

S1C114E5-B20



**Scandura B-20.** A portable Multifunction, Multivariable Calibrator that provides a complete range of functions for the industrial world in a self-contained Miniature Calibration Laboratory. Instead of being located in a workshop it is brought to the field to provide full calibration service through easy, quick, safe and accurate microprocessor driven operations.

The **B-20** is an unconventional instrument because, in addition to a variety of Electrical Simulations and Measurements, it also simulates, generates and measures Temperature, Vacuum and Pressure. Being a highly integrated Multifunction, Multivariable unit, it incorporates, in a compact and handy box, most of the functions normally available within the maintenance laboratory. In most cases, no external ancillaries such as pumps, fittings, gauges, additional modules or data recording tools are required. Its internal storage capabilities allow the editing of individual Test Reports, in accordance with ISO9001:2000 requirements, either directly, connected to a printer or using a PC.

### ■ TECHNICAL SPECIFICATION

- ▶ Digital measurement, simulation/generation of:
  - Pressure (with fine adjustment)
  - Vacuum (with fine adjustment)
  - Voltage (two simulation channels)
  - Current (two simulation channels)
  - Frequency (measurement only)
  - Resistance / RTD
  - Thermocouples
  - Switch status test: Detection of ON/OFF status
- ▶ Comprehensive Alphanumeric & Graphical Readings
- ▶ Automatic Deviation (Error) calculation
- ▶ Signal conditioning: Linear, Square Root, Inverse

*Modular Multifunction, Multivariable Calibrator for the field testing of Electronic & Pneumatic Process Instruments*

## A Portable “Calibration Laboratory” in Operator’s hands

- ▶ Dual Language: English/Second Language selectable from Italian, French, Spanish or German
- ▶ Simple Menu-driven operations for configuration, reading, storing etc.
- ▶ Full Calibrator set-up, Manipulation & Data Display
- ▶ All parameters displayed in selectable engineering units:
  - Pressure: mbar, bar, kPa, psi, mmHg, mmH<sub>2</sub>O, H<sub>2</sub>O, "Hg, kg/cm<sup>2</sup>
  - Temperature: °C, °F, K
  - Frequency: Hz
  - Current: mA
  - Voltage: mV, V
  - Resistance: Ω
  - Percent (%) on all parameters
- ▶ Logging function: up to 999 consecutive readings within a user-definable time
- ▶ Up to 63 process instruments (Tags) with calibration runs to a total of 1200 calibration points can be stored into non-volatile memory
- ▶ Each point-record (Process Instrument Calibration TAG) includes:
  - Device (instrument) type
  - Date
  - Remarks
  - Job Number
  - Signal conditioning type
  - Operator’s code
  - Maximum permissible error
  - Tag Number
  - Error table (before/after calibration)
  - Calibration cycle
- ▶ Built-in reporting facility via direct connection to any serial printer
- ▶ Communication Link to a PC via RS-232 serial interface
- ▶ Computer Uploading/Downloading of calibrator configuration

■ **TECHNICAL DATA**

- ▶ Compact, lightweight shock resistant case provided with handle and shoulder strap
- ▶ Lid with storage for tubing, connections, leads & accessories
- ▶ Large, backlit Alphanumeric and Graphic LCD display for simultaneous presentation of three types of information on three lines
- ▶ Membrane Alphanumeric Industrial keyboard
- ▶ Standard socket for any **Scandura** external pressure transducers (see selection table)
- ▶ Two-wire transmitter Power Supply: 2 out 0 - 25 mA, 24 V nominal
- ▶ Built-in battery-pack, for 8 hours continuous operation
- ▶ RS-232 Serial Port for Printer or PC connection
- ▶ Built-in battery charger (except Intrinsically Safe Models) 220/240 V ac (option 110/120 V), 10 VA
- ▶ External Battery charger (Intrinsically Safe Models only) 220/240 V ac (option 110/120 V), 10 VA
- ▶ Intrinsically Safe Version : 2 wire transmitter power supply equivalent to 300Ω Zener Barrier
- ▶ Intrinsically Safe Versions available compliant with Directive 94/9/EC - **ATEX FOR EX II 2 G, EEx ib IIc T4** (EC Examination Certificate: INERIS 03ATEX0030X)
- ▶ Operating ambient temperature 0 ÷ 50 °C
- ▶ Temperature effect on accuracy <± 20 ppm/°C within 0 ÷ 50 °C
- ▶ Operating ambient humidity 10 ÷ 90 % non condensing
- ▶ Dimensions 290 x 180 x 180 mm (packed 530 x 360 x 360 mm)
- ▶ Weight 6 kg net (packed 9 kg)


■ **EASYLINK2000 TEST REPORTING SOFTWARE**

Is probably the most user friendly program on the market. It has an immediate impact on the calibration documentation process allowing configuration, in A4 format, of the calibration reports and/or certificates according to individual user's requirements.

Automatic calibration and configuration data transfer (over RS 232 serial interface, from the **B-20** to PC) makes **EasyLink2000** the safe software system to support any calibration procedure in accordance with ISO 9001:2000 standards.

The operating platform may be MS-Windows 98 or higher.

**EasyLink2000** is included in the **B-20** standard supply.

Calibration Laboratory Via Neera 43 20141 MILANO		CALIBRATION DOCUMENT Instr. tag. no.: DPI-101					
Instrument name: DP cell		Manufacturer: Honeywell		Model: Series 3000			
Type: STG 644		Serial Number: 260562		Measuring Range: 0 - 1000 mbar			
Class: 0,1%							
<b>CALIBRATION REPORT</b> <b>SCANDURA B-20 CALIBRATOR S/N 4307</b> Calibrator setup							
Reference reading pressure (standard range)		Reading from device measure current		Auxiliary input/output OUT1 aux power supply			
Unit: mbar		Unit: mA		Unit: not defined			
Range: 0.0 / 1000.0		Range: 4.000 / 20.000					
Test data							
Cal. point number	REF mbar	REF % range	RDG mA	RDG % range	ERR % range	AUX	As found / as left
1	-0.1	-0.01	3.997	-0.02	-0.01		As found
2	511.6	51.16	12.107	50.67	-0.49		As found
3	997.6	99.76	19.844	99.03	-0.73		As found
4	516.1	51.61	12.174	51.09	-0.52		As found
5	-0.0	0.00	3.987	-0.08	-0.08		As found
6	-0.0	-0.0	3.980	-0.13	-0.13		As left
7	489.4	48.94	11.760	48.50	-0.44		As left
8	999.7	99.97	19.888	99.31	-0.66		As left
9	461.4	46.14	11.313	45.71	-0.43		As left
10	-0.0	0.00	3.997	-0.02	-0.02		As left
Remarks: Instrument errors: allowable ±0.10%, max. -0.66%						B-20 operator: SP Instrument out of tolerance.	
Calibration Date: 19/11/98			Approval Date: 19/11/98				
Calibration done by: D. D'Angio			Approval by: C. Spaccavento				

■ **STANDARD SUPPLY**

Standard supply includes:

- ▶ **B-20** Basic Unit
- ▶ **EasyLink2000** Test Reporting Software
- ▶ 1.5 m flexible PVC ¼" tubing
- ▶ External Battery Charger (IS versions only) or power cord
- ▶ Certificate of Conformity
- ▶ Operating Manual
- ▶ Standard kits include:

<b>Electrical Kit (All models) Product Code 241027</b>
N.4 Flying leads, silicone insulated
N.2 Crocodile Terminals
N.2 Delayed Fuses
N.5 Sub-Miniature Fuses
N.1 Power supply cable
N.1 RS232 Cable for PC
N.1 RS232 Cable for Printer

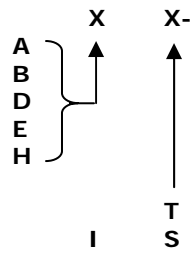
<b>Pneumatic Pressure Kit (7 bar only) Product Code 241028</b>
N.2 Straight joint 468Z ¼"x¼" NPT
N.2 Straight joint 468Z ¼"x1/8" NPT
N.2 Cross jointes 463Z ¼"
N.2 "T" joint 464Z ¼"
mt. 1.5 PVC red hose Ø 6 mm
N.2 ¼" x ½" NPT male joint
N.2 Ring-nuts
N.2 Plug-in cable for <b>B-20</b>

<b>Pneumatic Pressure Kit (21 bar only) Product Code 241029</b>
N.1 "T" brass joint
N.1 Female adapter C2
N.1 Female adapter C2
mt.1.5 Neutral Rilsan hose 6x4
N.2 Ring-nuts
N.2 Plug-in cable for <b>B-20</b>

■ ORDER GUIDE

- High accuracy
- Single range
- Dual range
- Electric only
- Dual range High Accuracy
- Generation and Measurement of T/C; RTD; mV; mA; Ω
- Intrinsically safe
- Dual Range, Temperature card

B-20-



Code 1° transd. XXXX - Code 2° transd. XXXX

Example: **B20 - IS - 151G - 212G** ranges -900 ÷ +1500 mbar and 0 ÷ 21 bar.  
 Example: **B20 - DT - 500G - 701G** ranges -500 ÷ +500 mbar and 0 ÷ 7 bar.

											<b>BUILT-IN PRESSURE TRANSDUCERS SELECTION</b>				
											Code	Range	Transducer	Resolution	Uncertainty
B-20/HT	B-20/H	B-20/AT	B-20/A	B-20/IS	B-20/DT	B-20/D	B-20/BT	B-20/B	B-20/ET	B-20/E	251-H	35 ÷ 2000 mbar Abs.	1°	0.01 mbar	0.01 % ( f.s.)
											151-A	0 ÷ 1500 mbar Abs.	1°	0.1 mbar	0.04 % ( f.s.)
											251-A	0 ÷ 2500 mbar Abs.	1°	0.1 mbar	0.04 % ( f.s.)
											060-G	-60 ÷ +60 mbar	1°	0.01 mbar	0.15 % ( f.s.)
											151-G	-900 ÷ +1500 mbar	1°	0.1 mbar	0.025 % ( f.s.)
											500-G	-500 ÷ +500 mbar	1°	0.1 mbar	0.04 % ( f.s.)
											701-G	0 ÷ 7 bar	1°	1 mbar	0.04 % ( f.s.)
											212-G	0 ÷ 21 bar	1°	1 mbar	0.025 % ( f.s.)
											501-A	0 ÷ 5 bar	1°	1 mbar	0.04 % ( f.s.)
											701-A	0 ÷ 7 bar	1°	1 mbar	0.04 % ( f.s.)
											212-A	0 ÷ 21 bar	1°	1 mbar	0.025 % ( f.s.)
											701-G	0 ÷ 7 bar	2°	1 mbar	0.04 % ( f.s.)
											212-G	0 ÷ 21 bar	2°	1 mbar	0.04 % ( f.s.)
											701-A	0 ÷ 7 bar	2°	1 mbar	0.04 % ( f.s.)
											212-A	0 ÷ 21 bar	2°	1 mbar	0.04 % ( f.s.)

- In dual range configuration, one of range must be 0 ÷ 7 bar or 0 ÷ 21 bar  
 - Other ranges available on request

► ACCESSORIES

► External Transducers

Scandura offer a full range of external transducers to cover measurement up to 700 bar, all of which are interchangeable with any B-20 unit. The nominal accuracy is ±0.1% except for those cases where paired factory

calibration, B-20 with its External transducer, is possible. For ranges up to 100 bar paired factory calibration increases the uncertainty level to ±0.05 % f.s.

Operating and Process Temperature up to 50°C.



<b>External Pressure Transducers Selection</b>			
Model	Range	Resolution	Uncertainty
SP-1/1.5A	0 ÷ 1500 mbar Abs.	0.1 mbar	0.04 % (f.s.) *
SP-1/2.5A	0 ÷ 2500 mbar Abs.	0.1 mbar	0.04 % (f.s.) *
SP-1/1.5	0 ÷ 1500 mbar	0.1 mbar	0.04 % (f.s.) *
SP-1/7	0 ÷ 7 bar	1 mbar	0.04 % (f.s.) *
SP-1/20	0 ÷ 20 bar	1 mbar	0.04 % (f.s.) *
SP-1/50	0 ÷ 50 bar	10 mbar	0.05 % (f.s.) *
SP-1/100	0 ÷ 100 bar	10 mbar	0.05 % (f.s.) *
SP-1/200	0 ÷ 200 bar	10 mbar	0.1 % (f.s.)
SP-1/400	0 ÷ 400 bar	100 mbar	0.1 % (f.s.)
SP-1/700	0 ÷ 700 bar	100 mbar	0.1 % (f.s.)

\* Only when calibrated together its B-20 (if not, uncertainty is 0.1 % f.s.)

												<b>ELECTRICAL PARAMETERS</b>			
B-20/HT	B-20/H	B-20/AT	B-20/A	B-20/IS	B-20/DT	B-20/D	B-20/BT	B-20/B	B-20/ET	B-20/E					
<b>SIMULATION</b>												<b>Range</b>	<b>Resolution</b>	<b>Uncertainty</b>	<b>Input imp. Load</b>
•	•	•	•	•	•	•	•	•	•	•	2 channels V d.c.	0 ÷ 10 V	1 mV	Up to 0.03 % rdg + 0.003 % f.s.	4 mA
•	•	•	•	•	•	•	•	•	•	•	1 channel mV d.c.	± 1200 mV	10 µV (up to ± 300 mV) 100 µV (> ± 300 mV)	Up to 0.03 % rdg + 0.003 % f.s.	2.5 mA
			•								1 channel V d.c. (I.S.)	0 ÷ 10 V	1 mV	Up to 0.03 % rdg + 0.003 % f.s.	4 mA
•	•	•	•	•	•	•	•	•	•	•	2 wire transmit. (external power)	0 ÷ 25 mA	5 µA	Up to 0.03 % rdg + 0.02 % f.s.	40 V (max ext. pow)
•	•	•	•	•	•	•	•	•	•	•	2 channels mA d.c.	0 ÷ 25 mA	5 µA	Up to 0.03 % rdg + 0.02 % f.s.	1 kΩ a 20 mA
			•								1 channel mA d.c.(I.S.)	0 ÷ 20 mA	5 µA	Up to 0.03 % rdg + 0.02 % f.s.	500 Ω a 20 mA
<b>MEASUREMENT</b>												<b>Range</b>	<b>Resolution</b>	<b>Uncertainty</b>	<b>Input imp. Load</b>
•	•	•	•	•	•	•	•	•	•	•	V d.c.	± 80 V	1 mV (up to ± 20 V) 5 mV (> ± 20 V)	Up to 0.03 % rdg + 0.003 % f.s.	1 MΩ
•											mV d.c.	±1200 mV	10 µV (up to ± 300 mV) 100 µV (> ± 300 mV)	Up to 0.03 % rdg + 0.003 % f.s.	> 100 MΩ
			•								V d.c. (I.S.)	± 30 V	1 mV (up to 20 V)	Up to 0.03 % rdg + 0.005 % f.s.	1 MΩ
•	•	•	•	•	•	•	•	•	•	•	mA d.c.	±100 mA	1 µA (up to ± 20 mA) 5 µV (> ± 20 mA)	Up to 0.03 % rdg + 0.003 % f.s.	10 Ω (Shunt resist.)
			•								mA d.c. (I.S.)	±25 mA	1 µA (up to 20 mA)	Up to 0.03 % rdg + 0.003 % f.s.	10 Ω (Shunt resist.)
•	•	•	•	•	•	•	•	•	•	•	Hz	0.5 ÷ 10 kHz	0.1 Hz	Up to 0.05 % rdg	1 Vpp min.

**TEMPERATURE SIMULATION & MEASUREMENT**

												<b>Cold jun.</b>	<b>Range</b>	<b>Resolution</b>	<b>Uncertainty</b>
•	•	•	•	•	•	•	•	•	•	•	Termocouples (IEC) *	± 0.25 °C	B,E,J,K,N,R,S,T	0.1 °C	e.m.f. error + Lin. error: 0.1 °C + Cold jun. error **
•	•	•	•	•	•	•	•	•	•	•	Termocouples (DIN)	± 0.25 °C	U,L	0.1 °C	e.m.f. error + Lin. error: 0.1 °C + Cold jun. error **
•	•	•	•	•	•	•	•	•	•	•	RTD (IEC 751)	-	Pt100 Pt200 Pt500 Pt1000	0.1 °C	0.2 °C (T < 300 °C) 0.4 °C(T > 300°C)*****
•	•	•	•	•	•	•	•	•	•	•	RTD α=392·10 <sup>-5</sup> °C <sup>-1</sup>	-	Pt-100	0.1 °C	0.2 °C (T < 300 °C) 0.4 °C(T > 300°C)*****
•	•	•	•	•	•	•	•	•	•	•	Resistance	-	0 ÷ 3900 Ω	0.01 Ω (up to 240 Ω) 0.1 Ω (> 240 Ω)	0.03 % rdg + 20 mΩ*****
•	•	•	•	•	•	•	•	•	•	•	mV c.c.	-	0 ÷ 1200 mV	10 µV (up to ± 0.3 V) 100 µV (> ± 0.3 V)	Up to 0.03 % rdg + 0.003 % f.s.***
* Max Load 2.5 mA												** Measurement with internal C.J. compensation only			
*** e.m.f. error												**** 4 wires measurements – Measuring current 1 mA			
***** 4 wires measurements – V max = ± 4 V; 0,1 mA < I < 2,5 mA – engineering unit: °C, °F, K – Measuring current 1 mA															

**Scandura: "Synonymous with Calibration"**

Scandura is a customer oriented enterprise that stands by all Instrument & Maintenance Engineers to better serve their requirements and enable their work to become carried out more accurately and efficiently. Although nearly forty years of challenging and competitive activity all over the world have definitively

given Scandura an international role, the roots and the fruits remain "Made in Italy". A symbol of sophisticated solutions ensured by an experienced, creative, flexible and open minded team of people that is pleased to respond to our customer's needs whatever your needs are.

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