### Overview
The UDA2182 Universal Dual Analyzer is a new, economical, dual input analyzer addition to Honeywell’s Smart Sensor product family.

The analyzer can accept single or dual inputs from Honeywell pH, ORP, contacting conductivity and dissolved oxygen sensors. For dual units the inputs can be ordered in any combination.

The UDA2182 monitors and controls Analytical process variables in applications such as:
- Power water quality control
- Wastewater influent & effluent
- Pure water preparation
- Food and Dairy
- Neutralization

### Features
- Single or Dual input measurement
- Dual input in any combination of pH, ORP, contacting conductivity, or dissolved oxygen
- Versatile, backlit graphical display
- Infrared PC & Pocket PC configuration
- Optional input from Honeywell remote digital preamplifiers and Durafet Cap Adapters
- Isolated inputs and outputs
- CSA Type 4X (NEMA 4) enclosure
- Multilanguage prompts
- Two analog outputs standard plus one additional optional
- Two electromechanical relays standard plus two additional optional
- Easy access through hinged front door
- Full DIN Size
- Panel, wall or pipe mounting is available
- Easily Field Up-gradable

The UDA2182 is UL Listed and CSA Certified. It is also CE Compliant. The unique UDA2182 display is a graphical backlit LED. Two PV values along with their Unit of Measure can be displayed simultaneously. The process temperature of both PVs is also displayed. The versatile display will also display the analog output FS percent and the state of the relays.

Tagging and time or date information as well as status messages are available on the display and are easily configured by the user.

Configuration can be done with a PC through communication or with a Pocket PC, using the embedded infrared communication port. No need to get access to the back of the controller to download or upload a brand new configuration!

### Analytical Inputs
The UDA2182 is a “Mix & Match” design. Analytical measurements of pH, conductivity and dissolved oxygen (ppm or ppb) can all be done in one analyzer. The unit can be used as a single input or dual input instrument – the user decides what measurements are included.

The input boards are easily replaced and the addition of additional relays or an analog output is done with a single board. The “Mix –n– Match” design reduces inventory and increases flexibility. A user can purchase a basic unit and then add input and output boards as needed. The board changes are fast and easy with front, hinged access to the analyzer.

The wiring is easily accessible through the front and the boards can be pulled out to facilitate the wiring of sensor inputs.

Inputs are isolated so grounding problems associated with sensor input signals are minimized.
The following output types are available:
- Current Outputs (4-20 or 0-20 ma)
- Electromechanical Relays (5 amps)

The outputs are isolated and can be field allocated to the input PV, temperature, or computed value (conductivity).

**Control Algorithms** – Depending on the output algorithms specified, the controller can be configured for the following control algorithms:
- On-Off
- Current Adjusting Type (CAT)
- Pulse Frequency Type (PFT)
- Duration Adjusting Type (DAT)
- PID

Each control loop has as standard an auto-tuning feature using Honeywell’s performance proven Accutune III tuning algorithm. A selectable “Fuzzy Logic” algorithm is also provided for each loop to suppress unwanted process setpoint overshoot.

**Alarms**

Two (or four) electromechanical alarm relays are field selectable for activating external equipment when preset alarm setpoints are reached based on the PV. Each alarm setpoint can be either a high or low alarm. The relays can also be assigned to temperature or diagnostics. The alarm hysteresis is configurable from 0 to 100% of range.

**Display** – The UDA2182 has a versatile backlit, graphical LED display that is easy to read, even in the most difficult installations. Multi-language prompts guide the operator step-by-step through the configuration process assuring quick and accurate entry of all configurable parameters. Five languages are available via configuration: English, French, German, Spanish and Italian.

**Dedicated Keys** – Provide direct access to Setup and Calibration to simplify and speed operation.

**Miscellaneous**

**Moisture Protection** – CSA Type 4X (NEMA 4X) rating for front and case permits use in applications where it may be subjected to moisture, dust, or hose-down conditions.


**Approval Body Options** – General Purpose CSA certification and UL listing and FM Class I, Div. 2 is standard.

**Data Security** – Keyboard security protects configuration and calibration data, accessed by a configurable 4-digit code. Nonvolatile EEPROM memory assures data integrity during loss of power.

**Diagnostic/Failsafe Outputs** – Continuous diagnostic routines detect failure modes, trigger a failsafe output value and identify the failure to minimize troubleshooting time.

**High Noise Immunity** – The controller is designed to provide reliable, error-free performance in industrial environments that often affect highly noise-sensitive digital equipment.

**Quality/Support** – The UDA2182 is covered by an 18-month warranty and backed up by a toll-free phone number for technical assistance (US Only).

**Auto Buffer Calibration** – for pH measurement the unit can be set up to recognize NIST, US, and Euro buffers and automatically select the standardize and slope values at the calibration temperature.

**Solution Temperature Compensation** – For high purity water measurement the user can select pre-set compensations or configure custom values.

**USP26 Alarm Capabilities** – Relays can be configured to alarm on conductivity values as determined by the USP26 Standards.

**Computed Variables** – For two-cell conductivity measurements, computed values of %Rejection/Passage, Difference, or Ratio can be displayed and assigned to the outputs or alarms.

**Dissolved Oxygen** – Auto-ranging of display and outputs with relays to indicate range, specialized probe bias diagnostics.

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*Figure 2 – UDA2182 Displays*
Features

- Create configurations with intuitive software program running on a Pocket PC, a Desktop or a laptop computer.
- Create/edit configurations live, just connect software to analyzer via comm port.
- Create/edit configurations offline and download to analyzer later via comm. port.
- Infrared port available on every UDA2182.
- This software is available in English, Spanish, Italian, German and French.

Infrared Communications

The infrared connection provides a non-intrusive wireless connection with the instrument and maintains NEMA4X integrity.

No need to get access to the back of the analyzer to communicate with the instrument, no need to take your screw driver to wire the communication cable, no wiring mistake possible! You can now duplicate an instrument's configuration, upload or download a new configuration in a matter of seconds, just by pointing your Pocket PC in the direction of the instrument.

**Aim & Upload!** It takes less than 2 seconds to upload a configuration from an instrument! You can then save the configuration file onto your PC or pocket PC for review, modification or archiving.

Furthermore, this software also gives you important maintenance information on the analyzer: instantly, get information on the current operating parameters, digital inputs and alarm status, identify internal or analog input problems.

**Question:** What if I have several analyzers on the same panel? How can I be sure I am communicating with the correct one?

**Answer:** The Infrared port is normally "off". You activate the infrared port on a particular analyzer by pressing any key. You can now communicate with the analyzer. If no communications are received for 2 minutes, the IR port will be shut down again.

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**Get More Value and Performance From The UDA2182 …**

**… The Most Versatile Multiple-Input Analyzer**
## Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Display</strong></td>
<td>Graphical LCD with white LED Backlight&lt;br&gt;Viewing Area: 66.8 mm (W) X 35.5 mm (H)&lt;br.Dot Pixels: 128 (W) X 64 (H)</td>
</tr>
<tr>
<td><strong>Display Ranges</strong></td>
<td>pH: 0-14 pH&lt;br&gt;ORP: -1600 to +1600 mV&lt;br&gt;<strong>Conductivity:</strong>&lt;br&gt;- 0.01 Cell: 0-2 uS/cm displayable to 200 uS/cm; 0-0.2 mS/cm; 0-2,000 ppb TDS; 0-200 ppm TDS&lt;br&gt;- 0.1 Cell: 0-20 uS/cm displayable to 2000 uS/cm; 0-2 mS/cm; 0-2,000 ppb TDS; 0-2,000 ppm TDS&lt;br&gt;- 1.0 Cell: 0-200 uS/cm displayable to 20,000 uS/cm; 0-20 mS/cm; 0-200 ppm TDS; 0-20 ppt TDS&lt;br&gt;- 10 Cell: 0-2,000 uS/cm displayable to 99999 uS/cm; 0-200 mS/cm; 0-2,000 ppm TDS; 0-200 ppt TDS&lt;br&gt;- 25 Cell: 0-20,000 uS/cm displayable to 99999 uS/cm; 0-500 mS/cm; 0-2000 ppm TDS; 0-200 ppt TDS&lt;br&gt;- 50 Cell: 0-20,000 uS/cm displayable to 99999 uS/cm; 0-1,000 mS/cm; 0-20% Concentration&lt;br&gt;- 10 Cell: 0-2,000 uS/cm displayable to 99999 uS/cm; 0-200 mS/cm; 0-1,000 mS/cm; 0-20% Concentration&lt;br&gt;<strong>Temperature:</strong> -10 to + 140°C (14 to 284°F)&lt;br&gt;<strong>Dissolved Oxygen:</strong>&lt;br&gt;- 0 - 200 ppm&lt;br&gt;- 0 - 20 ppb&lt;br&gt;- 0 –200 ppb&lt;br&gt;- 0 – 2000 ppb&lt;br&gt;<strong>Temperature:</strong> 2 – 60°C (35.6 – 104°F), must not freeze</td>
</tr>
<tr>
<td><strong>Keypad</strong></td>
<td>10 Button Membrane Switch w/Directional Functionality&lt;br&gt;UV/Solvent/Abrasion Resistant</td>
</tr>
<tr>
<td><strong>Case Material</strong></td>
<td>GE Valox® 357 (unreinforced thermoplastic polyester)</td>
</tr>
</tbody>
</table>
| **Performances (Under reference operating conditions)** | Accuracy: 0.5% of reading<br>Output Accuracy: +/- 0.01 mA<br>Drift: Negligible<br>Repeatability: 0.05%
| **Temperature Accuracy:** | pH and Conductivity Thermistor: +/- 0.1°C from -10 to 100° C, +/- 1.0° C from 101° to 140° C<br>pH 1000 ohm RTD: +/- 0.4° C<br>D.O. Thermistor: +/- 0.1° C from +2 to 60° C<br>**Reference Operating Conditions:** 25 +/- 1° C; 10-40% RH; 120 or 240 Vac |
| **Operating Conditions** | Ambient Temperature<br>Operating: 0 to 60°C (32 to 140°F)<br>Storage: -30 to 70°C (-22 to 158°F)<br>RH: 5 to 90% max. Non-condensing up to 40°C (104°F). For higher temperatures the RH specification is derated to maintain constant moisture content.<br>Vibration:<br>- 5-15 Hz disp 8 mm pk to pk<br>- 15-200 Hz accel 2 G |
| **Standard Analog Output** | Two 0-20 or 4-20 mA dc, 750 ohms max., isolated from inputs, ground, and each other, independently field-assignable to any parameters and ranges. Proportional to user-set output range(s) of selected parameter(s). |
| **Optional Analog Output** | One 0-20 or 4-20 mA dc, 750 ohms max., isolated from inputs, ground, and each other. Independently field-assignable to any parameters and ranges. |
### Control Loop/Outputs (Optional)
- Control Loops: 2 standard (one for each PV); current, pulse frequency, or time proportional
- Control Loop Types: PID, Duplex, On/Off
- Auto-tuning: Accutune II, fuzzy logic overshoot suppression, applicable to both control loops

### Standard Alarm/Control Relays
- Two SPDT (Form "C") Relays
- Resistive Load Rating: 4A, 120/240 Vac

### Optional Additional Alarm/Control Relays
- Two SPDT (Form "C") Relays
- Resistive Load Rating: 4A, 120/240 Vac

### Alarm/Control Settings
- Alarm/on-off control delay: 0-100 seconds.
- Alarm/on-off control deadbands: individually set, from 1 count to full scale for pH, ORP, and temperature.
- On/off cycle period: 0 to 1000 seconds.
- On/off percent "on" time: 0 to 100%, 1% resolution.
- Setpoint and proportional band limit ranges: ±19.99 pH, ±1999 mV, -10 to 130°C, 1 count resolution.
- DAT cycle period: 1 to 1999 seconds.
- PFT maximum frequency: 1 to 200 pulses/minute.
- PFT pulse width: 50 ms, compatible with electronic pulse-type metering pumps.

### Remote Preamplifier Input Option
- Optional input card to accept input signal from Honeywell digital preamplifiers: Meridian II – 31075707 and 31022283
- Durafet – 31079288 and Cap Adapter cables

### pH Temperature Compensation
- Conventional compensation for changing electrode output (Nernst response), plus selectable solution temperature compensation for high-purity water.

### Auto Buffer Recognition (pH)
- User Selectable
- Available Buffer Series: NIST, US, and Euro

### Conductivity Compensations
- NaCl, HCl, H2SO4, PO4, NaOH, NH3, Morpholine, Pure Water, Custom (User Selectable)

### Dissolved Oxygen Measurement
- Max flowrate (probe): 950 ml/min with flow chamber; no dependence on stirring or flowrate
- Atmospheric pressure: 500-800 mm Hg with internal sensor, for calibration
- Calibration with either Air or Sample

### Power Requirements
- 90 -264 Vac, 47-63 Hz, 15 VA. Memory retained by EEPROM when power is off.

### Wireless Interface
- Type: Infrared (IR)
- Length of Link: 0 –1 M, 0 –15° Offset
- Baud Rate: 9600
- Data Format: Modbus Protocol

### Safety Compliance
- UL/CSA General Purpose
- FM Approval for Class I, Div 2.

### CE Compliance
- CE Conformity (Europe): CE Mark on all models signifies compliance to EMC Directive 84/363/EEC and LVD Directive 73/23/EEC.
- EMC Classification: Group 1, Class A, ISM Equipment
- Method of Assessment: Technical File; EN61326, EN61010-1
- Declaration of Conformity: 51453667

### Installation Rating
- Installation Category (Overvoltage Category): Category II
- Pollution Degree 2
- Altitude: 2000 m

### Case Dimensions
- 156 mm X 156 mm X 150 mm (6.14" X 6.14" X 5.91")
- Panel cutout: 138.5 mm X 138.5 mm (5.45" X 5.45")
- Panel thickness: 1.52 mm (0.06") min, 9.5 mm (0.38") max

### Enclosure rating
- CSA Type 4X (NEMA 4X)

### Weight
- Approx 3 lbs (6.6kg)

### Mounting
- Panel mounting-hardware supplied.
- Optional Wall and 1” to 2” pipe mounting. Select option appropriate in Model Number.
(2) M5 machine screws w/lockwashers supplied with unit
Do not over tighten screws
6.7Nm (60 Lb-in) of torque max.

(4) 22.22 [.87] holes for lead wires and conduit fittings
(conduit fittings supplied by user)

Figure 3—Cutout and Panel Mount Dimensions

Figure 4 – Wall/Pipe Mounting Dimensions
## Ordering Information

### Dual Input Analytical Analyzer

#### Model UDA2182

**Model Selection Guide**

51-52-16-85  Issue 3

**Honeywell Proprietary**

### Instructions

- Select the desired key number. The arrow to the right marks the selection available.
- Make the desired selections from Table I - V using the column below the proper arrow.

A dot (•) denotes availability. No ( ) dot denotes not available.

### Key Number - Dual Input Analyzer

<table>
<thead>
<tr>
<th>Stock Part No.</th>
<th>Selection</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>50003691-501</td>
<td>UDA2182</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE I - Channel Inputs

<table>
<thead>
<tr>
<th>Channel 1 Input</th>
<th>Stock Part No.</th>
<th>Selection</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>N/A</td>
<td>NN1</td>
<td>•</td>
</tr>
<tr>
<td>pH</td>
<td>51453313-501</td>
<td>PH1</td>
<td>•</td>
</tr>
<tr>
<td>pH from Preamp</td>
<td>50009551-501</td>
<td>PA1</td>
<td>•</td>
</tr>
<tr>
<td>Conductivity</td>
<td>51453316-501</td>
<td>CC1</td>
<td>•</td>
</tr>
<tr>
<td>Dissolved Oxygen ppm</td>
<td>51453319-501</td>
<td>DM1</td>
<td>•</td>
</tr>
<tr>
<td>Dissolved Oxygen ppb</td>
<td>51453319-502</td>
<td>DB1</td>
<td>•</td>
</tr>
</tbody>
</table>

### TABLE II - Channel Inputs

<table>
<thead>
<tr>
<th>Channel 2 Input</th>
<th>Stock Part No.</th>
<th>Selection</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>N/A</td>
<td>NN2</td>
<td>•</td>
</tr>
<tr>
<td>pH</td>
<td>51453313-501</td>
<td>PH2</td>
<td>•</td>
</tr>
<tr>
<td>pH from Preamp</td>
<td>50009551-501</td>
<td>PA2</td>
<td>•</td>
</tr>
<tr>
<td>Conductivity</td>
<td>51453316-501</td>
<td>CC2</td>
<td>•</td>
</tr>
<tr>
<td>Dissolved Oxygen ppm</td>
<td>51453319-501</td>
<td>DM2</td>
<td>•</td>
</tr>
<tr>
<td>Dissolved Oxygen ppb</td>
<td>51453319-502</td>
<td>DB2</td>
<td>•</td>
</tr>
</tbody>
</table>

### TABLE III - Outputs and Relays

<table>
<thead>
<tr>
<th>Additional Analog Output &amp; Relays</th>
<th>Stock Part No.</th>
<th>Selection</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Additional Analog Output or Relays</td>
<td>N/A</td>
<td>NN2</td>
<td>•</td>
</tr>
<tr>
<td>Additional 4-20 mA/0-20 mA output &amp; 2 additional relays</td>
<td>51453328-501</td>
<td>C3</td>
<td>•</td>
</tr>
</tbody>
</table>

### TABLE IV - Communications

<table>
<thead>
<tr>
<th>Communications</th>
<th>Stock Part No.</th>
<th>Selection</th>
<th>Availability</th>
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</thead>
<tbody>
<tr>
<td>None</td>
<td>N/A</td>
<td>N</td>
<td>•</td>
</tr>
</tbody>
</table>

### TABLE V - Options

<table>
<thead>
<tr>
<th>Mounting Hardware</th>
<th>Stock Part No.</th>
<th>Selection</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>None (Panel mounting only)</td>
<td>N/A</td>
<td>0 _ _ _ _</td>
<td>•</td>
</tr>
<tr>
<td>Pipe and wall mounting hardware</td>
<td>50001023-501</td>
<td>P _ _ _ _</td>
<td>•</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instruction Books</th>
<th>Stock Part No.</th>
<th>Selection</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD Only (English)</td>
<td>50003501-501</td>
<td>_ 0 _ _ _</td>
<td>•</td>
</tr>
<tr>
<td>Additional Paper Copy: English</td>
<td>70-82-25-119</td>
<td>E _ _ _ _</td>
<td>•</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Certificates</th>
<th>Stock Part No.</th>
<th>Selection</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>None Calibration &amp; Conformance</td>
<td>N/A</td>
<td>_ _ _ _ C</td>
<td>•</td>
</tr>
<tr>
<td>PID Control</td>
<td>No</td>
<td>N/A</td>
<td>_ _ _ _ C</td>
</tr>
<tr>
<td>Yes</td>
<td>N/A</td>
<td>_ _ _ _ C</td>
<td>•</td>
</tr>
</tbody>
</table>
Warranty/Remedy

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace without charge those items it finds defective. The foregoing is Buyer’s sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

For more information, contact Honeywell sales at:
US: 1-800-343-0228
Canada: 1-800-461-0013