

TECHNA-CHECK® PWM3100A Load Transducer

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

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

PWM3100A measures motor power [kW] or motor current [A].

◆ Analog Output

(0-20 mA) reflecting power or current

◆ 8 Programmable Measurement Ranges

1, 2.5, 5, 10, 15, 25, 50 or 100 Amp.

Digital Design

4 quadrant digital multiplication.

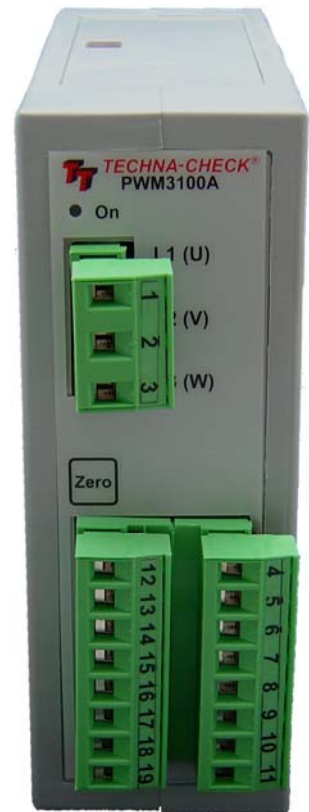
Measures power or current before or after variable frequency inverter.

Ultra Compact DIN rail mount

Less than 2" of rail space.

External Hall-Sensor(s) for Current Measurement

1 or 3 external 100 Amp. 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.
 Analogue output: 0 - 20mA, 200 ohm isolated. TC compatible.
 Digital Inputs: 10-30 VDC.
 CE marked to: TBD

Range Select:

The measurement-range is selected from 3 digitally isolated inputs. The inputs may be hardwired or controlled from a PLC.

S3, S2, S1	Range %
0 0 0	1
0 0 24V	2.5
0 24V 0	5
0 24V 24V	10
24V 0 0	15
24V 0 24V	25
24V 24V 0	50
24V 24V 24V	100

0 is zero volt or open circuit (no connection).

Features

The PWM3100A 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 PWM3100A Power or Current Transducer is specifically developed to function as a load transducer for the **TECHNA-CHECK®** Range of Machine Tool Monitors.

Three opto-coupler isolated inputs allow the selection of 8 measurement ranges: 1 Amp., 2.5 Amp., 5 Amp., 10 Amp., 15 Amp., 25 Amp., 50 Amp. and 100 Amp.

The transducer outputs a current of 0–20mA (200 ohm) compatible to Techna Check TC3200 and Techna Check TC101.

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 PWM3100A

The operating mode is selected from a dip-switch located at the top of the unit. A small screw driver must be used to access the individual dip switches.

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).

Dip. Switch No. 1 - 2 = Off, Off (Default Operating Mode)

This is the default AC-measurement mode. The PWM3100A 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.

Dip. Switch No. 1 - 2 = On, Off

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

Dip. Switch No. 1 - 2 = Off, On

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

Dip. Switch No. 1 - 2 = On, On

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

Dip. Switch No 3: Off = 3-Phase Measurement (Default) On = 1-Phase Measurement

1-Phase measurement is usually used with DC-measurement. Only phase L1(U) must be connected.

Dip. Switch No. 4: Off: Power Measurement (Default), On: Current Measurement

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.

3-Phase AC-Connection with Frequency Inverter.

