

# 6 Interfaces

WCC lite supports various interfaces to acquire data and control external circuitry. That includes two serial port interfaces, relay output, digital input, and external cellular connection antenna.

- 6.1 Serial port interfaces
- 6.2 Relay output
- 6.3 Digital Input
- 6.4 GSM
- 6.5 Wi-Fi

# 6.1 Serial port interfaces

WCC Lite WCC Lite has 2 serial ports (Figure 7). Selectable RS485 (by default) or RS232 interface on PORT1 and RS485 interface on PORT2.



Figure 7: WCC Lite ports

WCC Lite RS485 interface supports baud rates up to 115200 and has an integrated 120 termination resistor. It is recommended to use termination at each end of the RS485 cable. To reduce reflections, keep the stubs (cable distance from the main RS485 bus line) as short as possible when connecting the device. See the typical RS485 connection diagram in figure 8.

**Note:** Double-check if A and B wires are not mixed up.

WCC Lite 3-wire RS232 interface is available on PORT1 and can be selected by the user (see Port settings). Baud rates up to 115200 are supported. See the typical RS232 connection diagram in figure 9.



Figure 8: Typical WCC Lite RS-485 connection diagram



Figure 9: Typical WCC Lite RS-232 connection diagram

## 6.2 Relay output

WCC Lite integrates 1 signal relay (3-way RO connector) with COM (common), NC (normally closed), and NO (normally open) signals.

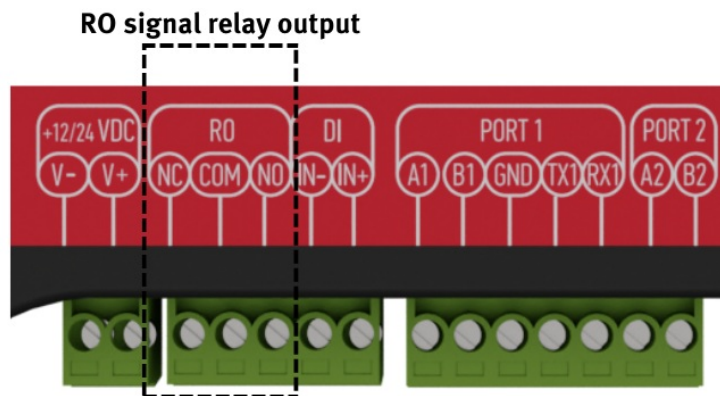


Figure 10: Signal relay connector

Maximum switching power is 60W, maximum contact current is 2A, maximum switching voltage is 60VDC/60VAC. The lower is switching power, the higher is the lifecycle of Relay Output.

Relay electrical endurance:

- resistive load, 30VDC / 1A - 30W min.  $1 \times 10^5$  operations;
- resistive load, 30VDC / 2A - 60W min.  $1 \times 10^4$  operations.

# 6.3 Digital Input

With WCC Lite hardware version 1.4, a digital input functionality has been introduced. Software configuration guidelines are discussed in the **WCC Lite internal signals** section. It changes state when the voltage is between 12-48V (The supported range is between 10-60V).

|               |   |
|---------------|---|
| Input voltage | 12-48 VDC (accepts 10-60V)                                      |
| Protection    | ±60 VDC reverse polarity protection<br>Isolated from main logic |



Figure 11: Signal relay connector

# 6.4 GSM

WCC Lite comes with an optional GSM module.  
There are a few hardware configurations available:

- Without GSM modem.
- With single SIM modem (HW version 1.0 - 1.2) - 2G/3G (GPRS, EDGE / UMTS, HSDPA, HSUPA) version - 5.76Mb/s upload, 7.2Mb/s download. UMTS/HSPA bands 900, 2100. GSM bands 900, 1800. Modem chip - Ublox Sara-U270.
- With single SIM modem (HW version 1.0 - 1.2) - 2G/4G (GPRS, EDGE / LTE) Cat 1 version - 10.3Mb/s upload, 5.2Mb/s download. LTE bands 3, 7, 20. GSM bands 900, 1800. Modem chip - Ublox Lara-R211.
- With dual SIM modem (HW version 1.0 - 1.2) - 2G/3G (GPRS, EDGE / UMTS, HSDPA, HSUPA) version - 5.76Mb/s upload, 7.2Mb/s download. UMTS/HSPA bands 900, 2100. GSM bands 900, 1800. Modem chip - Ublox Sara-U270.
- With dual SIM modem (HW version 1.0 - 1.2) - 2G/4G (GPRS, EDGE / LTE) Cat 1 version - 10.3Mb/s upload, 5.2Mb/s download. LTE bands 3, 7, 20. GSM bands 900, 1800. Modem chip - Ublox Lara-R211.
- With dual SIM modem (HW version 1.3 - 1.4) - 2G/3G/4G (GPRS, EDGE / UMTS, HSDPA, HSUPA / LTE) Cat 4 version - 50Mb/s (max) upload, 150Mb/s (max) download. LTE bands 1, 3, 5, 7, 8, 20, 38, 40, 41. GSM bands 3, 8. UMTS bands 1, 5, 8. Modem chip - Quectel EC25-E.

They are based on a mini PCI-e standard connector and compatible with any other device. Check the label on the package for current modifications.

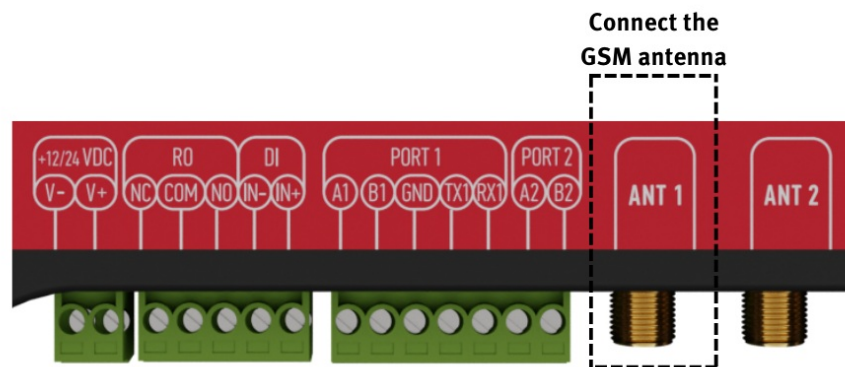


Figure 12: GSM antenna connector

Connect an antenna to the SMA connector labeled “ANT1”. Select a good antenna placement spot considering the operation environment and network coverage of your mobile provider in the area. To enable MIMO functionality for 4G (LTE) modems a second antenna should be connected to the SMA connector labeled “ANT2”.

- 4G (LTE) Cat 1 version modem both antennas are used for LTE communication. In such case, an internal WIFI antenna is used. The network can be limited in distance and speed, especially in metal-based panels.

Make sure the signal level is over -80dBm to have a stable connection to the network.

# 6.5 Wi-Fi

For hardware versions older than version **1.4**, in case a Wi-Fi connection is needed, connect a Wi-fi antenna to the SMA connector labeled “WIFI”. Select a good antenna placement spot considering the operation environment.



Figure 1. Wi-Fi antenna connector (hardware version older than **1.4**)

Newer hardware versions don’t have an option of connecting an external Wi-Fi antenna as MIMO capability for cellular modems has been introduced. In case stronger reach is needed, a user should contact the manufacturer to provide possible solutions.

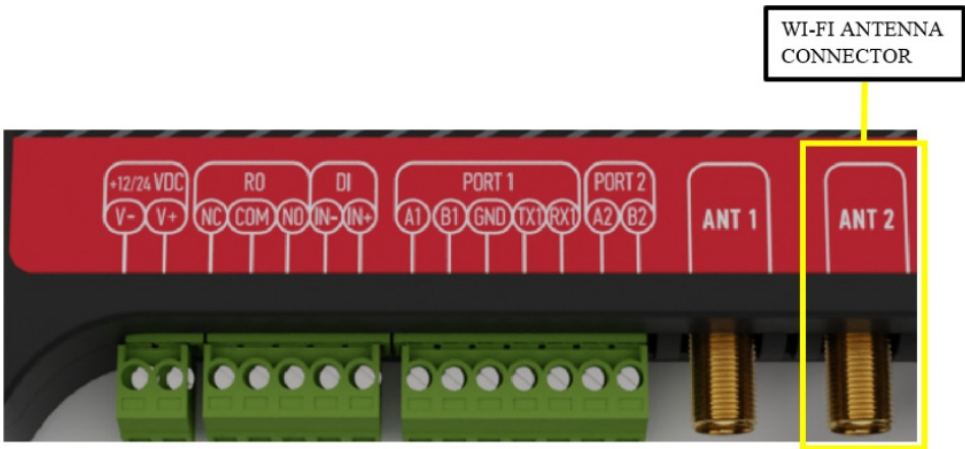


Figure 2. Wi-Fi antenna connector (hardware version newer than **1.3**)

Given that the default hardware configurations are set for GSM on connectors **ANT 1** and **ANT 2**, the Wi-Fi antenna shall remain non-operational in versions exceeding **1.3**. Users are advised to contact the manufacturer before purchasing the product if Wi-Fi functionality is required.

Make sure the signal level is over -80dBm to have a stable connection to the network.