

Digital Reference Thermometer

Introduction

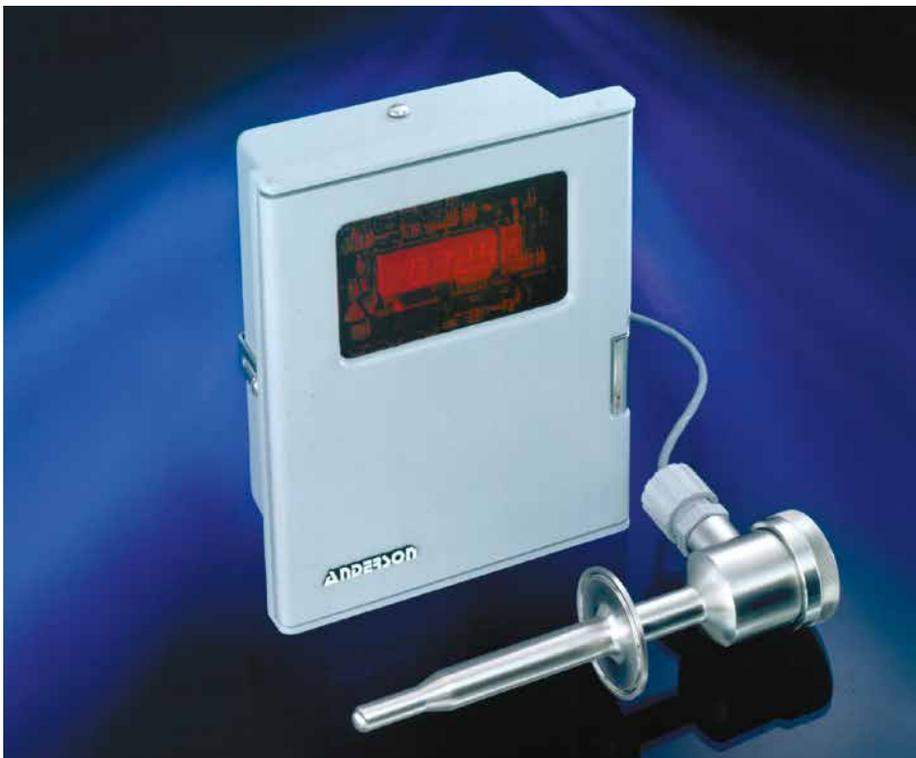
The "DART" Digital Reference Thermometer is the only digital thermometer available today that complies with the applicable provisions of the Pasteurized Milk Ordinance (PMO). With accuracy greater than twice that of mercury-in-glass pasteurization thermometers, the DART assures consistent processing. Unlike conventional thermometers which must be viewed at the process location, the "DART" display may be located up to 1500 feet from the sensor.

Its dual-element sensor and proprietary comparator circuitry assure fail-safe performance. Self-diagnostics guarantee continued, reliable service and an internal test feature allows for easy verification of accuracy and performance by regulators. The DART not only meets or exceeds the requirements of the PMO, it stands up to the demands of the pasteurization loop. Dual element DART sensors are built to meet 3-A standards, and are interchangeable requiring no field calibration. As with all critical temperature instruments, DARTs are calibrated to Anderson's exacting performance requirements and are traceable to the National Institute of Standards and Technology (N.I.S.T.).

For Retort applications, the unique features of the DART also meet the requirements of the updated 21 CFR Part 113 document covering the use of Alternative Temperature Indicating Devices (ATID's). The DARTs' dual element comparator circuit ensures that readings are never compromised. With the ability to locate the display up to 1500' from the sensor, Retort process monitoring can easily be performed in the control room.

Features

- Meets PMO Provisions
- Digital display reads to 0.1°F (0.01°C) providing precise and accurate temperature indication
- Display blanks providing failsafe performance if the differential between RTD elements exceeds .5° F; sensor fails; lead broken; electrical short
- Sensors can be easily replaced without the need to recalibrate the instrument and with no effect on the DART's accuracy
- Degree F/C is user selectable enabling global performance
- Meets requirements for use as Alternative Temperature Indicating Device (ATID) on Retort cookers
- Quick Disconnect Receptacle (QDR) sensor connection optional for Retort and
- Non-PMO applications



Specifications

SENSOR

Type: 8 wire, dual-element, resistive
 Material: Type 316 stainless steel
 Finish: Meets or exceeds 3-A sanitary standards (#09-08)
 Process Connections: Split ferrule or sanitary-clamp type available in various sizes.
 Wiring Connection: Integral conduit housing with cap sealable by health authority
 Cable Length: 25' standard, 1500' maximum
 Stability: Within 0.45°F (0.22°C) per year
 Calibrated Accuracy: ±0.1°F at 32°F and 212°F (±0.06°C at 0°C and 100°C)
 Linearity: ±0.036°F between 32°F and 212°F (±0.02°C between 0°C and 100°C)
 Interchangeability: ±0.10°F (±0.06°C)
 Service Range: -50°F to +350°F (-45°C to +176°C)

DIGITAL DISPLAY

Housing Type: Remote mount, wall or panel
 Housing Material: Die cast aluminum coated with two-part urethane paint
 Closure: Fully gasketed and splashproof (provision for health authority seal)
 Dimensions: 8-1/6" W x 10" H x 4" D
 Power: 115 Volt A.C. nominal, 50/60 Hz, 85.0 volt A.C. minimum, 138.0 Volt A.C. maximum
 Effect of Line Voltage Changes: None within stated minimum and maximum VAC
 Power Consumption: 5 watts maximum

Display: 1/2" LED, 4-1/2 active digits
 Display Value: Fahrenheit or Celsius, user selectable
 Display Range: -50°F to +350°F (-45°C to +176°C)
 Resolution: 0.1°F (0.01°C)
 Calibrated Accuracy: ±0.1°F (±0.06°C) at room temperature, 70°F - 80°F (21°C - 26°C)
 Linearity: ±0.1°F (±0.06°C)
 Repeatability: ±0.1°F (±0.01°C) at room temperature
 Ambient Temperature Limits: 40°F to 120°F (5°C to 49°C)
 Interchangeability: 0.1°F (±0.06°C)
 Long-term Stability: Within 0.5°F (0.28°C) per year
 Warm-up Time: One hour to meet stated specifications

OVERALL SPECIFICATIONS (Display Unit and Sensor)

Calibrated Accuracy: ±0.3°F (±0.16°C) including drift, linearity and repeatability
 Stability: 3 months minimum to calibrated accuracy
 Calibration Adjustment: "Fine" zero ±2.5°F (±1.39°C) only; (tracks for °F and °C)
 Speed of Response: All factory adjustments sealed
 Interchangeability of Cable: Within four seconds for standard PMO test (Appendix I, Test 7)
 Changing, adding or subtracting cable length has no effect on system specifications
 Special Applications: Consult factory

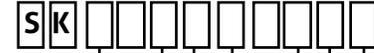
Order Information

DISPLAY



- THERMOMETER TYPE**
 - 1 Digital Reference Thermometer for Pasteurizers
 - 2 Digital Reference Thermometer for Retort and Non-PMO applications
 - 3 Digital Reference Thermometer with Quick Disconnect Receptacle(QDR) for Retort and Non-PMO applications
- VOLTAGE**
 - 1 115 VAC 50/60 Hz
 - 2 230 VAC 50/60 Hz
- RETRANSMISSION**
 - 0 None¹
 - 3 w/ 4-20mA Retransmission (only with code FD2 or FD3)
- RETRANSMISSION POWER**
 - 1 Internal
 - 2 External
- OFFSET POINT**
 - 1 -50°F 4 100°F
 - 2 0°F 5 150°F
 - 3 50°F 6 200°F
- SPAN**
 - 3 50°F 6 200°F
 - 4 100°F 7 250°F
 - 5 150°F 8 300°F
- FAIL MODE**
 - 1 Display Blanks and RTR signal goes to zero (0) mA
 - 2 Display Blanks and no effect on RTR signal

SENSOR



- FITTING (TRI-CLAMP)**
 - 004 1-1/2" Tri-Clamp
 - 005 2" Tri Clamp
 - 006 2-1/2" Tri Clamp
 - 007 3" Tri Clamp
 - 008 4" Tri Clamp
 - 061 Split Ferrule (button)
 - 062 Projectile Well (41247)³
 - 101 Projectile Well (41074)³
 - 119 3/4" Swagelok⁴
 - 120 1" Swagelok⁴
 - 179 Retort Port (1 1/4" x 18 UNEF)³
- HOUSING**
 - 1 Straight
 - 2 Bent (for split ferrule only)
- PROBE LENGTH²**
 - 025 2" (req'd for 119 fitting)
 - 029 2-1/4" (req'd for 120 fitting)
 - 081 5-1/2" (req'd for 004 thru 061)
 - 091 6-1/8" (req'd for 101 fitting)
 - 139 9-1/8" (req'd for 062 fitting)
 - 049 3 1/2" (optional for 179 fitting)
 - 091 6 1/8" (optional for 179 fitting)
 - 139 9 1/8" (optional for 179 fitting)
- CABLE LENGTH²**
 - 00 No Cable
 - 01 25'
 - 02 50'
 - 03 75'
 - 04 100'
 - 05 125'
 - 06 150'
 - 07 175'
 - 08 200'
 - 10 250'
 - 12 300'
 - 14 350'
 - 16 400'
 - 18 450'
 - 20 500'
- Quick Disconnect Option(FD3 only)**
 - A0 Quick Disconnect Receptacle(QDR) no cable
- Spare Parts**
 - 42117L0006 6' Molded Cordset
 - 42117L0025 25' Molded Cordset
 - 42117L0050 50' Molded Cordset
 - 42117L0100 100' Molded Cordset

¹ For Option "0", no additional coding required.
² For longer or intermediate lengths, consult factory.
³ Meets 3-A when used with a 3-A compliant well
⁴ Not 3-A compliant

"FH" Digital Temperature Gauge

Introduction

The Anderson-Negele DTG Digital Temperature Gauge carries on the tradition of accurate and reliable electronic temperature indication, while incorporating many new features tailored to a growing industry.

This "next generation" product provides high accuracy temperature monitoring in an operator friendly simple to read design. The DTG also offers new options for remote mounting as well as high and low switches for critical applications where user-defined setpoints can be easily programmed.

The battery-operated version can be ordered with or without a secondary 100 ohm 3-wire RTD. The secondary RTD option is ideal in applications that require local indication, as well as remote recording. As only one vessel penetration is required, a cost savings can be realized.

The DC powered version supplies two (2) SPST low voltage contacts assigned to the adjustable setpoints. An optional remote relay module is available that provides SPDT relays rated 6 amps at 250 VAC.

All models feature simple field calibration for fine tuning to the plant reference standard. As such, the DTG makes a perfect and cost-effective replacement for any mechanical thermometer, from bi-metals to mercury-in-glass. With resolution to a tenth of a degree, the DTG takes the guesswork out of reading dials and mercury columns.

Complete specifications and ordering information are available on the reverse. For additional information please visit us on the web at www.anderson-negele.com, or contact your local Authorized Anderson-Negele Distributor.

Authorizations



Features

- Ideal replacement for Mercury-In-Glass thermometers
- Models and fittings for Dairy, Fluid Food and Beverage Applications
- Operates on field replaceable batteries; DC switching version available
- Large Liquid Crystal Display makes viewing easy and repeatable
- All models offer field calibration capability



Specifications

Compliance:	3-A, NEMA 4X, IP-66	Internal Switch Rating:	1 amp at 24 VDC SPST
Product Contact Material:	Fitting & Probe: 316L SS	Remote Relay Rating:	6 amp at 250 VAC SPDT
Product Contact Finish:	Ra max = 32 micro inches	Power:	2 AA Industrial Grade Batteries (Style 0,1,5)
Non-Product Contact Surface:	Housing - 304 SS		9-30V DC external supply (Style 2)
	Lens - Polysulfone	Battery Life:	Style 0,1,5: 12 month minimum
Process Temp. Range:	0 to 300°F (-18 to 150°C)		Style 2: Externally powered
Units:	Deg F and Deg C; field selectable	Vibration:	10 to 60 Hz, 2g
Resolution:	0.1°F or °C	Warranty:	2 year
Accuracy:	+/- .75°F (+/-0.4°C)	Secondary Output:	Additional 100 ohm RTD, 3 wire DIN, wire via quick disconnect fitting (Style 1)
Repeatability:	+/-0.2% of full scale (+/-0.6°F)	Display Update:	3 seconds
Ambient Operating Limits:	40 to 140°F (4.4 to 60°C)	Calibration Adjustment:	Via onboard switches
Ambient Temp. Stability:	Better than 0.1°C per 10°C ambient shift		
Storage Temp.:	32 to 140°F (0 to 65°C)		
Display:	LCD: 4 digit main display, 6 digit secondary; 0.9" high contrast LCD		

Order Information

STYLE

- 0 Standard Thermometer
- 1 Thermometer w/ Optional RTD
- 2 Thermometer w/Dual Switches(DC power /SPST) ²
- 5 Remote Display Thermometer (must order mounting style 9)

DISPLAY UNITS

- 0 Deg F
- 1 Deg C

MOUNTING

- 1 Bottom
- 4 Back (90° elbow)
- A Back (90° adjustable elbow)
- 5 Left ⁴
- 6 Right ⁴
- 7 Top ⁴
- 8 Back (45° elbow)
- 9 Remote Display - Bottom Cable Exit

FITTING/INSERTION

<ul style="list-style-type: none"> 001-013 1/2" Tri-Clamp⁶ 1-1/4" 002-037 3/4" Tri-Clamp⁶ 2-3/4" 004-037 1-1/2" Tri-Clamp⁶ 2-3/4" 005-049 2" Tri-Clamp⁶ 3-1/2" 006-049 2-1/2" Tri-Clamp⁶ 3-1/2" 007-053 3" Tri-Clamp⁶ 3-3/4" 008-065 4" Tri-Clamp⁶ 4-1/2" 010-031 1-1/2" APC "K" ⁴ 2-3/8" 011-730 2" APC "K" ⁴ 2-25/32" 016-031 1-1/2" Cherry-Burrell "I" 2-3/8" 017-730 2" Cherry-Burrell "I" 2-25/32" 027-044 1-1/2" G&H "H" Line (male) 3 3/16" 028-056 2" G&H "H" Line (male) 3-15/16" 032-033 1-1/2" Cherry "Q" 2-1/2" 033-049 2" Cherry "Q" 3-1/2" 044-029 1-1/2" #14 Bevel Seat (with 13 H nut) ⁴ 2-1/4" 045-035 2" #14 Bevel Seat (w/ nut) ⁴ 2-5/8" 060-221 Umbrella 14-1/4" 060-360 Umbrella 22-15/16" 060-435 Umbrella 27-5/8" 060-532 Umbrella 33-11/16" 	<ul style="list-style-type: none"> 060-680 Umbrella 42-15/16" 061-077 Split Ferrule 5-1/4" 062-139 Projectile Well(41247) ⁵ 9-1/8" 063-161 Projectile Well(41280) ^{4,5} 10-1/2" 064-187 Projectile Well(41279) ^{4,5} 12-1/8" 084-033 Bi-Metal Well 1/2" NPT ⁵ 2-1/2" 084-057 Bi-Metal Well 1/2" NPT ⁵ 4" 084-089 Bi-Metal Well 1/2" NPT ⁵ 6" 084-137 Bi-Metal Well 1/2" NPT ⁵ 9" 084-185 Bi-Metal Well 1/2" NPT ^{4,5} 12" 084-233 Bi-Metal Well 1/2" NPT ^{4,5} 15" 084-281 Bi-Metal Well 1/2" NPT ^{4,5} 18" 084-377 Bi-Metal Well 1/2" NPT ^{4,5} 24" 100-049 Industrial well(41070) ⁶ 3-1/2" 101-091 Industrial well(41074) ⁶ 6-1/8"
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REMOTE DISPLAY CABLE LENGTH

- 0 None
- 5 5' (style 5)
- 6 10' (style 5)
- 7 15' (style 5)
- 8 20' (style 5)

CABLE LENGTH

- 00 None (style 0,2 ³ or 5)
- 02 10' (style 1, 2 or 2 w/AC module)
- 04 20' (style 1, 2 or 2 w/AC module)
- 06 30' (style 1, 2 or 2 w/AC module)
- 08 40' (style 1, 2 or 2 w/AC module)
- 10 50' (style 1, 2 or 2 w/AC module)
- 15 75' (style 1, 2 or 2 w/AC module)
- 20 100' (style 1, 2 or 2 w/AC module)

PROBE

- 0 Standard probe (choose for projectile well fittings)
- 1 Heavy duty probe ¹ (recommended for lengths over 6")

Mounting

¹ Heavy Duty Probes with 3/4" Dia., insertion lengths from 3-1/2" to 43-1/2" available for standard fittings, Tri-Clamp®, Cherry "I", Bevel Seat and Umbrella
Consult factory for other fittings.

² For AC Relays, order remote relay module# PM0606004

³ Style 2 supplied with 90° Field Wireable Connector, no cable

⁴ Sensors with these options are non-cancellable/non-returnable for credit.

⁵ Meets 3-A when used with a 3-A compliant well

⁶ Not 3-A Compliant

05055 / 2.0 / 2015-03-20 / GR / NA

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