original spare telemetry unit from Sontheim Industrie Elektronik GmbH or from the system integrator, otherwise the functional reliability cannot be guaranteed, and the warranty will be voided.

Address all questions regarding repair to your responsible Sontheim Industrie Elektronik GmbH service or from system integrator.

8.3. Removal and Replacement

Only remove the telemetry unit when completely de-energized.

8.4. Disposal

Careless disposal of the telemetry unit can lead to environmental pollution.

Only dispose of the vehicle, vehicle parts or electronic parts such as this ECU in approved recycling companies. Do not simply throw away the vehicle or vehicle parts. Dispose of it in a waste cycle. This has to be considered from the vehicle owner as well. The system integrator shall notify the vehicle owner about this topic.

The telemetry unit and its packaging must be disposed of according to the national environmental regulations of the country in which the telemetry unit is used.

8.5. Extension and Conversion

The telemetry unit must not be modified.

The warranty from Sontheim Industrie Elektronik GmbH only applies to the configuration as delivered.

The warranty will be voided if the unit is modified or extended.

9. Verona Gen 4 Overview

9.1. Verona Gen 4 HW Block Diagram:

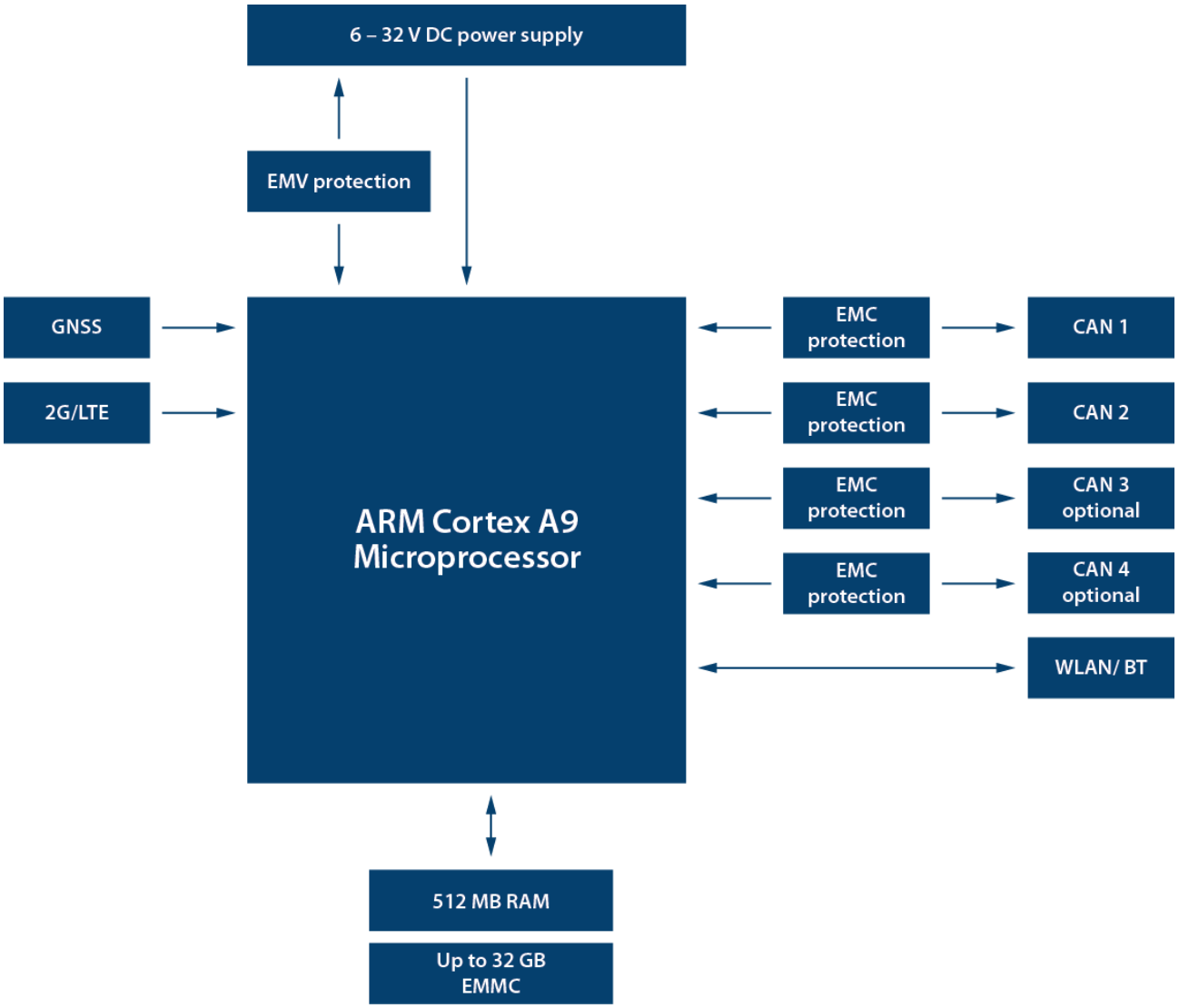


Figure 2 Verona Gen 4– Block diagram

10. COMhawk xt / Verona Gen 4 – Technical Data

VERONA Gen 4	
Micro Controller	**NXP iMX6DualLite 32bit- ARM Cortex-A9 800MHz**
RAM	External: **512MB**/1GB/2GB LPDDR3
External Flash extension	4/8/**16**/64 **GB eMMC NAND Flash**
EEPROM	1x EEPROM 32kBit
Real Time Clock	yes
CAN	2-**4 CAN interfaces**, all of them - according to ISO 11898 standard, 2.0A and 2.0B
CAN termination	Split termination in combination with CAN transceiver
LIN	Optional either Master or Slave
WIFI	1x WIFI module 2,4 GHz (IEEE 802.11 b/g/n) with external FAKRA antenna
Bluetooth	1x integrated together with WiFi Module BLE
Ethernet	1x 100 Mbit Ethernet.
Digital Input	4x, up to 32V allowed
Digital Output	**1x 1A output with PWM** (Voltage Level V_{BAT}) with HSS **1x 5V output** (optional 10 V)
Analog Input	4 x 0 – 24 V measurement
Power Supply	24V system: 16 – 32V / max. 1A (basic board configuration) 12V system: 6 – 16V / max. 1A (basic board configuration) Range: 6 – 32V
Housing	Cinch housing with 30-pole automotive connector IP69K protection
Operating temperature	-40°C ... +85°C
Storage temperature	-40°C … +85°C
Extensions/Options	
LAN	**10/100 Mbit/s LAN for cable network connection**
GNSS	**GNSS module**: GPS/GLONASS, Galileo, BeiDou with external FAKRA antenna

Cellular	Cellular module with **LTE CAT4/**UMTS/GSM support, external FAKRA antennas
Security	function integrated in iMX6
Temperature sensor	Temp. range -55 up to +125°C, 3% accuracy
Acceleration sensor	3-axis
Gyroscope-sensor	3-axis
LED	2x 3-color LEDs
Software	
Operating System	Linux Kernel: 4.19 (4.19.219) Boot Loader: U-Boot 2015.01
Certifications	
ECE R10 type approval number	E1*10R06/01*9371*00
Machinery directive	Yes, compliant with 2006/42/EC (machinery directive)
EMC	Yes, compliant with *2014/30/EC (EMC directive)*
RF Compliance	Yes, compliant with 2014/53/EC (radio equipment directive)
Low voltage	Yes compliant with *2014/35/EC (low voltage directive*
RoHS	Yes compliant with *2011/65/EC (*RoHS)
HMN / HVIN	Verona GEN4

Table 3: System and Functional Requirements (Populated Option is Bold)

11. RF Specification

11.1. GSM/UMTS/LTE RF Specifications

Technologies	Max. power [dBm] conducted	Antenna gain max.: [dBi]
E GPRS 900 MHz	33dBm±2dB	0.03
E GPRS 1800 MHz	30dBm±2dB	3.12
LTE FDD 1 1950 MHz	23dBm±2dB	2.17
LTE FDD 3 1800 MHz	23dBm±2dB	3.12
LTE FDD 7 2600 MHz	23dBm±2dB	3.2
LTE FDD 8 900 MHz	23dBm±2dB	0.03
LTE FDD 28 700 MHz	23dBm±2dB	1.57
LTE TDD 40 2300 MHz	23dBm±2dB	3.52
WLAN 2450 MHz	15.0	3.0

Table 4 Bands, frequencies, maximum power and maximum antenna gain for EC

Technologies	Max. power [dBm] conducted	Antenna gain max.: [dBi]
E GPRS 850 MHz	31dBm±2dB	
E GPRS 1900 MHz	28dBm±2dB	
LTE FDD 2 1900 MHz	23dBm±2dB	1.87
LTE FDD 4 1750 MHz	23dBm±2dB	3.12
LTE FDD 5 850 MHz	23dBm±2dB	0.91
LTE FDD 12 700 MHz	23dBm±2dB	0.95
LTE FDD 13 700 MHz	21dBm±2dB	2.23
LTE FDD 25 1900 MHz	23dBm±2dB	1.87
LTE FDD 26 850 MHz	23dBm±2dB	0.91
LTE TDD 41 2600 MHz	22dBm±2dB	2.90
LTE FDD 66 2150 MHz	23dBm±2dB	3.12
WLAN 2450 MHz	15.0	3.0

Table 5 Bands, frequencies, maximum power and maximum antenna gain for FCC / ISED

11.2. Antenna Specifications

For LTE band use a 0 dBi gain antenna, to be compliant with Table 5 Bands, frequencies, maximum power and maximum antenna gain for FCC / ISED.
For WiFi, use a maximum 3 dBi antenna for 2.4 GHz frequency band

The maximum antenna gain is listed in the chapter 11.1 GSM/UMTS/LTE RF Specifications.

Use only the following antenna, this antenna was part of the certification:
Antenna: Hirschmann (TE): CGNW 702659 LP S/FAKRAf/3.0

Or alternative:
Antenna Molex 206866

12. Software

12.1. SW Overview

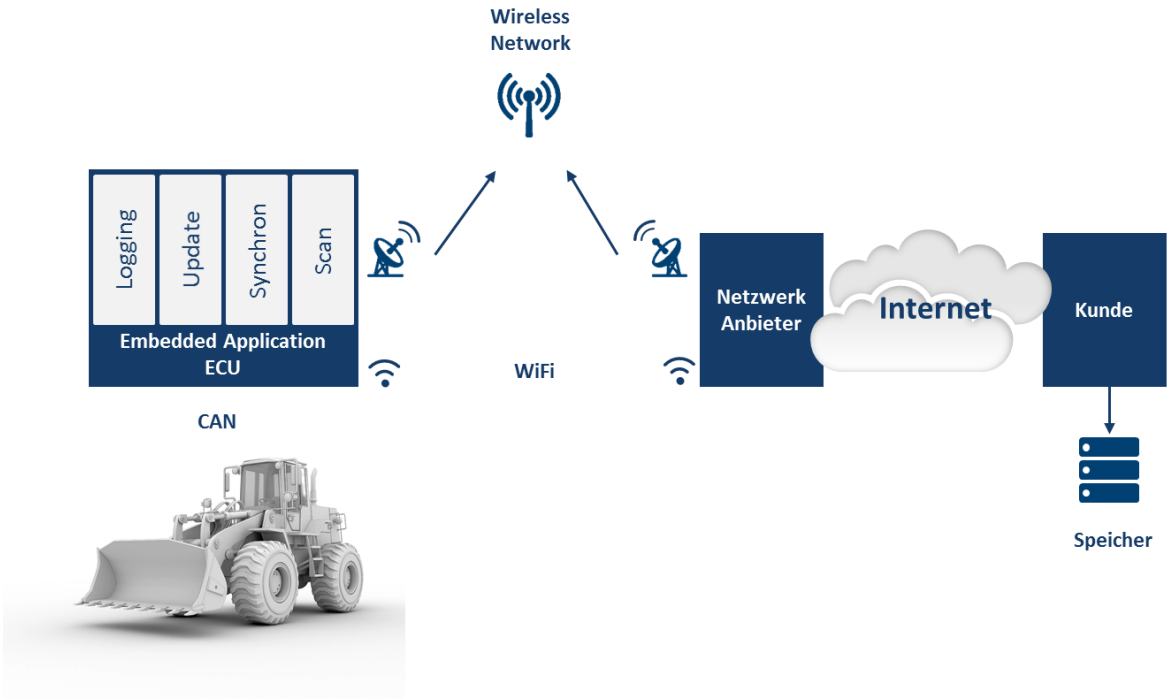


Figure 3 Function Overview

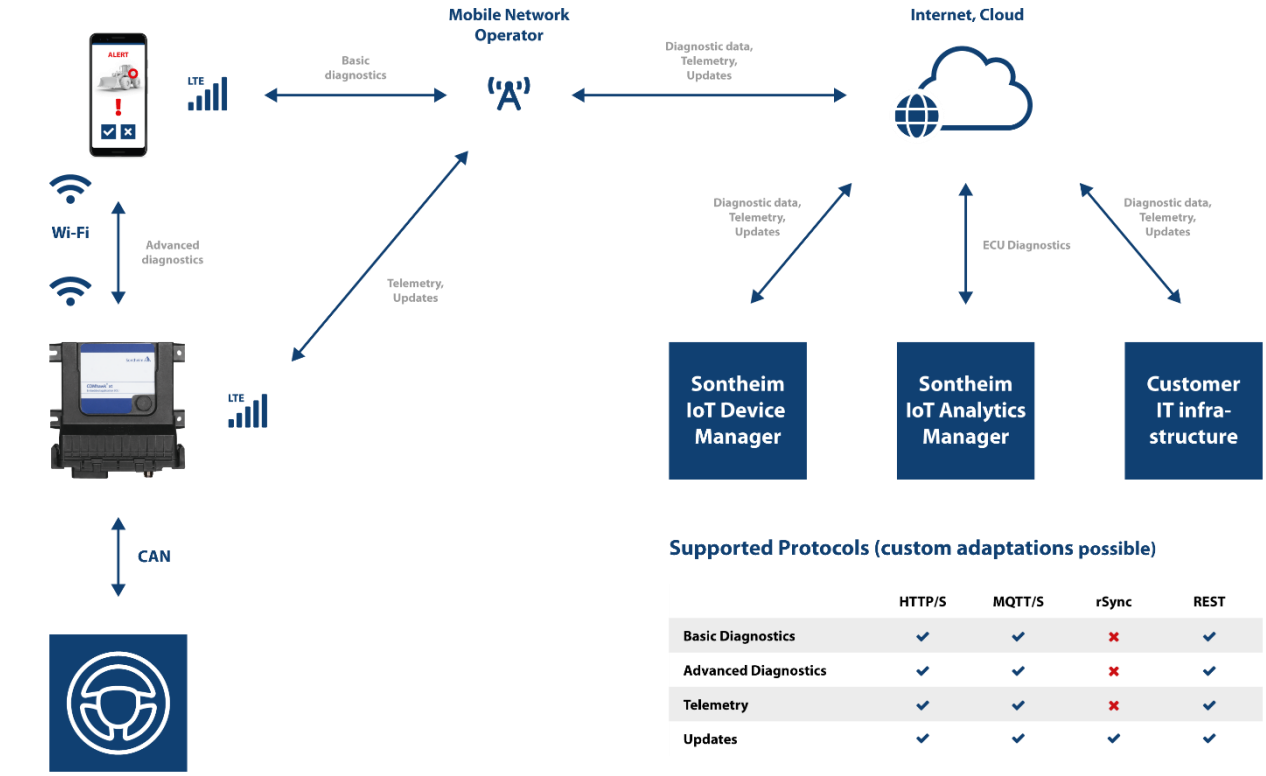


Figure 4 Function Overview with more detailed clouded services Explanation

13. SW Access to COMhawk xt:

The LAN interface of the telemetry node is connected to the wiring harness (RJ45 line) and is connected directly to the LAN port of the PC (no switch or similar in between). The IP4 network configuration of the PC must be set to "Use the following IP address".

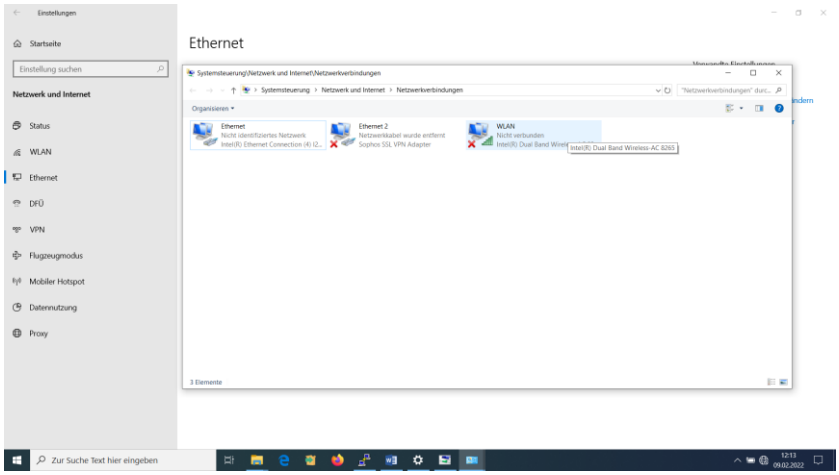


Figure 5 Network Configuration (in Windows 10)

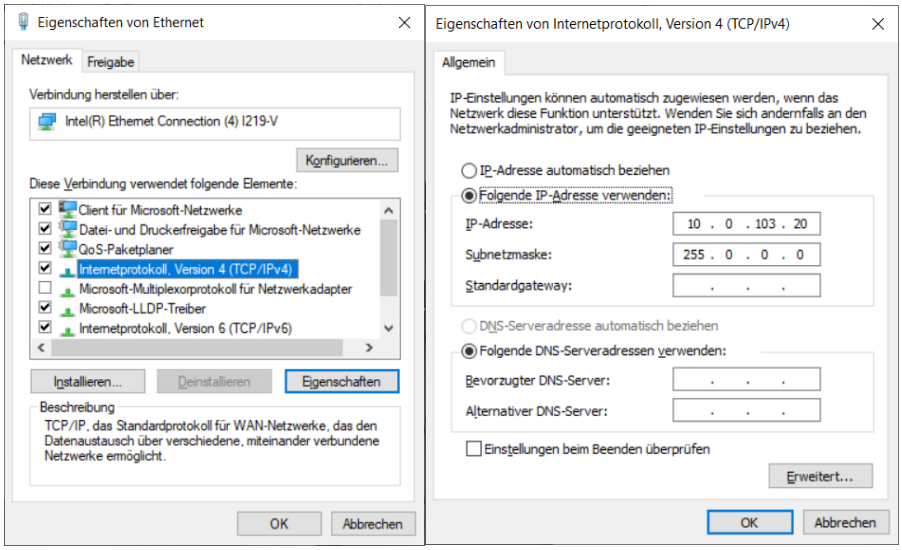


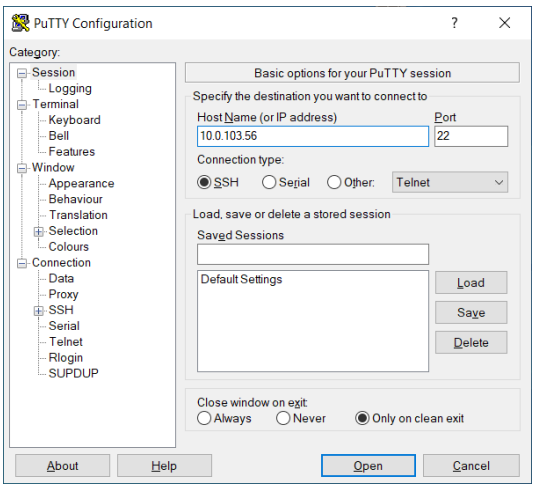
Figure 6 Ethernet Configuration

The test object is now controlled via LAN connection.

This requires an SSH connection from the test PC to the test object. This is done, for example, using the supplied tool "putty" (Release 0.76).

13.1. Operating the Software via LAN (Verona Gen 4 is powered and connected to the PC via LAN cable)

Log in from the PC to the Verona Gen 4 telemetry node via SSH using the “putty” software tool:



SSH connection via Putty (via network cable):

- IP: 10.0.103.56
- user: root
- passwd: root

➔

Figure 7 setup PUTTY Console

The Verona Gen 4 reports as follows:

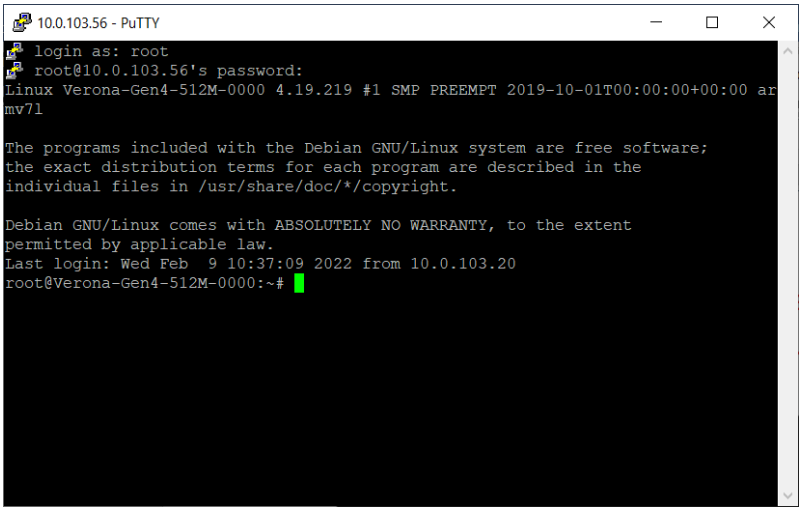


Figure 8 Verona Gen 4 Response in Putty Console

Command line opens, the commands can be entered directly.

13.2. Operating the Software via WIFI (Verona Gen 4 is powered and connected to the PC via WiFi)

Log in from the PC to the Verona Gen 4 telemetry node via SSH using the “putty” software tool over WIFI:

Figure 9 Windows 10 WLAN - networks available

Select the network: **Verona-Gen4-512M-0000**

Figure 10 WIFI Verona Gen 4 - automatic connection

Select the network: **Verona-Gen4-512M-0000**
Enter the network password: **secret_word**

After connecting the COMhawk xt / VERONA Gen 4, open a SSH console.
In this example, PuTTY was used:

Enter the IP address: **10.0.0.1**
Port: **22** (is automatically set)
Than press open

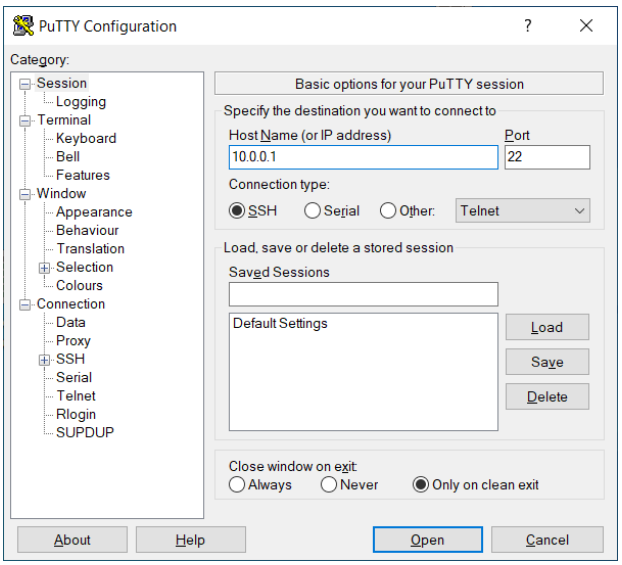


Figure 11 PuTTY Console to connect the COMhawk xt

The COMhawk xt / VERONA Gen 4 is connected.
Enter the login: **root**
Password: **root**

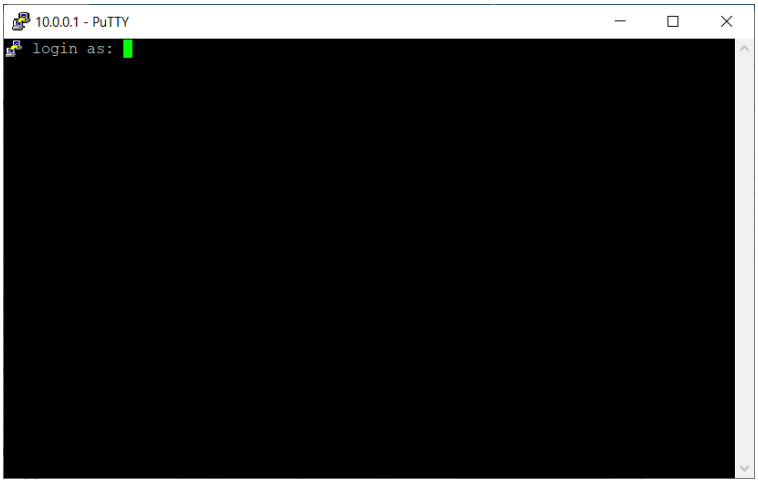


Figure 12 Enter the Login

After successful login the COMhawk xt / VERONA Gen 4 can be accessed:

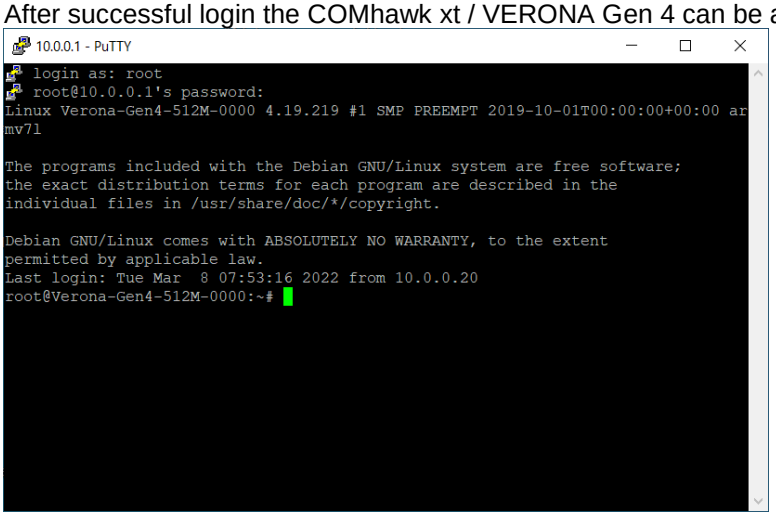


Figure 13 COMhawk xt is connected

13.3. WinSCP Access:

To easily access from PC the COMhawk xt file system, WinSCP can be used:

Example is with WiFi connection:
Set the IP-address: **10.0.0.1**
User: **root**
Password: **root**

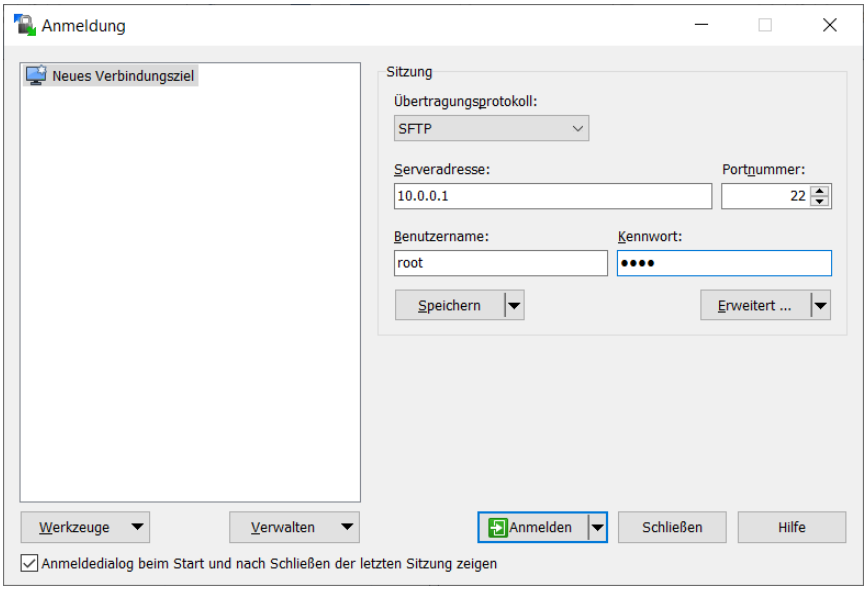


Figure 14 Start Screen for WinSCP

Protocol is SFTP (was automatically selected)

The COMhawk xt directory opens (right is COMhawk xt):

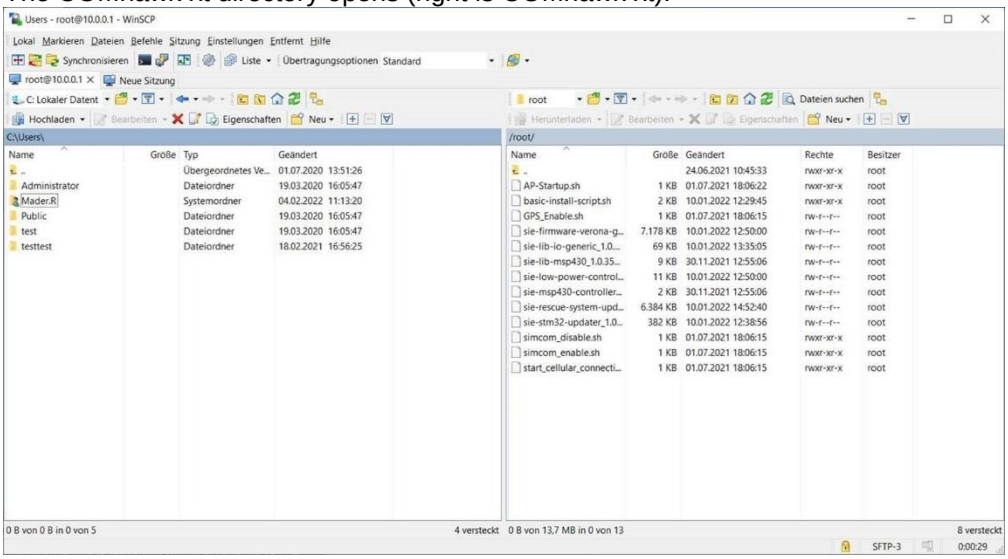


Figure 15 COMhawk xt Start Directory Structure (Example)

Start is the 'root' directory, -> go up and change to the 'home' directory!

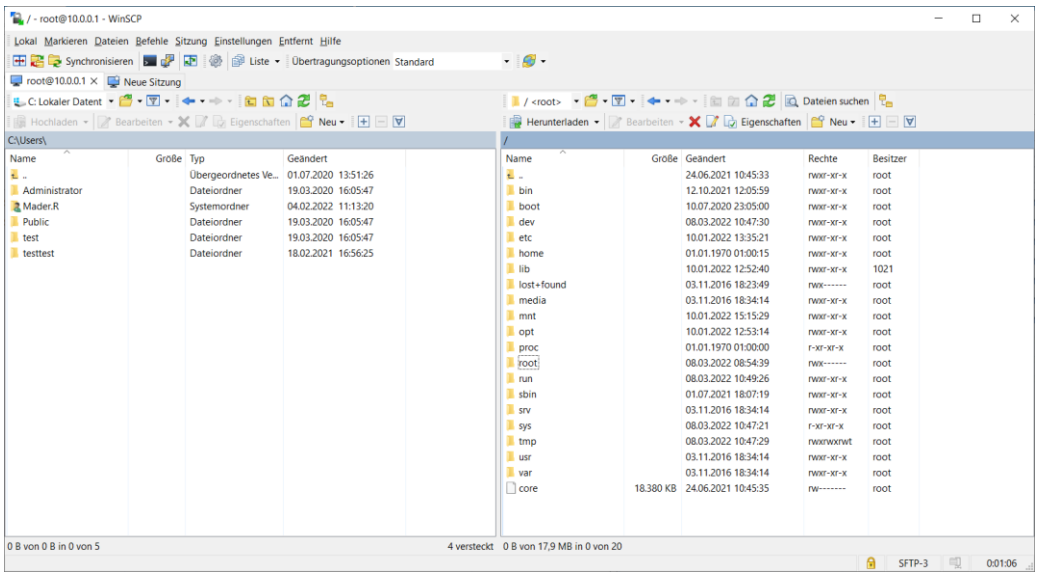


Figure 16 COMhawk xt Root Directory (Example)

14. GPS Position

To call the GPS position, use the Linux standard program: GPSD.

GPSD-client package is installed. As an example you can use “cgps” for showing the GPS position within putty.

The output are the GPS coordinates: LON, LAT, height in a Table.

To close cgps enter: **[STRG + c]** (German keyboard)
To close cgps enter: **[CRTL + c]** (English keyboard]

15. Insert the SIM card

Please be careful and work on an ESD protected workplace!
To set in the SIM card, please go step by step.

Please be careful with the antenna cable for the WIFI module.

Prepare the Verona Gen 4 and the SIM card. Please be careful with the orientation of the SIM card:

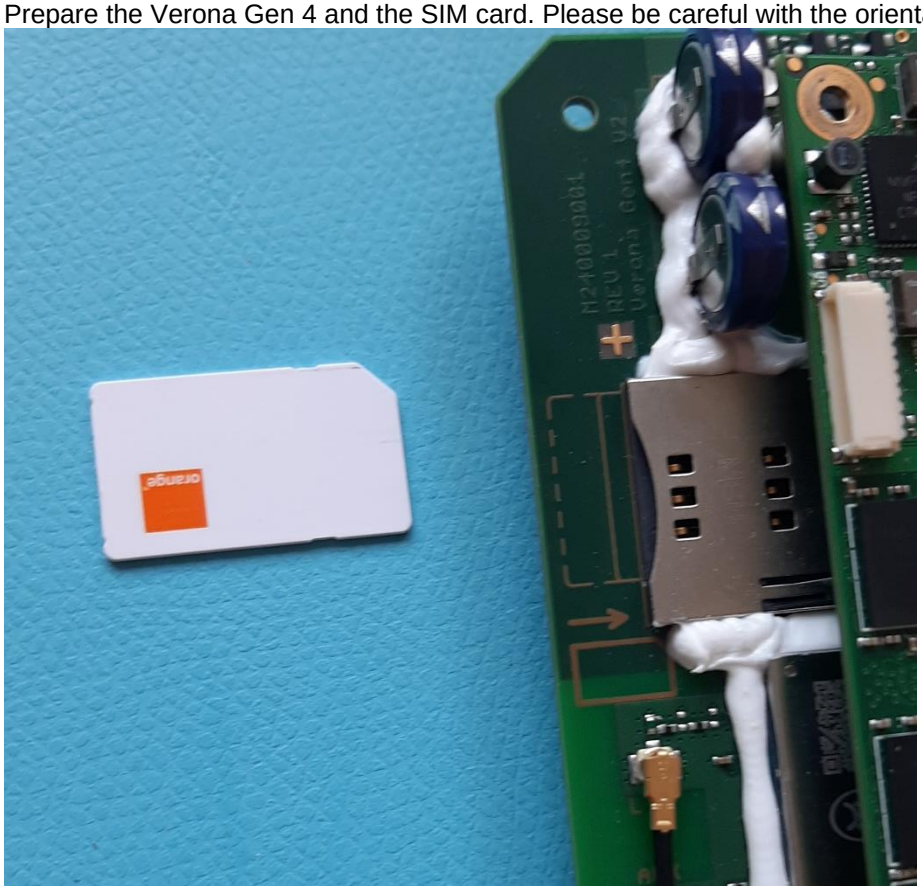


Figure 17 prepare the SIM card with the right Orientation.

Pre-set the SIM card with the right orientation to set into the holder:

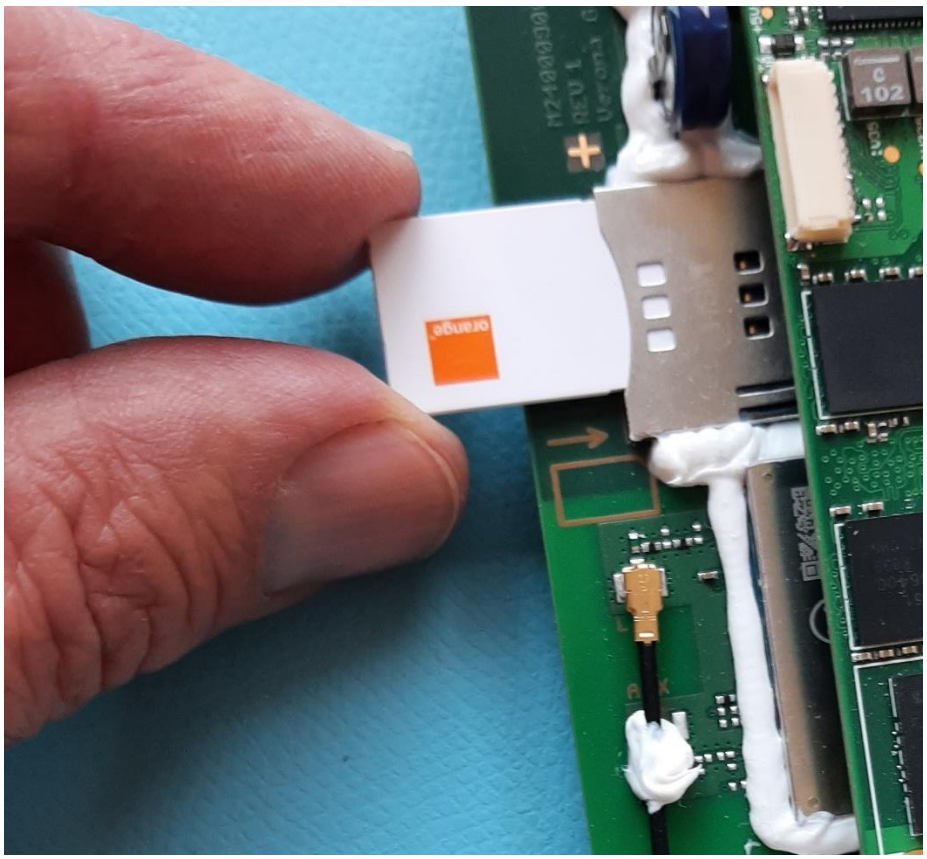


Figure 18 Pre-set the SIM card with the right Orientation to set into the Holder

To insert the SIM card into the SIM connector, please the SIM card into the SIM connector on the PCB.

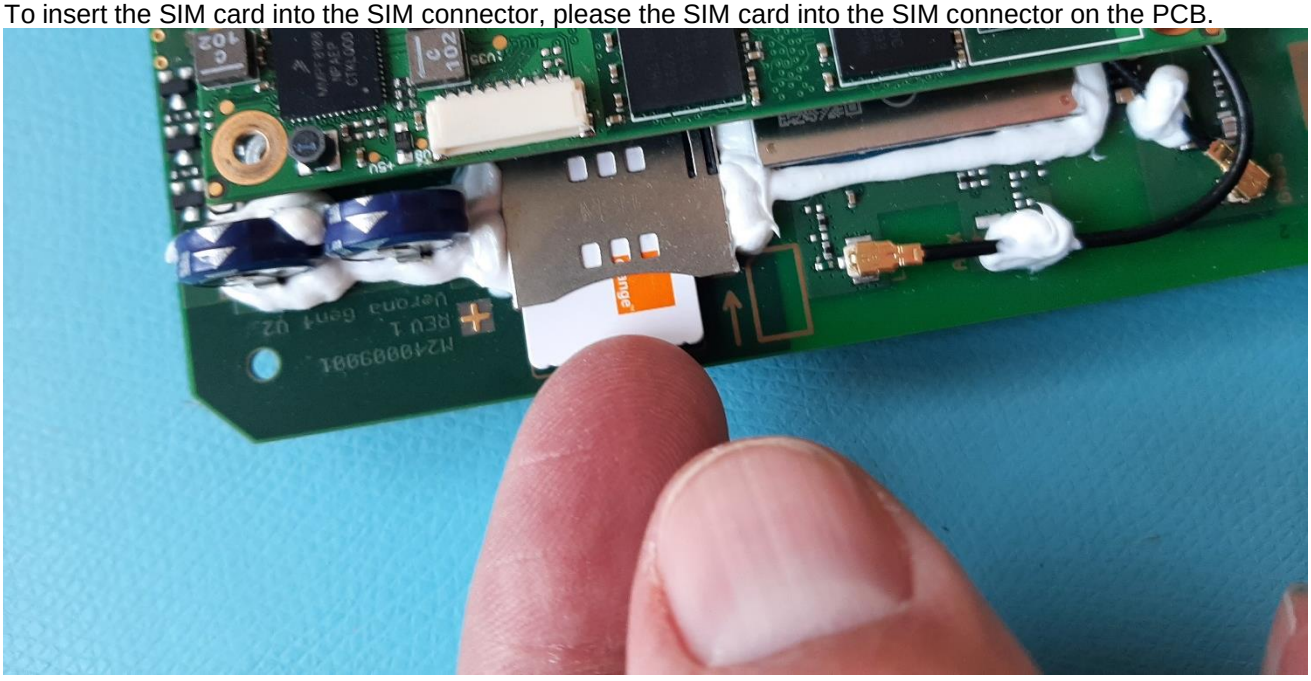


Figure 19 Please the SIM card into the SIM Connector on the PCB. Push carefully in.

SIM card is connected and automatically locked in operation-position.

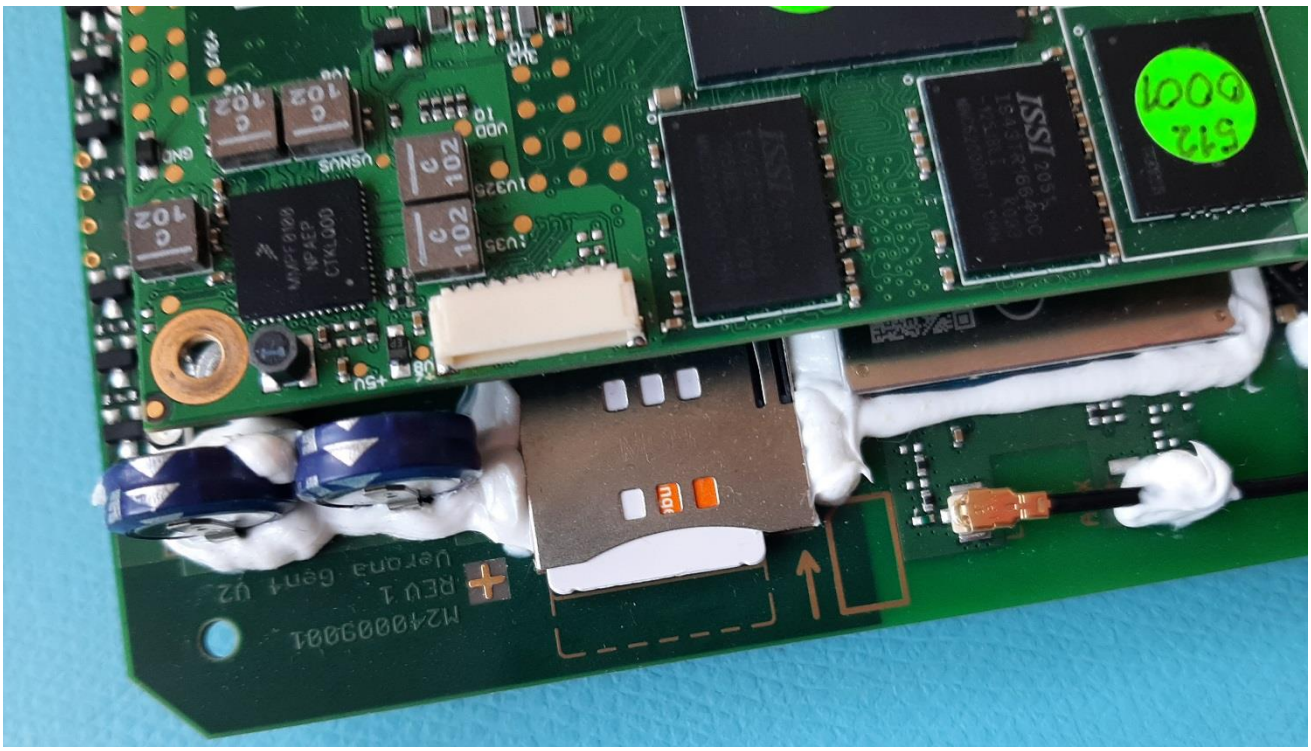


Figure 20 SIM card is connected and automatically locked in Operation-Position.

After setting the SIM card in, please close the housing using either the Cinch Closing tool, or by hand. Press to the front connector with both thumbs and press until you're here the "clicks" of the locks.

16. Verona Gen 4 Housing

16.1. Scale Drawings:

All drawings aren't in scale, please see the dimensions:

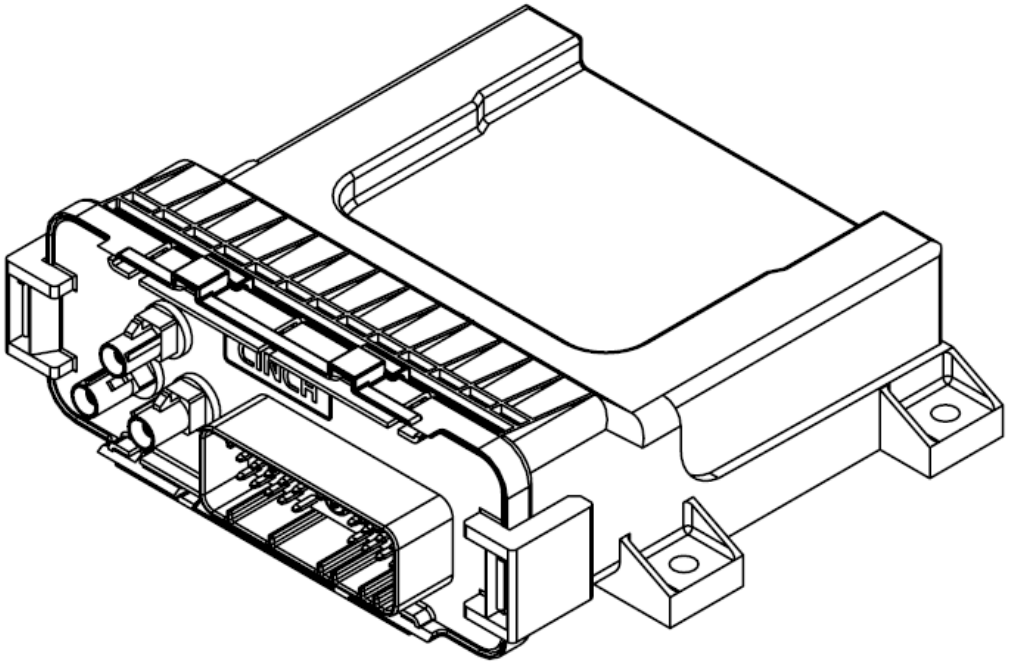


Figure 21 3D view Verona Gen 4 Telemetry

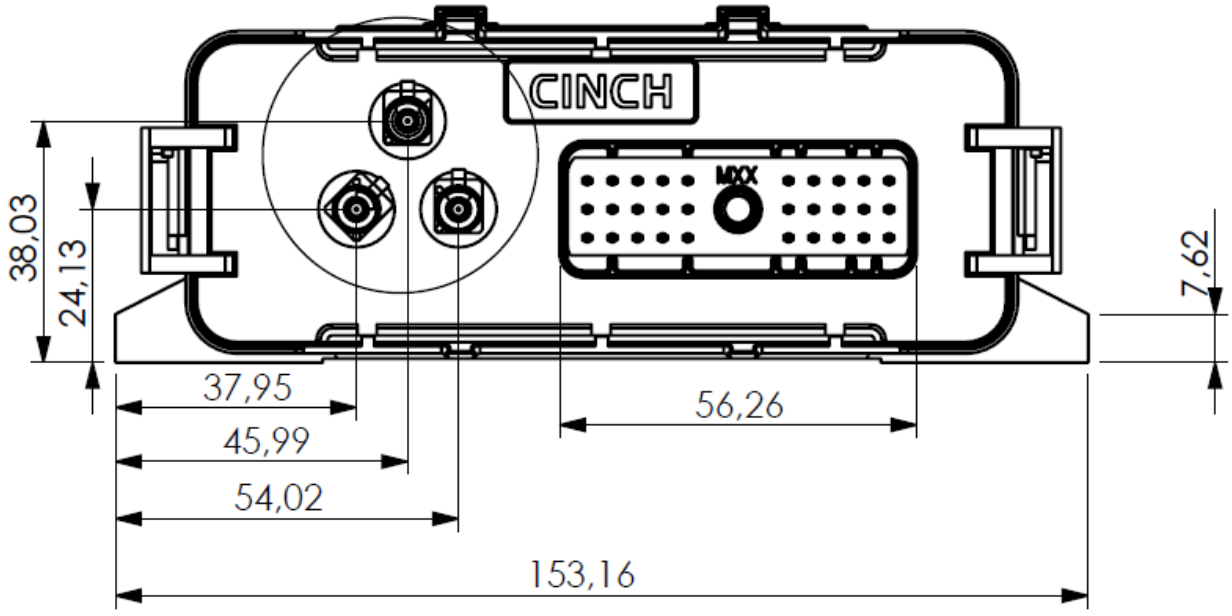


Figure 22 Verona Gen 4 Telemetry - Front View with Dimensions

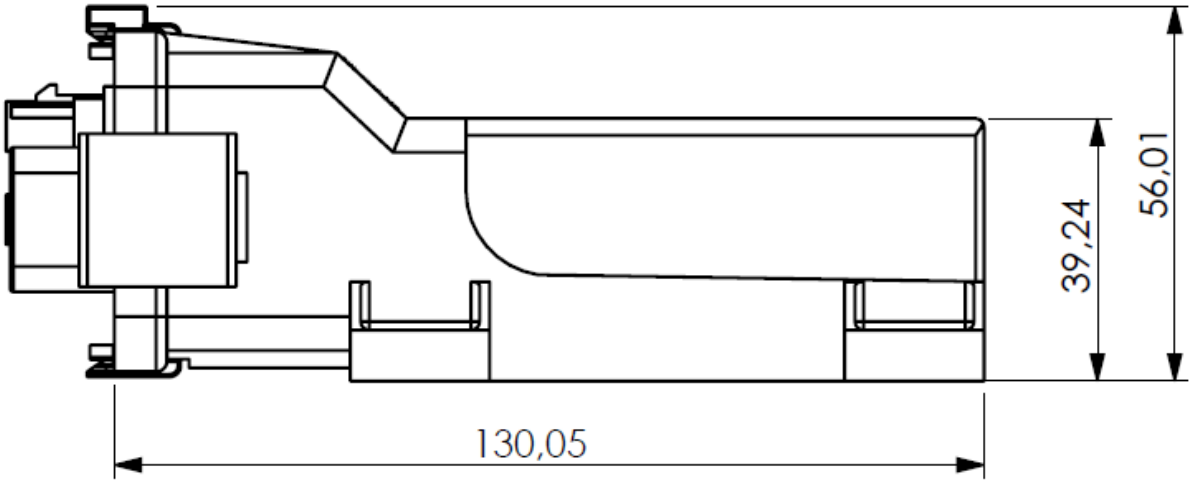


Figure 23 Verona Gen 4 Telemetry - Side View with Dimensions

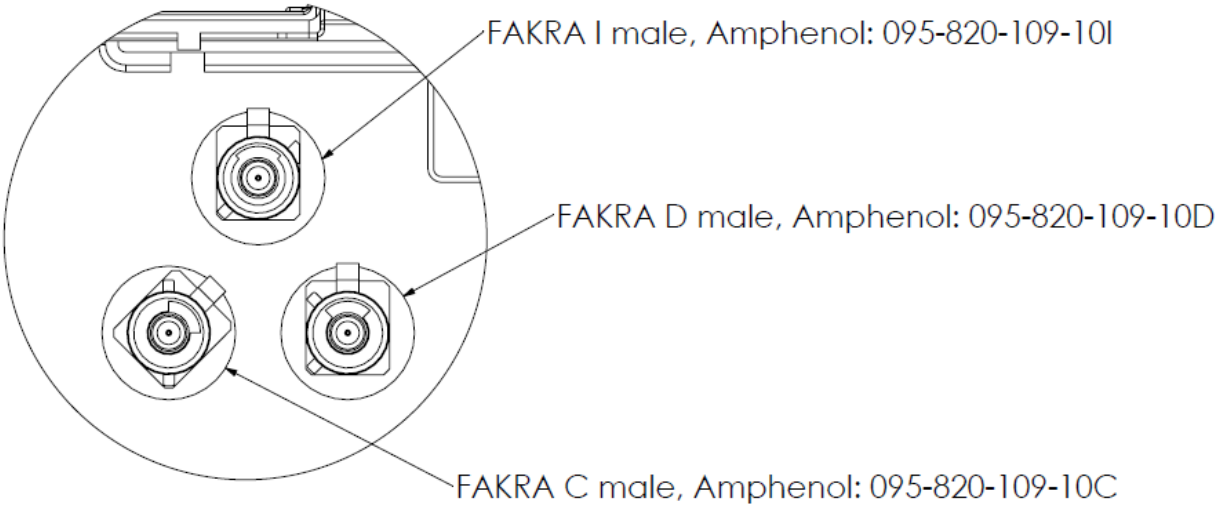


Figure 24 Verona Gen 4 Telemetry - Detail View: FAKRA Antenna Connection

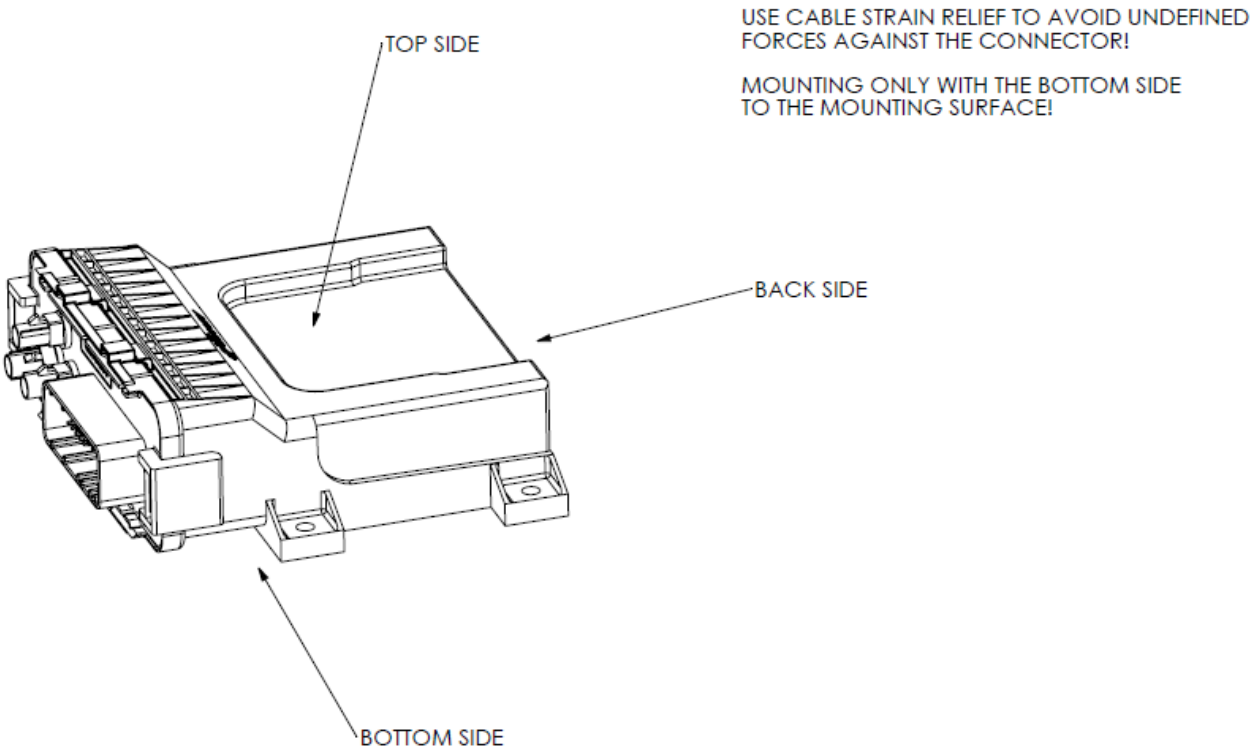


Figure 25 Verona Gen 4Telemetry – Definition of Sides

16.2. Mounting Plate:

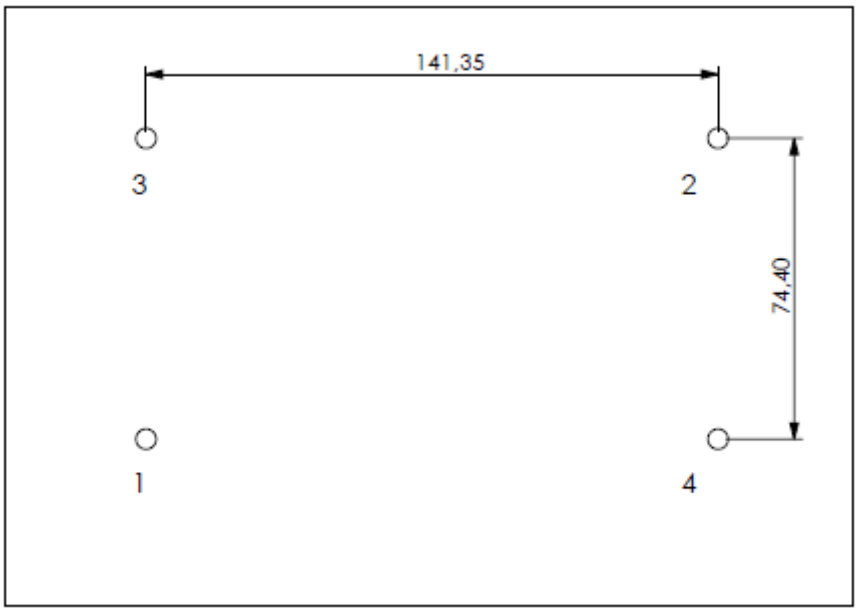


Figure 26 Mounting Scheme

MOUNTING HOLES: HOLE SIZING AND / OR TAPPING AS NECESSARY FOR CUSTOMER MOUNTING HARDWARE
FORMAL M5 SCREW

FASTENERS SHOULD BE TIGHTENED BY HAND AT EACH LOCATION, APPLYING EQUAL PRESSURE AGAINST MOUNTING SURFACE IN ALL LOCATIONS, THEN TORQUE TO 10-12 IN. LB (1.13 - 1.36 Nm) FOLLOWING THE PATTERN SHOWN:
TORQUE PATTERN: 1, 2, 3, 4

17. Verona Gen 4 Pinout

	A	B	C	D	E	F	G	H	J	K
1	LANR+	LANT+	CAN3H	CAN3L	LIN	ANA0	ANA1	ANA2	ANA3	KL30
2	LANR-	LANT-	CAN1H	CAN1L	KL15	ANA4 DIGIN0	ANA5 DIGIN1	ANA5 DIGIN2	ANA7 DIGIN3	KL31
3	CAN0H	CAN0L	CAN2H	CAN2L	TP	OUT0	SENS	EB0 AkkuC+	EB1 AkkuU+	ANAG

Figure 27 Verona Gen 4 Pinout

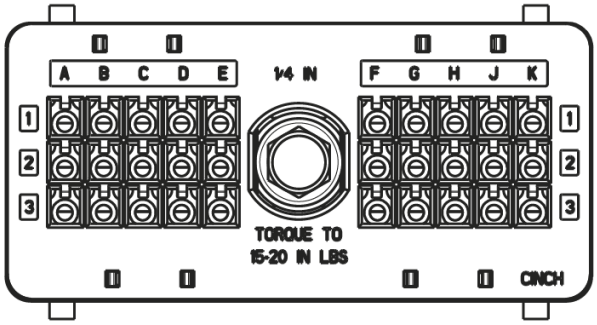


Figure 28 30 Pin Receptacle (Rear View)

Assignment of RJ45-connector for Ethernet according to EIA/TIA 568A (network cable):

Signal	Pin	Color
TX+	1	white/green
TX-	2	green
RX+	3	white/orange
	4	blue
	5	white/blue
RX-	6	orange
	7	white/brown
	8	brown

Figure 29 Ethernet RJ45-Plug and Network-Cable

Required additional material (part of delivery)

1x Sealed plug:	Cinch	581 01 30 029
30x Crimp contact:	Cinch	425 00 00 873

Wiring harness fusing:

Set a fuse 10 A into the wiring harness for KL30 and KL15 supply lines for safe operations.

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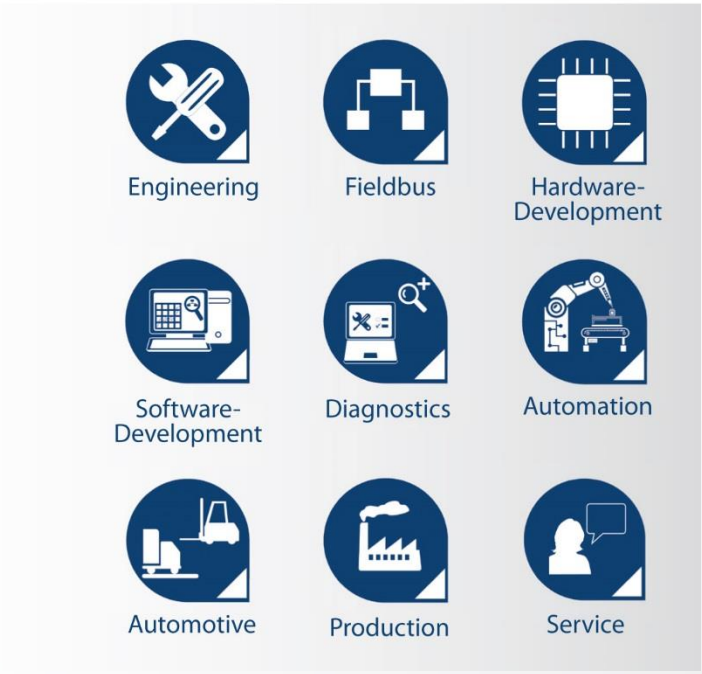
Sontheim Overview and Portfolio



We are looking forward to your enquiry. For personal advice and detailed information please refer to our specialists:

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