Installation, IQlogic+, modules TBIQ-3 GOLD

1. General

The IQlogic+ is used for extra functions for which the inputs and outputs are not included as standard in the air handling unit's control unit.

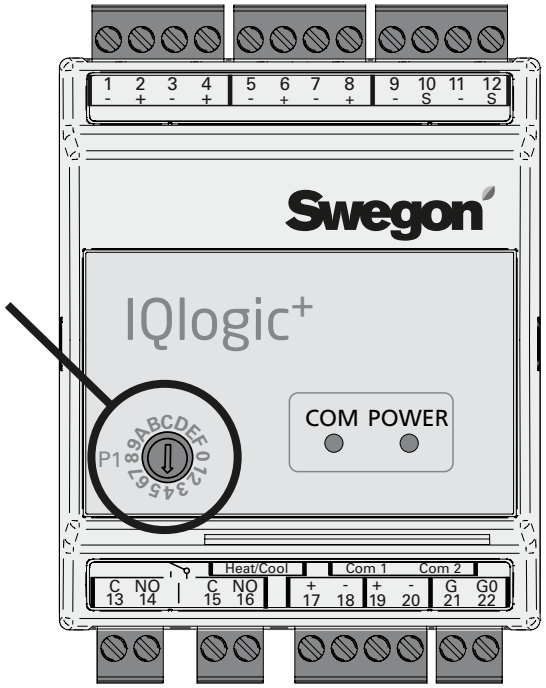
2. Installation

Install the IQlogic+ at an appropriate place, for example at an unoccupied spot on a DIN rail inside the air handling unit's electrical equipment cubicle .

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 IQlogic+.

Connect the other end of the communication cable to one of the connections of the control unit, marked COM (the exact connection is specified under the relevant function).

Function selector switch



A TBIQ-3-2 is shown.

Function selector switch

0 $ReCO_2$, TBIQ-3-1
1 Coil heat exchangers, TBIQ-3-1 (- 2015)
2 Plate heat exchanger, TBIQ-3-1 (PX, Version E)
3 Plate heat exchanger, TBIQ-3-1 (PX, Version E2/F, Standard defrosting)
3 Plate heat exchanger, TBIQ-3-3 (PX, Version E2/F, RECOfrost defrosting)
3 External supervision, TBIQ-3-2
4 Humidification, TBIQ-3-1.
Exhaust air heating, TBIQ-3-2
5 AQUA Link (see separate instructions), TBIQ-3-1
5 GOLD RX/HC (see separate instructions), TBIQ-3-2
6 External supervision, TBIQ-3-2
7 All Year Comfort (see separate instructions), TBIQ-3-2
8 Booster unit, TBIQ-3-2
9 Preheating, TBIQ-3-2
A Xzone heating (see separate instr. TBLZ-1-50), TBIQ-3-2
External communication, I/O module no. A, TBIQ-3-1
B Xzone cooling (see separate instr. TBLZ-1-50), TBIQ-3-2
External communication, I/O module no. B, TBIQ-3-1
C Coil heat exchangers, TBIQ-3-2 (2016 -)
External communication, I/O module no. C, TBIQ-3-1
D Spare
E Extra control sequence 1 and Season Heating, TBIQ-3-2
F Extra control sequence 2, TBIQ-3-2

3. Data

Connection port	2 x RJ 12 6/6
Supply voltage (Via modular contact)	24V DC
Relay contacts	2 A/AC3 5 A/AC1
Ambient temp. normal	-40 °C - +55 °C, 10 - 95 % RH
Enclosure class	IP 20 to EN 60529
CE-approved to	EN 61000-6-2, EN 61000-6-3

Terminal number

1	– *	0–10 VDC, OUT 1
2	+	
3	– *	0–10 VDC, OUT 2
4	+	
5	– *	0–10 VDC, IN 1
6	+	
7	– *	0–10 VDC, IN 2
8	+	
9	–	Digital sensor 1
10	s	
11	–	Digital sensor 2
12	s	
13	⌐	Relay 1
14	⌐	
15	⌐	Relay 2
16	⌐	
17	→	Digital, IN 1
18	–	
19	→	Digital, IN 2
20	–	
21	+	24 V AC input, for Heat/Cool power supply
22	– *	

4. Function

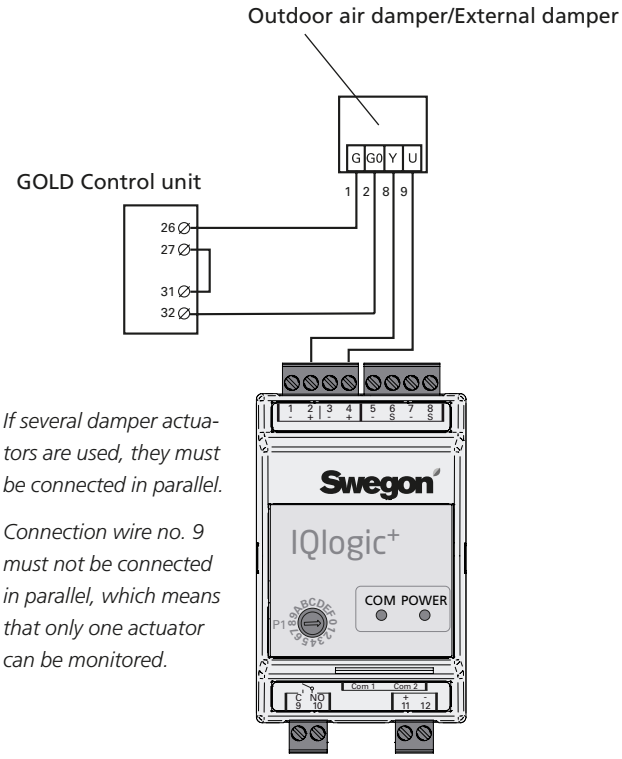
4.1 $ReCO_2$

The IQlogic+ is used for the $ReCO_2$ function (function selector switch set to position 0).

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

The module controls the outdoor air dampers.

Connect the cable for BUS communication between the IQLogic+ module and the air handling unit's IQLogic control unit, from an optional COM1 or COM2 contact on the IQLogic+module to one of the contacts in the air handling unit's IQLogic control unit marked COM6-11.



If several damper actuators are used, they must be connected in parallel.

Connection wire no. 9 must not be connected in parallel, which means that only one actuator can be monitored.

4.2 Coil heat exchanger

4.2.1 CX, version E, fixed-speed controlled pump (delivered before or during 2015)

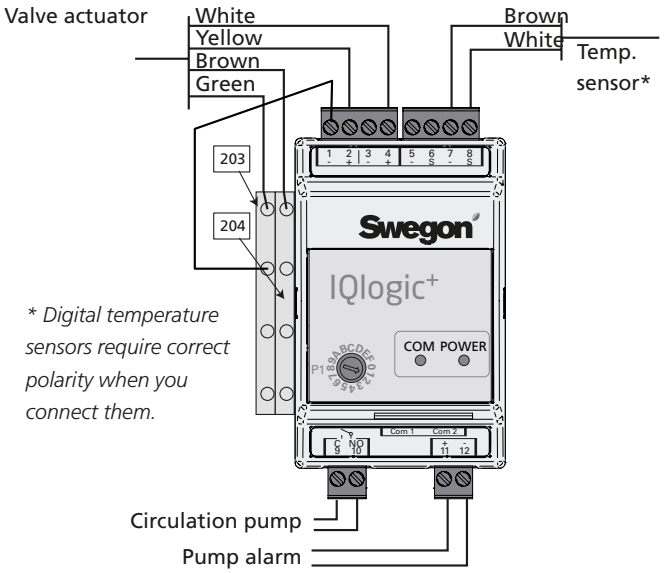
The IQlogic+ is used for the coil heat exchanger function.

One IQlogic+ module is installed, as standard, in all GOLD CX air handling units. The IQlogic+ 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.

Cable for BUS communication is connected to any of the contacts in the air handling unit IQlogic control unit marked COM6-11.



** Digital temperature sensors require correct polarity when you connect them.*

4.2.2 CX, version E/F, pressure controlled pump (delivery during 2016/2017)

The IQlogic+ is used for the coil heat exchanger function.

One IQlogic+ module is installed, as standard, in all GOLD CX air handling units. The IQlogic+ module's function selector switch is set to position C.

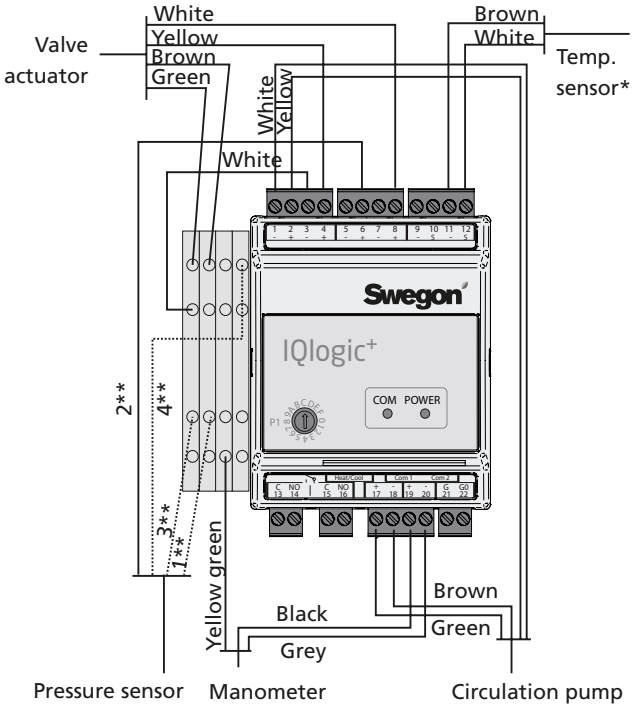
The module controls the circulation pump of the pipework package and the valve actuator on the coil heat exchanger.

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

A pressure sensor measures the pressure in the liquid circuit and ensures correct flow.

A manometer initiates an alarm in the event of low pressure.

Cable for BUS communication is connected to any of the contacts in the air handling unit IQlogic control unit marked COM6-11.



** Digital temperature sensors require correct polarity when you connect them.*

*** There are three cable variants. These variants depend on the brand of pressure sensor.*

HUBA and Grundfos brands have different coloured cables. For Siemens each cable is numbered 1 - 3.

HUBA and Siemens brands are voltage fed with 24 VAC via the terminal next to the IQlogic+-module, while Grundfos is voltage fed with 24 VDC from the GOLD unit's control card via the cable adapter.

HUBA	Siemens	Grundfos
1 = Brown	*1 = 1*	*-*
2 = Green	*2 = 2*	*2 = Light grey*
3 = White	*3 = 3*	*-*
-	*-*	*4 = Black*

NOTE! Check the make of pressure sensor carefully before connecting!

4.2.3 CX, version F, pressure-controlled pump (delivery starting autumn 2017)

The IQlogic⁺ is used for the coil heat exchanger function.

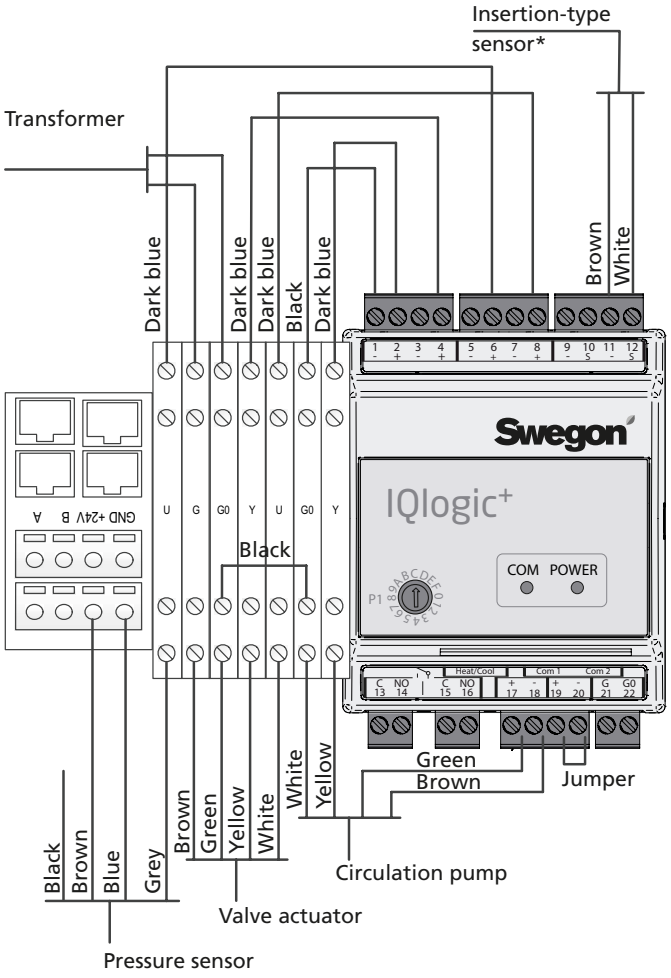
One IQlogic⁺ module is installed, as standard, in all GOLD CX air handling units. The IQlogic⁺ module's function selector switch is set to position C.

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 (insertion type) prevent the water circulating through the extract air coil from reaching such low temperatures that freezing is likely.

A pressure sensor measures the pressure in the liquid circuit and ensures correct flow.

Cable for BUS communication is connected to any of the contacts in the air handling unit IQlogic control unit marked COM6-11.



** Digital temperature sensors require correct polarity when you connect them.*

4.3 Plate heat exchanger

4.3.1 PX, Version E (delivered as from week no. 46 of 2014)

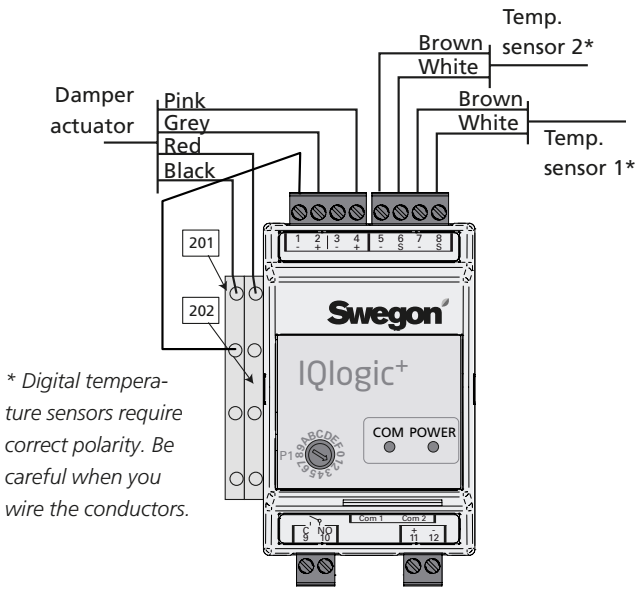
IQlogic+ is used for the plate heat exchanger function.

One IQlogic+ module is installed, as standard, in all GOLD PX air handling units. The IQlogic+ 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 foil, in the extract air passages of the heat exchanger cube, from reaching such low temperatures that freezing is likely.

The cable for BUS communication is connected to one of the ports in the air handling unit's IQlogic control unit marked COM6-11.



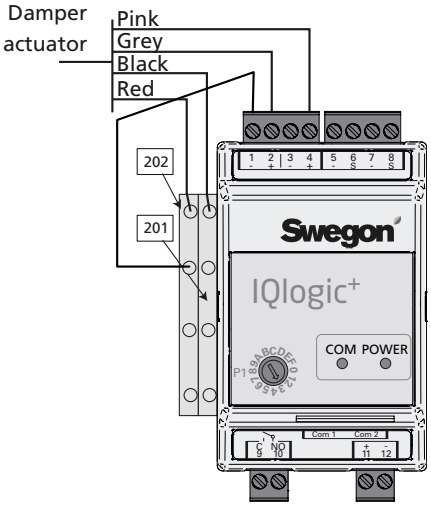
4.3.2 PX, Version E2/F, Standard defrosting (delivered as from week no. 47 of 2014)

IQlogic+ is used for the plate heat exchanger function with the Standard defrosting function.

One IQlogic+ module is installed, as standard, in all GOLD PX air handling units. The IQlogic+ module's function selector switch is set to position 3.

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

Cable for BUS communication is connected to any of the contacts in the air handling unit IQlogic control unit marked COM6-11.



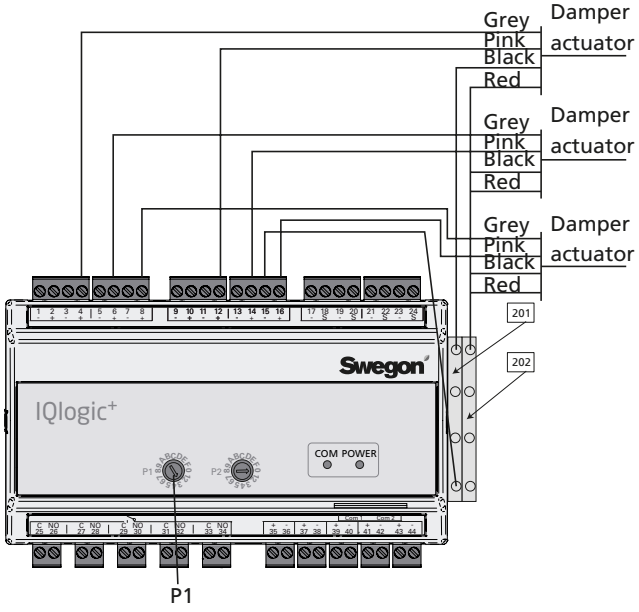
4.3.3 PX, Version E2/F, RECOfrost defrosting (delivered as from week no. 47 of 2014)

IQlogic+ is used for the plate heat exchanger function with the RECOfrost defrosting function.

One IQlogic+ module is installed, as standard, in all GOLD PX air handling units. The IQlogic+ module's function selector switch P1 is set to position 3.

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

Cable for BUS communication is connected to any of the contacts in the air handling unit IQlogic control unit marked COM6-11.



4.4 External monitoring

4.4.1 External operation

IQlogic+ is used for external monitoring by means of analogue and digital signals (function selector switch set to position 3 and/or 6) in cases when communication with the air handling unit cannot be used. The module can for example be used if the air handling unit will be controlled/ monitored via a microprocessor substation or a PLC system. The function is activated in the air handling unit's terminal or via a communications interface.
Connect the cable for BUS communication between the IQLogic+ module and the air handling unit's IQLogic control unit, from an optional COM1 or COM2 contact on the IQLogic+ module to one of the contacts in the air handling unit's IQLogic control unit marked COM1-3.

Dig. output 1 Closes between terminals 13 and 14 when the control system, in the terminal, indicates Selected function*, active.
Factory-preset function:
Inactive.

Dig. output 2 Closes between terminals 15 and 16 when the control system, in the terminal, indicates Selected function*, active.
Factory-preset function:
Inactive.

** Indication is obtainable for two of the functions below:*

All GOLD
AHU in operation/AHU in automatic operation/ AHU in manual operation/AHU in low speed mode/AHU in high speed mode/A-alarm/B-alarm/Damper relay/ Heat exchanger/Heat exchanger, defrosting/Re-heat/ Re-heat capacity reduction/Heating Boost/Morning Boost/Intermittent night operation/Airflow, down regulation/Extra regulation sequence 1, heating/ Extra regulation sequence 1, cooling/Cooling/Cooling Boost/Summer night cool/ Supply air fan in operation/ Extract air fan in operation Internal fire alarm/External fire alarm 1/External fire alarm 2/External fire alarm 1 or 2/Any fire alarm/External fire alarm 1 with priority/ External fire alarm 2 with priority//Internal fire alarm tripped with priority/Preheating/HC defrosting/ HC defrosting with recirculation/HC heat/HC cool/ Filter calibration

Dig. input 1 To be connected to terminals 17 and 18.
The following can be selected via the hand-held terminal:
- Alarm resetting. Resets possible alarms on closure.
- Stop AYC heated water Blocks heated water regulation and pump operation when the input is interrupted.
- Stop AYC chilled water Blocks chilled water regulation and pump operation when the input is interrupted.
- MIRU 1-3 external stop.
- MIRU 1-3 external low speed
- MIRU 1-3 external high speed
Reheating alarm input/
Cooling alarm input 1/
Cooling alarm input 2
Factory-preset function: Inactive.

Dig. input 2 To be connected to terminals 19 and 20.
The following can be selected via the hand-held terminal:
- Alarm resetting. Resets possible alarms on closure.
- Stop AYC heated water Blocks heated water regulation and pump operation when the input is interrupted.
- Stop AYC chilled water Blocks chilled water regulation and pump operation when the input is interrupted.
- MIRU 1-3 external stop.
- MIRU 1-3 external low speed
- MIRU 1-3 external high speed
Reheating alarm input/
Cooling alarm input 1/
Cooling alarm input 2
Factory-preset function: Inactive.

Digital sensor 1 Spare
Digital sensor 2 Spare

Analog output 1 Indicates present supply airflow, from 0 to air handling unit's max. speed (%). Connect to Terminals 1 (-) and 2 (+).

Analog output 2 Indicates present extract airflow, from 0 to air handling unit's max. speed (%). Connect to Terminals 3 (-) and 4 (+).

Analog. input 1 Connect to Terminals 5 (-) and 6 (+).
The following selection can be made via the hand-held micro terminal:
- Set point displacement (temperature).
- Set point displacement, supply air (flow).
- Set point displacement, extract air (flow).

Factory-preset function:
Inactive.

Analog. input 2 Connect to Terminals 7 (-) and 8 (+).
The following selection can be made via the hand-held micro terminal:

- Set point displacement (temperature).
- Set point displacement, supply air (flow).
- Set point displacement, extract air (flow).

Factory-preset function:
Inactive.

4.4.2 External BMS, I/O-module

IQlogic+ modules for external communication can be used by the monitoring system (BMS), when several inputs/ outputs are required and no microprocessor substation is installed in the fan room.

The IQlogic+ modules are controlled completely separately by BMS and do not affect the GOLD unit's internal control system.

Requires Program Version 1.20 or a later version.

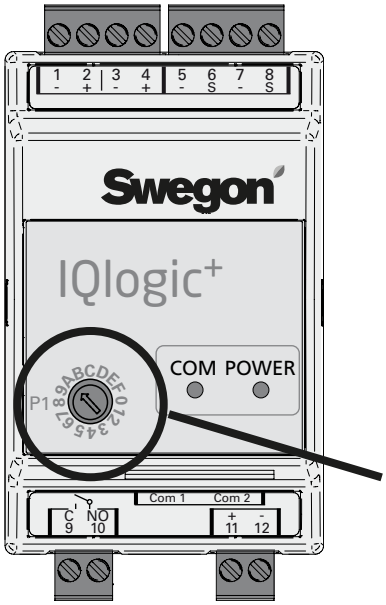
Up to three IQlogic+modules (TBIQ-3-1) can be used (function selector switch set to position A, B or C).

There are one AI, one AO, one DI, one DO and two inputs for temperature sensor on every IQlogic+ module. The temperature sensor should be of Swegon manufacture. These are available as insertion-type sensors, strap-on sensors and duct sensors.

The outputs of the module(s) can be viewed and the outputs can be controlled externally via communication protocol (see the relevant protocol for BACnet, Modbus and Exoline). All the inputs/outputs can also be viewed in the GOLD unit's hand-held terminal and, if required, all the outputs can be controlled from the test menu.

The function can be activated in the AHU's hand-held terminal or via a communication interface.

Connect the cable for BUS communication between the IQlogic+ module and the air handling unit's IQlogic control unit, from an optional COM1 or COM2 contact on the IQlogic+ module to one of the contacts in the air handling unit's IQlogic control unit marked COM1-3.



Function selector switch. Position A, B or C.

Wiring terminal number

1	–	0–10 VDC, OUT
2	+	
3	–	0-10 VDC, IN
4	+	
5	–	Digital sensor 1
6	s	
7	–	Digital sensor 2
8	s	
9		Relay
10		
11	→	Digital, IN
12	–	

4.5 Humidification

Steam humidifier

The IQlogic⁺ is used for the steam humidifier function (function selector switch set to position 4).

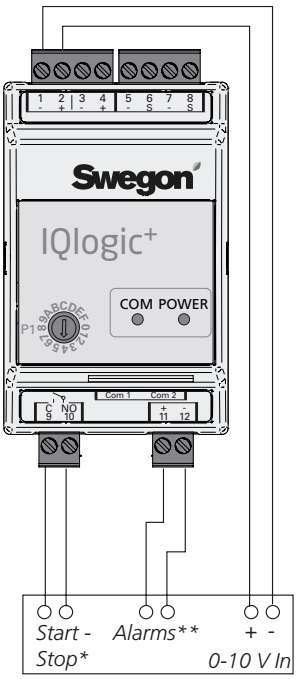
Select Humidification in the air handling unit's hand-held micro terminal or via a communication interface.

The relay output is used for controlling the steam humidifier, on/off.

Digital input 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 for variably modulating 0 – 10 V to the steam humidifier.

Connect the cable for BUS communication between the IQLogic⁺ module and the air handling unit's IQLogic control unit, from an optional COM1 or COM2 contact on the IQLogic⁺ module to one of the contacts in the air handling unit's IQLogic control unit marked COM1-3.



Steam humidifier (not Swegon)

** Normally-open contact starts the humidifier.*
*** Select the normally-open contact function in the AHU hand-held micro terminal.*

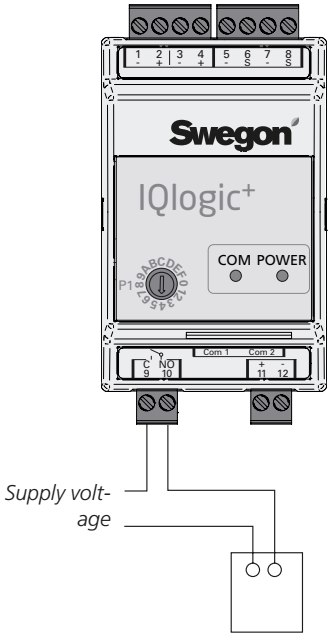
Evaporative humidification

The IQlogic⁺ is used for the evaporative humidification function (function selector switch set to position 4).

Select Humidification in the air handling unit's hand-held micro terminal or via a communication interface.

The relay output is used for controlling the humidifier's solenoid valve or circulation pump, on/off.

Connect the cable for BUS communication between the IQLogic⁺ module and the air handling unit's IQLogic control unit, from an optional COM1 or COM2 contact on the IQLogic⁺ module to one of the contacts in the air handling unit's IQLogic control unit marked COM1-3.



Solenoid valve or circulation pump, evaporative humidifier (not Swegon)

4.6 AQUA Link

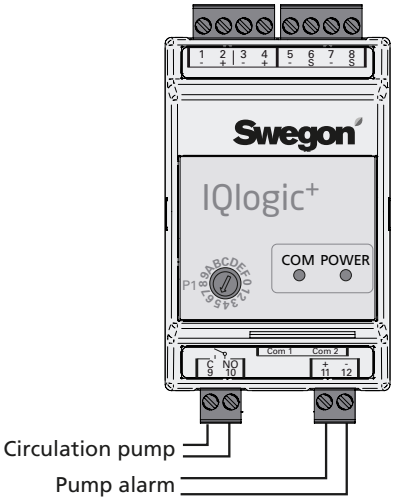
The IQlogic+ is used for the AQUA Link function (function selector switch set to position 5).

Select AQUA Link in the air handling unit's hand-held micro terminal or via a communication interface.

The relay output is used for controlling the circulation pump.

The digital input can be used for external alarms. Select normally open, normally closed or contactor function in the AHU's hand-held micro terminal or via a communication interface.

Connect the cable for BUS communication between the IQLogic+ module and the air handling unit's IQLogic control unit, from an optional COM1 or COM2 contact on the IQLogic+ module to one of the contacts in the air handling unit's IQLogic control unit marked COM1-3.



4.7 All Year Comfort

The IQlogic+ is used for the All Year Comfort function (function selector switch set to position 7).

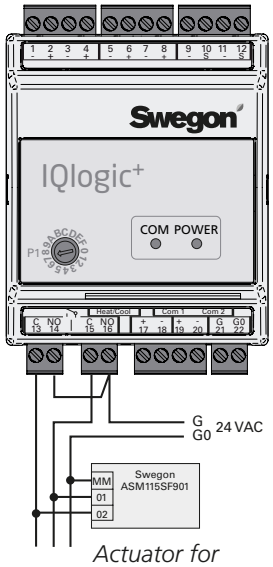
See the Guide to the All Year Comfort Functions and Installation of the TBLZ-2-59 control box.

Connect the cable for BUS communication between the IQLogic+ module and the air handling unit's IQLogic control unit, from an optional COM1 or COM2 contact on the IQLogic+ module to one of the contacts in the air handling unit's IQLogic control unit marked COM1-3.

4.8 Booster unit

The IQlogic+ is used for the Booster unit function (function selector switch set to position 8), where type BOOSTER displacement units with damper motor are used. Relay 1 on the module is energised when the supply air temperature is higher than the room temperature, relay 2 operates inversely compared to Relay 1, i.e. that when relay 1 is energised Relay 2 is de-energised and vice versa.

Connect the cable for BUS communication between the IQLogic+ module and the air handling unit's IQLogic control unit, from an optional COM1 or COM2 contact on the IQLogic+ module to one of the contacts in the air handling unit's IQLogic control unit marked COM1-3.



Actuator for BOOSTER

4.9 Preheating

The IQlogic⁺ is used for the preheating function (function selector switch set to position 9).

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 water or the electric air heater.

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

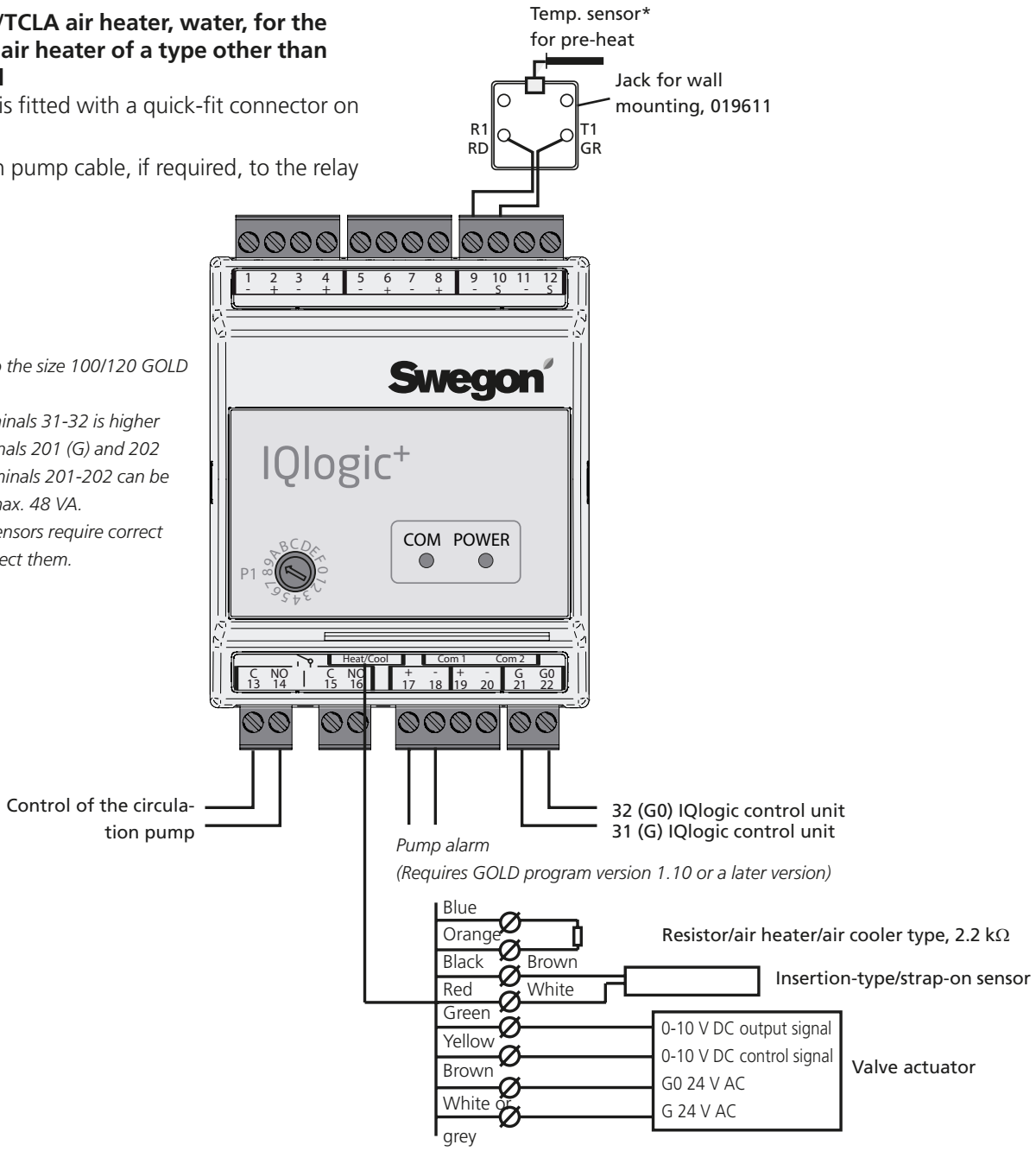
The valve actuator is fitted with a quick-fit connector on the control cable.

Wire the circulation pump cable, if required, to the relay output.

The anti-frost sensor (if required) for the water air heater is equipped with RJ 45 connector.

Connect the cable for BUS communication between the IQLogic⁺ module and the air handling unit's IQLogic control unit, from an optional COM1 or COM2 contact on the IQLogic⁺ module to one of the contacts in the air handling unit's IQLogic control unit marked COM1-3.

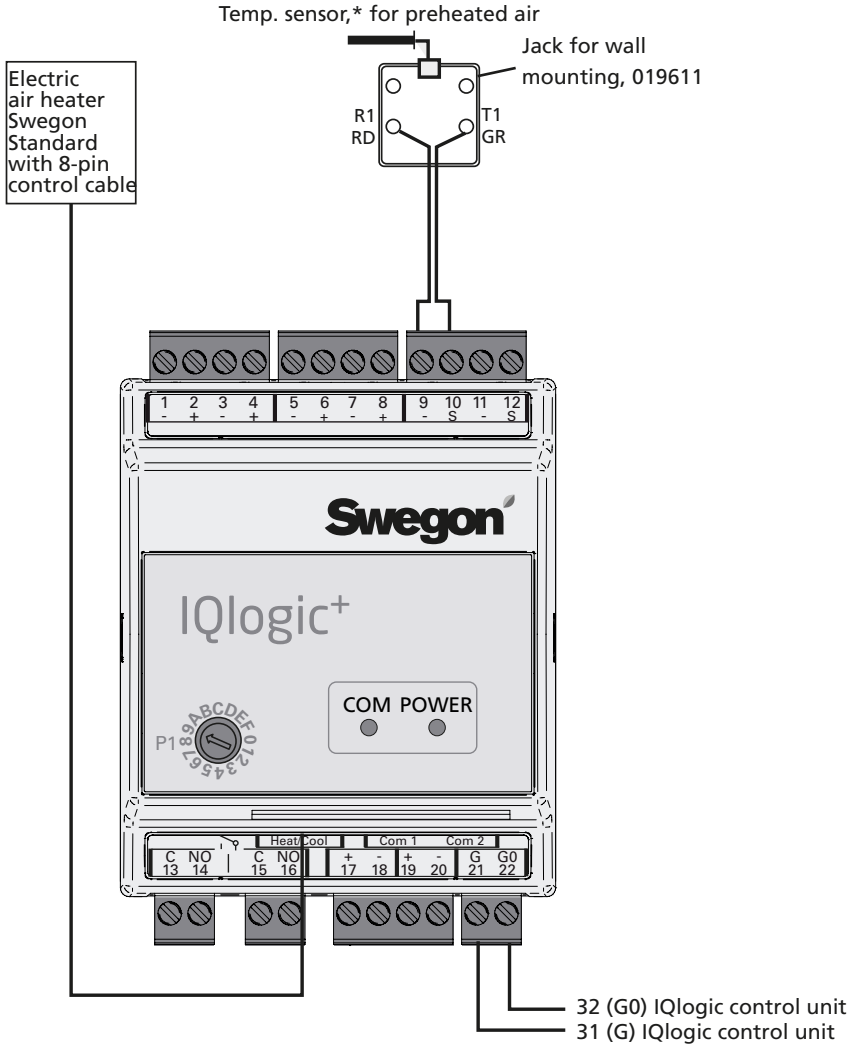
The following applies to the size 100/120 GOLD units only:
If the total load on Terminals 31-32 is higher than 16 VA, then Terminals 201 (G) and 202 (G0) must be used. Terminals 201-202 can be loaded with a total of max. 48 VA.
** Digital temperature sensors require correct polarity when you connect them.*



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

The control cable of the standard, type TBLE/TCLE coils are fitted with a quick-fit connector.

Connect the cable for BUS communication between the IQLogic+ module and the air handling unit's IQLogic control unit, from an optional COM1 or COM2 contact on the IQLogic+ module to one of the contacts in the air handling unit's IQLogic control unit marked COM1-3.



Applicable to size 100/120 GOLD units only:
If the total load on Terminals 31-32 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.*

4.10 Extra control sequence and Season Heating

The IQlogic+ is used for the extra control sequence 1 and Season Heating (function selector switch set to position E) and for the extra control sequence 2 (function selector switch set to position F). Used also as a regulation output to SMART Link

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/air cooler for water or the electric air heater.

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

The connection applies when both extra regulation sequence and Season Heating are in use.

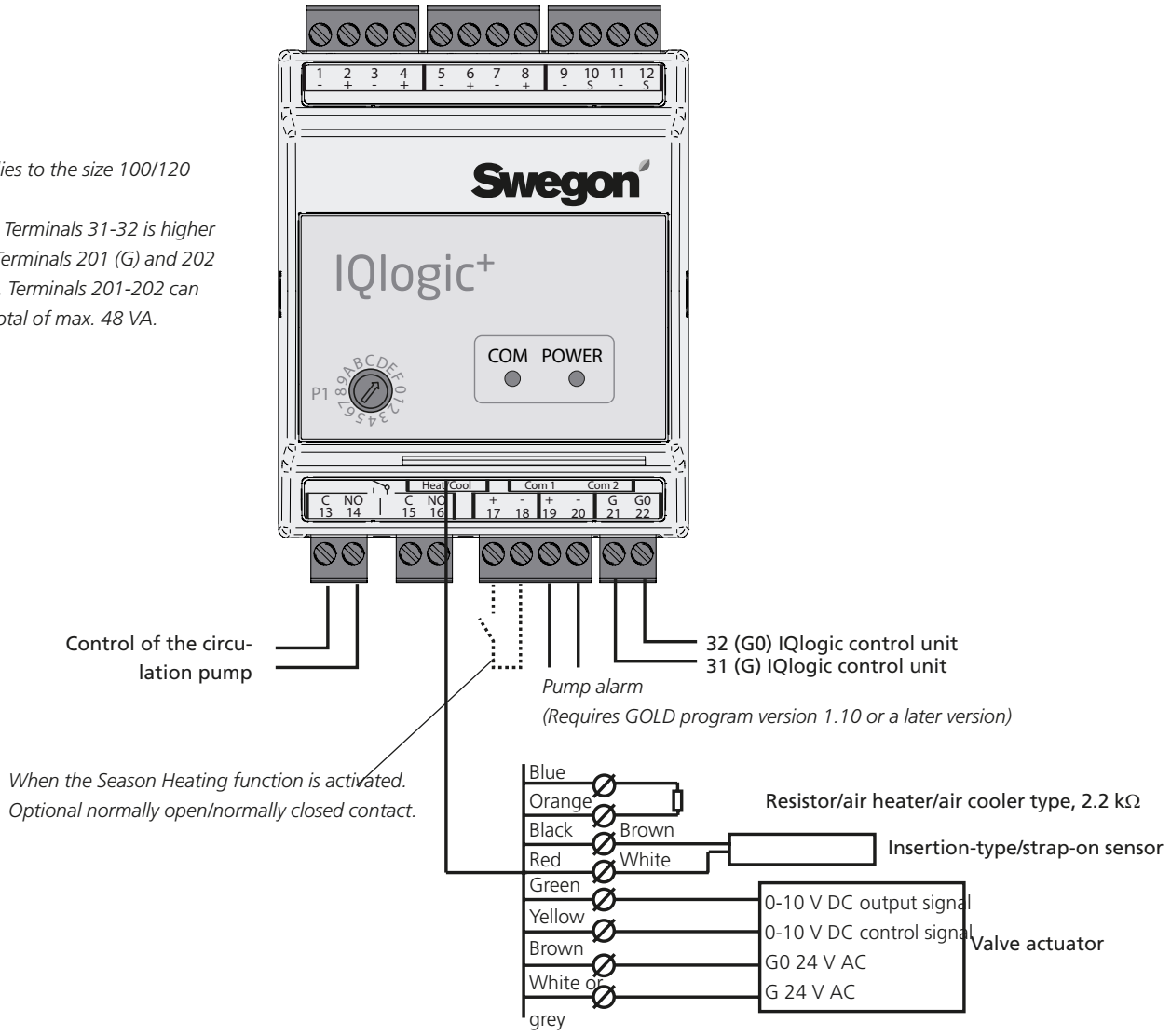
The valve actuator is fitted with a quick-fit connector on the control cable.

Wire the circulation pump cable, if required, to the relay output.

The anti-frost sensor (if required) for the water air heater is equipped with RJ 45 connector.

Connect the cable for BUS communication between the IQLogic+ module and the air handling unit's IQLogic control unit, from an optional COM1 or COM2 contact on the IQLogic+ module to one of the contacts in the air handling unit's IQLogic control unit marked COM1-3.

The following applies to the size 100/120 GOLD units only:
If the total load on Terminals 31-32 is higher than 16 VA, then Terminals 201 (G) and 202 (G0) must be used. Terminals 201-202 can be loaded with a total of max. 48 VA.



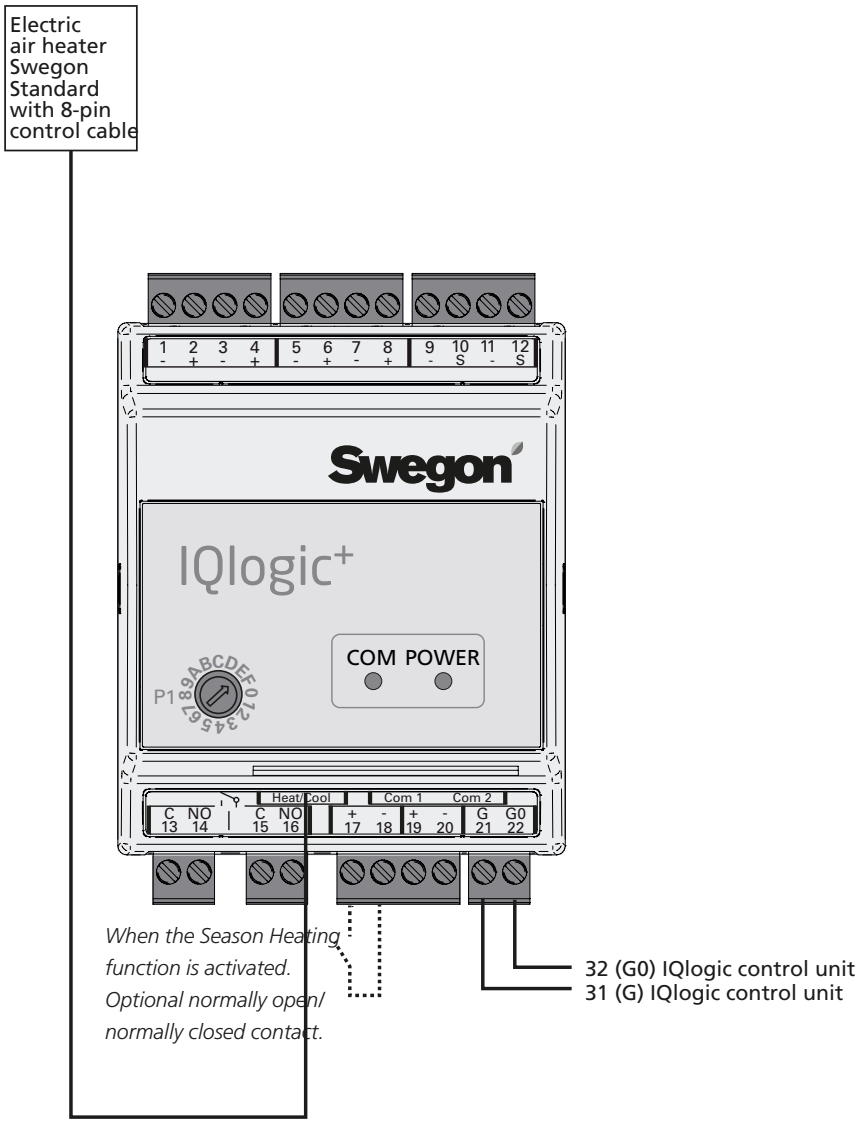
To wire a standard air heater for the GOLD, TBLE/TCLE

The connection applies when both extra regulation sequence and Season Heating are in use.

The control cable of the standard, type TBLE/TCLE coils are fitted with a quick-fit connector.

Connect the cable for BUS communication between the IQLogic+ module and the air handling unit's IQLogic control unit, from an optional COM1 or COM2 contact on the IQLogic+ module to one of the contacts in the air handling unit's IQLogic control unit marked COM1-3.

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.



Connection for GOLD SD and TBBD mixing section

Applies only if extra regulation sequence is in use.

See separate instructions for the TBBD mixing section.