

# Additel 273Ex

## Handheld Pressure Calibrator

- 0.02%, 0.05% FS Accuracy
- Intrinsically Safe
- Field Switchable Pressure Module
- Dual Digital Pressure Module Inputs
- Color Touchscreen Display
- Built-in Quick Test Task Feature
- Built-in Barometer
- Intuitive Smartphone Like Interface
- Bluetooth and USB Communication
- Optional HART Communication
- Communicates with Additel's Link Mobile App



Additel 273Ex with ADT158Ex module

### OVERVIEW

Additel's 273Ex is an Intrinsically safe handheld multifunctional pressure calibrator with a color touchscreen, smartphone like interface, built-in quick test tasks and optional HART communications capability. This innovative Additel product drastically improves explosion-proof field testing and calibration. The Additel 273Ex has a built-in atmospheric pressure sensor, so that absolute pressure and the gauge pressure are easily facilitated. With three pressure module inputs, one switchable at the bottom and two digital inputs on the side, the user can configure the setup accordingly and easily meet the needs of pressure calibration and testing in virtually any environment.

#### Intrinsically Safe :

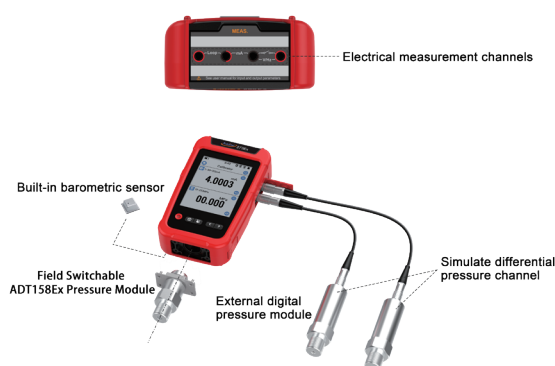
ADT273Ex has passed the most stringent ATEX, IECEx intrinsic safety certifications from authoritative organizations. The explosion-proof level is Ex ia IIC T4 Ga. It can be widely used in potentially explosive gas environments, such as oil and gas platforms, refineries, chemical and petrochemical plants, pharmaceutical industry, energy and gas processing industry. Each intrinsically safe calibrator has an advance transreflective color LCD display which has enhanced visibility when viewed in direct sunlight. No matter where your work takes you, these calibrators are up to the task.

#### A Modern User Experience:

Additel has gone above and beyond to provide our customers with the best possible experience when using this new and revolutionary calibrator. The color touchscreen display provides a refreshing and intuitive experience compared to other calibrators on the market. With an easy to navigate menu structure and fast touchscreen response, you will find the ADT273Ex calibrator simple yet powerful to use. The easy-to-read display isn't just fun to use, but it's built rugged to handle the demands of a busy technician in the field or the laboratory.

#### Optional HART Communication:

With support for HART communication protocols, the ADT273Ex Handheld Pressure Calibrator provides a pressure calibration solution for transmitters over a wide pressure range. The ADT273Ex is a highly portable device and can measure pressure precisely with a field switchable pressure sensor, as well as read the current or mV produced by a transducer. It can even supply an excitation voltage (loop power) to power sensors or transmitters during calibration.



## FUNCTIONAL FEATURES

| Functional Features          | Details                                                                                                                                                                             |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Scaling                      | User can convert measured current, voltage and frequency values into pressure, temperature and flow values. Three conversion functions available: linearity, square and square root |
| Filtering                    | Average sliding filter (sampling number: 1 ~ 50)<br>First-order linear filter (First-order coefficient: 0.01 ~ 1)                                                                   |
| Switch                       | The measurement value will be automatically displayed at the moment the switch change of state. The latest 8 state changes will be stored in the memory.                            |
| Pressure Tare                | Tare value is set through the user interface                                                                                                                                        |
| Pressure stability indicator | Stability time and criteria is selectable                                                                                                                                           |
| Power management             | Backlight auto off<br>Auto power off                                                                                                                                                |

## Specifications

| General Specifications  |                                                                                                                                                                                     |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Channels          | Top: 1 electrical signal measurement channel, $\phi 4$ mm banana jacks                                                                                                              |
|                         | Right side: 2 channels for external digital pressure modules, 5-core dedicated aviation plug                                                                                        |
|                         | Bottom: embedded digital pressure module (model ADT158Ex), field switchable.                                                                                                        |
|                         | Internal: 1 embedded atmospheric pressure sensor                                                                                                                                    |
| Barometric Accuracy     | $\pm 55$ Pa                                                                                                                                                                         |
| Measurement Rate        | mV, V, mA & frequency: 3 times/sec                                                                                                                                                  |
|                         | Pressure module: 1~10 times/sec selectable (3 times/sec as default)                                                                                                                 |
|                         | Barometer: 1 time/sec                                                                                                                                                               |
| Power                   | 4000mAh, 14.4Wh explosion-proof intelligent lithium battery, charging time about 6 hours, battery can be charged independently<br>Typical working time 100 hours (measurement mode) |
| Environmental           | Guaranteed temperature range of technical specifications: (-10 ~ 50) $^{\circ}$ C<br>*Temperature coefficient: $\pm 5$ ppm FS/ $^{\circ}$ C (-20 to -10) $^{\circ}$ C               |
|                         | Operating temperature: (-20 ~ 50) $^{\circ}$ C                                                                                                                                      |
|                         | Storage temperature: (-30 ~ 70) $^{\circ}$ C                                                                                                                                        |
|                         | Humidity: 0% to 95% RH, non-condensing                                                                                                                                              |
|                         | Altitude: 3000 meters                                                                                                                                                               |
| Warm-up Time            | 10 min to fully meet technical specifications                                                                                                                                       |
| Port Protection Voltage | 30 V max                                                                                                                                                                            |
| Explosion-proof Grade   | ATEX & IECEX: Ex ia IIC T4 Ga (Ta = -20 $^{\circ}$ C to + 50 $^{\circ}$ C)<br>Ta = -20 $^{\circ}$ C to + 50 $^{\circ}$ C Ex ia IIC T4 Ga                                            |
| CE Certification        | TUV IEC61326, IEC61010                                                                                                                                                              |
| Rohs Compliance         | Rohs II Directive 2011/65/EU, EN50581:2012                                                                                                                                          |
| Protection Level        | IP67, 1 meter drop test                                                                                                                                                             |
| Communication           | Isolate USB-Type C (slave), Bluetooth                                                                                                                                               |
| Display                 | 4.4-inch color display capacitive screen, transfective, with LED backlight                                                                                                          |
| Size                    | 6.97" x 4.13" x 2.04" (177 x 105 x 52 mm) which doesn't include bottom ADT158Ex.                                                                                                    |
| Weight                  | 1.65 lbs (0.75 kg)                                                                                                                                                                  |
| Warranty Time           | 1 year                                                                                                                                                                              |

## Electrical Specifications

| Specification             | Range                                                                                 | Accuracy                  | Resolution              | Note                         |
|---------------------------|---------------------------------------------------------------------------------------|---------------------------|-------------------------|------------------------------|
| Voltage Measurement       | $\pm 300$ mV                                                                          | 0.015%RDG + 15 $\mu$ V    | 1 $\mu$ V               | Impedance: >100 M $\Omega$   |
|                           | $\pm 30$ V                                                                            | 0.015%RDG + 1.5 mV        | 0.1 mV                  | Impedance: >1 M $\Omega$     |
| Current Measurement       | $\pm 30$ mA                                                                           | 0.015%RDG + 1.5 $\mu$ V   | 0.1 $\mu$ A             | Impedance: < 40 $\Omega$     |
| Frequency Measurement     | 0.01~50000 Hz (auto range)                                                            | 0.005% RDG + 2 last digit | 6-digit auto-resolution | Min threshold voltage: 2.5 V |
|                           | Units: Hz, kHz, MHz, CPM, CPH, s, ms, us                                              |                           |                         |                              |
| Switch On-Off Measurement | Inspection voltage: (3 ~ 30)V<br>Response speed: < 10 ms, supports wet and dry switch |                           |                         |                              |
| Pulse Count               | 0 ~ 9999999, optional rising edge and falling edge<br>Min threshold voltage: 2.5 V    |                           |                         |                              |
| Loop Power                | 22 V $\pm$ 10%, max output impedance: 320 $\Omega$ , max load current: 25 mA          |                           |                         |                              |

## PRESSURE TECHNICAL SPECIFICATIONS

| Specifications                                                                      |                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Pressure resolution</b>                                                          | 4, 5, or 6 digit resolution (user selectable)                                                                                                                                                                                                                                                            |
| <b>Measurement Units<sup>[1]</sup></b>                                              | kPa, Pa, GPa, MPa, mPa, uPa, hPa, bar, mbar, torr, mtorr, atm, psi, psia, psig, gf/cm2, kgf/cm2, inH2O@4°C, inH2O@68°F, mmH2O@4°C, mmH2O@20°C, ftH2O@4°C, ftH2O@68°F, inHg@0°C, mmHg@0°C, lb/ft2, tsi, psf, inH2O@60°F, ftH2O@60°F, cmH2O@4°C, mH2O@4°C, cmHg@0°C, mHg@0°C, kgf/m2                       |
| <b>Temperature Compensation</b>                                                     | -10 °C~50 °C                                                                                                                                                                                                                                                                                             |
| <b>Pressure Module Type</b>                                                         | Built-in digital pressure module: ADT158Ex, for more detailed information, please see ADT158Ex datasheet.<br>External digital pressure module: ADT161Ex, for more detailed information, please see ADT161Ex datasheet.                                                                                   |
| <b>Specifications</b>                                                               | Refer to the technical specification of the ADT158Ex and ADT161Ex                                                                                                                                                                                                                                        |
| <b>High Static Pressure and Differential Pressure Synthesis Index<sup>[2]</sup></b> | Two modules must be with the same range;<br>Typical Differential pressure accuracy of 0.002%FS or 0.02%RD, whichever is greater when using two 0.02%FS external modules.<br>Typical Differential pressure accuracy of 0.002%FS or 0.05%RD, whichever is greater when using two 0.05%FS external modules. |

[1] Available units are dependent on the overall pressure range.

[2] For more explanation, please reference application note "Achieving High Accuracy for High Static Differential Pressure Measurements".

## PRESSURE RANGE

| Gauge Pressure <sup>[1]</sup> |                |       |                      |                |                |
|-------------------------------|----------------|-------|----------------------|----------------|----------------|
| P/N                           | Pressure Range |       | Media <sup>[2]</sup> | Accuracy (%FS) | Burst Pressure |
|                               | (psi)          | (bar) |                      |                |                |
| V15                           | -14.5          | -1.0  | G                    | 0.02           | 3x             |
| GP2                           | 2              | 0.16  | G                    | 0.05           | 3x             |
| GP5                           | 5              | 0.35  | G                    | 0.05           | 3x             |
| GP10                          | 10             | 0.7   | G                    | 0.02           | 3x             |
| GP15                          | 15             | 1.0   | G                    | 0.02           | 3x             |
| GP30                          | 30             | 2.0   | G                    | 0.02           | 3x             |
| GP50                          | 50             | 3.5   | G, L                 | 0.02           | 3x             |
| GP100                         | 100            | 7.0   | G, L                 | 0.02           | 3x             |
| GP150                         | 150            | 10    | G, L                 | 0.02           | 3x             |
| GP300                         | 300            | 20    | G, L                 | 0.02           | 3x             |
| GP500                         | 500            | 35    | G, L                 | 0.02           | 3x             |
| GP600                         | 600            | 40    | G, L                 | 0.02           | 3x             |
| GP1K                          | 1,000          | 70    | G, L                 | 0.02           | 3x             |
| GP1.5K                        | 1,500          | 100   | G, L                 | 0.02           | 3x             |
| GP2K                          | 2,000          | 140   | G, L                 | 0.02           | 3x             |
| GP3K                          | 3,000          | 200   | G, L                 | 0.02           | 3x             |
| GP5K                          | 5,000          | 350   | G, L                 | 0.02           | 3x             |
| GP10K                         | 10,000         | 700   | G, L                 | 0.02           | 2x             |
| GP15K                         | 15,000         | 1,000 | G, L                 | 0.05           | 2x             |
| GP20K                         | 20,000         | 1,400 | G, L                 | 0.05           | 1.5x           |
| GP25K                         | 25,000         | 1,600 | G, L                 | 0.05           | 1.5x           |
| GP30K                         | 30,000         | 2,000 | G, L                 | 0.05           | 1.5x           |
| GP36K                         | 36,000         | 2,500 | G, L                 | 0.05           | 1.5x           |
| GP40K                         | 40,000         | 2,800 | G, L                 | 0.05           | 1.35x          |
| GP50K                         | 50,000         | 3,500 | G, L                 | 0.1            | 1.2x           |
| GP60K                         | 60,000         | 4,200 | G, L                 | 0.1            | 1.1x           |

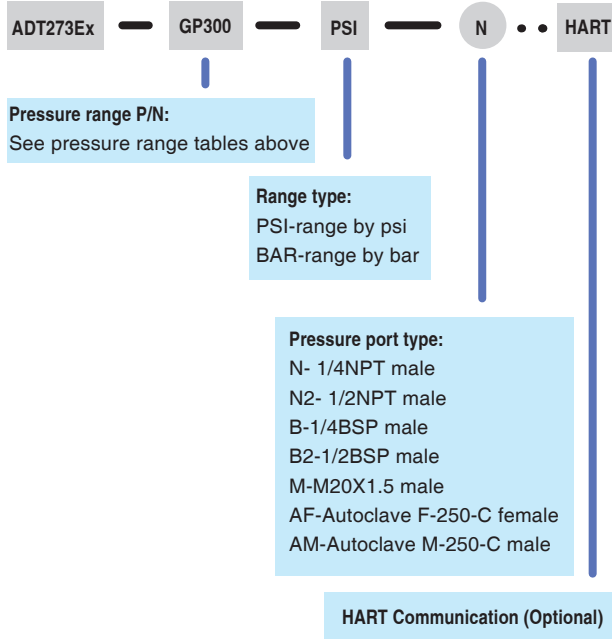
| Compound Pressure |                 |           |       |          |                |
|-------------------|-----------------|-----------|-------|----------|----------------|
| P/N               | Pressure Range  |           | Media | Accuracy | Burst Pressure |
|                   | psi             | bar       |       |          |                |
| CP2               | ±2              | ±0.16     | G     | 0.05% FS | 3x             |
| CP5               | ±5              | ±0.35     | G     | 0.02% FS | 3x             |
| CP10              | ±10             | ±0.7      | G     | 0.02% FS | 3x             |
| CP15              | -14.5 to 15     | ±1.0      | G     | 0.02% FS | 3x             |
| CP30              | -14.5 to 30     | -1 to 2.0 | G     | 0.02% FS | 3x             |
| CP50              | -14.5 to 50     | -1 to 3.5 | G     | 0.02% FS | 3x             |
| CP100             | -14.5 to 100    | -1 to 7.0 | G,L   | 0.02% FS | 3x             |
| CP300             | -14.5 to 300    | -1 to 20  | G,L   | 0.02% FS | 3x             |
| CP500             | -14.5 to 500    | -1 to 35  | G,L   | 0.02% FS | 3x             |
| CP600             | -14.5 to 600    | -1 to 40  | G,L   | 0.02% FS | 3x             |
| CP1K              | -14.5 to 1,000  | -1 to 70  | G,L   | 0.02% FS | 3x             |
| CP2K              | -14.5 to 2,000  | -1 to 140 | G,L   | 0.02% FS | 3x             |
| CP3K              | -14.5 to 3,000  | -1 to 200 | G,L   | 0.02% FS | 3x             |
| CP5K              | -14.5 to 5,000  | -1 to 350 | G,L   | 0.02% FS | 3x             |
| CP10K             | -14.5 to 10,000 | -1 to 700 | G,L   | 0.02% FS | 2x             |

[1] Sealed gauge pressure for above 1000 psi

[2] G=Gas, L=Liquid

## ORDERING INFORMATION

## ■ Model Number



**Note:** The ADT273Ex can be purchased without the ADT158Ex module  
If needed using the following part numbers.  
ADT273Ex-NO  
ADT273Ex-NO-HART (includes HART Communication)

| Accessories (included) |                                                    |               |                                                                                     |
|------------------------|----------------------------------------------------|---------------|-------------------------------------------------------------------------------------|
| Model number           | Description                                        | QTY           | Picture                                                                             |
| 9811Ex-X               | 110V/220V external power adapter                   | 1 pc          |  |
| 9704Ex                 | Chargeable Li-ion battery                          | 1pc           |  |
| 9025                   | Test leads                                         | 1 set (3 pcs) |  |
| 9040                   | Hanging strap with magnet                          | 1 pc          |  |
| 9052Ex                 | Ex USB Cable type A to type C (For Ex models only) | 1 pc          |  |
|                        | ISO 17025 accredited calibration certificate       | 1 pc          |                                                                                     |

| Optional Accessories |                                                                                                                                     |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Model number         | Description                                                                                                                         |
| ADT158Ex             | Built-in digital pressure module (see ADT158Ex datasheet)                                                                           |
| ADT161Ex             | External digital pressure module (see ADT161 datasheet)                                                                             |
| 9060                 | Pressure module connection cable                                                                                                    |
| 9919EX               | Carrying case for one gauge for ADT226Ex, 227Ex, 260Ex, 273Ex handhelds                                                             |
| 9918-SC              | Soft carrying case, with space for handheld instrument, test leads, and accessories                                                 |
| 9530-BASIC           | Additel/Acal Automated calibration software with asset management, basic version                                                    |
| 9530-NET             | Additel/Acal Automated calibration software with asset management, network version, includes server installation and 1 user license |



ADT161Ex pressure modules - See ADT161 Datasheet for more info



ADT158Ex pressure module - For use with ADT273Ex (bottom mount)

