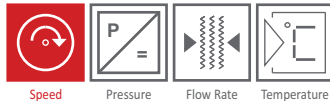


End-of-Life  
no successor

**ESTERS**  
ELEKTRONIK 



## DIGITAL TACHOMETER FOR ROTATIONAL SPEED - FLOW RATE PMO 2150/51, PMO 4150/51

2 x absolute value (A, B) or absolute difference (A-B) or percental difference  $((A-B / B) * 100)$



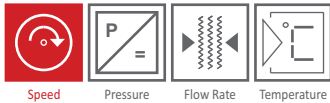
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Digital tachometers are especially qualified for an exact measurement and monitoring of all time-related measurements, which can be converted into a proportional frequency by appropriate sensors. Rotational speed, velocity, flow rate and related measurements belong to these time-related measurements. Depending on the programming the device measures the absolute value, ratio, percental or absolute difference.

The generation of speed-proportional frequencies results from a pulse wheel mounted on the shaft, which is scanned by a remote sensor. For control technique applications high resolution rotary encoders are coupled directly to the motor shaft.

The measuring method is the multi period measurement principle and the frequency is determined by the reciprocal value of the measured periodic time. The number of periods considered at the measurement value is dependent on the adjusted measurement time and the level of the input frequency. If the period time of the input frequency is smaller than the adjusted measurement time, the frequency average is calculated on all periods, that were counted in the last measurement interval. If the period time is longer than the adjusted measuring interval, the frequency is calculated from the last measured period.

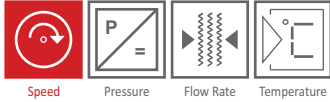
The two-channel type PMO 2150/4150 records both channels simultaneously. For the calculation of a difference or ratio the measured values of both channels are taken over concurrently.



## Technical data

MEASURING MODE (PMO 2150, PMO 4150)	Absolute value channel A and channel B, absolute difference A-B, percental difference (A-B) / ratio (A/B) and (B/A)	
(PMO 2151, PMO 4151)	Only absolute value channel A	
FREQUENCY INPUT	mV-input	V-input
FREQUENCY RANGE	0,02 Hz ... 20 kHz	0,02 Hz ... 120 kHz
SENSITIVITY	50 mV ... 8 V <sub>eff</sub> AC	3 ... 80 V <sub>eff</sub> AC
IMPEDANCE	AC-coupling, 47 Ω	AC-coupling, 100 Ω
SENSOR SUPPLY	8 V/15 V, 60 mA (internally programmable)	
ACCURACY OF FREQUENCY MEASUREMENT	Better than 40 x 10 <sup>-6</sup> of the measuring value	
DISPLAY	– 19999 ... 99999, 0 ... 4 fixed positions after decimal point or floating point programmable	
DISPLAY ACCURACY ABSOLUTE VALUE, ABSOLUTE DIFFERENCE	40 x 10 <sup>-6</sup> of the measured value ± 1 digit	
DISPLAY ACCURACY PERCENTAL ± 1 digit DIFFERENCE, RATIO		
MEASURING TIME	300 ms, 1 s, 2 s, 3 s average value	
DIGITALINPUT		
CONNECTION	Switch contact, open collector, or 5-V-digital level, inversion programmable	
FUNCTIONS	Programmable on display and holding of limit values (start/stop), display test or shading	
MONITORING	Watchdog circuit	
POWER SUPPLY	230 V/115 V AC ± 10% ,47 ... 63 Hz (voltage selectable by internal solder bridge)	
POWER CONSUMPTION	6 VA	
AMBIENT TEMPERATURE	0 ... 55 °C	
STORAGE TEMPERATURE	-10 ... +70°C	
PROTECTION CLASS	Housing frontside IP64 acc. to DIN 40050	
CONNECTION	Plugged terminal blocks 1,5 mm <sup>2</sup>	
ISOLATION CLASS	A acc. to VDE 0110 in mounted condition	
RELATIVE HUMIDITY	≤ 75% annual mean, seldom slight dew	

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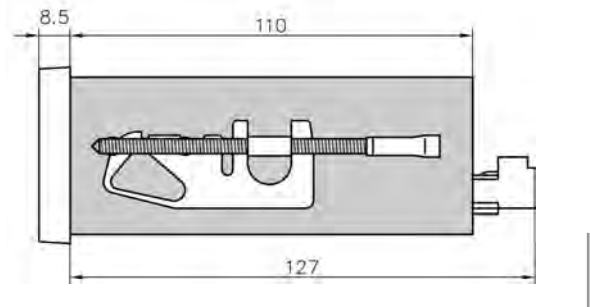
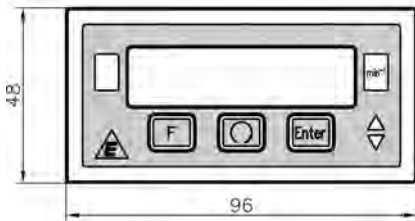


**Options**

- N3 Power supply 18 - 30 V DC, 6 watt, galvanically isolated from input and analog output, test voltage 1,5 kV acc. to VDE 0100, part 410
- I Transducer output, isolated 0(4)...20 mA, burden 500 A, 0(2)...10 V, max. load 2 kA, accuracy 0,1%, 12 bit D/A converter with LSB-PWM (resolution better than 14 bit), measuring time/effective dead time 30 ms, 100 ms or 100 ms with digital 1 pol. filter T63% = 600 ms, updating rate 2,6 ms
- G2 2 independent limit switches, isolated change-over-contacts, 250 V, 1 A 50 W, load current/non-operate current, hysteresis adjustable per channel
- G3 3 limit value, (not in connection with option I) only in connection with option G2, isolated change-over-contact, 125 V AC/0,4 A 30 V = /2 A, load current/non-operate current, hysteresis adjustable per channel
- S4 sensor supply 24 V DC, 50 mA

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**Dimension illustration - PMO 2150/2151**



**Dimension illustration - PMO 4150/4151**

