



The next generation thermometer from the global leader

- Six switch capability, sequentially independent, with adjustable hysteresis
- Reduce failure costs with reliable AKM bellows operation
- Widest range of inputs and outputs including double gradient onboard
- Simple to work on with the new smart design case
- Further reduce your costs with the high switching capability no extra components for fan bank control and alarm trip

Product Summary

Description Capillary based, mechanical, remote indicating thermometer where electrical power is not required for indication. Configurations for oil temperature measurement and winding temperature simulation. Features up to 6 flexible switches for alarm, trip, and cooling system functions and can be equipped with various electronic outputs for SCADA and remote monitoring applications.

Application For oil (liquid) or simulated winding temperature indication with integrated features for control or alarm functions. Designed for use where the point of measurement (the well or pocket) is not easily viewed by personnel requiring separate or remote indication.



AKM OTI/WTI remote mount thermometers

The next generation thermometer from the global leader

- Over 75 years of experience designing mechanical temperature measurement devices for transformers
- Over 250,000 capillary type thermometers in service worldwide in all environmental conditions
- Improved connection ease with a greater number cable glands; 3xM25 style and 2xM20 style
- Improved switching flexibility with up to 6 fully configurable switches
- New and improved swing out case design allows for easy cable connection, switch configuration and testing without removal of the cover

Accomplish the most demanding control and alarm configurations

- Up to 6 fully independent switches flexible enough for most control and alarm schemes
- Each switch can be specified by switch type, hysteresis range, and set point, without limitation of sequential set points
- Standard switch rated for up to 15 Amps AC and up to 10 Amp DC, switches also available for higher VDC (magnetic blow out, M.B.O.), and switches for milliamp loads-- see technical specifications for more information
- Various analog outputs also available (mA, Pt 100, and Cu 10) -- see technical specifications for more information
- Each switch can be specified with adjustable hysteresis (5 to 25°C)

Reduce costs with reliable AKM bellows operation

- Non-pressured bellows system better resists leakage when compared to bourdon tube (pressurized) style capillary thermometers
- Integrated heating element in bellows for winding temperature indication eliminates extra cost and complexity of accessories to simulate the winding
- AKM bellows system provides a 260° dial deflection (angle the pointer travels from minimum to maximum) making it easier to interpret temperature reading from a distance

Minimize installation complexity with all-in-one design

- Single enclosure design minimizes need for additional accessories such as matching units and heated wells commonly used by other mechanical temperature solutions
- New hinged cover enables easy access to switch settings and connections during installation while shielding device from elements. Features all captive screws and can be completely removed, if necessary
- Same installation footprint and mounting options as the previous generation AKM 345
- Improved wiring installation with addition of 2 cable glands (for a total of 5) and an increase in size to 3xM25 and 2xM20 versus the previous generation

Simplify operations by using one family of thermometer for all environmental conditions

- Wide range of options allow for standard use of one thermometer series across a wide array of applications and operating conditions
- Extreme temperature survivability with polar executions for use down to -60°C
- Enclosures with IP55 or IP65 rating with numerous mounting configurations available
- The most flexible switching capabilities available for implementation of any control and alarm configuration

New improved AKM 345

AKM BELLOWS TECHNOLOGY

System provides a 260° dial deflection (angle the pointer travels from minimum to maximum) making it easier to interpret temperature reading from a distance

AKM BELLOWS TECHNOLOGY

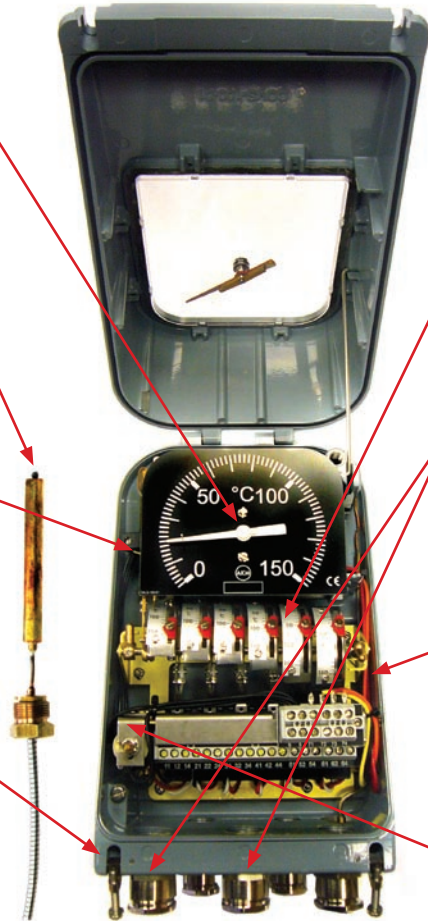
Non-pressured bellows system better resists leakage when compared to bourdon tube (pressurized) style capillary thermometers

AKM BELLOWS TECHNOLOGY

Integrated heating element in AKM bellows for winding temperature indication eliminates extra cost and complexity of accessories to simulate the winding

ONE FAMILY OF THERMOMETER FOR ALL ENVIRONMENTAL CONDITIONS

Enclosures with IP55 or IP65 rating with numerous mounting configurations available including extreme temperatures down to -60°C



NEW CASE DESIGN

Swing out case design allows for easy terminal block connection, switch configuration and testing without removal of the cover

NEW 6 SWITCH CAPABILITY

Up to 6 fully independent switches flexible enough for most control and alarm schemes

IMPROVED WIRING INSTALLATION

Improved wiring installation with addition of 2 cable glands (for a total of 5) and an increase in size to 3xM25 and 2xM20 versus the previous generation

ELECTRONIC OUTPUTS (USER UPGRADE KITS AVAILABLE)

Various analog outputs available (mA, Pt 100, and Cu 10) -- user upgrade possible via rear access panel by trained personnel.

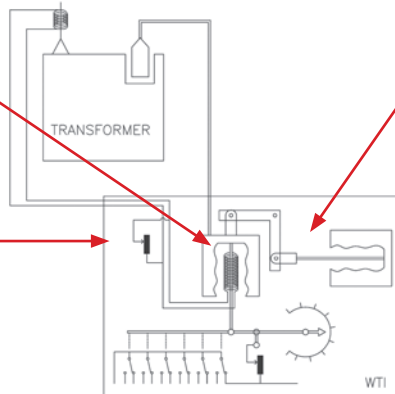
AKM345 DOUBLE GRADIENT OPTION

The Double Gradient option allows for setting two separate winding simulations in the same Winding Temperature Indicating Thermometer.

Winding system

Integrated heating element in AKM Measurement bellows simplifies winding temperature indication by eliminating the complexity of accessories to simulate the winding

Single enclosure design minimizes need for additional accessories such as matching units and heated wells commonly used by other mechanical temperature solutions



AKM Compensation bellows automatically compensates for ambient temperature



Options and accessories

Pockets/wells



- Pockets and wells available to fit all bulb types including IEC and ANSI standards

Remote indicators



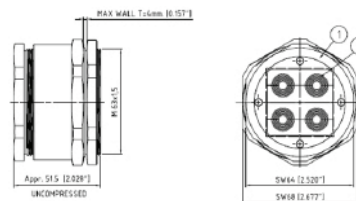
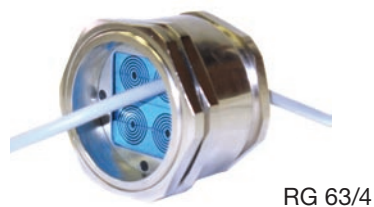
- Digital and analog indicators available for remote display of temperature measurement
- For use with 4-20 mA output option

Power supply



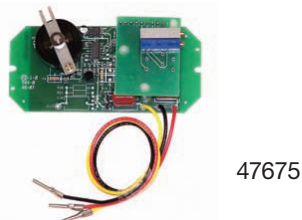
- For use with remote indicators and remote electronic outputs when 24 VDC is not available
- Universal Power Supply 85-264 VAC, 90-250 VDC
- Tolerance +10% or -15%
- DIN rail mounting

Pass through capillary gland



- For environmental isolation when capillary needs to pass through an enclosure

Electronic output user upgrade kit



- Add electronic output capability to units previously purchased without output
- Upgrade possible through back access panel by trained personnel only



Don't see what you need?

QUALITROL regularly creates models with special customer requirements.

Contact your local sales representative or QUALITROL Application Engineer to review your special requirements.



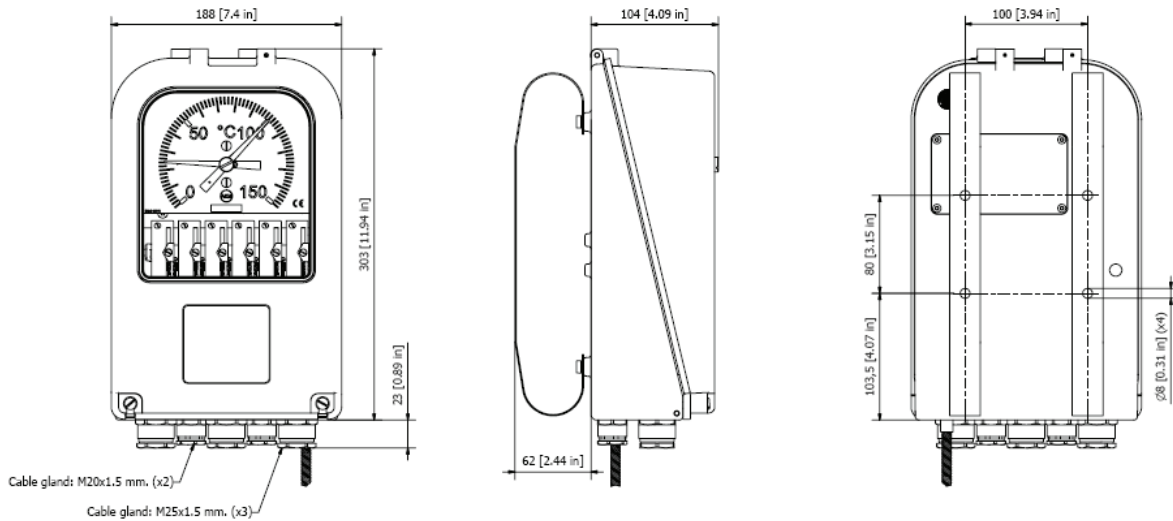
TECHNICAL SPECIFICATIONS

Materials	Housing	Die-cast aluminum, polyester powder coat finish
	Capillary	Copper or copper/nickel with stainless steel jacket
	Lens	UV stabilized polycarbonate (standard), glass optional
Functional specification	Indication accuracy	±1.5% full-scale
	Standard measurement range	0 to 150°C (32°F to 302°F)
	Bulb types	Standard: 14mm diameter x 156mm length Available: for wells per DIN 42554, ASA C57.12.00
	Winding thermal image	Internal winding simulation: TD50 5 Amp/TD50 (up to 2.2A CT Max) or TD76 (up to 2.65A CT max) External winding simulation: (AKM 44678) up to 2A CT or (AKM 44674) up to 1.2A CT max, matching unit (AKM 44677) for up to 5A CT max
	Mounting styles	Stainless steel anti-vibration mount (standard), elastomeric seismic mount optional
	Cover	Swing up cover design, fully detachable, with all captive hardware
	Cable glands	3 x M25, 2 x M20
	Output parameters	Number of switches
Switch types		VAC, VDC, M.B.O. (magnetic blow out, high DC)
Switching differential (hysteresis)		10° to 14°C for most dial ranges, optional adjustable differential from 5° to 25°C
Switching accuracy		± 3% full-scale
Optional remote outputs		Current loops: 0 to 1 or 4 to 20mA Voltage: 1-5V, etc... Resistive: Pt 100 or Cu 10 ohm
Environmental	Protection class	IP55 (standard), IP65 optional
	Dielectric isolation (hi pot)	2500 VAC at 50Hz, 60 seconds, all terminals to ground
	Surge withstand capability	IEEE C37.90.1 (TD111 output board only)
	Operating temperature	-40°C to 70°C (-40°F to 158°F), polar execution available -60°C to 50°C (-76°F to 122°F)
	Storage temperature	-50°C to 80°C (-58°F to 176°F)
	Humidity	95% non-condensing relative humidity @ 95°C (203°F)
	Vibration	50Hz/60Hz @ 0.1mm inch displacement, 3-axes
	Shock	10 G's half-sine, in three orthogonal planes



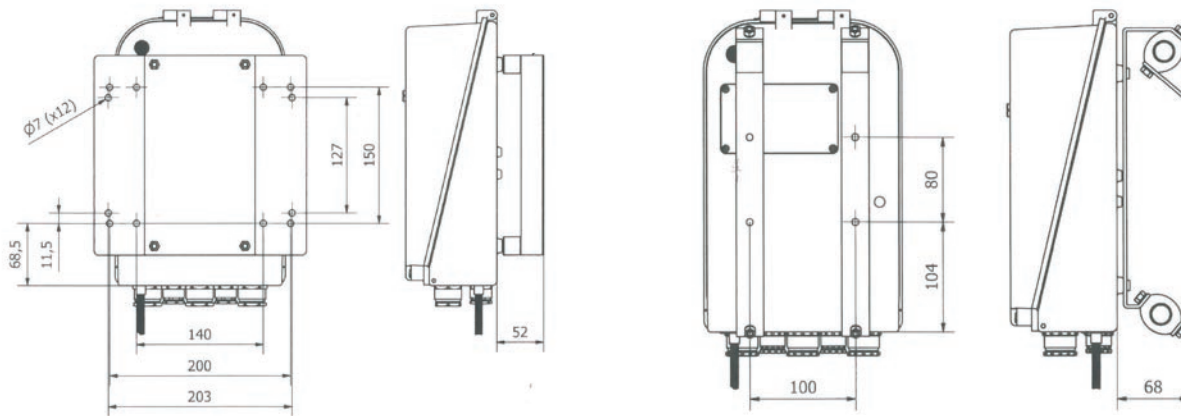
AKM 345 oil and winding thermometer

Standard mounting



Universal mounting

Siesmic mounting



QUALITROL® Field Services

To further improve reliability, QUALITROL provides comprehensive education and on-site commissioning services, maintenance contracts and technical support to all customers worldwide. Emergency response is available on all products and services.

About QUALITROL®

QUALITROL Company LLC manufactures substation and transformer monitoring and protection devices used by electric utilities and manufacturing companies. It is the global leader in sales and installations of transformer asset protection equipment, fault recorders and fault locators. Established in 1945, QUALITROL Company produces thousands of different types of products on demand, each customized to customers' unique requirements.

©2010 QUALITROL® Company LLC, an ISO 9001 system certified company. All rights reserved. Information subject to change without notice. All trademarks are properties of their respective companies, as noted herein. AP-T02-03A-02EN.