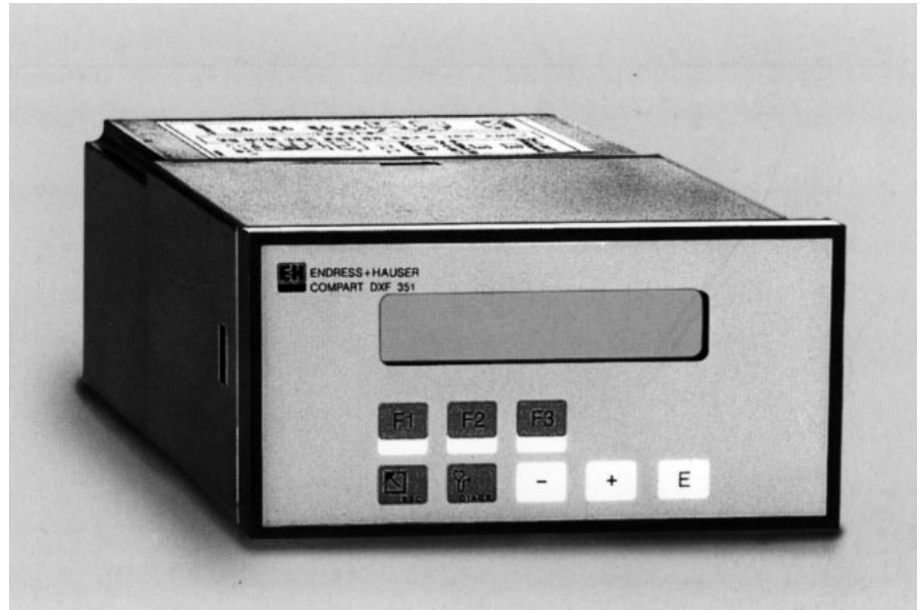


Flow Computer *compart DXF 351*

Universal Application for Gas, Steam and Liquids



Easy

- Fast commissioning using “Quick Setup” and help functions
- E+H programming matrix for all parameters
- Clear text display (multi-language)
- Programmable function keys
- Easy configuration through stored data for common fluids
- Current and frequency simulation for verifying the installation

Safe

- CE conformity, EMC qualified
- Permanent self-diagnostics
- All data safely stored on power failure (no batteries required)
- Galvanically isolated inputs and outputs

Universal

- Broad functionality: *one* flow computer for mass, energy and corrected volume
- Power supply and inputs for flow, pressure, temperature and density transmitters
- 2 current outputs, 1 pulse output, 2 programmable relays
- Serial printer interface
- Housings for panel or wall mounting

Endress+Hauser

Nothing beats know-how



Function

Function and fields of application

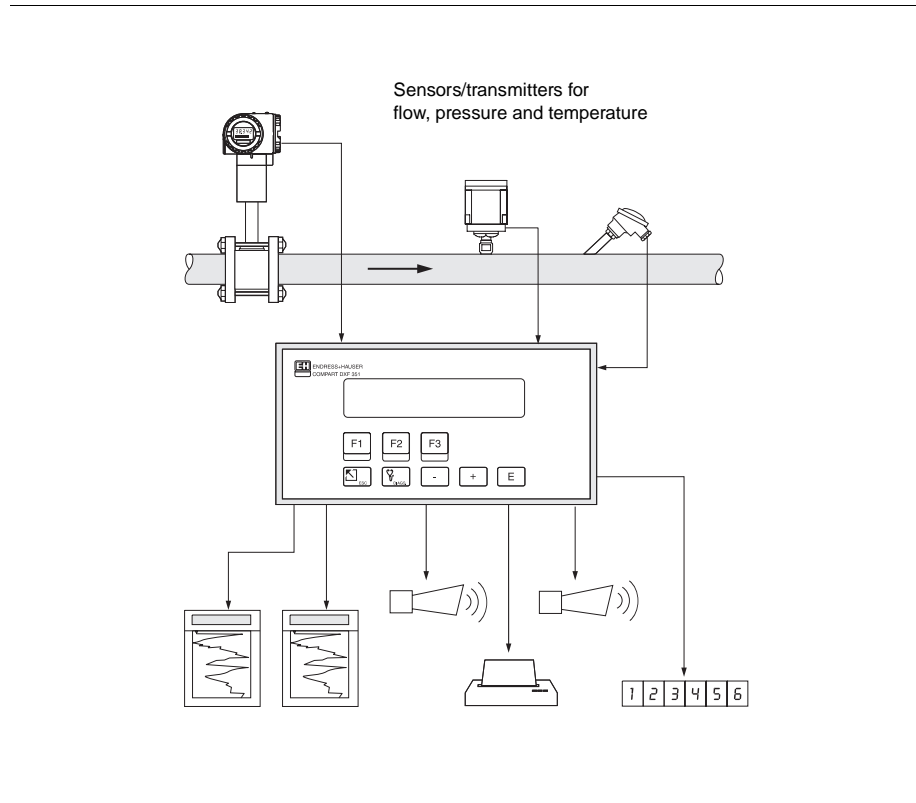
The Compart DXF 351 flow computer combines signals from volumetric flowmeters with those from pressure, temperature and density sensors. Using various flow formulae, the computer is capable of calculating variables important for the measurement and control industry (see page 4):

- Mass, operating volume and corrected volume flow
- Heat flow
- Delta heat
- Combustion heat

All data required for steam and water such as the saturated steam curve, density and heat content are permanently stored in the Compart DXF 351.

For various other fluids such as air, natural gas and other fuels, default data is stored and can be adjusted by the user according to individual process conditions. This eliminates tedious searching in reference manuals.

The measured and calculated variables can be displayed in selectable engineering units, assigned to various outputs and printed out either automatically at programmed intervals or by pressing a key.



A typical application:
Gas corrected volume
measurement

Programming

The "Quick Setup" programming menu allows fast commissioning, especially for standard applications.

For special applications the Compart DXF 351 offers a wide range of functions which the user can individually set, thereby tailoring the unit to the process conditions.

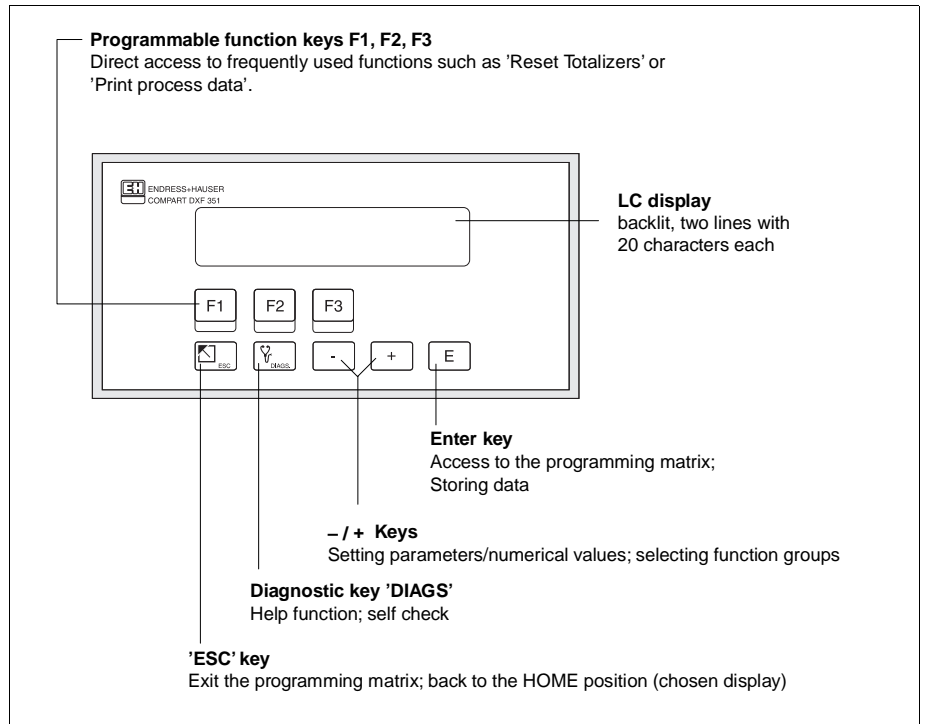
All functions can be configured using the E+H programming matrix.

Display

The unit is equipped with a two-line backlit display. Actual process data, error messages as well as dialogue text for programming can be displayed in three different languages:

- English
- French
- German

Display and operating elements



Inputs and Outputs

The Compart DXF 351 has configurable inputs for flowmeters, as well as pressure, temperature and density transmitters. In addition to linear signals, the flow input processes square root signals from orifice flowmeters (with or without linearisation). The flow signal can also be processed with internal 16 point linearisation.

Measured or calculated variables are available at the outputs as current or pulse signals. In addition, two configurable relays can be set to indicate limit or alarm condi-

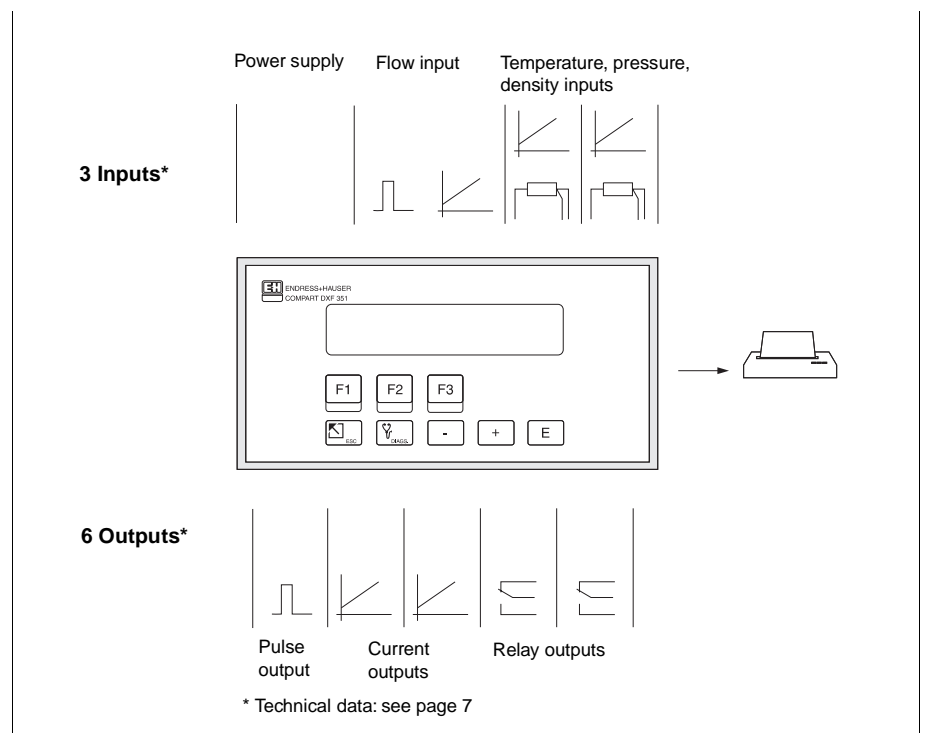
tions, or to output low-frequency pulses to totalisers or process control systems.

All inputs and outputs are configurable via the E+H programming matrix:

- Input signal type
- Assignment of output variables
- Pulse output signal type
- Range scaling

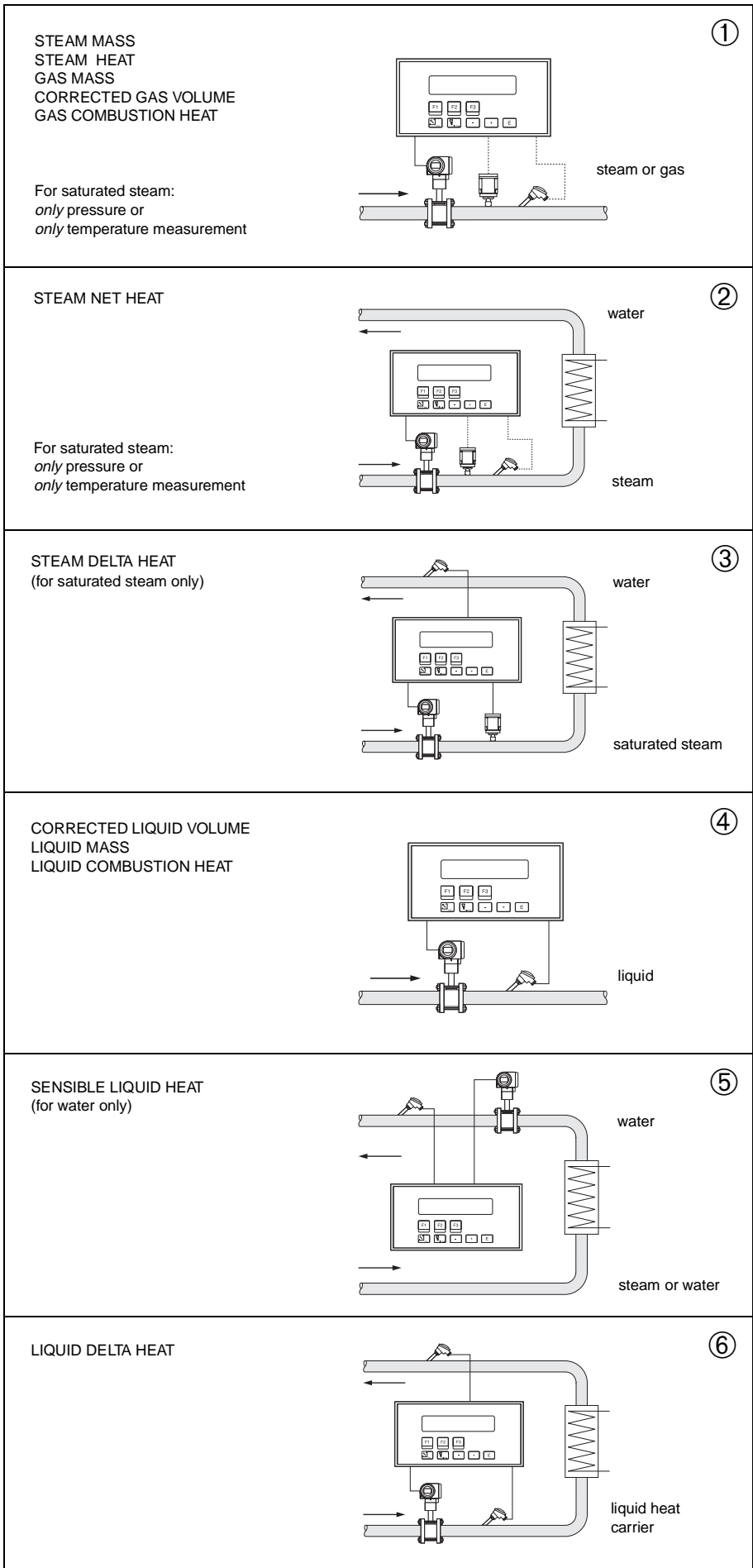
The serial interface (RS 232) allows connection of a printer for recording process data and programmed parameters in the selected language.

Possible connections with Compart DXF 351




Compart DXF 351 Fields of Application


STEAM	
MASS ①	Calculation of the MASS from the volume flow, pressure and temperature. For saturated steam, only pressure or temperature is measured; the other variable is taken from the saturated steam curve.
HEAT ①	Calculation of the MASS of superheated or saturated steam as described above, as well as the HEAT (enthalpy).
NET HEAT ②	Calculation of the MASS for superheated or saturated steam as described above, as well as the NET HEAT. This corresponds to the difference between the enthalpies of steam and condensate at saturation temperature.
DELTA HEAT ③	Calculation of the MASS of saturated steam from volume flow and pressure, as well as the DELTA HEAT between inlet and outlet. The Delta Heat is defined here as the enthalpy of the saturated steam minus the enthalpy of the condensate.
GAS	
CORRECTED VOLUME ①	Calculation of the CORRECTED VOLUME from the volume flow, pressure and temperature. The corrected volume is the volume the gas would occupy at (selectable) reference conditions for pressure and temperature.
MASS ①	Calculation of the MASS from volume flow, pressure and temperature.
COMBUSTION HEAT ①	Calculation of the MASS of gaseous fuels from volume flow, pressure and temperature, as well as the COMBUSTION HEAT value.
LIQUID	
CORRECTED VOLUME ④	Calculation of the CORRECTED VOLUME from volume flow and temperature. The corrected volume is the volume the liquid would occupy at a (selectable) reference temperature.
MASS ④	Calculation of the MASS from volume flow and temperature.
COMBUSTION HEAT ④	Calculation of the MASS of liquid fuels from volume flow and temperature, as well as the COMBUSTION HEAT value.
SENSIBLE HEAT ⑤	Calculation of the MASS and HEAT FLOW (enthalpy) of water from volume flow and temperature.
DELTA HEAT ⑥	Calculation of the MASS of liquid heat carriers from volume flow and temperature, as well as the DELTA HEAT (enthalpy difference between inlet and outlet). It's preferable to use a matched pair of 100 Ω RTD's, class A, for temperature measurement.



Compart DXF 351:
Fields of application

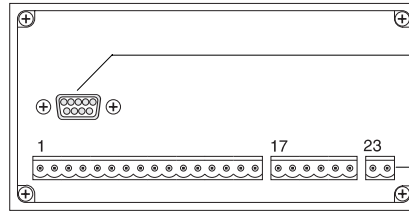
Key:

 Flow
(volumetric or
differential pressure)

 Pressure

 Temperature

Electrical Connection



Serial interface RS 232 (shares a common with terminal 4)

3 separate terminal connectors simplify wiring

(Rear view of panel mount housing)

Terminal designation (panel and wall mount housing) Inputs/outputs

1.	+24VDC supply (connected with terminal 8)	
2.	Pulse or voltage input (active+/passive-)*	Flow input
3.	Current input (active+/passive-)*	
4.	(-) Ground connection for 24VDC supply	Active inputs*
5.	(+) Pt100 excitation	
6.	(+) Pt100 sense input	Pt100 or
7.	Pt100(-) or current input (active+/passive-)*	Current input 1
8.	+24VDC supply (connected with terminal 1)	Current inputs
9.	(+) Pt100 excitation	
10.	(+) Pt100 sense input	Pt100 or
11.	Pt100(-) or current input (active+/passive-)*	Current input 2
12.	(+) active or passive	
13.	(-) active or passive	Pulse output
14.	(+) Current output 1	
15.	(+) Current output 2	Current outputs
16.	(-) Ground connection	
17.	Normally open contact	
18.	Relay 1 wiper	Relay output 1
19.	Normally closed contact	
20.	Normally closed contact	
21.	Relay 2 wiper	Relay output 2
22.	Normally open contact	
23.	L1 for AC, L+ for DC	
24.	N for AC, L- for DC	Power supply

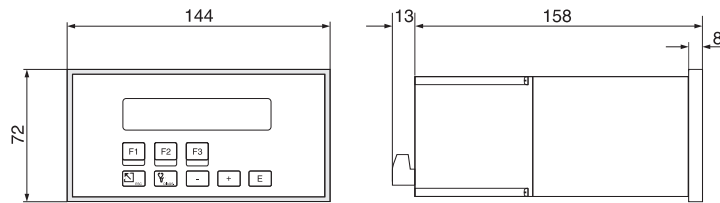
* active: Transmitter with own power supply
passive: Transmitters supplied by the flow computer (2-wire)

The inputs share a common ground connection. The current outputs also share a common ground. If complete separation is required between the two current outputs, then external galvanic isolators must be used.

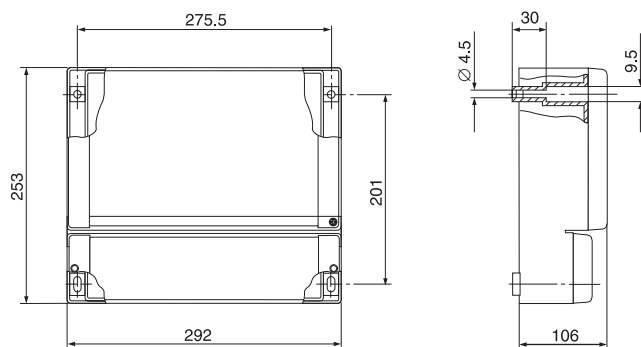
—— galvanically isolated

Dimensions

Panel mount housing (Panel cutout: 138⁺¹ x 68^{+0.7} mm)



Wall mount housing



Display	Two-line, backlit, liquid crystal, 20 characters per line
Housing material	Flameproof plastic
Electromagnetic compatibility (EMC)	According to IEC 801
Protection type	Panel mount: IP 20 (DIN 40050); Front: IP 65/NEMA 4X Wall mount: IP 65 (DIN 40050)/NEMA 4X
Ambient temperature	0...+50 °C
Storage temperature	-40...+85 °C
Power supply	85...260 V AC (50/60 Hz) or 20... 55 V AC (50/60 Hz), 16... 62 V DC
Power consumption	AC: <10 VA DC: <10 W

Flow Input

Analogue input	0/4...20 mA, 0...10 V, 0...5 V, 1...5 V Resolution: 18 bit Automatic error recognition: signal overrange, current loop broken U_{max} : 50 V DC, R_{in} : >25 k Ω (voltage input) U_{max} : 24 V DC, R_{in} : 100 Ω (current input)
Pulse input	Current pulse (Prowirl PFM): triggerlevel 12 mA Voltage pulse: triggerlevel 10 mV, 100 mV, 2.5 V U_{max} : 50 V DC, I_{max} : 25 mA f_{max} : 20 kHz

Compensation Inputs (Temperature, Pressure or Density)

Current input	0/4...20 mA Automatic error recognition: signal overrange, current loop broken
Pt100 input	3-wire connection Temperature resolution: 0.01 °C Internal linearisation Automatic error recognition: RTD short, RTD open

Outputs

Relay outputs	2 relays for: flow alarm, temperature alarm, pressure alarm, pulse output (f_{max} : 5 Hz) Contacts: SPDT 240 V, 1 A Galvanically isolated
Current outputs	2 outputs: 0/4...20 mA Resolution: 12 bit Linearity: 0.05% o.f.s. at 20 °C Load: max. 1 k Ω Galvanically isolated
Pulse output	Open collector or 24 V DC pulse (selectable) Voltage <30 V DC, current <25 mA, U_{CE} <0.4 V f_{max} : 50 Hz Galvanically isolated
Printer port	Serial interface RS 232 9-pin DSUB connector

Power supply

- A 85...260 V AC, 50/60 Hz power supply
- B 20... 55 V AC, 50/60 Hz; 16...62 V DC power supply
- 9 other

Housing

- 1 DIN panel mount housing
- 2 Wall mount housing, IP 65/NEMA 4X
- 9 other

Serial Interface

- 0 RS 232 serial interface for remote configuration or printer connection
- 9 other

Special functions

- 0 Basic version with standard functions
- 9 other

DXF 351- [] [] [] [] ← Order code

Supplementary Documentation

- | | |
|---|--------------|
| <input type="checkbox"/> Operating Manual Compart DXF 351 | BA 020D/06/e |
| <input type="checkbox"/> Technical Information Prowirl 70 | TI 031D/06/e |
| <input type="checkbox"/> Technical Information Deltabar S | TI 256P/00/e |
| <input type="checkbox"/> Product Group Pressure Accessories | SD 069P/00/e |
| <input type="checkbox"/> Technical Information Cerabar S | TI 216P/00/e |
| <input type="checkbox"/> Technical Information Omnigrad TMT 137 | TI 041/02/e |
| <input type="checkbox"/> Technical Information Omnigrad TST 110 | TI 060/02/e |

Subject to modification

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Nothing beats know-how

