

DATA SHEET

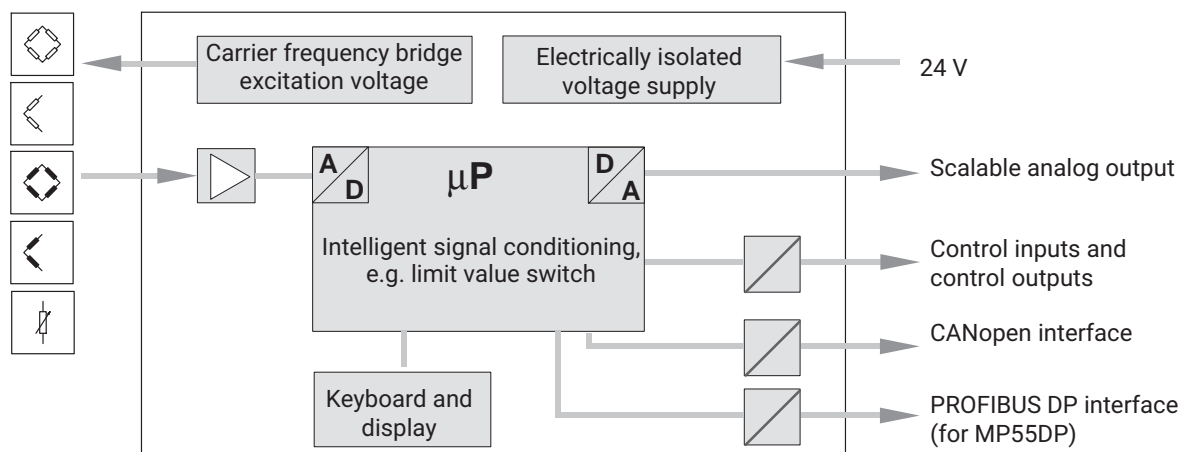
PME - MP55..., MP60... Industrial Measurement Electronics

SPECIAL FEATURES

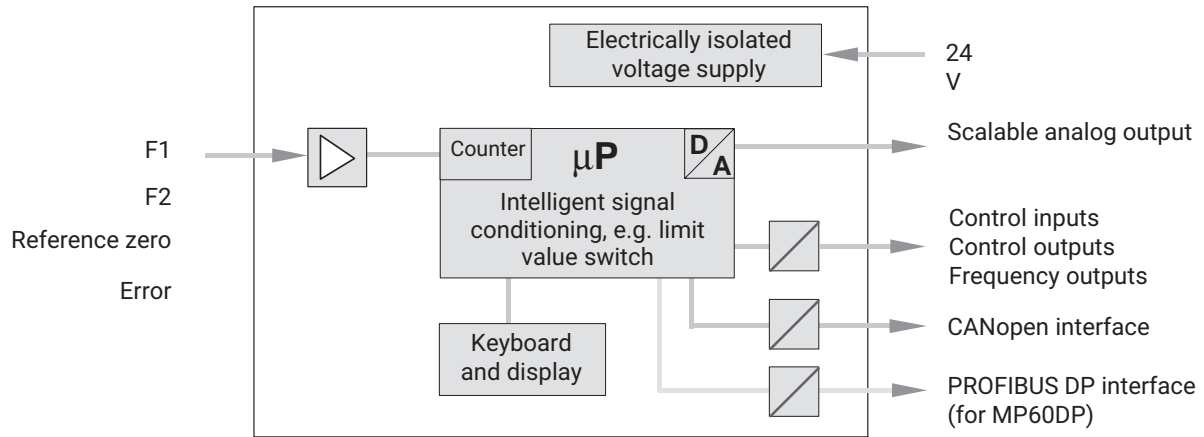
- MP55: Interference-free carrier-frequency amplifier for half and full bridge circuits, inductive full and half bridge circuits, and LVDT sensors
- Accuracy class 0.1
- MP60: Frequency module for speed transducers and HBK torque transducers
- Accuracy class 0.01
- Both are freely scalable and have an analog output, digital inputs/outputs, CAN interface, and optional PROFIBUS interface
- Sturdy aluminum housing for mounting on a DIN rail



BLOCK DIAGRAM MP55/MP55DP



BLOCK DIAGRAM MP60/MP60DP



SPECIFICATIONS FOR SINGLE-CHANNEL MODULE: MP55

Single-channel module		MP55		
Accuracy class		0.1		
Supply voltage	V_{DC}	24; electrical isolation from measurement system (typ. 500 V_{DC})		
Permissible supply voltage range	V_{DC}	18...30		
Power consumption, max.	W	9		
Amplifier				
Carrier frequency ($\pm 1\%$)	kHz	4.8		
Bridge excitation voltage U_B ($\pm 5\%$)	V_{rms}	5	2.5	1
Transducers that can be connected				
SG half and full bridge	Ω	220...5000	110...5000	60...5000
Inductive half and full bridge, LVDTs	mH	8...160	4...160	2...160
Permissible cable length between transducer and amplifier, max.	m	500		
Maximum permissible common-mode voltage	V	± 5		
Common mode rejection				
	0...500 Hz	dB		
	0...4800 Hz	dB		
Maximum differential voltage	mV	± 30		
Non-linearity (typical)	%	0.025		
Noise voltage, when $U_B=5$ V, in relation to the input		Measuring range (mV/V)		
		3	50	500
0...10 Hz	$\mu V/V_{SS}$	0.2	3	30
0...500 Hz	$\mu V/V_{SS}$	1.5	25	250
Measurement frequency range, adjustable (-1 dB)	Hz	0.05...500		
Max. display resolution		999,999 digits at 6.67% of input measuring range		
Min. display resolution		10 digits at 100% of input measuring range		
Input sensitivities		low	medium	high
Measuring ranges (selectable via DIP switch)				
at $U_B=5$ V	mV/V	0.15...3	2.5...50	25...500
at $U_B=2.5$ V	mV/V	0.3...6	5...100	50...1000
at $U_B=1$ V	mV/V	0.75...15	12.5...250	125...2500

Single-channel module		MP55		
Low-pass filter		Adjustable in increments of 0.05 to 500 Hz (Bessel and Butterworth filter characteristics)		
Effect of the supply voltage when there are variations in the specified range, relating to the full scale value				
on zero point	%	< 0.01		
on sensitivity	%	< 0.01		
Effect of the ambient temperature when there is a variation of 10 K, at U _B =5 V		3 mV/V	50 mV/V	500 mV/V
on full bridge zero point	μV/V	1	10	100
on half bridge zero point	μV/V	10	20	100
on sensitivity	%	0.05	0.05	0.05
Long-term drift over 48 hours				
Measuring range 3 mV/V (30 minutes after start-up)	μV/V	1		

MP55 FILTER DATA

Nominal (rated) value/Hz	fg (-1dB)/Hz	fg (-3dB)/Hz	Runtime/ms	Rise time (10-90%) / ms	Overshoot / %
Bessel					
500	690	780	0.1	0.5	16
200	250	315	0.4	0.9	0
100	99.5	189	0.85	1.85	0
50	50.4	97.5	1.68	3.5	0
20	20.0	39.2	4.1	8.8	0
10	9.8	19.2	8.3	17.9	0
5	4.92	9.58	16.5	36.3	0
2	1.97	3.86	41.0	90.2	0
1	0.99	1.95	81.6	179	0
0.5	0.50	0.97	164	359	0
0.2	0.20	0.39	410	898	0
0.1	0.10	0.20	820	1795	0
0.05	0.05	0.10	1640	3590	0

Nominal (rated) value/Hz	Fg (-1dB)/Hz	fg(-3dB)/Hz	Runtime/ms	Rise time (10-90%) / ms	Overshoot / %
Butterworth					
500	690	780	0.1	0.5	16
200	240	295	0.55	1.1	3.0
100	100.0	142.4	1.38	2.23	5.2
50	49.9	69.7	3.0	4.9	4.6
20	20.8	31.2	6.9	10.8	2.5
10	10.4	15.6	13.8	21.6	2.5
5	5.2	7.8	27.6	43.2	2.5
2	2.08	3.12	69	108	2.5
1	1.04	1.56	138	216	2.5
0.5	0.52	0.78	276	432	2.5
0.2	0.21	0.31	690	1080	2.5
0.1	0.10	0.16	1380	2160	2.5
0.05	0.05	0.08	2760	4320	2.5

Comments

The specified values were determined at a level control of approx. 5% of the measuring range.

The runtimes are determined up to digitization. Approx. 0.6 ms should be added for the total runtimes up to the analog output; the respective update rate must be taken into account for the interface output.

Unless otherwise designated, all specifications apply to a bridge excitation of 5 V.

SPECIFICATIONS FOR SINGLE-CHANNEL MODULE: MP60

Single-channel module		MP60
Accuracy class		0.05
Supply voltage	V _{DC}	24; electrical isolation from measurement system (typ. 500 V _{DC})
Permissible supply voltage range	V _{DC}	18...30
Power consumption, max.	W	9
Amplifier		
Transducers that can be connected		HBM torque transducers of type series T30FN...T34FN in connection with MP07; T10F-SF1 and SU2 can be connected directly Incremental encoder Frequency signal sources
Input		Differential analog inputs for balanced and unbalanced frequency signals
Cable length	m	70
Input level¹⁾		
Each line to measurement ground	V	-5...+5
Signal amplitude	V _{SS}	> 1
Hysteresis , switching threshold can be selected in increments		0.25
Trigger level		±5 (adjustable in increments of 250 mV)
Input impedance²⁾ (input signal range -5...+5 V)		> 100
Input filter		Glitch filter, can be disabled
Detection of the direction of rotation		Via additional ±90° phase-delayed frequency signal
Frequency quadrupling		Can be connected
Input range frequency measurement	kHz	0.0001...1
	kHz	0.001...10
	kHz	0.02...20
	kHz	0.01...100
	kHz	0.1...1,000
	kHz	0...999999
Pulse counting	Pulses	0...5 × 10 ⁶
		0...1 × 10 ⁹ (kilo/pulse increments)
Resolution (at frequency measurement)		0.01 of measured value
Maximum pulse rate		1000000
Non-linearity		0.01
Low-pass filter		Can be switched off and adjustable in increments of 0.05 to 500 Hz
Sample rate when filter is switched off	1/s	(Bessel and Butterworth filter characteristics) 4800
Calibration accuracy		0.01

Single-channel module		MP60
Long-term drift over 48 hours 30 minutes after start-up	%	< 0.01
Effect of the operating voltage when there are variations in the specified range , relating to the full scale value on sensitivity	%	0.01
Effect of the ambient temperature when there is a variation of 10 K , on sensitivity	%	0.01

1) Levels up to ± 30 V are permissible and are internally limited to ± 5 V

2) The input impedance for levels $> \pm 5$ V is approx. 3 k Ω

MP60 FILTER DATA

Nominal (rated) value/Hz	fg (-1dB)/Hz	fg (-3dB)/Hz	Runtime/ms	Rise time (10-90%) / ms	Overshoot / %
Bessel					
Off	800	1500	0.15	0.3	1
500	480	750	0.20	0.5	1.7
200	204	375	0.31	0.8	0
100	102	185	0.79	1.7	0
50	47.5	90.8	1.75	3.7	0
20	20.3	40.1	4.0	8.8	0
10	9.8	19.2	8.3	18.3	0
5	4.8	9.5	16.7	36.7	0
2	2.0	3.99	39.9	86.7	0
1	1.0	1.95	81.0	178	0
0.5	0.49	0.97	164	359	0
0.2	0.20	0.39	409	899	0
0.1	0.10	0.20	818	1800	0
0.05	0.05	0.10	1636	3600	0

Nominal (rated) value/Hz	fg (-1dB)/Hz	fg (-3dB)/Hz	Runtime/ms	Rise time (10-90%) / ms	Overshoot / %
Butterworth					
Off	800	1500	0.15	0.3	1
500	480	750	0.20	0.5	1.7
200	205	357	0.31	0.8	7.8
100	101	148	1.1	2.5	3.0
50	50.3	70.5	2.8	4.6	3.8
20	20.0	31.2	6.7	10.8	1.8
10	10.1	15.4	14.0	22.1	2.0
5	5.0	7.7	28.0	44.2	2.0
2	2.0	3.4	61.7	99.6	0.5
1	1.0	1.7	123	199	0.5
0.5	0.5	0.85	246	398	0.5
0.2	0.2	0.27	802	1254	4.7
0.1	0.1	0.14	1604	2508	4.7
0.05	0.05	0.07	3208	5016	4.7

Comments

The specified values were determined at a level control of approx. 5% of the measuring range.

The runtimes are determined up to digitization. Approx. 0.6 ms should be added for the total runtimes up to the analog output; the respective update rate must be taken into account for the interface output.

GENERAL SPECIFICATIONS FOR SINGLE-CHANNEL MODULE: MP55, MP60

Single-channel module		MP55, MP60
Analog output		
Applied voltage	V	±10
Permissible load resistance, min.	kΩ	10
Internal resistance, max.	Ω	10
Applied current	mA	±20; 4...20
Permissible load resistance, max.	Ω	500
Internal resistance, min.	kΩ	100
The analog output can illustrate gross, net, positive and negative peaks, and peak-to-peak values.		
Analog output scaling range, min.		0.17 V (0.5 V ¹) at 100% of the input measuring range
Analog output scaling range, max.		10 V at 3.67% (1% ¹) of the input measuring range
Interference voltage at output, typical	mV _{SS}	10
Long-term drift over 48 hours (30 minutes after start-up)		
Effect of the ambient temperature when there is a variation of 10 K (additional effect on digital value)	mV	< 3
on zero point		
Voltage	mV	3
Current	μA	6
on sensitivity	%	0.05
Additional functions		
Limit value switches		
Number		4
Reference level		Gross, net, peak values
Hysteresis	%	0...100
Adjustment accuracy	%	0.0033
Response time	ms	1
Peak-value memory		
Number		2
Function		Positive, negative, peak-to-peak
Update time	ms	1
Clearing peak-value memory	ms	2
Retaining the current measured value/peak value	ms	2
Envelope curve discharge rate	Physical unit/s	0 to 999999

Single-channel module		MP55, MP60
Control outputs		
Number		4
Nominal (rated) voltage, external power supply	V	24
Permissible supply voltage range	V	18...30
Output current, max.	A	0.5 / 0.1 ¹⁾
Short-circuit current, typ.	A	0.8 / 0.2 ¹⁾
Short-circuit period		unlimited
Isolation voltage, typical	V _{DC}	500
Functions		
Output 1		selectable: GW1 ... GW4, error ²⁾ , standstill, signal F1 ¹⁾ (up to 300 kHz typical), counting pulse (1.6 μs width) ¹⁾
Output 2		selectable: GW1 ... GW4, error ²⁾ , standstill, signal F2 ¹⁾ (up to 300 kHz typical), direction of rotation ¹⁾
Output 3, Output 4		selectable: GW1...GW4, error ²⁾
Control inputs		
Number		4
Functions		Tare, zero, peak value/instantaneous value, parameter set selection, shunt ¹⁾
Input voltage range, LOW	V	0...5
Input voltage range, HIGH	V	10...30
Input current, typ., HIGH level = 24 V	mA	12
Isolation voltage, typical	V _{DC}	500
Parameter memory (EEPROM)		4 (plus factory settings)
Interface		
Sample rate, approx.		Max. 1000 measured values/s
Protocol		CAN 2.0B, CAL/CANopen-compatible
Hardware bus link		per ISO11898
Baud rate	kBit/s	1000, 500, 250, 125, 100, 50, 20, 10
Maximum line length	m	25, 100, 250, 500, 600, 1000, 1000, 1000
Display		
Type		2-line, 8-digit, alphanumeric, LCD
Keyboard		Membrane keypad with 3 pressure-sensitive operator keys
Nominal (rated) temperature range	°C	0...50
Operating temperature range	°C	-20...+50
Storage temperature range	°C	-20...+70
Equipment protection level		IP20
Dimensions, overall (W x H x D)	mm	59 x 150 x 152
Weight, approx.	g	750
Mechanical stress capability (test similar to DIN IEC 60068, Parts 2-6)		
Oscillation (30 min. in each direction)	m/s ²	25 (5 ... 65 Hz)
Impact (3 times in each direction; impact duration 11 ms) (test similar to DIN IEC 60068, Parts 2-27)	m/s ²	200

¹⁾ Only for MP60

²⁾ Errors are output at the digital output if there is an initial calibration error, a hardware, ADC, gross, net, analog output, measuring range overflow, or CAN transmit error.

SPECIFICATIONS PROFIBUS INTERFACE MP55DP, MP60P

Specifications the same as for basic device, extended to include PROFIBUS DP interface

Single-channel module		MP55, MP60
Protocol		PROFIBUS DP slave, as per DIN 19245-3
Baud rate, max.	Mbaud	12
Node address		3-123, set via the keyboard
PROFIBUS ID number		04CF (hex) ¹⁾
Configuration data	Byte	5
Parameter data, max.	Byte	6 (+7 byte DP standard)
Input data, max.	Byte	26
Output data, max.	Byte	18
Input data update time	ms	1 ms at 1 measured value, otherwise < 3.4 ms
Output data update time	ms	< 10 (tare, zero, limit value level); < 1 s (parameter sets)
Diagnostic data		1 byte version and 4 byte module diagnosis
PROFIBUS connection		9-pin Sub-D (DIN 19245-3), electrically isolated from power supply and measurement ground
CAN bus (PDO rate), max.	Measured values/s	20
Supply voltage	V	24 (18...30)
Supply current	mA	approx. 320

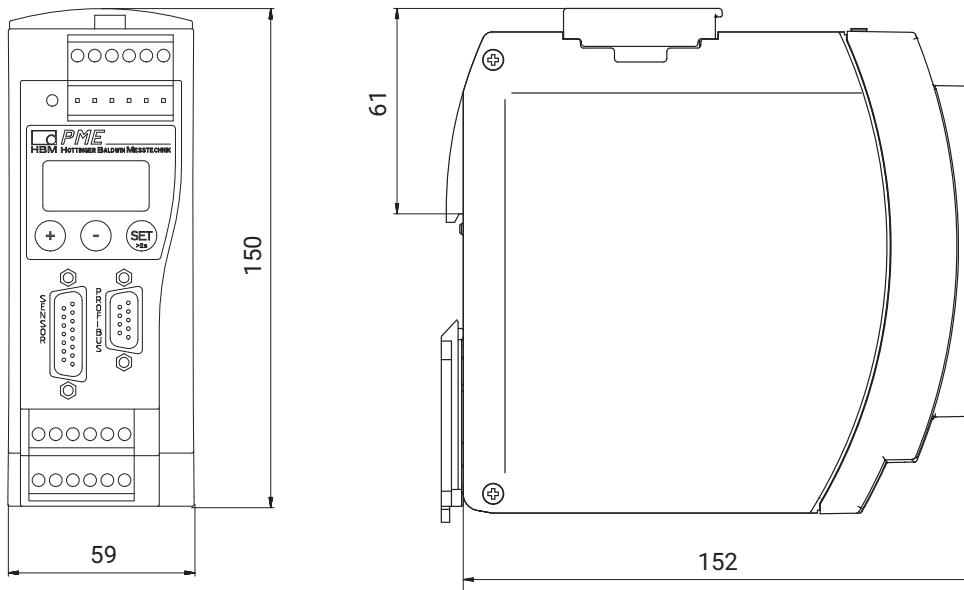
¹⁾ 00B2 (hex) for MP55DP; 0466 (hex) for MP60DP

SINGLE-CHANNEL MODULE MP55IBS

Specifications the same as for basic device, extended to include Interbus-S interface

Single-channel module		MP55IBS
Protocol		Interbus-S slave, as per IEC 61158
Baud rate	kBit/s	500 (2 MBit/s soldered via resistors)
Operating mode		2-wire remote bus
Input data, max.	Byte	20
Output data, max.	Byte	20
Input data update time	ms	< 1 (4 bytes of data, step 1)
Output data update time	ms	< 10 (tare, zero) < 100 (limit value level) < 500 (parameter sets)
PCP		not supported
CAN bus (PDO rate), max.	Measured values/s	20
Supply voltage MP55IBS	V	24 (18...30)
Supply current (at 24 V)	mA	approx. 300
Interbus-S connection		Db15-pin socket Y-cable to connect two 9-pin DSUB plugs Inputs galvanically isolated from power supply and measurement ground

DIMENSIONS OF THE PME MODULES



SCOPE OF SUPPLY

PME module

Plug terminals for voltage supply / CAN and digital inputs/outputs

	HBM order number	Phoenix order number
1x power supply/CAN	3-3312.0426	MV STBW 2.5/6-ST-5.08
1x digital INPUT	3-3312.0427	MV STBW 2.5/6-ST-5.08
1x digital OUTPUT	3-3312.0428	MV STBW 2.5/6-ST-5.08

10-pin flat ribbon cable female connector

All of the documentation and PME Assistant for module parameterization and operation (the latest Assistant versions) are also available free of charge at <http://www.hbm.com/support>.

ACCESSORIES

15-pin Sub-D connector for transducers

Order no.: 1-CON-P1024

Setup toolkit (USB to CAN interface converter)

Order no.: 1-PME-Setup-USB

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