KNC Model 3603-A, 3604-A, and 3605-A Thermo Units

Product Overview

The Model 3603-A, 3604-A, and 3605-A Thermo Units by King Nutronics Corporation are highly accurate dry well temperature standards designed for testing and calibrating a broad range of thermometers, temperature sensors, thermocouples, RTDs, and temperature switches used in military and industrial applications. Conforming to rigorous U.S. Military specifications, King Nutronics Thermo Units are manufactured in three versions covering the temperature ranges most frequently encountered in field and laboratory settings.

During use, devices to be tested or calibrated are inserted into the dry well of the unit, which is heated or cooled (Model 3605-A only) to the temperature specified by the operator. Close-fitting dry well adapter chucks maximize thermal transfer to the unit under test and minimize the time required for the specified temperature to be reached. Adapter chucks are available for most industrial applications and in sizes conforming to specific U.S. Navy requirements.

All King Nutronics Thermo Units are microprocessor-driven for maximum safety and simplicity of operation. Housed in rugged aluminum carrying cases with storage for additional adapter chucks and accessories, King Nutronics Thermo Units can withstand hard use in workshop, hangar, flight line, shipboard and submarine environments. Like all King Nutronics Instruments, each Thermo Unit can be easily serviced and calibrated in the field, and includes a comprehensive technical manual containing complete troubleshooting and repair instructions, and an illustrated parts breakdown.

The design, operational details, and features of the King Nutronics Model 3603-A, 3604-A, and 3605-A Thermo Units are protected by the following U.S. Patents: 3,699,800; 3,738,174; 3,939,687; 4,075,882; 4,079,618; 4,901,257.

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Model 3603-A Thermo Unit (100°F to 600°F)

Smallest of the Thermo Units manufactured by King Nutronics Corporation, the Model 3603-A is an easy to use self-contained instrument designed to generate, control, measure, and display temperatures from 100°F to 600°F, with an accuracy of ±0.5°F throughout its operating range. The Model 3603-A thermo unit weighs only 12.5 lbs., and is housed in a rugged, compact 11” x 7” x 10” aluminum case, making for easy transport to remote job sites.

A simple ON/OFF switch and a push-button temperature selector control all functions. The measured temperature and other status information is shown on the 16-character digital display.

Four adapter chucks are furnished with the Model 3603-A in the following bore diameters: 1/4", 3/8”, 7/16”, and 9/16”. Other bore diameters are available upon request.

Model 3604-A Thermo Unit (100°F to 1200°F)

The Model 3604-A Thermo Unit by King Nutronics Corporation is a self-contained portable dry well temperature calibration system designed to generate, control, measure, and display temperatures from 100°F to 1,200°F, with an accuracy exceeding ±0.15% or ±0.8°F of the setpoint value, whichever is greater, throughout its operating range.

Incorporating an IEEE-488/GPIB bus, the Model 3604-A Thermo Unit can be operated from a remote terminal using simple commands, or via the user-friendly front panel keypad and display. A convenient built-in dot-matrix printer generates hard copies of test and calibration data.

Two configurations of the Model 3604-A Thermo Unit are available. Part No. 3604A-1-1 includes four adapter chucks in the following bore diameters: 1/4", 3/8”, 7/16”, and 9/16”.

Part No. 3604A-1-101 includes 12 adapter chucks conforming to specific U.S. Navy requirements. Compartments in the carrying case permit up to a dozen adapter chucks to be stored and transported with the instrument.

Each Model 3604-A Thermo Unit also includes an accessory kit containing a dial caliper, a continuity tester, adapter chuck handling tools, an adapter chuck for standard glass thermometers, and an assortment of spare parts. All accessories and parts are stored in the case lid for convenience.

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Model 3605-A Thermo Unit (-40°F to 250°F)

The Model 3605-A Thermo Unit by King Nutronics Corporation is a self-contained portable dry well temperature calibration system based on a Peltier element, which permits the generation and control of temperatures from –40°F to 250°F, with an unsurpassed accuracy of ±0.5°F throughout its operating range.

Incorporating an IEEE-488/GPIB bus, the Model 3605-A Thermo Unit can be operated from a remote terminal using simple commands, or via the user-friendly front panel keypad and display. A convenient built-in dot-matrix printer generates hard copies of test and calibration data.

Two configurations of the Model 3605-A Thermo Unit are available. Part No. 3605A-1-1 includes four adapter chucks in the following bore diameters: 1/4", 3/8", 7/16", and 9/16". Part No. 3605A-1-101 includes 12 adapter chucks conforming to specific U.S. Navy requirements. Compartments in the carrying case permit up to a dozen adapter chucks to be stored and transported with the instrument.

Each Model 3605-A Thermo Unit also includes an accessory kit containing a dial caliper, a continuity tester, adapter chuck handling tools, an adapter chuck for standard glass thermometers, and an assortment of spare parts. All accessories and parts are stored in the case lid for convenience.

Performance Specifications

Characteristics	**Specifications**		
Model No.	**3603-A**	**3604-A**	**3605-A**
Temperature range	100°F to 600°F (38°C to 315°C)	100°F to 1,200°F (38°C to 649°C)	-40°F to 250°F (-40°C to 121°C)[1]
Accuracy	±0.5°F throughout range	±0.8°F from 100°F to 600°F ±0.15% of setpoint > 600°F	±0.5°F throughout range
Resolution: **Test mode** **Calibration**	 0.1° 0.01°	 0.1° 0.01°	 0.1° 0.01°
Setpoint stability	±0.15°F	±0.15°F	±0.15°F
Stabilization time	14 min. max, 75°F to 300°F 23 min. max, 75°F to 600°F	30 min. max for a 1,100°F change from ambient temp.	30 min. max for a 60°F change from ambient temp.
Well uniformity	±0.3°F	±0.5°F	±0.5°F

[1] 100°F below ambient temperature

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General Specifications

Characteristics	Specifications		
Model No.	**3603-A**	**3604-A**	**3605-A**
Ambient temp. range:			
Operational	32°F to 120°F	32°F to 120°F	32°F to 120°F
Storage	-67°F to 167°F	-67°F to 167°F	-67°F to 167°F
Readout units	Fahrenheit (°F) or Celsius (°C)	Fahrenheit (°F) or Celsius (°C)	Fahrenheit (°F) or Celsius (°C)
Well size	1 " I.D. x 6" deep	1 " I.D. x 6" deep	1 " I.D. x 6" deep
Case construction	Deep drawn aluminum	Deep drawn aluminum	Deep drawn aluminum
Case dimensions (L x W x H)	11" x 7" x 10"	18" x 11" x 14"	18" x 11" x 14"
Weight:			
Industrial model	12.5 lbs.	35 lbs.	35 lbs.
USN model	N/A	44 lbs.	44 lbs.
Input power:			
Voltage	115 VAC, 50-60 Hz	115 VAC, 50-60 Hz	115 VAC, 50-60Hz
Current	3.5 Amps	9.0 Amps	5.0 Amps
Fuse(s)	5 Amps	10 Amps	1 Amp and 5 Amps

Functional Features

Characteristics	Specifications		
Model No.	**3603-A**	**3604-A**	**3605-A**
Display:			
No. of characters	16	40	40
Type	5 x 7 alphanumeric dot-matrix, vacuum-fluorescent type	5 x 7 alphanumeric dot-matrix, vacuum-fluorescent type	5 x 7 alphanumeric dot-matrix, vacuum-fluorescent type
Keypad	N/A	16-key, touch sensitive	16-key, touch sensitive
Printer	N/A	24 character dot-matrix impact printer with replaceable ribbon cartridge and standard adding machine paper	24 character dot-matrix impact printer with replaceable ribbon cartridge and standard adding machine paper
Remote interface	N/A	IEEE-STD-488-1978 GPIB	IEEE-STD-488-1978 GPIB

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