

Installation Instructions for the TBIQ-2-1-aa IQnomic Plus Module GOLD/COMPACT

1. General

The IQnomic Plus is used for extra functions for which inputs and outputs are not included as standard in the control unit of the air handling unit.

2. Installation

Mount the IQnomic Plus at a suitable location. One helpful hint is to mount the module at an unoccupied spot on the rail inside the control cubicle of the air handling unit.

Wire the IQnomic to the control unit inside the electrical equipment cubicle of the air handling unit. Connect the communication cable, supplied with the unit, to one of the connections on the module. It is not important which connection is used. The reason why there are two connections is to make it possible to connect several IQnomic in series.

Connect the other end of the communication cable to one of the connections of the control unit, marked Internal EIA-485.

Function selector switch

0 ReCO₂ Interm. night-time heating + extra control seq.)*

1 Coil heat exchanger*

2 Plate heat exchanger*

3 External supervision

4 Spare

5 Spare

6 CoolDX* or External Cooling Control

7 All Year Comfort**

8 Swegon Factory*

9 Preheater***

A Xzone heating* (see separate instructions TBLZ-1-50)

B Xzone heating* (see separate instructions TBLZ-1-50)

C Spare

D Spare

E Spare

F Spare

* Not COMPACT/GOLD LP

** Not COMPACT

*** Not COMPACT Air/Heat

3. Data

Terminal contacts: 2 x RJ 12 6/6

Voltage supply

(Via modular contact): 24V DC

Relay contacts 5A/AC3

12A/AC1

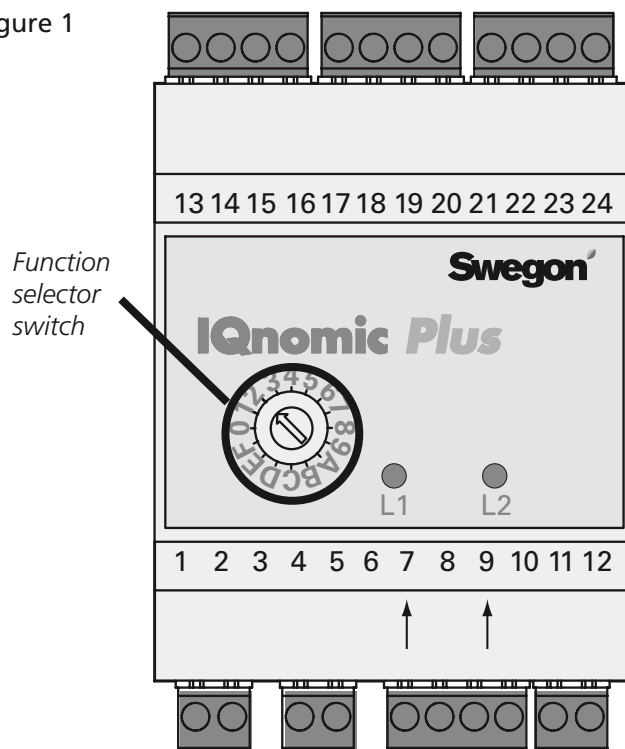
Ambient temp.

Normal: -20 °C — 40 °C, 10 — 95 % RH

Degree of protection: IP 20 to EN 60529

CE approval: EN 61000-6-2, EN 61000-6-3

Figure 1



Terminal number

1	↘	Relay 1
2	—	
4	↘	Relay 2
5	—	
7	→	Digital, IN 1
8	—	
9	→	Digital, IN 2
10	—	
11	+	External power supply, 24 V DC
12	— *	
13	— *	0–10 V, OUT 2
14	+	
15	— *	0–10 V, OUT 1
16	+	
17	— *	0–10 V, IN 2
18	+	
19	— *	0–10 V, IN 1
20	+	
21	—	Digital sensor 2
22	s	
23	—	Digital sensor 1
24	s	

* Measuring zero. Internally connected.

4. Function

4.1 ReCO2

The IQnomic Plus module is used for the ReCO2 function (function selector switch set to position 0, see Figure 1). The function is activated in the GOLD unit's hand terminal or via the communication interface.

The module controls mixture and outdoor air dampers. Connect signal response from the mixture damper's actuator to terminal 18 (+) on the module. Do not connect outdoor air damper's signal response, monitoring is carried out by the unit's flow alarm.

Connect the control signal for the mixture damper's actuator to terminal 14 (+) on the module. Connect the control signal for the outdoor air damper's actuator to terminal 6 (+).

If the function is to be controlled from an external CO2 sensor, or similar with signal 0- 0 VDC, connect it to terminal 9 (-) and 20 (+).

Intermittent night-time heating + extra control sequence

The module can also be used for a combination of the intermittent night-time heating and extra control sequence functions (function selector switch in position 0, see Fig. 1).

Connect the air recirculation damper just like you would for the ReCO2, see Fig. 2.

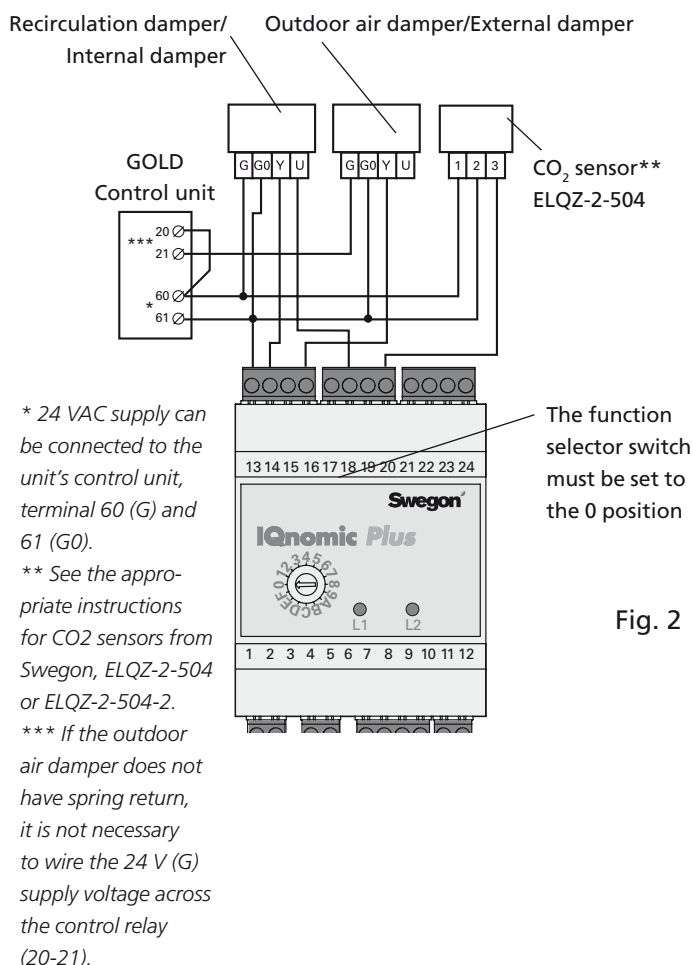


Fig. 2

4.2 Coil heat exchanger

The IQnomic Plus module is used for the coil heat exchanger function.

An IQnomic Plus module is installed, as standard, in all GOLD CX air handling units. The IQnomic Plus module's function selector switch is set to Position 1.

The module controls the circulation pump of the pipework package and the valve actuator on the coil heat exchanger.

A limiting sensor is connected to the module. Readings from the temperature sensor (strap-on type) prevent the water circulating through the extract air coil from reaching such low temperatures that freezing is likely.

The GOLD CX unit requires communication with an IQnomic Plus module (1) so that no alarm will trip.

The contactor for controlling the circulation pump is connected to terminals 1 and 2 on the module.

Signal response from the contactor is connected to terminals 7 and 8 on the module.

The control signal (Y) for the valve actuator is connected to terminal 6 (+) on the module.

The valve position signal (U) is connected to terminal 20 (+) on the module.

The conductors for supplying 24 V AC power to the valve actuator must be connected to Terminals 203 (G0) and 204(G). A jumper must be fitted between Terminal 12 on the module and Terminal 203 (GO) to give reference to control signals.

Connect the temperature sensor conductors to Terminals 24 (white wire) and 23 (brown wire).

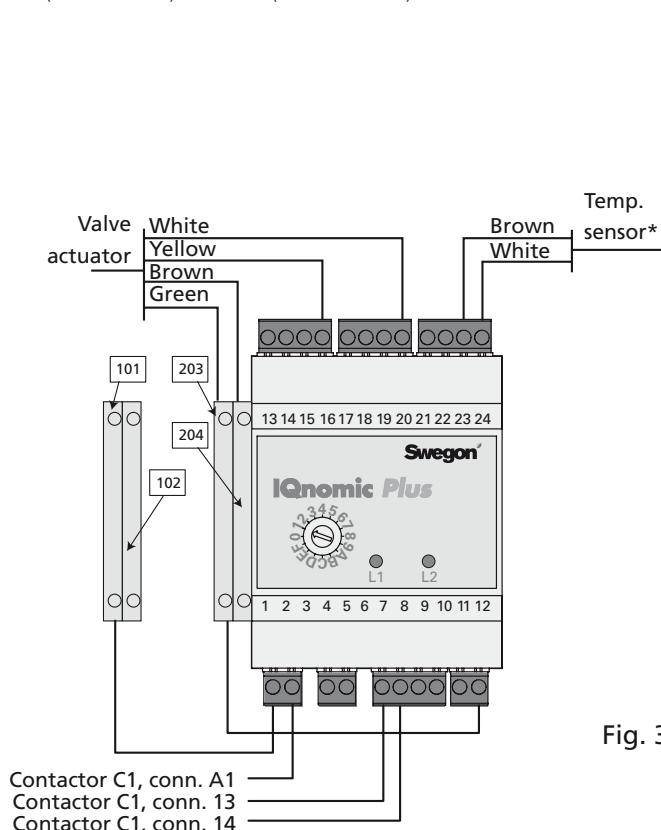


Fig. 3

4.3 Plate heat exchanger

The IQnomic Plus module is used for the plate heat exchanger function.

An IQnomic Plus module is installed, as standard, in all GOLD PX air handling units. The IQnomic Plus module's function selector switch is set to Position 2.

The module controls the by-pass and shut-off damper actuators on the plate heat exchanger.

Two limiting sensors are connected to the module. Readings from the temperature sensor (strap-on type) prevent the temperature in the foil, in the extract air passages of the heat exchanger cube, from reaching such low temperatures that freezing is likely.

The GOLD PX unit requires communication with an IQnomic Plus module (2) so that no alarm will trip.

The control signal (Y) for the damper actuator is connected to terminal 6 (+) on the module.

The damper actuator signal response (U) is connected to terminal 20 (+) on the module.

The conductors for supplying 24 VAC power to the valve actuator must be connected to Terminals 201 (G0) and 202(G). A jumper must be fitted between Terminal 12 on the module and Terminal 201 (GO) to provide reference to the control signals.

Connect the conductors of the one temperature sensor to Terminals 24 (white wire) and 23 (brown wire); those of the other sensor to Terminals 22 (white wire) and 21 (brown wire) with the other.

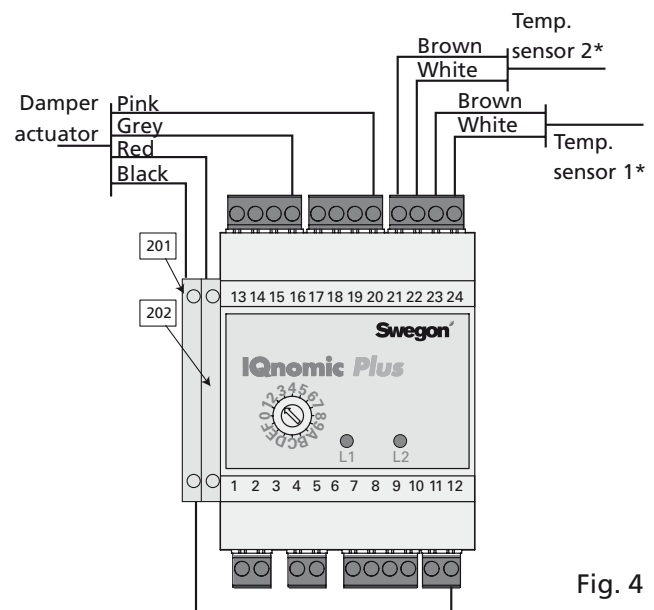


Fig. 4

* Digital temperature sensors require correct polarity. Be careful when you wire the conductors.

4.4 External supervision

The IQnomic Plus module is used for external supervision by means of analogue and digital signals (function selector switch set to position 3, see figure) when regular means of communication with the air handling unit cannot be used. The module is, for example, suitable for use if the air handling unit is to be controlled/supervised via a computer substation or a PLC system.

The function can be activated in the terminal of the unit or via a communication interface.

Relay 1	Connects between Terminals 1 and 2 when the control unit, in the terminal, indicates Selected function*, active Factory-preset function: Heating by means of heat exchanger required.
Relay 2	Connects between Terminals 4 and 5 when the control unit, in the terminal, indicates Selected function*, active. Factory-preset function: Cooling required.
Digital In 1	Resets any possible alarms on closure. Hot water stop, cold water stop, alarm reset.
Digital In 2	Resets any possible alarms on closure. Hot water stop, cold water stop, alarm reset.
Digital sensor 1	Spare
Digital sensor 2	Spare
0 - 10 V In 1	Spare
0-10 V In 2	Spare
0 - 10 V Out 1	Indicates the present supply airflow, from 0 to the AHU fans' max speed.
0 - 10 V Out 2	Indicates the present extract airflow, from 0 to the AHU fans' max speed.

* Two of the functions below can be indicated:

GOLD/COMPACT

Cooling Boost, Heating Boost, Cooling load, Heating load – heat exch., Heating load – air heater, Supply air downspeed regulation, Electric air heater capacity reduction, intermittent night-time heating, Summer night cooling, Morning Boost, Heat exch. defrosting.

GOLD RX/PX/CX/SD

Extra control sequence for heating, Extra control sequence for cooling, Damper relay, Operating relay, Auto operation, Manual operation, Extra control sequence for hot water, Extra sequence for cold water.

4.5 CoolDX or External cooling control of the COMPACT and GOLD

An IQnomic Plus module is mounted as standard in all the CoolDX units, for external cooling control of the COMPACT and GOLD. Otherwise the module is an extra accessory (function selector switch set to position 6. See Figure 1).

The desired cooling function can be set in the hand-held micro terminal of the air handling unit. If you select CoolDX, see Section 4.5.1, if you select external (remote) cooling control, see Section 4.5.2.

4.5.1 Cool DX

The CoolDX cooling unit is installed and trial run from the factory.

If you select the CoolDX function in the hand-held micro terminal, you should operate the automatic cooling control function as: On/Off cooling in 3 steps in the binary mode.

The IQnomic Plus module's relay outputs DO 1 (terminal block 1-2) and DO 2 (terminal block 4-5), control the contactors for the two compressors of the cooling unit.

The digital inputs DI 1 (terminal block 7-8) and DI 2 (terminal block 9-10), receive contactor responses from the contactors of the compressors. If you do not receive any response from the contactors or if the responses from the contactors are constant, Alarm no. 85 or 86 will trip.

The AO 2 analogue output (terminal block 14 (+)) is used for modulating 5 V as a reference for supervising the in-service pressure switches via analogue inputs AI1 and AI2.

4.5.2 External cooling control of the COMPACT and GOLD

When the IQnomic Plus module is used for controlling other types of cooling circuit valves or cooling units (external cooling control), the inputs must be fitted with a jumper (if they are not used for external alarms). Jumpers must also be fitted from terminal block 14 to terminal block 20 and terminal block 18 (if they are not used for external in-service pressure switches).

IQnomic Plus Module Number 6 must be manually activated in the hand-held micro terminal.

Relay outputs, DO 1 (terminal block 1-2) and DO2 (terminal block 4-5) are used for on/off controlling of the cooling units or the circulation pump in the cooling water circuit.

The digital inputs, DI 1 (terminal block 7-8) and DI 2 (terminal block 9-10), can be used for external alarms with normally-closed function. The alarm text will be the same as that for the CoolDX (Alarms 85 and 86).

The AO 1 analogue output (terminal block 15 (+)) is used for modulating 0-10 V to the actuator for the cooling circuit valve or the cooling unit with capacity regulation.

The AO 2 analogue output (terminal block 14 (+)) is used for modulating 5 V as a reference for supervising the in-service pressure switches, for instance, via analogue inputs AI 1 and AI 2. 0V in on input AI 1 stops output DO 1 and 0 V in on input AI 2 stops output DO 2. Each relay is energised when the input has 5 V in again and the restarting time has expired.

4.6 All Year Comfort

The IQnomic Plus is used for the All Year Comfort function, (function selector switch set to position 7, see Figure 1).

See the All Year Comfort Function Guide and the Installation instructions for the TBLZ-1-59 equipment cubicle

4.7 Swegon Factory

The IQnomic Plus module is used for the Swegon Factory function (function selector switch set to position 8, see Figure 1) where type BOOSTER low-velocity supply air terminals with damper motor are used. Relay 1 on the module is energized whenever the supply air temperature is higher than the room temperature; relay 2 operates inversely compared to relay 1, i.e. when relay 1 is energized, relay 2 is de-energised and vice versa. For wiring particulars, see Figure 6.

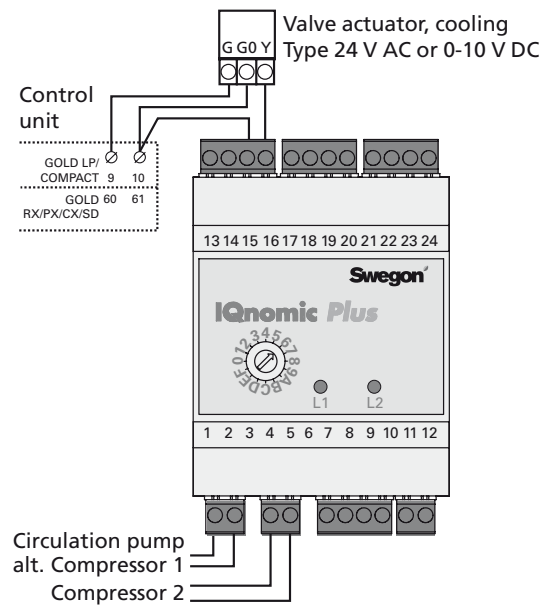
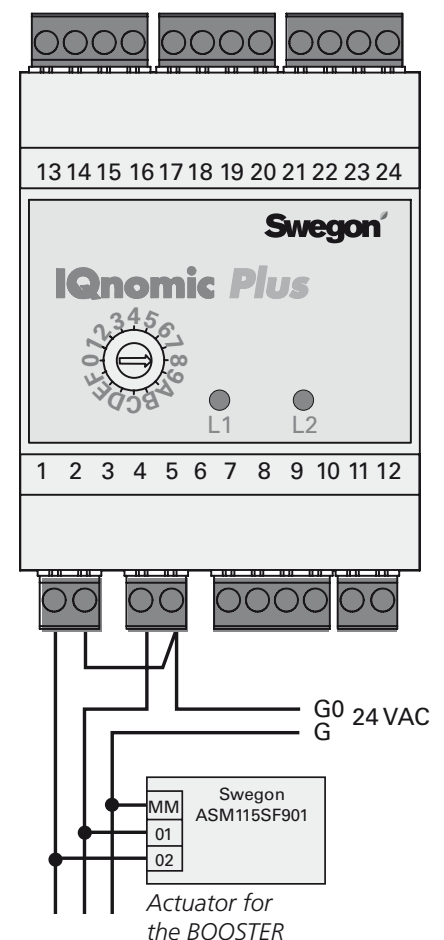


Fig. 5

Fig. 6



4.7 Preheater

The IQnomic Plus module is used for the preheating function (function selector switch set to position 9, see Figure 1).

The function is activated in the GOLD unit's hand terminal or via the communication interface.

The module controls an air heater for water (fig. 7) or an electric air heater (fig. 8)

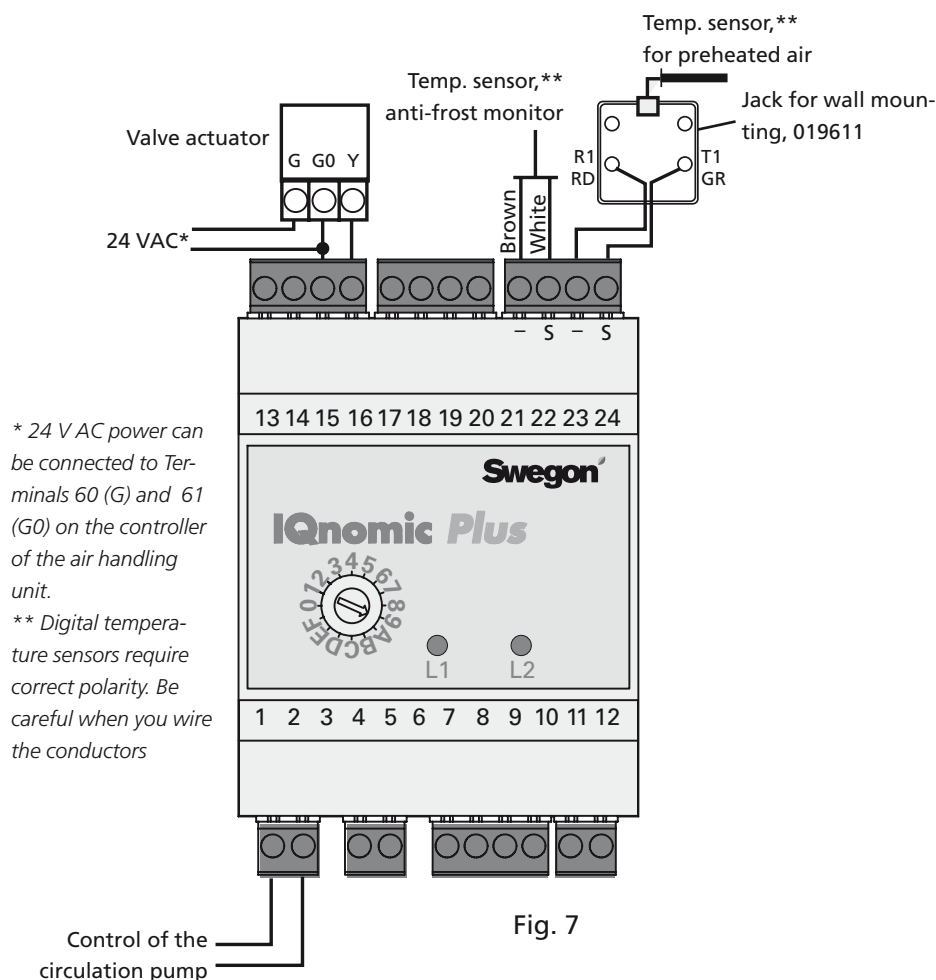
Connection of air heater, water, to GOLD, TBLA

Connect control signal 0-10 VDC for the electric air heater or valve actuator to terminals 5 (-) and 6 (+).

Connect any pumps to terminals 1 and 2.

Connect any anti-frost sensors for the water air heater to terminals 21 and 22. If an electric air heater is used, closure must be obtainable from potential-free contacts.

Connect temperature sensors (TBLZ-1-30) for preheating to terminals 23 and 24.



Connection of standard air heater to GOLD, TBLE

Standard TBLE coils are fitted with quick coupling for connection to control cable. Connect the quick-fit connector to the adaptor (TBLZ-1-55) and from there further with loose cables as shown in Figure 8 or, as an alternative, clip off the control cable beside the quick-fit connector and peel approx. 100 mm of insulation from the cable.

- Connect white/orange or white wire to Terminal 21.
- Connect blue wire to Terminal 22.
- Connect white/blue or light blue wire to Terminal 15.
- Connect orange wire to Terminal 16.

Other wires are not used to connect air heaters for pre-heating.

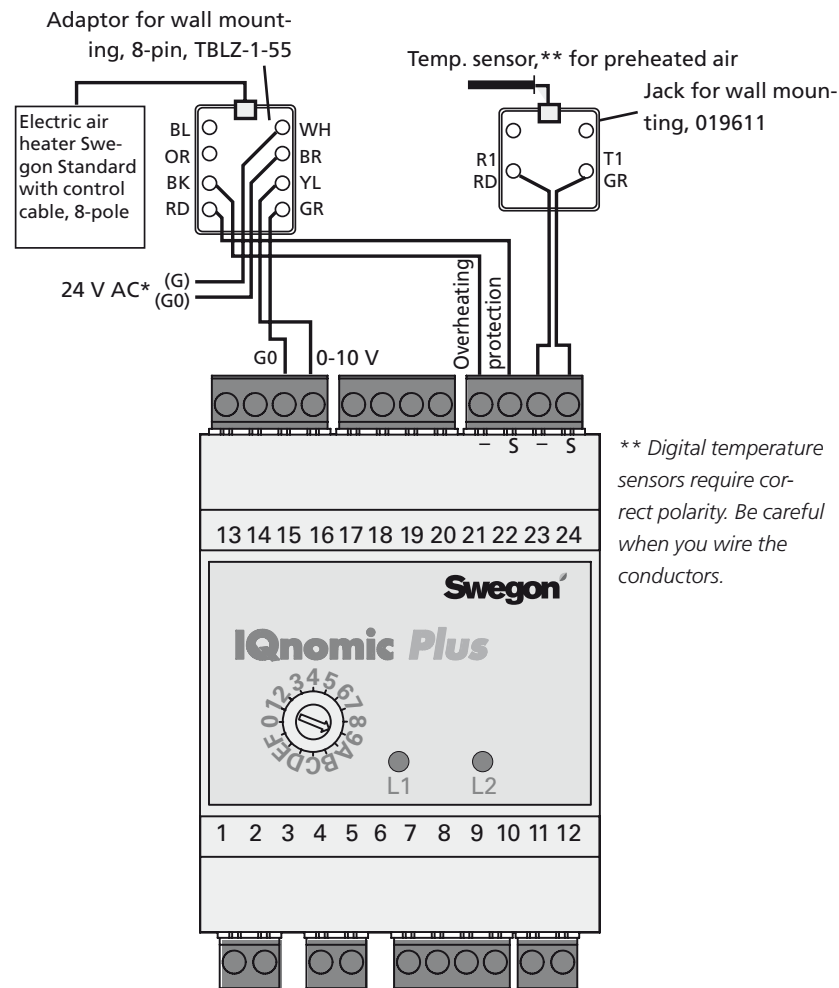


Fig. 8

