

Compressor management

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Compressor management

Supplier:
WF Steuerungstechnik GmbH
Zeppelinstr. 7-9

D-75446 Wiernsheim

Contact:
Ronald Schlegel
Commissioning coordination
T 0 70 44 – 911 10 – 0 (ext. 13)
F 0 70 44 – 57 17
E ronald.schlegel@airleader.de

Thomas Schneider
Commissioning
T 0 70 44 – 911 10 – 0 (ext. 18)
F 0 70 44 – 57 17
E
thomas.schneider@airleader.de

Project address

Contact person:

Special Notes:



On-site installation (to be completed before commissioning!)



Compressor management

After checking the work on site, complete and sign this checklist and send it to WF.



Please tick completed items (delete as appropriate):

- ☐ 1 Attach the Airleader control cabinet, supply it with power (lead 230 V to the terminal)
- ☐ 2 Establish a network connection (ETHERNET) (socket with patch cable to the Airleader)
- ☐ 3 Provide IP addresses, email account (IT department)
- ☐ 4 Install web server visualization (IT department)
- ☐ 5 Install the pressure transmitter and any other supplied sensors in the compressed-air system.
- ☐ 6 Install connection modules, isolation amplifiers (for FU) and power supplies in the compressor and supply them with power (230 V)
- ☐ 7 Lay the status and signal cables according to this plan and route them into the machines/control cabinet.
- ☐ 8 Lay the bus cables (use the network for remote stations) and route them into the machines/control cabinet.
- ☐ 9 Connect the bus between the Airleader and the RS485 connection modules. If necessary, bridge it over the network using FL-COM server modules; see the operating instructions.
- ☐ 10 Attach switch box(es) - if available - and supply power (connect 230 V to terminal)
- ☐ 11 Install and wire A or kW measurement (current transformer 1 or 3-phase) in compressors
- ☐ 12 Install the surface temperature sensor at the compressor-stage outlet on oil-cooled compressors, together with the JUMO transmitter. Run the sensor cable to the transmitter.
- ☐ 13 Attach the vibration sensor to each compressor (compressor stage) (M8 thread in the direction of vibration) and lead the cable to the RS 485 connection module
- ☐ 14 Install heat recovery components - if available - (heat meter, 2 temp. sensors, volume flow sensor), wire electrically, signal cable to Airleader component.
- ☐ 14 Record the actual delivery rate of each compressor at operating pressure accurately. For variable-speed compressors, record both minimum and maximum delivery rates. Correct control depends on these values.

The checked items are complete. Please arrange a commissioning date.

Date suggestion:

Date:

Signature:

WF cannot determine the required system pressure.
Enter the binding pressure settings here:

Pmax : bar (upper value of control pressure band)

Pmin : bar (lower value of control pressure band)

PAalarm: bar (alarm by Airleader)

A notice:

Unfinished items and unusual work (e.g. duplicating contacts/signals required on site) increase the scope of the order and will be charged for additional work. If commissioning is not possible for this reason, multiple arrivals or waiting times will be charged additionally!



Commissioning work by WF Steuerungstechnik

Compressor management

Cable specification:

Bus cable:



from Airleader → RS485 modules (in the compressor, switch box)

Signal cable:



LIYCY 2x0.34 mm² to 2x0.5 mm²
from Airleader → Pressure transmitter, temp. sensor

Signal and feed cable:



LIYCY 4x0.34 mm² to 4x0.5 mm²
Flow/DTP sensor → Airleader (or switch box with power supply)

Cable for potential-free fault or operating messages:



LIYY 2x0.5mm²

ETHERNET cable:



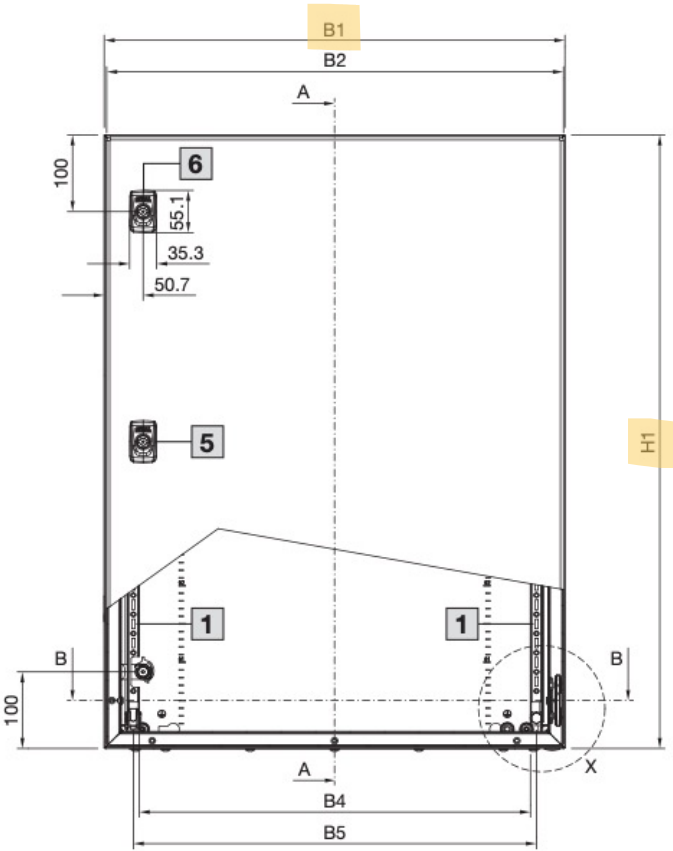
Network cable, patch cable

Commissioning work by WF Steuerungstechnik GmbH:

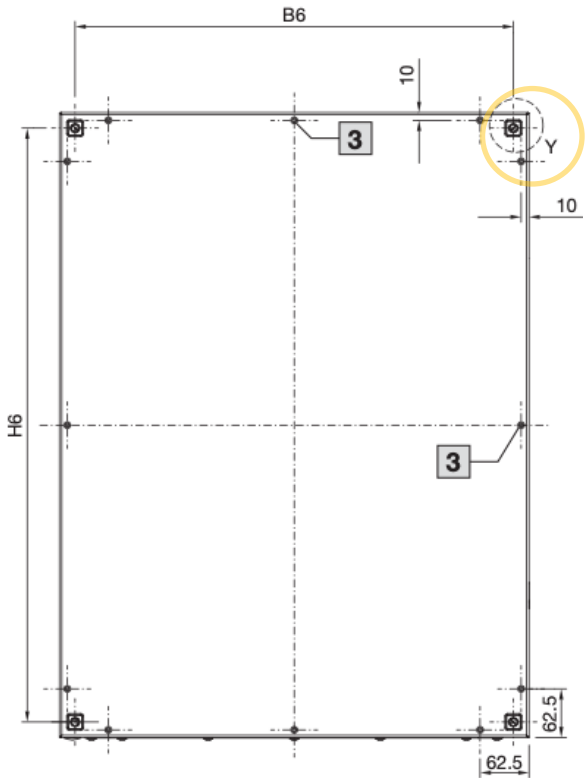
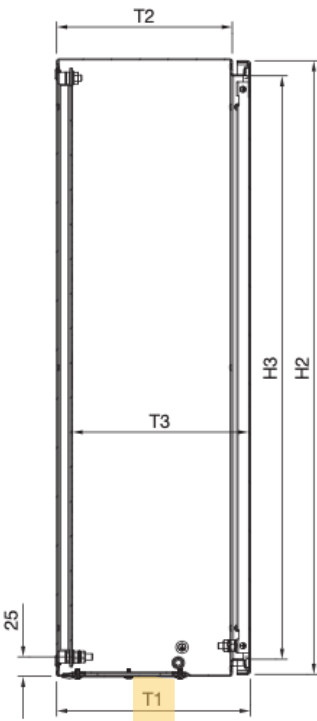
- Checking the on-site wiring
- Terminate the cables in the compressors and components, except for power-supply and bus cables.
- Parameterization of the control and commissioning
- Configure the web visualisation with assistance from the customer: compressor, message and sensor names; sensor alarm limits; and current thresholds for kW/A measurement.

The presence of potential-free fault signaling contacts in the units (condensate drains, dryers, etc.) must be checked on-site before laying the cables!

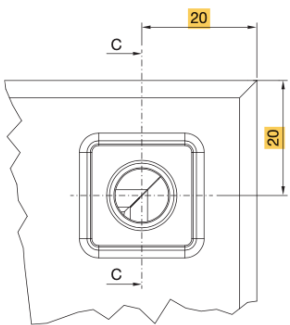
Compressor management



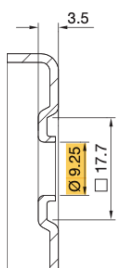
Cut A - A



Detail Y



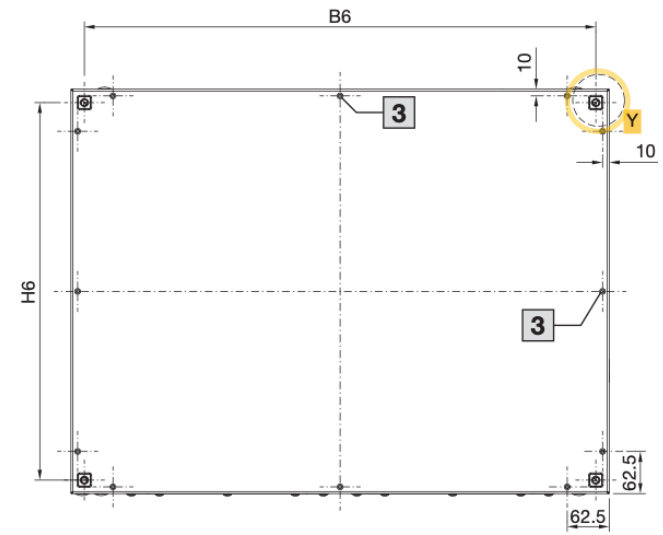
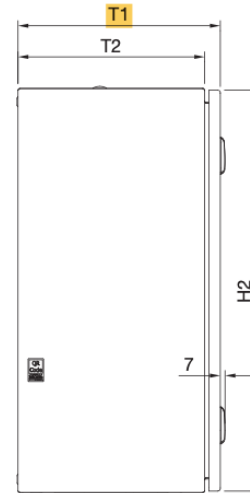
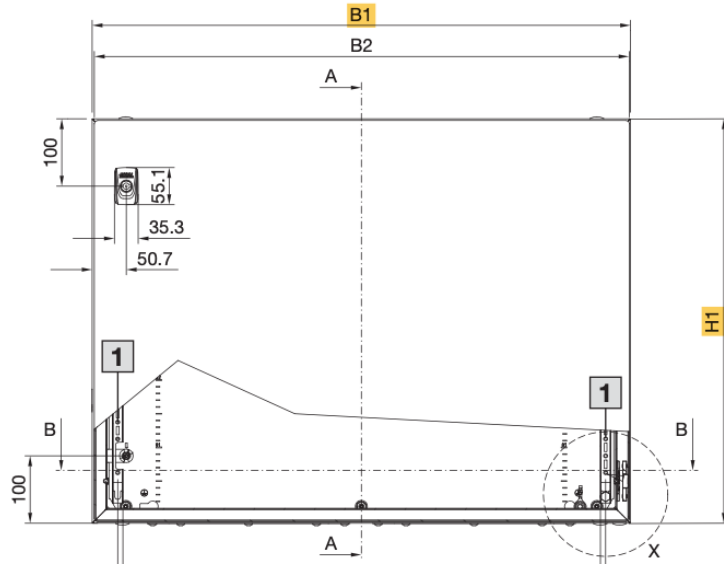
Cut C - C



Order no. AX	Width dimensions mm							Height measurements mm						Depth measurements mm			
	B1	B2	B3	B4	B5	B6	B7	H1	H2	H3	H4	H6	N	T1	T2	T3	T7
1050.000	500	494	452,7	409,5	425	460	411	500	494	456,5	350	460	14	209,7	187,0	188,5	113

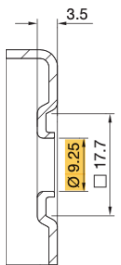
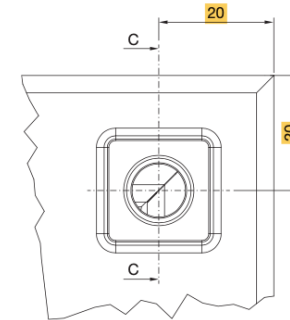
RITTAL compact control cabinet AX Basic cabinet AX, sheet steel

Compressor management



Detail Y

Cut C – C



RITTAL compact control cabinet AX Basic cabinet AX, sheet steel

Order no. AX	Width dimensions mm							Height measurements mm							Depth measurements mm						
	B1	B2	B3	B4	B5	B6	B7	H1	H2	H3	H4	H6	N	T1	T2	T3	T4	T7			
1055.000	800	795	752,2	709,5	725	760	265	600	595	556	450	560	18	300,7	277,5	278,7	187,5	185			
1073.000	760	755	712,2	669,5	685	720	265	760	755	716	600	720	24	300,7	277,5	278,7	–	185			
1077.000	760	755	712,2	669,5	685	720	303	760	755	716	600	720	24	210,7	187,5	188,7	–	113			
1180.000	800	795	752,2	709,5	725	760	265	1000	995	956	850	960	34	300,7	277,5	278,7	187,5	185			
1181.000	800	795	752,2	709,5	725	760	265	1000	995	956	850	960	34	400,7	377,5	378,7	287,5	185			

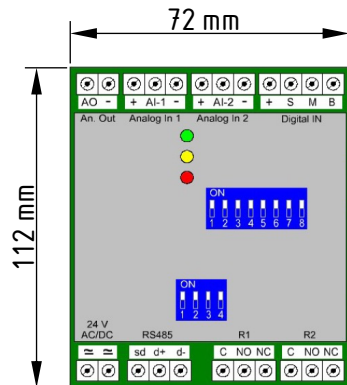
Compressor management

Connection modules (AM) interface with the Airleader controller. They are used for:

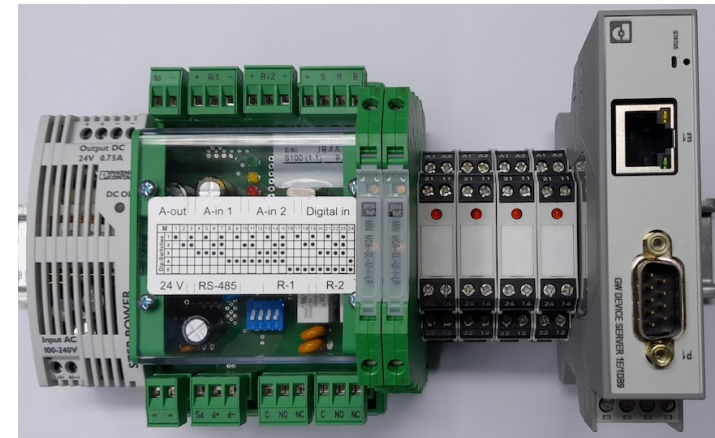
- Compressor control: DIP-switch addresses 1-16.
- Accessory monitoring and switching: DIP-switch addresses 17-24.

The DIP-switch address determines whether the module controls a compressor or accessories.

The installation and power connection (24 V AC/DC) must be carried out on site. The installation space required for the Airleader components (if necessary power supply, AM, if necessary relay, COM server and for FU/VSD 2x isolation amplifier) is a maximum of approx. (L x W x H) 200 x 180 x 180 mm.



RS485 compressor connection module: bus interface to the compressor
d+ / d-: RS485 serial bus connection
S: Digital input, compressor fault
M: Digital input, motor running
B: Digital input, compressor ready
R1: Remote/local changeover relay
R2: Load/unload changeover relay
AI 1: 4-20 mA input for current measurement (single-phase), power measurement (three-phase) or the VSD signal
AI 2: 4-20 mA input for compressor oil temperature
AO: 4-20 mA actual-pressure output for variable-speed compressors (FU-Control)



RS-485 connection module for accessories (same hardware, DIP switch addressing 17 - 24): d+ / d-: Serial RS 485 bus connection S, M, B: 3 x digital inputs - for fault or operating messages from external devices AI 1 - 2: 2 x analog inputs (4-20mA) - for temp., dew point, pressure, flow sensors etc. R 1 - 2: 2 x potential-free relays - alarm contact when limit values of the sensors on analog inputs AI 1-2 are exceeded, alternatively: timer contacts R1 and R2

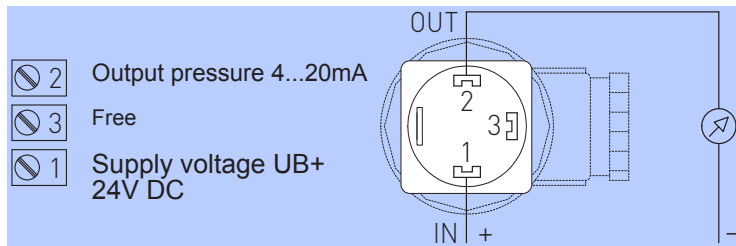
*DIP switch for CN:
compressors 1 – 32
accessories 33-64

Compressor management

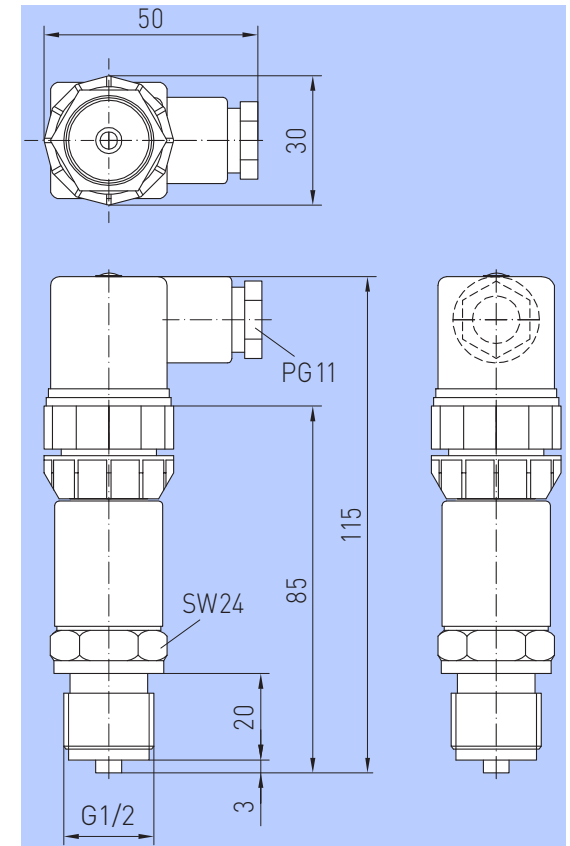
The DTH pressure transmitter records the control pressure for the Airleader and is of high quality and repeatability with the lowest pressure tolerances. A different sensor will cause the control to malfunction!

- To avoid flow-induced pressure fluctuations, install the sensor at a location with stable pressure, such as an air receiver or the end of a pipe.
- The control pressure must be the system pressure. Install the sensor downstream of all air-treatment units to exclude their pressure drops.
- The pressure is converted into an analog signal (4-20mA) and is applied to the Airleader master module (mandatory AI 1 = reference pressure).
- Route the cable separately from power cables and electrical fields to avoid interference. Connect the cable shield at the Airleader end only.
- Electrically insulate the sensor from the compressed-air network as far as possible (e.g. using a plastic nipple or a section of hose) to avoid potential differences through the pipework.
- Additional pressure transmitters can be connected to AI 1 or AI 2 on the connection modules to calculate an average control pressure.

Connection diagram:



Installation of pressure transmitter DTH



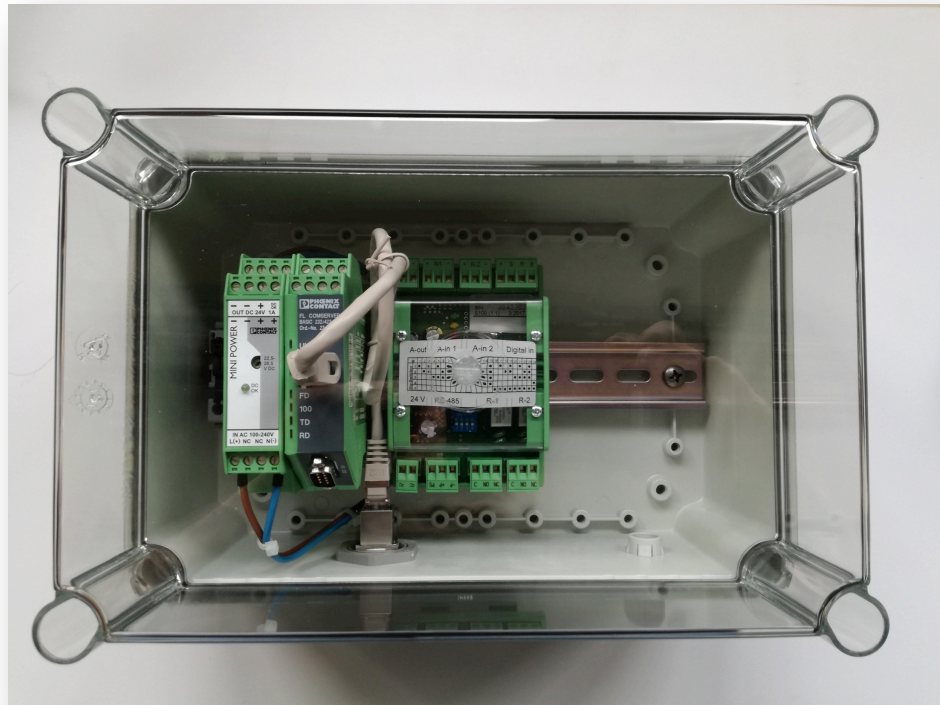
Compressor management

The switch box is used to accommodate additional connection modules outside the Airleader or compressor control cabinet and to ensure a 24 V supply.

E.g. for accessory sensors such as pressure dew point, flow, temperature and differential pressure sensors or heat meters for heat recovery.

Digital messages such as dryer, Bekomat malfunctions, etc. can also be recorded more easily and cable routes can be kept short.

The switch box must be connected to the RS 485 BUS connection of the Airleader (see cable diagram) and requires a 230 V connection.



Switch box with high lid (contents: power supply, FL-COM server, 1x connection module)

There are 2 versions:

- With high cover (see picture above) (L x W x H) 280 x 180 x 180 mm for FL-COM server for BUS cable bridging with existing TCP-IP network
- With flat lid (L x W x H) 280 x 180 x 130 mm as a standard switch box

Compressor management

Atlas Copco VSD compressor ACTUAL pressure integration via remote-pressure input for ELEKTRONIKON MK V



If there are pressure differences between the Airleader control pressure sensor and the VSD pressure sensor (e.g. pressure loss across the intake line, decentralized installation), it is necessary to use the compressor's remote pressure input, otherwise the pressure spread will be too large

This option is not supplied as standard (check on site!) and must be retrofitted by the operator before putting the Airleader into operation (IB) (Atlas Copco order numbers outlined in red, see below). Experience has shown that a knowledgeable (!) Atlas Copco technician is absolutely necessary for the IB to activate the inputs via laptop with AC software.

Atlas Copco Mk5 IO3-4 modules



15 relay outputs 16 digital inputs 11 temp. inputs (Pt 1000) 4 pressure inputs (transducer) 12 analog inputs 4...20mA 12 analog outputs 4...20mA

Expansion module MK5 IO3-4 as a kit including terminals

PART NUMBER 2230 5200 02

Connection cable 500mm length **PART NUMBER 1622 5099-01**

or: Connection cable 1000mm length PART NUMBER 1622 5099-03 Connection cable 1500mm length PART NUMBER 1622 5099-04 Connection cable 2000mm length PART NUMBER 1622 5099-05

Atlas Copco Pressure Transmitter



PART NUMBER:

1089 0492 50

DESCRIPTION:

- › Measurement of pressures
- › Pressure sensing over a longer distance up to 1000m
- › Supply 10-30VDC
- › Output 4...20mA

DESCRIPTION:

- › Measurement of pressures between 0 and 4 bar(g) (58 psig)

PART NUMBER:

1089 0492 54

DESCRIPTION:

- › Measurement of pressures between 0 and 6 bar(g) (87 psig)

PART NUMBER:

1089 0492 51

DESCRIPTION:

- › Measurement of pressures between 0 and 10 bar(g) (145 psig)

PART NUMBER:

1089 0492 52

DESCRIPTION:

- › Measurement of pressures between 0 and 16 bar(g) (232 psig)

PART NUMBER:

1089 0492 53

DESCRIPTION:

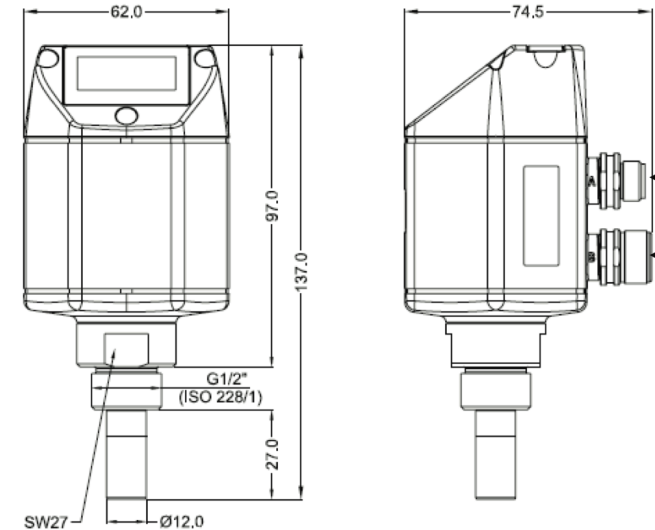
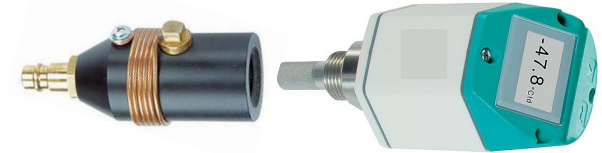
- › Measurement of pressures between 0 and 60 bar(g) (870 psig)



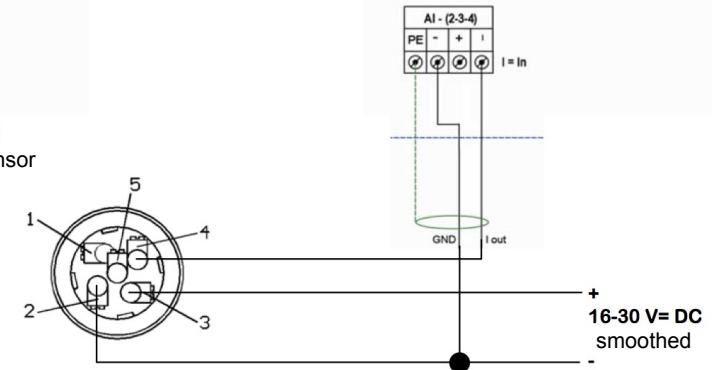
Compressor management

The pressure dew point sensor measures and monitors moisture in the compressed air. Connect its 4-20 mA output to the Airleader. Values are recorded every 10 seconds, providing detailed, continuous documentation of compressed-air quality in the web visualisation.

- Use a quick coupling and the measuring chamber to connect the sensor to the compressed air being measured, at any point downstream of the dryers.
- Without a measuring chamber, the sensor becomes contaminated too quickly and requires frequent recalibration. The chamber capillary continuously passes a small sample flow through the measuring cell (approximately 1 l/min expanded air at 7 bar). This improves accuracy and shortens response time.
- Do not exceed the pressure range of up to 50 bar for the standard version. (Special version up to 350 bar.)
- Observe the measuring ranges of the sensor!
- Temperatures above 50°C destroy the sensors. Protect the measuring device from direct sunlight, for example.
- If the compressed air contains oil and dirt, install a pre-filter in front of the measuring chamber.
- Pull the signal and power cable (LIYCY 4x0.34 mm² to 4x0.5 mm²) from the sensor plug to the Airleader analog input (AI2 to AI4).
- 24 V DC power supply via power supply (option) in the Airleader.

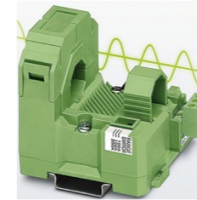


Plug
DTP sensor



Built-in current transformer for 1-phase A measurement

Compressor management



- Installation at the power supply to the compressor in front of the first contactor!
- Place current transformer around one phase
- Pull 4-20 mA signal (LiYCY 2 x 0.35 mm²) to the module connection
- Wire to AI 1
- Activate the Airleader Master module and program the measuring range



Compressor management



• Install the power meter in the compressor control-cabinet door; see its operating instructions. Panel cut-out: 92+0.8 x 92+0.8 mm; maximum panel thickness: 6 mm.

• Alternatively, mount the meter on a DIN rail to avoid cutting the cabinet door. This requires a DIN-rail adapter, WF order no. 5226.

• Install the current transformers on the power supply to the compressor in front of the first contactor!

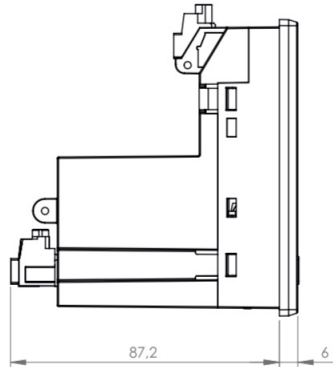
• Place 3 x current transformers around one phase each

• Pull 3 x HO 7V-K 1.5 mm² signal cables from the current transformer to the kW measuring device

• 3 x feed cable NS GA FÖU 2.5 mm² (up to 4 mm²) voltage per phase to the 3-pole. Circuit breaker

• 3 x supply cable HO 7V-K 1.5 mm² from 3-pole. Pull the circuit breaker to the kW measuring device

• Activate the Airleader Master module and program the measuring range



• Install the power meter in the compressor control-cabinet door; see its operating instructions. Panel cut-out: 92+0.8 x 92+0.8 mm; maximum panel thickness: 6 mm.

• Alternatively, mount the meter on a DIN rail to avoid cutting the cabinet door. This requires a DIN-rail adapter, WF order no. 5226.



• Installation of the 3 x current transformers on the power supply to the compressor in front of the first contactor!

- Place current transformers around one phase each
- Pull 3 x HO 7V-K 1.5 mm² signal cables from the current transformer to the kW measuring device



• 3 x feed cable NS GA FÖU 2.5 mm² (up to 4 mm²) voltage per phase to the 3-pole. Circuit breaker

• 3 x supply cable HO 7V-K 1.5 mm² from 3-pole. Pull the circuit breaker to the kW measuring device

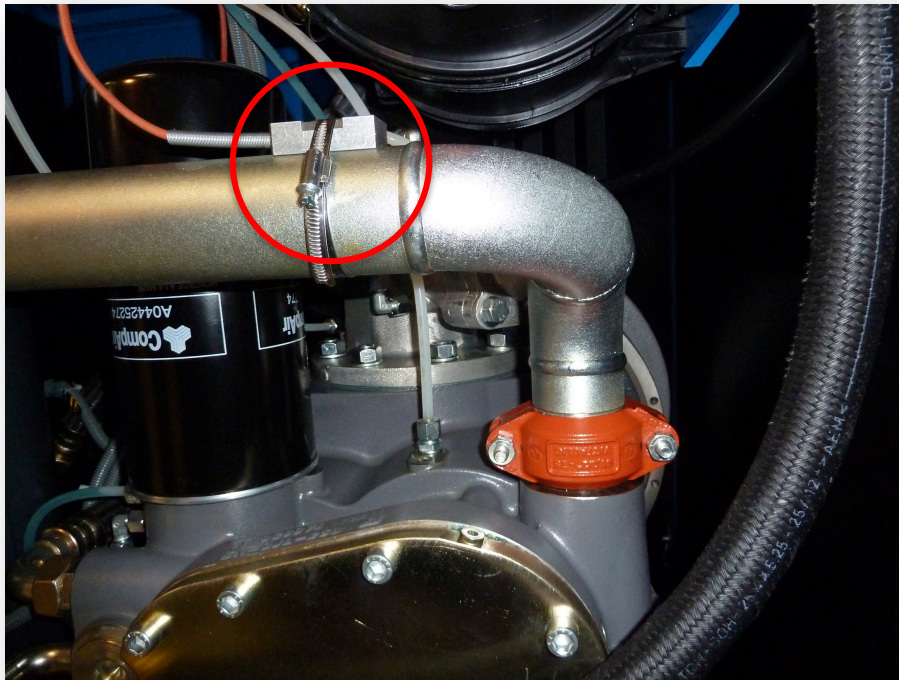
• Activate the Airleader Master module and program the measuring range

Compressor management

- Installation of contact sensor at the warmest point of the oil circuit (immediately after the exit of the compressor stage)
- Use a hose clamp (and not a cable tie).
- Wrap with insulating material otherwise there will be too much deviation
- Pull the cable to the JUMO transmitter, DIP switches 1, 2 and 5 to ON
- Wire the measuring transducer to the analog input AI 2 connection module
- Activate the Airleader Master module and program the measuring range



JUMO measuring transducer



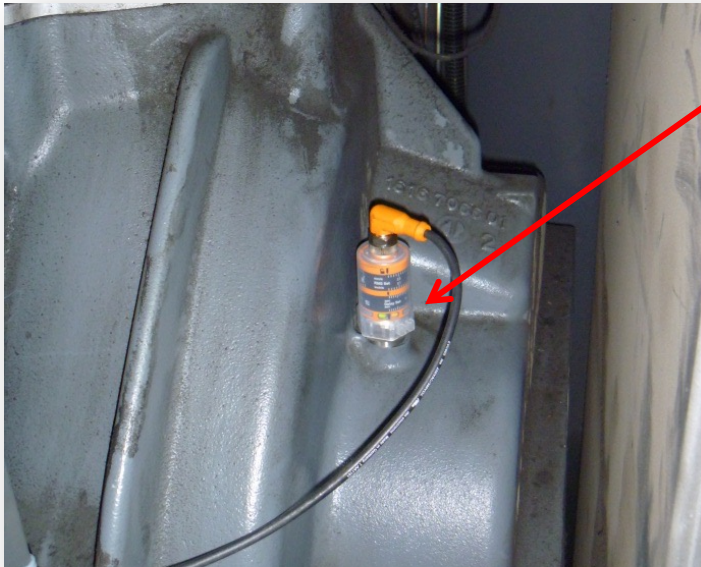
DIP switch configuration

Function or measuring range bei Pt 100 und Pt 1000	Function or measuring range bei Potentiometer	DIP switch					
		1	2	3	4	5	6
PC setup ¹	PC setup ¹						
Output 0... 10V	Output 0...10V	•					
Output 0...20mA	Output 0...20mA		•				
Output 4...20mA	Output 4...20mA	•	•				
Measuring range 0 ... 50°C	Range: 0-500 Ω			•			
Measuring range 0 ... 60°C	Range: 0-1 kΩ				•		
Measuring range 0 ... 100°C	Range: 0-2 kΩ				•	•	
Measuring range 0 ... 150°C	Range: 0-3 kΩ						•
Measuring range 0 ... 200°C	Range: 0-4 kΩ					•	•
Measuring range 0 ... 250°C	Range: 0-5 kΩ					•	•
Measuring range 0 ... 300°C	Range: 0-6 kΩ					•	•
Measuring range 0 ... 400°C	Range: 0-7 kΩ						•
Measuring range 0 ... 500°C	Range: 0-8 kΩ					•	•
Measuring range 0 ... 600°C	Range: 0-9 kΩ						•
Measuring range -20 ... +80°C	Range: 0-10 kΩ					•	•
Measuring range -30 ... +60°C	Range: 0-11 kΩ						•
Measuring range -30 ... +70°C						•	•
Measuring range -40 ... +60°C							•
Measuring range -50 ... +50°C						•	•

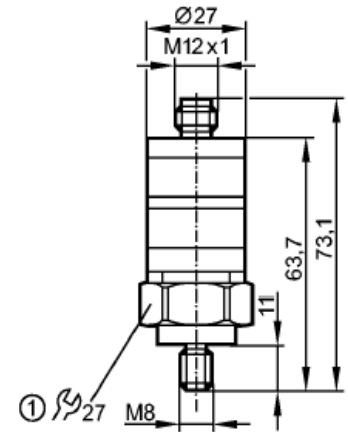
• = ON

Bearing-monitoring installation (example: Atlas Copco GA 180 VSD)

Compressor management



- Attach Airleader vibration sensor with M 8 thread to the compressor block (provided by customer).
- Connect 24 V voltage to vibration sensor (provided by customer).
- Assign analogue input AI2 from Airleader connection module (supplier's request).
- Enter the sensor on the Airleader (supplier's request).
- View normal vibration levels in the visualisation. Set the warning threshold 10% above the maximum normal value, as specified by the supplier.



1: Tightening torque 15 Nm



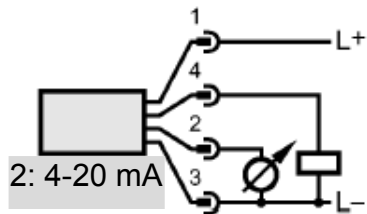
Pin assignment

1: L+

2: 4...20 mA

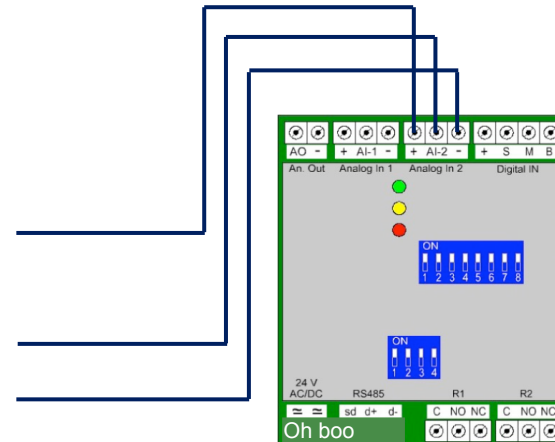
3: GND

4: Digital output (normally closed)



Sensor -> connection module

1 (L+) brown -> + 2
(Signal) white -> AI 3 (L-)
blue -> -

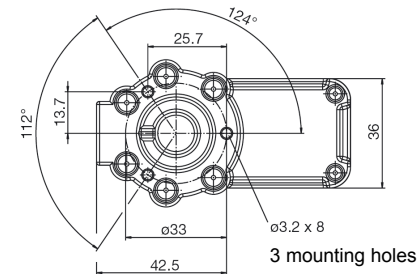
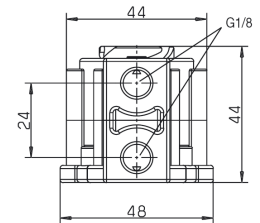
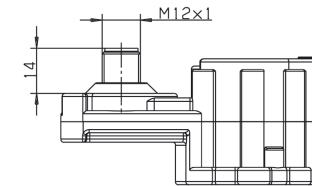
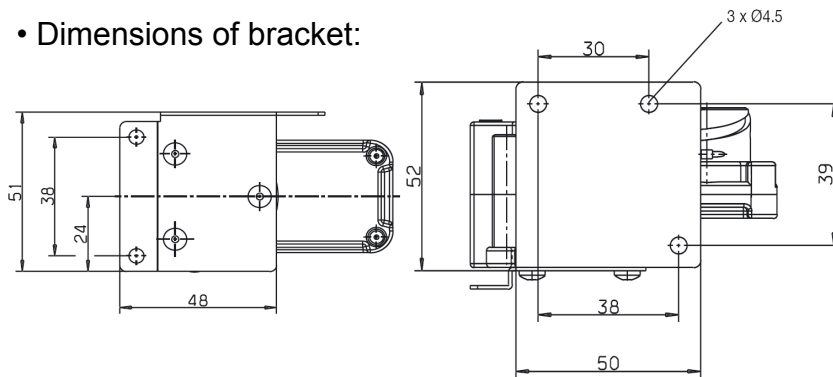


Compressor management



- The differential-pressure transmitter measures pressure upstream and downstream of the filter or air-treatment train.
- The difference between the two pressures is converted into an analog signal (4-20mA).
- Connect the signal to AI 1 or AI 2 on a connection module, or to AI 2, AI 3 or AI 4 on the Airleader master module.
- Take the pressure connections from T-pieces upstream and downstream of the filter (see illustration).
- Alternatively, use the connections for the filter's existing pressure gauge and remove that gauge.
- Transmitter dimensions:

- Dimensions of bracket:



Compressor management

- The flow sensor is delivered including an integrated flow straightener (no inlet sections necessary) and determines the compressed air flow (volume flow) in Nm³/h (specify m³/min when ordering!)
- ATTENTION: Do not exceed the pressure range of up to 16 bar!
- Install downstream of the dryer. The measurement requires non-condensing compressed air: no droplets may form on the sensor.



Piping requirements:

- Ø Be sure to observe the specified flow direction of the sensor!
- Ø The pipeline must be screwed in pressure-tight
- Ø Avoid diameter jumps (e.g. due to seals, screw connections) in the measuring section)
- The flow rate is converted into an analog signal (4-20mA).
- The signal is sent to an analog input
 - on an accessory connection module (AI 1 or AI 2), or on the Airleader master (AI 2 to AI 4).
- Power supply 24 VDC
- Power consumption max. 5W

Reference standard DIN1945/ ISO 1217: 20°C, 1000 mbar (reference when adjusting the probes)

Designation	version	Analogue output	
VA 525 with integrated 14TM measuring block	Low Speed	4... 20 mA =	0-25 l/min
	Standard		0-50 l/min
	Max		0...105 l/min
	High Speed		0...130 l/min
VA 525 with integrated 1/2" measuring block	Low Speed	4... 20 mA =	0...20 m ³ /h
	Standard		0...45 m ³ /h
	Max		0...90 m ³ /h
	High Speed		0...110 m ³ /h
VA 525 with integrated 3/4" measuring block	Low Speed	4... 20 mA =	0...45 m ³ /h
	Standard		0...85 m ³ /h
	Max		0...175 m ³ /h
	High Speed		0...215 m ³ /h
VA 525 with integrated 1" measuring block	Low Speed	4... 20 mA =	0...75 m ³ /h
	Standard		0...145 m ³ /h
	Max		0...290 m ³ /h
	High Speed		0...355 m ³ /h
VA 525 with integrated 1 1/4" measuring block	Low Speed	4... 20 mA =	0...140 m ³ /h
	Standard		0...265 m ³ /h
	Max		0...530 m ³ /h
	High Speed		0...640 m ³ /h
VA 525 with integrated 1" measuring block	Low Speed	4... 20 mA =	0...195 m ³ /h
	Standard		0...365 m ³ /h
	Max		0...730 m ³ /h
	High Speed		0...885 m ³ /h
VA 525 with integrated 2" measuring block	Low Speed	4... 20 mA =	0...320 m ³ /h
	Standard		0...600 m ³ /h
	Max		0...1195 m ³ /h
	High Speed		0...1450 m ³ /h

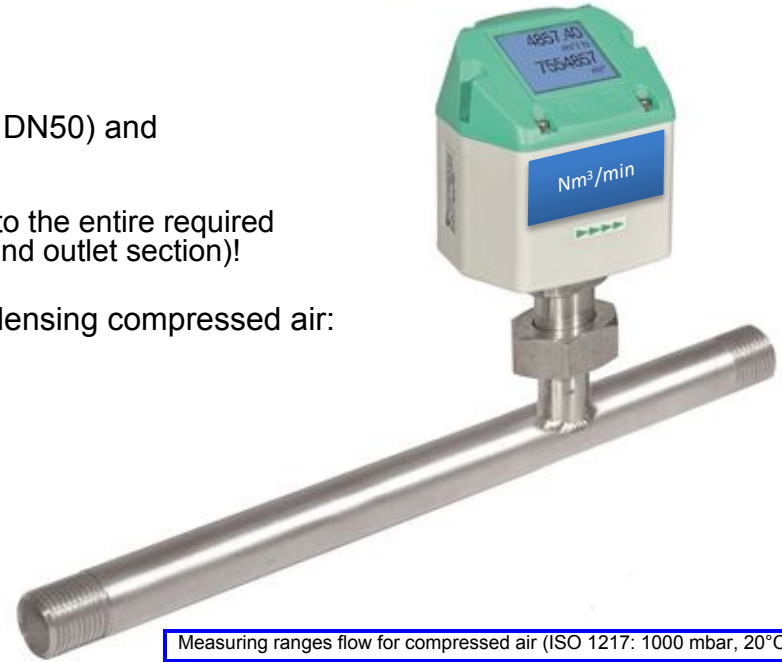
Compressor management

- The flow sensor is supplied including a pipe section (up to max. 2" or DN50) and determines the compressed air flow (volume flow) in Nm³/min
- ATTENTION: The pipe section supplied (usually) does NOT correspond to the entire required measuring section length (varies, see measuring section length and inlet and outlet section)!
- Install downstream of the dryer. The measurement requires non-condensing compressed air: no droplets may form on the sensor.

Piping requirements:

- Ø Correctly sized seals
- Ø Properly aligned flanges and gaskets
- Ø Avoid diameter jumps (e.g. due to seals, screw connections) in the measuring section (max. 1mm, see ISO standard 14511)
- Ø Clean, not dirty pipes after installation

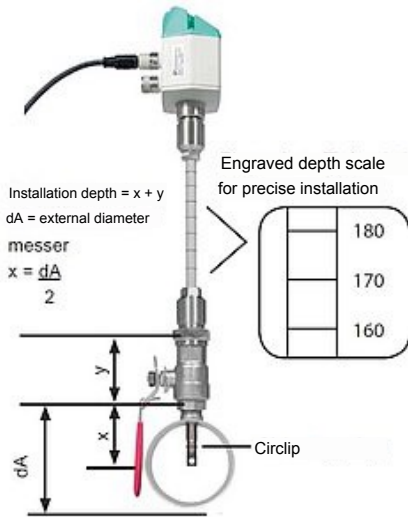
- The Position of the display head can be rotated by 180° (see BA), for example in the case of reverse flow direction.
- The flow rate is converted into an analog signal (4-20mA).
- The signal is sent to an analog input
 - on an accessory connection module (AI 1 or AI 2), or on the Airleader master (AI 2 to AI 4).
- Power supply 24 VDC/80 mA



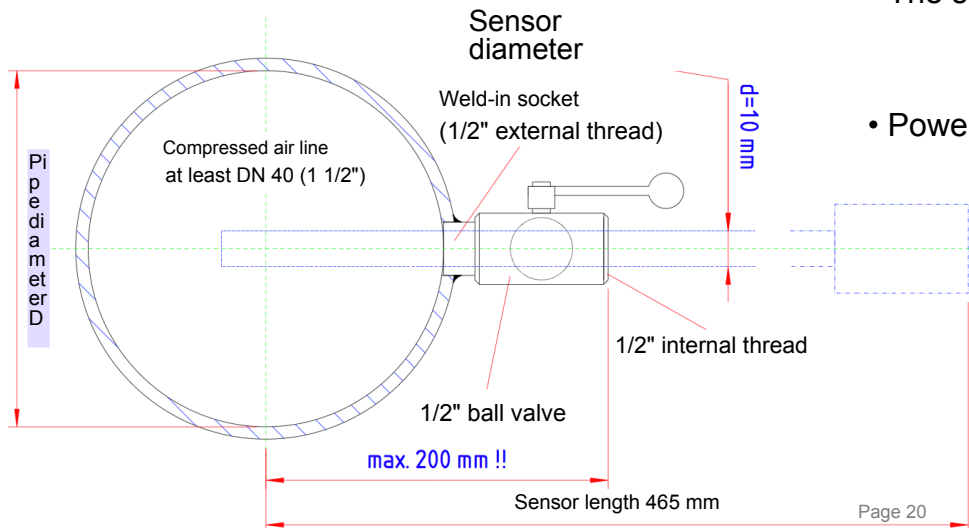
Measuring ranges flow for compressed air (ISO 1217: 1000 mbar, 20°C)					
Connection- thread	Pipe OD mm	Pipe ID mm	Measuring range l/min from to		Total length mm
R 1/4 "	13,7	8,9	0,8	90	194
R 1/2 "	21,3	16,1	3,3	1.500	300
R 3/4 "	26,9	21,7	5,0	2.833	475
R 1 "	33,7	27,3	8,3	4.833	475
R 1 1/4 "	42,4	36,0	11,7	8.833	475
R 1 3/2 "	48,3	41,9	16,7	12.167	475
R 2 "	60,3	53,1	33,3	19.917	475

Thermal mass-flow measurement is very sensitive to flow disturbances. Observe the recommended upstream and downstream straight pipe lengths.

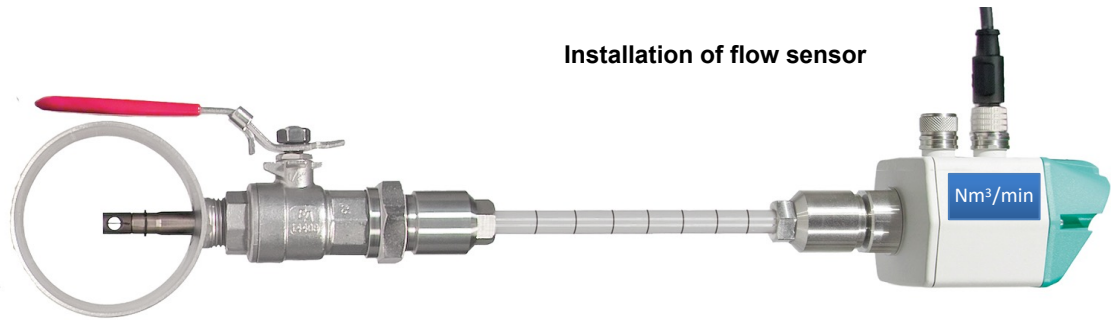
Compressor management



When installing a welded socket with a ball valve:



Installation of flow sensor

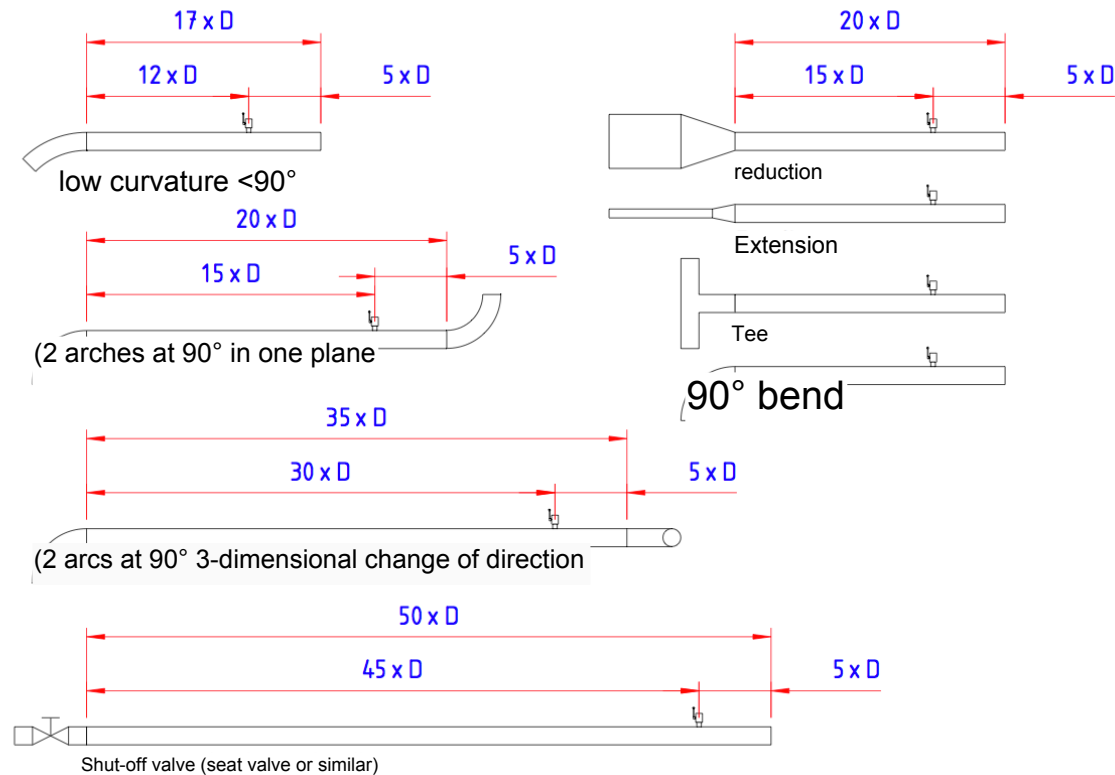


- The flow sensor measures the compressed air flow (volume flow) in Nm³/min.
- Install downstream of the dryer. The measurement requires non-condensing compressed air, with no droplets on the sensor. Insert the probe perpendicular to the direction of flow; its rotational position is unrestricted.
- Record the internal pipe diameter. This determines the measuring range to enter on the Airleader and, for sensors with the display option, on the sensor itself.
- The flow rate is converted into an analog signal (4-20mA).
- The signal is sent to an analog input
 - on an accessory connection module (AI 1 or AI 2), or on the Airleader master (AI 2 to AI 4).
- Power supply 24 VDC/80 mA.

Thermal mass-flow measurement is very sensitive to flow disturbances. Observe the recommended upstream and downstream straight pipe lengths.

Compressor management

Measuring section length and minimum length of the inlet and outlet sections for flow sensors:



The required minimum values are indicated in each case.

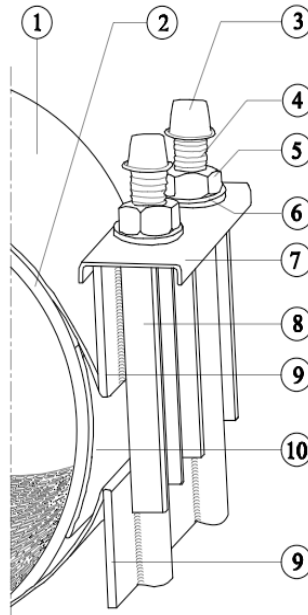
If the specified straight pipe lengths cannot be provided, expect increased or substantial measurement errors.

Compressor management

Tapping clamps including
ball valve 1/2", I/A

For pipe outside diameters
from – to

032 - 036 mm, length: 100
mm 036 - 040 mm, length:
100 mm 040 - 044 mm,
length: 150 mm 044 - 051
mm, length: 200 mm 048 -
055 mm, length: 200 mm 052
- 059 mm, length: 200 mm
057 - 064 mm, length: 200
mm 063 - 070 mm, length:
200 mm 070 - 077 mm,
length: 200 mm 075 - 083
mm, length: 200 mm 082 -
090 mm, length: 200 mm 087
- 097 mm, length: 200 mm
087 - 097 mm, length: 200
mm 102 - 112 mm, length:
200 mm 108 - 118 mm,
length: 200 mm 118 - 128
mm, length: 200 mm 125 -
135 mm, length: 200 mm 133
- 144 mm, length: 200 mm
145 - 155 mm, length: 250
mm 151 - 161 mm, length:
250 mm 159 - 170 mm,
length: 250 mm 168 - 180
mm, length: 250 mm 180 -
191 mm, length: 250 mm 193
- 203 mm, length: 300 mm
200 - 210 mm, length: 300
mm 209 - 220 mm, length:
300 mm



- The tapping collar with ball valve is designed for the subsequent creation of a measuring point on pressurized steel compressed air pipes.

- Measure the pipe diameter and make sure you are using the appropriate tapping clamp.

- Clean the pipe thoroughly before attaching the tapping collar. Remove loose dirt particles.

- Make sure that no particles of dirt remain on the rubber when wrapping the pipe. Even when tightening the screws, no particles of dirt should get between the pipe and the rubber seal.

- Keep sand out of the threads. Despite the PTFE coating on the nuts and passivation of the bolts, keep them clean to prevent the nuts and bolts from seizing.

- Use a torque wrench to tighten the screws. Please note the required wrench size and the prescribed torque. (M12: 65 Nm/ SW 19 M14: 85 Nm/ SW 22 M16: 110 Nm/ SW24)

- If you use a regular wrench instead of a torque wrench, the screws will not be tightened enough. In such a case, pay particular attention to tightening the screws tightly.

Compressor management

Demonstrate heat balance

Since compressors are operated depending on the compressed air requirement, they often work at partial load and therefore inevitably give off less heat than possible. On the other hand, not as much heat is always needed as is currently available. This means that the heat balance of the “harvested” energy fluctuates wildly and is difficult to determine.

An accurate measuring and counting system is essential to demonstrate efficiency or to provide evidence when applying for funding.

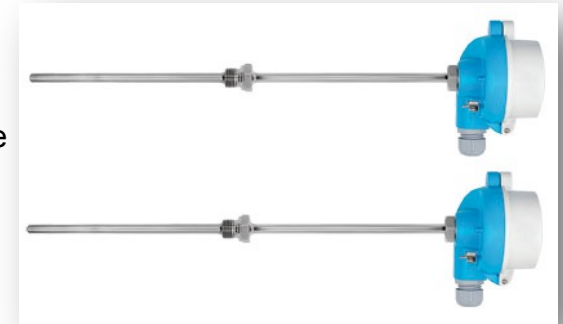
With the heat meter kit (consisting of a calibratable heat meter, 2 temperature probes and an inductive flow meter) there is now an ideal addition to the airleader compressed air management system. Calibratable heat meter

WRG energy recording system (OPTION)



Flow sensor up to 600 l/min, with the electronics and calculation unit in one housing

Calibrated,
electronic
paired
temperature
sensors
ensure
highest
accuracy



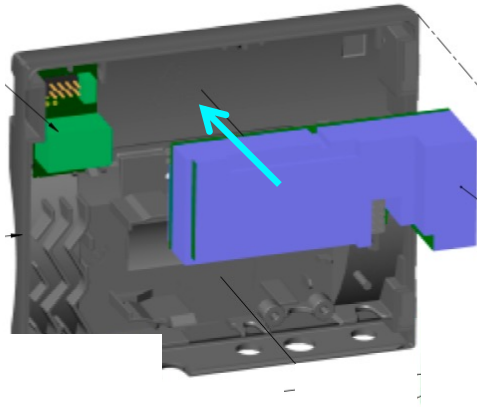
Compressor management

Electrical connection

WRG energy recording system (3.5 – 10 m³/h)



ATTENTION 24 V AC alternating current!
(Do not use 24 V DC power supplies!)



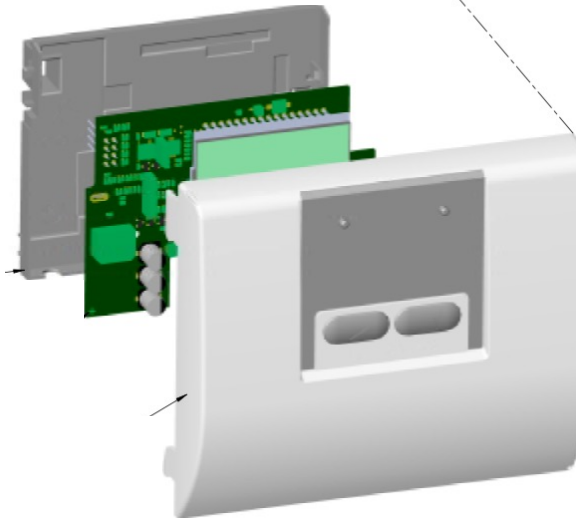
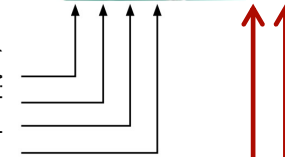
Install 4-20 mA analog output data module (included in delivery!)

Data module 4 – 20 mA



0/4-20 mA analog
Output connections
Terminal 80: Out 1 (+)
Terminal 81: Out 1 (-)
Terminal 82: Out 2 (+)
Terminal 83: Out 2 (-)

to Airheader



24 V AC (!) via
external
transformer
module
(included in
delivery!)



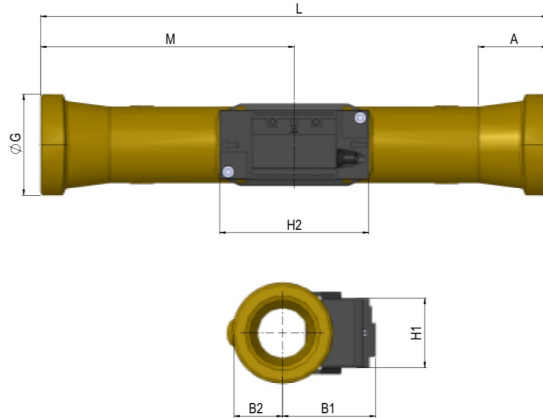
Compressor management

Installation diagram

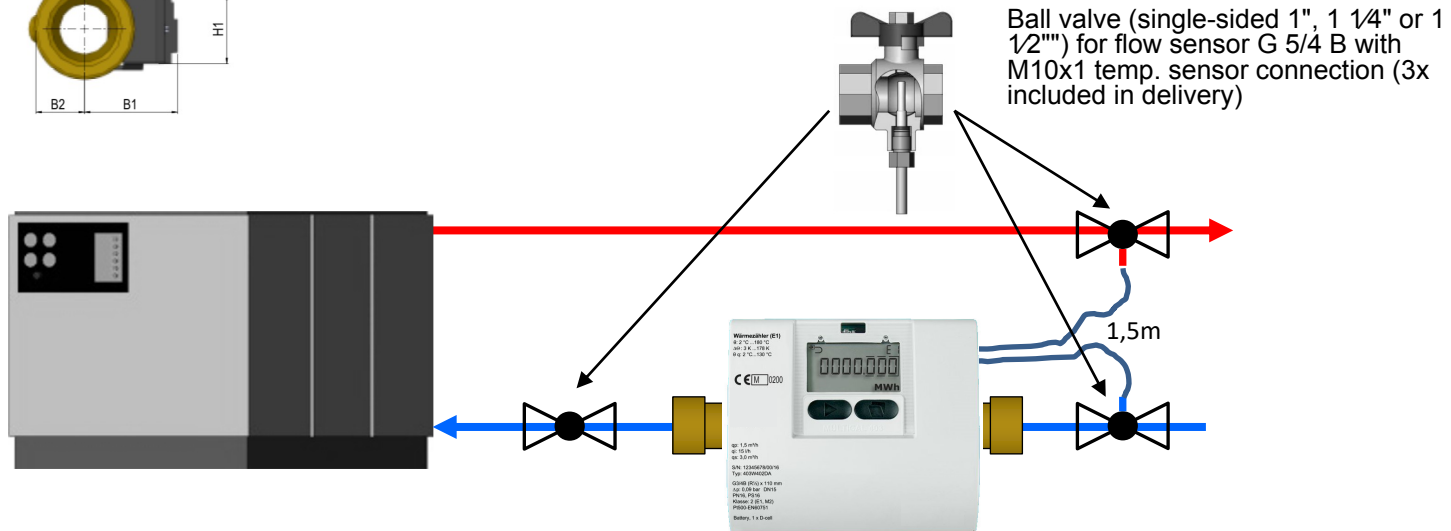
WRG energy recording system (3.5 – 6 m³/h)



Flow sensor G 1 1/4 " (= 5/4") up to 3,500 OR 6,000 l/h (calculator can be attached)



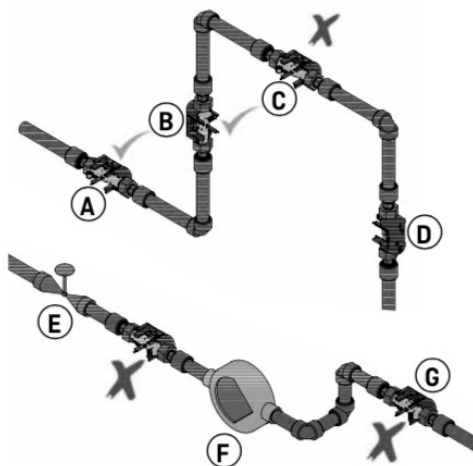
Nominal flow q_p [m ³ /h]	thread G	L	M	H2	A	B1	B2	H1	Weight approx. [kg] *
3,5	G5/4B	260	130	88	16	51	20	41	2,0
6	G5/4B	260	130	88	16	53	20	41	2,1



Compressor management

Flow sensor placement

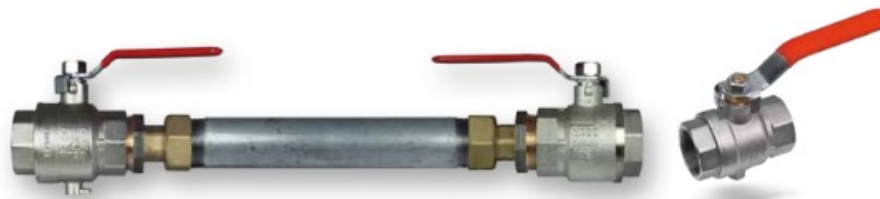
WRG energy recording system (3.5 – 6 m³/h)



A Recommended flow sensor placement. B Recommended flow sensor placement. C Unacceptable placement due to risk of debris accumulation. D Acceptable placement in closed systems. E/E A flow sensor should not be placed immediately after a valve,

apart from ball valve type which must be completely open when not used for shut-off. F A flow sensor must never be installed on the suction side of a pump. G A flow sensor should not be placed after a U-bend in two levels.

Heat-meter installation: use adapters to install the components without mechanical stress. Then install the flow sensor.



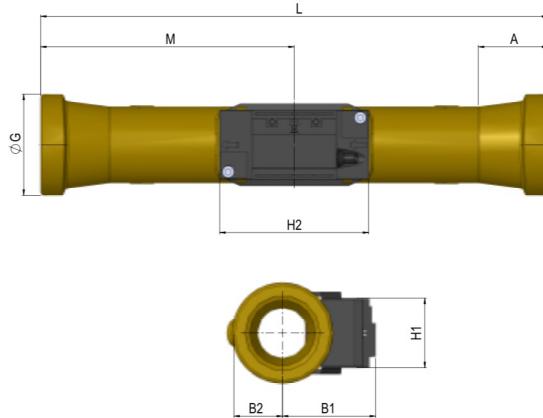
	Connection on the pipe side	q_n [m ³ /h]	DN	Connection meter	Length of fitting piece	Overall length of group		Item no.
4	1"	3,5 – 6,0	25	G1¼"	260 mm	445 mm	WGE	5544-WD
	1¼"	3,5 – 6,0	25	G1¼"	260 mm	515 mm	WGE	5550-WD
	1½"	3,5 – 6,0	25	G1¼"	260 mm	530 mm	WGE	5555-WD



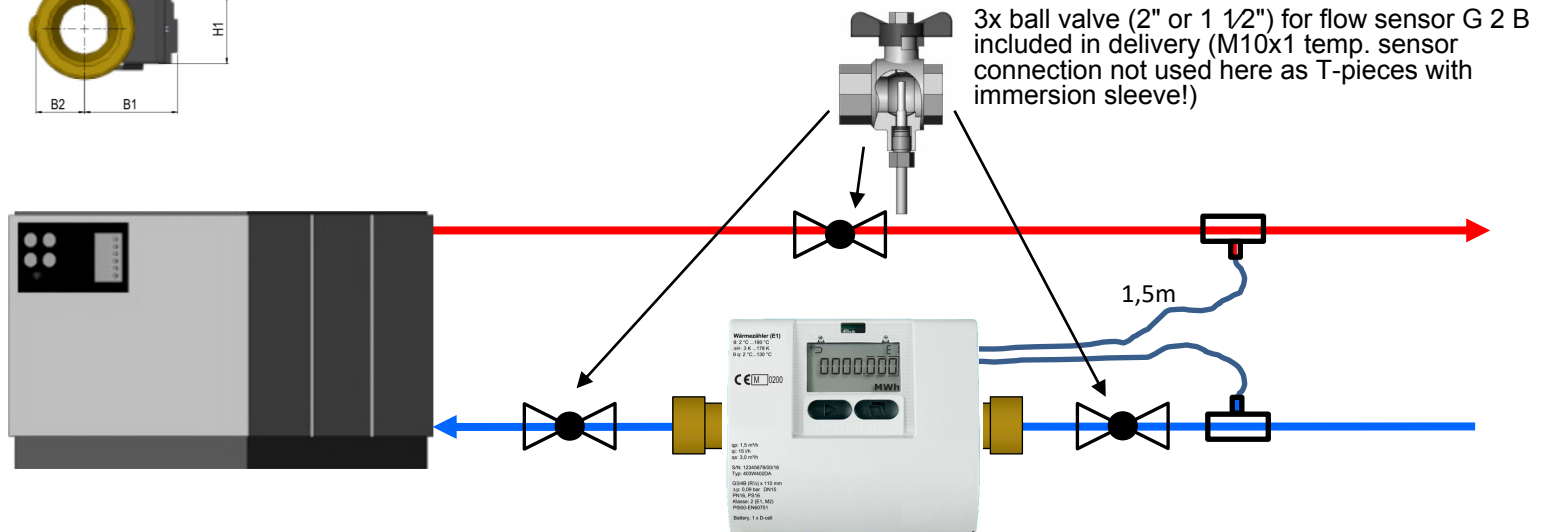
Compressor management

Installation diagram

Flow sensor G 2 "up to 10,000 l/h (calculator can be attached)



Nominal flow q_p [m³/h]	thread G	L	M	H2	A	B1	B2	H1	Weight approx. [kg] *
10	G2B	300	150	88	40,2	55	29	41	3,0



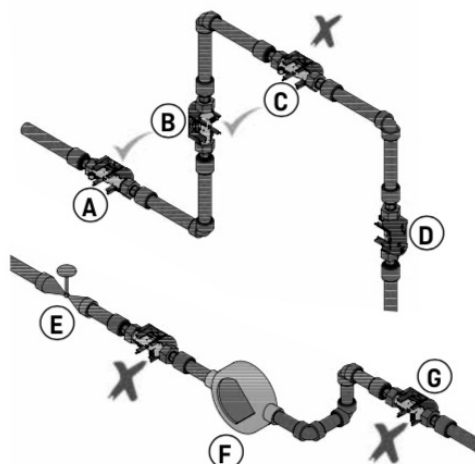
WRG energy recording system (10 m3/h)



Compressor management

Flow sensor placement

WRG energy recording system (10 m3/h)

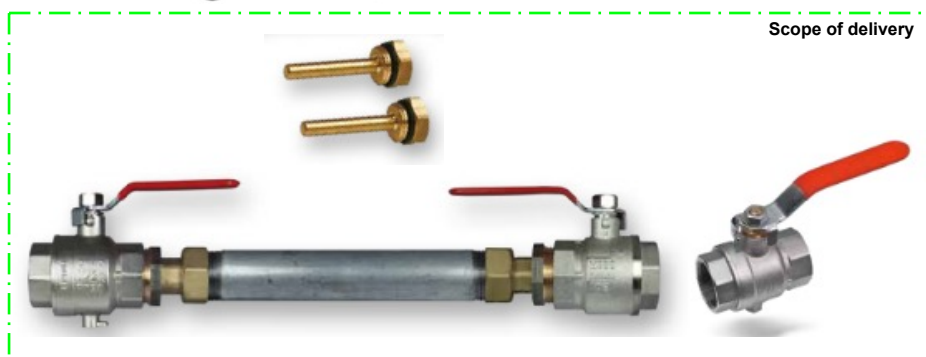


A Recommended flow sensor placement. B Recommended flow sensor placement. C Unacceptable placement due to risk of debris accumulation. D Acceptable placement in closed systems. E/E A flow sensor should not be placed immediately after a valve,

apart from ball valve type which must be completely open when not used for shut-off. F A flow sensor must never be installed on the suction side of a pump. G A flow sensor should not be placed after a U-bend in two levels.



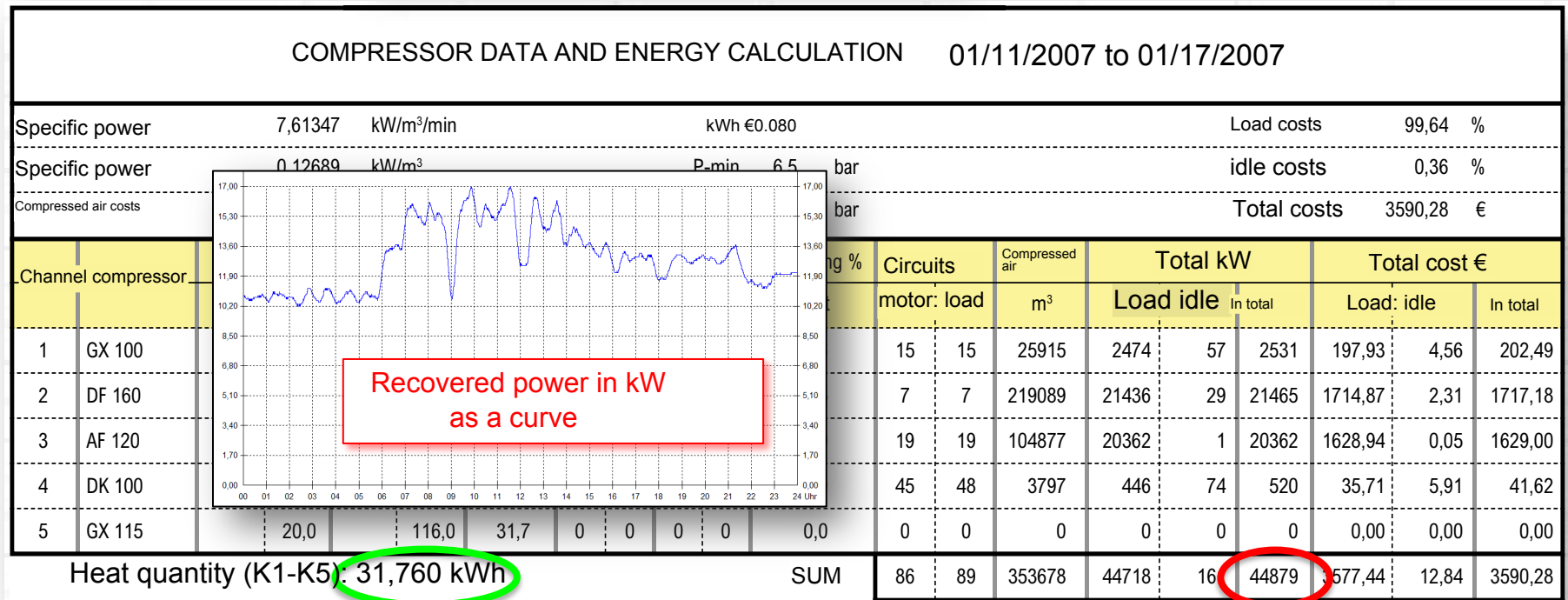
Installation of immersion sleeves: Provide T-pieces (on site!) 1 1/2" or 2" with 1/2" outlet for the immersion sleeve in the flow and return!



Heat-meter installation: use adapters to install the components without mechanical stress. Then install the flow sensor.

Connection on the pipe side	q_p [m ³ /h]	DN	Connection meter	Length of fitting piece	Overall length of group	Item no.
1 1/2"	10	40	G2"	300 mm	600 mm	WGE 5547-WD
2"	10	40	G2"	300 mm	660 mm	WGE 5557-WD

Compressor management



Recovered energy (day, week, month) from heat meter

Energy used to generate pressure luJ (day, week, month) from Airleader

