



## Sample dilution system version DIL-U

### consisting of dilution probe SP2000H/DIL-U/P and dilution pump unit DIL-U/A (N)

- **Lowest dilution ratio 1:1**
- **Ambient air as dilution gas possible**
- **Low dilution gas consumption**
- **No influence of barometric pressure<sup>1</sup>**
- **Compact design**
- **Gas sample probe SP2000H/...**
- **Incorporated pre heater for dilution gas**
- **Test gas connection at the probe inlet**
- **Completely heated up to 180°C**

<sup>1</sup> varying process pressure must be taken into consideration

### Application

The electrically heated **M&C** dilution system **DIL-U** is applicable for such processes, where the measuring procedure or the handling of the process gas requires the dilution of the sample respectively the component to be measured in a range of 100:1 up to 1:1.

Typical applications:

- toxic gases above TLV value
- explosive gas mixture above LEL
- adapting the concentration of the sample components to the measuring range of the analyser
- measuring possibility at low sample flow rates from 1NI/hr
- moisture measurement in flue gas with IR-analyser

The **M&C** dilution probe (part of this system) is based on the well tested modular designed **M&C** gas sample probe **SP2000H**. This enables the user to adapt the probe to nearly every application, using for example special filter techniques or special materials.

### Description

The **M&C** dilution system **DIL-U** consists of the dilution probe **SP2000H/DIL-U/P** and the dilution pump unit **DIL-U (A/N)**.

The dilution unit, including the critical orifices, is integrated in the sample probe outlet, heated up with the probe to a stable temperature. The incorporated pre-heater heats up the dilution gas to the probe temperature. Both steps avoid that the temperature of sample gas decreases under the dew point. The test gases for the system calibration enter the sample probe via an integrated valve.

A vacuum pump integrated in the pump unit **DIL-U** sucks the required vacuum, which is necessary for the function of the critical orifices. A pressure gauge indicates the function of the dilution system. The flowmeters indicate the analyser and bypass flow **1**. A flow alarm is available as well. For test procedure with zero and span gas a 3 way ball valve and a flowmeter is installed.

Version **DIL-U/A** is suitable for ambient air as a dilution gas and version **DIL-U/N** for bottle gas. Bottle gas requires a pressure regulator, a pressure gauge and a flowmeter which can be installed optional in the pump unit.

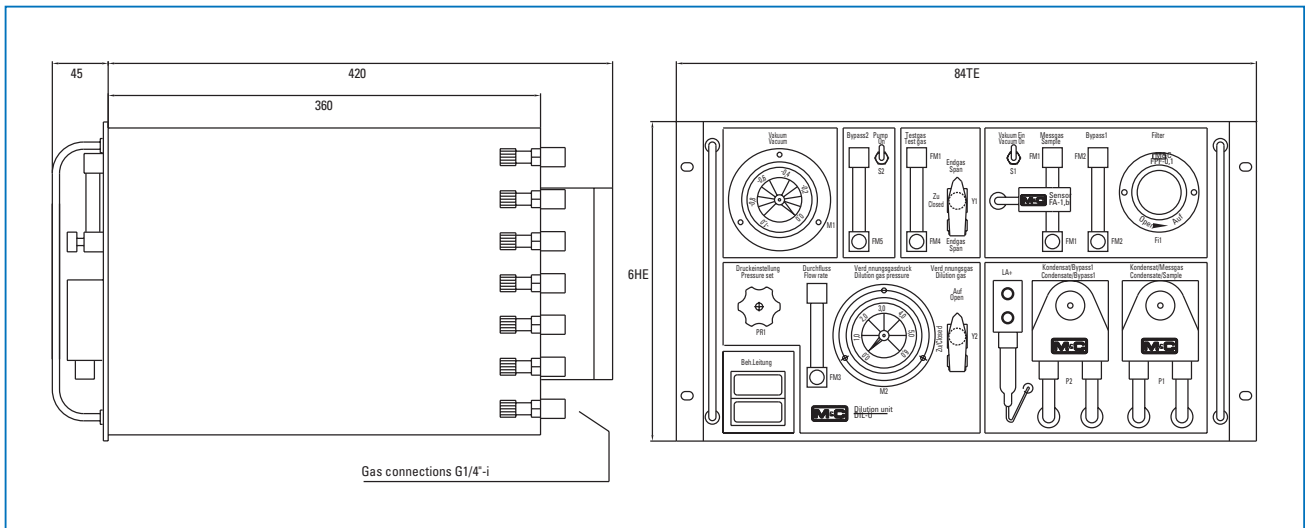
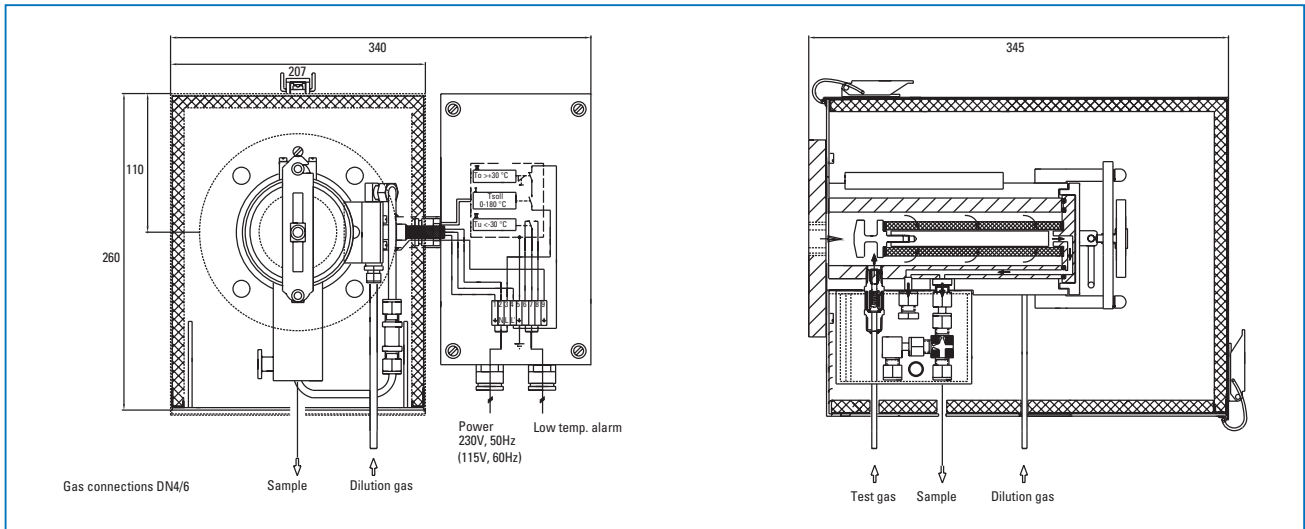
If the dew point of the diluted sample is higher than ambient temperature an optional integrated **M&C** cooler, **ECP1000G/SR25**, reduces it to +5 °C.

High dilution ratios cause a very low sample flow. Therefore it is necessary to use an additional sample bypass **2** to reduce the response time. This will be done with the option **DIL-U/B** with an additional pump and flowmeter and the cooler as an option. The heated **M&C** sample line(s) **3/4-N/M/H** between the probe and the pump unit can be controlled via a temperature controller **703**, built into the pump unit.

**The design of the dilution system DIL-U guarantees easy maintenance.**

2-1.1.8

Dimensions



Dimensions in mm

Technical Data

Gas sample dilution system version DIL-U	Part-No.	Type
Dilution gas sample probe SP2000H/DIL-U/P Part No.	SP2000H/DIL-U/P	20S4950(a) *see to dilution ratio
Dilution pump unit, standard DIL-U/A Part No.	DIL-U/A	20S4955(a)
Dilution pump unit, standard DIL-U/A Part No.	DIL-U/N	20S4960(a)
Option: Gas cooler ECP1000G/SR25 Part No.	ECP1000G/SR25	20S4965(a)
Option: bypass DIL-U/B Part No.	DIL-U/B	20S4970(a)
Insitu sample tube or prefilter	optional available, see data sheet 2-1.1b; 2-1.5.1; 2-1.6.1/2; 2-1.9.5	
Dilution ratio	1:1 up to 100:1; adjustable via corresponding orifices * please specify the required dilution ratio with the order	
Sample flow rate	from approx. 1 NI/hr up to 50 NI/hr	
Dilution gas flow rate	from approx. 30 NI/hr up to 100 NI/hr	
Dilution gas pressure at DIL-U/N	>3 bar g	
Material of sample contacting parts	stainless steel 316Ti, 1.4404, glass, FPM, PTFE	
Dimensions from dilution pump unit DIL-U	19"-rack, 6U, 84HP, depth = 460 mm	
Gas connections	thread G1/4" i	
Power supply	230V 50Hz optional 115V 60Hz (a)	
Weight	dilution gas sample probe SP2000H/DIL-U/P: 15 kg, dilution pump unit DIL-U: 15 kg	

Further technical data see data sheet SP2000, 2-1.1b and 2-1.1.7.