FTC300
Thermal Conductivity Analyser

APPLICATION

- Extractive gas analysis
- Quality and process monitoring
- Continuous determination of the concentration of single gas components like e.g. H_2, CO_2, O_2, He, Ar, CH_4, N_2, NH_3,CO, SF_6 in binary gas mixtures in the gas-, food-, insulating glass- and thermal treatment-industry

BENEFITS

- High sensitivity e.g. 0 to 0,5 Vol.-% H_2 in N_2; noise < 10 ppm H_2 in N_2
- Durable measuring cell
- Sequential measurement of 15 binary gas mixtures due to multi gas mode
- Offsetting the cross sensitivity of an interfearing component possible
- Quick response time (T_{90} < 1 s)
- Comfortable menu and operater navigation at calibration and parameterisation
- Classic two-point calibration or one-point calibration
- RS232-access to all (measuring) data and parameters

FEATURES

- Precise and long-term stable gas analysis according to the thermal conductivity measuring principle
- Microprocessor based
- 128 x 64 point graphic display
- Operation via 3 keys or PC-based service program
- Small robust design in aluminium housing for field operation (protection class IP65)
- Linear electrically isolated current output 4 to 20 mA, start- and end point concentration freely selectable
- 3 configurable relays for alarm message and device status
- Precise linearisation for binary gas mixtures like e.g. H_2, He, CO_2, CH_4 in N_2 or Ar in the permanent storage; additional customer specific linearisation with polynomial of 6th order
- Indication in ppm or Vol.-%, resolution adjustable up to 1 ppm
- Pressure resistant (20 bar) and vacuum leak-tight gas path out of stainless steel (SS316Ti)

JCT Analysentechnik

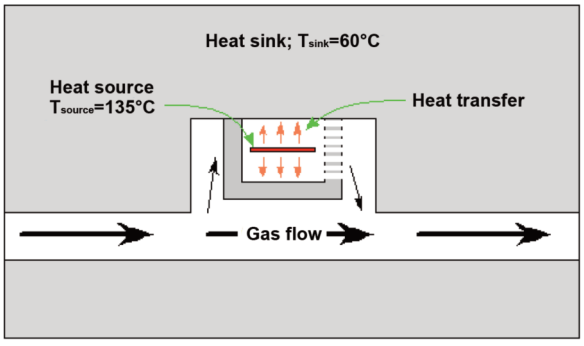
TECHNICAL DATA

Model	FTC300
Description	thermal conductivity analyser
Operation	
Ambient temperature	-5°C to 50°C (others on request)
Operating pressure	max. 21 bara
Flow rate	40 Nl/hr to 150Nl/hr (60 to 80Nl/hr recommended)
T_{90}-time at 100 Nl/hr	< 1 s at flow rate > 60Nl/hr
Heating-up time	approx. 30 min; 1 hr for small measuring range
Vibration	10 to 150 Hz (2g Peak)
Construction	
Dimensions over all (W x H x D)	185 x 80 x 85 mm
Weight (without cable)	approx. 1800 g
Sample gas inlet / outlet	stainless steel stubs 6 mm
Mounting	wall mounting
Electrics	
Power supply	18 to 36 VDC (24 VDC recommended)
Power consumption	max. 700 mA
Output signal	4 to 20 mA
Connection cable	2 m long
Signal noise*	< 1 % of smallest measuring range
Drift at zero*	< 2 % of smallest measuring range / week
Repeatability*	< 1 % of measuring range
Influence of ambient temperature*	< 1 % of smallest measuring range / 10°C
Influence of sample gas flow rate around 80 Nl/hr*	< 1 % of smallest measuring range / 10 l/hr
Influence of sample gas pressure > 0,8 bara*	< 1 % of smallest measuring range / 10 mbar
Smallest measuring range	0,5 Vol.-% for H_2 in N_2

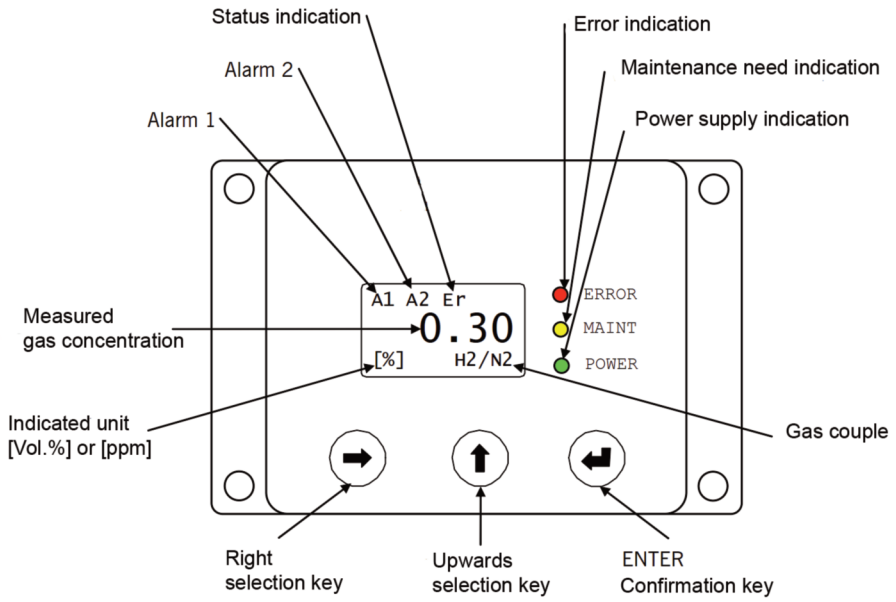
* Important note: These are standard values that may differ for some gas mixtures!

MEASURING PRINCIPLE

Sample gas is led through a stainless steel block that is warmed up to a temperature of 60°C. A control circuit keeps this temperature constant, the block acts as a heat sink.
A micromechanical manufactured membrane with applied thin-film reistor acts as heat source inside the block. The temperature is kept constantly to 135°C with a second control circuit. Below and above the membrane there are small hollow spaces to which sample gas can diffuse.
The opposing sides of the membrane are thermally connected with the heat sink. In dependence of the thermal conductivity of the sample gas the heat source is loosing more or less energy which is compensated by heating again.
The voltage necessary for preservation of a constant membrane temperature is a measure for the thermal conductivity of the sample gas.
The resistors are coated with ceramic to prevent a chemical reaction with the sample gas.



OPERATING PANEL



MEASURING RANGES

Measuring ranges

Sample gas	Carrier gas	Basic measuring range	Smallest measuring range	Smallest measuring range with zero suppression	Multi Gas Mode
H_2	N_2 or air	0 to 100 %	0 to 0,5 %	98 to 100 %	yes
H_2	Ar	0 to 100 %	0 to 0,4 %	99 to 100 %	yes
H_2	He	20 to 100 %	20 to 40 %	85 to 100 %	on request
H_2	CH_4	0 to 100 %	0 to 0,5 %	98 to 100 %	on request
H_2	CO_2	0 to 100 %	0 to 0,5 %	98 to 100 %	on request
He	N_2 or air	0 to 100 %	0 to 0,8 %	97 to 100 %	yes
He	Ar	0 to 100 %	0 to 0,5 %	98 to 100 %	yes
CO_2	N_2 or air	0 to 100 %	0 to 3 %	96 to 100 %	yes
CO_2	Ar	0 to 100 %	0 to 10 %	-	yes
Ar	N_2 or air	0 to 100 %	0 to 3 %	96 to 100 %	yes
Ar	CO_2	40 to 100 %	-	80 to 100 %	yes
Ar	O_2	0 to 100 %	0 to 3 %	96 to 100 %	yes
CH_4	N_2 or air	0 to 100 %	0 to 2 %	96 to 100 %	yes
CH_4	Ar	0 to 100 %	0 to 1,5 %	97 to 100 %	yes
O_2	N_2	0 to 100 %	0 to 15 %	85 to 100 %	yes
O_2	Ar	0 to 100 %	0 to 2 %	97 to 100 %	yes
N_2	H_2	0 to 100 %	0 to 2 %	99,5 to 100 %	yes
N_2	Ar	0 to 100 %	0 to 3 %	97 to 100 %	yes
N2	CO_2	0 to 100 %	0 to 4 %	96 to 100 %	on request
NH_3	H_2	0 to 100 %	0 to 5 %	95 to 100 %	on request
NH_3	N_2	0 to 100 %	0 to 10 %	60 to 100 %	on request
CO	H_2	0 to 100 %	0 to 2 %	99 to 100 %	on request
SF_6	N_2 or air	0 to 100 %	0 to 2 %	96 to 100 %	on request

Other gases and measuring ranges on request;
Multi Gas Mode „yes“ means that these binary gas mixtures and additionally a customer specific mixture can be measured sequential with one analyser

ORDER CODE

Plug A (7-pole)*

Pin number	Cable colour	Function	Description
1	white	analogue voltage input 1	0 to 10 V
2	brown	analogue voltage input 2	0 to 10 V
3	green	analogue return	reference level
4	yellow	digital inlet	24 V
5	gray	ground	ground
6	pink	analogue voltage input 1	0 to 10 V
7	blue	analogue voltage input 2	0 to 10 V

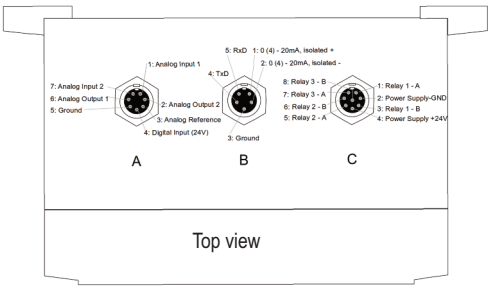
Plug B (5-pole)*

Pin number	Cable colour	Function	Description
1	white	current output transmitter	0 (4) to 20 mA, electrically isolated
2	brown	current output reciever	0 (4) to 20 mA, electrically isolated
3	black	serial interface RS232	ground
4	blue	serial interface RS232	TxD
5	gray	serial interface RS232	RxD

Plug C (8-pole)*

Pin number	Cable colour	Function	Description
1	white	relay 1	potential free contact; 36 V, 1 A
2	brown	power supply	ground
3	green	relay 1	potential free contact; 36 V, 1 A
4	yellow	power supply	+24 V (18 to 36 V), max. 700 mA
5	gray	relay 2	potential free contact; 36 V, 1 A
6	pink	relay 2	potential free contact; 36 V, 1 A
7	blue	relay 3	potential free contact; 36 V, 1 A
8	red	relay 3	potential free contact; 36 V, 1 A

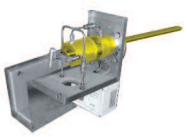
* Partially included in the range of delivery



ORDER CODE

Order code	Description
FTC300	Thermal conductivity analyser FTC300

Gas Sampling **Probes**



Heated Sample **Lines**

Sample Gas **Coolers**

Gas Conditioning **Systems**

NOx **Converter**

and **solutions** for

fixed installation

portable

JCT Analysentechnik

JCT Analysentechnik GmbH | Werner Heisenberg-Strasse 4 | 2700 Wiener Neustadt | AUSTRIA | T +43 2622 87201 | sales@jct.at