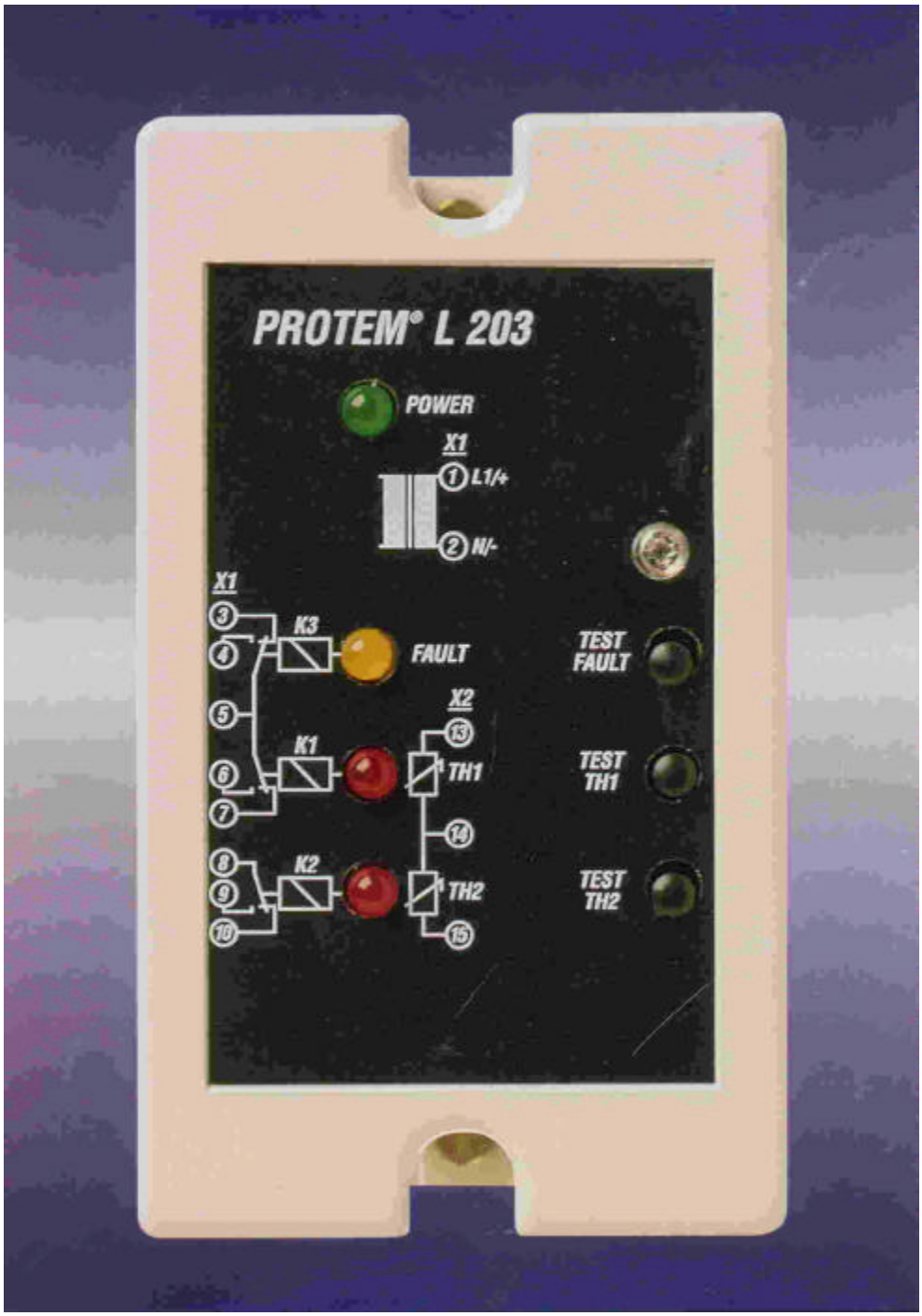
PAUWELS
ENERGY IS OUR BUSINESS



THERMAL PROTECTION EQUIPMENT FOR CAST RESIN TRANSFORMERS

USER MANUAL

UK VERSION 2.2 - 09/01

Table of Contents

1.0 GENERAL

The Protem L203 is a thermistor-driven device that provides protection against thermal overloading.

The Protem L203 is equipped with two independently operating channels. An output relay K1 or K2 with potential-free contacts has been assigned to each of the inputs.

A common-fault indicator indicates any discontinuity in the measuring sensors and/or the measuring cables by means of the yellow LED and the relay K3.

All inputs are electrically isolated from both the outputs and the power supply.

2.0 TECHNICAL DATA

2.1 - Power supply

24…220V DC + 10% / -5%
24…220V AC + 10% / -5% (1…45Hz)
24…250V AC + 15% / -5% (45…63Hz)

2.2 - Power consumption

approx. 2VA

2.3 - Operation temperature

-25°C…+60°C

2.4 - Measuring circuits

The two independent measuring circuits TH1 (warning) and TH2 (trip) must not be connected to the mains.

2.5 - Measuring sensors

Up to 6 PTC sensors can be connected to each measuring circuit.

PTC switching threshold	R on >3650Ω
	R off <1650Ω

2.6 - Relay data K1/K2/K3

K1 measuring circuit TH1 (warning)
K2 measuring circuit TH2 (trip)
K3 measuring circuit TH1 and TH2 (fault)

All relays are equipped with potential free contacts.

1 contact operation	2 contact operation
8A 220V AC (cos phi = 1.0)	5A 250V AC (cos phi = 1.0)
5A 250V AV (cos phi = 0.4)	3A 550V AC (cos phi = 0.4)
5A 30V DC (0 ms)	5A 30V DC (0 ms)

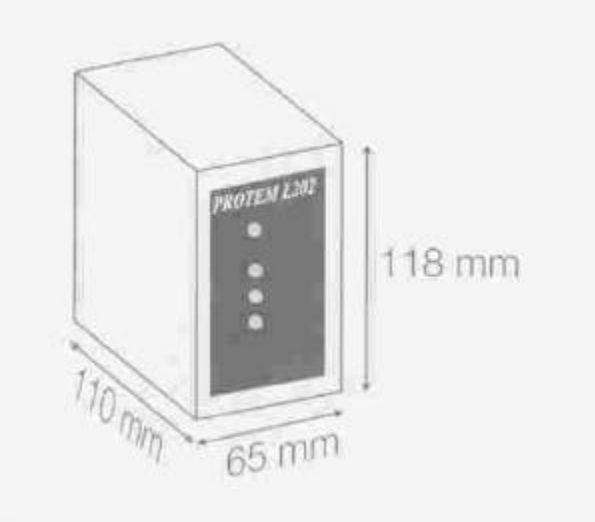
Hysteresis: $5x10^7$ (mech.) 10^5 (electr.)

2.7 - Fault

A fault indication implies that a sensor connection has been cut and/or the sensor is broken. This will be indicated by means of the yellow LED and a contact of the relay K3.

2.8 - Dimensions

65mmx110mmx118mm (LxWxH)



2.9 - Connection terminals

2.5mm^2 (contact and supply in the base of the unit)
1.5mm^2 plug in (PTC sensors)

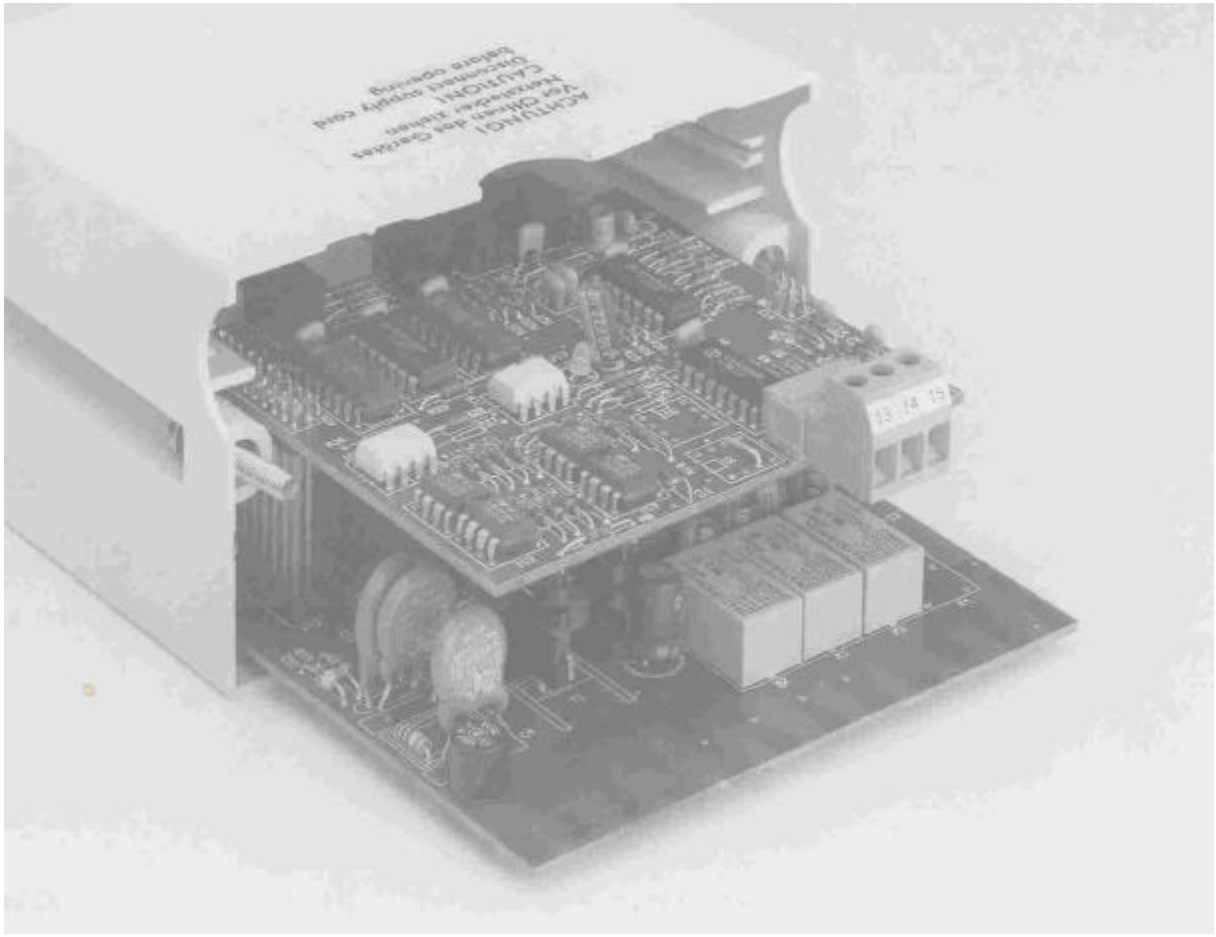
3.0 POWER SUPPLY

The device is supplied at the terminals X1/1 and 2, which are located in the mounting base of the unit.

The power input is designed as a universal power supply (see technical data)

Polarity need not to be taken into consideration when a DC supply is connected. However when an AC supply is connected, X1/1 has to be connected to L1, and X1/2 to N.

N.B. The device does not contain an emergency supply



4.0 MEASURING CIRCUITS / SENSORS

Two separate measurement circuits can be connected to the terminals X2/13-15 (see diagram).

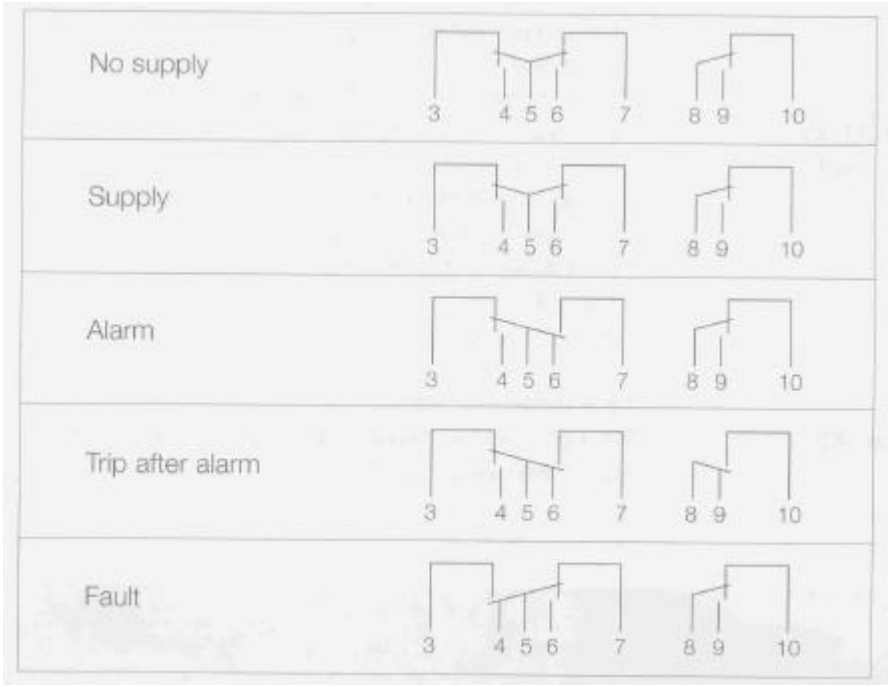
The choice of the sensor type determines the switching point of the relay.

5.0 LED INDICATORS

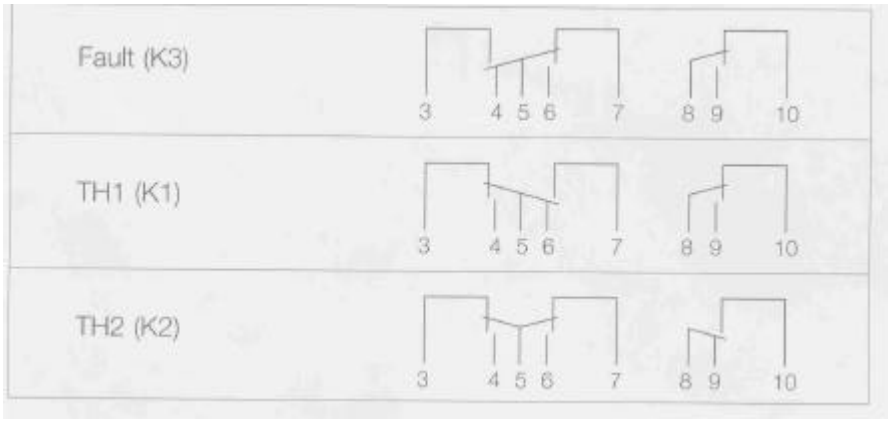
	Power	K1	K2	K3
Supply	ON	/	/	/
Alarm	ON	ON	/	/
Trip after alarm	ON	ON	ON	/
Fault	ON	/	/	ON

6.0 FUNCTIONAL DESCRIPTION

Contact positions normal operation



Contact positions during test



N.B. The instrument MUST be resent after either a fault or a trip has occurred. This can be achieved by pushing the test buttons.

7.0 CONNECTOR CONFIGURATION PLAN

Terminal X1 (on housing)	1 = supply DC + AC (L1) 2 = supply DC - AC (N) 3 = break contact K3 fault 4 = make contact K3 fault 5 = joint switching contact K1/K3 6 = make contact K1 warning 7 = break contact K1 warning 8 = joint switching contact K2 trip 9 = make contact K2 trip 10 = break contact K2 trip 11 = not used 12 = not used
Terminal X2	13 = measuring circuit TH1 14 = ground for measuring circuit TH1 and TH2 15 = measuring circuit TH2