OIL CHECK 511

Class 1 – Point-of-use sensor for residual oil vapor in compressed air and industrial gases

Measure medium quality continuously, centrally or at the point of use



Benefits at a glance:

- Fast, continuous medium monitoring through online measurement
- Trend analysis to detect quality changes
- Detects sudden faults in medium distribution
- Easy installation under pressure, e.g. via a quick coupling
- Long-life light source, 15,000 h average service life
- Low operating costs





The OIL CHECK 511 helps detect changes early. It monitors medium quality where it matters most: at the point of use, just upstream of critical processes, machines, tools or supply handover points.

Fast, continuous medium monitoring through online measurement

The OIL CHECK 511 online sensor takes a partial flow and continuously measures its residual oil vapor content.

Detects deviations just upstream of critical processes

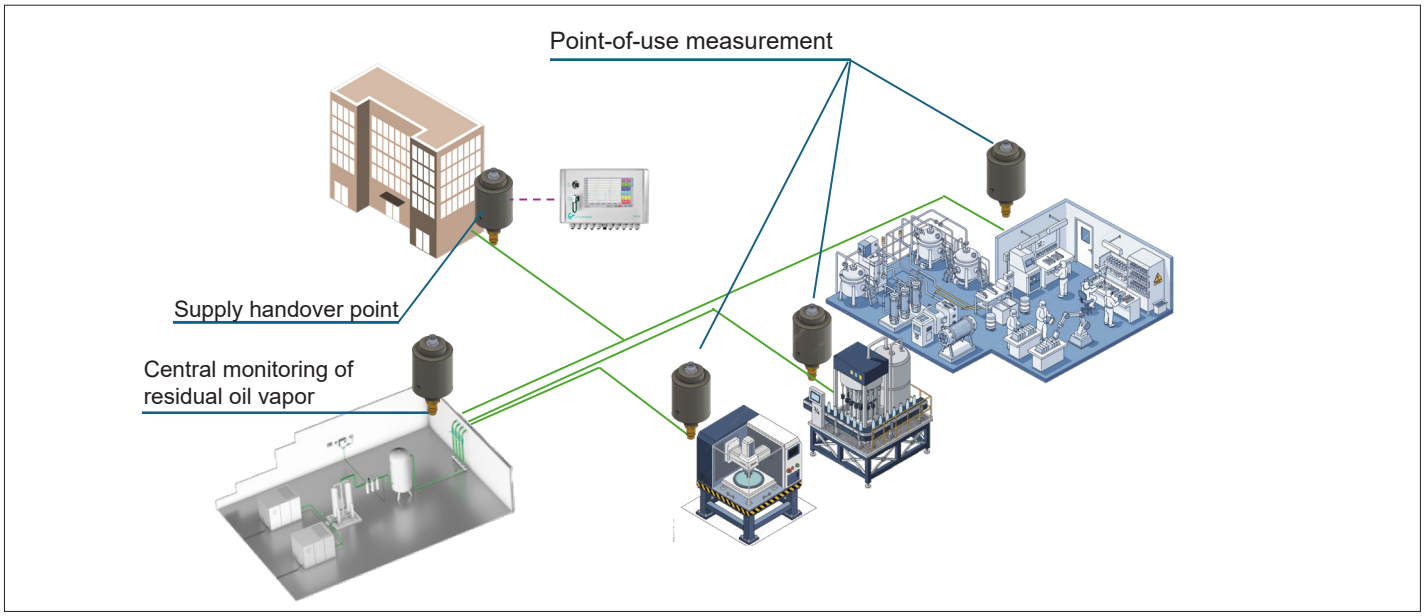
A measurement downstream of medium treatment is often insufficient to protect critical processes and equipment. Oil compounds can also enter within the distribution network. The OIL CHECK 511 helps detect such events through changes in measured concentrations of gaseous oil compounds, helping protect critical processes.

Residual oil vapor can be measured by offline laboratory analysis or continuous online measurement. Laboratory analysis is often too slow and infrequent to detect sudden faults and the resulting rise in contamination in time to act.

This is particularly relevant when compressed air or industrial gases directly affect product quality, surface quality or process stability, for example:

- **Food industry**: compressed air for filling, packaging or product discharge
- **Pharmaceutical industry**: compressed air in processes near the product, cleanrooms or packaging lines
- **Electronics industry**: compressed air for cleaning, drying or handling sensitive components
- **Semiconductor industry**: industrial gases and compressed air in ultra-clean production environments
- **Automotive manufacturing**: compressed air for painting, surface preparation or spray guns

The compact OIL CHECK 511 fits where space is limited, at the point of use or at the central supply inlet, for example at a handover point. The 4–20 mA and Modbus interfaces make it easy to integrate into machines and systems.



Measurement and trend analysis for condition-based maintenance

Continuous logging of measured values provides the data needed for condition-based maintenance.

Easy installation, even under pressure

The OIL CHECK 511 connects directly to the compressed air piping, for example via a quick coupling or ball valve. It can therefore be installed under pressure and retrofitted to existing systems.

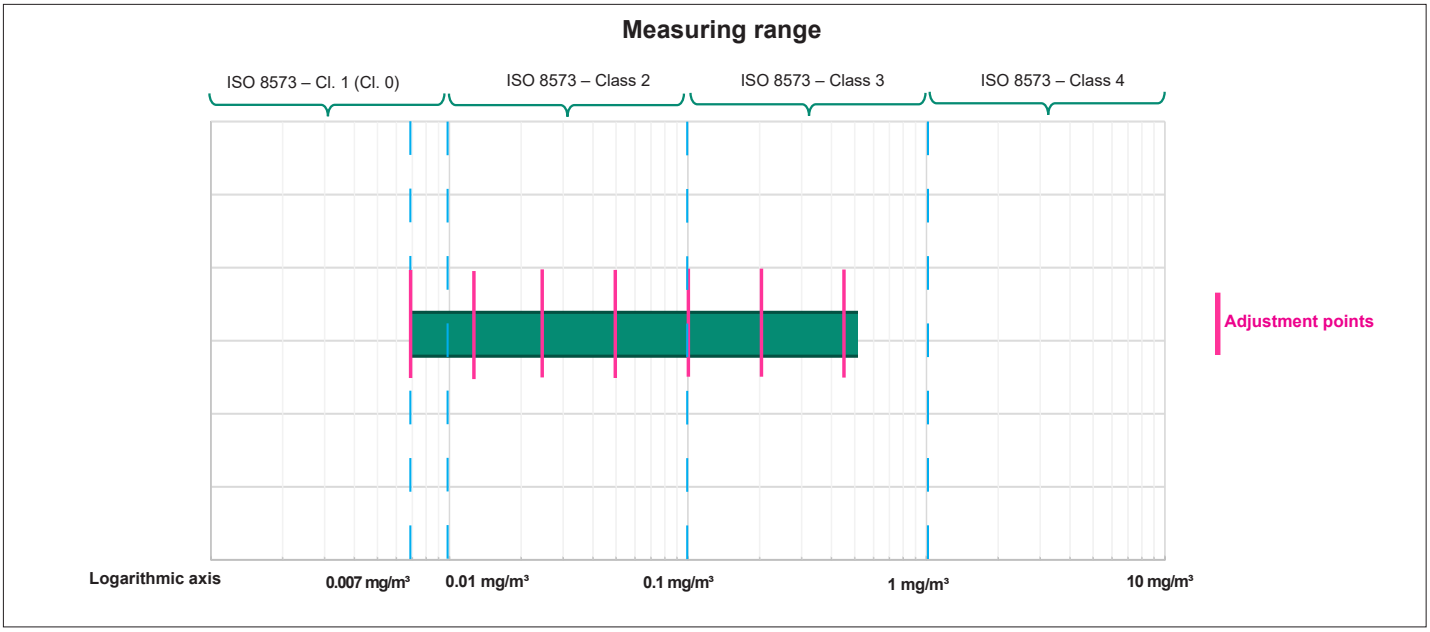
Low operating costs

The OIL CHECK 511 reduces pressure internally and sets the flow rate to about 0.018 ft³/min. The low flow keeps compressed air consumption low and supports economical continuous operation.

Long-life light source

The OIL CHECK 511 uses a high-quality light source with an average service life of 15,000 hours.

Measuring ranges and adjustment points



Example order code for OIL CHECK 511:

0699 0082_A1_C1_D1_F2_H1_J1_K1_Z1

Measuring range	
A1	0.007 mg/m³ … 0.5 mg/m³

Process connection	
C1	G 1/4 female thread
C2	G 1/2 male thread
C3	1/2″ NPT male thread
C4	Plug nipple NW 7.2
C5	1/4″ industrial quick connector

Gas type	
E1	Compressed air
E2	Nitrogen
E4	CO_2
E90	Other gases on request

Pressure range	
G1	43.51–232.06 psig
G2	14.50–43.51 psig

Surface condition	
I1	Oil- and grease-free (standard)
I2	LABS-, silicone-, oil- and grease-free

Signal output / bus connection	
K1	1 × 4–20 mA analog output, RS 485 (Modbus RTU)

Calibration	
Z1	Certificate included (7 points)

DESCRIPTION	ORDER NO.
OIL CHECK 511 – Class 1 point-of-use sensor for residual oil vapor in compressed air and industrial gases. PID sensor with 4–20 mA analog output and digital Modbus RTU interface.	0699 0082
Accessories:	
Pressure regulator	Z699 0076
Connection cable for VA/FA series, 16.4 ft	0553 0104
Connection cable for VA/FA series, 32.8 ft	0553 0105
Connection cable for VA/FA series, 65.6 ft	0553 0120
90° angled M12 connector	0219 0060
Stainless steel ball valve, F/F G1/2″	3300 0002

OIL CHECK 511 TECHNICAL DATA	
Measured medium:	Compressed air, nitrogen, CO_2 (free of aggressive, corrosive, caustic, toxic, flammable or oxidizing components); other gases on request
Material:	1.4404, 316L
Measured variable:	Residual oil content in mg oil per normal cubic meter (14.50 psia [1.0 bar abs.], 68 °F, 0% relative humidity, ISO 8573-1) and in ppm
Detectable substances:	Hydrocarbons, functionalized hydrocarbons, aromatics
Applications:	In compressed air distribution, upstream of critical processes and machines, at supply handover points and downstream of medium treatment
Ambient temperature:	41 to 113 °F, relative humidity < 80%, noncondensing
Medium temperature:	68 to 113 °F (briefly 158 °F)
Operating gauge pressure:	43.51–232.06 psig, optional upstream pressure regulator
Sample gas humidity:	Relative humidity ≤ 40%, pressure dew point max. 50 °F, noncondensing
Degree of protection:	IP 54
Compressed air connection:	G 1/4″ female thread Optional: G1/2″ male or 1/2″ NPT male thread Plug nipple NW 7.2
Measured values:	mg/m³, pressure- and temperature-compensated ppm
Measuring range:	0.007 mg/m³ … 0.5 mg/m³
Detection limit:	0.001 mg/m³
Sample gas flow rate:	Approx. 0.018 ft³/min
Power supply:	24 VDC (18 … 36 VDC)
Outputs:	4 … 20mA, RS485 (Modbus RTU)
Electrical connection:	M12 connector
Hour counter:	Built-in
PID operating hours:	Approx. 15,000 h
Dimensions:	3.86 × 2.05 in
Weight:	1.80 lb

Notes

OIL CHECK 512

Class 2 – Monitoring residual oil vapor in compressed air and industrial gases

Continuous monitoring of Class 2 supply, centrally at treatment or at the point of use



Benefits at a glance:

- Fast, continuous medium monitoring through online measurement
- Early detection of declining treatment performance
- Detects sudden faults in medium distribution
- Easy installation under pressure, e.g. via a quick coupling
- Long-life light source, 15,000 h average service life
- Low operating costs due to low compressed air consumption





Fast, continuous medium monitoring through online measurement

The OIL CHECK 512 helps detect changes early. It is particularly suited to monitoring ISO 8573 Class 2 applications, centrally at the compressed air treatment stage or directly at the point of use.

Designed to monitor Class 2 compressed air treatment

Some compressed air systems can operate reliably with Class 2 supply and do not need the strictest oil purity grade. Even so, sudden oil breakthrough, for example from a compressor fault, must be detected immediately to avoid widespread contamination of the compressed air network.

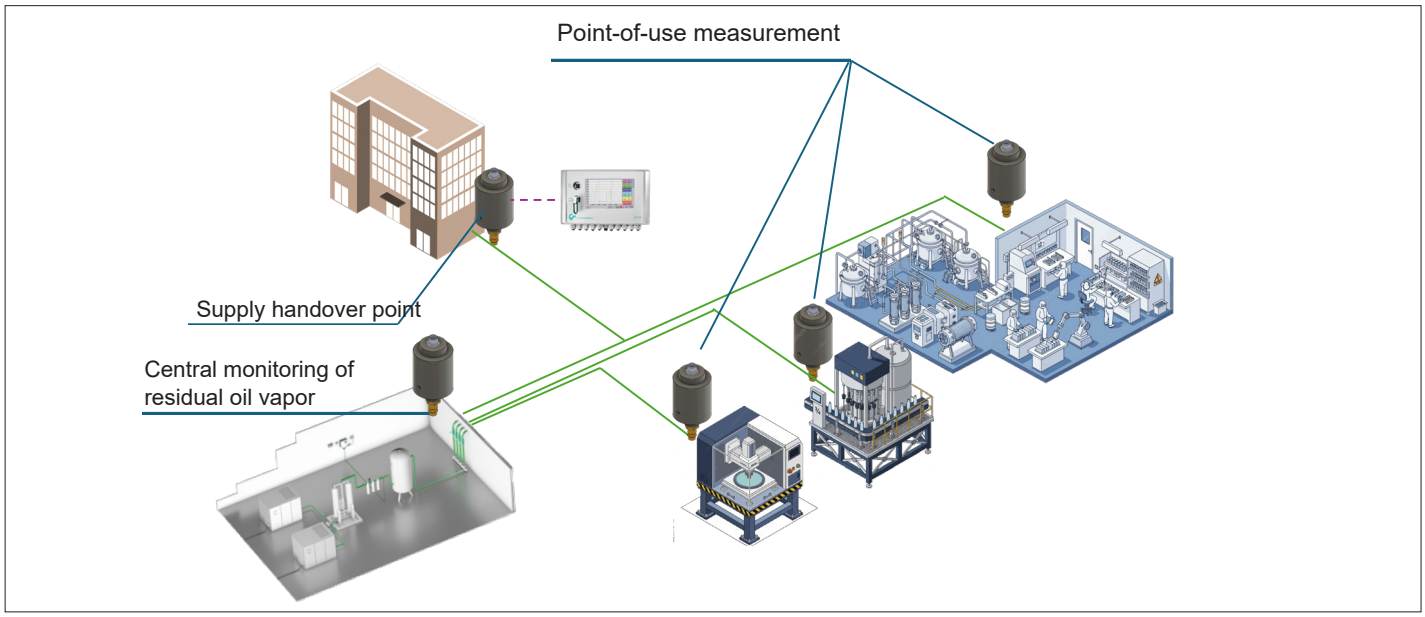
Detects deviations just upstream of critical processes

A measurement downstream of medium treatment is often insufficient to protect critical processes and equipment. Oil compounds can also enter within the distribution network. The OIL CHECK 512 helps detect such events through changes in measured concentrations of gaseous oil compounds, helping protect critical processes.

Residual oil vapor can be measured by offline laboratory analysis or continuous online measurement. Laboratory analysis is often too slow and infrequent to detect sudden faults and the resulting rise in residual oil vapor in time to act.

Central and point-of-use monitoring

The compact OIL CHECK 512 fits where space is limited, at the point of use or at the central supply inlet, for example at a handover point. The 4–20 mA and Modbus interfaces make it easy to integrate into machines and systems.



Central and point-of-use monitoring

The compact OIL CHECK 512 fits where space is limited, at the point of use or at the central supply inlet, for example at a handover point. The 4–20 mA and Modbus interfaces make it easy to integrate into machines and systems.

Easy installation and maintenance, even under pressure

The OIL CHECK 512 connects directly to the compressed air piping, for example via a quick coupling or ball valve. It can therefore be installed under pressure and retrofitted to existing systems.

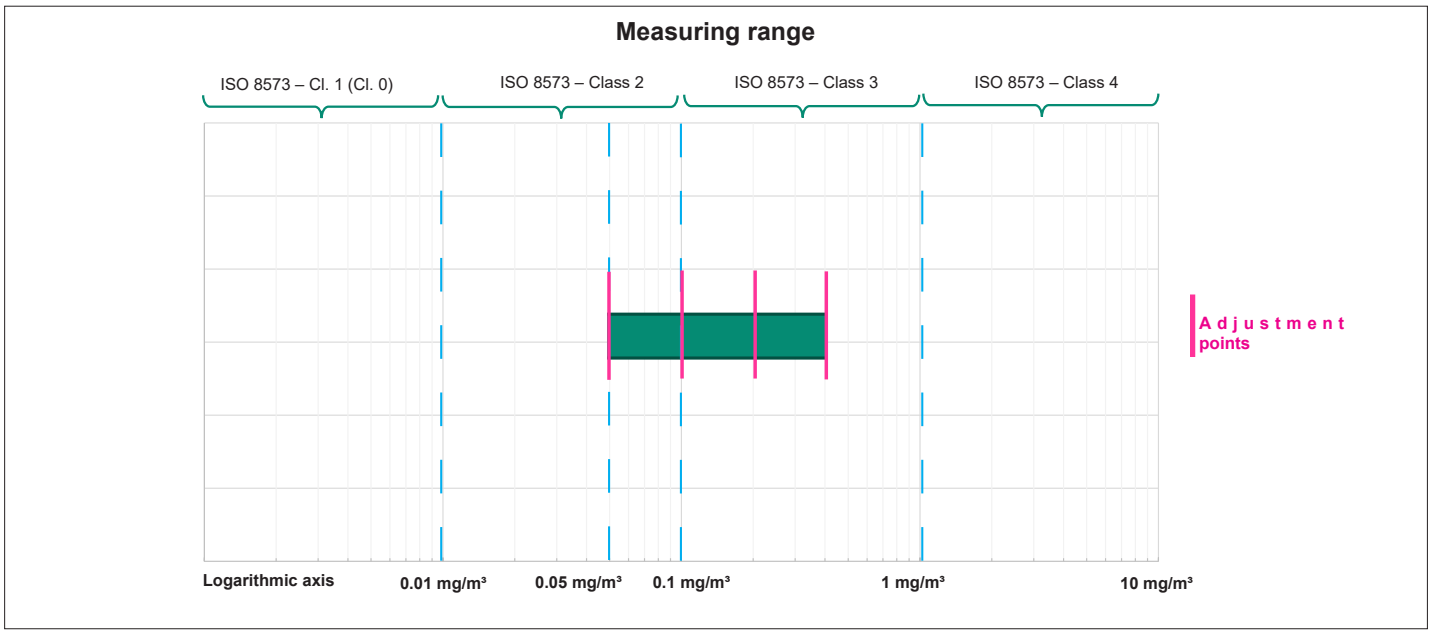
Low operating costs

The OIL CHECK 512 reduces pressure internally and sets the flow rate to about 0.018 ft³/min. This low flow keeps compressed air consumption low and supports economical continuous operation.

Long-life light source

The OIL CHECK 512 uses a high-quality light source with an average service life of 15,000 hours.

Measuring ranges and adjustment points



Example order code for OIL CHECK 512:

0699 0083_A1_C1_D1_F2_H1_J1_K1_Z2

Measuring range	
A1	0.05 mg/m3 … 0.5 mg/m3

Process connection	
C1	G 1/4 female thread
C2	G 1/2 male thread
C3	1/2″ NPT male thread
C4	Plug nipple NW 7.2
C5	1/4″ industrial quick connector

Gas type	
E1	Compressed air
E2	Nitrogen
E4	CO_2
E90	Other gases on request

Pressure range	
G1	43.51–232.06 psig
G2	14.50–43.51 psig

Surface condition	
I1	Oil- and grease-free (standard)
I2	LABS-, silicone-, oil- and grease-free

Signal output / bus connection	
K1	1 × 4–20 mA analog output, RS 485 (Modbus RTU)

Calibration	
Z2	Certificate included (4 points)

DESCRIPTION	ORDER NO.
OIL CHECK 512 – Class 2 monitoring of residual oil vapor in compressed air and industrial gases. PID sensor, 4–20 mA analog output and digital Modbus RTU interface.	0699 0083
Accessories:	
Pressure regulator	Z699 0076
Connection cable for VA/FA series, 16.4 ft	0553 0104
Connection cable for VA/FA series, 32.8 ft	0553 0105
Connection cable for VA/FA series, 65.6 ft	0553 0120
90° angled M12 connector	0219 0060
Stainless steel ball valve, F/F G1/2″	3300 0002

OIL CHECK 512 TECHNICAL DATA	
Measured medium:	Compressed air, nitrogen, CO_2 (free of aggressive, corrosive, caustic, toxic, flammable or oxidizing components); other gases on request
Material:	1.4404, 316L
Measured variable:	Residual oil content in mg oil per normal cubic meter (14.50 psia [1.0 bar abs.], 68 °F, 0% relative humidity, ISO 8573-1) and in ppm
Detectable substances:	Hydrocarbons, functionalized hydrocarbons, aromatics
Applications:	In compressed air distribution, upstream of critical processes and machines, at supply handover points and downstream of medium treatment
Ambient temperature:	41 to 113 °F, relative humidity < 80%, noncondensing
Medium temperature:	68 to 113 °F (briefly 158 °F)
Operating gauge pressure:	43.51–232.06 psig, optional upstream pressure regulator
Sample gas humidity:	Relative humidity ≤ 40%, pressure dew point max. 50 °F, noncondensing
Degree of protection:	IP 54
Compressed air connection:	G 1/4″ female thread Optional: G1/2″ male or 1/2″ NPT male thread Plug nipple NW 7.2
Measured values:	mg/Nm³, pressure- and temperature-compensated ppm
Measuring range:	0.05 mg/m3 … 0.5 mg/m3
Detection limit:	0.001 mg/m³
Sample gas flow rate:	Approx. 0.018 ft³/min
Power supply:	24 VDC (18 … 36 VDC)
Outputs:	4 … 20mA, RS485 (Modbus RTU)
Electrical connection:	M12 connector
Hour counter:	Built-in
PID operating hours:	Approx. 15,000 h
Dimensions:	3.86 × 2.05 in
Weight:	1.80 lb

Notes

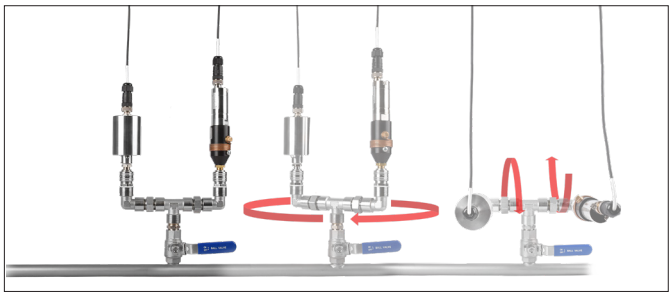
DS 400 Oil vapor monitoring

For fixed oil vapor monitoring on refrigerated or desiccant air dryers. The graphical touchscreen is intuitive to use and displays trends in measured values. Two alarm relays provide limit monitoring. Interfaces include a standard 4–20 mA analog output or optional digital interfaces such as Ethernet and RS 485 (Modbus protocol). For standalone operation, download measured values from the optional data logger to a USB drive and analyze them on a PC with CS Basic software.



KEY BENEFITS:

- 3.5″ graphical touchscreen, easy to use
- Fully wired system, ready to plug in
- 2 alarm contacts (230 VAC, 3 A), adjustable pre-alarm and main alarm
- Adjustable delay for each alarm relay
- 4–20 mA analog output
- Optional: Ethernet and RS 485 interfaces (Modbus protocol)
- Optional: web server



DESCRIPTION	ORDER NO.
DS 400 oil vapor monitoring, Class 1 (OIL CHECK 511)	0601 0511
DS 400 oil vapor monitoring, Class 2 (OIL CHECK 512)	0601 0515
Options	
Built-in data logger: 100 million measured values	Z500 4002
Optional built-in Ethernet and RS 485 interfaces	Z500 4004
Optional built-in web server	Z500 4005
Option: 2 extra inputs for analog sensors (pressure and temperature sensors, etc.)	Z500 4001
Other accessories	
CS Basic – Graphical and tabular analysis, data readout via USB or Ethernet, license for 2 workstations	0554 8040
Y-connector for oil vapor and dew point sensors	Z699 0079
FA 510 dew point sensor (−112 to 68 °Ftd)	0699 0510
FA 510 dew point sensor (−4 to 122 °Ftd)	0699 0512
Connection cable for FA 510	0553 0104
Alarm tower built into wall housing	Z500 0003
Alarm tower for external mounting, 16.4 ft cable	Z500 0004
Calibration and adjustment	
Precision adjustment at −40 °Ftd or +37.4 °Ftd, incl. ISO certificate	0699 3396

DS 400 TECHNICAL DATA	
Dimensions:	4.65 × 4.53 × 3.86 in IP 54 (wall housing) 3.62 × 3.62 × 2.95 in (panel mounting)
Inputs:	2 digital inputs for FA 510 or VA 500/520
Interface:	USB interface
Power supply:	100…240 VAC, 50-60 Hz
Measurement accuracy:	See FA 510
Alarm outputs:	2 relays (volt-free)
Options	
Data logger:	100 million measured values Adjustable start/stop times and sampling rate
2 additional sensor inputs:	For pressure and temperature sensors, current clamps, third-party sensors: 4–20 mA, 0–10 V, Pt 100, Pt 1000

PI 500 - Handheld instrument for residual oil vapor measurement

The PI 500 is a versatile handheld instrument for many industrial applications. Combined with an OIL CHECK 511 or OIL CHECK 512 sensor, it enables mobile oil vapor measurement.

Store up to 100 million measured values with the date and measurement site name. Transfer the data to a PC via USB drive for easy analysis with CS Basic software.



Key benefits:

- Fast mobile oil vapor measurement at critical points
- Li-ion batteries, internal charging (approx. 12 h use)
- 3.5″ graphical touchscreen, easy to use
- Built-in data logger for measured values
- USB interface for readout via USB drive
- Multilingual: up to 8 languages

DESCRIPTION	ORDER NO.
OIL CHECK 511 – Point-of-use sensor for residual oil vapor in compressed air and industrial gases. PID sensor, 4–20 mA analog output and digital Modbus RTU interface.	0699 0082
OIL CHECK 512 – Class 2 monitoring of residual oil vapor in compressed air and industrial gases. PID sensor, 4–20 mA analog output and digital Modbus RTU interface.	0699 0083
PI 500 handheld instrument with built-in data logger	0560 0511
Option: calculation function for 4 configurable virtual channels (addition, subtraction, division, multiplication)	Z500 5107
Option 'Totalizer for analog signals'	Z500 5106
CS Basic – Graphical and tabular analysis, data readout via USB or Ethernet, license for 2 workstations	0554 8040
Carrying case	0554 6510
Accessories:	
Connection cable for VA/FA sensors to portable devices, ODU / M12, 16.4 ft	0553 1503
Extension cable for portable devices, 32.8 ft	0553 0504

PI 500 TECHNICAL DATA	
Display:	3.5″ transmissive TFT touchscreen, graphs, curves, statistics
Interfaces:	USB interface
Sensor power supply:	Output voltage: 24 VDC ± 10% Output current: 120 mA continuous
Power supply:	Li-ion batteries, internal charging in approx. 4 h. PI 500: > 4 h continuous use, depending on external sensor draw.
Power supply:	100–240 VAC / 50–60 Hz, 12 VDC – 1 A, safety Class 2, dry rooms only
Dimensions:	3.23 × 3.78 × 9.65 in
Housing material:	PC/ABS
Weight:	0.99 lb
Ambient temperature:	32 to 122 °F ambient
Storage temp.:	−4 to +158 °F
EMC:	DIN EN 61326
Sensor input:	For pressure and temperature sensors, current clamps and third-party sensors: 4–20 mA, 0–10 V, Pt 100, Pt 1000, Modbus
Memory:	16 GB – standard memory card