



PWM3100T Load Transducer

Load Transducer for 1- or 3-phase AC & DC Loads

An ultra-fast measurement transducer specifically developed for Machine Tool Monitoring applications.

PWM3100T measures motor power [kW] or motor current [A].

- ◆ **TTBus Output**
RS485 type Sensor Bus
- ◆ **8 Programmable Measurement Ranges**
1, 2.5, 5, 10, 15, 25, 50 or 100%
- ◆ **Hall Sensors**
200 Amp, 500 Amp. or 1000 Amp available

Digital Design

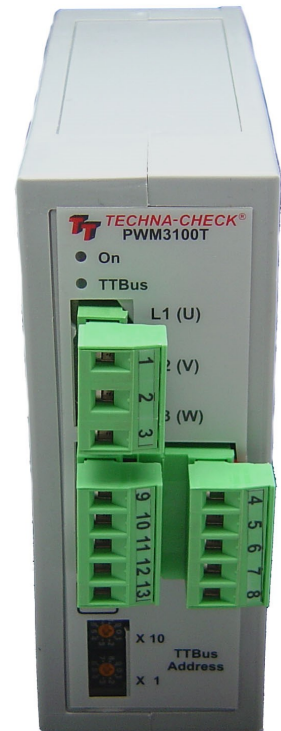
*4 quadrant digital multiplication.
Measures power or current before or after
variable frequency inverter.*

Ultra Compact DIN rail mount

Less than 2" of rail space.

External Hall-Sensor(s) for Current Measurement

1 or 3 external Custom Designed current sensors (Hall-Effect Sensors).



Technical Specification

Mechanical

Housing: Polycarbonate.
Mounting: 35 mm DIN-rail.
Protection Class: IP40.
Temp. Range: -15 to + 50 C.
Weight: App. 250g.
Dimensions: D 118 x B 45 x H 137,5 mm.
Connections: Max 2.5 mm² (AVG 24).

Electrical

Voltage Input: 3 x 0-500 VAC/VDC max.
Current Input: 3 x 100 Amp. 0 Hz - 35kHz
Power Range: 0 - 86.5 kW AC. 0 - 50 kW DC.
Supply: 18-36 V DC max. 2.0 Watt.
TTbus output: RS485 - proprietary protocol.
CE marked to: TBD

Range Select:

The measurement-range is selected from the Tool Monitoring Application TTMON.

Range	%
0	1
1	2.5
2	5
3	10
4	15
5	25
6	50
7	100

Features

The PWM3100T is designed primarily for measuring AC or DC power or current delivered to motors by variable frequency inverters. AC power is measured from the formula:

$$P = \sqrt{3} \times U \times I \times \text{Cos}\phi$$

DC power is measured from the formula:

$$P = U \times I$$

The PWM3100T Power or Current Transducer is specifically developed to function as a load transducer for the **TECHNA-CHECK**® Range of Machine Tool Monitors.

The transducer interface to Tool Monitor Applications via the TTBus interface.

The three motor wires **must** pass through the external hall sensors in the **same direction** to the motor either from Top-Bottom or from Bottom-Up.

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Using the PWM3100T

The operating mode is selected from the Tool Monitoring Application, usually TTMON. Parameters are accessed from the menu Modify Parameters->Measurement page.

Measurement U4, Cut #19

Copy to All Cuts

TTBus Transducer Network Address: 3 (0 - 50)

Copy to All Cuts

Measurement Range: 0 (0 - 7)

Measurement: Power

Operating Mode: Auto

No Of Phases: 3 Phases

PWM3100T Measurement Range:

- 0 = 1 % (Max. Sensitivity)
- 1 = 2.5 %
- 2 = 5 %
- 3 = 10 %
- 4 = 15 %
- 5 = 25 %
- 6 = 50 %
- 7 = 100 % (Min. Sensitivity)

P1Max: 100 %
Analogue zoom. The P1Max function is used to decrease the measurement range from the top. This may be very useful for the supervision of small dimensioned tools.

P1Min: 0 %
Analogue zoom. The P1Min function is used to decrease the measurement range from the bottom. This may be very useful for the supervision of small dimensioned tools.

Ok Apply Cancel

Range.

8 programmable current ranges—see the dialog box above.

Operating Mode.

Auto = This is the default AC-measurement mode. The PWM3100T measures the current frequency and uses this as a time base for the measurement. The measurement speed and reaction speed of the unit increases as the spindle speed increases. This mode cannot be used in DC-measurement mode.

10ms = Fixed measuring interval 10 ms (millisecond). May be used in both AC- and DC-mode

25 ms = Fixed measuring interval 25 ms (millisecond). May be used in both AC- and DC-mode

100ms = Fixed measuring interval 100 ms (millisecond). May be used in both AC- and DC-mode

No. of phases:

3 Phases = 3 phase measurement

Single Phase = Single phase measurement—usually used with DC-measurement

Power/Current Measurement.

Power or Current measurement may be selected from the dialog box above. When power is measured after a variable frequency inverter a certain amount of noise is introduced. The noise comes from the high frequency voltage switching (PWM Voltage). In some applications the noise can be eliminated by measuring current only. Measuring current after a frequency converter often has similar sensitivity as power-measurement, but the noise is significantly reduced. The current measurement may be used for monitoring smaller dimension tools. When current is measured the voltage connection terminals 1, 2 and 3 are not used and may be left open.

Offset Zeroing:

Offset zeroing is a function that calibrates the Hall-Sensors to the unit. Offset zeroing **must be done once** after the Hall Sensors are connected and the spindle (motor) is **NOT** running. The offset button must be activated for 5 seconds and the green on-led flashes for 5 seconds during the offset adjustment. Calibration values are maintained after power off (saved in EEPROM).

3-Phase AC-Connection with Frequency Inverter.

