



Compressed air quality

Compressed air quality meas. according to ISO 8573

Residual oil content - particles - moisture



DS 500 - the intelligent chart recorder of the next generation

The centrepiece of compressed air quality measurement is the chart recorder DS 500. It measures and documents the measured data of the sensors for residual oil content, particles and moisture.

The measured values are indicated on the 7" colour screen. The curve progressions

from the beginning of the measurement can be viewed by an easy slide of the finger.

The integrated data logger stores the measured values safely and reliably. The threshold value can be freely entered for each measured parameter. 4 alarm relays are available for automatic alarm in case of

an exceeding of the threshold values.

Optionally DS 500 can be upgraded with up to 12 sensor inputs. For connection to a PLC DS 500 has an Ethernet interface as well as a RS 495 interface. The communication is done via the Modbus protocol.

Extract from ISO 8573-1 - threshold values

ISO 8573-1:2010 CLASS	Solids			Water	Oil
	Maximum number of particles per m³			Pressure dew point vapour	Total share in oil (liquid aerosol and mist) mg/m³
	0.1 - 0.5 µm	0.5 - 1 µm	1 - 5 µm		
0	According to determination by the instruments user, more severe requirements than Class 1				
1	≤ 20.000	≤ 400	≤ 10	≤ -70 °C	0,01
2	≤ 400.000	≤ 6.000	≤ 100	≤ -40 °C	0,1
3	--	≤ 90.000	≤ 1.000	≤ -30 °C	1
4	--	--	≤ 10.000	≤ -3 °C	5
5	--	--	≤ 100.000	≤ +7 °C	--
6	--	--	--	≤ +10 °C	--
7	--	--	--	--	--
8	--	--	--	--	--
9	--	--	--	--	--
X	--	--	--	--	L 10



Residual oil content measurement - OIL check

The residual oil content sensor OIL check measures the vaporous residual oil content in the compressed air. By means of a sample taking a representative part volume flow is taken from the compressed air and led to the OIL check.

Due to the continuous measurement threshold value exceeding will be recognized immediately and remedial actions initiated.

Technical data OIL Check

Dimensions	487 x 170 x 120 mm (L x H x W)
Power supply	230 VAC 50 Hz $\pm 10\%$ resp. 115 VAC 60 Hz $\pm 10\%$
Medium	Compressed air
Noticeable substances	Polyalphaolefins aliphatic hydrocarbons hydrocarbons functional hydrocarbons aromatics
Ambient temp.	+5 ... +45°C
Compres. air temp.	+5 ... +55°C
Operating overpres.	3 bar ... max. 16 bar (ü)*
Meas. gas humidity	$\leq 40\%$ rel. humidity
Measuring unit	mg/m ³ (standard cubic meters in accordance with ISO 1217; 1 bar, 20°C, 0 % rel. humidity)
Measuring range	$\leq 0,01 - 5.000 \text{ mg/m}^3$ residual oil vapour content (according to ISO 8573-1)
Measuring accuracy	0.003 mg/m ³
Detection limit	0.0006 mg/m ³
Connections	G3/8" internal thread. Please observe install. instructions
Installation requirements	Vertically** into the rising main pipe via oil and grease- free measuring section
Inlet section	10 x DN (min. 200 mm) according to ISO 8573-2
Outlet section	3 x DN (min. 100 mm) according to ISO 8573-2

* further operating pressures on request

** horizontal mounting on request

Particle counter PC 400

The highly precise optical particle counter PC 400 measures particles from a size of 0.1 μm and is therefore suitable for monitoring of the compressed air quality class 1 (ISO 8573).

The correct function the filtration elements mounted in the compressed air is monitored and possible filter perforations are recognized immediately.

The compressed air flow through the particle counter is automatically supervised.

Technical data PC 400

Measuring range	Number of particles per m ³ Particle size channels: 0.1...0.5 μm 0.5...1 μm 1...5 μm Further particle size channels on request
Flow rate	28.3 l/min (1 cfm)
Light source	laser diode
Interface	RS 485 (Modbus protocol)
Power supply	24 VDC, 300 mA
Dimensions	150 x 200 x 300 mm
Weight	8 kg

Technical data dew point sensor FA 410

Measuring range	-80...-20°C _{td}
Accuracy	$\pm 1^\circ\text{C}$ at -20...-20°C _{td} $\pm 2^\circ\text{C}$ at -20...-50°C _{td} $\pm 3^\circ\text{C}$ at -50...-80°C _{td}
Pressure range	-1...50 bar (with measuring chamber 16 bar, special version up to 350 bar)
Protection class	IP 65
EMC	according to DIN EN 61326
Einsatztemperatur:	-20...70 °C
Burden for analogue output	< 500 Ohm
Screw-in thread	G½" without meas. chamber

Moisture - dew point sensor FA 410

FA 410 measures the pressure dew point in the compressed air down to -80° Ctd.

The mounting is effected either directly into the pipe via the G ½" thread or better by means of the measuring chamber which allows a defined stream of about 2 litres/minute to bypass the sensor. Also in this case the continuous measurement takes care that alert is triggered immediately if the compressed air dryer breaks down.

Technical data DS 500

Dimensions housing	280 x 170 x 90 mm, IP 65, 7.3 kg
Connections	18 x PG 12 for sensors and power supply, alarm relay 1 x RJ 45 Ethernet connection
Version panel mounting	Cutout panel 250 x 156 mm
Weight	7.3 kg
Material	Diecast, front keypad: Polyester
Sensor inputs	4/8/12 sensor inputs for analogue and digital sensors freely assignable, see options Digital CS sensors for dew point and flow with SDI interface FA/VA 400 Series Digital third-party sensors RS 485 / Modbus RTU, other bus systems can be realized on request Analogue CS sensors for pressure, temperature, clamp-on ammeters pre-configured Analogue third-party sensors 0/4 ...20 mA, 0...1/10/30 V, pulse, Pt 100 / Pt 1000, KTY
Power supply sensors	24 VDC, max. 130 mA per sensor, integrated mains unit max. 24 VDC, 25 W In case of version 8/12 sensor inputs 2 integrated mains units each 24 VDC, 25 W
Interfaces	USB stick, Ethernet / RS 485 Modbus RTU / TCP
Alarm relays	4 relays (changeover contact 230 VAC, 6 A), alarm management Rrelays freely programmable, collective alarm Analogue output, pulse in case of sensors with own signal output looped, like e.g. VA/FA Series
Memory card	Memory size 2 GB SD memory card standard optionally up to 4 GB
Power supply	100...240 VAC / 50-60 Hz, special version 24 VDC
Colour screen	7" touch panel TFT transmissive , graphics, curves, statistics
Accuracy	see sensor specifications
Operating temperature	0...50°C
Storage temperature	-20...70°C
Optional	Webserver



Compressed air quality

Stationary solution with particle counter PC 400 and DS 400



Description	Order no.
PC 400 particle counter up to 0.1 µm for compressed air and gases including pressure reducer	0699 0040
Connection cable 5 m	0553 0108
DS 400 multifunction measuring instrument with graphic display and touch screen operation	0500 4000 D
Option: Integrated data logger for 100 million measured values	Z500 4002
Option: Integrated Ethernet and RS 485 interface	Z500 4004
CS Soft Basic - data evaluation in graphic and table form - reading out of the measured data of DS 500 via USB or Ethernet	0554 7040
Alternative version to PC 400 up to 0.1 µm: PC 400 particle counter up to 0.3 µm for compressed air and gases including pressure reducer	0699 0041

Portable solution with particle counter PC 400 and DS 500 mobile

The particle counter is fixed onto a portable mounting plate with pedestal



Description	Order no.
PC 400 particle counter up to 0.1 µm for compressed air and gases including pressure reducer	0699 0040
Connection cable for third-party sensors to portable devices, ODU/open ends, 5 m	0553 0501
Portable mounting plate with pedestal	0554 6016
Multifunction measuring instrument DS 500 mobile, 4 sensor inputs	0500 5012
CS Soft Basic - data evaluation in graphic and table form - reading out of the measured data of DS 500 mobile via USB or Ethernet	0554 7040
Alternative version to PC 400 up to 0.1 µm: PC 400 particle counter up to 0.3 µm for compressed air and gases including pressure reducer	0699 0041

Portable solution with particle counter PC 400 in a service case and DS 500 mobile



Description	Order no.
Portable PC 400 particle counter up to 0.1 µm for compressed air and gases including pressure reducer, in a service case	0699 0042
Connection cable for third-party sensors to portable devices, ODU/open ends, 5 m	0553 0501
Multifunction measuring instrument DS 500 mobile, 4 sensor inputs	0500 5012
CS Soft Basic - data evaluation in graphic and table form - reading out of the measured data of DS 500 mobile via USB or Ethernet	0554 7040
Alternative solution to PC 400 up to 0.1 µm: Portable PC 400 particle counter up to 0.3 µm for compressed air and gases including pressure reducer, in a service case	0699 0043



Stationary solution with OIL-Check and DS 400



Description	Order no.
OIL-Check - residual oil content measurement for vaporous residual oil content (DN20-DN40), 3-16 bar, measuring range <0.01...5.000 mg/m ³ , including sampling probe (DN 20-DN40), inspection certificate, 4...20 mA analogue output. Please order measuring section for sampling separately.	0699 0060
OIL-Check measuring section for sampling (DN 20, 3/4"), 16 bar, stainless steel, outer diameter 26.9 mm, outer thread R3/4"	4000 2001
Ball valve G3/8" incl. connection fittings for installation between sampling probe and OIL-Check, cleaned oil- and grease-free	3300 0004
Connector plug for 4...20 mA analogue output	3300 0005
Connection cable 5 m	0553 0108
DS 400 multifunction meas. instrument with graphic display and touch screen operation	0500 4000 A
Option: Integrated data logger for 100 million measured values	Z500 4002
Option: Integrierte Ethernet- und RS 485-Schnittstelle	Z500 4004
CS Soft Basic - data evaluation in graphic and table form - reading out of the measured data of DS 400 via USB or Ethernet	0554 7040

OIL-Check versions for different pipe diameters:

OIL-Check - residual oil content measurement for vaporous residual oil content (DN50-DN80), 3-16 bar, meas. range <0.01...5.000 mg/m ³ , including sampling probe (DN 50-DN80), inspection certificate, 4...20 mA analogue output. Please order meas. section for sampling separately.	0699 0061
OIL-Check - residual oil content measurement for vaporous residual oil content (>DN80), 3-16 bar, measuring range <0.01...5.000 mg/m ³ , incl. sampling probe (customer-specific length), insp. certificate, 4...20 mA analogue output. Please order meas. section for sampling separately.	0699 0062
OIL-Check measuring section for sampling (DN 25, 1"), 16 bar, stainless steel, outer diameter 33.7 mm, R1"	4000 2002
OIL-Check measuring section for sampling (DN 32, 1 1/4"), 16 bar, stainless steel, outer diameter 42.4 mm, R1 1/4"	4000 2003
OIL-Check measuring section for sampling (DN 40, 1 1/2"), 16 bar, stainless steel, outer diameter 48.3 mm, R1 1/2"	4000 2004
OIL-Check measuring section for sampling (DN 50, 2"), 16 bar, stainless steel, outer diameter 60.3 mm, R2"	4000 2005
OIL-Check measuring section for sampling (DN 65, 2 1/2"), 16 bar, stainless steel, outer diameter 76.1 mm, R2 1/2"	4000 2006
OIL-Check measuring section for sampling (DN 80, 3"), 16 bar, stainless steel, outer diameter 88.9 mm, R3"	4000 2007
Stainless steel pipe 6x1 mm for horizontal installation, length max. 1000 mm including connection fittings	4000 2008

Stationary solution with OIL-Check, particle counter PC 400 and DS 500



Description	Order no.
OIL-Check - residual oil content measurement for vaporous residual oil content (DN20-DN40), 3-16 bar, measuring range <0.01...5.000 mg/m ³ , including sampling probe (DN 20-DN40), inspection certificate, 4...20 mA analogue output. Please order measuring section for sampling separately.	0699 0060
OIL-Check measuring section for sampling (DN 20, 3/4"), 16 bar, stainless steel, outer diameter 26.9 mm, outer thread R3/4"	4000 2001
Ball valve G3/8" incl. connection fittings for installation between sampling probe and OIL-Check, cleaned oil- and grease-free	3300 0004
Connector plug for 4...20 mA analogue output	3300 0005
Connection cable 5 m	0553 0108
PC 400 particle counter up to 0.1 µm for compr. air and gases incl. pressure reducer	0699 0040
Connection cable 5 m	0553 0108
DS 500 - intelligent chart recorder in basic version (4 sensor inputs)	0500 5000
CS Soft Basic - data evaluation in graphic and table form - reading out of the measured data of DS 400 via USB or Ethernet	0554 7040
OIL-Check versions for different pipe diameters:	Please see above
Optionally available: dew point sensor, pressure sensor, flow sensor	

Portable solution with OIL-Check, particle counter PC 400 + DS 500 mobile



Description	Order no.
OIL-Check - residual oil content measurement for vaporous residual oil content (DN20-DN40), 3-16 bar, measuring range <0.01...5.000 mg/m ³ , including sampling probe (DN 20-DN40), inspection certificate, 4...20 mA analogue output. Please order measuring section for sampling separately.	0699 0060
OIL-Check measuring section for sampling (DN 20, 3/4"), 16 bar, stainless steel, outer diameter 26.9 mm, outer thread R3/4"	4000 2001
Mobile transport case with wheels including mounting plate	0554 6015
Connector plug for 4...20 mA analogue output	3300 0005
Connection cable for third-party sensors to portable devices, ODU/open ends, 5 m	0553 0501
PC 400 particle counter up to 0.1 µm for compr. air and gases, incl. pressure reducer	0699 0040
Connection cable for third-party sensors to portable devices, ODU/open ends, 5 m	0553 0501
Multifunction measuring instrument DS 500 mobile, 4 sensor inputs	0500 5012
CS Soft Basic - data evaluation in graphic and table form - reading out of the measured data of DS 500 mobile via USB or Ethernet	0554 7040
OIL-Check versions for different pipe diameters:	Please see above
Optionally available: dew point sensor, pressure sensor, flow sensor	