D3020
CALIBRATOR

MODEL D3020

Simulate and Measure

- DC Voltages from 1µV to 10VDC
- DC Current from 1µA to 21mA
- Resistance from 0.1 to 3000 ohms
- Thermocouples – B, E, J, K, N, R, S, & T types
- RTDs – Pt100 and Ni100 types

Product Highlights

- Multifunction Calibrator for Source and Measurement
- Intrinsic Safe Barrier and Loop Isolator Tester
- Simultaneous Input/Output Operation
- Easy Menu Operation and Clear 2 Line Backlight Dot Matrix LCD Display
- 29 Button Keyboard Allows Easy and Direct Programming and Operation
- Inputs and Outputs Fully Isolated
- Programmable and Controllable via Bi-directional RS232 and Provided Windows Software
- 95-264VAC or DC Powered
- Short Circuited Protected

Standard Features

- DC Voltage, Current, Thermocouple, RTD and Resistance Source and Measurement with independent displays, connections and operation
- mV, mA and Ohms inputs and outputs can be scaled to display and output in any engineering units
- Direct readout in °C or °F
- 10 programmable 3 step calibration routines. One button access or timed interval output for 3 values (typically zero, half scale and full scale values).
- 8 hours of portable operation off rechargeable batteries. Battery charge indicator on front panel.
- 24VDC loop power for 2 and 4 wire transmitter checkout
- Reference Junction Temperature can be Set to any Desired value or Automatically Compensated
- Bi-directional RS232 interface with Windows communications software
- 24VDC @ 25mA excitation supply
- mA output operates as a current source or current sink output
- Portable carrying case



CE Approved

Technical Specifications

Common Specifications	
Input/output Isolation	500 V DC or AC peak maximum
Display matrix	2 rows of 20 characters backlight LCD dot
Reading Rate	Low: 1.25 readings/sec
	Normal: 2.5 readings/sec
	Fast: 5 readings/sec
Connectors	two groups of front termination posts (6 for input, 5 for output) RS-232 interface D9 rear connector. AC power supply rear connector
Temperature Stability	±15 ppM full scale ±0.3 µV/ºC typical
Warm-up Time	1 min operating 5 min for rated accuracy
Cold Junction Compensation	manual adjustable from -50ºC to +100ºC internal automatic from -10ºC to +55ºC
Cold Junction Compensation Drift	±0.02ºC
Cold Junction Compensation Error	±0.03ºC
Operating Temperature	-10ºC to +55ºC
Storage Temperature	-40ºC to +60ºC
Power Supply	AC line or internal Ni-Cd rechargeable battery
Line Operation	95 to 264 V AC 47 to 70 Hz
Line Transformer Insulation	2500 VAC
Power Consumption	8 VA (exhausted batteries)
Battery Recharging Time	5 hours for full charge
Battery Operation Time	8 hours (all functions) 5 hours (mA & ext. supply)

Technical Specifications (continued)

Common Specifications (continued)	
Battery Protection	Warning at battery run-down, automatic switching off before battery discharge
Case	Injection molded ABS
Dimensions	260W × 100H × 250D mm 10.3"W × 4.4"H × 9.9"D
Weight	6.6 lbs. (3.0 kg)
Input specifications	
Input impedance	1000 MΩ (mV, T/C and 2V range) 1MΩ (20 V range)
Common Mode Rejection Ratio	> 140 dB @ AC operation
Normal Mode Rejection Ratio	> 70 dB @ 50 or 60 Hz
Common Mode Voltage	500 V DC or peak AC maximum
Maximum Input Protection	500 V DC or peak AC maximum
Response Time	1 sec maximum (to rated accuracy)
Rtd and Ω Measurement Configuration	2 or 3 wire
Shunt Resistance (mA range)	10Ω
Overload Protection	1.6A250V fuse (current ranges)
Output Specifications	
Output Current	0 to 10 mA at rated accuracy (voltage and T/C ranges) short-circuit protected
Output Compliance	Up to 20V as generator (current & transmitter simulation) up to 60V as controlled load
Response Time	0.5 sec maximum (to 100% step change)
Rtd & Ω Simulation Excitation Current	0.1 to 3 mA
Input and Output Auxiliary Supply Specifications	
Output Voltage	24 V DC ±3% stabilized
Output Current	0 to 25 mA
Output Protection	Electronically protected against short-circuit
RS-232 serial interface	
Baud Rate	1200 to 9600
Isolation	500 V DC or peak AC maximum

The electrical specifications given apply for an operating temperature of 15°C to 35°C (59°F to 95°F) and 1 year calibration cycle.

Keyboard Functions

Key	Function
◄ ►	Input and output range selection
☼	LCD backlight switch
○ ◑	LCD contrast control
OFF	Switch off command
0 1 … 9	Numeric values entry
L M H	One touch low medium high value set, reading rate selection (after ✱ operate)
▼ ▲	One step increase/decrease (normal operation), browse menu operation (after ✱ operate), start autostep (after STEP operate)
STEP	Ramp function control
C/CE	Data entry clear function
STO	Parameter storage control
°C/°F	Celsius/Fahrenheit selection
CJ	Cold junction compensation mode and set
IN ENG	Direct/scaled input reading
OUT ENG	Direct/scaled output reading
ENTER	Data entry confirmation, switch on comand
✱	0 to 9 memory recall enable, functions enter, reading rate changes