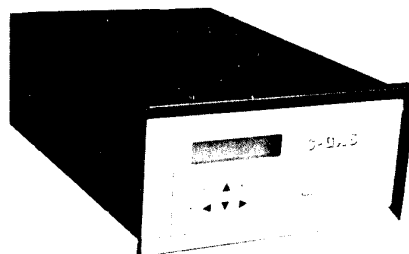


C-GAS

INTELLIGENT SIGNAL PROCESSOR FOR GAS MEASUREMENT

The C-GAS intelligent signal processor is designed to be used for calculating the volume, density, normalized volume and mass of natural gas, compressed air and other gases flowing in pipelines under pressure.

The device accepts signals from measuring devices manufactured by MMG AM e.g. frequency signals from turbine meters and vortex meters, current signals of 4 to 20 mA from absolute- or gauge pressure transmitters as well as signals from resistance thermometers of type Pt 100 (DIN 43760) connected directly.



Other types of measuring devices are also allowed to be connected; in such cases, the user is requested to consult the specialists of MMG AM. The value of compressibility factor necessary for the calculation of the normalized gas volume is determined on the basis of

COMPRESSIBILITY AND SUPERCOMPRESSIBILITY FOR NATURAL GAS AND OTHER HYDROCARBON GASES

Transmission Measurement Committee Report No. 8 American Gas Association Catalog No. XQ 1285

The main features of the signal processor are:

- Error check of the signals from the sensing elements at three levels:
 1. verifying the wiring and functional ability of the sensing elements,
 2. verifying the measuring range of sensing elements,
 3. verifying whether the limits set by the user are exceeded.
- Reduction of the linearity error of flow meter by using linearization with 4 straight sections.
- Input from absolute- or gauge pressure transmitters.
- Linearized input for temperature sensing devices.
- Calculation of the density and supercompressibility according to the standard AGA8.
- Operator keypad of 8 keys.
- Dual-row 16-character alphanumeric display.
- Current output adjustable between 0 and 20 mA.
- Adjustable frequency output and remote counter output.
- Standardized RS 232 or RS485/422 serial line output for computer connection.
- 230 V AC or 24 V DC power supply.

Type number **3 6 8 2 - 0 - 1 0 0 - A**

	Power supply
0	230 V AC
1	24 V DC

Input parameters

- Flow meter input (adjustable)
 - Low-level input
 - Input signal level 15 mV rms to 3 V rms
 - Input waveform nearly sinusoidal
 - Input frequency range 20 Hz to 5000 Hz
 - High-level input
 - Input signal level 4V to 8V(min. 10 mA)
 - Input waveform pulse (min. 20 μ s)
 - Input frequency range 0.05 Hz to 5000 Hz

• Pressure meter input	
Input current	4 to 20 mA
Input load	20 Ω
• Temperature sensor input	
Type of temperature sensor	Pt 100 platinum resistance thermometer (DIN 43760)
Method of compensation	three-wire
Output parameters	
• Current output	
Output type	negative grounded
Output current	adjustable within the range of 0 to 20 mA
Permissible load	0 to 500 Ω
Output unit (selectable)	volumetric flow, normalized volumetric flow, mass flow
• Frequency output	
Output type	open collector (short-circuit protected)
Permissible load current	up to 20 mA (up to 40 V)
Output unit (selectable)	volumetric flow, normalized volumetric flow, mass flow
• Remote counter output	
Output	potential-free contact
Switching capacity	up to 10 VA (resistive load)
Output unit (selectable)	totalized volume, non-normalized volume, mass
• ALARM output	
Output type	open collector (short-circuit protected)
Permissible load current	up to 20 mA (up to 40 V)
Output control	on failure indication or on exceeding limit values
• Serial line output	
Output type	RS232 or RS485/422
Data transfer rate	600, 1200, 2400, 4800, 9600 bps (selectable)
Max. data transfer range	200 m/RS232, 1200 m/RS485/422

Display

The data supplied by the signal processing unit appear in menus, grouped by functions. The data once set, measured or calculated can be displayed in menus each. The associated ID, value and unit are also displayed together with the data.

Measuring errors

Error of volumetric flow calculation	$\pm 0.02\%$
Error of volume flow calculation	$\pm 0.5\%$
Pressure measurement error	$\pm 0.5\%$
Temperature measurement error	$\pm 0.3\text{ C}^\circ$
Error of the calculated normalized volumetric flow	$\pm 0.6\%$
Error of mass flow calculation	$\pm 0.6\%$
Output current error	$\pm 0.25\%$ (related to the range of 0 to 20 mA)

Other informative data

Ambient temperature range	+5 to +40 C°
Storage temperature range	-25 to +70 C°
Protection	IP 20, shock protection: class I
Dimensions	192 x 96 x 290 mm
Design	Nz-1 (MSZ 8881/3-70) normal indoor
Power dissipation	approx: 20 VA
Mass	approx. 5 kg