

# Additel 761A

## Series Automated Pressure Calibrators



- Automated and self-contained pressure generation and control to 1,000 psi ( 70 bar)
- Precision accuracy models to 0.01%FS
- Standard accuracy to 0.02%FS
- Two removable internal pressure modules for multi-range selection
- Control stability to 0.003%FS
- Portable, designed for use in the field and in the lab
- Ability to measure two external pressure modules
- Wi-Fi, Bluetooth, USB and Ethernet communication
- Full HART field communicator
- HART and profibus communication
- Data logging and task management
- Patented electric pump technology and improved speed



### OVERVIEW

At Additel, innovation and continuous improvement are part of our company's culture and the products we introduce. When we set out to deliver the Additel 761A series calibrators, we knew we needed to provide breakthrough improvements and additional value to the existing line of calibrators (Additel 761 series). The ADT761A has many improvements: increased pressure range to 1,000 psi (70 bar), removable internal pressure modules, precision accuracy models available to 0.01%FS, increased speed to pressure, ability to read two external pressure modules, touch screen display, Wi-Fi, Bluetooth, and Ethernet communications, double the original battery life, and more!

Just like the first generation, this second generation product is completely self-contained and automated with a built-in pump for pressure generation and precision control technology. Simply set the desired pressure and watch the calibrator do the work.



*Metrology Made Simple*

### ADT761A-LLP

The Additel 761A-LLP is designed for low pressure calibration and comes with a  $\pm 30$  inH<sub>2</sub>O ( $\pm 75$  mbar) high range module and a low range module of your choice ranging from  $\pm 20$  inH<sub>2</sub>O to as low as  $\pm 0.25$  inH<sub>2</sub>O ( $\pm 50$  to  $\pm 0.62$  mbar). This unit has an accuracy of 0.05%FS with control stability better than 0.005%FS. All measurements can be made in differential or gauge pressures.



### ADT761A-D

The Additel 761A-D also provides differential and gauge measurement which covers the range of -13.5 to 35 psi (-0.95 to 2.5 bar). This unit comes with a CP35 module (-13.5 to 35 psi) and one low range module of your choice ranging as low as  $\pm 10$  inH<sub>2</sub>O (25 mbar). Each ADT761A-D can be preconfigured with the modules that fit your need to give you the best precision at the pressures you perform calibrations.



### ADT761A-500

The Additel 761A-500 will generate and control from vacuum pressures up to 500 psig (35 bar.g). Both gauge and absolute pressures can be realized due to a built-in barometer. Each unit comes with a CP500 module (-13 to 500 psig) for the high range and the low range can be preconfigured based on the variety of modules available down to 10 psig (0.7 bar.g).

### ADT761A-1K

The Additel 761A-1K will generate and control from vacuum pressures up to 1,000 psig (70 bar.g). This unit can typically achieve 1,000 psi in less than 45 seconds. Like the ADT761A-500, both gauge and absolute pressures can be realized due to a built-in barometer. Each unit comes with a CP1K module (-13 to 1,000 psig) for the high range and the low range can be preconfigured based on the variety of modules available down to 30 psig (2 bar.g).



### ADT761A-BP

The Additel 761A-BP is designed for calibration of barometer sensors. With a range of 100 to 1200 hPa and an accuracy of 0.01%FS, this unit is ideal for calibration on the bench or in the field.

## Pressure Specifications

| Model Specification     | 761A-LLP   | 761A-D                | 761A-500                               | 761A-1K                                | 761A-BP   |
|-------------------------|--|-----------------------|--|--|-----------|
| Max Pressure Range      | 30 inH <sub>2</sub> O (75 mbar)  | 35 psi (2.5 bar)      | 500 psig (35 bar.g)                    | 1,000 psig (70 bar.g)                  | 1,200 hPa |
| Min Pressure Range      | -30 inH <sub>2</sub> O (-75 mbar)  | -13.5 psi (-0.95 bar) | -13 psi (-0.9 bar)                     | -13 psi (-0.9 bar)                     | 100 hPa   |
| Accuracy <sup>(1)</sup> | 0.05%FS  | 0.02%FS               | User selectable:<br>0.01%FS or 0.02%FS | User selectable:<br>0.01%FS or 0.02%FS | 0.01%FS   |
| Stability               | 0.003%FS or 0.03 Pa  | 0.003%FS              | 0.003%FS                               | 0.003%FS                               | 0.02 hPa  |
| Pressure Type           | Differential, Gauge  | Differential, Gauge   | Gauge, Absolute                        | Gauge, Absolute                        | Absolute  |
| Over Range Indication   | 120%   |                       |  |  |           |
| Resolution              | 6 digits   |                       |  |  |           |
| Measurement Units       | Pa, hPa, kPa, mPa, bar, mbar, psi, mmHg@0°C, cmHg@0°C, mHg@0°C, inHg@0°C, inH <sub>2</sub> O@4°C, mmH <sub>2</sub> O@4°C, cmH <sub>2</sub> O@4°C, mH <sub>2</sub> O@4°C, mmH <sub>2</sub> O@20°C, cmH <sub>2</sub> O@20°C, mH <sub>2</sub> O@20°C, inH <sub>2</sub> O@20°C, inH <sub>2</sub> O@68°F, kgf/cm <sup>2</sup> , mtorr, torr, lb/ft <sup>2</sup> , tsi, custom |                       |  |  |           |
| Barometric Accuracy     | N/A  | N/A                   | 55 Pa                                  | 55 Pa                                  | N/A       |

[1] One year accuracy (including 1 year stability). FS specification applies to the span of the module range.

[2] Specification based on gauge measurement. An additional 55 pa uncertainty will need to be included when measuring in absolute mode. Applicable only for use with the ADT761A-500 and ADT761A-1K.

\* Additel 761A calibrators support 161 series intelligent digital pressure modules that are available for gauge, vacuum pressure from -15 psi to 60,000 psi (-1 bar to 4,200 bar). For detailed specifications refer to the 161 series pressure modules datasheet.

## Electrical Specifications

| Model Specification      | Range   | Resolution                                 | Accuracy  | Note   |
|--------------------------|---|--|---|--|
| mA Measure               | Auto-ranging<br>±25 or ±50 mA   | 0.1 µA                                     | 0.008%RD+0.004%FS                                     | Impedance <10Ω   |
| V Measure                | ±300 mV   | 1 µV                                       | 0.008%RD+0.002%FS                                     | Impedance >1 GΩ  |
|                          | Auto-ranging<br>±5, ±12 or ±30 V  | ±5 V:20 µV<br>±12 V:100 µV<br>±30 V:100 µV | 0.008%RD+0.002%FS                                     | Impedance >1 MΩ  |
| Loop Power Source        | 24 V  | N/A  | ±0.24 V   | 50 mA (Max Loading)  |
| mA Source                | 0 to 2.5 mA or<br>2.5 to 25 mA  | 0-2.5 mA: 0.05µA<br>0-25 mA:0.5µA          | 0-2.5 mA: 0.008%RD+0.1 µA<br>0-25 mA: 0.008%RD+1.0 µA | 20 mA @ 1 KΩ   |
| Power Source             | 16 to 30 V  | 1 V  | ±1 V  | 70 mA (Max Loading)  |
| V Source                 | 0 to 16 V   | 250 µV                                     | 0.008%RD+0.002%FS                                     |  |
| Pressure Switch          | Mechanical Switch, Live<br>Mechanical Switch, NPN Switch,<br>PNP Switch | N/A  | N/A   | Response time<10 ms.<br>If the switch is live, voltage range<br>will be (3-30) V |
| Temperature Compensation | 15°C to 25°C  |  |   |  |
| Temperature Coefficient  | Outside of 15°C to 25°C: <±0.0005%RD+0.00005%FS/°C                      |  |   |  |
| Misuse Protection        | Up to 30 V on any two sockets   |  |   |  |

## Internal Module Specification and Compatibility

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| <i>Model Range</i>    | <i>inH<sub>2</sub>O</i> <sup>[6]</sup> | <i>mbar</i> <sup>[6]</sup> | <i>Media</i> | <i>Accuracy (%FS)</i> <sup>[1]</sup>      | <i>Burst Pressure</i> | <i>761A-LLP</i> | <i>761A-D</i> | <i>761A-500</i> | <i>761A-1K</i> |
|-----------------------|--|----------------------------|--------------|---|-----------------------|-----------------|---------------|-----------------|----------------|
| ADT155-20-DP025       | ±0.25                                  | ±0.62                      | G            | 0.2 <sup>[2]</sup>                        | 100x                  | ●               |               |                 |                |
| ADT155-10-DP050       | ±0.5                                   | ±1.25                      | G            | 0.1 <sup>[3]</sup>                        | 100x                  | ●               |               |                 |                |
| ADT155-05-DP1         | ±1                                     | ±2.5                       | G            | 0.05 <sup>[4]</sup>                       | 100x                  | ●               |               |                 |                |
| ADT155-05-DP2         | ±2                                     | ±5                         | G            | 0.05 <sup>[4]</sup>                       | 100x                  | ●               |               |                 |                |
| ADT155-05-DP5         | ±5                                     | ±10                        | G            | 0.05 <sup>[4]</sup>                       | 50x                   | ●               |               |                 |                |
| ADT155-05-DP10        | ±10                                    | ±25                        | G            | 0.05 <sup>[4]</sup>                       | 20x                   | ●               | ●             |                 |                |
| ADT155-05-DP20        | ±20                                    | ±50                        | G            | 0.05                                      | 20x                   | ●               | ●             |                 |                |
| ADT155-05-DP30        | ±30                                    | ±75                        | G            | 0.05                                      | 20x                   | ●               | ●             |                 |                |
| ADT155-05-DP50        | ±50                                    | ±125                       | G            | 0.05                                      | 3x                    |                 | ●             |                 |                |
| ADT155-02-DP100       | ±100                                   | ±250                       | G            | 0.02                                      | 3x                    |                 | ●             |                 |                |
| ADT155-02-DP150       | ±150                                   | ±350                       | G            | 0.02                                      | 3x                    |                 | ●             |                 |                |
| ADT155-02-DP300       | ±300                                   | ±700                       | G            | 0.02                                      | 3x                    |                 | ●             |                 |                |
| ADT155-02-DP400       | -380 to 400                            | -950 to 1K                 | G            | 0.02                                      | 3x                    |                 | ●             |                 |                |
| ADT155-02-DP800       | -380 to 800                            | -950 to 2K                 | G            | 0.02                                      | 3x                    |                 | ●             |                 |                |
| ADT155-02-DP1K        | -380 to 1K                             | -950 to 2.5K               | G            | 0.02                                      | 3x                    |                 | ●             |                 |                |
| <b>Gauge Pressure</b> | <b>psig</b>                            | <b>bar.g</b>               |              |   |                       |                 |               |                 |                |
| ADT155-02-CP10        | ±10                                    | ±0.7                       | G            | 0.02 <sup>[5]</sup>                       | 3x                    |                 | ●             | ●               |                |
| ADT155-02-CP15        | -13.5 to 15                            | -0.95 to 1                 | G            | 0.02 <sup>[5]</sup>                       | 3x                    |                 | ●             | ●               |                |
| ADT155-01/02-CP30     | -13.5 to 30                            | -0.95 to 2                 | G            | 0.01 <sup>[7]</sup> / 0.02 <sup>[5]</sup> | 3x                    |                 | ●             | ●               | ●              |
| ADT155-01/02-CP35     | -13.5 to 35                            | -0.95 to 2.5               | G            | 0.01 <sup>[7]</sup> / 0.02 <sup>[5]</sup> | 3x                    |                 | ●             | ●               | ●              |
| ADT155-01/02-CP50     | -13.5 to 50                            | -0.95 to 3.5               | G            | 0.01 / 0.02 <sup>[5]</sup>                | 3x                    |                 |               | ●               | ●              |
| ADT155-01/02-CP100    | -13.5 to 100                           | -0.95 to 7                 | G            | 0.01 / 0.02 <sup>[5]</sup>                | 3x                    |                 |               | ●               | ●              |
| ADT155-01/02-CP150    | -13.5 to 150                           | -0.95 to 10                | G            | 0.01 / 0.02 <sup>[5]</sup>                | 3x                    |                 |               | ●               | ●              |
| ADT155-01/02-CP200    | -13.5 to 200                           | -0.95 to 14                | G            | 0.01 / 0.02 <sup>[5]</sup>                | 3x                    |                 |               | ●               | ●              |
| ADT155-01/02-CP300    | -13.5 to 300                           | -0.95 to 20                | G            | 0.01 / 0.02 <sup>[5]</sup>                | 3x                    |                 |               | ●               | ●              |
| ADT155-01/02-CP500    | -13.5 to 500                           | -0.95 to 35                | G            | 0.01 / 0.02 <sup>[5]</sup>                | 3x                    |                 |               | ●               | ●              |
| ADT155-01/02-CP600    | -13.5 to 600                           | -0.95 to 40                | G            | 0.01 / 0.02 <sup>[5]</sup>                | 3x                    |                 |               |                 | ●              |
| ADT155-01/02-CP1K     | -13.5 to 1K                            | -0.95 to 70                | G            | 0.01 / 0.02 <sup>[5]</sup>                | 3x                    |                 |               |                 | ●              |

[1] FS specification applies to the span of the module range. Accuracy includes one-year stability, except for DP025 to DP10 modules.

[2] Accuracy is a 6 months spec, 1-year long-term drift is 0.2%FS.

[3] Accuracy is a 6 months spec, 1-year long-term drift is 0.1%FS.

[4] Accuracy is a 6 months spec, 1-year long-term drift is 0.05%FS.

[5] Specification based on gauge measurement. An additional 50 Pa uncertainty will need to be included when measuring in absolute mode.

[6] The low module pressure range may be outside the pressure range of the calibrator.

Applicable only for use with the ADT761A-500 and ADT761A-1K.

[7] 0.01%FS accuracy specification not available for 761A-D models.

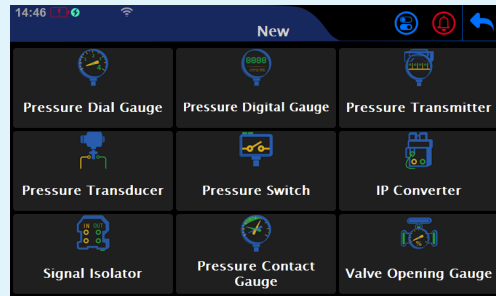
\* ADT155 Pressure modules are calibrated in psi & inH<sub>2</sub>O.

## General Specifications

| Specification                | Description   |
|------------------------------|---|
| User Interface               | Color touch screen and/or keypad operation  |
| Channels                     | Four total: one electrical, high or low internal pressure module, two external pressure modules |
| Enclosure IP Rating          | IP31  |
| Battery                      | Rechargeable Li-Ion battery, typically 12 hours of operation, recharges in less than 5 hours.   |
| Power                        | Rechargeable Li-Ion battery, external power 110/220 V power adapter 27 V                        |
| Display                      | 7" TFT touch screen 800 x 480 color   |
| Communications               | USB, LAN, Bluetooth, Wi-Fi  |
| Weight                       | <17.52 lb (7.95 KG)   |
| Size                         | 11.77 x 7.60 x 7.56 in (299 x 193 x 192 mm)   |
| Certification                | ISO 17025 accredited certificate of calibration with NIST-traceable data                        |
| Data Storage                 | 6 GB  |
| Data Logging                 | Up to 1,000,000 readings (data and time stamped)  |
| HART Communicator            | Read, configure and calibrate HART devices - DD files updated periodically                      |
| Task documentation           | Up to 1000 tasks can be stored with data  |
| Automation Functions         | Switch test, auto step, leak test   |
| User Interface Localization  | English, German, French, Italian, Spanish, Portuguese, Chinese, Japanese, and Russian           |
| Pump life                    | >1,000,000 cycles   |
| Environmental Specifications | Operating temperature: 32°F to 122°F (0°C to 50°C)  |
|                              | Compensated temperature: 32°F to 122°F (0°C to 50°C)  |
|                              | Storage temperature: -20°C to 60°C (-4°F to 120°F)  |
|                              | Humidity: <90%, non-condensing  |
| Vibration and Shock          | Vibration: 4 g (20 to 2,000 Hz)<br>Shock: 8 g, 1 meter drop test                                |
| Compliance                   | CE  |
| Software Compatibility       | ACal, Additel Land and Additel Link for access via mobile application                           |
| Warranty                     | 1 year  |



Pressure gauge / transmitter / switch calibration



Task Menu



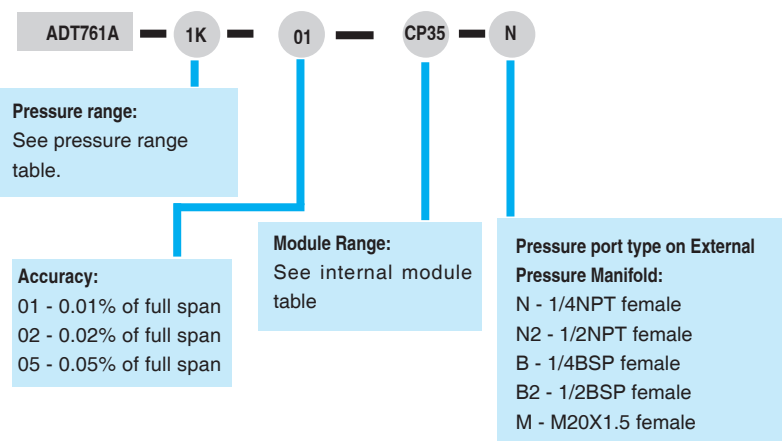
High Pressure Automated Calibration

## Pressure Range

| Type  | Model                 | Pressure Range                     | High-Range Pressure Module               |                                     | Low-Range Pressure Module          |                           |
|---|-----------------------|------------------------------------|--|-------------------------------------|------------------------------------|---------------------------|
|   |                       |                                    | Range                                    | Accuracy                            | Range                              | Accuracy                  |
| Low / Differential Pressure                 | ADT761A-LLP-05-DPXX   | -75 to 75 mbar (-30 to 30 inH2O)   | DP30: -75 to 75 mbar (-30 to 30 inH2O)   | 0.05% FS                            | User selectable from DP20 to DP025 | See Internal Module Table |
|   | ADT761A-D-02-DPXX-X   | -0.95 to 2.5 bar (-13.5 to 35 psi) | CP35: -0.95 to 2.5 bar (-13.5 to 35 psi) | 0.02% FS                            | User selectable from DP10 to CP30  | See Internal Module Table |
| Standard Accuracy Gauge / Absolute Pressure | ADT761A-500-XX-CPXX-X | -0.9 to 35 bar (-13 to 500 psi)    | CP500: -0.9 to 35 bar (-13 to 500 psi)   | User selectable: 0.01%FS or 0.02%FS | User selectable from CP10 to CP300 | See Internal Module Table |
|   | AADT761A-1K-XX-CPXX-X | -0.9 to 70 bar (-13 to 1000 psi)   | CP1K: -0.9 to 70 bar (-13 to 1000 psi)   | User selectable: 0.01%FS or 0.02%FS | User selectable from CP30 to CP600 | See Internal Module Table |

## ORDERING INFORMATION

## Model Number



| Optional Accessories |   |  |
|----------------------|---|--|
| ADT161               | See datasheet of ADT161 for more info; connection cable sold separately |  |
| 9060                 | Pressure module connection cable  |  |
| 9530                 | Additel/ACal Automated Calibration Software                             |  |
| ADT100-761Hose       | ADT761 hose, 5 feet (polyamide, 2,390 psi burst)                        |  |
| ADT106A-X            | External Pressure Manifold (Excl ADT761A-LLP)                           |  |
| ADT100-761A-X        | Hose Test Kit, 5 feet flexible hose                                     |  |

| Accessories (included)  |   |  |
|---|---|--|
| ADT106A-X<br>External Pressure Manifold<br>(Excl ADT761A-LLP)                 | 1 pc  |  |
| 9818<br>110V/220V external<br>Power adapter                                   | 1 pc  |  |
| 9725<br>Chargeable Li-ion battery   | 1 pc  |  |
| 9240<br>DP gauge holder, rubber<br>(Only for ADT761A-LLP)                     | 1 pc  |  |
| 9060<br>(Pressure module<br>connection cable)                                 | 1 pc  |  |
| ADT100-761A-X<br>Hose Test Kit, 5 feet flexible<br>hose<br>(excl ADT761A-LLP) | 1 pc + 1 pc<br>adapter  |  |
| 1220211206<br>Adapter, quick female to barb<br>(Only for ADT761A-D)           | 1 pc  |  |
| 9022<br>Test Leads for calibrator   | 2 sets<br>(4 pcs)   |  |
| 9907<br>Carrying case for 761A<br>calibrator and accessory                    | 1 pc  |  |
| O-rings   | 20 pcs  |  |
| Pressure Hose   | 1 pc for the<br>ADT761A-D<br>1 pc for the<br>ADT761A-BP             |  |
| ISO17025 accredited<br>calibration certificate                                | 1 pc  |  |
| Threaded plug<br>(Excl ADT761A-LLP)   | 1 pc  |  |
| USB Cable   | 1 pc  |  |
| Barb Fitting<br>(Only for ADT761A-D<br>and ADT761A-BP)                        | 1 pc  |  |
| Silicone Tube   | 2 meters for<br>the ADT761A-<br>LLP<br>1 meter for the<br>ADT761A-D |  |