MCS300P

Multi component analyzer

Sophisticated analyzers for high-value products and exact measurement results.

- Automatic adjustment without expensive test gases
- Integration in existing networks
- Integration of external parameters like temperature or pressure
- Suitable for potentially explosive atmospheres
- Easy installation and maintenance thanks to transparent, compact design

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Reliable measuring results through photometric process monitoring.

Product quality in chemical processes also depends not least on the quality of the process measurement technology. High-value products demand sophisticated measurement technology.

Versatile use
MCS300P process measuring devices are generally suitable for use in all process industries. From synthetics production on through exhaust gas cleaning plants up to measuring a wide range of gas components from acetaldehyde to vinyl chloride. And, as well, liquids from acetone to traces of water.

Compact and robust
Compact layout simplifies installing the MCS300P and keeps the maintenance effort very low. The robust analyzer guarantees reliable measuring results even in rough operating conditions.

6 components – also for cross-sensivity compensation
Thanks to two filter wheels, simultaneous recording of up to 6 components is possible. Six cross-sensitivity variables can be corrected dynamically per component to attain the most exact values.

Reading in external signals
Values such as pressure or flow rate can also be read in via analog inputs and included in calculations.

Saving potential through automatic adjustment
An optional adjustment filter wheel is a further MCS300P highlight. Comparable analyzers require expensive test gases for adjustment and checking automatic drift behavior. This involves a high work and safety effort especially in potentially explosive atmospheres. This effort is not required thanks to the adjusting filter wheel which saves time and money.

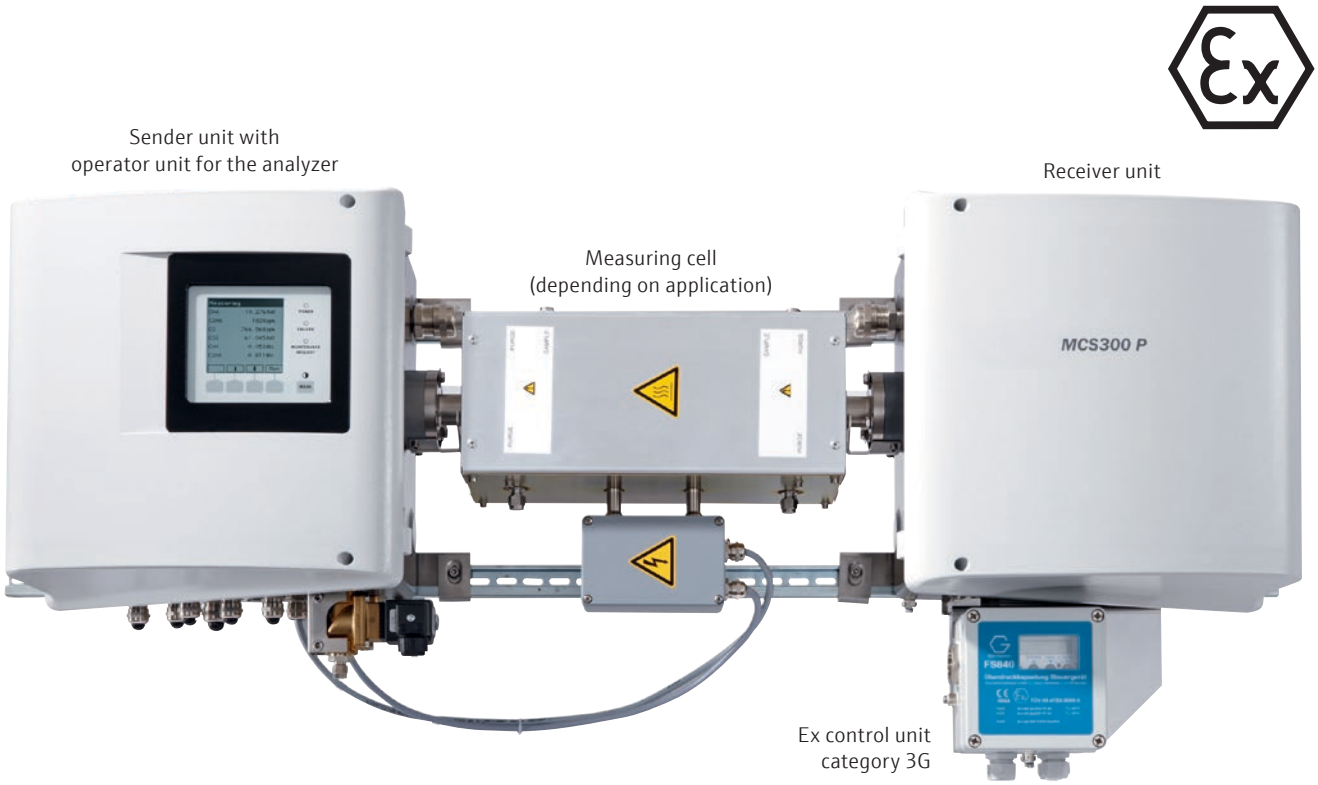
Process cells for many applications
Various cells can be adapted due to the modular concept of the MCS300P: Long path cells for especially small measuring ranges, cells for liquids or cells for high media pressures. The cells can also be used for measuring toxic and corrosive gases.

Remote diagnosis and remote maintenance
Current communication protocols such as Modbus, TCP/IP and OPC support, via Ethernet connections, easy access to the MCS300P and complete control over measured value recording.

Non-dispersive photometer principle
The MCS300P runs as a non-dispersive process photometer. The beam source sends light through the sample cell. Interference and gas filters swiveled into the beam path on filter wheels then select the desired measuring and reference wavelengths. The precise detector receives the measured and reference beams in chronological sequence. The MCS300P computates both signals to determine the measured variable absorbance that is largely independent of changes in the optical characteristics of the photometer.
This means high long-term stability and reproducibility of measured values. After correction of possible interference factors, the linearization function converts the determined absorbance to a concentration value.

MCS300P Ex: Exact measurement results also in Ex conditions

Reliable measuring results, also in Ex zones, also for combustible gases



Comprehensive safety functions for Ex areas

The MCS300P Ex with device category 3G or 2G (ATEX) is usable in Ex zones and 1. The pressurized enclosure does not allow any explosive gases to penetrate; the required permanent overpressure in the enclosure is ensured by protective gas purging with appropriate control systems.

For version “3G”, a continuous throughflow with a low protective gas flow rate via digital valve ensures pressurized enclosure “pz”. For version “2G”, pressurized enclosure “px” is realized via proportional valve with leakage compensation. This means high operational reliability with negligible protective gas consumption.

Ex cell for rough industrial use

The associated cells are designed optimally for rough industrial use with sample gas temperatures up to 140 °C and pressures up to 20 bar: Welded-on connecting flanges, integrated safety purge sections, twin Elastomer seals and leak tightness check using the helium leak test. The cells with electrical heating with ignition protection type “Increased safety” are suitable for safe use in Ex zone 1 and also for measuring combustible and ignitable sample gases classified according to ATEX zone 1.

MCS300P: Simultaneous process monitoring of up to 6 measuring components

Product description

The MCS300P is an extractive process photometer for measurement of gaseous or liquid media. It measures IR and VIS active components with variable measuring ranges from very low (ppm) to high (vol%) concentrations. For monitoring of toxic or flammable mixtures, it has special process cuvettes with safety devices like twinseals and flushing gas feeds. The heatable cuvettes made of corrosion-resistant materials have a high pressure resistance. Automatic adjustment, innovative operation concept and modern communication protocols make the MCS300P an all-purpose photometer, also for potentially explosive atmospheres.

At a glance

- Simultaneous measurement of up to 6 components
- Process cuvettes up to 60 bar and 200 °C
- Automatic sample point switching
- Integrated adjustment unit
- Safety devices for measurement of toxic or flammable mixtures
- Extended operation via PC and software SOPAS ET
- Flexible I/O module system

Your benefits

- Automatic adjustment without expensive test gases
- Integration in existing networks
- Integration of external parameters like temperature or pressure
- Suitable for potentially explosive atmospheres

Fields of application

- Process monitoring in production of vinylchloride or isocyanate
- Process control in chemical industry
- Monitoring of processes in the production of plastics
- Raw gas monitoring in waste incineration
- Monitoring of flue gas purification plants
- Determination of the water content of liquid chemicals

More Information online

For more information, enter the link or scan the QR code to get direct access to technical data, operating instructions, software, application examples, and much more.
www.endress.com/mcs300p

Detailed technical data

MCS300P

Measured value	CH_3OH, C_3H_4, Br_2, C_2Cl_4, C_2H_2, $C_2H_2Cl_2$, C_2H_3Cl, C_2H_4, $C_2H_4Cl_2$, C_4H_6, C_2H_6, C_6H_{14}, C_2HCl_3, CH_3Cl, C_3F_6, C_2H_2O, C_3H_6, C_3H_7OH, C_3H_8, C_4H_{10}, C_4H_8, $C_2H_4(OH)_2$, $C_6H_4Cl_2$, $HCOOH$, C_6H_5Cl, C_6H_6, CCl_2F_2, CCl_4, CH_2Cl_2, CH_3CHO, $CH_3COOC_2H_3$, CH_4, $CHCl_3$, $CHCl_2F$, Cl_2, CO, CO_2, $COCl_2$, C_7H_8, R-NCO, H_2O, HCl, HCN, HF, N_2O, NH_3, NO, NO_2, SO_2, SiF_4, many other IR / VIS active gases and liquids
Maximum number of measured values	6
Measuring principle	Interference filter correlation, Gas filter correlation
Measuring ranges	More than 60 measuring components available (depending on concentration and sample gas composition), up to 6 components simultaneously, 2 measuring ranges per component, automatic measuring range switching (adjustable), 2 limit values per component, measuring ranges depend on application and combination of measuring components
Zero point drift	VIS type: < 1 % of smallest measuring range per day IR type: < 2 % of smallest measuring range per week
Detection limit	< 2 % relative to measuring range end value
Ambient temperature	+5 °C ... +40 °C temperature change max. ±10 °C/h
Storage temperature	−20 °C ... +60 °C
Ambient humidity	≤ 80 %, non-condensing
Ex-approvals	
IECEx	Ex pxb IIC T3...T4 Gb Ex pzc IIC T3...T4 Gc Process cuvette: Ex eb IIC Gb
ATEX	II 2G Ex pxb IIC T4 Gb II 2G Ex pxb IIC T3 Gb Process cuvette: II 2G Ex e IIC Gb II 3G Ex pzc IIC T4 Gc II 3G Ex pzc IIC T3 Gc
Electrical safety	CE
Enclosure rating	IP 65; measuring cuvette depending on version
Analog outputs	2 outputs: 0/4 ... 22 mA, 500 Ω electrically isolated; max. number of outputs depends on application
Analog inputs	2 inputs: 0/4 ... 22 mA, 100 Ω electrically isolated; max. number of inputs depends on application
Digital outputs	5 outputs: 2 power relays, electrically isolated; 3 outputs, floating; max. number of outputs depends on application
Digital inputs	4 inputs: open contacts, floating; max. number of inputs depends on application
Modbus	✔
Remark	Not in the Ex-version
Type of fieldbus integration	TCP
Ethernet	✔
Remark	Not in the Ex-version

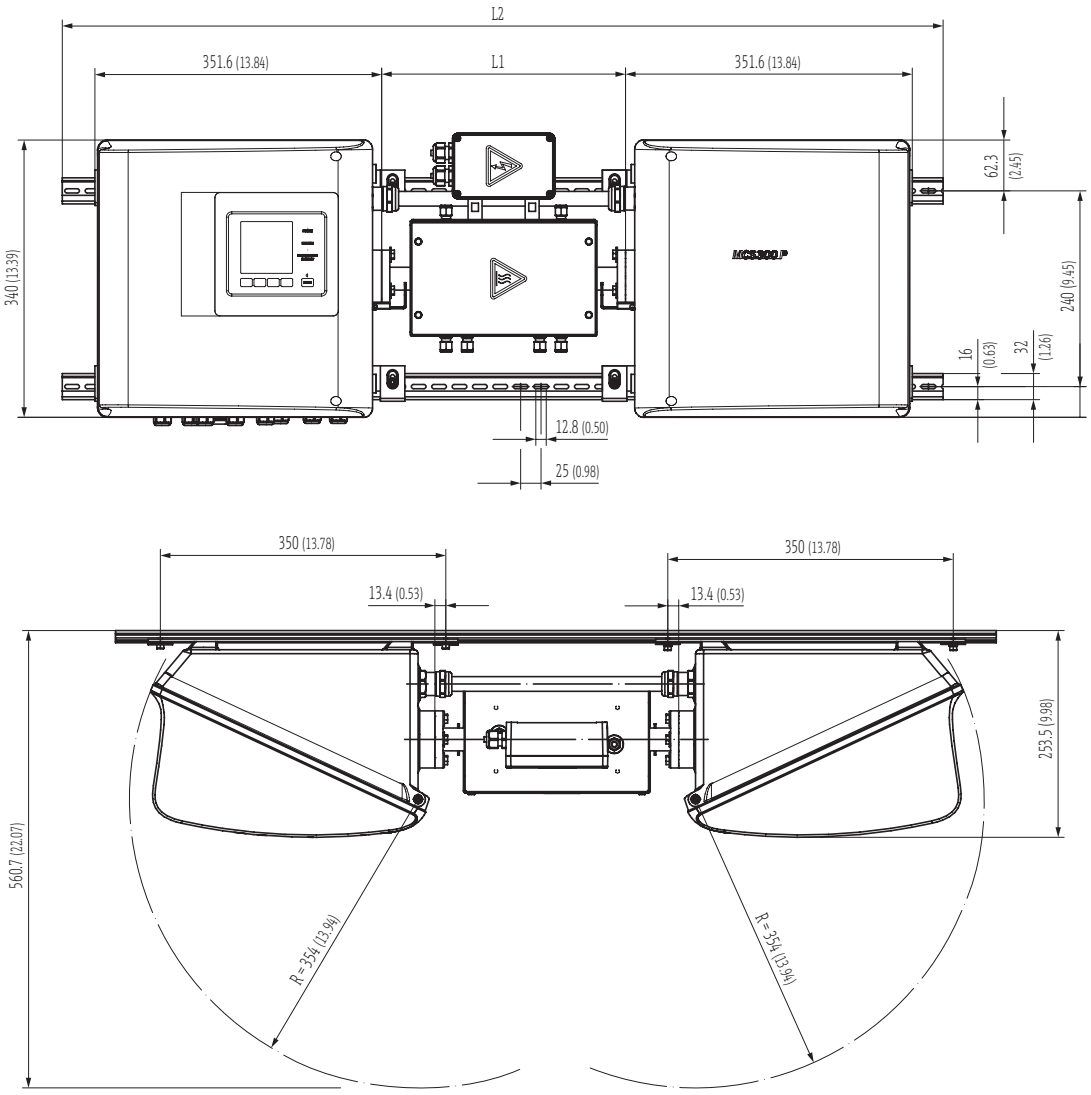
Function	Connection to SOPAS ET software or OPC server
Indication	Status LEDs “Power”, “Maintenance” and “Fault” LC display
Input	Functional keys
Operation	Via LC-display, via software SOPAS ET (not in the Ex-type)
Dimensions (W x H x D)	Dimensions may vary. For details, see the dimensional drawings.
Weight	See dimensional drawings
Material in contact with media	Measuring cuvette depending on version
Material	Aluminium, coated
Power supply	
Voltage	Standard version 115 V AC, ± 10 % Standard version 230 V AC, ± 10 % Ex-version 230 V AC, ± 10 % Ex control device 230 AC, ± 10 %
Frequency	Analyzer: 50 ... 60 Hz Ex control device: 48 ... 62 Hz
Power consumption	Analyzer: ≤ 230 VA With cuvette heating: ≤ 805 VA With 2nd heating: ≤ 1,450 VA
Correction functions	Cross-sensitivity compensation of up to 6 interferents

Ordering information

Our regional sales organization will help you to select the best fitting device configuration.

Dimensional drawings

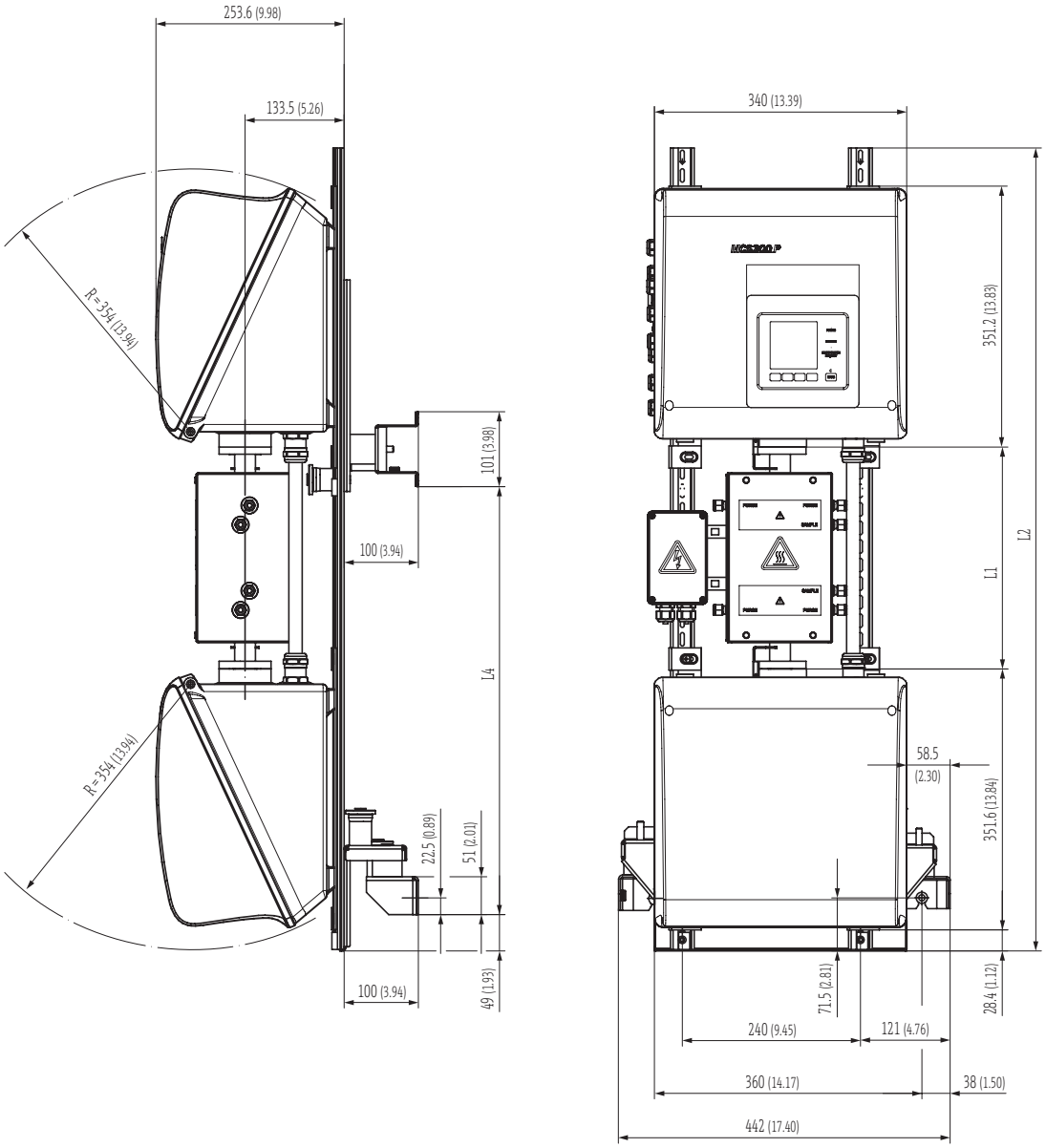
MCS300P, horizontal (dimensions in mm (inch))



Cuvette	Length		Weight
	L1	L2	total
FGK	168 ... 229 (6.72 ... 9.02)	1000 (39.37)	33.5
PGK10, FGK	299 (11.77)	1080 (42.52)	37
PGK20	399 (15.71)	1180 (46.46)	39
PGK50	699 (27.52)	1480 (58.27)	45
PGK75	949 (37.36)	1730 (68.11)	50

All dimensions in mm (inch); all weights in kg

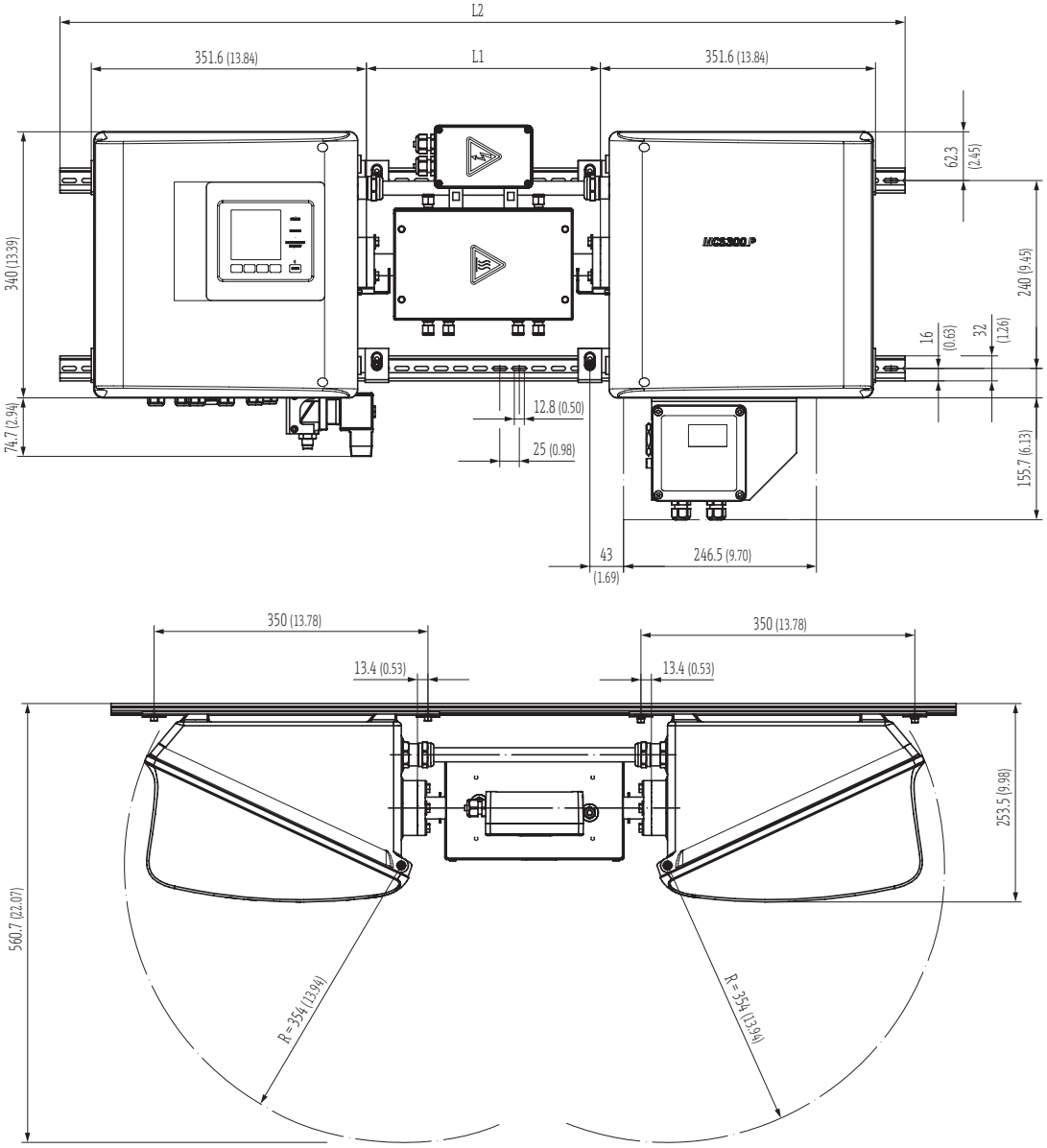
MCS300P, vertical (dimensions in mm (inch))



Cuvette	Length			Weight
	L1	L2	L4	total
FGK	224 (8.82)	1000 (39.37)	494 (19.45)	39.5
PGK10, FGK	299 (11.77)	1080 (42.52)	569 (22.40)	43
PGK20	399 (15.71)	1180 (46.46)	669 (26.34)	45
PGK50	699 (27.52)	1480 (58.27)	969 (38.15)	51
PGK75	949 (37.36)	1730 (68.11)	1219 (47.99)	56

All dimensions in mm (inch); all weights in kg

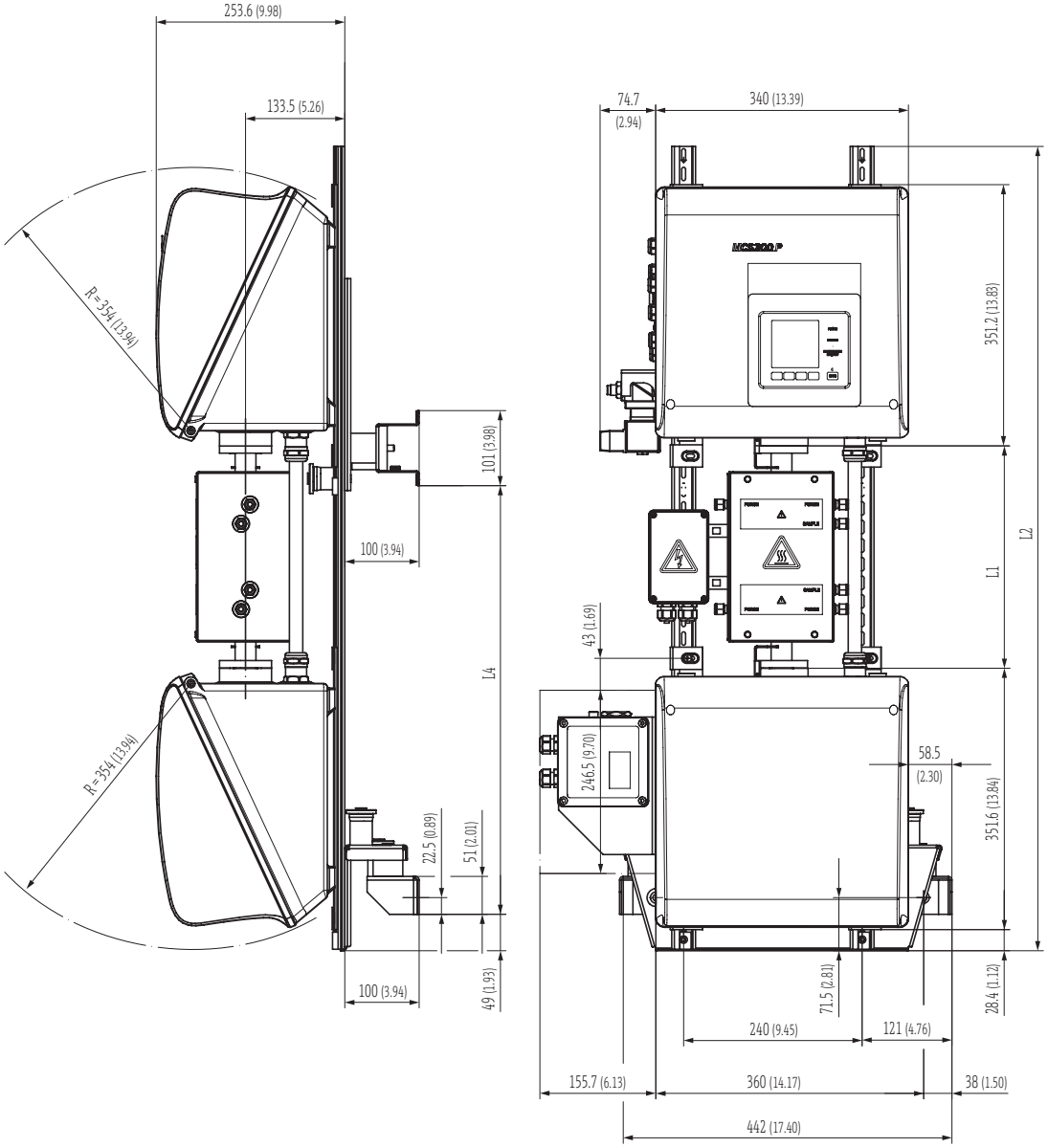
MCS300P Ex, horizontal (dimensions in mm (inch))



Cuvette	Length		Weight
	L1	L2	total
PGK10 Ex	299 (11.77)	1080 (42.52)	37
PGK20 Ex	399 (15.71)	1180 (46.46)	39
PGK50 Ex	699 (27.52)	1480 (58.27)	45
PGK75 Ex	949 (37.36)	1730 (68.11)	50

All dimensions in mm (inch); all weights in kg

MCS300P Ex, vertical (dimensions in mm (inch))



Cuvette	Length			Weight
	L1	L2	L4	total
PGK10 Ex	299 (11.77)	1080 (42.52)	569 (22.40)	43
PGK20 Ex	399 (15.71)	1180 (46.46)	669 (26.34)	45
PGK50 Ex	699 (27.52)	1480 (58.27)	969 (38.15)	51
PGK75 Ex	949 (37.36)	1730 (68.11)	1219 (47.99)	56

All dimensions in mm (inch); all weights in kg

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