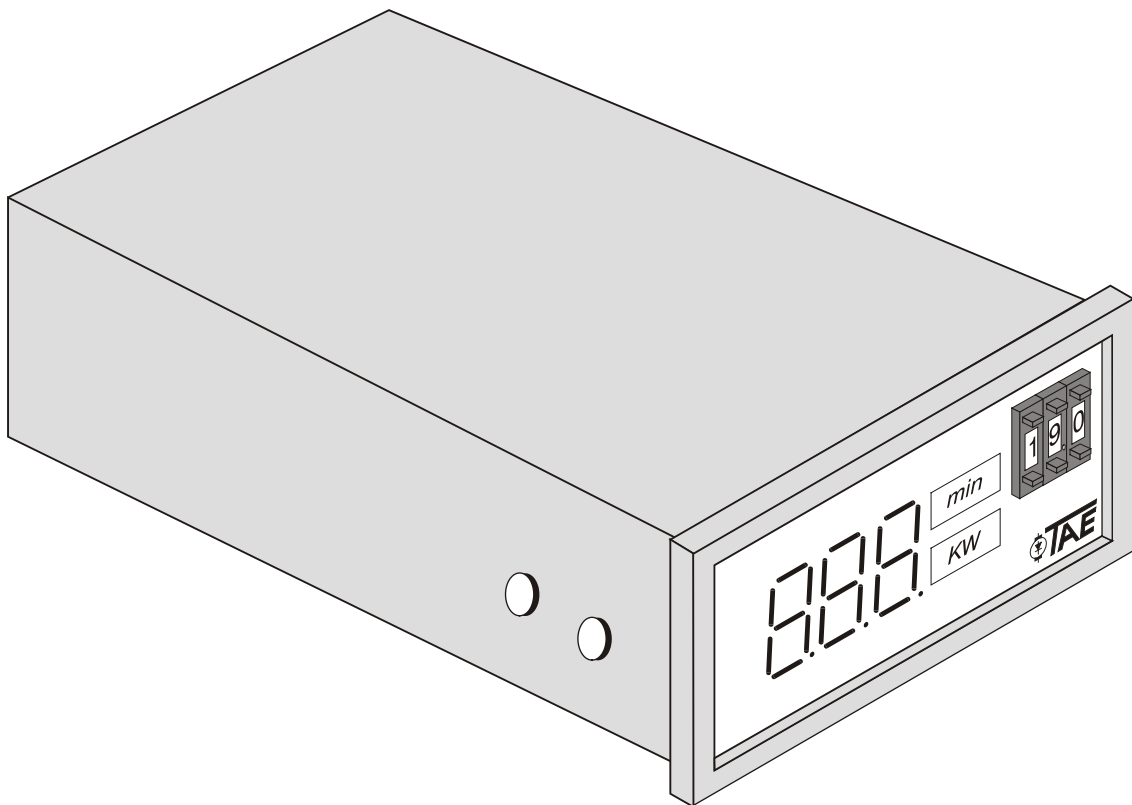


# ***Powermeter DMI 2000***

0-9,99 and 0-19,9 KW

Instruction & Operating manual



### **Caution:**

As with any form of electrical equipment, there is always a risk involved in the handling of electrical machinery. The greatest care must always be exercised during installation and maintenance, and it is recommended this be carried out by authorized personnel.

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## About This Instruction Manual

If you look for some definite topic you can use the table of contents at the beginning of these instruction and operation manual. In these instructions is a row of symbols which shall provide you with a fast orientation and show the importants.

### 1. Instructions of Safety



Notes and useful informations which shall make the operation easier.

Before you put the device into operation, please read this instruction and operation manual completely. The operation should only be done by qualified personnel.

The precautions and warnings below must be observed at the operation of the device.



#### **Caution - Danger !**

Note, disregard means a danger for the operator

Disconnect unit from mains before making any repairs. After the installation make sure that the unit and motor is properly grounded in order to avoid electrical hazzards. Do not connect or disconnect the device when it has power.

## 1.1 Instructions and Rules

These guidelines for installation have been compiled with regard to the following standards:

EN 60204-1 (VDE 0113: 1992-1)	Electrical equipment for machines
EN 60529:1991 (VDE 0470 Part 1)	Protection by frame
DIN EN 50178 (VDE 0160-1994-11)	Electronic equipment to be used in electrical power installations
DIN VDE 0100	Erection of power installations with nominal voltage up to 1000 V
DIN VDE 0110	Dimensioning of clearances and creepage distances
DIN 40050	(IP-International Protections)
EN 50081/50082	EMC general rules

### Low Voltage Directive

Referring to article 2 only those devices may be introduced which meet "the state of safety technique in the community".

Using a QM system, TAE is watching all steps from development to production of the device. So all norms and directives can be fulfilled referring to this aspect of safety.

Improper installation can lead to exceeding the maximum limits of EMC and to a malfunction of devices of other manufacturers.

DIN EN-50178 (VDE 0160:1994-11)	Electronic equipment for use in Electrical Power installations
DIN VDE 0100	Erection of Power Installations
DIN VDE 0110	Dimensioning of Clearance and Creepage distances
DIN 40050	IP-International Protections
DIN 50081/50082	EMC Basic Standards

## 1.2 Norms and Directives

### Declaration of manufacturer

#### EMC directive

The EMC directive of November 9th 1992 concerning the electromagnetic compatibility with reference to the EMC directive EMCD 89/336/EWG is a national law. This directive distinguishes between two criteria: Product components and product distribution.

According to these criteria, our products are classified as follows:

- Product components: Parts from suppliers which are inoperative on their own.
- Product distribution: Not commonly available, sold to qualified persons.

The law states that an EC-declaration of conformity, as well as a CE-marking, is not required for such components.

In order to meet the requirements of the EMC-directive we supply the following:

- Productrelated documents which describe the interference radiation of our products. This information will enable the user to provide all necessary steps to meet the EMC-requirements during planning and installation.
- EMC-specific components such as filters, chokes, shielded wiring, metal enclosures and others are available from TAE. TAE will furthermore provide specific technical information concerning the proper use of such components for their products in order to meet the requirements of the harmonized standards.

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*It is the users responsibility to carry out our instructions and to use adequate provisions. The user is also responsible that his machine and installation meets the requirements of the EMC-standards.*

Based on the EMC directive and its corresponding standards, we have carried out extensive measurements at our premises. These tests have included our complete product line. With the use of filters and proper wiring all our products meet the requirements of standard EN 50081-2 (sweep radiation) and standard EN 55011 class A for industrial use.

## 1.3 TAE-Products and EMC

### **Special boards, are all devices which not direct control drives**

this means:

- all measuring devices of the DMI-series and the frequency measuring device FM 2000
- Power supplies e.g. SN 8350, amplifier-, rated valueboards
- dancer boards e.g. SN 8802
- Synchronous boards e.g. SD 81/L1
- Control boards
- Converter e.g. SN 9103 f/U-converter
- Supervisor- and voltage indicator boards, e.g. V2000
- Signal insulation e.g. SN 9524 ISO-board, BCD W-ISO
- Digit-Master DGM 2000

Our measuring amount to that, the above mentioned devices meet the requirements of the standard EN 50081-1 and 50081-2 without filters and specific wiring.

## 2. Technical data

	Article-No. 20582F	Article-No. 20581F
	0-9,99 kW	0-19,9 kW
Line Voltage:	230 V (other voltage on request)	
Range:	0 to 9,99 kW	0 to 19,9 kW
Accuracy:	+/- 1 digit	
max. Input Voltage on Terminal 5:	500 V	
max. Input Voltage on Terminal 3:	60 mV	120 mV
Ambient temperature:	0 to +40°C	

Further information on enquiry

## 3. Connections (look at layout point 5.1)

Please be sure that your line voltage is identical to the line voltage on the name plate.

### Terminals:



- 1 - 2 Line (Input 1=L1, 2=N)
- 3 - 4 Input for current measurement, with shunt 60mV at 20A.  
terminal 4 plus (ground), terminal 3 minus
- 4 - 5 Input for voltage measurement. Terminal 4 minus (ground), terminal 5 plus
- 4 - 6 Output 0-10V correspond to: 0-20kW (art.-no. 20581), 0-9.99kW (art.-no. 20582)  
terminal 6 plus, terminal 4 minus (ground)
- 7 - 8 - 9 Relais changing contact (look at point 5.1)

## 4. Potentiometer adjustments

### Potentiometer of indicator board:

All set up by factory and sealed.

- P1 Measurement sensibility
- P2 Gain BCD-switch
- P4 Offset BCD-switch

### Potentiometer of multiplier board:

All set up by factory and sealed.

- P1 Offset, flip-flop for min/max-relay
- P2 Gain multiplier
- P3 Offset current amplifier
- P4 Offset multiplier
- P5 Gain current amplifier (look at point 6)
- P6 Gain voltage amplifier (look at point 6)

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## 5. Function

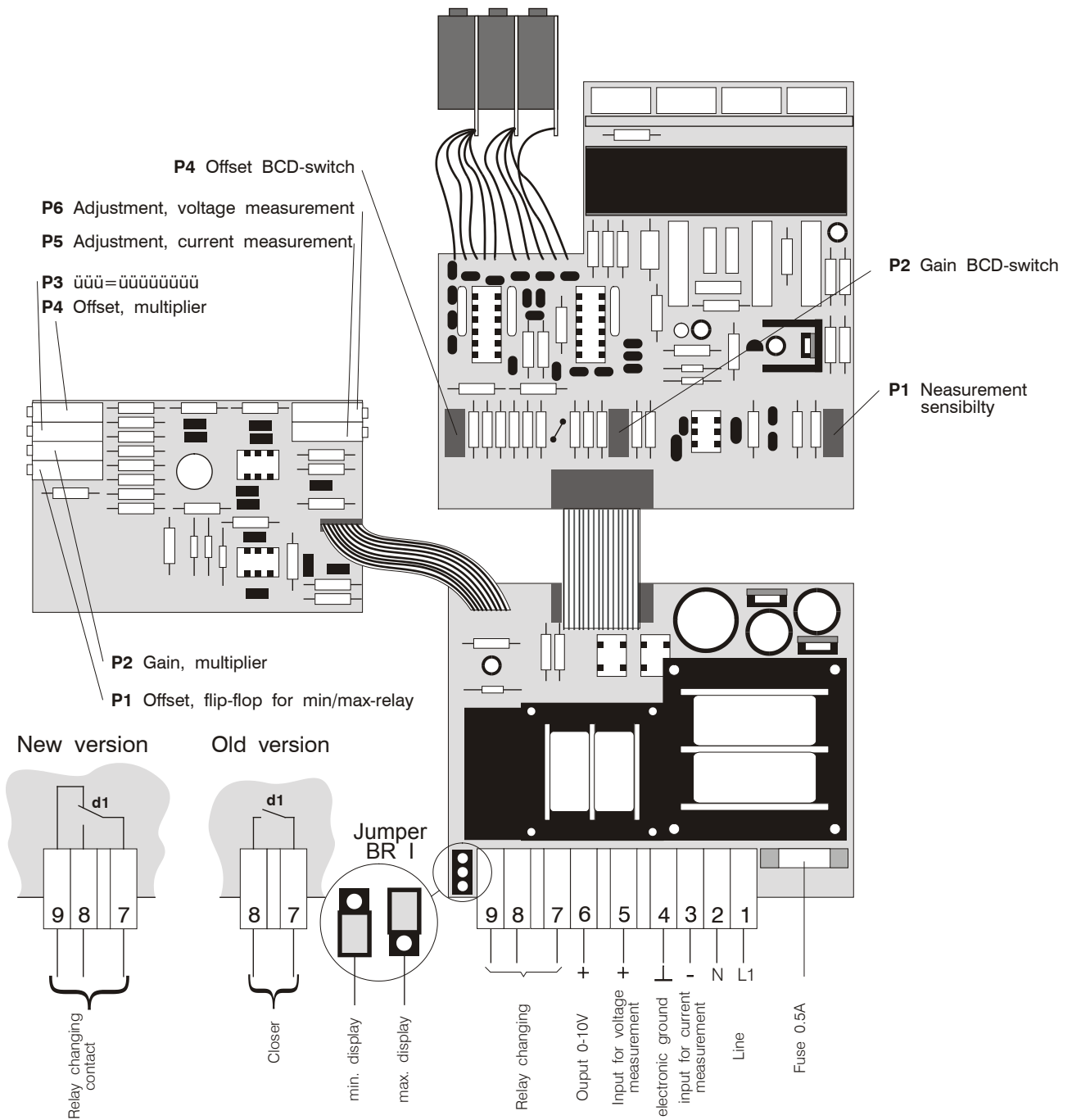


After supplying the line voltage the display goes on. The input voltages on terminal 4 and 5 (max. +500V) and the terminal 3 and 4 (max. -120mV for art.-no. 20581 and max. -60mV for art.-no. 20582) are analog multiplied and the result is displayed.

### Relay contact for supervising the preset power.

The relay contact switches when the power is below the preset power.

### 5.1 Layout art.-no. 20581F and 20582F



## 6. Initial operation

Voltage measurement: This is done by connecting the voltage which should be measured. At +500V you can measure 10V on test point PP1 to ground. This can be adjusted by potentiometer P6.

Current measurement: This must be done using a shunt resistor. The shunt must have 60mV at 20A (3mOhm).

At -60mV with respect to ground you can measure on test point PP2 +5V for art.-nr. 20581 +10V for art.-nr. 20582  
This can be adjusted with potentiometer P5.

## 7. Dimensions

