



Technical Description

**REOTRON MEK7711**  
**Pre-stabiliser VS-1**

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## Technical Safety Information for the User

This description contains the necessary information for the correct application of the product described below. It is intended for use by technically qualified personnel.

Qualified personnel are persons who, because of their training, experience and position as well as their knowledge of appropriate standards, regulations, health and safety requirements and working conditions, are authorised to be responsible for the safety of the equipment, at all times, whilst carrying out their normal duties and are therefore aware of, and can report, possible hazards (Definition of qualified employees according to IEC 364)

### Safety Instructions

The following instructions are provided for the personal safety of operators and also for the protection of the described product and connected equipment.



#### Warning!

Hazardous Voltage

Failure to observe can kill, cause serious injury or damage

- Isolate from mains before installation or dismantling work, as well as for fuse changes or post installation modifications.
- Observe the prescribed accident prevention and safety rules for the specific application.
- Before putting into operation check if the rated voltage for the unit conforms with the local supply voltage.
- Emergency stop devices must be provided for all applications. Operation of the emergency stop must inhibit any further uncontrolled operation.

### Specified Use

The units described herein are electrical controllers for installation in industrial plant.

These units conform with EMC standards 89/336/EWG



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**1 General**

The equipment described below is used as an intermediate unit for different supply voltages and stabilises the mains voltage to within  $\pm 6\%$  of the output voltage. The permissible variation of the mains supply voltage can be up to  $\pm 25\%$ .

**2 Function description**

The main component in the unit is a transformer with several tapings which correspond to the various supply voltages which can be used with the equipment (mains voltage change). On the secondary side of the transformer there are six other tapings which can be switched onto the output by using semiconductors (triacs). The regulating electronics selects a tapping on the secondary side depending upon the level of the supply voltage and switches this onto the output..

For a variation of between 75% and 125%, of the rated input voltage, the output voltage can be changed in six steps, providing an output of within 94% and 106% of the 230V rated output voltage.

The unit incorporates suppression which eliminates spikes, during switching on, and accidental blowing of the fuses connected in circuit. The starting current limiter comprises a resistor and temperature sensor, which is connected in series by a relay for a few mains cycles. Fuses are correctly rated for semiconductor protection at 230V, 16A, type B.

**Description of regulator electronics**

A microprocessor is the main component in the electronic control circuit and this regulates, selects the semiconductor switches and controls the LED indicators. The analogue effective value is generated from the output side of the unit and is fed back to the analogue input on the processor, through a conditioning circuit. The actual value is derived from measuring the effective value, in the processor, every period.

A comparison between the set point and actual value is made by a window comparator, in the software, and the corresponding semiconductor is selected. A row of LED's is used to indicate if the allowable voltage range has been exceeded and also the currently selected tapping.

When the unit is switched on, before proper regulation, the lowest output voltage is selected and afterwards the tapping which corresponds to the input voltage.

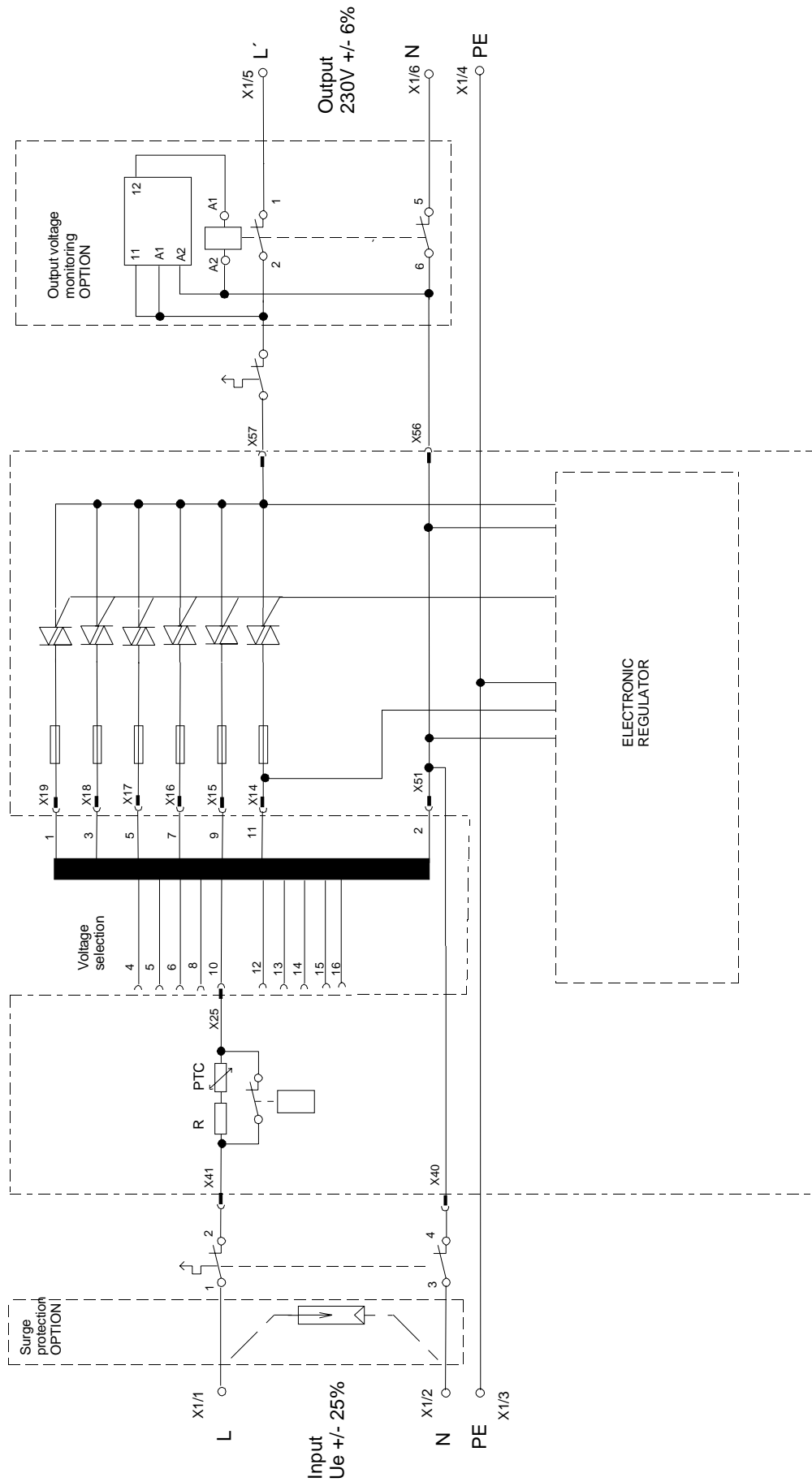
Regulating times:

By monitoring the effective value, every period, the following regulating times can be achieved:

From	To	50 Hz mains frequency	60 Hz mains frequency
-25%	+25%	120 msec	100 msec
-25%	+16%	100 msec	83 msec
-25%	+8%	80 msec	66.7 msec
-25%	-0%	60 msec	50 msec
-25%	-8%	40 msec	33.3 msec

3 Internal Control Circuit

Schematic Diagram - Electronic Voltage Stabiliser



#### 4 Technical data

Rated input voltage +/- 25%	200 V, 220 V, 230 V, 240 V 254 V 100 V, 110 V, 115 V, 120 V 127 V
Output voltage +/- 6%	230 V
Mains frequency +/- 3%	50/60 Hz
Throughput power	1 kVA / 2 kVA
Operating temperature	0...45 °C -20...45 optional
Storage temperature	-40...+70 °C
Enclosure protection	IP20
Overall dimensions (W x L x H)	290 x 350 x 210

#### 4.1 Design Variations

- Variation 1 (Standard Version)  
Autotransformer maximum power 1 kVA, input voltage range 100...127 V/ 200...254 V
- Variation 2  
Autotransformer maximum power 2 kVA, input voltage range 100...127 V/ 200...254 V
- Variation 3  
Isolated transformer maximum power 1 kVA, input voltage range 100...127 V/ 200...254 V
- Variation 4  
Isolated transformer maximum power 2 kVA, input voltage range 100...127 V/ 200...254 V

#### 4.2 Options

##### Surge Suppression

Resettable unit protection element

##### Output over voltage protection

A monitoring unit, independent of the electronic regulator, which separates the load (through a fuse) from the output of the equipment.

Over voltage: > 230 V effective +12...15% = 248.4...253 effective.

Response time approximately 100...200 msec.

Switch off duration: For the period of over voltage less the response time. A reset occurs approximately 100 msec after the output voltage returns back to the correct value (max +6%)

The unit is prepared in readiness for the fitting of options.  
Some wiring is necessary when the options are fitted.

## 5 Construction

Sheet steel housing, with blue painted finish.  
Conforms with VDE 0160 standard for technical construction.  
UL listed materials are used throughout.

Electrical Connections:

Mains input: Plug and cable  
230V output: Cable (socket available on request)

EMC Tests

EN 50081-1 Generic emission standard  
Domestic, commercial and light industry environment  
EN 50082-2 Generic emission standard  
Industrial environment

The unit is supplied ready for connection to the equipment requiring a stabilised input.

## 6 Changing input voltage

The mains input voltage can be changed by linking the required transformer tapplings. The following voltages can be selected:-

100 V, 110 V, 115 V, 120 V, 127 V, 200 V, 220 V, 230 V, 240 V, 254 V

The following drawing shows the layout of the whole control board and the connections for the voltage change are brought out to the spade connectors X30, X31, X32, X33, X34, X35, X36, X37, X53, X54 and the required tapping is plugged into position X25. The connections of the transformer tapplings are also marked with corresponding numbers.

The procedure for changing the voltage is as follows:-

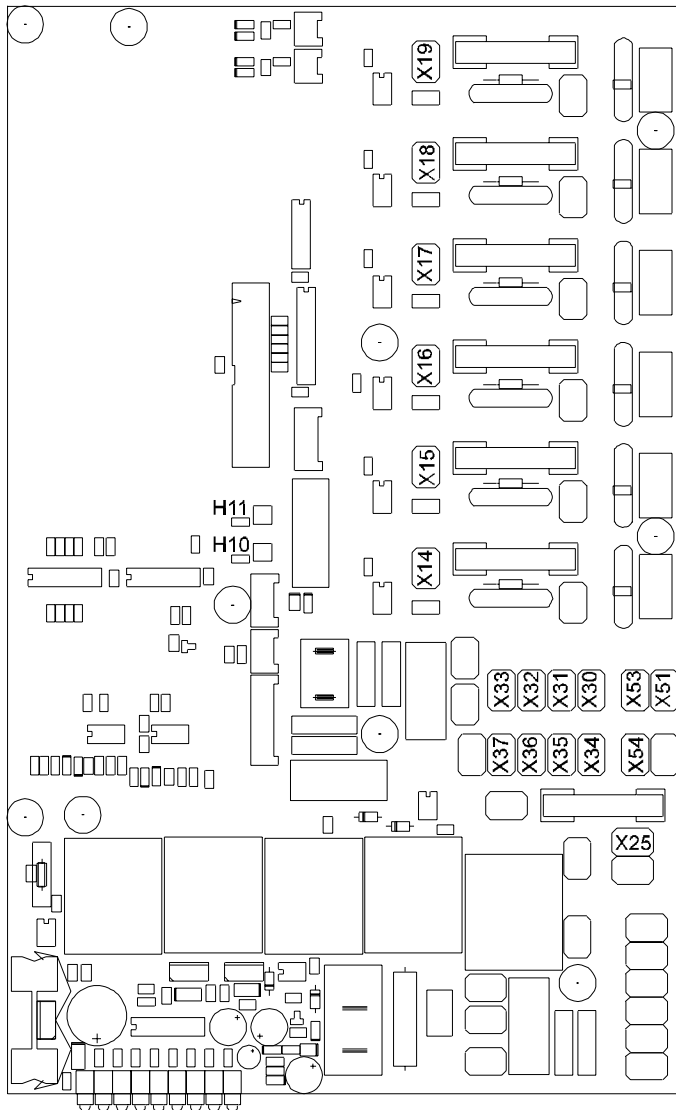
- !!! Isolate the unit from the mains !!!
- Remove cover (release 6 screws)
- Select the required voltage from the table on the following page and take the cable number given under column X25, next to the required voltage, from its present position (4, 5, 6, 8, 10, 12, 13, 14, 15 or 16) and plug it into position X25. If another cable is already there, then remove it and plug it into the original position given in the table.
- Refit cover

For tables and drawings see following pages.

Input voltage selection

Spade connector	X19	X51	X18	X17	X16	X15	X14
Transformer terminal	1	2	3	5	7	9	11

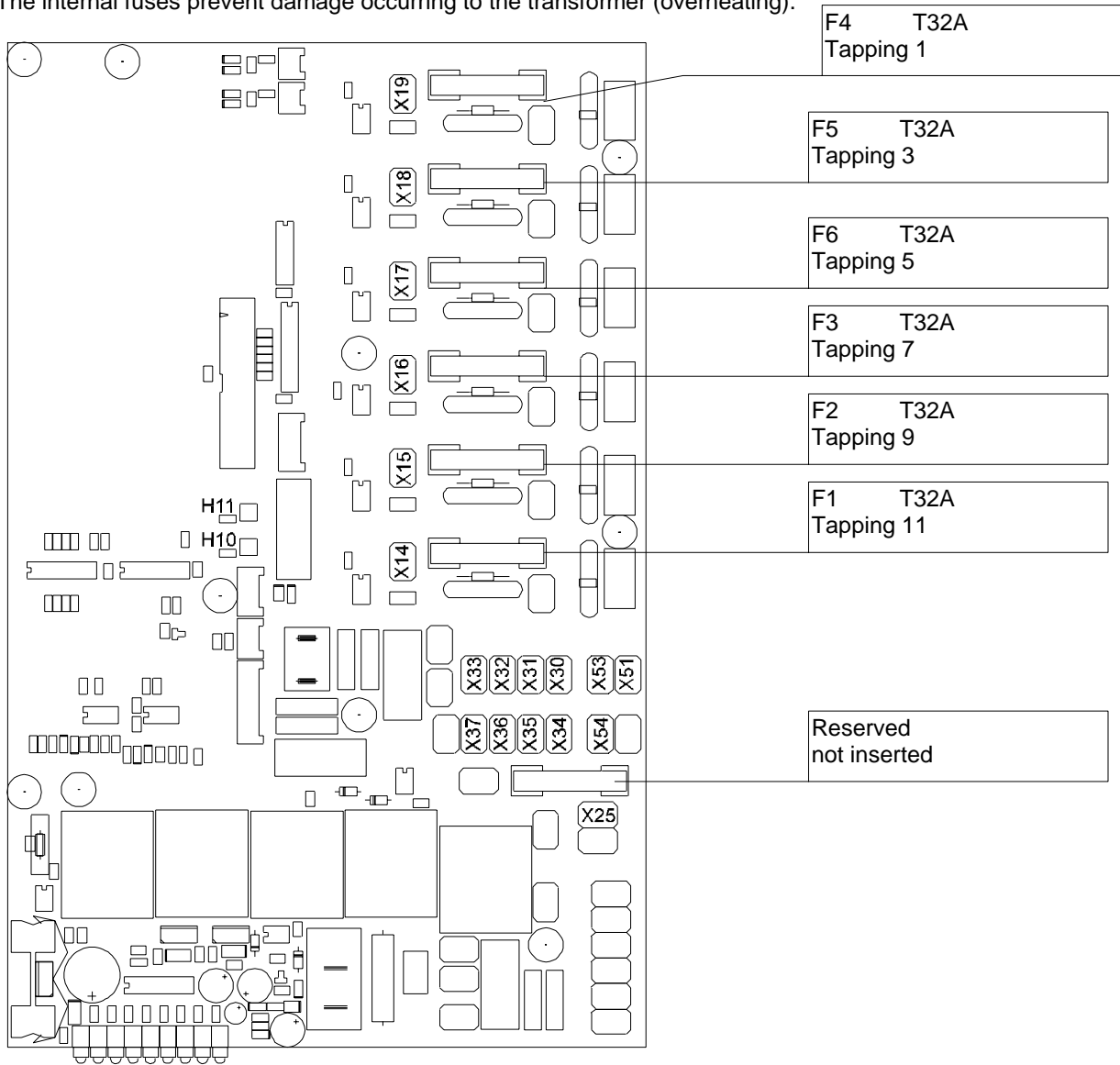
	X25	X54	X34	X35	X36	X37	X33	X32	X31	X30	X53
100V	16	4	5	6	8	10	12	13	14	15	nc
110V	15	4	5	6	8	10	12	13	14	nc	16
115V	14	4	5	6	8	10	12	13	nc	15	16
120V	13	4	5	6	8	10	12	nc	14	15	16
127V	12	4	5	6	8	10	nc	13	14	15	16
200V	10	4	5	6	8	nc	12	13	14	15	16
220V	8	4	5	6	nc	10	12	13	14	15	16
230V	6	4	5	nc	8	10	12	13	14	15	16
240V	5	4	nc	6	8	10	12	13	14	15	16
254V	4	nc	5	6	8	10	12	13	14	15	16



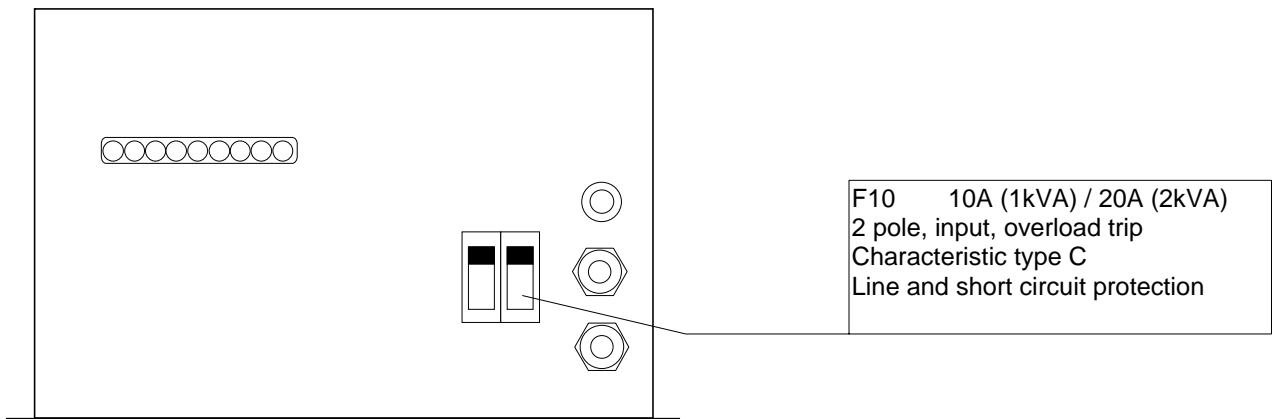
**7 Unit Protection**

Internal fuses:

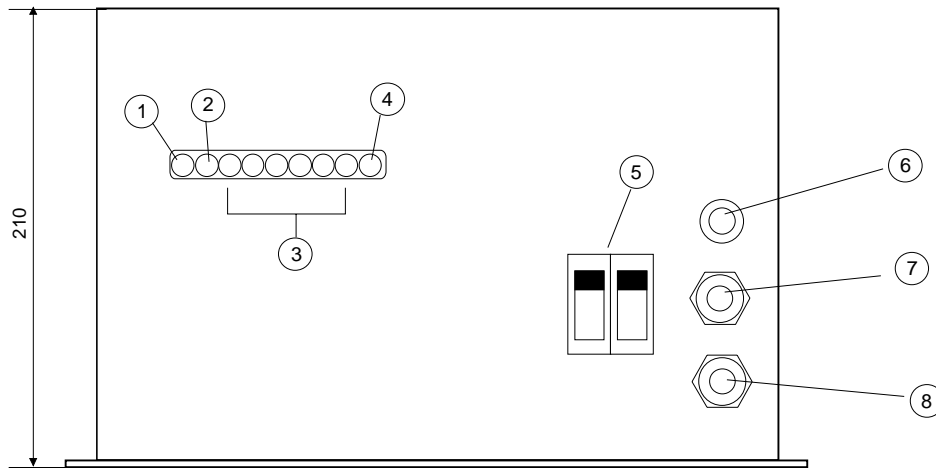
The internal fuses prevent damage occurring to the transformer (overheating).



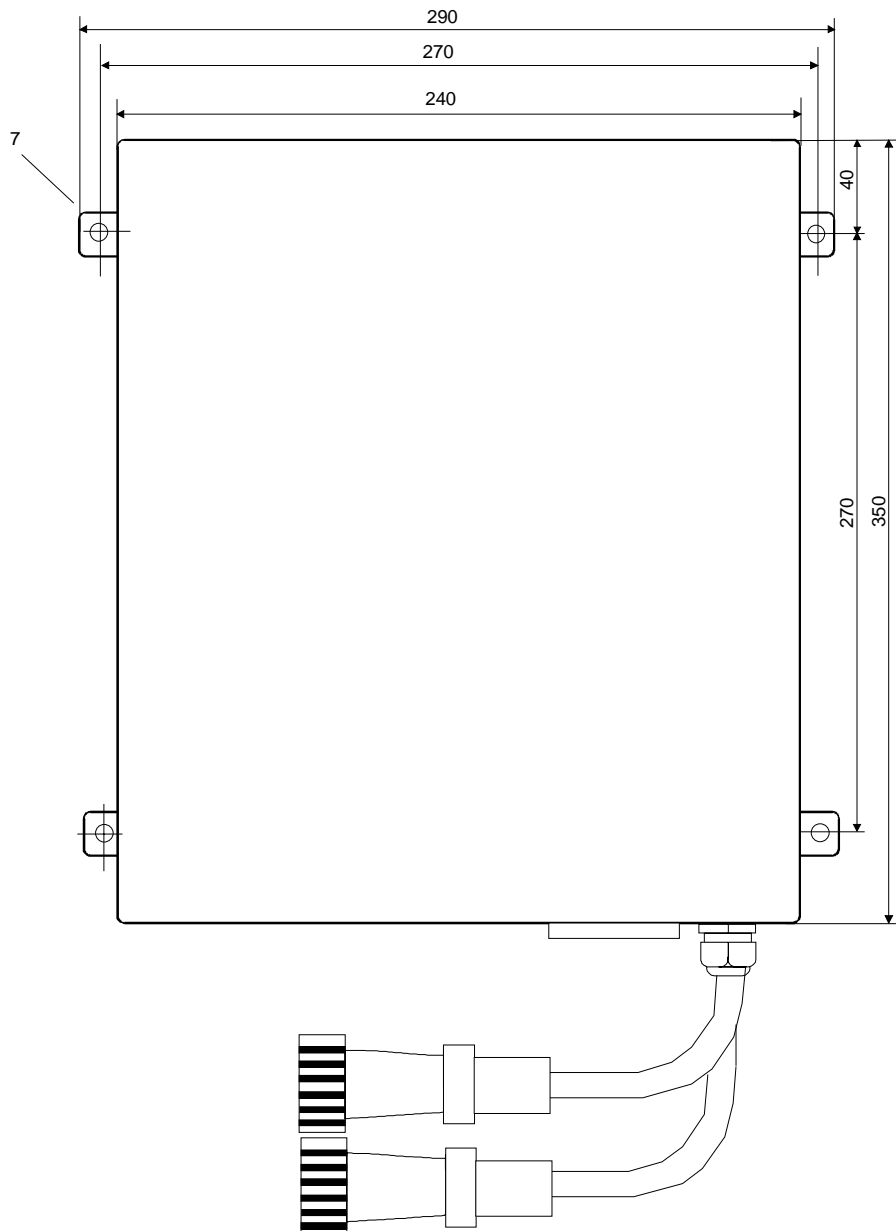
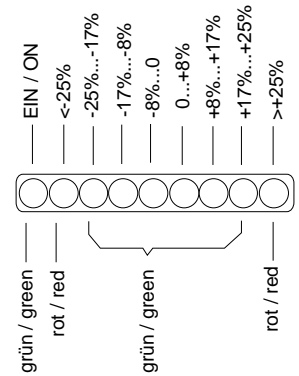
Externally, resettable overload trips



8 Dimensions / unit components



LED - Display  
Selected transformer tapping



1	Supply voltage
2	Output voltage limit <6%
3	Tapping 1-6
4	Output voltage limit >6%
5	Input fuse
6	Output fuse (thermal for rated current)
7	Input cable
8	Output cable