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# DIGI-STEM<sup>®</sup>

## Thermometer and Transmitter Systems

Measure Process Temperatures  
with Digital Accuracy

Rigid & Remote Sensor Systems

RTD or Thermocouple Output

**PALMER Wahl**  
INSTRUMENTATION GROUP

*173 Years of Continued Innovation*  
*ISO 9001:2000 CERTIFIED*

## Digi-Stem<sup>®</sup> Thermometers and Transmitters



Digi-Stem Thermometer  
with Brazed Stem

- Selectable Stems, Integral or Remote
- Large 1 inch LCD Continuous Display
- Easy to Read from Over 20 Feet
- Battery Operated
- Meter Accuracies from  $\pm 0.3^{\circ}\text{F}$  ( $\pm 0.2^{\circ}\text{C}$ )
- Factory Calibration Lot Traceable to NIST
- Direct Replacement for Bimetal, Mercury-in-Glass, Bulb and Capillary Thermometers
- Temperature Ranges from 0 to 800°F (-20 to 425°C)
- Easy to Install
- NEMA-4X Stainless Housing
- Hose-Down Proof, Vibration Tolerant
- Optional RTD or Thermocouple Output
- 4-20mA Transmitter with Local Display, Loop Power

Wahl's Digi-Stem Thermometer and Transmitter Systems provide digital accuracy and reliability for temperature measurements in rugged industrial environments.

Our variety of rigid stems and remote interface connections accommodate most installations.

### A Quick Look at Models Most Often Specified

Model	DST200	DST300	DST310
Range	0 to 199.9°F -20 to 130°C	0 to 300°F	200 to 800°F 100 to 425°C
Display Resolution	0.1°F or °C	0.1°F: 0 to 150°F 1°F: above 150°F	1°F or °C
Meter Accuracy	$\pm 0.3^{\circ}\text{F}$ $\pm 0.2^{\circ}\text{C}$	$\pm 1.1^{\circ}\text{F}$ : 0 to 150°F $\pm 2^{\circ}\text{F}$ : above 150°F	$\pm 2^{\circ}\text{F}$ : 200 to 600°F $\pm 2^{\circ}\text{C}$ : 100 to 425°C

*Specifications subject to change*

### Approvals

3-A Sanitary Standard 74-03 Authorization	Intrinsically Safe FM Approved	Housing per NEMA-4X
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# Digi-Stem®

## Thermometers and Transmitters

### Remote Sensor Systems

Digi-Stem is offered in a variety of configurations to measure process temperatures remotely located from the meter. Optional remote sensor cables are available with different stem configurations. Stems can be specified for a variety of process connections or interfaces, including different thermowell adapters, penetration probes and immersion probes. See Ordering Guide on pages 5 and 6.

### RTD or Thermocouple Output

**Direct Connection:** Wahl provides Digi-Stems with optional dual-element temperature sensors in the stem for direct connection to recorders and controllers. The primary sensor drives the local display while the dedicated secondary sensor (RTD or Thermocouple) provides access to a 3- or 4-wire RTD circuit or a Thermocouple system interface. The connecting port is 1/2" NPT.

**In Situ Calibration:** Specify option DSA392M or DSA392HP for in situ calibration of Digi Stem Model DST200 without removal from a process. This instrument has an RTD as the secondary sensor, which allows single-point calibration using Wahl's highly accurate platinum-RTD Heat Prober 392 Meter. This provides the accuracy of a laboratory calibration, and saves time as well as money.

### Transmitter Systems

Wahl offers loop-powered transmitter versions of Digi-Stem with continuous, digital, local display. The transmitter is an integral meter and electronics assembly in NEMA-4X housing with a 4-20mA, 2-wire current loop. Model DSX300 has a temperature range of 0 to 300°F (-18 to 150°C), while Model DSX310's range is 200 to 800°F (100 to 425°C). The transmitters incorporate all Digi-Stem family features, including stainless steel construction, large digital display, reliability, and rugged construction.



Digi-Stem with Sanitary Stem

### Stainless Steel Stems

**Cut-to-Length:** Compression seal; for direct immersion in fluids and for thermowell applications.

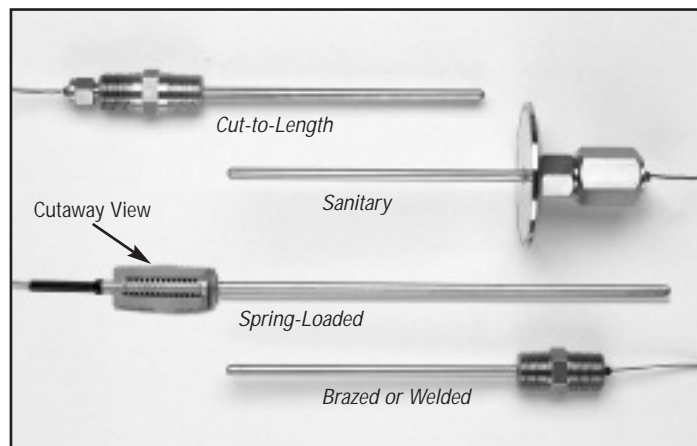
**Sanitary:** Authorized 3-A Sanitary Standard 74-03 for 1.5" to 3.0" diameter tube sizes with tri-clamp fitting for milk, food and pharmaceutical processing.

**Spring Loaded:** Maintains a positive force against the bottom of thermowells; not for direct immersion in fluids; assembly is not sealed.

**Brazed\*:** For use in thermowells.

**Welded\*:** Sealed for immersion in fluids; for use in thermowells, sanitary, and high-pressure applications.

\*Note: some connections include 1/2" of threads when measuring probe length. Contact Customer Service for information.



Stainless Steel Stems

Calibration Services Available

## Meter Specifications

		Battery Powered Display			Display Transmitters	
Model		DST200	DST300	DST310	DSX300	DSX310
Range	Standard °F or °C	0.0 to 199.9°F -20.0 to 130°C	0.0 to 300°F	200 to 800°F 100 to 425°C	0.0 to 300°F -18.0 to 150°C	200 to 800°F 100 to 425°C
	Option	Option DSA20: 0.0 to 199.9°C Option DSA21: -20.0 to 150°C	Option DSA 30: 0.0 to 600°F	Option DSA 31: 0 to 800°F or 0 to 425°C	N/A	N/A
Display Resolution		0.1°F or °C	0.1°F : 0.0 to 150°F 1°F: above 150°F	1°F or °C	0.1°F : 0.0 to 150°F 1°: 150°F to 300°F 0.1°C	1°F or °C
Meter Accuracy Display & Loop @ 75°F (±1 LSD included)		±0.3°F ±0.2°C	±1.1°: 0.0 to 150°F ±2°: above 150°F	±2°F: 200 to 600°F ±4°F: elsewhere ±2°C: 100 to 425°C	±1.1°F: 0 to 150°F ±2°F: 150 to 300°F ±0.7°C: -18.0 to 150°C	±2°: 200 to 600°F +4 / -2°: 600 to 800°F ±4° over entire range
	Option	Option DSA21: ±0/0.4°C @ 150°C	N/A	N/A	N/A	N/A
Point Calibration		External	Internal			
Ambient Temp. Rated Accuracy Operating*		20 to 130°F (-7 to 54°C) with Alkaline Batteries 20 to 158°F (-7 to 70°C) with Lithium Battery			20 to 158°F (-7 to 70°C)	
Ambient Temp. Coefficient		0.02 deg/deg from 75°F	0.04 deg/deg from 75°F			
Material		Meter Case, Fittings, Stems: 300 Series Stainless Steel Window and Molding: Polycarbonate    Gasket: Silicone, O-Ring Sealed				
Battery Power Battery Life		2 Alkaline** 18 months	1 Lithium 2 years	2 Alkaline** 18 months	N/A	N/A
Loop Power		N/A			12/42 V DC min/max	
Loop Output		N/A			4-20 mA; fixed zero and span	
Housing		Rating NEMA 4-X. Dimensions: 5.3"W x 4.3"H x 2.7"D (13.5 x 10.9 x 6.9 cm); weight: 2 lbs. (1kg)				

\*Temperature Rating for Alkaline Batteries: -20 to 130°F ; for Lithium Batteries: -40 to 185°F

\*\* "C" Cell Alkaline Batteries

Specifications subject to change without notice



### Stainless Steel Stems

When measuring the probe length for your Digi-Stem Rigid Stem Sensors or some Remote Stem Sensors the measurement includes 1/2" of the threads, depending on the connection.

Please contact Wahl Customer Service at 1-800-421-2853 for more information. Also, see Ordering Guide on pages 5 and 6.



# Ordering Guide for Meters and Rigid Stem Sensors

**Digi-Stem®  
Meters and Rigid  
Stem Sensors**

## DIGI-STEM® METERS FOR RIGID & REMOTE SENSORS

*Insert Model Number Code in white boxes at bottom of table to construct Part Number for product desired.*

Code	Meter Description
DST200	Meter, 0.0/199.9°F (-20.0/130.0°C), Battery Powered Display
DST300	Meter, 0.0/300°F, (Not available in C), Battery Powered Display
DST310	Meter, 200/800°F (100/425°C), Battery Powered Display
DSX300	Meter, 0.0/300°F (-18.0/150.0°C), Loop Powered, 4-20mA, Display Transmitter
DSX310	Meter, 200/800°F (100/425°C), Loop Powered, 4-20mA, Display Transmitter
Code	Scale
F or C	Fahrenheit or Celsius <i>Stop here if ordering Meter only. To order Meter with Rigid Stem Sensor continue below.</i>

*To order Meter with Remote Stem Sensor see page 6, and order as a separate line item.*

## DIGI-STEM® RIGID STEM SENSORS

<i>Start here → if ordering Replacement Probe only</i>	Code	Rigid Probe (This Code is not required if ordering complete unit)
	DSTP	Grounded Stem (for DST Display Meters)
	DSXP	Ungrounded Stem (for DSX Display Transmitters)

<i>Continue here → if ordering complete unit</i>	Code	Process Connections
	12	1/2" NPT Fitting (Standard)
	13	3/4" NPT Adapter
	20	1-1/4" x 18 NEF2 Thermowell Adapter
	30	1-1/2" Diameter 3-A Sanitary Std. 74-02, Welded (Stem Material Codes 2 or 3 only)
	31	2" Diameter 3-A Sanitary Std. 74-02, Welded (Stem Material Codes 2 or 3 only)
	32	2-1/2" Diameter 3-A Sanitary Std. 74-02, Welded (Stem Material Codes 2 or 3 only)
	33	3" Diameter 3-A Sanitary Std. 74-02, Welded (Stem Material Codes 2 or 3 only)
	50	Union Thermowell Fitting, 1-1/4" x 18 NEF2
	Code	Stem Type
	1	Cut to Length (User), 12" Std (Shipped in 6" increments thereafter)
	2	Cut to Length (Factory)
	3	Brazed
	4	Welded (included with all 3A Connections)
	5	Spring Loaded (not available with Connection Code 50)
	Code	Stem Material
	1	304SS, Temp Rating 400°F (Standard)
	2	316SS, Temp Rating 400°F
	3	316SS, Temp Rating 900°F
	4	304SS, Temp Rating 900°F
	Code	Stem Tip Diameter
	2	1/4" Diameter (Standard)
	3	3/8" Diameter with Stem Adapter
	4	1/2" Diameter with Stem Adapter
	5	7/16" Diameter with Stem Adapter, Tapered
	6	7/16" Diameter with Stem Adapter, not Tapered

*Insert Model Number Code in white boxes  
below to construct Part Number  
for product desired.*

Code	Stem Lengths <sup>1</sup>
01-12	1" to 12" (12" Std)(Specify exact length desired)
13-99	13" to 99" add per inches over 12" (Specify)
	over 99" in length (Specify exact length desired)

<sup>1</sup> Fractional Lengths available: A = 1/4", B = 1/2", C = 3/4" Example: 08C = 8-3/4"

**Calibration Services Available**

*Specifications subject to change without notice*

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# Ordering Guide for Remote Stem Sensors

DIGI-STEM REMOTE STEM SENSORS						
<i>Insert Model Number Code in white boxes below to construct Part Number for product desired.</i>						
Code	Remote Probe <i>Start here when ordering a Remote Stem Sensor separately or as part of a complete unit with a Meter.</i>					
DSTP	Grounded Stem (for DST Display Meters)					
DSXP	Ungrounded Stem ( for DSX Display Transmitters)					
	Code	Remote Cable Type (and/or Remote Probe)				
	40	PVC				
	41	Teflon Covered				
	42	Armored				
	44	Coiled (TPE Insulated only)				
	Code	Remote Cable Lengths <sup>1</sup>				
	01-06	Codes 40, 41, 42 (above) only, Code 06 = 6 foot length Std, (Specify exact length desired 01 = 1 ft, etc)				
	07-99	7 to 99 feet - PVC or Teflon, add per foot over 6' (Specify exact length desired)				
	07-99	7 to 99 feet - Armored, add per foot over 6' (Specify exact length desired)				
	01	Code 44 (above) - Coiled only, 5:1 Expansion Ratio, Code 01 = 1 Foot (Standard)				
	02-04	Code 02 = 2 ft, 03 = 3ft, 04 = 4ft, (Add per ft over 1 ft) (Specify exact length desired)				
	Code	Remote Stem Material				
	1	304SS, Temperature Rating 400°F (Standard)				
	2	316SS, Temperature Rating 400°F				
	3	316SS, Temperature Rating 900°F				
	4	304SS, Temperature Rating 900°F				
	Code	Remote Stem Tip Diameter/Termination				
	2	1/4" Diameter (Standard)				
	3	3/8" Diameter with Stem Adapter				
	4	1/2" Diameter with Stem Adapter				
	5	7/16" Diameter with Stem Adapter, Tapered				
	6	7/16" Diameter with Stem Adapter, not Tapered				
	8	TC817 Style Piercing Probe w Handle (Note: if ordering this Tip, Part Number ends here)				
	Code	Remote Stem Connections/Fittings (insert 0 if not applicable)				
	1	1/2" NPT Compression				
	2	1/2" NPT Compression w/ 3/4" NPT Adapter.				
	3	1-1/4X18 NEF2 Thermowell Adapter				
	5	Union Thermowell Fitting, 1-1/4X18 NEF2				
6A	1-1/2" Diameter 3-A Sanitary Std 74-02, Welded (Remote Stem Material Codes 2 or 3 only)					
6B	2" Diameter 3-A Sanitary Std 74-02, Welded (Remote Stem Material Codes 2 or 3 only)					
6C	2-1/2" Diameter 3-A Sanitary Std 74-02, Welded (Remote Stem Material Codes 2 or 3 only)					
6D	3" Diameter 3-A Sanitary Std 74-02, Welded (Remote Stem Material Codes 2 or 3 only)					
7	1/2" NPT - Brazed					
8	1/2" NPT - Welded (Included w/ all 3A Connections)					
9	1/2" NPT - Spring Loaded (Not Avail. w/Conn Code 50)					
<i>Insert Model Number Code in white boxes below to construct Part Number for product desired.</i>		Code	Remote Stem Lengths <sup>2</sup>			
		01-12	1" to 12" (12" Standard)(Specify exact length desired)			
		13-99	13" to 99" (add per inches over 12")(Specify length)			
			over 99" in length (Specify exact length desired)			

<sup>1</sup> 01= 1 foot, 02 =2 feet, 03 = 3 feet, etc. <sup>2</sup> Fractional Lengths available: A =1/4", B =1/2", C = 3/4" Example: 08C = 8-3/4"

Specifications subject to change without notice

# Options and Accessories

## Digi-Stem® Options and Accessories

ADDITIONAL OPTIONS FOR DIGI-STEM THERMOMETERS	
	<i>Order as separate line items from Meter Model Numbers</i>
<b>Code</b>	<b>Range Expansion Options</b>
D1284-2	Range Ext, DST310/DSA31, -30/125°C
D1284-3	Range Ext, DST200F, -50/200°F
D1284-4	Range Ext, DST200F, -50/1450°F *
DSA20	Range Ext. DST200C, 0/199.9°C
DSA21	Range Ext. DST200C, -20/150°C
DSA30	Range Ext. DST300F, 0.0/600°F *
DSA31	Range Ext. DST310F/C, 0/800°F or 0/425°C *
* Stem Material Codes 3 & 4 only	
<b>Code</b>	<b>Secondary Element Options</b>
DSA204-3	Secondary Element Direct RTD Access 3-wire
DSA204-4	Secondary Element Direct RTD Access 4-wire
DSA205J	Secondary Element Type J Thermocouple
DSA205K	Secondary Element Type K Thermocouple
DSA392HP	Secondary Element Stem/Wahl 392HP Meter
DSA392M	Secondary Element Stem/Wahl 392 Meter
<b>Code</b>	<b>Cables</b>
DSAC392HP	Interface Cable, Wahl 392HP Meter
DSAC392M	Interface Cable, Wahl 392 Meter
<b>Code</b>	<b>Batteries</b>
DSA3060	Lithium Battery
DSA3061	Alkaline Battery, Type C, Set of 2
<b>Code</b>	<b>Certifications</b>
DSAFMT	DST Intrinsically Safe Ratings*
DSAFMX	DSX Intrinsically Safe Ratings*
DSTNIST	NIST Calibration Test Report
<b>Code</b>	<b>Miscellaneous Options</b>
DSA3020	Tube Cutter 1/8" x 1-1/8"
DSA3030	Wall Mount Bracket
DSA3121	High Humidity/Moisture Resistant Conformal Coating**
DSA3130	Thermowell Adapter Kit
13146	90 Degree Elbow

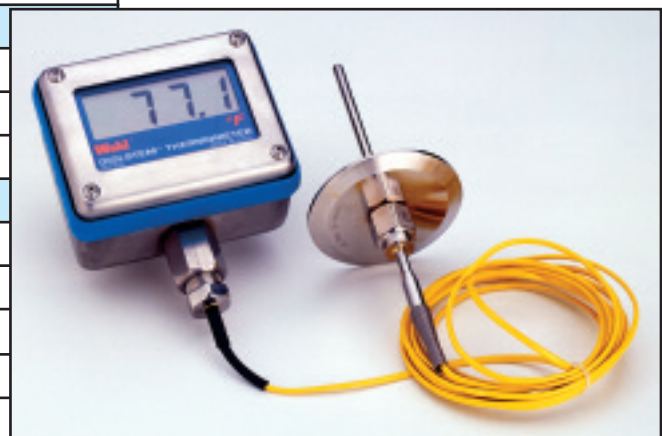
\*Class I, II, III, Division 1 & 2, Groups A, B, C, D, E, F, & G

\*\*for DST units (Standard on DSX units)

Specifications subject to change without notice



Digi-Stem Remote Transmitter with DSA3030 Wall Bracket



Digi-Stem Meter DST300 with Wahl Heat Prober® Sanitary Remote Model #DSTP4010226C04.



Calibration Services Available

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The World's Finest Manufacturers of Industrial  
Temperature, Pressure, Humidity, Test and Calibration Instruments

CALIBRATION SERVICES

Wahl designs and manufactures to the most stringent quality standards. We provide certified, traceable calibration data in support of companies whose requirements include meeting ISO 9000, FAA and FDA quality standards. Calibrations to both IPTS-68 and ITS-90 are available. Choose from two levels of calibrations services to meet your quality system requirements.

**STANDARD CERTIFICATION:** Unit is calibrated to factory specifications using NIST traceable equipment. Unit is provided with:

**Certificate of Conformance\*** - Statement that our product meets published specifications. Included when you buy a new product.

**Calibration Sticker\*** - (or tag) Advising you of the date your instrument(s) was/were calibrated, and the suggested date for its next calibration. This is provided when you buy a new product and when you return a product for calibration. (\*Most Products)

**NIST TRACEABLE TEST REPORT:** Unit is calibrated to factory specifications using NIST Traceable equipment. Unit is provided with:

**NIST Traceable Test Report** - Our quality Management system is certified to conform to ISO9001:2000. We maintain a calibration system in conformance with ANSI/NCCL Z-540 and MIL-STD-45662A.



**"Before" and "After" Data** with Out of Tolerance conditions noted.

**Calibration Sticker** (see above).

REPAIR AND OTHER SERVICES

**REGISTER YOUR PRODUCT:** Registration is fast and easy. In about a minute you can register your product for Warranty Protection and our Calibration Reminder Service to keep your QC Program in compliance. Go to [www.palmerwahl.com/register](http://www.palmerwahl.com/register).

**REPAIR SERVICES:** Palmer Wahl offers repair and calibration services on most products we sell. Contact Customer Service for pricing, and an RMA. Please see note below.

**Detailed Repair Report** - Available upon request, this report provides details of evaluation and repairs made.

**Custom Points** - Palmer Wahl will calibrate your instruments at your specified temperatures.

**Special Requests** - When calibrating your instrument, our experienced personnel will help you to achieve the level of quality that you need in your facility.

**Note:** You must have a **Return Merchandise Authorization Number**, (RMA) before returning a product for repair or calibration. To obtain an RMA, please call Customer Service at 1-800-421-2853 or go to [www.palmerwahl.com](http://www.palmerwahl.com) and click on: Service > Product Return Request.

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**TRANSCAT®**

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Call 1.800.800.5001

Why you need to  
Calibrate your Instruments

- Increase customer satisfaction with consistent products.
- Comply with quality standards.
- Improve product quality.
- Ensure traceability throughout your entire manufacturing process.
- Palmer Wahl offers a complete line of Calibrators to integrate all the necessary functions for adjustment and maintenance of your process.
- Our products are easy to use and Palmer Wahl is there to help, every step of the way.
- Go to: [www.palmerwahl.com](http://www.palmerwahl.com) > Test & Calibration.

Palmer Wahl Warranty

Manufacturer warrants all products listed in this catalog to be free from defects in material or workmanship under normal use and service. The Manufacturer agrees to repair or replace any product which upon examination is revealed to have been defective due to faulty workmanship or material if returned to our factory, transportation charges prepaid, within the product specific warranty period stated in the catalog by the manufacturer. This warranty is in lieu of all other warranties, expressed or implied and of all obligations or liabilities on its part for damages including but not limited to consequential damages, following the use or misuse of instruments sold by the Manufacturer. No agent is authorized to assume for manufacturer any liability except as set forth above.