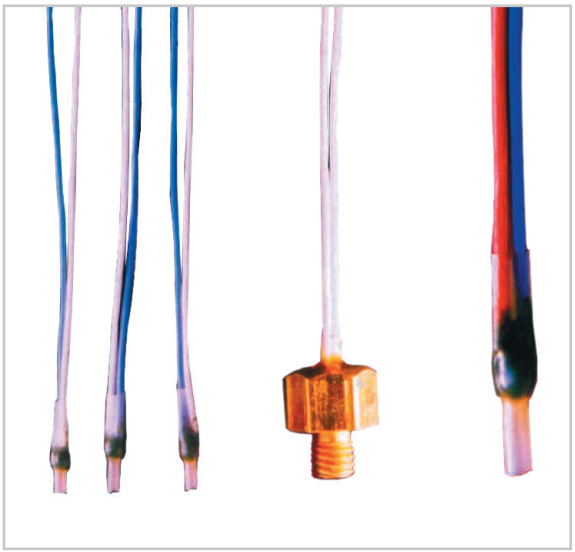
CYGM

Motor Protectors

PTC (Positive Temperature Coefficient)

CANTHERM

Supplying high-quality bimetal and thermal sensor products.



PTC Thermistors act as thermal protectors for electrical motors. They are available with or without an insulated sleeve and have flexible connecting leads. PTC thermistors have a non-linear resistance/ temperature response. At a specified temperature the resistance changes rapidly to a very high value.

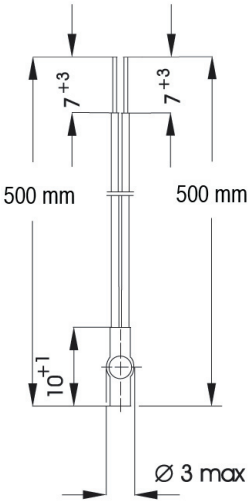
Features

- Rapid response protection for electrical machines
- Compact size for easy assembly into windings
- Silvered copper leads

CYGM1

Single Thermistor
with shrunk-sleeve & epoxy seal

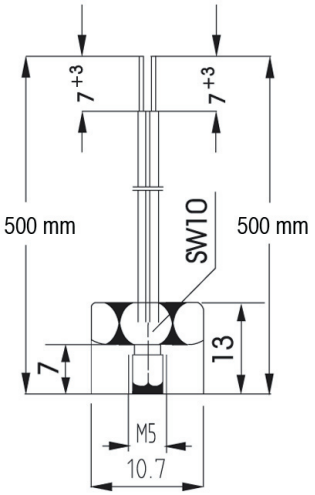
Type	Response Temp. δ_{NAT}	Colour Code
CYGM1 C508	80 ±5	white - white
CYGM1 C509	90 ±5	green - green
CYGM1 C510	100 ±5	red - red
CYGM1 C511	110 ±5	brown - brown
CYGM1 C512	120 ±5	grey - grey
CYGM1 C513	130 ±5	blue - blue
CYGM1 C514	140 ±5	white - blue
CYGM1 C545	145 ±5	white - black
CYGM1 C515	150 ±5	black - black
CYGM1 C655	155 ±5	blue - black
CYGM1 C516	160 ±5	blue - red
CYGM1 C517	170 ±5	white - green
CYGM1 C518	180 ±5	red - white



CEF1

Mount-on Sensor
in isolated brass/aluminium housing

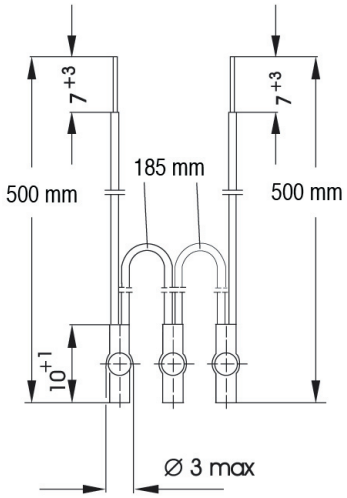
Type	Response Temp. δ_{NAT}	Colour Code
CEF1 C508	80 ±5	white - white
CEF1 C509	90 ±5	green - green
CEF1 C510	100 ±5	red - red
CEF1 C511	110 ±5	brown - brown
CEF1 C512	120 ±5	grey - grey
CEF1 C513	130 ±5	blue - blue
CEF1 C514	140 ±5	white - blue
CEF1 C545	145 ±5	white - black
CEF1 C515	150 ±5	black - black
CEF1 C655	155 ±5	blue - black
CEF1 C516	160 ±5	blue - red
CEF1 C517	170 ±5	white - green
CEF1 C518	180 ±5	red - white

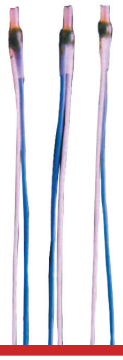


CYGM3

Triple Thermistor
with shrunk-sleeve & epoxy seal

Type	Response Temp. δ_{NAT}	Colour Code
CYGM3 C508	80 ±5	white - yellow - yellow - white
CYGM3 C509	90 ±5	green - yellow - yellow - green
CYGM3 C510	100 ±5	red - yellow - yellow - red
CYGM3 C511	110 ±5	brown - yellow - yellow - brown
CYGM3 C512	120 ±5	grey - yellow - yellow - grey
CYGM3 C513	130 ±5	blue - yellow - yellow - blue
CYGM3 C514	140 ±5	white - yellow - yellow - blue
CYGM3 C545	145 ±5	white - yellow - yellow - black
CYGM3 C515	150 ±5	black - yellow - yellow - black
CYGM3 C655	155 ±5	blue - yellow - yellow - black
CYGM3 C516	160 ±5	blue - yellow - yellow - red
CYGM3 C517	170 ±5	white - yellow - yellow - green
CYGM3 C518	180 ±5	red - yellow - yellow - white

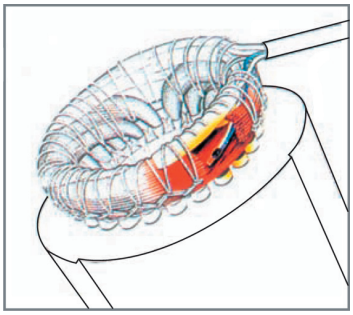




Operation

PTC thermistors exhibit very high sensitivity over a narrow temperature band. For temperature measurement in this range, NTC thermistors are easier to measure and more accurate.

PTC thermistors are especially suited as temperature sensors for monitoring the windings of electric machines, and also for use in simple fail-safe circuitry. When a given temperature (nominal response temperature δ_{NAT}) is exceeded, the circuit can be switched off through a relay or amplifier, since the PTC-sensor will have an extremely high ohmic value in the region of its response temperature. This will have the same effect as a break in the circuit or a failure of the thermistor.



Technical data

Nominal response temperature	80 ° to 180 °C in steps of 10 °, plus 145 ° and 155 °C
Maximum allowable operating temp.	$T_{max.}$ 200 °C
Max. allowable operating voltage at + 25 °C	$U_{max.}$ 25V (per bead)
Max. allowable power dissipation at + 25 °C	690 mW
Insulation strength (between leads and outer insulation) also for threaded sensor	2.5 kV
Conductors - silvered copper wire with teflon insulation	PTFE
Insulation stripping	approx 10 mm
Conductor cross-section	0.25 mm² for single, double and triple PTC's

Conductor lengths

Single PTC 500 mm ± 10 mm
Triple PTC 500 - 180 - 180 - 500 mm ± 10 mm

Special versions

PTC's are also available in many special housings (can be manufactured to customers specifications)

Installation tips

For PTC temperature sensors in electrical windings:
- the thermistors can only be inserted in the windings before impregnation
- it is advisable to embed one in each phase, if possible in the centre of the coil generating most heat, and generally on the outflow side of any air movement
- air inflow onto the temperature sensor will interfere with heat transfer
- if using varnish/lacquer which is not chemically neutral, suitability tests must be undertaken by the customer
- WARNING! It is very important that the sensor must be installed parallel with the copper of the winding, so that the teflon leads can assume the form of the rest of the winding and thereby retain the high- voltage resistance rating.

• PTC's are classified according to their nominal response temperature δ_{NAT} but all have similar resistance characteristics to simplify the choice of switching device; the relationship of resistance to temperature of all these PTC's is as follows:

Standard Resistance Values

Single PTC

Temperature °C	Resistance Ω	measuring Voltage V
– 20 to ϑ_{NAT} – 20	250 max./100 max.	2.5
ϑ_{NAT} – 5	550 max.	2.5
ϑ_{NAT}	1.000	2.5
ϑ_{NAT} + 5	1.330 min.	2.5
ϑ_{NAT} + 15	4.000 min	7.5

Triple PTC

Temperature °C	Resistance Ω	measuring Voltage V
– 20 to ϑ_{NAT} – 20	750 max./300 max.	7.5
ϑ_{NAT} – 5	1.650 max.	7.5
ϑ_{NAT} + 5	4.000 min.	7.5
ϑ_{NAT} + 15	4.000 min.*	7.5

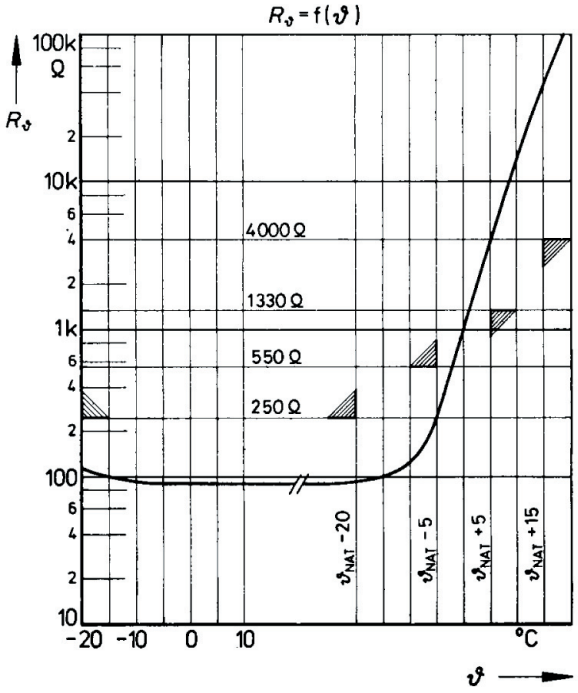
* one PTC might reach δ_{NAT} + 15 °C, while the second or even both of the others could still remain at room temperature.
The PTC's resistance values for motor protection are specified in DIN 44081/44082. Resistance values below δ_{NAT} –20 are not specified, and resistance when cold is no indication of the PTC's condition. It is ideally between 40 - 200 ohms but can be anywhere between 35 - 250 ohms.

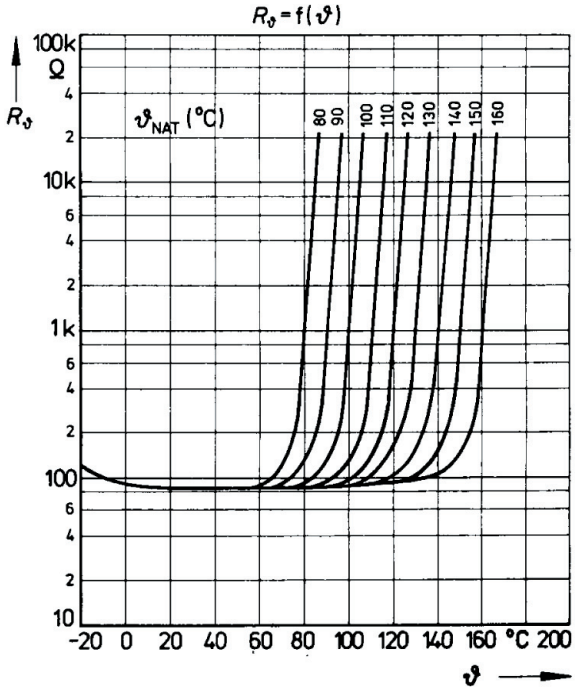
The greatest resistance change occurs between ±5 °C either side of δ_{NAT}, being at least 15%/K.

Quality standard

Random testing is carried out according to DGQ P90/P10 (DIN 40080). AQL values can be fixed by arrangement.

Temperature-Resistance Curve





Ordering Information

Quantity	Type	Temp. code No.	Resistance max.
1.000	CYGM1	C 510	250 ohms

CANTHERM

Supplying high-quality bimetal and thermal sensor products.

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Website: www.cantherm.com I Division of Microtherm

2011/MAY PTC

Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
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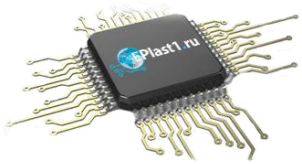
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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