Hardware Manual

Analog input module - R560

2021-01-13

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1 Technical data

This section covers the basic technical data of the R560 unit, see the product sheet for more details.

1.1 Power supply

In ClimaCheck *onsite* systems, the R560 unit is supplied with 24V DC via the serial communication cable connected to the panel. In ClimaCheck *online* installations, the R560 unit is supplied with 24 VDC from the common power supply but it can handle 10-35 V DC.

1.2 Analog inputs

There are 8 analog inputs on the unit, configurable for temperature sensors (Pt1000), pressure transducers or other sensors with voltage (0-10V), current (4-20mA), or resistance signals.

2 Configuration

This section explains how to change Modbus address and analog input configuration between 4-20mA and V/PT input. In most cases the R560 modules will be delivered pre-configured to fit the system, but changes in the setup compared to the order may cause a need for change of these settings.

The ClimaCheck PA Pro III configurator is used to set scale and offset for the analog inputs, to change the inputs to PT1000 or to configure additional R560 modules. See the PA Pro III hardware manual for more details.

2.1 Change Modbus address

Modbus address is set with DIP switches marked ADR on the top left side of the unit, see Figure 1. Address is entered as binary where DIP8 = bit 0, switches increase their bit weight from right to left. Default address for module 1 is 00010100 (20), module 2 is 00010101 (21) and so on, see Table 1, Figure 1 and Figure 2 below.

RS485 bus termination is activated with the BUS END switch. The last device in the Modbus chain should have **BUS END ON,** all other R560 units should be set to **OFF**.
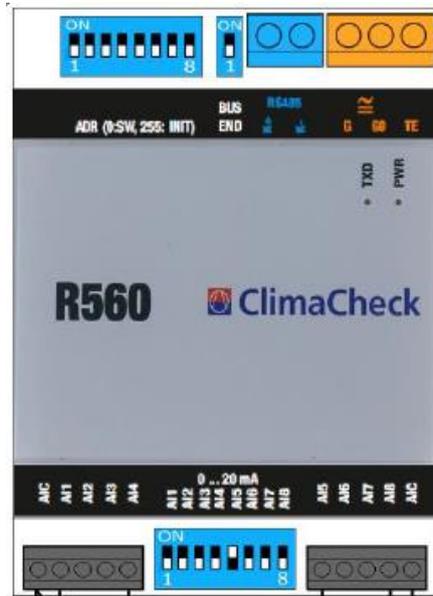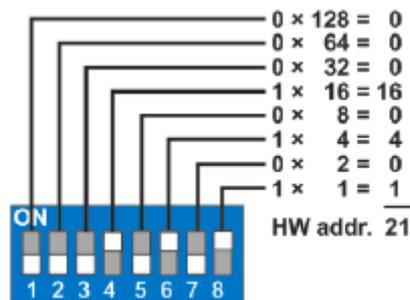

Figure 1 - R560 module

Figure 2, Modbus address calculation
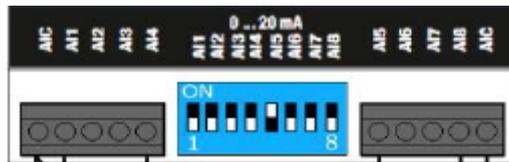
Table 1, Modbus address dip switch

Modbus address	Binary	Dip switch
20	1 2 3 4 5 6 7 8 00010100	ON ↑ 1 2 3 4 5 6 7 8
21	1 2 3 4 5 6 7 8 00010101	ON ↑ 1 2 3 4 5 6 7 8
22	1 2 3 4 5 6 7 8 00010110	ON ↑ 1 2 3 4 5 6 7 8
23	1 2 3 4 5 6 7 8 00010111	ON ↑ 1 2 3 4 5 6 7 8
24	1 2 3 4 5 6 7 8 00011000	ON ↑ 1 2 3 4 5 6 7 8
25	1 2 3 4 5 6 7 8 00011001	ON ↑ 1 2 3 4 5 6 7 8
26	1 2 3 4 5 6 7 8 00011010	ON ↑ 1 2 3 4 5 6 7 8
27	1 2 3 4 5 6 7 8 00011011	ON ↑ 1 2 3 4 5 6 7 8
28	1 2 3 4 5 6 7 8 00011100	ON ↑ 1 2 3 4 5 6 7 8
29	1 2 3 4 5 6 7 8 00011101	ON ↑ 1 2 3 4 5 6 7 8

2.2 Change Analog input mode

DIP switches for the analog inputs can be found in between the AI terminals on the bottom side of the device, see Figure 1. Default setting is 0-10V and PT1000 (DIP switch 1-8 **OFF**). In this mode each input is configured on the ClimaCheck Online server or in the PA Pro III configurator, see PA Pro III Hardware manual for details. For current measurement (0-20mA) the particular DIP switch is changed to ON, see Table 2 and Figure 3.

Table 2, Input mode Dip switch, all set to 0-10V

Figure 3, Analog input DIP switch, AI_5 set to current measurement

2.3 Configuration on PA Pro II

It is possible to use the R560 with PA Pro II. To configure, the R560 script needs to be uploaded to the PA Pro. Contact ClimaCheck support for more information. With the script in place, follow the steps below:

- Connect the PA Pro to your computer
- Open a web browser and enter **http://169.254.1.1**
- The default user name is **"config"** and password **"ef56"** (default)
- Select **Settings** -> **Advanced** - > **External Units**
- Select a unit
- Ensure the correct type of unit is selected **R560**
- Check **Activate** and click **OK**.
- Select the same unit again
- Enter the **address** and the **type** for each input. Check Table 3 for more information. Input type 10 is selected in the example of Figure 4.
- Select the telegram update times: 1 minute (or longer) for **Set input type** and 10 seconds for **Read all**
- Click **OK**
- Continue the setup process by connecting the external channels and activating them

Figure 4, R560 configuration in PA Pro II

The configuration of each input type can be done in the PA Pro II. The correct type needs to be entered to ensure correct values with applicable scale and offset.

Table 3, input types for configuration in PA Pro II

Input type	Description
10	PT1000 with an offset of 0.35 K
20	Voltage, 0-10 V
21	5 Bar pressure transducer with 0-5V output
22	10 Bar pressure transducer with 0-5V output
23	35 Bar pressure transducer with 0-5V output
24	50 Bar pressure transducer with 0-5V output
25	150 Bar pressure transducer with 0-5V output
30	Resistance, 0-1600 Ω
40	Current, 4-20 mA (check section 2.2)
41	0-25 mm/s Vibration sensor with 4-20mA output
50	Resistance, 0-5000 Ω

3 ClimaCheck Onsite portable version

Each portable R560 has 8 tele plug inputs and 4 DIN 5D inputs to be used with the standard PT1000 temperature sensors and pressure transducers. Inputs 3, 4, 7 and 8 are connected to tele plug inputs and inputs 1,2,5 and 6 have both a tele plug and a DIN 5D each to be able to handle both types of sensors, see electrical wiring diagram and Table 4. Note that it is not possible to use an input for both PT1000 and pressure transducer

Table 4

AI	Available connection
1	Tele plug and DIN 5D
2	Tele plug and DIN 5D
3	Tele plug
4	Tele plug
5	Tele plug and DIN 5D
6	Tele plug and DIN 5D
7	Tele plug
8	Tele plug

4 Electrical wiring diagram