

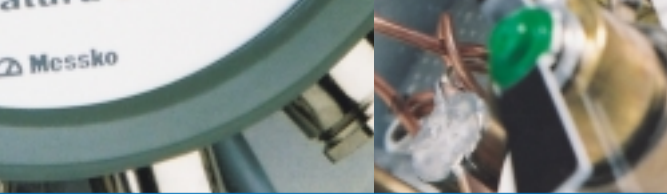
TRASY2 Type Series

Temperature Measuring Systems for Transformers



Messko





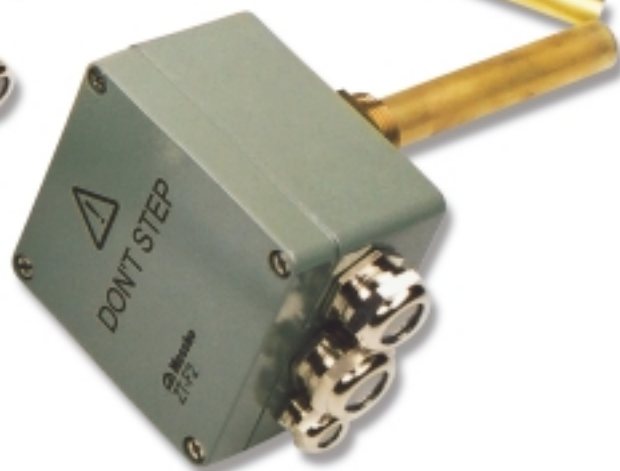
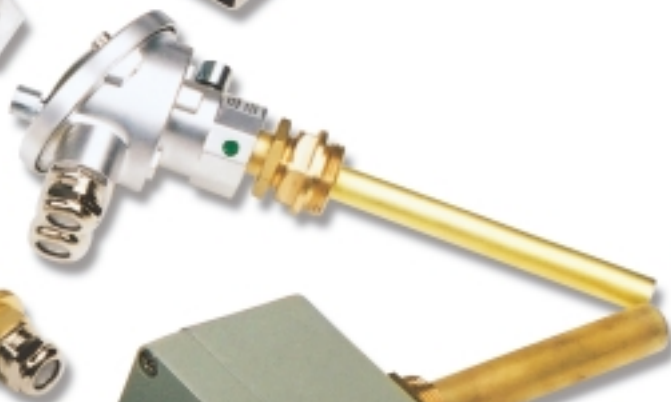
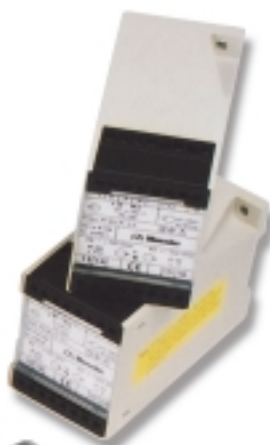
Modularity has a name – TRASY2

TRASY2 at a glance

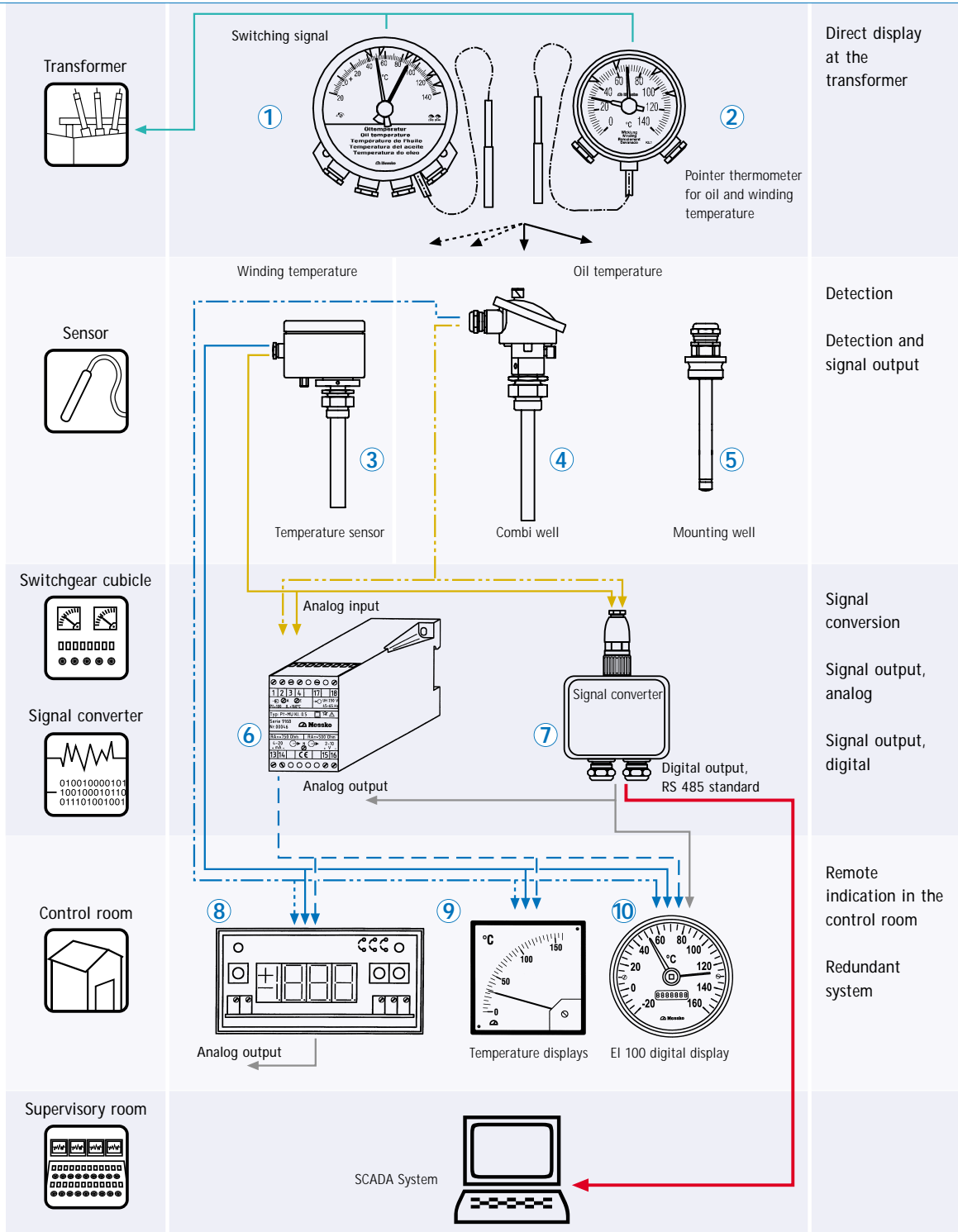
- extremely long-lived and functionally reliable
- modular-type system
- Bourdon tube: precise and robust, without additional mechanical elements
- two redundant measuring points in combination with Combi well or winding temperature sensor ZT-F2
- quick and easy gradient setting with fixed resistors (thermal image)
- ambient temperature compensation: no modification required – not even for extreme environments
- possibility of several different output signals: Cu10, PT100, 4 ... 20 mA
- in combination with the signal converter:
analog signals: 0 ... 1 m A; 0 ... 20 m A, 4 ... 20 m A, relay output
digital signals: RS 485
- no need of readjustments and/or re-calibration



°C



TRASYS2 – the functional modular system for temperature measuring



Direct display at the transformer

Detection
Detection and signal output

Signal conversion
Signal output, analog
Signal output, digital

Remote indication in the control room
Redundant system



Pointer thermometer for oil and winding temperature

Self-sufficient and non-energy dependent pointer thermometer featuring the following requirement profile:

- robust and long-lived technology (Bourdon tube)
- functionally reliable and accurate
- vibration-proof and outdoor-proof
- easy to install and commission
- low-maintenance

① MT-ST160F / MT-STW160F2 (Ø 160 mm)

The main application of pointer thermometer types MT-ST160F and MT-STW160F2 is temperature monitoring (winding/oil) in power transformers or large-size distribution transformers. They are equipped with micro-switches for external switching processes (ventilation control, alarm, trip) and are quick and easy to install. These robust pointer thermometers have been designed specifically for use under even the most diverse and exacting environmental conditions (heat, cold, ambient humidity). The measuring system (Bourdon tube, capillary tube, sensor) guarantees high-precision temperature displays without any need for re-calibration or readjustments, not even after decades of use!



Pointer thermometer für oil temperature
MT-ST160F; Ø 160 mm



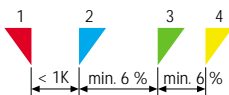
Pointer thermometer for winding temperature
MT-ST160F2; Ø 160 mm

② MTA -F100 / MTA-F100W (Ø 100 mm)

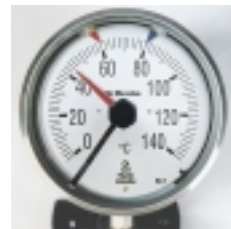
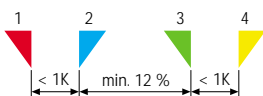
The functions of pointer thermometer types MTA-F100 and MTA-F100W are generally equivalent to the functions of the pointer thermometers specified above. Their smaller size, however, makes them ideally suited for application in switchgear cubicles and small or medium-sized distribution transformers.

Microswitch setting (switching distance)

1+2 Narrow circuitry, standard



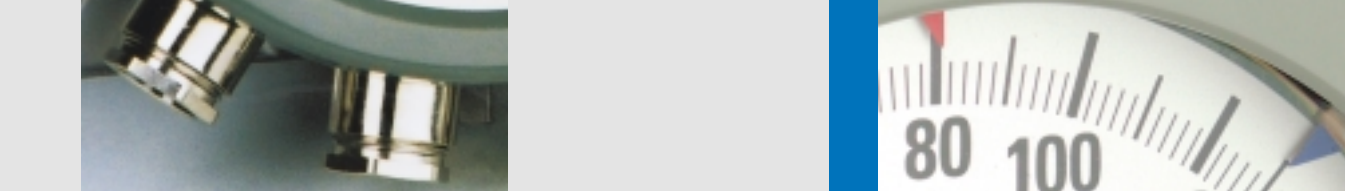
1+2 / 3+4 Narrow circuitry



Pointer thermometer for oil temperature
MTA-F100, Ø 100 mm



Pointer thermometer für winding temperature
MTA-F100W, Ø 100 mm



TRASY2 – as flexible as the tasks it manages

③ Winding Temperature sensor ZT-F2 for pointer thermometer

The ZT-F2 contains all heating elements required for representation of the winding temperature within the transformer. The temperature gradient between winding and coolant depends on the current present in the winding at any given time. This winding current is proportional to the secondary current of a current transformer mounted to a transformer.

The secondary transformer current feeds a heating resistor contained in the dipper tube of ZT-F2, thereby causing a progression of the display instrument - in relation to the respective transformer load - to the oil temperature actually measured.

Indication of the mean maximum winding temperature (= thermal image) is yielded by this indirect method.

Furthermore, the ZT-F2 permits the implementation of an additional sensor for direct mechanical displaying. Setting of the temperature gradient is a one-time event: it is adjusted only once at the time of commissioning, via the matching resistors.

In addition, the ZT-F2 supplies a temperature-proportional resistance signal, Pt 100 as per DIN IEC 751, for remote measuring value monitoring.

Optional output signals: Cu10 as per ANSI ASME PTC 19.3 or 4 ... 20 mA.

④ Combi well for pointer thermometer (oil temperature)

As specified under 5), albeit with an integrated measuring shunt Pt100 as per DIN IEC 751 for remote measuring value monitoring.

Optional output signals: Cu10 as per ANSI ASME PTC 19.3 or 4 ... 20 mA.

⑤ Mounting well for pointer thermometer (oil temperature)

Standard mounting well for installation of the oil thermometer in the thermometer pocket as per DIN 42 554. Kick protection against mechanical damages.

⑥ Measured value transducer Pt-MU

The Pt-MU measured value transducer converts the signals of a Pt100 to a uniform signal proportional to the temperature.

The measured value transducer is connected, for example, to the Pt100 connections on the ZT-F2 transformer temperature encoder or to the combi-mounting well. It conditions the output signals of these devices for further processing by the computer or electrical/electronic indication (D1272 PQ144). The Pt-MU is used where measured values must be transmitted over long distances or the transmission path contains interference.

The two output signals (4 ... 20 mA and 2 ... 10 V) are no-load and short-circuit proof. The two outputs may not be connected together. An auxiliary voltage (supply voltage: 230 V AC, 45-65 Hz) is required.

⑦ Signal converter TT30: maximum flexibility in adaptation and a maximum variety of signals

The TT30 signal converter's task is the conversion of sensor signals into analog and digital process signals. The TT30's user-friendly design allows quick and easy adaptation – both mechanical and electronic – to even the most diverse types of sensors. It's so easy to handle it can even be integrated into existing systems at a later date, without any need for modification work. That way, even older systems can be upgraded and made fit for remote measuring display tasks in the supervisory room.

That's why we call our TT30 concept 'Retrofit.'

The TT30 understands even the most diverse types of sensor signals which makes TT30 an epitome of versatility for just about any monitoring task: be it temperature, position, pressure or flow monitoring – the TT30 can do it all.

Input signals

PT100 (RTD) (3-conductor connection)

4 ... 20 mA (2-conductor connection)

0 ... 20 mA (3-conductor connection)

0 ... 5 Volt (3-conductor connection)

Angle of rotation (angle-of-rotation encoder)

Analog output signals:

0 ... 1 mA

0 ... 20 mA (Error signal > 22 mA)

4 ... 20 mA (Error signal < 3.6 mA)

4 ... 20 mA (Error signal > 22 mA)

Digital output signals:

RS 485

Relay output

⑧ Digital display D1270 /1272

The digital display types D1270 and 1272 PQ144 are used in the digital remote display of the oil and/or winding temperatures, and are connected with the analog output (PT100 or 4 ... 20 mA) of the combi well or the ZT-F2.

The optional selection of two freely adjustable limit value contacts and of various different output signals (4 ... 20 mA, 0 ... 5 V, 0 ... 10 V) for further signal processing is available as well.

⑨ Moving-coil instrument PQ96 / PQ144

The moving-coil instrument types PQ96 and PQ144 are used in the analog remote display of the oil and/or winding temperatures, and are connected with the analog output (PT100 or 4 ... 20 mA) of the combi well or the ZT-F2.



⑩ Electronic Indicator EI 100/160

The "electronic indicator EI 100/160" shows the temperature or a percentage output of any sensor. The information is indicated with an analog indicator instrument and a digital LCD display. The built-in max. memorized value can be reset by hand. The input signal is 4 ... 20 mA. The voltage supply is 24 V DC.

The EI 100 can be mounted with a holder (figure 1) or with a support (figure 2) in the switchgear cubicle. The EI 160 (figure 3) can be mounted in the switchgear cubicle or directly on the transformer.

The EI 100/160 is the ideal supplement for the thermometer with temperature transmitter (TT = 4 ... 20 mA) and can also be used in combination with "signal converter TT30."

The measured value can be presented in % or °C depending on the application.



figure 1 EI with holder



figure 2 EI with support



figure 3 EI 160

MT-ST160F / MT-STW160F2	Technical data
Housing (standard)	Steel plate, galvanized
Mounting ring and housing	Acrylic resin coated, Bayonet fixing ring with Silicone seal
Viewing glass	Laminated safety glass with UV filter
Temperature sensor	Brass, polished
Mounting plate	Stainless steel
Capillary tube	Copper capillary with insulating PVC tube; or insulating, flexible stainless-steel tube
Cable gland	M25 brass, nickel-plated
	Characteristic data
Measuring range	-20 ... 140°C or 0 ... 160°C
Tolerance	Category 1 as per DIN EN 13190
Place of installation	Indoors and outdoors, tropic-proof
Ambient temperature	-20 ... 80°C for the electronics (compensated); storage at -40 ... 100°C
Degree of protection	IP55 as per DIN VDE 0470-1
Ventilation	Thanks to the ventilation system included, the viewing glass will remain mist-free up to a level of 80 % of relative humidity
Maximum pointer	All thermometers are equipped with a resettable maximum pointer in red
Weight	approx. 2.5 kgs (6 metres of capillary line)
	Micro-switches
Quantity	1 ... 6 adjustable micro-switches (1 ... 4 change-over switches)
Contact load	AC: 250 V / 5 A / $\cos\phi = 1$ DC: 250 V / 0.4 A (non-inductive) 110 V / 0.6 A, 60 V / 1 A, 24 V / 4 A (non-inductive)
Switching interval	6 % of the measuring range
Contact material	Silver Cadmium Oxide (AgCdO10)
Rated insulation voltage	AC: 2,500 V / 1 min
Switch hysteresis	Approx. 5°C
Terminals	min. 0.25 mm ² / max. 2.5 mm ²

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