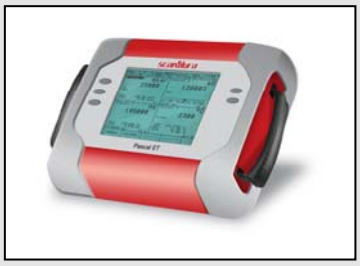


DATASHEET Pascal ET

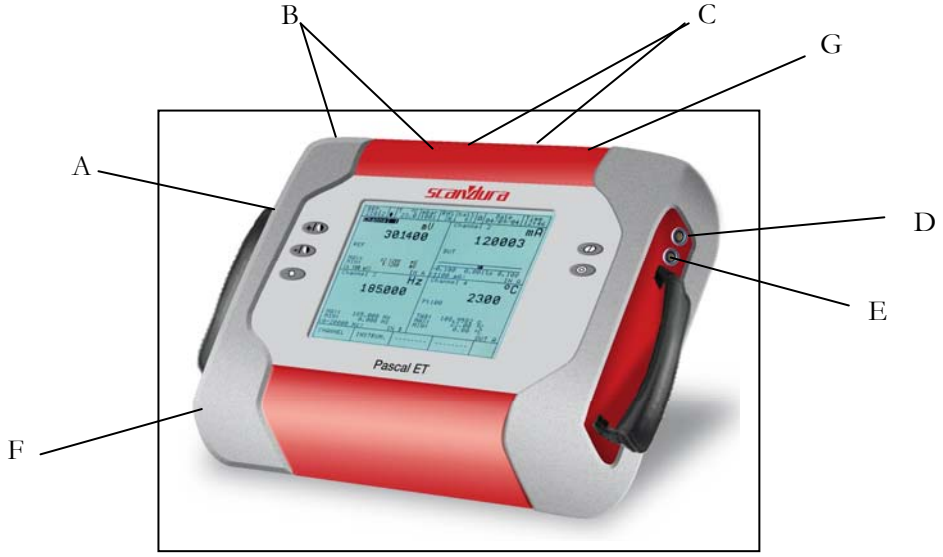
Pascal ET is an handheld multifunction calibrator for the measurement and simulation of the following parameters:

- pressure
- electrical signals (mA, mV, V, Ω)
- temperature (TC and RTD)
- frequency

Main Features

- Large display with touch screen: user-friendly interface, easy & fast configuration
- 4 channels: up to 4 simultaneous measures
- Modular configuration: up to 2 input and 2 output modules for the measurement/simulation of the electrical signals/temperature
- Accuracy up to 0,008 % rdg
- Pressure & vacuum measurement (external)
- Data storage & calibration reports printing
- Bi-directional real-time communication to a PC
- Environmental conditions Sensor (barometric pressure, ambient temperature, RH %)

Example of Input module



A - Pressure sensor connector (option)
B - 2 input modules for the measurement of the electrical signals / temperature (IN A & IN B)
C – 2 output modules for the simulation of the electrical signals / temperature (OUT A & OUT B)
D – RS-232 connector to the PC
E – Power supply connector
F – Connector for the environmental conditions sensor
G – Loop Supply – 24 V dc

Specifications are subject to change without notice.

Software Functionalities

- Multilanguage menu-driven user interface
- LCD display with 4 simultaneous measures
- Resolution, filter and scale settings
- Automatic step generation
- Functions to perform specific applications
- Large memory to store calibration procedures, data and reports
- Graphical display of calibration results
- Remote control of the instrument through PC
- Datalogging for 4 simultaneous measures

General specifications

Switching Power Supply:	In: 100÷240 V ac 50÷60 Hz Out: 9 V dc – 1 A
Battery package:	NiMH
Battery charger:	Integrated
Battery Life:	8 hours for typical usage
Display:	320 x 240 Dots Dot size:0,34 x 0,34 mm (0,013 x 0,013 in) Eff. Area: 122 x 92 mm (4,6 x 3,6 in) Backlight: LED
Keyboard:	Touch-screen + 5 keys
Communication Ports:	RS-232 connector External Pressure connector Connector bottle environmental conditions sensor
Power Supply for Device Under Test:	24 V dc

Dimensions:	305(l) x 210(h) x 90(w) mm
Weight:	3 kg approx
IP Protection:	IP54(open)
Operating temperature:	-10 ÷ 50 °C (14 ÷ 122 °F)
Operating Humidity:	20 % ÷ 80 % not cond.
Storage Temperature:	-30 ÷ 70 °C (-22 ÷ 158 °F)
Storage Humidity:	0 % ÷ 90 % not cond.
Standards:	CEI EN 61326-1 (1998) EN 55011(1999) EN 6100-4-2 (1995) EN 6100-4-3 (1996) EN 6100-4-4 (1995)

Order code

PASCAL ET	-XX	-XX	-X	-X
Electrical / temperature				
One input module	**I**			
Two input modules	**II**			
One output module		**O**		
Two output modules		**OO**		
OPTION				
External pressure transducer connector			**P**	
Environmental parameters sensor (P abs –T-RH)				**A**

Standard Supply

- PASCAL ET
- Electrical kit 241076
- Pascal Report Software
- Power Supply (AC adaptor)
- RS 232 cable to PC
- Calibration Work Test Report
- Certificate of Conformity
- Operating Manual

Electric Kit Code 241076
N.4 Flying leads, silicone isolated
N.2 Crocodile Terminals
N.2 TC mini plugs

Specifications are subject to change without notice.

Optional Accessories

- Pressure sensor connector
- Environmental parameters module
- External pressure sensors – see table External Transducers
- Soft bag
- PasLog Software
- Calibration certificate issued by accredited lab (SIT *)
- Handheld Hydraulic Pressure Generators, SCANDURA models:
  GHM: range 0 ÷ 300 bar
  GHM-H: range 0 ÷ 400 bar
  GHM700/GHH :range 0 ÷ 700 bar
  Fluid: hydraulic oil
- Handheld Pneumatic Pressure Generators, SCANDURA models:
  BA 12: range 0 ÷ 7 bar
  BA 42: range: -900 ÷ 0 mbar
  GPP: range 0 ÷ 20 bar
  GPP40: range -900 mbar ÷ 40 bar

* SIT = the Italian accreditation body for calibration labs.

Pascal Report Software

Technical Data

- Operating Platform MS Windows 2000 or higher
- Configuration of Calibration Certificate layout within one or two pages A4 format
- Headings of Calibration Certificates, including address and associated data
- Key-in, edit and print additional information as part of the calibration document.
- Automatic identification of PASCAL calibrators serial number
- Off-line read-out and display of all records taken from the memory of PASCAL series calibrators with automatic calculation of calibration results
- Read-out and display of all errors with automatic "passed/rejected" indication
- Calibration data storage on hard disk for later retrieval and print-out
- Display calibration data and calculated errors in table and/or graph format
- Printout of calibration certificates with or without graph

Calibration Reports

Templates

Template is a pre-defined fill-in-the-blanks calibration reports created by the user himself. As the calibration data sets are different, depending on the type of the process instruments involved, also the lay-out and the content of relevant calibration reports shall be such that data transferred from PASCAL calibrators can automatically find their own location.
Therefore for the optimum effectiveness of PASCAL Report a certain quantity of certificate templates shall be configured in advance by user.

The document includes the following data:

- Instrument Tag Number
- Date of Calibration
- Number of Calibration Points
- Calibration Set-up and Test Data
- Remarks
- Automatic Error Calculation
- Page Numbering
- Operator I.D.
- Calibration done by
  It is the information to be filled in by the user (the name and the surname of the technician who has made the calibration run)
- Approved by
  It is the information to be filled in by the user (the name and the surname of the responsible person who approved the Calibration document).
- Approval Date
  It is the date the user saves the document in Pascal Report data base and it is automatically set by the program using system date

PasLog Software

Technical Data

- Retrieve Logging data from instrument
- Operating Platform MS Windows 2000 or higher
- Display data as tabular format and also as graphical format
- Able to zoom into the graphics
- Multi-document handling of different logging data in the same workspace
- Store and load data as file on the PC
- Export logging as Excel CSV data
- Easy designed interface for better user interaction
- Printout of Logging data as tabular format as well as graphical format

Input Electrical/Temperature module

DC voltage measurement

Range	Full scale	Accuracy (% rdg + % fs)	Uncertainty (% rdg + % fs)	Max Resolution	Note
± 100 mV	100 mV	0,008 + 0,002	0,01 + 0,003	0,0001 mV	1,2,3,5
± 2 V	2 V	0,008 + 0,002	0,01 + 0,003	0,000001 V	1,2,3,5
± 80 V	80 V	0,008 + 0,002	0,01 + 0,003	0,00001 V	1,2,4,5

[1] One year specifications
[2] Temperature effect: 0,001 % rdg/ $|t - t_c|$ for t : -10 °C ≤ t ≤ 19 °C and 23 °C ≤ t ≤ 50 °C and t_c = 20 °C
[3] Input Impedance: > 100 MΩ
[4] Input Impedance: 0,5 MΩ
[5] Maximum input voltage: ± 100 V dc

DC current measurement

Range	Full scale	Accuracy (% rdg + % fs)	Uncertainty (% rdg + % fs)	Max Resolution	Note
± 100 mA	100 mA	0,008 + 0,003	0,01 + 0,003	0,0001 mA	1,2,3,4

[1] One year specifications
[2] Temperature effect: 0,001 % rdg/ $|t - t_c|$ for t : -10 °C ≤ t ≤ 19 °C and 23 °C ≤ t ≤ 50 °C and t_c = 20 °C
[3] Input Impedance: < 20 Ω
[4] Maximum input current: ± 120 mA

Resistance measurement

Range	Full scale	Accuracy (% rdg + % fs)	Uncertainty (% rdg + % fs)	Max Resolution	Note
(0 ÷ 400) Ω	400 Ω	0,008 + 0,002	0,01 + 0,003	0,001 Ω	1,2,3
(0 ÷ 10000) Ω	10000 Ω	0,008 + 0,002	0,01 + 0,003	0,01 Ω	1,2,3

[1] One year specifications
[2] Temperature effect: 0,001 % rdg/ $|t - t_c|$ for t : -10 °C ≤ t ≤ 19 °C and 23 °C ≤ t ≤ 50 °C and t_c = 20 °C
[3] Meas. Current: < 200 µA

Frequency measurement

Range	Full scale	Accuracy	Uncertainty	Max Resolution	Note
(0,5 ÷ 10000) Hz	50000 Hz	0,01 Hz	0,01 Hz	0,001 Hz	1,2,3,4,6
(10000 ÷ 20000) Hz	50000 Hz	0,1 Hz	0,1 Hz	0,001 Hz	1,2,3,4,5
(20000 ÷ 30000) Hz	50000 Hz	1 Hz	1 Hz	0,001 Hz	1,2,3,4,5
(30000 ÷ 50000) Hz	50000 Hz	20 Hz	20 Hz	0,001 Hz	1,2,3,4,6

[1] Maximum Input Voltage: ± 100 V
[2] Input Impedance: > 100 MΩ
[3] Minimum amplitude of squarewave: 1,5 V p-p @ 50 kHz, 0,7 V p-p @ 5 Hz
[4] Configurable Duty Cycle from 10 % up to 90 % with minimum amplitude of 5 V p-p
[5] for only one frequency input (IN A or IN B) in the same time
[6] for both frequency inputs simultaneously (IN A + IN B)

Pulses measurement

Range	Full scale	Accuracy	Uncertainty	Max Resolution	Note
(1 ÷ 999999) Pulses	999999 Pulses	N/A	N/A	1 Pulse	1,2

[1] Amplitude: (1÷ 80) V
2 Frequency: (0,5 ÷ 20) Hz

Specifications are subject to change without notice.

Temperature measurement

RTDs

Type	Range/°C	Accuracy °C	Uncertainty °C	Typical Resolution/°C	Note
Pt100 (385)	-200 ÷ 0	0,05	0,06	0,01	1,10,11,12 13
	0 ÷ 300	0,07	0,09	0,01	
	300 ÷ 850	0,15	0,17	0,01	
Pt100 (3916)	-200 ÷ 0	0,05	0,06	0,01	2,10,11,12 13
	0 ÷ 300	0,07	0,09	0,01	
	300 ÷ 850	0,15	0,17	0,01	
Pt100 (3902)	-200 ÷ 0	0,05	0,06	0,01	3,10,11,12 13
	0 ÷ 300	0,07	0,09	0,01	
	300 ÷ 850	0,15	0,17	0,01	
Pt100 (3926)	-200 ÷ 0	0,05	0,06	0,01	4,10,11,12 13
	0 ÷ 300	0,07	0,09	0,01	
	300 ÷ 850	0,15	0,17	0,01	
Pt100 (3923)	-200 ÷ 0	0,05	0,06	0,01	5,10,11,12 13
	0 ÷ 300	0,07	0,09	0,01	
	300 ÷ 850	0,15	0,17	0,01	
Pt200 (385)	-200 ÷ 0	0,05	0,06	0,01	1,10,11,12 13
	0 ÷ 300	0,09	0,1	0,01	
	300 ÷ 850	0,18	0,21	0,01	
Pt500 (385)	-200 ÷ 0	0,05	0,06	0,01	1,10,11,12 13
	0 ÷ 300	0,09	0,1	0,01	
	300 ÷ 850	0,18	0,21	0,01	
Pt1000 (385)	-200 ÷ 0	0,05	0,06	0,01	1,10,11,12 13
	0 ÷ 300	0,09	0,1	0,01	
	300 ÷ 850	0,18	0,21	0,01	
Pt1000 (3916)	-200 ÷ 0	0,05	0,06	0,01	2,10,11,12 13
	0 ÷ 300	0,09	0,1	0,01	
	300 ÷ 850	0,18	0,21	0,01	
Ni100 (617)	-60 ÷ 0	0,04	0,05	0,01	6,10,11,12 13
	0 ÷ 100	0,05	0,06	0,01	
	100 ÷ 180	0,05	0,06	0,01	
Ni120 (672)	0 ÷ 100	0,04	0,05	0,01	7,10,11,12 13
	100 ÷ 150	0,05	0,05	0,01	
Cu10 (42)	-70 ÷ 0	0,23	0,28	0,1	8,10,11,12 13
	0 ÷ 40	0,24	0,29	0,1	
	40 ÷ 150	0,27	0,3	0,1	
Cu100	-180 ÷ 0	0,06	0,07	0,01	9,10,11,12 13
	0 ÷ 80	0,07	0,08	0,01	
	80 ÷ 150	0,08	0,09	0,01	

[1] IEC 751 (α = 0,00385 °C^{-1})
[2] JIS C1604 (α = 0,003916 °C^{-1})
[3] U.S. Standard (α = 0,003902 °C^{-1})
[4] Old U.S. Standard (α = 0,003926 °C^{-1})
[5] SAMA (α = 0,003923 °C^{-1})
[6] DIN 43760 (α = 0,00617 °C^{-1})
[7] (α = 0,00672 °C^{-1})
[8] (α = 0,0042 °C^{-1})
[9] (α = 0,0042 °C^{-1})
[10] Spec. for 4-wire measurements with $I_{meas.}$< 0,2 mA
[11] One year specifications
[12] Temperature effect: (see resistance measurement)
[13] Meas. Current: < 200 µA

Specifications are subject to change without notice.

Thermocouples

Type	Range/°C	Accuracy (% rdg + % fs)	Uncertainty (% rdg + % fs)	Lin. Error / °C	Typical Resolution/°C	Note
J						
	-190 ÷ 0	0,008 + 0,002	0,01 + 0,003	0,05	0,01	1,2,3,4,5,6
	0 ÷ 1200	0,008 + 0,002	0,01 + 0,003	0,04	0,01	
K						
	-160 ÷ 0	0,008 + 0,002	0,01 + 0,003	0,06	0,01	1,2,3,4,5,6
	0 ÷ 1260	0,008 + 0,002	0,01 + 0,003	0,04	0,01	
T						
	-130 ÷ 0	0,008 + 0,002	0,01 + 0,003	0,05	0,01	1,2,3,4,5,6
	-0 ÷ 400	0,008 + 0,002	0,01 + 0,003	0,04	0,01	
F						
	0 ÷ 400	0,008 + 0,002	0,01 + 0,003	0,05	0,1	1,2,3,4,5,6
R						
	150 ÷ 1760	0,008 + 0,002	0,01 + 0,003	0,04	0,1	
S						
	170 ÷ 1768	0,008 + 0,002	0,01 + 0,003	0,04	0,1	
B						
	920 ÷ 1820	0,008 + 0,002	0,01 + 0,003	0,1	0,1	1,2,3,4,5,6
U						
	-160 ÷ 0	0,008 + 0,002	0,01 + 0,003	0,04	0,01	1,2,3,4,5,6
	0 ÷ 400	0,008 + 0,002	0,01 + 0,003	0,04	0,01	
L						
	-200 ÷ 0	0,008 + 0,002	0,01 + 0,003	0,03	0,01	1,2,3,4,5,6
	-0 ÷ 760	0,008 + 0,002	0,01 + 0,003	0,04	0,01	
N						
	0 ÷ 1300	0,008 + 0,002	0,01 + 0,003	0,04	0,01	
E						
	-200 ÷ 0	0,008 + 0,002	0,01 + 0,003	0,03	0,01	
	0 ÷ 1000	0,008 + 0,002	0,01 + 0,003	0,04	0,01	
C						
	0 ÷ 2000	0,008 + 0,002	0,01 + 0,003	0,05	0,1	1,2,3,4,5,6

[1] Accuracy and Uncertainty of the e.m.f. values
[2] for measurements with internal C.J. compensation: C.J. error = 0,15 °C
[3] Maximum input voltage: ± 100 V dc
[4] Input Impedance: > 100 MΩ
[5] Temperature effect: 0,001 % rdg/ $|t - t_c|$ for t : -10 °C ≤ t ≤ 19 °C and 23 °C ≤ t ≤ 50 °C and t_c = 20 °C
[6] One year specifications

Specifications are subject to change without notice.

Output Electrical/Temperature module

DC voltage Output

Range	Full scale	Accuracy (% rdg + % fs)	Uncertainty (% rdg + % fs)	Max Resolution	Note
(0 ÷ 100) mV	100 mV	0,01 + 0,003	0,015 + 0,003	0,0001 mV	1,2,3
(0 ÷ 2) V	2 V	0,01 + 0,003	0,015 + 0,003	0,000001 V	1,2,4
(0 ÷ 20) V	20 V	0,015 + 0,003	0,02 + 0,003	0,00001 V	1,2,4

[1] One year specifications
[2] Temperature effect: 0,001 % Output/ $|t - t_c|$ for t : -10 °C ≤ t ≤ 19 °C and 23 °C ≤ t ≤ 50 °C and t_c = 20 °C
[3] Output Impedance = 10 Ω - Rlmin > 1 kΩ
[4] Output Impedance < 30 mΩ - Rlmin > 1 kΩ

DC current Output

Range	Full scale	Accuracy (% rdg + % fs)	Uncertainty (% rdg + % fs)	Max Resolution	Note
(0 ÷ 20) mA	20 mA	0,02 + 0,003	0,025 + 0,003	0,0001 mA	1,2,3

[1] One year specifications
[2] Temperature effect: 0,002 % Output/ $|t - t_c|$ for t : -10 °C ≤ t ≤ 19 °C and 23 °C ≤ t ≤ 50 °C and t_c = 20 °C
[3] Output Impedance > 100 MΩ - Rlmax < 750 Ω

Resistance sourcing

Range	Full scale	Accuracy (% rdg + % fs)	Uncertainty (% rdg + % fs)	Max Resolution	Note
(0 ÷ 400) Ω	400 Ω	0,008 + 0,003	0,01 + 0,003	0,001 Ω	1,2
(0 ÷ 10000) Ω	10000 Ω	0,008 + 0,003	0,01 + 0,003	0,01 Ω	1,2

[1] One year specifications
[2] Temperature effect: 0,002 % Output/ $|t - t_c|$ for t : -10 °C ≤ t ≤ 19 °C and 23 °C ≤ t ≤ 50 °C and t_c = 20 °C

Frequency sourcing

Range	Full scale	Accuracy	Uncertainty	Max Resolution	Note
(0,5 ÷ 20000) Hz	20000 Hz	0,1 Hz	0,1 Hz	0,004 Hz	

Pulses sourcing

Range	Full scale	Accuracy	Uncertainty	Max Resolution	Note
(1 ÷ 999999) Pulses	999999 Pulses	N/A	N/A	1 Pulse	1,2

[1] Amplitude: (0.1÷ 15) Vrms
2 Frequency: (0,5 ÷ 200) Hz

Specifications are subject to change without notice.

Temperature simulation

RTDs

Type	Range/°C	Accuracy °C	Uncertainty °C	Typical Resolution/°C	Note
Pt100 (385)	-200 ÷ 0	0,05	0,06	0,01	1,10,11
	0 ÷ 300	0,07	0,09	0,01	
	300 ÷ 850	0,15	0,17	0,01	
Pt100 (3916)	-200 ÷ 0	0,05	0,06	0,01	2,10,11
	0 ÷ 300	0,07	0,09	0,01	
	300 ÷ 850	0,15	0,17	0,01	
Pt100 (3902)	-200 ÷ 0	0,05	0,06	0,01	3,10,11
	0 ÷ 300	0,07	0,09	0,01	
	300 ÷ 850	0,15	0,17	0,01	
Pt100 (3926)	-200 ÷ 0	0,05	0,06	0,01	4,10,11
	0 ÷ 300	0,07	0,09	0,01	
	300 ÷ 850	0,15	0,17	0,01	
Pt100 (3923)	-200 ÷ 0	0,05	0,06	0,01	5,10,11
	0 ÷ 300	0,07	0,09	0,01	
	300 ÷ 850	0,15	0,17	0,01	
Pt200 (385)	-200 ÷ 0	0,05	0,06	0,01	1,10,11
	0 ÷ 300	0,09	0,1	0,01	
	300 ÷ 850	0,18	0,21	0,01	
Pt500 (385)	-200 ÷ 0	0,05	0,06	0,01	1,10,11
	0 ÷ 300	0,09	0,1	0,01	
	300 ÷ 850	0,18	0,21	0,01	
Pt1000 (385)	-200 ÷ 0	0,05	0,06	0,01	1,10,11
	0 ÷ 300	0,09	0,1	0,01	
	300 ÷ 850	0,18	0,21	0,01	
Pt1000 (3916)	-200 ÷ 0	0,05	0,06	0,01	2,10,11
	0 ÷ 300	0,09	0,1	0,01	
	300 ÷ 850	0,18	0,21	0,01	
Ni100 (617)	-60 ÷ 0	0,04	0,05	0,01	6,10,11
	0 ÷ 100	0,05	0,06	0,01	
	100 ÷ 180	0,05	0,06	0,01	
Ni120 (672)	0 ÷ 100	0,04	0,05	0,01	7,10,11
	100 ÷ 150	0,05	0,05	0,01	
Cu10 (42)	-70 ÷ 0	0,23	0,28	0,1	8,10,11
	0 ÷ 40	0,24	0,29	0,1	
	40 ÷ 150	0,27	0,3	0,1	
Cu100	-180 ÷ 0	0,06	0,07	0,01	9,10,11
	0 ÷ 80	0,07	0,08	0,01	
	80 ÷ 150	0,08	0,09	0,01	

[1] IEC 751 (α = 0,00385 °C^{-1})
[2] JIS C1604 (α = 0,003916 °C^{-1})
[3] U.S. Standard (α = 0,003902 °C^{-1})
[4] Old U.S. Standard (α = 0,003926 °C^{-1})
[5] SAMA (α = 0,003923 °C^{-1})
[6] DIN 43760 (α = 0,00617 °C^{-1})
[7] (α = 0,00672 °C^{-1})
[8] (α = 0,0042 °C^{-1})
[9] (α = 0,0042 °C^{-1})
[10] One year specifications
[11] Temperature effect: (see resistance sourcing)

Thermocouples

Type	Range/°C	Accuracy (% rdg + % fs)	Uncertainty (% rdg + % fs)	Lin. Error / °C	Typical Resolution/°C	Note
J						
	-190 ÷ 0	0,01 + 0,003	0,015 + 0,003	0,05	0,01	1,2
	0 ÷ 1200	0,01 + 0,003	0,015 + 0,003	0,04	0,01	
K						
	-160 ÷ 0	0,01 + 0,003	0,015 + 0,003	0,06	0,01	1,2
	0 ÷ 1260	0,01 + 0,003	0,015 + 0,003	0,04	0,01	
T						
	-130 ÷ 0	0,01 + 0,003	0,015 + 0,003	0,05	0,01	1,2
	-0 ÷ 400	0,01 + 0,003	0,015 + 0,003	0,04	0,01	
F						
	0 ÷ 400	0,01 + 0,003	0,015 + 0,003	0,05	0,1	1,2
R						
	150 ÷ 1760	0,01 + 0,003	0,015 + 0,003	0,04	0,1	
S						
	170 ÷ 1760	0,01 + 0,003	0,015 + 0,003	0,04	0,1	
B						
	920 ÷ 1820	0,01 + 0,003	0,015 + 0,003	0,1	0,1	1,2
U						
	-160 ÷ 0	0,01 + 0,003	0,015 + 0,003	0,04	0,01	1,2
	0 ÷ 400	0,01 + 0,003	0,015 + 0,003	0,04	0,01	
L						
	-200 ÷ 0	0,01 + 0,003	0,015 + 0,003	0,03	0,01	1,2
	-0 ÷ 760	0,01 + 0,003	0,015 + 0,003	0,04	0,01	
N						
	0 ÷ 1300	0,01 + 0,003	0,015 + 0,003	0,04	0,01	
E						
	-200 ÷ 0	0,01 + 0,003	0,015 + 0,003	0,03	0,01	
	0 ÷ 1000	0,01 + 0,003	0,015 + 0,003	0,04	0,01	
C						
	0 ÷ 2000	0,01 + 0,003	0,015 + 0,003	0,05	0,1	1,2

[1] Accuracy and Uncertainty of the e.m.f. generation
[2] for temperature simulation with internal C.J. compensation: C.J. error = 0,15 °C

Pressure module

External transducers *

Type	Range	Accuracy (% fs)	Uncertainty (% fs)	Typical Resolution	Note
Gage					
PSP-1/1.5	-900 ÷ 1500 mbar	0,015	0,025	0,01 mbar	1,2,3
PSP-1/8	-1 ÷ 7 bar	0,015	0,025	0,1 mbar	1,2,3
PSP-1/22	-1 ÷ 21 bar	0,015	0,025	0,1 mbar	1,2,3
PSP-1/50	0 ÷ 50 bar	0,015	0,025	1 mbar	1,2,3
PSP-1/100	0 ÷ 100 bar	0,015	0,025	1 mbar	1,2,3
PSP-1/200	0 ÷ 200 bar	0,03	0,06	10 mbar	1,2,3
PSP-1/400	0 ÷ 400 bar	0,015	0,025	100 mbar	1,2,3
PSP-1/700	0 ÷ 700 bar	0,025	0,05	100 mbar	1,2,3
Absolute					
PSP-1/1.5A	0 ÷ 1500 mbar Abs.	0,015	0,025	0,01 mbar	1,2,3
PSP-1/2.5A	0 ÷ 2500 mbar Abs.	0,015	0,025	0,01 mbar	1,2,3
PSP-1/81A	0 ÷ 80 bar abs	0,015	0,025	1 mbar	1,2,3

*** Other ranges available on request**

[1] One year specifications
[2] Temperature effect: 0,002 % rdg/ $|t - t_c|$ for t : 0 °C ≤ t ≤ 18 °C and 28 °C ≤ t ≤ 50 °C and t_c = 20 °C
[3] pneumatic connection: depend on the Pascal 100 model

Environmental parameters module

Parameter	Range	Accuracy	Uncertainty	Max Resolution	Note
Temperature	(-10 ÷ 50) °C	1,5 °C	1,8 °C	0,1 °C	
Barometric Pressure	(650 ÷ 1150) mbar	4 % fs	5 % fs	1 mbar	
Relative Humidity	10 % ÷ 90 %	4 %	5 %	1 %	

How to compare specifications

Accuracy or Uncertainty

Usually the SCANDURA declarations concerning the metrological aspects involve the uncertainty approach.
Since some ambits seem to prefer a declaration that involves the word "Accuracy" instead of the "Uncertainty", we have decided to report this value into our specifications also, giving to the customer the possibility to understand the difference.
Actually, in a different way from what it happens for the "Uncertainty", that it is well defined, the "Accuracy" it is not: in details, referring to the international rules, the term " accuracy" is just a qualitative term (e.g. you can say that a measurement is "accurate" or "not accurate") instead the "Uncertainty" is a quantitative term. Accordingly when a "plus or minus" figure is quoted, it should be only an "Uncertainty", not an "Accuracy": in spite of this fact, many technical datasheets report the term "Accuracy" followed by a number. In general it's possible to read that the "Accuracy" includes: non-linearity, hysteresis and non-repeatability. so, under the name "Accuracy", we have reported the contribution of these components to the Total Extended Uncertainty. In the same way, under the name "Uncertainty" the Total Extended Uncertainty has been reported: this value includes all the components of the Uncertainty and has been given with a confidence level of around 95 %. Only to give an idea on how these values have been carried out we report here below the components of the "Accuracy" and those of the "Uncertainty" taken into consideration.

Accuracy:

- hysteresis
- non-repeatability
- non-linearity

Uncertainty:

- hysteresis
- non-repeatability
- non-linearity
- instrument resolution
- indication error
- uncertainty of the reference instrument used to measure the components above-mentioned

The methods to calculate the contribution of these components are in accordance to the international rules: ISO GUM "Guide to Expression of Uncertainty in Measurement", ISO ENV 13005.
For the declaration of the "Accuracy" see: ISA 51.1

Temperature compensation

As the instrument can be used in different environmental conditions, the correction of the indication error due to the temperature effect has be done separately.

For the pressure parameters:
temperature effect: 0,002 % rdg/ $|t - t_c|$ from 0 °C to 50 °C
where:

- t_c is the calibration temperature equal 20 °C;
- t is the ambient temperature;
- % rdg means that the value is reported in percent of the measuring point reading (eg.: 10 bar).

E.g.: if the instrument will be used at a temperature t equal to 20 °C this temperature error contribution will be equal zero.

Percent of reading or full scale

The "Accuracy" such as the "Uncertainty" can be declared in percentage of the reading (% rdg) or in percentage of the full scale (% fs).
For the pressure parameters (e.g.: for strain gauge pressure sensors) we declare in percent of the full scale. Why? In this case, in fact, the hysteresis contribution, that is an important value in the calculation process, strictly depends on the maximum pressure point and, to be conservative, we assume for this value the full scale.