

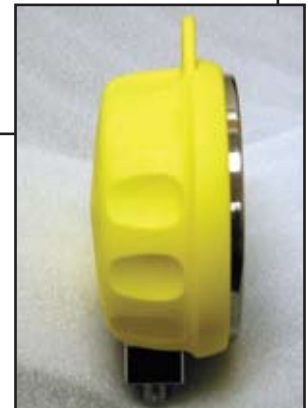


**INSTRUMENTS, LLC**  
Direct Drive Difference  
**SIERRA PRECISION**

## Accu-Cal Plus Digital Gauge Gauge & Absolute Versions

### 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 chemicals/sanitary seals and .05% FS accuracy vacuum gauge.



*Pictured with  
Optional Boot*

### 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 circuitry 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

# FEATURES

## 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 76114 - 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: (75514 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 1/2" 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:

1/4" NPT male 316SS

## Dimensions (w/o flange):

4.375" x 5.0" x 1.5"

## Weight (w/o flange):

1.09 lbs (495 gms)

## Standard Engineering Units:

PSI, Bar, Kg/cm<sup>2</sup>, inH<sub>2</sub>O(4 °C, 20 °C or 60°F), ftH<sub>2</sub>O(4 °C, 20 °C or 60°F), cmH<sub>2</sub>O(4 °C & 20 °C), mH<sub>2</sub>O (4 °C & 20 °C), kPa, MPa, inBar, inHg, mmHg, Torr, ftSw, mSw, mmH<sub>2</sub>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 - shut-off 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 1/4" 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)
 

<b>04:</b> -1-0-1 psig	<b>23:</b> -14.5-0-100 psig	<b>27:</b> -14.5-0-500 psig	<b>32:</b> -14.5-0-2,000 psig	<b>35:</b> -14.5-0-5,000 psig
<b>15:</b> -5-0-15 psig	<b>26:</b> -14.5-0-300 psig	<b>29:</b> -14.5-0-1,000 psig	<b>33:</b> -14.5-0-3,000 psig	<b>38:</b> -14.0-10,000 psig
<b>21:</b> -5-0-30 psig	<b>48:</b> -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	<b>72:</b> 0-15 psia	<b>73:</b> 0-30 psia	<b>75:</b> 0-100 psia
<b>48:</b> -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		<b>77:</b> 0-300 psia		
- ③ **Process connection:** B: 1/4" NPT male
- ④ **Connection Position and Mounting Flange Codes:** (Codes 35 and 45 not available on 76114 and 76514 series)
 

<b>15:</b> Flange front, bottom fitting	<b>35:</b> Flange back, bottom fitting	<b>55:</b> Flange none, bottom fitting
<b>25:</b> Flange front, back fitting	<b>45:</b> Flange back, back fitting	<b>65:</b> 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

## 3D Instruments, LLC

2900 E. White Star Avenue, Anaheim, California 92806 USA

Phone: (714) 399-9200 Fax: (714) 399-9221

Internet: www.3dinstruments.com E-mail: info@3dinstruments.com

