



DIL-1/H

- Proven M&C-dilution technique
- Operation at ambient temperature
- Optionally heated to 180 or 320 °C
- Integrated dilution preheater
- No dew point problems
- Dilution factor from 10:1 to 500:1
- With test gas connection
- Independent of the ambient temperature
- Easy maintenance and operation

## Gas-Dilution Unit DIL-1/(H)

### Application

The non-heated or electrically heated **M&C** dilution unit **DIL-1 /H** is used in analysis technique to dilute the sample gas or components in the sample for example in case of toxic gases, moisture measurement or emission measurement. The **M&C** dilution unit is based on the functional dilution technique which is proved since years in the **M&C** gas sample probe **SP2000-H/DIL**.

### Description

The **M&C** dilution units **DIL-...** are mounted on a plate for wall mounting. The version **DIL-1** is not heated and works at ambient temperature. The version **DIL-1/H** is electrically heated up to 180 °C . It is additionally equipped with a lagged cover (version for 320 °C on request).

A capillary thermostat controls the temperature, adjustable from 0-180 °C . A high temperature limiter and a low temperature alarm is included.

The connection of the heated lines is made without cold bridges in the heated part. Before the dilution gas enters the dilution unit, it is heated up to operating temperature via a gas pre-heater. In order to protect the dilution part against contaminations, internal protective filters are installed for the sample gas and the dilution gas stream. Calibration gas can be feeded via the integrated connection.

A precision pressure controller with pressure gauge is used for adjustment of the necessary admission pressure of the dilution gas. Via a vacuum pressure gauge, the function of the dilution injector is controlled.

Both, pressure controller and pressure gauges have to be ordered separately. Two versions are available: Set **-A (-A1)** is mounted directly on the mounting plate and control panel type **-S (-S1)** is suitable for external 19" rack mounting. A shut off valve and a flowmeter for adjustment of the calibration gas are included in the version **-S (-S1)**.

The dilution unit can realize dilution ratios of 10:1 to 500:1. In case of high dilution ratios, a respective small quantity of gas is sampled from the process. Optionally a bypass injector **-B (Option I)** is available integrated right in front of the dilution unit in order to shorten the response time in case of operation with atmospheric pressure or low pressure. In case of option **I**, an additional pressure controller is included in both mounting versions.

The construction of the dilution unit guarantees easy maintenance and operation independent from process temperatures.



## Technical Data

	M&C-Dilution unit DIL-1/ (H)							
Dilution rates with the critical orifices "a" - "g"	a = 500	b = 200	c = 100	d = 50	e = 30*	f = 20	g = 10	: 1
Sample flow rate depending on the critical orifices "a" - "g"	a = 1,4	b = 2,7	c = 5,5	d = 11	e = 19*	f = 28	g = 55	l/hr <sup>1)</sup>
Possibility to adapt the dilution factor	with dilution gas pressure-adjustment -5% bis +30% <sup>2)</sup>							
Dilution gas flow rate with injector version I or II	I: 480 - 600 NI/hr, optional II: 1800 - 3000 NI/hr							
Dilution gas pressure on inlet of pressure controller	min. 4,5 bar g, max. 16 bar g							
Bypass injector / B sample gas flow rate	approx. 2 bar							
gas pressure / gas flow rate	injector gas approx. 300 l/hr				sample gas approx. 150 l/hr			
Process pressure	0,9 to 2 bar abs.							
Fault caused by process temperature variations	operation independent of process temperature							
Fault caused by process low- or overpressure	no fault as long as the differential pressure $\Delta P$ at the dilution unit is > 0,5 bar g and test gas is given to the probe under process conditions							
Fault caused by atmospheric pressure variations	< 1% with a variation of 50 mbar							
Materials in contact with the sample gas	stainless steel 316Ti, quartz glass, FPM, graphite							
Power supply for DIL-1/H	230V 50Hz, 800W							
Temperature controller for DIL-1/H	capillary thermostat adjustable 0-180 °C , with high temperature limiter and low temperature alarm as changeover contact, voltage free alarm point $\Delta T_{30}$ °C to $T_{Set}$ , contact rating max. 250V 3A~ 0,25A =							
Weight	approx. 8 kg							

\* Standard, others to be indicated along with order, intermediate values possible.

1) approx. at 3 bar dilution gas.

2) -5% not possible for orifice "g".

Part-No.	Type	M&C-Dilution Unit DIL-1/ (H) with orifice "e" for dilution ratio 30 : 1 standard
20 S 4900	DIL-1	Dilution unit non heated
20 S 4905	DIL-1/H (a)	Dilution unit electrically heated to 180 °C , (a) to be added to the Part-No. for power 115V 60Hz
20 S 4925	Option I	Bypass injector - B
20 S 4930	Option II	Additional sample gas outlet undiluted
20 S 4205	DIL-1-A	option: 1 pressure controller, 2 gauges, mounting set for dilution unit
20 S 4215	DIL-1-A1	option: 2 pressure controllers, 3 gauges, mounting set incl. connector set for dilution unit with by-pass
20 S 4250	DIL-1-S	option: control panel with 1 pressure controller, 2 gauges, flowmeter, 2 ball valves
20 S 4260	DIL-1-S1	option: control panel with 2 pressure controllers, 3 gauges, flowmeter, 2 ball valve

Other executions on request.