

Certified according to DIN EN ISO 9001

## Technical Datasheet



# MCM 200

## Precision Evaluation Unit

## Description

The MCM 200 is a programmable evaluation unit on micro-processor basis. It serves the detection and processing of frequency proportional and analogous measuring values of up to two measuring channels. The MCM 200 excels in short response time and high accuracy.

### Operation Modes and Applications

- **Measuring mode**  
Monitoring of scaled measuring values in all common units and versatile control functions for ratio and real-time values.
- **Contoller mode**  
by PI-controller card tailored to flow control requirements.
- **Applications**  
range from simple one-channel measuring tasks to complex two-component tasks which require ratio measurement or control as well as recording and printing of additional process parameters such as pressure or temperature.

### Options

- Second measuring channel.
- Analogue input for each channel.
- Analogue output for each channel.
- PI closed loop controller as master or ratio controller with variable set points (analogue, digital, ratio set point).
- Frequency linearisation for one measuring value per channel.
- Communication- and printer interface for satellite units or host computers to record process data and parameters. An integral clock allows for prints indicating time and date (Year 2000 compatible).
- Lockable sheet-steel case (see above)

### Operation Principle

An edge-controlled pulse width measurement combined with a programmable time-base function provides rapid and stable measuring values. The MCM 200 therefore detects any alteration of the measured values quickly and most accurately. The analogue inputs incorporate an integrating sigma-delta-converter to ensure that analogous measuring values are detected as accurately (14 Bit) and quickly as required by automatic control applications of processtechnology.

The analogue output has resolution of 12 bit. It either supplies a standardised analogue signal or serves the PI controller.

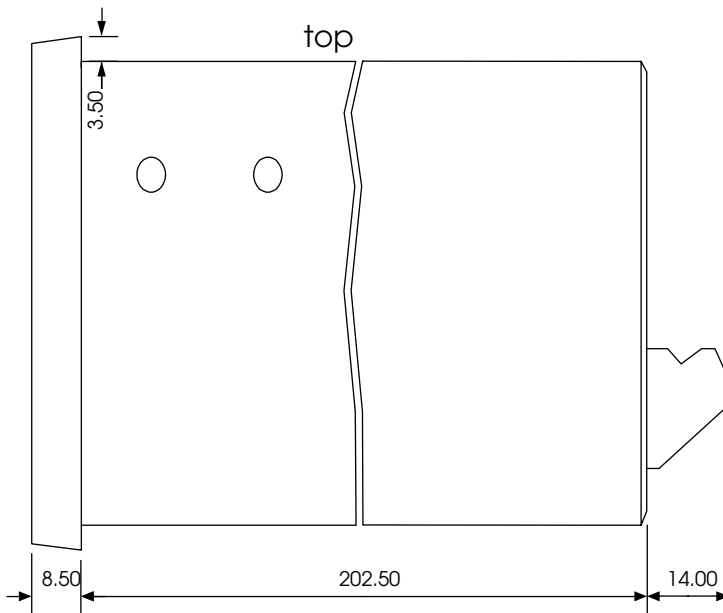
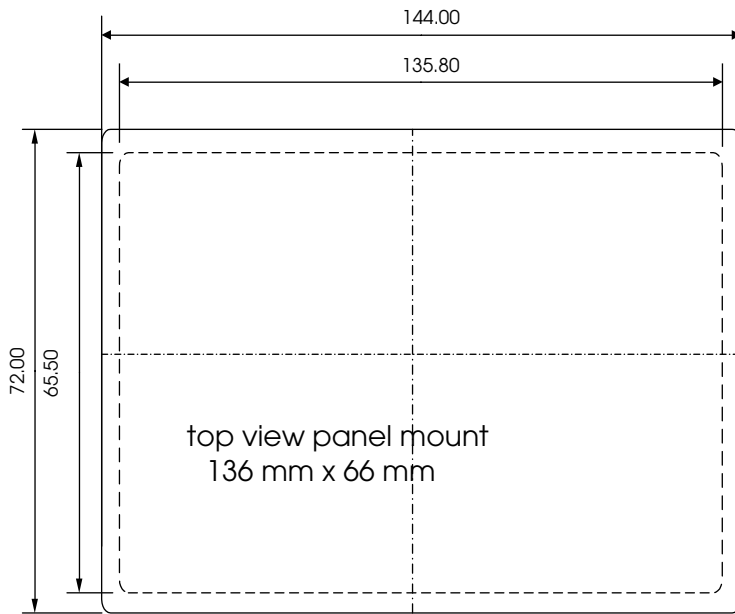
### Features:

- VFD-display and touch keyboard for operation and monitoring of all process data and parameter settings.
- 1 channel for detection of measuring values and reverse-flow.
- 1:1 frequency output for additional evaluation units.
- 6 switch outputs.
- Batch counter for single jobs.
- Totaliser for long-term consumption measurement.

## Technical Data

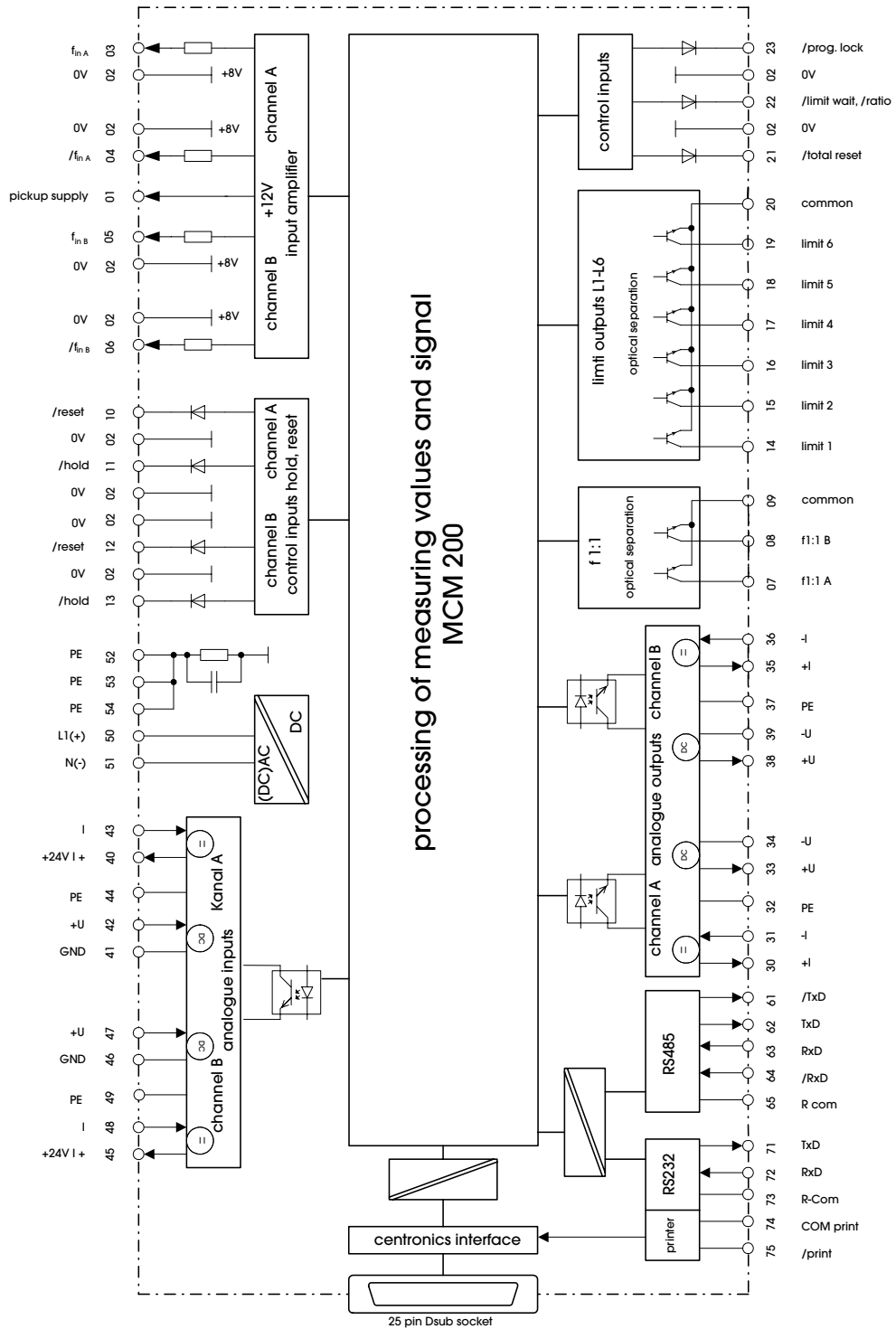
Housing protection:	Front: IP60 as per DIN 40050, rear: IP30 as per DIN 40050
Electrical connections:	Supply: 3-pin screw terminals; wire size 0.2 up to 2.5 mm <sup>2</sup> In-/outputs: plug-in screw terminal; wire size 0.08 up to 2.5 mm <sup>2</sup> Interface: plug-in screw terminal; wire size 0.08 up to 2.5 mm <sup>2</sup>
Housing:	DIN panel housing 144 x 72 mm overall depth incl. connector: 220 mm
Ambient temperature:	0 bis up to 45 °C
Weight:	approx. 750 g
Power supply:	24 V DC optionally: 24 or 230 V AC/50 Hz (please indicate) power consumption: 5 VA at 230 V
Pickup supply:	12 V DC/20 mA per channel
Battery life time:	8 years with storage, at least 10 years with daily 8-hour-operation
Frequency inputs:	Channel A, optionally channel B 2 frequency inputs each channel (one for measurement, one for reverse Flow detection); accuracy: 0.02% Current switch level: NAMUR DIN 19234 Voltage switch level: UI < 6 V; Uh > 9 V; Umax = 30 V
Frequency range:	0.8 Hz up to 10 kHz
Control inputs:	/reset and /hold per channel, /ST1, /ST2, /ST3: active at UI < 3 V (tmin = 100 ms) vs. GND
Analogue inputs:	1 Off per channel, resolution 14 bit, Conversion mode: sigma-delta Current (0/4 up to 20 mA), impedance = 500 Ω Voltage (0/2 up to 10 V), Ri = 1012 Ω Detection of line breakage at 4 mA or 2 V respectively
Switch outputs:	6 Off galvanically free, related after setup Open collector, 30 V/50mA, low-inductive Switch hysteresis adjustable from 0 up to 9.9% of measuring value
Frequency outputs 1:1:	Each channel, galvanically free: open collector 30 V/50 mA
RS 232/RS 485:	Serial interface 2400/4800/9600 Bd (read/write)
Centronics printer	Parallel line printer to record measuring values and parameter settings (centronics standard)
Operation and display:	Input of all operational parameters via front touch keyboard Monitoring via two line vacuum flourescent display (VFD) (2x 20 characters, character size 2.4 x 4.7 mm)

Dimensional Drawings (mm)

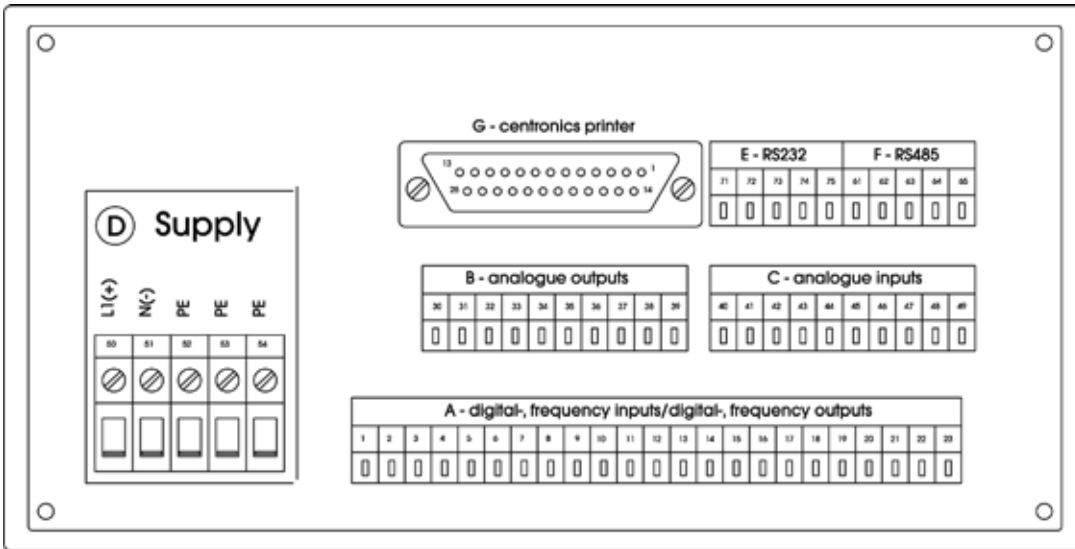


When installing, please consider bending radius of connector cable.

Processing of Measuring Values and Signals



Rear View and Terminal Connections



Digital Inputs (A)

- 1 +12 V/20 mA external, pickup supply
- 2 GND, 0 V external, pickup supply
- 3 fin channel A measuring input
- 4 /fin channel A reverse-flow detection
- 5 fin channel B measuring input
- 6 /fin channel B reverse-flow detection
- 7 f 1:1 frequency output channel A 1:1, open collector
- 8 f 1:1 frequency output channel B 1:1, open collector
- 9 COMMON f 1:1 frequency output channel A,B
- 10 /reset channel A (vs. GND)
- 11 /hold channel A (vs. GND)
- 12 /reset channel B (vs. GND)
- 13 /hold channel B (vs. GND)
- 14 limit 1, open collector
- 15 limit 2, open collector
- 16 limit 3, open collector
- 17 limit 4, open collector
- 18 limit 5, open collector
- 19 limit 6, open collector
- 20 COMMON LIMIT
- 21 /total reset (vs. GND)
- 22 /ratio, /limit wait (vs. GND)
- 23 /lock programming (vs. GND)

Analogue Outputs (B)

- 30 I+ current output channel A (0/4–20 mA)
- 31 I- current output channel A (0/4–20 mA)
- 32 PE protected earth
- 33 U+ voltage output channel A (0/2–10 V)
- 34 U- voltage output channel A (0/2–10 V)
- 35 I+ current output channel B (0/4–20 mA)
- 36 I- current output channel B (0/4–20 mA)
- 37 PE protected earth
- 38 U+ voltage output channel B (0/2–10 V)
- 39 U- voltage output channel B (0/2–10 V)

Analogue Inputs (C)

- 40 I+ current input +24 V channel A (0/4–20 mA)
- 41 GND voltage input channel A
- 42 U+ voltage input channel A (0/2–10 V)
- 43 I current input channel A (0/2–10 V)
- 44 PE protected earth
- 45 I+ current input +24 V channel B (0/4–20 mA)
- 46 GND voltage input channel B
- 47 U+ voltage input channel B (0/2–10 V)
- 48 I current input channel B (0/2–10 V)
- 49 PE protected earth

Power Supply (D)

- 50 L1 (+) power supply
- 51 N (-) power supply
- 52 PE protected earth
- 53 PE protected earth
- 54 PE protected earth

RS 232 Interface (E)

- 71 TxD (send)
- 72 RxD (receive)
- 73 R-COM (potential reference RS 232 galvanically free)
- 74 COM-Print
- 75 /print

RS 485 Interface (F)

- 80 /TxD (send)
- 81 TxD (send)
- 82 /RxD (receive)
- 83 RxD (receive)
- 84 R-COM (potential reference RS 485 galvanically free)

Centronics Printer/25 D Sub Socket (G)

- 1 /Strobe
- 2–9 D0...D7
- 11 Busy
- 16–25 GND Printer (galvanically free)

## Notes

The following has to be adhered to:

- a) Installation instructions for electrical devices. Installation instructions for associated intrinsically-safe devices  
The »Special conditions for safe use« as per EC-Type Examination Certificate
- b) The amplifier has to be installed in a way that the max. ambient temperature does under no circumstances exceed +60°C (consider self heating).
- c) With cables care should be taken, that the max inductivity and capacity of the respective voltage or gas group are not exceeded.
- d) Exceeding or falling below the regular measuring range will cause invalid frequency output signals.
- e) Shielded cables are to be used as connecting lines.
- f) Generally, supplied units have to be connected by an expert according to EMC stipulations.
- g) Flammable media may only be used as measuring medium when they do not build an explosive atmosphere permanently or for a longer period of time. In addition, the amount of air and oxygen contained must be low enough to ensure the danger of explosion can definitely be excluded. The local display unit has to be included in repeated pressure tests.

**Contact worldwide****KEM-Headquarter**

Liebigstraße 2  
D-85757 Karlsfeld  
T. +49 8131 5 93 91 - 0  
F: +49 8131 9 26 04  
info@kem-kueppers.com

**KEM-Office West**

Im Langen Hahn 44  
D-58515 Lüdenscheid  
T. +49 2351 9 78 80  
F: +49 2351 9 78 83 1  
kem-west@kem-kueppers.com

**KEM-Office South**

Dahlienweg 35  
D-73765 Neuhausen  
T. +49 7158 98 56 82  
F: +49 7158 98 56 83  
kem-sued@kem-kueppers.com

**Denmark**

E. Eberhardt ApS  
Bygstubben 6  
DK-2950 Vedbæk  
T. +45/45/89 33 66  
info@eeberhardt.dk

**Norway**

Flow Teknikk as  
Olav Brunborgsv. 27, Postboks 244  
N-1377 Billingstad  
T. +47/66/77 54 00  
mail@flow.no

**Singapore**

Polyquip Engineering Pte Ltd  
Blk 20 Woodlands Link #08-12  
Woodlands East Industrial Est.  
SGP- 738733 Singapur  
T. +65/6753/79 97  
sales@polyquip.com.sg

**China**

KEM China  
Mr. Xiao Tianxiang  
Rm.2429, JinYuan Office Building, No. 36,  
CN- BeiYuan Road, Beijing 100012  
T. +86/10/52 00 37 38  
Shaw@kem-kueppers.com

**Poland**

Newtech Engineering  
ul. Sowinskiego 3  
PL-4-100 Gliwice  
T. +48/32/237 61 98  
newtech@newtech.com.pl

**Slovakia**

Bibus SK, s.r.o.  
Priemysel'na 4  
SK-949-01 Nitra  
T. +421/377/41 25 25  
gyenes@bibus.sk

**Finland**

Wexon Oy  
Juhanilantie 4  
FI-01740 Vantaa  
T. +358/9/29 04 40  
wexon@wexon.com

**Portugal**

Contimetra Departamento Indústria  
R. Braamcamp 88-40 Dt0  
P-1269-020 Lisboa  
T. +351/213/86 05 00  
contimetra@contimetra.com

**Spain**

Ortrat S.L.  
Calle La Sofora 13 + 15  
ES-28020 Madrid  
T. +349/1/57 91 60 6  
ortrat@ortrat.es

**United Kingdom & Eire**

KEM Küppers UK  
2 Highfield Drive  
Ickenham Uxbridge  
UB10 8AL England  
T. +44/1895/23 35 52  
hans.rader@kueppers.co.uk

**Russia**

Michael Dueck  
Industrievertretungen und Vertrieb  
St.-Vither-Str. 12  
D-50171 Kerpen  
T. +49/2237/67 91 88  
info@m-dueck.de

**Taiwan**

Yuden Electric Co.,Ltd  
Taiwan Headquarter  
5F, No.121, Li De ST, JHONGHE TAIPEI  
COUNTY 235, Taiwan ROC  
T. +886/2/82 21 29 58  
sales@yuden.com.tw

**Hong Kong Area**

Asia Technology and Instrument Ltd.  
Unit 5, 9/F., Free Trade Centre  
49 Tsun Yip Street, Kwun Tong  
HK-Kowloon  
T. +85/227/16 55 56  
ati@ati.com.hk

**Sweden**

Pentronic AB  
SE-590 93 Gunnebobruk  
T. +46/490/25 85 00  
info@pentronic.se

**United States of America**

AW-LAKE Company  
Electronics for Instrumentation  
8809 Industrial Dr.  
Franksville, WI 53126, USA  
T. +1/262/88 49 80 0  
sales@aw-lake.com

**Italy**

Ingg. Vigo e Cova SAS  
Piazzale Segrino 6/a  
I-20159 Milano  
T. +39/02/668 82 02  
vigo.cova@vigocova.com

[www.kem-kueppers.com](http://www.kem-kueppers.com)  
[info@kem-kueppers.com](mailto:info@kem-kueppers.com)