

D-R 290 Application Data

measurements	opacity, extinction / optical density, allows calibration as a dust concentration in mg/m ³
sample gas	air, flue gas, non flammable process gas
dust concentration** (typical values at the site)	0,5 - 15.... / 500 - 10.000 mg/m ³ (.0002-.0065 / .22 - 4.37 gr/ft ³)
duct diameter	1 - 2,3 m / 1 - 8m* / 1 - 12m* / 1 - 18m* (3.3 - 6.5 , 9.8 ft./ 3.3 - 26.2ft* / 3.3 - 39.4 ft* / 3.3 - 59 ft*)
sample gas temperature	-25 ... 250°C / 400°C* / 600°C*, (-13...482°F / 752°F* / 1112°F*) others on request
sample gas pressure (relative to ambient pressure)	-50 to +20 hPa, others on request
sample gas moisture	< 95% relative humidity (non-condensing)
ambient temperature	-20 to +50 °C (-4°F to 122°F), others on request
compliances	2000/76/EG WID / 17. BlmschV 2001/80/EG LCPD / 13. BlmschV 27. BlmschV EN 13284-2, EN 14181 EN 15267-3 40 CFR 60 US EPA PS1 40 CFR 60 US EPA PS11
certificates	CE, COC QAL1 DIN EN 14181 / DIN EN ISO 14956 /prEN 15267-3, MCERTS, Pattern Approval GOST R, Pattern Approval certificate Rep.of Belarus, Pattern Approval Certificate PRC, MCOC 40CFR 60 EPA PS1

D-R 290 Specifications

measuring principle	measuring the optical transmission of visible light which passed a measuring path twice
light source	SWBD LED white, 450 - 680 nm
type	in situ, mounted at stack, device not in contact with sample gas
system components	D-R 290 M measuring head D-R 290 R Reflector D-R 290 AW2 / AG Evaluation unit D-R 290 AZ2/AG display unit * D-BL purge air unit accessories
measuring ranges	0 - 97,5 % Opacity 0 - 1,6 EXT (Optical density)
expanded uncertainty EN14181 / EN ISO14956 / EN15267-3	better than 0,0063 Ext, related to ca. 1 mg/m ³ (.0004 gr/cu ft) for particle size 1-2µ and duct diameter D = 5m (16.5ft)
output ranges	0-20% ... 100% Opacity 0 to 0,1 ... 1,6 extinction, can be assigned in 2 ranges to 2 analog outputs, measured values are displayed at D-R 290 AW2/AZ2 as opacity, extinction or scaled to dust concentration
process connection	2 x adjustment flange, 100mm (4 in) bolt circle, pipe ID = 59, 83*, 105* mm (2.25 x 3.25 x 4.25 in) 2 x adjustment flange, 150mm (6in) bolt circle*, pipe ID = 59 / 83* / 105* mm (2.25 x 3.25 x 4.25 in)

DR 290 M measuring head

power supply + 5 VDC, +- 15 VDC

dimensions (hxwxd) ca. 370 x 190 x 400 mm (14.5 x 7.5 x 15.75 in.)

protection IP65,
Ex II 3G Ex pz II T4*
Ex II 3D Ex pz II T4*
others on request

weight ca. 10 kg (22 lbs.)

material Al cast alloy, painted RAL 5017

D-R 290 AW2 + D-R 290 AG2 Evaluation unit D-R 290 AZ2* + D-R 290 AG2 Display unit*

measurement outputs 2 x 4-20 mA / 500 Ohm,
RS 485 - Modbus RTU*, Profibus DP*

status outputs 6 relay outputs, programmable function, resilience 48 V / 0,5 A

analog signal inputs 1 x 4 - 20 mA, can be configured

status inputs 6 potential free inputs, programmable function

supply 90 - 264 VAC, 48 - 62 Hz, 30 VA

protection IP 65

dimensions (hxwxd) ca. 260 x 190 x 220 mm (10.25 x 7.5 x 8.75 in.)

material Al cast alloy, painted RAL 5017

D-R 290 R Reflector

weight ca. 7 kg (15.5 lbs.)

material Al cast alloy, painted RAL 5017

D-BL Blower unit

purge air flow rate max. 40/60 m³/h at dP_{tot} 50/25 hPa, others on request

power supply 115 / 230 VAC, 50 / 60 Hz, 0,37 / 0,43 kW, others on request

protection IP 55

dimensions (hxwxd) 480 x 450 x 320 mm (19 x 17.75 x 12.5 in.)

weight 12 kg (26.5 lbs.)

material 1.4301

remarks * Variants
** the suitability of the DR 290 for the listed ranges depends on the kind of dust, the size distribution and the duct diameter
Subject to technical modifications!