

# 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 ReCO<sub>2</sub> (Intermittent night-time heating + extra control sequence)\* or Input/Output connections\*\*\*\*

1 Coil heat exchanger\*

2 Plate heat exchanger\*

3 External supervision

4 Humidification\*

5 AQUA Link\*

6 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 Enhanced heating sequence\*

F Spare

\* Not COMPACT/GOLD LP

\*\* Not COMPACT

\*\*\* Not COMPACT Air/Heat

\*\*\*\* Do not apply to GOLD RX/IPX/CX/SD

## 3. Data

Terminal contacts: 2 x RJ 12 6/6

Voltage supply

(Via modular contact): 24V DC

Relay contacts  
5A/AC3  
12A/AC1

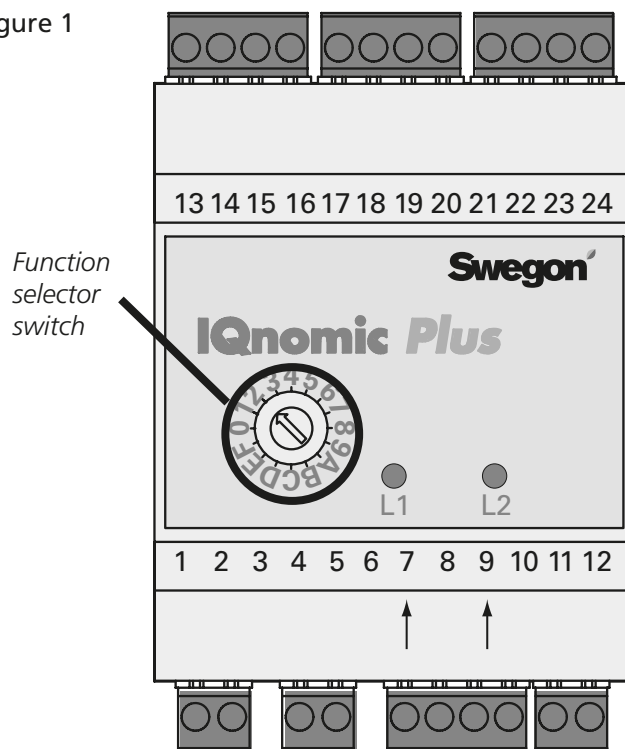
Ambient temp.

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

\* 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.

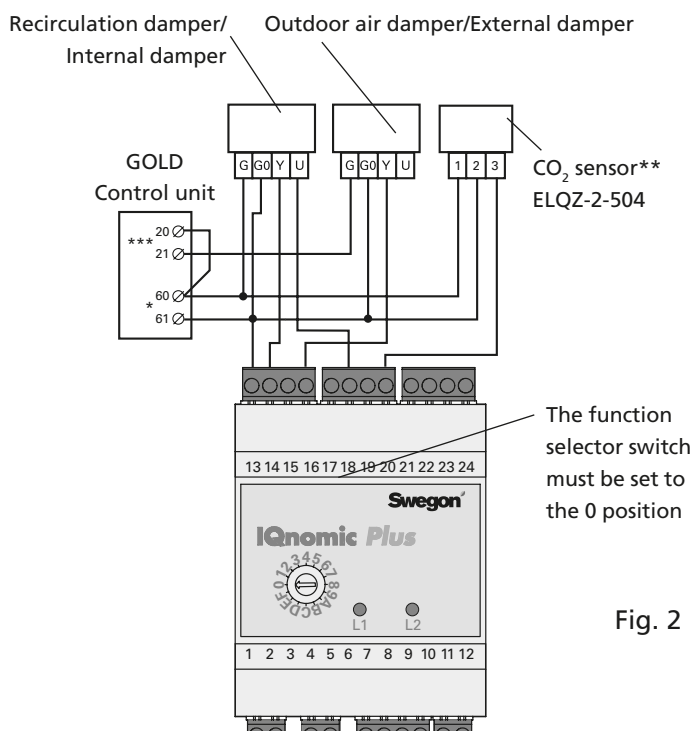


Fig. 2

\* 24 VAC supply can be connected to the unit's control unit, terminal 60 (G) and 61 (G0).

Applies to GOLD size 100/120 only:

If the total load on wiring terminals 58-59 and 60-61 is higher than 16 VA, you should wire the leads to terminals 201 (G) and 202 (G0). Wiring terminals 201-202 can be loaded with a total of max. 48 VA.

\*\* See the appropriate instructions for CO2 sensors from Swegon, ELQZ-2-504 or ELQZ-2-504-2.

\*\*\* If the outdoor air damper does not have spring return, it is not necessary to wire the 24 V (G) supply voltage across the control relay (20-21).

## 4.2 Input/Output connections

The IQnomic Plus is used for the Input/Output connection function (function selector switch in position 0. See Figure 1).

The function can be activated in the hand-held air handling unit's micro terminal.

The GOLD LP/COMPACT has as standard two inputs and two outputs respectively. In applications in which this is not sufficient, the IQnomic Plus module can be used for increasing the number of inputs and outputs to 4 respectively.

### Outputs

*When the IQnomic Plus module is used, a maximum of four of the functions stated below can be combined as standard.*

Optional functions:

- Damper, output: For control of the outdoor air/exhaust air damper.
- Operation, output: Indicates that the unit is operating.
- Low speed, output: For indicating low speed operation.
- High speed, output: For indicating high speed operation.
- A Alarm, output: For type A group alarms.
- B Alarm, output: For type B group alarms.
- Heating, output: For controlling external heating.
- Cooling, output 1: For controlling external cooling.
- Cooling, output 2: For controlling external cooling.

### Inputs

*When the IQnomic Plus module is used, a maximum of four of the functions stated below can be combined as standard.*

Optional functions:

- External stop: The unit will stop if the input is not closed.
- External LS: For external overtime operation via timer (switch clock), from stop to low speed operation.
- External HS: For external overtime operation via timer (switch clock), from stop or low speed operation to high speed operation.
- External Alarm 1: For connection of External Alarm 1.
- External Alarm 2: For connection of External Alarm 2.
- External reset: For connection of the pushbutton for resetting a tripped alarm.
- External fire alarm: A fire alarm will trip if the input is not closed.

### 4.3 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).

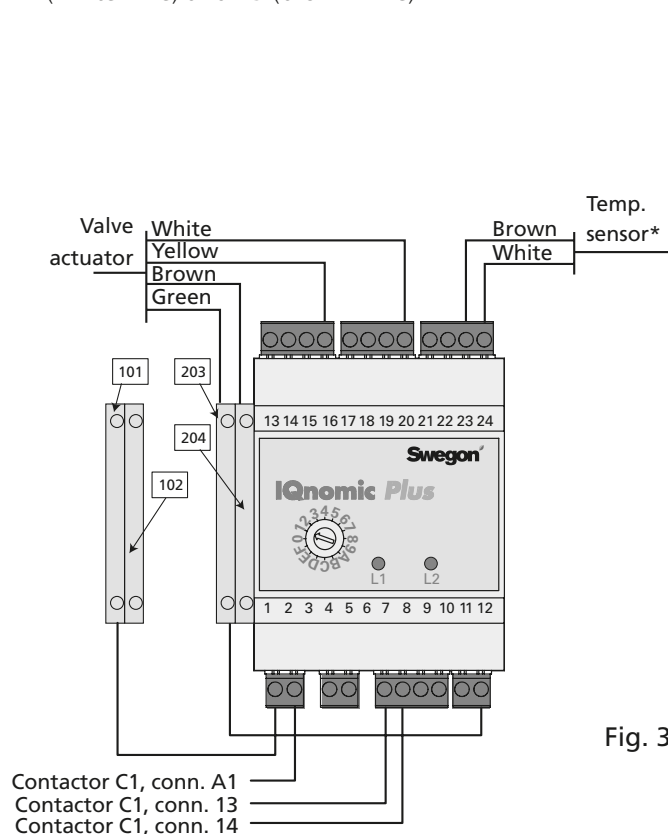


Fig. 3

### 4.4 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.

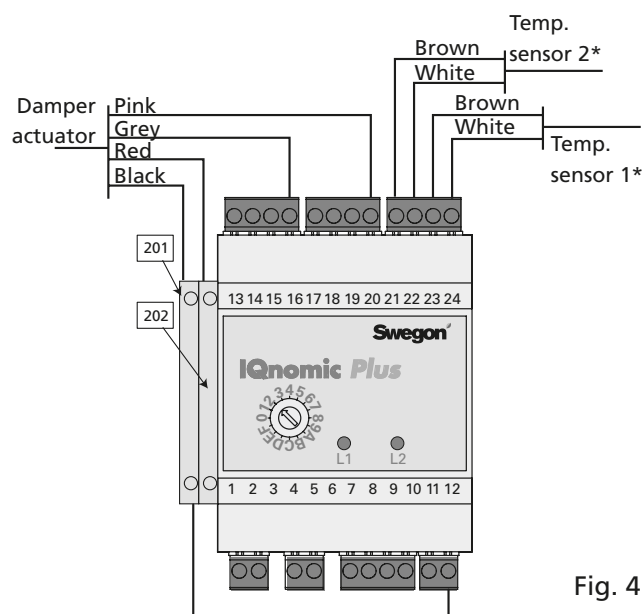


Fig. 4

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

## 4.5 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.

\* Two of the functions below may be indicated:

### All GOLD/COMPACT units

Cooling Boost, Heating Boost, Cooling demand, HRC heating demand, Reheating demand, Supply airflow regulation to lower rate, Reduction in electric air heater output, Intermittent night heating, Summer night cooling, Morning Boost, HRC defrosting.

### GOLD RX/PX/CX/SD only

Extra heating control sequence, Extra cooling control sequence, Damper relay, Operation relay, Auto operation, Manual operation.

Digital In 1 Connect to terminals 7 and 8.  
The following functions can be selected in the hand-held micro terminal:  
- Alarm reset. Resets possible alarms on closure.  
- External stop of the AYC cooling water flow regulation system. Blocks the cooling water flow regulation and pump function when the input is interrupted.\*\*  
- External stop of the AYC cooling water flow regulation system. Blocks the heating water flow regulation and pump function when the input is interrupted.\*\*  
Factory preset function: Alarm reset.

Digital In 2 Connect to terminals 9 and 10.  
The following functions can be selected in the hand-held micro terminal:  
- Alarm reset. Resets possible alarms on closure.  
- External stop of the AYC cooling water flow regulation system. Blocks the cooling water flow regulation and pump function when the input is interrupted.\*\*  
- External stop of the AYC cooling water flow regulation system. Blocks the heating water flow regulation and pump function when the input is interrupted.\*\*  
Factory preset function: Alarm reset.

\*\* GOLD RX/PX/CX/SD only

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.

## 4.6 Humidification

### Steam humidifier

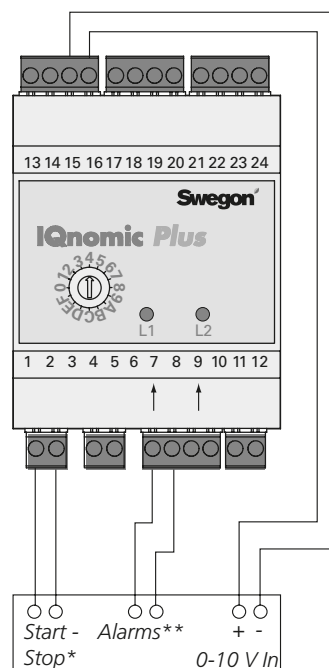
Select Humidification in the AHU hand-held micro terminal or via a communication interface (function selector switch set to position 4; see Fig. 1).

Use relay output DO 1 (Terminals 1-2) for controlling the steam humidifier, on/off.

Digital input (Terminals 7-8) can be used for external alarms. Select normally open or normally closed contact function in the AHU hand-held micro terminal.

Use the analogue output AO 1, Terminals 15 (-) and 16 (+), for variably modulating 0 – 10 V to the steam humidifier.

Fig. 5



Steam humidifier (not Swegon)

\* Normally-open contact start the humidifier.

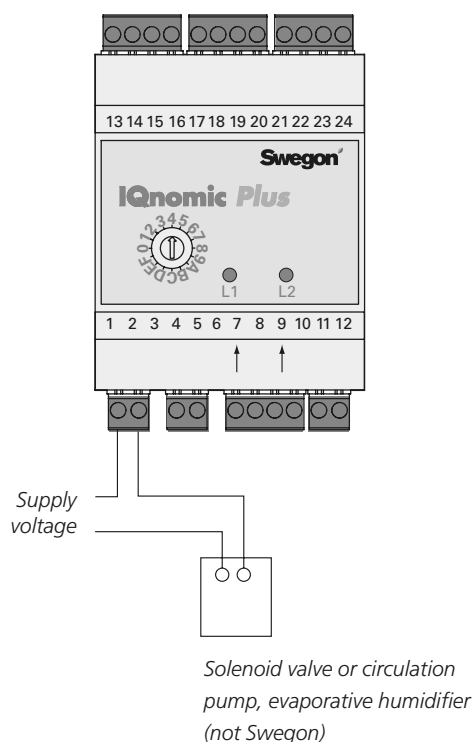
\*\* Select the normally-open contact function in the AHU hand-held micro terminal.

### Evaporative humidification

Select Humidification in the AHU hand-held micro terminal (function selector switch set to position 4; see Fig. 1).

Relay output DO 1 (use Terminals 1-2) for controlling the humidifier's solenoid valve or circulation pump, on/off.

Fig. 6



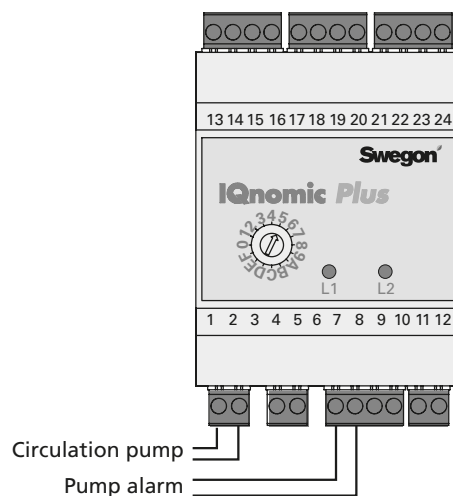
#### 4.7 AQUA Link

Select AQUA Link in the AHU's hand-held micro terminal or via a communication interface (function selector switch set to position 5; see Fig. 1).

Use relay output DO 1 (Wiring terminals 1-2) for controlling the circulation pump.

Digital input (Wiring terminals 7-8) can be used for pump alarms. Select normally open, normally closed or contactor function in the AHU's hand-held micro terminal.

Bild 7



## 4.8 External cooling control of the COM-PACT and GOLD

Select external cooling control in the hand-held micro terminal of the air handling unit (function selector switch set to position 6, see Figure 1).

When the IQnomic Plus module is used for control-ling 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 activa-ted in the hand-held micro terminal.

Relay outputs, DO 1 (terminal block 1-2) and DO2 (ter-minal 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 (terminals 7-8) and DI 2 (terminals 9-10), can be used for external alarms with normally-closed function (alarms 85 – 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 ener-gised when the input has 5 V in again and the restarting time has expired.

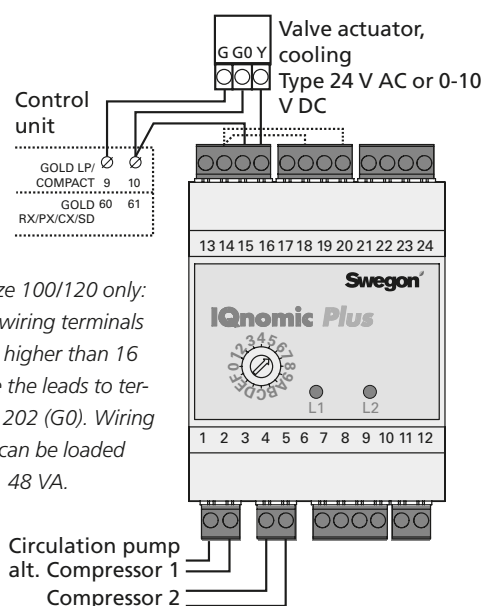
## 4.9 All Year Comfort

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

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

## 4.10 Swegon Factory

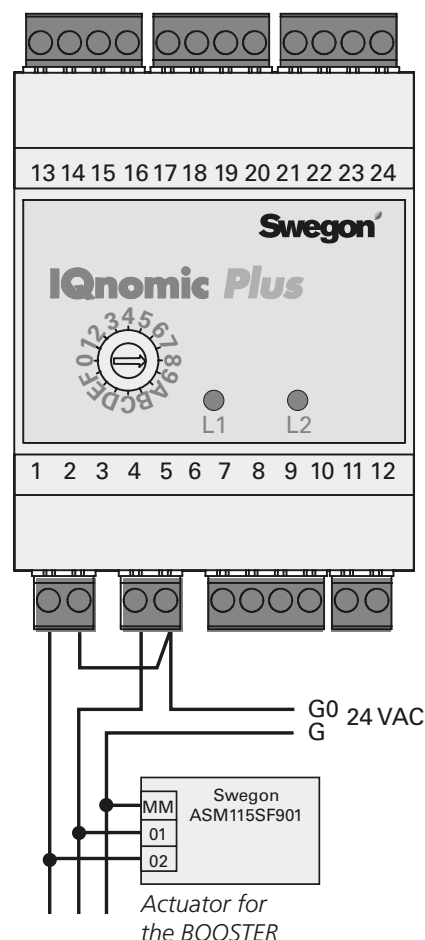
The IQnomic Plus module is used for the Swegon Factory function (function selector switch set to position 8, see Fi-gure 1) where type BOOSTER low-velocity supply air termi-nals with damper motor are used. Relay 1 on the module is energized whenever the supply air temperature is higher than the room 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 9.



Applies to GOLD size 100/120 only:  
If the total load on wiring terminals 58-59 and 60-61 is higher than 16 VA, you should wire the leads to terminals 201 (G) and 202 (G0). Wiring terminals 201-202 can be loaded with a total of max. 48 VA.

Fig. 8

Fig. 9



## 4.11 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. 10) or an electric air heater (fig. 11)

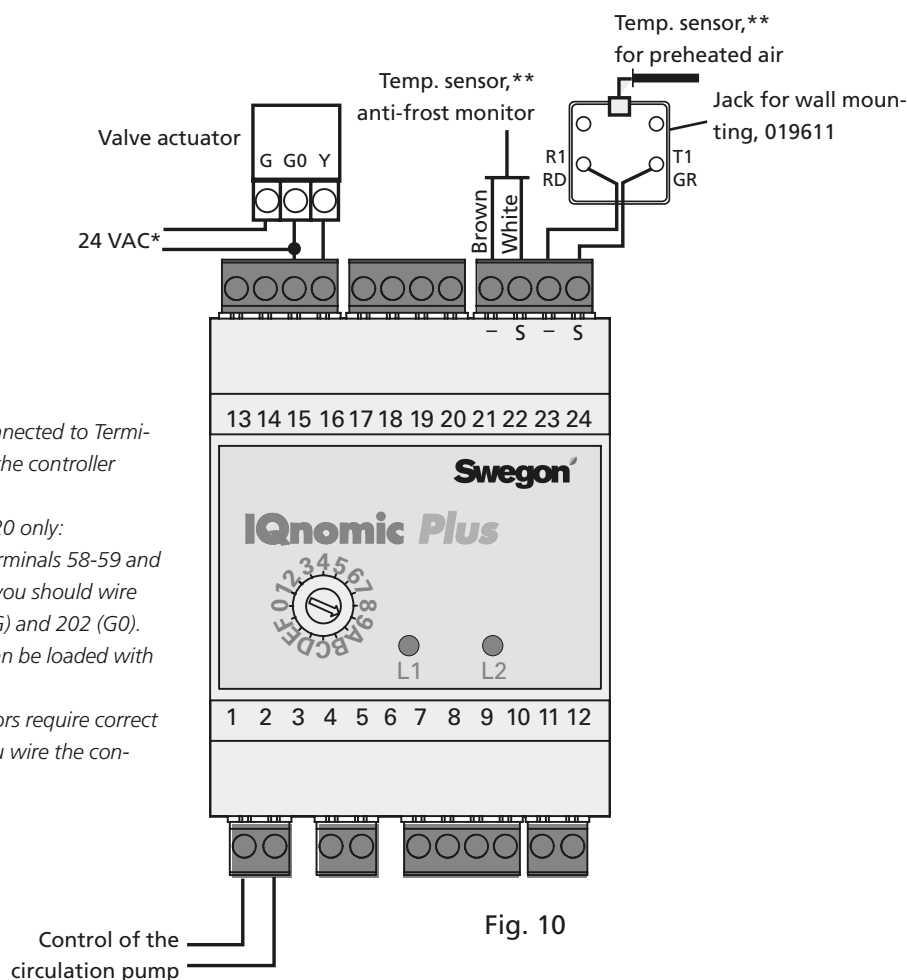
### Wiring the TBLA/TCLA air heater, water, for the GOLD, or electric air heater of a type other than Swegon standard

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.



\* 24 V AC power can be connected to Terminals 60 (G) and 61 (G0) on the controller of the air handling unit.

Applies to GOLD size 100/120 only:

If the total load on wiring terminals 58-59 and 60-61 is higher than 16 VA, you should wire the leads to terminals 201 (G) and 202 (G0).

Wiring terminals 201-202 can be loaded with a total of max. 48 VA.

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

## Connection of standard air heater to GOLD, TBLE/TCLE

Standard TBLE/TCLE 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 10 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.

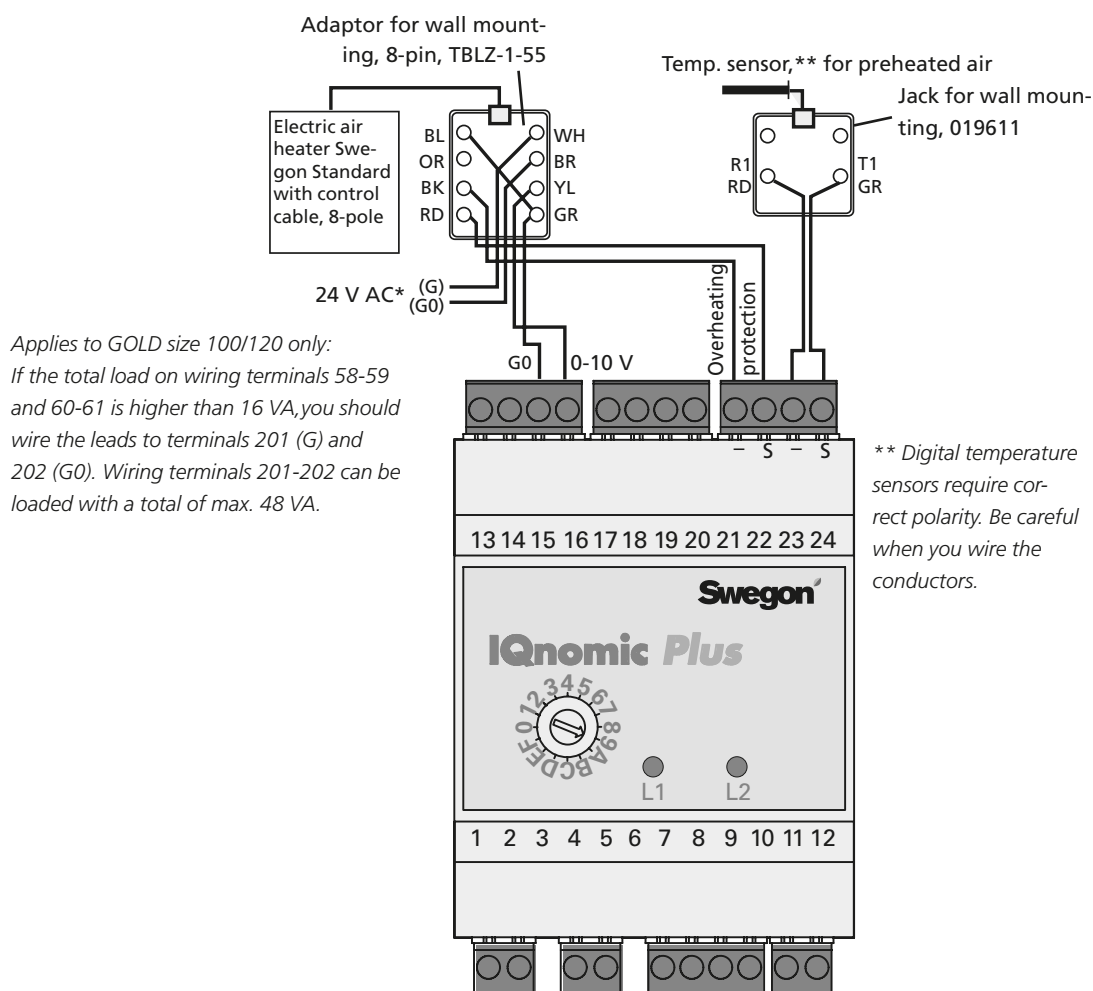


Fig. 11

#### 4.12 Enhanced heating sequence

The IQnomic Plus is used for enhanced heating sequence (function selector switch set to position E; see Fig. 1).

The function can be activated in the hand-held micro terminal of the GOLD unit or via a communication interface.

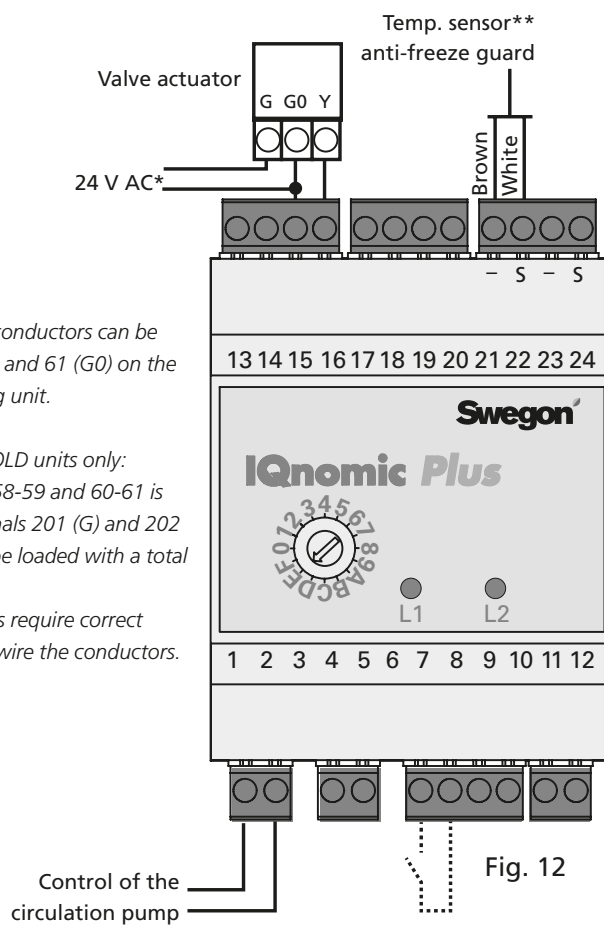
The module controls the air heater for hot water (Fig. 12) or electric air heater (Fig. 13).

##### To wire the TBLA/TCLA air heater, water, for the GOLD, or electric air heater of a type other than Swegon standard

Connect the 0-10 V DC control signal conductors for signal transmission to air heater or valve actuator to Terminals 15 (-) and 16 (+).

Connect the conductors from the pump, if fitted, to Terminals 1 and 2.

Connect the conductors from the anti-freeze sensor for the air heater for hot water, if installed, to Terminals 21 and 22. If an electric air heater is installed, circuit closure must be obtainable from potential-free contacts.



\* The 24 V AC power-supply conductors can be connected to Terminals 60 (G) and 61 (G0) on the control unit of the air handling unit.

Applicable to size 100/120 GOLD units only:  
If the total load on Terminals 58-59 and 60-61 is higher than 16 VA, use Terminals 201 (G) and 202 (G0). Terminals 201-202 can be loaded with a total of max, 48 VA.

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

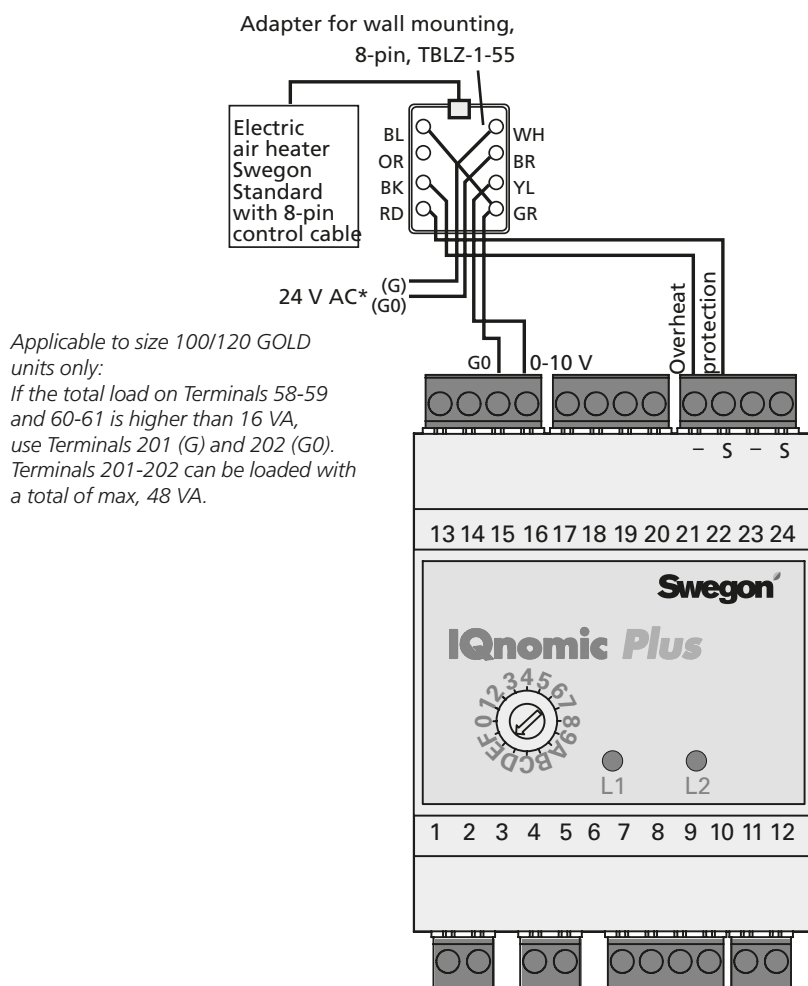
Fig. 12

If the Season Heating function is activated.  
Optional setting: normally-open or normally-closed contact.

## To wire a standard air heater for the GOLD, TBLE/TCLE

The control cable of the standard TBLE coils are fitted with a quick-fit connector. Connect the quick-fit connector to the adapter (TBLZ-1-55) and wire loose cables on from there as shown in Fig. 12; or cut off the control cable next to the quick-fit connector and strip it of its insulation approx. 100 mm to expose the wires inside.

- Connect the white/orange or white conductor to Terminal 21.
- Connect the blue conductor to terminal 22.
- Connect the white/blue or light blue conductor to Terminal 15.
- Connect the orange conductor to Terminal 16.



Applicable to size 100/120 GOLD units only:  
If the total load on Terminals 58-59 and 60-61 is higher than 16 VA, use Terminals 201 (G) and 202 (G0). Terminals 201-202 can be loaded with a total of max, 48 VA.

Fig. 13

If the Season Heating function is activated.  
Optional setting: normally-open or normally-closed contact.