GE
Measurement & Control Solutions

asit INSTRUMENTS Srl

The PACE6000

Modular Pressure Controller/Indicator

A new generation of modular, high precision Druck pressure controllers & indicators, designed for ATE and test bench applications.

Features

- A new generation of pressure controllers & indicators designed on a modular platform
- Utilises GE's new unique range of piezo-resistive & resonant pressure sensor technology
- Pressure ranges up to 210 bar (3000 psi/21 MPa) gauge & absolute
- Improved precision to 0.005% Rdg + 0.005% FS
- Improved long term stability to 0.01% Rdg per annum
- Control Stability to 0.001% FS
- Barometric Reference option
- Negative gauge calibration included as standard
- RS232 & IEEE connectivity as standard
- Analog O/P option
- High resolution touch screen operation
- Easy to use intuitive icon driven menu structure
- Modularity increases user flexibility, reduces downtime & lowers overall cost of ownership
- Switch Test, Leak Test & Test Program options
- Designed for both ATE Systems & bench top use
- Compatible with Intecal & some Third Party software packages
- New Burst Test and Volt Free contact options
- Aeronautical Option
- Various service support options available

GE imagination at work

PACE 6000 Options

Test Program

The Test Program option provides a facility for creating, storing and executing numerous test procedures within the instrument itself. This is particularly useful for longer, more repetitive and laborious procedures requiring manual inputs for rapid prototyping, manufacturing and life cycle testing. Test Programs can also be transferred to a PC using a mass storage device for further editing, and copied back from the mass storage device to the instrument.

Leak Test

Leak Test applies a test pressure(s) to an external system connected to the instrument to determine the magnitude of pressure variations due to leaks. This application sets the test pressure and a dwell time to eliminate potential adiabatic effects at the test pressure and the leak test time period. On completion, the display shows the Start Pressure, End Pressure, Pressure Change and Leak Rate.

Switch Test

Switch Test automates the testing of pressure switch devices. Following the test, the display shows the pressure at which the contacts open and closes, and the switch hysteresis. Switch Test Task can also be set to loop (n) times to exercise a switch or capture switch toggle max, min and average values.

Analog Output

This option can be programmed via the setup menu screen to output a signal proportional to the instrument range selected. This allows the instrument to interface with PC or PLC I/O cards, remote displays, chart recorders or other data logging equipment.

Users can select outputs of 0 to 10 V, 0 to 5 V, -5 to 5 V and 0/4 to 20 mA. Precision with respect to host instrument measured pressure 0.05% FS over the host instrument operating temperature range, variable update rate to 80 readings per second. The option is programmable between minimum and FS pressure for proportional output against pressure.

Burst Test

Burst Test is a brand new application for the PACE Series designed primarily for manufacturers of pressure rupture discs, other safety critical devices, even medical products where it is important to accurately measure the exact point at which the elastic limit or point at which the device will rupture or burst will occur.

Accurate and precise measurement of this phenomenon enables scalable process improvement in the manufacture of these devices, improved safety in safety critical applications and improved quality of life in medical applications.

Volt Free Contacts

Volt Free Contacts enable control of peripheral devices such as vacuum pumps, ovens, etc. Each VFC option has three independent volt-free NO/NC relay contacts. A number of conditions can be set within a PACE instrument to trigger a relay toggling its contacts.

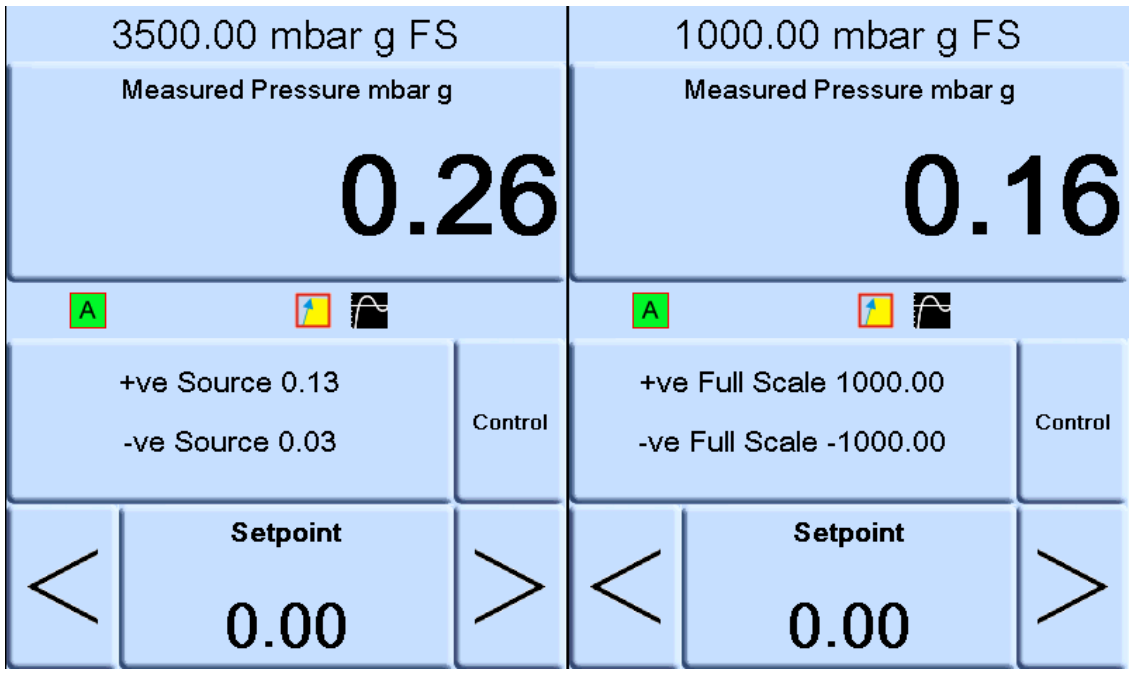
Aeronautical Option

Full control available in pure aeronautical units:

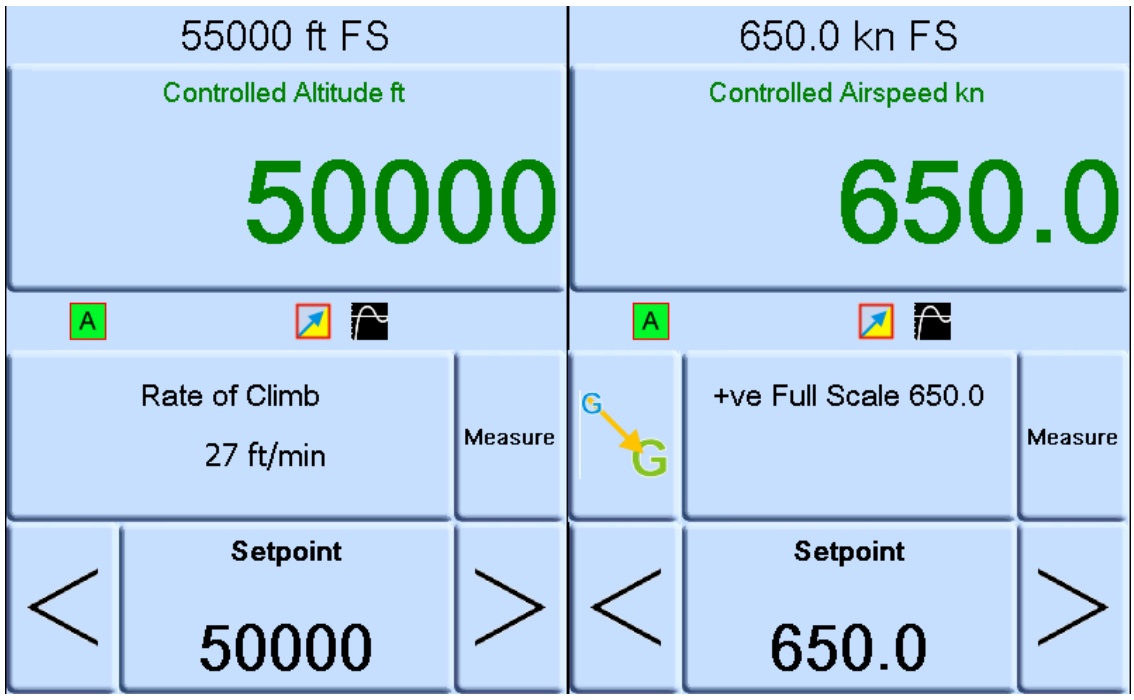
- Altitude - feet or meters
- Rate of Climb - feet or meters/minute, second
- Air Speed - knots or km/hour, mph
- Mach - mach number

Specifications

Pressure Measurement	
Standard Pressure Ranges	350 and 700 mbar gauge, 1, 2, 3.5, 7, 10, 20, 35, 70, 100, 135, 172 and 210 bar gauge 5, 10, 15, 30, 50, 100, 150, 300, 500, 1000, 1500, 2000, 2500, 3000 psi 35, 70, 100, 200, 350, 700 kPa, 1, 2, 3.5, 7, 10, 13.5, 17.2, 21 MPa All gauge versions available with negative calibration as standard. For absolute pressure ranges select any gauge range of 1 bar and above and add barometric option
Over Range Indication	10% above mbar/bar full scale pressure range.
Pressure Media	Dry, oil free, non-corrosive gas maintained at a value of 10% above the maximum required output pressure. Dry air or Nitrogen recommended.
	For low pressure ranges below 350 mbar please consult your sales representative.
Display	
Panel	7" (17.5 cm) TFT colour VGA resolution wide format display with integral touchscreen.
Comms Update Rate	8 times per second
Display Update Rate	2 times per second
Readout	± 9999999
Pressure Units	mbar, bar, Pa(N/m^2), hPa, kPa, MPa, mmHg @ 0°C, cmHg @ 0°C, mHg @ 0°C,, inHg @ 0°C, mmH_2O @ 4°C, cmH_2O @ 4°C, mH_2O @ 4°C, mmH_2O @ 20°C, cmH_2O @20 °C, mH_2O @ 20 °C, kg/m^2, kg/cm^2, torr, atm, psi, lb/ft^2, inH_2O @ 4°C, inH_2O@ 20°C, inH_2O @ 60°C, ftH_2O @ 4°C, ftH_2O @ 20°C, ftH_2O @ 60°C, User Defined 1, User Defined 2, User Defined 3, User Defined 4
Performance	
Gauge Mode Precision	0.005% Rdg + 0.005% FS includes linearity, hysteresis, repeatability and temperature effects for gauge pressures and assumes steady state temperature and regular zeroing.
Negative Gauge Precision	Maximum error at any given pressure value is equal to maximum error at the equivalent positive pressure value.
Absolute Mode Precision	Gauge mode precision + barometric reference precision
Barometric Reference Precision	Optional barometric reference 0.05 mbar or 0.000725 psi. Includes non-linearity, hysteresis, repeatability and temperature effects between 15°C (59°F) and 45°C (113°F).
Controller Stability	0.001% FS
Long term stability	To 0.01% reading per annum. 2 bar to 210 bar. 0.02% Rdg, 1bar & 0.03% Rdg, 350 mbar - 700 mbar. Barometer 0.1 mbar/annum
Gas Consumption	All supply gas is delivered to the system. No gas is used in measure mode, or when the instrument is turned off.
Aeronautical	
Altitude range -3000 to +55,000 ft (Altitude precision based on 35 to 1150 mbar range)	
Sea level	±2 ft
8500 ft	±3 ft
35,000 ft	±9 ft
Airspeed range to 650 knots (Airspeed precision based on 1000 mbar g range)	
50 knots	±1.00 kts
250 knots	±0.21 kts
500 knots	±0.11 kts
(Specifications assume steady state and regular zeroing.)	
Electrical	
Power Supply	90 V AC to 130 V AC @ 47 to 63 Hz & 180 V AC to 260 V AC @ 47 to 63 Hz. [Universal input.]
Communications	
Communication	RS232, IEEE-488, SCPI, DPI515, DPI510 and DPI500 emulation. Future expandability.
Environmental	
Temperature	Operating 10°C to 50°C (50°F to 122°F) Calibrated 15°C to 45°C (59°F to 113°F) Storage -20°C to 70°C (-4°F to 158°F)
Sealing	IP20
Humidity	5% RH to 95% RH non-condensing.
Vibration	Compliant with Def. Stan. 66-31 8.4 Cat 3 and MIL-T-28800E Cat 2.
Shock	Mechanical shock conforms to EN61010.
Conformity	LVD EN61010, EMC EN61326, PED, ROHS & WEEE - CE marked.
Physical	
Weight	12.5 kg or 27.5 lbs with single control module 17.5 kg or 38.5 lbs with dual control module
Dimensions	440 mm x 3U x 320 mm (17.3 in x 3U x 12.6 in)
Accessories:	
Pneumatic Connections	G ⅛ female Optional: G ⅛ male to ⅛ NPT female adaptor*, G ⅛ male to 7/16 – 20 UNF female adaptor, G ⅛ male to ¼ NPT female adaptor*, G ⅛ male to AN4 37 Deg male adaptor, G ⅛ male to G ¼ female adaptor, G ⅛ male to AN6 37 Deg male adaptor, G⅛ male to ¼ I.D. hose adaptor. IO-ADAPTOR-KIT-contains one of each of the above adaptors. *Required by US customers (5 for each control module) Differential connection kit Low Pressure Snubber reference port Diffuser gas exhaust Rack mount kit PACE6000 Negative gauge generator Vacuum system assembly
Options:	
Leak Test Test Program	Switch Test [with electrical connector] Analog O/P Volt Free contacts Burst Test Aeronautical
Calibration:	
	UKAS calibration PACE6000 (per module)



PACE 6000 Measurement Screen



PACE 6000 Altitude and Airspeed Measurement screen

Pneumatic Control Module

Ordering Information

Please state the following (where applicable)

1. Model PACE6000 - I6000 Chassis

2. Options

The range of optional features includes:

- Switch Test – Automatic & accurate calibration of pressure switches
- Leak Test – Automatically measures leak rates in the desired units/minute
- Test Program – Write & save numerous test programs
- Analog Output – for integration into older ATE applications
- Burst Test – For testing rupture discs or other elastic devices
- Volt Free Contacts – For automatically triggering ancillary devices
- Aeronautical - Allows for the test and calibration of aeronautical instruments

3. Mains Lead

Choose one from this list:

IO-IML-1	MAINS LEAD IEC-UK PLUG
IO-IML-2	MAINS LEAD IEC-JAPAN PLUG
IO-IML-3	MAINS LEAD IEC-EU PLUG
IO-IML-4	MAINS LEAD IEC-USA PLUG
IO-IML-5	MAINS LEAD IEC-SOUTH AFRICA/INDIA PLUG
IO-IML-6	MAINS LEAD IEC-CHINA PLUG

Area of Use

Please state area of use:

Europe
North America
Japan
Asia
Rest of World

4. Control Module(s) – CM2 Gauge Pressure Range(s)

	Bar	Psi	Pa
Control Module	25 mbar	0.35 psi	2.5 kPa
Control Module	70 mbar	1 psi	7.0 kPa
Control Module	200 mbar	3 psi	20.0 kPa
Control Module	350 mbar	5 psi	35.0 kPa
Control Module	700 mbar	10 psi	70.0 kPa
Control Module	1 bar	15 psi	100.0 kPa
Control Module	2 bar	30 psi	200.0 kPa
Control Module	3.5 bar	50 psi	350.0 kPa
Control Module	7 bar	100 psi	700.0 kPa
Control Module	10 bar	150 psi	1.0 MPa
Control Module	20 bar	300 psi	2.0 MPa
Control Module	35 bar	500 psi	3.5 MPa
Control Module	70 bar	1000 psi	7.0 MPa
Control Module	100 bar	1500 psi	10.0 MPa
Control Module	135 bar	2000 psi	13.5 MPa
Control Module	172 bar	2500 psi	17.2 MPa
Control Module	210 bar	3000 psi	21.0 MPa

Control Module(s) – CM2-B Gauge pressure ranges with Barometric option*

	Bar	Psi	Pa
Control Module	1 bar	15 psi	100.0 kPa
Control Module	2 bar	30 psi	200.0 kPa
Control Module	3.5 bar	50 psi	350.0 kPa
Control Module	7 bar	100 psi	700.0 kPa
Control Module	10 bar	150 psi	1.0 MPa
Control Module	20 bar	300 psi	2.0 MPa
Control Module	35 bar	500 psi	3.5 MPa
Control Module	70 bar	1000 psi	7.0 MPa
Control Module	100 bar	1500 psi	10.0 MPa
Control Module	135 bar	2000 psi	13.5 MPa
Control Module	172 bar	2500 psi	17.2 Mpa
Control Module	210 bar	3000 psi	21.0 MPa

*Provides absolute pressure option in addition to gauge pressure. In absolute mode adds 1 bar or equivalent to gauge pressure range. For absolute mode ranges below 1 bar please consult your sales representative.

Aeronautical Ordering Information

- For airspeeds to 650 knots, order a 1 barg/15 psi/1000 kPa control module

Options

5. Physical Accessories

Intecal Advanced Software – allows complete automation of the calibration process. (Please state e-mail address for registration)

Part Number	Description
781-016-A	INTECAL Advanced Software
IO-ADAPT-G1/4	Adaptor G1/8 Male to G 1/4 Female
IO-ADAPT-1/8NPT	Adaptor G1/8 Male to 1/8 NPT Female
IO-ADAPT-1/4NPT	Adaptor G1/8 Male to 1/4 NPT Female
IO-ADAPT-7/16UNF	Adaptor G1/8 Male to 7/16 - 20 UNF Female
IO-ADAPT-AN4	Adaptor G 1/8 Male to AN4 37 Deg Male
IO-ADAPT-AN6	Adaptor G 1/8 Male to AN6 37 Deg Male
IO-ADAPT-BARB	Adaptor G 1/8 Male to 1/4 I.D. Pipe
IO-ADAPTOR-KIT	Contains one of each of the above adaptors
IO-DIFF-KIT-LP	**Differential Connection Kit Low Pressure** Helps reduce the impact of thermal and/or pressure changes in ambient conditions occurring during the measurement cycle
IO-NEG-G-GEN-1	**Negative Gauge Pressure Generator** Used to generate small -ve gauge pressure (Venturi effect) to enable control at zero gauge without the need for a vacuum pump.
IO-VAC-SYS	**Vacuum System Check Valve Kit** Allows exhaust pressure to bypass vacuum pump to atmosphere, which improves control performance from any positive pressure downwards.
IO-SNUBBER-1	**Snubber Reference Port** Provides a pneumatic time constant to the sensor -ve port, thus attenuating the effect of ambient draughts.
IO-DIFFUSER-1	**Diffuser Gas Exhaust** Screws into vent or -ve supply port to diffuse exhaust gas
IO-RMK-P6000	**Rack Mount Kit** 19" Rack Mount Kit
IO-FILTER-KIT	Filter kit control manifold

6. Supporting Services

Services Ordering Information:

Please order the following as separate line items.

Calibration

IO6000-ACAL-PRESS
PACE6000 accredited pressure calibration of control module either on its own or within the instrument chassis.

Extended Warranty

Extend your instruments manufacturer's warranty to 2, 3, 4, or 5 years.

WARRANTY- *
Where * = 2, 3, 4 or 5 to indicate your required extended warranty period (eg: WARRANTY-3)

Calibration and Repair Contracts

Three levels of calibration and repair service contracts are available.

Bronze – Accredited calibration only (pre and post adjustment results given)
Silver – Accredited calibration and Level A repair
Gold – Accredited calibration and Level A and Level B repair

Available in yearly intervals up to 5 years.

CALREP-BRONZE-*
CALREP-SILVER-*
CALREP-GOLD-*
Where * = 1, 2, 3, 4 or 5 to indicate your required calibration and repair contract period (eg: CALREP-SILVER-3)

Note: Level A repair covers valves, seals, fittings and internal sensor. Level B repair covers main PCA, manifold (where applicable).

www.gesensinginspection.com

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