Function guide GOLD version E/F, fluid flow module TBLZ-1-96, liquid flow, power and energy measurement

1. General

Module for measuring liquid flow, liquid temperatures, heating/cooling capacity and heating/cooling energy for liquid-based air heaters/air coolers.

The function requires program version 2.47 or later

The module can be used for liquid-based air heaters/air coolers in the ordinary zone and heating/cooling in Xzone.

Measurement values are presented in the hand-held terminal and on the web page.

The liquid flow meter is supplied complete with all components required for measurement.

The dimension of the meter (DN), depending on the air heater/air cooler's sizing liquid flow, is selected in the calculation programme AHU Design.

The flow meter is placed on the air heater/air cooler's supply or return line and contact-type temperature sensors are placed on the supply line and return line as close to the air heater/air cooler as possible and is over-insulated for the best measurement result.

2. Material Specification

Air Handling Unit	**All types of GOLD**
Liquid flow module	**TBLZ-1-96-a**

Contains:
1 x liquid flow meter
1 x connection cable to flow meter
2 x temperature sensors, contact-type
1 x IQ Logic+ module, small
1 x communication cable

Code: **a** 1 = DN15
2 = DN20
3 = DN25
4 = DN32
5 = DN40

Liquid flow meter

Connection cable

3. Function

The function measures the liquid flow, the supply and return line temperature in the heating/cooling circuit of the coil and reports energy and power for the heating/cooling circuit.

The measurement value is shown in the air handling unit's hand-held terminal and on the web page.

The function is selectable for ordinary air heaters/air coolers and for air heaters/air coolers in Xzone.

When the function has been activated, the calculated heating/cooling capacity and heating/cooling energy are replaced with the values measured by the function.

The function is activated in the air handling unit's hand-held terminal or on the web page under Functions/Heat and Functions/Cool.

When the Energy Measurement function is activated, the valve size must be specified. If glycol mixture is used, the glycol type and glycol proportion are also to be specified.

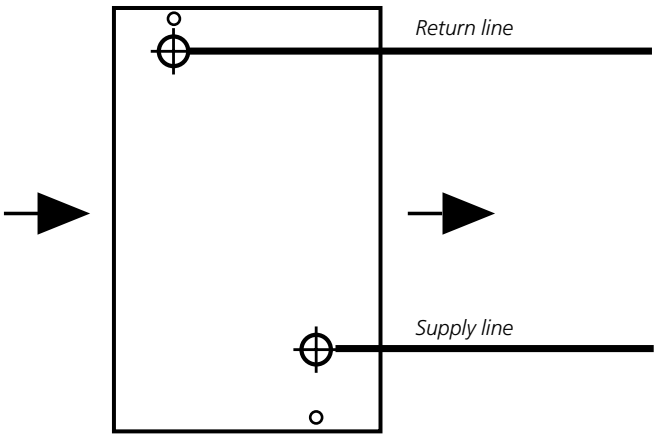
If the liquid temperature across the air heater/air cooler increases/decreases, without there being a need for this, an alarm for valve leakage is activated (alarms not active from the factory, can be selected actively).

Status

The flow level is shown under the Heat/Status and Cool/Status functions. Under the Temperature/Reading function, the supply and return line temperatures are reported. The power and energy consumption for heating and cooling are reported under the Energy Monitoring function.

Placement, liquid flow meter and temperature sensor

The liquid flow meter is placed on the air heater's/air cooler's supply or return line. Contact type temperature sensors are placed on the supply and return lines as close to the air heater/air cooler as possible. Temperature sensors are over-insulated for correct measurement.



4. Installation of the liquid flow meter

For additional information, see the instructions enclosed in the box.

Mechanical load, overshoot of the measuring range or pressure shocks can damage the meter.

Bubble formation and cavitation in the medium can cause sensor failure and must be avoided. Cavitation is heavily dependent on the medium, flow rate and media temperature.

Follow the recommendations for the minimum system pressure.

Recommended minimum system pressure

DN15	DN20	DN25	DN32	DN40
1.0 bar	1.4 bar	1.6 bar	2.0 bar	2.2 bar

The flow meter can be installed in horizontal and vertical pipework. The meter is only suitable for use in fully filled pipework.

Recommended distance before inlet and after outlet

	DN15, DN20, DN25	DN32, DN40
Inlet	Min. 10xDN	250 mm
Outlet	Min. 5xDN	Min. 5xDN

For the best measurement accuracy, the inner diameter of the pipe should correspond to the diameter of the flow meter.

DN15	DN20	DN25	DN32	DN40
13 mm	19 mm	25 mm	32 mm	40 mm

Installation liquid flow meter

Use only the supplied O-rings, follow the flow direction indicated on the unit and note the connection dimensions.

Install the couplings on the pipework, install the meter with O-rings.

Screw the coupling nuts onto the connections on the meter.

Hold the hexagon of the unit when tightening the coupling nut.

Observe the maximum torque.

Maximum torque

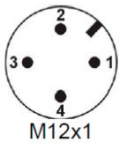
DN15	DN20	DN25	DN32	DN40
9 Nm	15 Nm	20 Nm	30 Nm	60 Nm

Electrical connection meter

The flow meter is connected electrically with the supplied cable. The connection is made via the M12x1-contact on the flow meter.

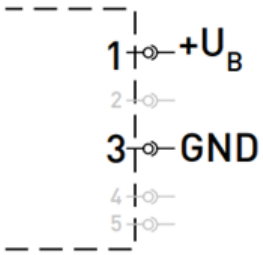
Screw the connection cable onto the meter's connector (max. 1 Nm).

The pin assignment for the liquid flow meter.

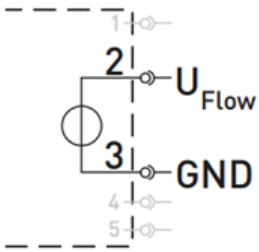


Pin 1: +Ub
Pin 2: Uflow
Pin 3: GND
Pin 4: Not used

Connection voltage
12-24V DC



Output signal flow
0-10V

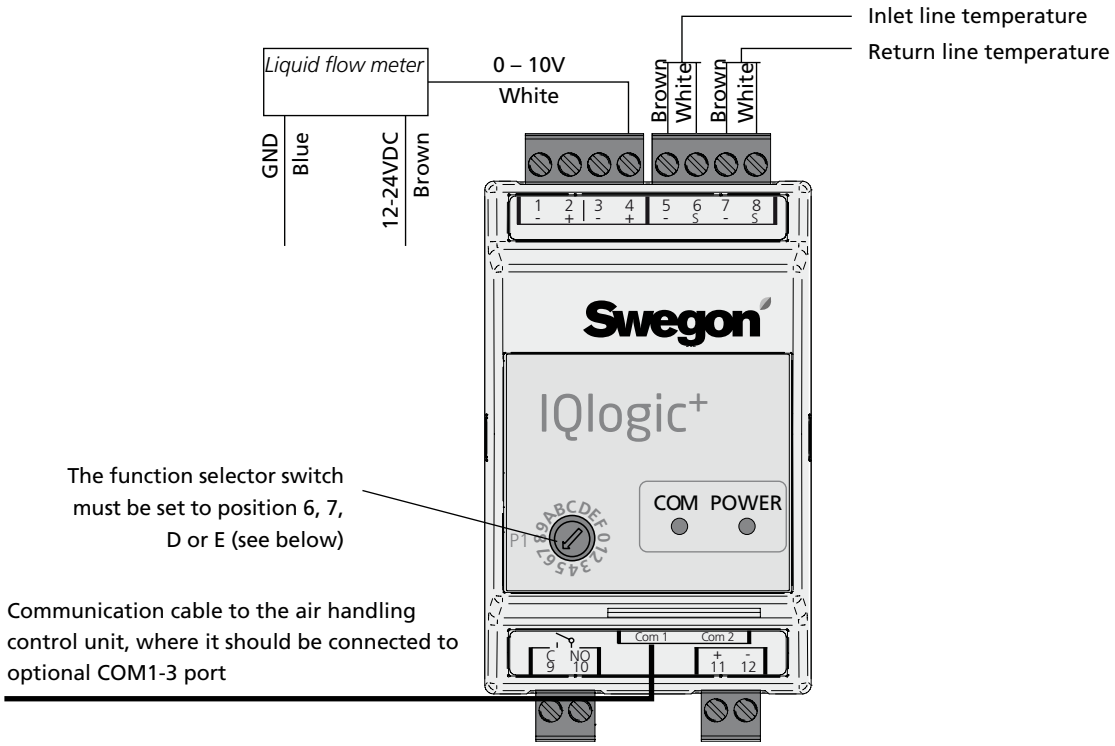


Technical data, liquid flow meter

Nominal diameter	**DN15**	**DN20**	**DN25**	**DN32**	**DN40**
Connections	G¾-ISO228, male incl. o-rings	G1-ISO228, male incl. o-rings	G1¼-ISO228, male incl. o-rings	G1½-ISO228, male incl. o-rings	G2-ISO228, male incl. o-rings
Inner diameter (mm)	Ø13	Ø19	Ø25	Ø32	Ø40
Flow range (l/min)	2-40	5-80	7-150	12-250	22-400
Medium	Water and brine				
Pressure class	PN10			PN16	
IP class	IP65 and IP67				
Electrical data					
Electrical connections	4- or 5-pin connection M12x1				
Connection voltage	12 - 24 V DC				
Analogue output signal					
Output signal flow	0 - 10 V output signal				
Scaling (l/min)	0-40	0-80	0-150	0-250	0-400
Voltage (V/(l/min))	0.25000	0.12500	0.06667	0.04000	0.02500

5. Connection

IQlogic+ Module



Connection of IQlogic+

Function switch in position 6, 7, D or E:
6=heating
7=cooling
D=heat Xzone
E=cool Xzone

Flow meters are supplied by 12-24 VDC (accessory connection kit TBLZ-1-64 can be used, see also separate instructions), output signal 0-10 V is connected to terminal 4. Cables that are not used are insulated to prevent short circuits.

The temperature sensor is connected to terminals 5, 6 (supply line) and 7, 8 (return line).

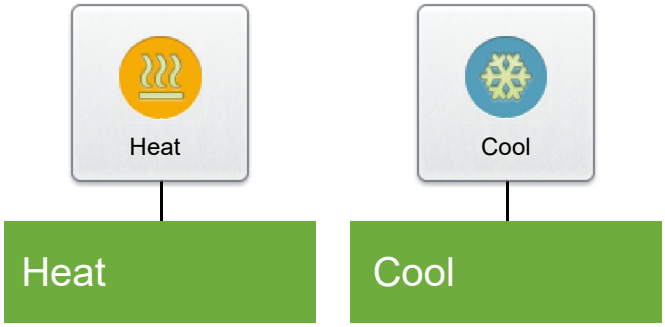
Connect the cable for BUS communication between the IQlogic+ module and the air handling unit's IQlogic control unit, from an optional COM1 or COM2 contact on the IQlogic+ module to one of the contacts in the air handling unit's IQlogic control unit marked COM1-3.

6. Settings

For basic facts on how to use the hand-held micro terminal, see the Operation and Maintenance Instructions for the GOLD unit.

The Energy measurement function is activated manually under Function/Heat or Function/Cool, (air heater/air cooler must be connected for the function to be shown)

1. Select Function/Heat or Function/Cool
2. Activate function, Energy measurement ON
3. Set the valve dimensions, glycol type and glycol proportion

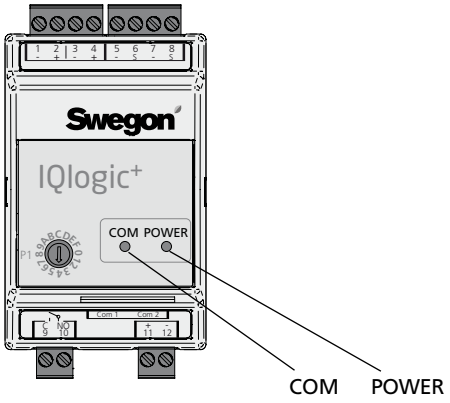


7. Function control

IQlogic+ Module:

POWER LED indicates with steady light that power is correctly supplied from the GOLD air handling unit's control unit.

LED COM indicates with a flashing light correct communication with the GOLD air handling unit's control unit.



Temperature sensor:

Current temperatures can be read under Temperature/ Status. If the temperature readings are reasonable, the wiring is correct.