3D INSTRUMENTS. LLC
Direct Drive Difference
SIERRA PRECISION

Accu-Cal Plus Digital Gauge
Gauge & Absolute Versions

Pictured with Optional Boot

Features

➢ **Intrinsically Safe -** Canadian Standards Association (CSA) approval for use in Class 1, Division 2, Groups A, B, C and D hazardous area locations

➢ **Precise Measurements -** 0.05% FS accuracy on most ranges. Vacuum accuracy: 0.25% FS for ranges 0-500 psi and below-**high accuracy vacuum version available**

➢ **Temperature Compensation -** accuracy not de-rated over the temp. range of 32-122 deg F with rigorous 3 temperature calibration

➢ **Rugged enclosure -** 300 Series Stainless Steel case with NEMA-4 waterproof rating

➢ **Security -** Password protected "through the keypad" Zero and Calibration information

➢ **Analog/Digital Display -** Large, backlit, 5 digit display with 0.65" high digits and complimentary 20 segment bar graph

➢ **Low Power consumption -** 2000 hours battery life @ slow sample rate from three (3) size AA alkaline batteries; adjustable sample rates

➢ **Versatile -** 16 pressure ranges available. Displays to 23 engineering units plus 1 user configurable unit.

➢ **Communication -** RS-232 output of ASCII data (optional cable required)

➢ **Peak/Valley measurements - MIN/MAX** function permits storage and retrieval of MIN and MAX pressure values

➢ **Tare -** allows re-zeroing of the gauge anywhere across the span of the gauge

➢ **Options -** 24 vdc power, mounting flanges, RS-232 output chemicallsanitary seals and .05% FS accuracy vacuum gauge.

Product Description

The Accu-Cal Plus Digital Test Gauge from 3D Instruments incorporates the ultimate in pressure measurement technology to address the calibration requirements of current process monitoring and control instrumentation. The Accu-Cal Plus combines the accuracy of digital technology with the simplicity of an analog gauge and achieves performance, ease-of-use and a feature set unmatched in the pressure measurement world!

Outstanding SS isolated pressure sensors 0-15 to 10,000 psig and from 0-15 to 0-300 psia provide for unmatched accuracy of 0.05% full scale. Additionally, a non-isolated 0-1 psig sensor provides for draft pressure measurement. Temperature compensation circuitry coupled with a rigorous multi-temperature calibration routine maintains this astounding accuracy over a temperature range of 32 to 122 deg F!

A 5 digit LCD with oversized 0.65" digits, high contrast, rotatable display and backlighting provides for superior resolution and excellent readability.. .even at a distance or in poor light or at a bad viewing angle!! As the perfect complement to the digital display, the Accu-Cal Plus offers a 20 segment bar graph scaled to 0-100% FS. This safety oriented feature gives the user a visual reference of their process pressure relative to scale of the gauge.

The Accu-Cal Plus is housed in a polished 300 Series Stainless Steel case, which is rated waterproof according to NEMA-4/IP-65 specifications. All device controls including: POWER, ZERO, MIN/MAX and CONFIGURATION are selectable via a Lexan keypad for reliable operation in adverse weather conditions. To reduce maintenance, low power circuitly provides for a 2000 hour battery life at a sample rate of 0.5/sec with no backlighting.

This high-end pressure instrument provides for numerous user-configurable features such as: adjustable sample rates, damping (smoothing of data on LCD). Tare (re-zero across span of the gauge), custom Engineering Units, MIN/MAX and "password protected" field calibration. Other features include ambient temperature measurement and an optional RS-232 cable for streaming real-time ASCII data.

The combination of sophisticated precision pressure measurement technology; robust design, ease-of-use, feature set, and a wide array of pressure ranges makes the Accu-Cal Plus from 3D Instruments the ideal choice for your demanding pressure monitoring or test and calibration applications.

GENERAL SPECIFICATIONS

Accuracies:
0-1 psi: 0.1% of Full Scale (FS) for both vacuum and positive pressure
Positive Pressure: >1 psi: 0.05% of FS
Vacuum: ±0.25% of FS for ranges to 500 psi and 2% FS for ranges > 500 psi
High Accuracy Vacuum: Series 75114 and 761 14 - vacuum accuracy is ±0.05% FS, where FS = 30 PSI
All accuracies include all variations due to: non-linearity, hysteresis, repeatability and temperature over the compensated temperature range.

Ranges/Resolutions/Proof Pressure:

Range (Bar)	Resolution	Proof Pressure
-1-0-1 psi	.0001	5 psi
-5-0-15 psi (1 Bar)	.001	30 psi
-5-0-30 psi (2 Bar)	.001	60 psi
-14.7-0-30 (2Bar) -Vac gauge	.001	60 psi
-14.5-0-100 psi (7 Bar)	.01	200 psi
-14.5-0-300 psi (20 Bar)	.01	600 psi
-14.5-0-500 psi (35 Bar)	.01	1000 psi
-14.5-0-1,000 psi (70 Bar)	.1	2000 psi
-14.5-0-2,000 psi (140 Bar)	.1	3000 psi
- 14.5-0-3,000 psi (200 Bar)	.1	6000 psi
-14.5-0-5,000 psi (350 Bar)	.1	10000 psi
-14-0-10,000 psi (700 Bar)	1	15,000 psi
0-15 psia	.001	30 psia
0-30 psia	.001	60 psia
0-100 psia	.01	200 psia
0-300 psia	.01	600 psia

Environmental:
Operating range: -10 °C-55 °C (14 °F-131 °F)
Compensated range: 0-50 °C (32 °F-122 °F)
Storage range: -20 °C-70 °C (-4 °F-158 °F)
Agency Approvals: (75114 Battery Power versions only)
Complies with requirements for Class 1, Division 2, Groups A, B, C & D operation
- CSA and ATEX (pending) Intrinsic Safety Approvals
- CE Mark

Power:
3 x AA alkaline batteries. Delivers 1500 hours service @ 3 samples/sec @ 72 °F without backlight or 2000 hours at the 1 sample/2 secs w/o backlight @ 72 °F
Display:
High contrast - LED backlight 5 digit, 0.65" high; 20 segment analog bargraph scaled to 0-100% of FS. LCD includes: Engr. Unit indication, MIN/MAX icons, low battery icon and backlight icon
Case:
Polished 304 Stainless Steel, NEMA-4/IP-65 waterproof rated
Mounting flanges (optional):
Front or back 300 series SS welded to case ANSI bolt pattern for 4 ½" gauge
RS-232 (optional):
Custom cable - ASCII data
Graphic Overlay:
Polycarbonate
Pressure Sensors:
0-1 psi: Silicon sensor.. media compatible with non-corrosive gases. All other ranges: isolated 316SS - wetted parts are 316SS
Process Connection:
¼" NPT male 316SS
Dimensions (w/o flange):
4.375" x 5.0" x 1.5"
Weight (w/o flange):
1.09 lbs (495 gms)

FEATURES

Standard Engineering Units*:
PSI, Bar, Kg/cm², inH$_2$O(4 °C, 20 °C or 60°F), ftH$_2$O(4 °C, 20 °C or 60°F), cmH$_2$O(4 °C & 20 °C), mH$_2$O (4 °C & 20 °C), kPa, MPa, inBar, inHg, mmHg, Torr, ftSw, mSw, mmH$_2$O(4 C and 20°C) and custom Engineering Units
*Not all Engineering Units enabled for all ranges

Password Protection:
"Tamper-proof" password protection of Zero and Calibration data is easily achieved via the keypad

LCD Bargraph:
20 segment bargraph is scaled at: 0-100% FS Provides a convenient visual reference of pressure readings relative to the pressure range of the gauge

Sample Rates:
User configurable 0.5/sec, 1/sec, 3/sec & 10/sec. 10/sec sampling good for QA/QC destructive tests

Power Management:
Adjustable auto power shut-off: 1-30 minutes - shutoff feature when enabled extends battery life

Damping:
Damping can be enabled to integrate readings and "smooth" LCD display: good for pulsation sources

MIN/MAX:
Capture & query MIN /MAX values: many applications in process monitoring and control

Tare:
0-100% FS zero offset: when used with custom Engr. Units, the gauge can be used in liquid level, volume and receiver gauge applications.

ORDERING INFORMATION

	①	② ③ ④	⑤
PART NUMBER:	XXXX -	XX B XX	XXX

Example:

75514-33B55   Battery Powered Accu-Cal Plus with 300 series SS case, 3000 psig sensor, bottom ¼" NPT male fitting without mounting flange

① **Product Description:**   **75514** - Accu-Cal Plus: 3 x AA battery powered (Batteries Included)
   76514 - Accu-Cal Plus: 24 VDC version **(does not include a 24 VDC adapter)**
   75114 - High Accuracy Vacuum Accu-Cal Plus: 3 x AA battery powered version
   76114 - High Accuracy Vacuum Accu-Cal Plus: 24 VDC version **(does not include 24 volt adapter)**

② **Pressure Ranges Codes:** (all ranges include vacuum measurement)
04: -1-0-1 psig

15: -5-0-15 psig	**23**: -14.5-0-100 psig	**27**: -14.5-0-500 psig	**32**: -14.5-0-2,000 psig	**35**: -14.5-0-5,000 psig
21: -5-0-30 psig	**26**: -14.5-0-300 psig	**29**: -14.5-0-1,000 psig	**33**: -14.5-0-3,000 psig	**38**: -14.0-10,000 psig

48: -14.7-0-30 psig High Accuracy Vacuum Gauge - 0.05% FS VAC/P+ Pressure Accuracy (FS = 30 PSI) use only with models 75114 and 76114

72: 0-15 psia	**73:** 0-30 psia	**75:** 0-100 psia	**77:** 0-300 psia

③ **Process connection:**   B: ¼" NPT male

④ **Connection Position and Mounting Flange Codes: (Codes 35 and 45 not available on 76114 and 76514 series)**
15: Flange front, bottom fitting   **35**: Flange back, bottom fitting   **55**: Flange none, bottom fitting
25: Flange front, back fitting   **45**: Flange back, back fitting   **65**: Flange none, back fitting

⑤ **Option Codes:** leave blank if no options are required
PNO: Accu-Cal Plus Cal Kit #1 includes an Accu-Cal Plus Digital Test Gauge, Model 8110-300: 0-300 psi Pneumatic Handpump, Hose Kit and Series-200 ABS waterproof case
PRO: Accu-Cal Plus Cal Kit #2 includes an Accu-Cal Plus Digital Test Gauge, Model 8110-300: Vac/0-300 psi Duplex Handpump, Hose Kit and Series-200 ABS waterproof case
PUO: Accu-Cal Plus Cal Kit #1 includes an Accu-Cal Plus Digital Test Gauge, Model 8112-3000: 0-3000 psi Hydraulic Handpump, Hose Kit and Series-200 ABS waterproof case
GCO1: Calibration Certificate Level #1 - readings done in descending pressure at room temperature
GCO2: Calibration Certificate Level #2 - readings in both ascending and descending pressures at room temperature
GCO3: Calibration Certificate Level #3 - readings in both ascending and descending pressures done at three distinct temperatures...typically: 22 °C, 5 °C and 45 °C

⑥ **Accessories:**
• Custom RS-232 Cable - Part Number: 2025-0004
• 110 VAC to 24 VDC power adapter wall mount style; 6 foot cable - Part Number: 2001-0090
• Protective yellow rubber boot for gauge - Part Number: 2023-0005