DULCOMETER® Instrumentation

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DULCOMETER® measuring and control units combine maximum process safety with a broad application spectrum. Different measured variables can be accurately determined. Depending on the application, the control behavior of DULCOMETER® measuring and control unit is adapted to meet the relevant application. Different designs permit flexible use.

- Advantages at a glance:
  - High measuring reliability, e.g. thanks to symmetrical input for pH/ORP
  - High measuring accuracy, e.g. thanks high-impedance input for pH/ORP
  - Minimum disturbance, e.g. thanks to alternating current disturbance suppression
  - Two-wire technology for disturbance-resistant measurement
  - Highly versatile thanks to many options and different designs

DULCOMETER® measuring and control units, DULCOTEST® sensors with ProMinent® metering pumps - the complete control cycle, measuring-controlling-metering and recording, everything from one single source, perfectly coordinated.

<table>
<thead>
<tr>
<th>Function</th>
<th>Compact Controller</th>
<th>D1Cb</th>
<th>D1Cc</th>
<th>DACb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control outputs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control of metering pump by pulse frequency</td>
<td>✔</td>
<td>✔, 2</td>
<td>✔, 2</td>
<td>✔, 2/4</td>
</tr>
<tr>
<td>Control of solenoid valve/motor-driven metering pump</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Interference variable processing (flow) via mA</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interference variable processing flow via frequency (e.g. of contact water meter)</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metering time monitoring with deactivation of the control variable</td>
<td>✔, 1</td>
<td>✔, 2</td>
<td>✔, 2</td>
<td>✔, 2</td>
</tr>
<tr>
<td>Output relay configurable as limit value relay</td>
<td>✔</td>
<td>✔, 1</td>
<td>✔, 1</td>
<td>✔, 2</td>
</tr>
<tr>
<td>Cycle timer</td>
<td>✔</td>
<td>✔, 2</td>
<td>✔, 2</td>
<td>✔, 2</td>
</tr>
<tr>
<td>Real time timer</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outputs</td>
<td></td>
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</tr>
<tr>
<td>Analog output 0/4-20 mA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Data logger with SD card</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web server via LAN</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parameter set switch-over via timer</td>
<td>✔</td>
<td></td>
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</tr>
<tr>
<td>Parameter set switch-over via contact</td>
<td>✔</td>
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<tr>
<td>PROFIBUS® DP</td>
<td>✔</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Modbus RTU</td>
<td>✔</td>
<td></td>
<td></td>
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<tr>
<td>Subsequent extension of functions via enabling code</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Operating hour counter</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
ProMinent® DULCOMETER® Analyzers

DULCOMETER® Measuring and Control Units

<table>
<thead>
<tr>
<th>Function</th>
<th>Compact Controller</th>
<th>D1Cb</th>
<th>D1Cc</th>
<th>DACb</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measured variable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>ORP</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Chlorine</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Chlorine dioxide</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Chlorite</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Bromine</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Conductivity, conductive</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Conductivity, inductive</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Conductivity via mA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Peracetic acid</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Hydrogen peroxide</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Ozone</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Dissolved oxygen</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Fluoride</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>0/4-20 mA standard signal general measured</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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</tr>
<tr>
<td>variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Power Supply</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90-253V</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>~24 V DC</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td><strong>Method of installation, degree of protection</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall mounted IP 65</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Panel mounted, IP 54</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Combination housing (wall-mounting, pillar</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>assembly) IP 66 + IP 67. Installation on control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Measurement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of measuring channels</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2 or 3 optionall y</td>
</tr>
<tr>
<td>Sensor monitoring of pH</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Temperature compensation for pH</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Temperature compensation for conductivity</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>pH compensation for chlorine</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PID controller</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Monodirectional controller (ex. with pH acid or</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Bidirectional controller (ex. with pH acid or alkali)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td><strong>Control Inputs</strong></td>
<td>✔, 1</td>
<td>✔, 1</td>
<td>✔, 1</td>
<td>✔, 4/7</td>
</tr>
</tbody>
</table>

DULCOTEST® sensors
DULCOMETER® instrumentation
motor-driven metering pumps
solenoid-driven metering pumps
product overview
polymer blending & dry feed solutions
**ProMinent® D1Cb and D1Cc Analyzers**

**D1Cb/D1Cc Single Channel Controller**

- Flexibly upgradable thanks to subsequent activation option for functions by means of activation code
- Equipped for the essential basic requirements in water treatment
- Large, illuminated graphic display
- Operator guidance with clear text menu available in 14 languages in the controller
- Automatic buffer detection for pH

**Standard configuration**

- The following functions are included in the D1Cb/D1Cc controller (the measured variables depend on the type of connection of the measured variable)

  - Sensor monitoring for pH
  - Switchable between all measured variables via mV or mA
  - 2 power relays for limit value monitoring or timer functions
  - Metering time monitoring with switch-off of the control variable
  - Extended range voltage supply: 90-253 V, 50/60 Hz
  - mA sensor input safely protected against short-circuit and polarization reversal
  - Method of installation, wall mounting: D1Cb
  - Method of installation, control panel: D1Cc

**Applications**

- Waste water treatment
- Cooling water treatment
- Treatment of potable water
- Neutralization
ProMinent® D1Cb and D1Cc Analyzers

**Technical Data**

**Measurement range:**
- **Type of connection mV:**
  - pH 0.00 ... 14.00
  - ORP +1000 mV
- **Type of connection mA:**
  - Chlorine: 0.00...0.500/2.00/5.00/10.0/20.0/50.0/100.0 ppm
  - Chlorine dioxide: 0.00...0.500/2.00/10.0/20.0 ppm
  - Chlorite: 0.02...0.35/0.1...2 ppm
  - Bromine: 0.02...2.0/0.1...10.0 ppm
  - Ozone: 0.00...2.0 ppm
  - Hydrogen peroxide, sensor PER1: 2.0...200.0/20...2,000 ppm
  - Hydrogen peroxide, sensor PEROX: 0...20/200/2,000 ppm, 1 vol.%
  - Peracetic acid: 1...20/10...200/100...2,000 ppm
  - Dissolved oxygen: 0.1...10/0.1...20 ppm
  - pH: 0.00...14.00
  - ORP: 0...+1000 mV
- Conductivity: 0...20/200/1,000 mS/cm
- Resolution: pH: 0.01 pH / ORP: 1 mV
- Amperometric: 0.001/0.01 ppm/l/0.1 %
- Accuracy: 0.5 % from measurement range
- Measurement input: SN6 (input resistance > 0.5 x 1012 Ω)
- Correction variable: Temperature via Pt 100 (conductivity or PT1000)
- Correction range temp.: 50 - 113 °F (10 - 45°C) (pH and conductivity only)
- Control characteristic: P/PID control
- Control: 2-way control
- Signal current output: 1 x electrically isolated 0/4-20 mA
  - max. load 450 Ω
  - Adjustable range and direction (measured, correction and control variable)
- Control outputs: 2 reed contacts (pulse rate, for pump control)
  - 2 relays (pulse length, 3P or limit value)
  - 1 x 0/4-20 mA
- Alarm relay: 250 V–3 A, 700 VA changeover contact
- Power supply: 90 - 253 V, 50/60 Hz
- Ambient temperature: Wall mounted: 23 - 122°F (-5 - 50°C)

**Mounting**
- **Wall mount:** Nonmetallic enclosure with protective gland-style strain relief cable sockets
  - Dimensions: 7.79"H x 7.87"W x 3.00"D (198 mm x 200 mm x 76 mm)
  - Weight: Approx. 2.6 lbs. (1.2 kg) Shipping Weight: 4.4 lbs. (2.0 kg)
  - Mounting: Detachable wall mount bracket
  - Protection class: NEMA 4X (IP 65)
- **Panel mount:**
  - Dimensions: 3.78"H x 3.78"W x 5.70"D (96 mm x 96mm x 145 mm)
  - Protection class: NEMA 3 (IP 54) when mounted in panel
**Specifications**

**Temperature data (Panel Mount)**

**Permissible ambient temperature**

**Basic version:**
- Control panel installation: 32° to 122°F (0° to 50°C)
- Installation in wall-mounted housing: 23° to 113°F (-5° to 45°C)

**Extended version (with status feedback or with correction value via mA or with disturbance variable via mA):**
- Control panel installation: 32° to 113°F (0° to 45°C)
- Installation in wall-mounted housing: 23° to 104°F (-5° to 40°C)
- Control panel installation: 14° to 158°F (-10° to 70°C)

**Permissible storage temperature:**

Material data/chemical resistance:

<table>
<thead>
<tr>
<th>Part</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing and frame</td>
<td>PPO GF 10</td>
</tr>
<tr>
<td>Rear panel</td>
<td>PPE GF 20</td>
</tr>
<tr>
<td>Membrane keypad</td>
<td>Polyester film PET</td>
</tr>
<tr>
<td>Seal, outside</td>
<td>Cellular rubber CR</td>
</tr>
<tr>
<td>Seal, inside</td>
<td>Silicon-based sealing compound</td>
</tr>
<tr>
<td>Retaining clip and screws</td>
<td>Galvanized steel</td>
</tr>
</tbody>
</table>

**Temperature data (Wall Mount)**

**Permissible ambient temperature**

**Basic version:**
- 23° to 122°F (-5° to 50°C)
- Installation in wall-mounted housing: 23° to 113°F (-5° to 45°C)

**Extended version (with status feedback or with correction value via mA or with disturbance variable via mA):**
- 23° to 104°F (-5° to 40°C)
- 14° to 158°F (-10° to 70°C)

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>Luranyl PPE GF 10</td>
</tr>
<tr>
<td>Membrane keypad</td>
<td>Polyester film PET</td>
</tr>
<tr>
<td>Housing seal</td>
<td>Cellular rubber CR</td>
</tr>
<tr>
<td>Outer seal</td>
<td>Cellular rubber CR</td>
</tr>
<tr>
<td>Retaining bracket</td>
<td>Galvanized steel</td>
</tr>
<tr>
<td>M5 screws</td>
<td>A2</td>
</tr>
</tbody>
</table>

**Standards:**

Supply voltage in accordance with DIN IEC 38
Electrical safety in accordance with EN 61010-1
Electromagnetic emitted interference in accordance with EN 55011 Gr.1/C1.A
CSA special inspection

**Electrical data:**

**Panel Mount**

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>Wall Mount</th>
</tr>
</thead>
<tbody>
<tr>
<td>115/230 VAC, 50/60 Hz</td>
<td>115/230 VAC, 50/60 Hz</td>
</tr>
<tr>
<td>140 mA at 115 V</td>
<td>120 mA at 115 V</td>
</tr>
<tr>
<td>70 mA at 230 V</td>
<td>60 mA at 230 V</td>
</tr>
</tbody>
</table>

**Max. power input:**

| 100-115 V = 315 mA     | 100-115 V = 315 mA               |
| 200-230 V = 160 mA     | 200-230 V = 160 mA               |

**Internal fuse protection:**

<table>
<thead>
<tr>
<th>Fine-wire fuse 5 x 20 mm</th>
<th>Fine-wire fuse 5 x 20 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 V slow-blow</td>
<td>250 V slow-blow</td>
</tr>
<tr>
<td>100-115 V = 315 mA</td>
<td>100-115 V = 315 mA</td>
</tr>
<tr>
<td>200-230 V = 160 mA</td>
<td>200-230 V = 160 mA</td>
</tr>
</tbody>
</table>

**Electrical data for both wall mount and panel mount D1C's**

**Rated voltage:**

- 24 VDC or 24 VAC, 50/60 Hz (low voltage operation only)

**Internal fuse protection:**

<table>
<thead>
<tr>
<th>Fine-wire fuse 5 x 20 mm</th>
<th>Fine-wire fuse 5 x 20 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 V slow-blow</td>
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</tr>
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<td>100-115 V = 315 mA</td>
</tr>
<tr>
<td>200-230 V = 160 mA</td>
<td>200-230 V = 160 mA</td>
</tr>
</tbody>
</table>
Specifications (cont.)

**Sensor input via SN6 socket:**
- Input impedance: $>10^{12}$ W
- Input impedance with reference electrode with respect to:
  - Device ground: $<1$ kW
  - Input range: $\pm 1$ V
  - Accuracy: $\pm 0.5\%$ of input range
  - Resolution: 0.0625% of input range
- Connection facility for one potential equalization electrode (solution ground). As an alternative, two connection terminals can be connected with a wire jumper.

**Sensor input via terminals:**
- Input impedance: $>5 \times 10^{11}$ W
- Input impedance with reference electrode with respect to:
  - Device ground: $<1$ kW
  - Input range: $\pm 1$ V
  - Accuracy: $\pm 0.5\%$ of input range
  - Resolution: 0.0625% of input range
- Connection facility for one potential equalization electrode (solution ground). As an alternative, two connection terminals can be connected with a wire jumper.

**Standard signal input for measured variable:**
- Input range: 0/4...20 mA (programmable)
- Input impedance: 50 W (Panel Mount) and (Wall Mount)
- Input resistance: 50 W
- Input range: $\pm 1$ V
- Accuracy: $\pm 0.5\%$ of input range
- Resolution: 0.0625% of input range
- Supply voltage and current for external electronics: 23 V ±1 V, 20 mA (Panel) 19 V ±1.5 V, 20 mA (Wall)

**Standard signal input for correction measured variable mA:**
- Galvanically isolated from remaining inputs and outputs
- Insulation voltage: 500 V
- Input range: 0/4...20 mA (programmable)
- Input resistance: 50 W
- Input range: $\pm 1$ V
- Accuracy: $\pm 0.5\%$ of input range
- Resolution: 0.0625% of input range
- Supply voltage and current for external electronics: 23 V ±1 V, 20 mA (Panel) 19 V ±1.5 V, 20 mA (Wall)

**Pt100 input:**
- Input range: 32° to 212°F (0° to 100°C)
- Accuracy: $\pm 0.5\%$
- Resolution: 0.1°C

**Pt1000:**
- Accuracy: ±0.5°C
- Resolution: 0.1°C

**Digital inputs:**
- Common reference potential with respect to each other and with the RS 232 interface, but galvanically isolated from remaining inputs and outputs
- Insulation voltage: 500 V (Wall Mount only)
- Potentiometer to be connected: 800 W ...10 kW
- Accuracy (without potentiometer error): 1% of input range
- Resolution: 0.5% of input range

**Status signaling input:**
- Galvanically isolated from remaining inputs and outputs
- Insulation voltage: 500 V
- Potentiometer to be connected: 800 W ...10 kW
- Accuracy (without potentiometer error): 1% of input range
- Resolution: 0.5% of input range

**Current output:**
- Galvanically isolated from remaining inputs and outputs
- Insulation voltage: 500 V (Wall Mount only)
- Output range: 0/4...20 mA (programmable)
- Maximum load: 600 W
- Accuracy: 0.5% of output range with respect to displayed value

**Frequency outputs (Reed relay):**
- Type of contact: n/o contact, interference suppressed with varistors
- Load capacity: 100 V peak, 0.5 A switching current (Panel Mount) 25 V peak, 0.5 A switching current (Wall Mount)
- Contact service life: $>50 \times 10^6$ switching operations at contact load 10 V, 10 mA
- Max. frequency: 8.33 Hz (500 strokes/min)
- Closing time: 100 ms

**Power relay output for alarm signaling:**
- Type of contact: Changeover contact, interference suppressed with varistors
- Load capacity: 250 VAC, 3 A, 700 VA
- Contact service life: $>50 \times 10^6$ switching operations (Panel Mount) $>20 \times 10^6$ switching operations (Wall Mount)
ProMinent® D1Cb and D1Cc Analyzers

Specifications (cont.)

<table>
<thead>
<tr>
<th>Power relay output for control variable output or limit value signaling:</th>
<th>Type of contact: n/o contact, interference supressed with varistors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load capacity:</td>
<td>250 VAC, 3 A, 700 VA</td>
</tr>
<tr>
<td>Contact service life:</td>
<td>&gt;20 x 10⁶ switching operations</td>
</tr>
</tbody>
</table>

Electrotechnical Safety/Radio Interference Protection:

- EC low voltage directive (73/23/EEC) subsequently 93/44/EEC
- EC EMC directive (89/336/EEC) subsequently 92/31/EEC
- Supply voltage in accordance with DIN IEC 38
- Electrical safety in accordance with EN 61010-1
- Electromagnetic emitted interference in accordance with EN 55011 Gr. 1/Cl B
- Noise immunity in accordance with IEC 801-2, -3, -4 or DIN VDE 0843, Part 2, Part 3, Part 4 or EN 50082-2

EN 60335-1: Safety of electrical devices for domestic use
EN 50081-1: EMC, emitted interference, residential
EN 50082-2: EMC, noise immunity, industrial
EN 60555-2: EMC, reactions in power supply networks, harmonics
EN 60555-3: EMC, reactions in power supply networks, voltage fluctuations
## ProMinent® D1Cb and D1Cc Analyzers

### Identcode Ordering System D1C (Version b & c)

<table>
<thead>
<tr>
<th>D1C Series</th>
<th>B</th>
<th>Wall mount version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td>Panel mount version</td>
</tr>
</tbody>
</table>

#### Type of Mounting:
- **W**: Wall mounting (IP 65, D1Cb only)
- **D**: Panel mounting (IP 54, D1Cc only)

#### Execution:
- **00**: w/h LCD + keypad, w/h PM - Logo

#### Operating Voltage:
- **6**: 90 - 253 VAC 50/60 Hz

#### Approvals:
- **01**: CE approval

#### Hardware add-on I:
- **0**: None
- **1**: RC protection for power relays (only D1Cb)

#### Hardware add-on II:
- **0**: None

#### External connection:
- **0**: None

#### Preset software functions:
- **V**: Preset software functions

<table>
<thead>
<tr>
<th>Measured Variables</th>
<th>Chlorite</th>
<th>Peracetic acid</th>
<th>pH</th>
<th>ORP (Redox)</th>
<th>0/4-20 mA norm signal</th>
<th>Dissolved oxygen</th>
<th>Ozone</th>
<th>Temperature via mA transducer</th>
<th>*Must include signal converter (pn. 809128)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
<td>H</td>
</tr>
</tbody>
</table>

#### Connection of measured variable:
- **1**: Standard signal 0/4-20 mA, all measured variables
- **2**: SN6 plug (mounting type "W" D1Cb only)
- **5**: mV input for pH/redox via guard terminal

#### Correction variable:
- **0**: None
- **2**: Temperature Pt 100 / Pt 1000 (pH/conductivity)
- **4**: Manual temperature input (pH/conductivity)

#### Control inputs:
- **0**: None
- **1**: Pause

#### Signal Output:
- **0**: None (Standard)
- **1**: 4-20 analog output

#### Relay Outputs:
- **G**: Alarm and 2 limit relays or 2 timer relays
- **M**: Alarm and 2 limit relays or 2 relays

#### Pump pacing:
- **0**: No pumps
- **2**: Two pumps

#### Control Action:
- **0**: None
- **1**: Proportional control
- **2**: PID control

#### Language:
- **00**: Language neutral

---

**D1C B W 00 6 01 0 0 0 V 0 1 0 0 0 G 0 0 00**
The D1C fluoride monitoring system incorporates the first buffer or reagent-free, ion specific sensor with a DULCOMETER® D1C fluoride monitor. The monitor features upper and lower limit relays with alarm, and analog output for recording.

Note: The fluoride D1C is for monitoring only.

**Measuring Principle & Application**

The D1C fluoride monitoring system is based on the principles of potentiometric measuring using a reagent-free, ion specific sensor & reference electrode. The fluoride sensor features a continuous electrode activation function, ensuring long-term stability of the measurement without the need for frequent recalibration or conditioning chemicals. The fluoride sensor automatically compensates temperature, but a temperature sensor is also used to compensate for fluctuation during application.

The fluoride sensor is recommended for use in water treatment only (patent pending). We recommend installation at atmospheric pressure.

**Measuring Ranges & Operating Conditions of Fluoride Sensor**

- **Measurement Range:** 0.05 to 10 ppm fluoride
- **pH Operating Range:** 5.5 to 8.5
- **Temperature Range:** 34 to 95°F (1 to 35°C)
- **Max. Operating Pressure:** 101.5 psi (7 bar) **Note:** the maximum admissible operating pressure for the monitoring system is 14.5 psi (1 bar) determined by the in-line sensor housing.
- **Sensor Response Rate T90:** approx. 30 seconds
- **Reproducible Measuring Accuracy:** 0.1 ppm
- **Measurement Water Flow Rate:** 16 gph (60 L/h)

**Fluoride Monitoring System**

![Fluoride Monitoring System Diagram]

**Options**

- Stand Base: 7744837
- NEMA 4X enclosed: 7744711
- Heater: 7744722
- Sun shield: 7744723
**ProMinent® D1Cb and D1Cc Analyzers**

**Fluoride Monitoring System Accessories**

### Replacement Sensors

- **FLEP 010 Fluoride Sensor**
  - with PG 13.5 male threaded connector and SN6 plug
  - 1028279

- **REFP-SE Reference Electrode**
  - with PG 13.5 male connector and SN6 plug
  - 1018458

- **PT 1000 SE Temperature Sensor**
  - with PG 13.5 male connector and SN6 plug
  - 1002856

- **FPV1 4-20 mA Measurement Transducer**
  - for connection to fluoride monitor and reference electrode
  - 1028280

### Fluoride Photometer

The D2TA or D2TB Photometer (see page 229) can be used to calibrate the fluoride monitor.

**Measurement Range:**

- **D2TA**
  - 0.05 to 2 mg/L fluoride
  - 0.05 to 6 mg/L free or total chlorine
  - 0.01 to 11 mg/L chlorine dioxide

- **D2TB**
  - 0.05 to 2 mg/L fluoride

**Options:**

- D2TA kit with carry case
  - 1010383

- D2TB kit with carry case
  - 1010394
Measuring principle

The Perox measuring systems are based on amperometric/potentio-static measuring principles incorporating several special features compared to conventional measuring technologies. The platinum (hydrogen peroxide \( (H_2O_2) \) measurement) or gold (peracetic acid measurement) working electrode with a small surface area is covered by a microporous membrane cap to achieve a degree of selectivity and independence from flow influences. The entire stainless steel shaft of the Perox sensor serves as the counter-electrode. This represents the complete sensor section for \( H_2O_2 \) measurement; a reference \( pH \) electrode is also required for peracetic acid measurement. A special, continuous electrode activation facility which represents the actual know-how, ensures long-term stability of the measurement without the need for frequent recalibration.

Since all amperometric measurement methods are relatively dependent of temperature, we recommend additional temperature compensation with the Pt 100 sensor if temperature fluctuations occur during applications. With the Pt 100, \( H_2O_2 \) measurement is a 2-electrode system while peracetic acid measurement is based on a 3-electrode system.

Applications

The environmentally-friendly substance hydrogen peroxide is used to an increasing extent in process control applications as an oxidising or reduction agent. Examples of applications where continuous Perox \( H_2O_2 \) measurement control is used either alone or in advanced oxidation systems (with ozone, UV or Fenton’s reagent) are:

- Odor control scrubbers
- Ground water purification
- Drinking water oxidation
- Utility water/cooling water disinfection
- Dechlorination, e.g. in chemical processes
- Landfill leachate treatment
- Biotechnology
- Vat dying/textile industry
- Swimming pool water disinfection

Peracetic acid as a disinfectant is used in the following industries:

- Food and beverage
- Cosmetics
- Pharmaceuticals
- Medicine

Continuous measurement and control is necessary wherever more demanding requirements are made with regard to disinfection and quality assurance.

Increasing the peracetic acid concentration in CIP processes as well as concentration control in bottle cleaning machines are typical applications of Perox peracetic acid measurement.

Operating conditions

<table>
<thead>
<tr>
<th>Measuring ranges and applications</th>
<th>( H_2O_2 )</th>
<th>Peracetic acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range (selectable) mg/l</td>
<td>1 - 20 / 10 - 200 / 100 - 2000</td>
<td>10 - 200 / 100 - 2000</td>
</tr>
<tr>
<td>pH range</td>
<td>( pH \ 2.5 - 10 )</td>
<td>( pH \ 1 - 8 )</td>
</tr>
<tr>
<td>Temperature range</td>
<td>32 - 104°F (0 - 40°C)</td>
<td>41 - 95°F (5 - 35°C)</td>
</tr>
<tr>
<td>Permissible changes in temperature</td>
<td>less than 0.9°F (0.5°C) per minute</td>
<td></td>
</tr>
<tr>
<td>Sensor response rate ( T_{90} ) approx.</td>
<td>20 seconds</td>
<td>2 minutes</td>
</tr>
<tr>
<td>Reproducible measuring accuracy</td>
<td>better than 2% referred to end value of measuring range</td>
<td></td>
</tr>
</tbody>
</table>

Min. conductivity of measurement solution at:

- measuring range 20 mg/L 50 µS/cm -
- measuring range 200 mg/L 500 µS/cm 2000 µS/cm
- up to 1000 mg/L 1000 µS/cm 4000 µS/cm
- up to 2000 mg/L 1000 µS/cm 4000 µS/cm

Measurement water flow rate recommended 16 gph (60 L/h)

Max. operating pressure 29 psig (2 bar)

Depending on the application, other parameters or water constituents may be of significance. For instance, higher concentrations of surface-active substances, such as fats or tensides, or suspended solids can have a detrimental effect on the measurement.
**ProMinent® D1Cb and D1Cc Analyzers**

**Hydrogen Peroxide Analyzers**

---

**Recommended Hydrogen Peroxide System**

(discussions follow)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>D1C H₂O₂ Controller (1)</td>
</tr>
<tr>
<td>1</td>
<td>Hydrogen Peroxide Sensor: H 2.10 P, complete with membrane cap (2)</td>
</tr>
<tr>
<td>1</td>
<td>Perox signal converter: Perox-micro-H 1.20-mA (3)</td>
</tr>
<tr>
<td>1</td>
<td>Connection between Perox signal converter and limit sensor</td>
</tr>
<tr>
<td>1</td>
<td>Three-wire cable, priced per foot (specify length)</td>
</tr>
<tr>
<td>1</td>
<td>Temperature Sensor: Pt 100 SE (4)</td>
</tr>
<tr>
<td>1</td>
<td>Connection between the temperature sensor and the controller:</td>
</tr>
<tr>
<td></td>
<td>(Based on distance between the controller and temperature sensor)</td>
</tr>
<tr>
<td></td>
<td>Up to 30 ft. SN6 open end cable</td>
</tr>
<tr>
<td></td>
<td>6 ft. (2 m) long</td>
</tr>
<tr>
<td></td>
<td>15 ft. (5 m) long</td>
</tr>
<tr>
<td></td>
<td>30 ft. (10 m) long</td>
</tr>
<tr>
<td>1</td>
<td>Over 30 ft. Signal converter 4-20 mA Pt 100 V1</td>
</tr>
<tr>
<td></td>
<td>Two-wire cable - priced per foot (specify length)</td>
</tr>
<tr>
<td>1</td>
<td>DLG-PER In-line sensor housing (5)</td>
</tr>
<tr>
<td>(includes limit sensor with 2 n/o contacts) (6)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Connection between the limit switch on the DLG-PER and the controller:</td>
</tr>
<tr>
<td></td>
<td>Two-wire cable - priced per foot (specify length)</td>
</tr>
<tr>
<td>1</td>
<td>Magnetic stirrer 115 VAC (7)</td>
</tr>
<tr>
<td>1</td>
<td>Stirrer Magnet</td>
</tr>
<tr>
<td>1</td>
<td>Compact stand (PE, UV protected, black)</td>
</tr>
<tr>
<td>1</td>
<td>Power Cord, 6 ft.</td>
</tr>
</tbody>
</table>

**Accessories:**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replacement membrane cap: M 2.0 P for H₂O₂ sensor</td>
</tr>
<tr>
<td>Polishing paste for sensor, 3 oz. (90 g) tube</td>
</tr>
</tbody>
</table>

**Note:** We can also provide measuring and control instruments mounted and wired, e.g. on PVC board or in a control cabinet. See PCM Systems in Feed & Control Packages section.

**Sensors: Hydrogen Peroxide Measurement**

The H₂O₂ sensor shaft is made of stainless steel (counter and reference electrode) with a platinum working electrode. Installation length 4.7" (120 mm), 0.5" (12 mm) Ø, PG 13.5 internal thread and SN6 plug connection.

H 2.10 P, complete with membrane cap

Temperature sensor Pt 100 for temperature compensation of H₂O₂ measurement; necessary when temperature fluctuations can occur in the measurement medium.

Pt 100 SE

A coaxial measuring line with an SN6 connector is required for direct connection of a temperature sensor:

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN6 open end</td>
</tr>
<tr>
<td>SN6 open end</td>
</tr>
<tr>
<td>SN6 open end</td>
</tr>
</tbody>
</table>

When distances between the measuring unit and sensor exceed 30 ft. (10 m), it is recommended to use a temperature signal converter which transmits the temperature signal via a 2-wire connection at 4-20 mA. Temperature compensation input should be taken into consideration when selecting the D1C-Perox controller from the identity code.

Signal converter 4-20 mA Pt 100 V1

Two-wire cable for connection between point-of-use signal converter 4-20 mA and controller - priced per foot (specify length).

7740215
Perox Signal Converter
The signal converter controls and activates the hydrogen peroxide sensor and evaluates the sensor signal. It is screw-mounted directly on the head of the sensor.

The signal converter has a length of approx. 8.1” (205 mm) and a 1.25” (32 mm) Ø.

Signal converter for H₂O₂ measurement
A changeover switch for the three measuring ranges 1 - 20, 10 - 200 and 100 - 2000 mg/L H₂O₂ is located on the inside.

Part No.  741129
Perox-micro-H 1.20-mA

In-line Sensor Housing
The DLG-PER in-line sensor housing must be used for hydrogen peroxide measurement where all (max. 3) individual sensors are installed in a measuring cup. A limit sensor must also be used which switches off the power supply for the signal converter when the measuring cup is removed. The DLG-PER in-line sensor housing features a body made of rigid PVC with a transparent polyamide cup and measurement water connection with 1/2” MNPT fittings.

Part No.  1000165
DLG-PER In-line sensor housing
(includes limit sensor with 2 n/o contacts)

Part No.  7740215
Two-wire cable for connection between the limit switch on the DLG-PER and the controller - priced per foot (specify length)

For calibration of the DLG-PER in-line sensor housing, we recommend a magnetic stirrer to facilitate flow independent calibration.

Part No.  7790915
Magnetic stirrer 115 VAC

Part No.  7790916
Stirrer magnet

Part No.  1000166
Mounting bracket for magnetic stirrer PVC
(includes screws with wall anchor)

Accessories/Spare Parts
Replacement membrane cap:

Part No.  792978
M 2.0 P for H₂O₂

Part No.  559810
Polishing paste for Perox sensor, 3 oz. (90 g) tube
ProMinent® D1Cb and D1Cc Analyzers

Peracetic Acid Analyzers

Recommended Peracetic Acid System (descriptions follow)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>D1C PAA Controller (1)</td>
</tr>
<tr>
<td>1</td>
<td>Peracetic Acid Sensor: P2.10 B, complete with membrane cap (2) 809150</td>
</tr>
<tr>
<td>1</td>
<td>Perox signal converter: Perox-micro-P 1.30-mA (3) 741128</td>
</tr>
<tr>
<td>1</td>
<td>Connection between Perox signal converter and limit sensor Three-wire cable, priced per foot (specify length) 791948</td>
</tr>
<tr>
<td>1</td>
<td>pH Sensor: REFP - SE (4) 1000505</td>
</tr>
<tr>
<td>1</td>
<td>Temperature Sensor: Pt 100 SE (5) 305063</td>
</tr>
<tr>
<td>1</td>
<td>Connection between the temperature sensor and the controller: (Based on distance between the controller and temperature sensor) Up to 30 ft 6 ft. (2 m) long 305030</td>
</tr>
<tr>
<td></td>
<td>15 ft. (5 m) long 305039</td>
</tr>
<tr>
<td></td>
<td>30 ft. (10 m) long 305040</td>
</tr>
<tr>
<td>1</td>
<td>Over 30 ft  Signal converter 4-20 mA Pt 100 V1 809128</td>
</tr>
<tr>
<td></td>
<td>Two-wire cable - priced per foot (specify length) 7740215</td>
</tr>
<tr>
<td>1</td>
<td>DLG-PER In-line sensor housing (6) (includes limit sensor with 2 n/o contacts) (7) 1000165</td>
</tr>
<tr>
<td>1</td>
<td>Connection between the limit switch on the DLG-PER and the controller: Two-wire cable - priced per foot (specify length) 7740215</td>
</tr>
<tr>
<td>1</td>
<td>Magnetic stirrer 115 VAC (8) 7790915</td>
</tr>
<tr>
<td>1</td>
<td>Stirrer Magnet 7790916</td>
</tr>
<tr>
<td>1</td>
<td>Compact stand (PE, UV protected, black) 7740000</td>
</tr>
<tr>
<td>1</td>
<td>Power Cord, 6 ft. 741203</td>
</tr>
</tbody>
</table>

Accessories:
- Replacement membrane cap: M 2.0 B for peracetic acid sensor 809154
- Polishing paste for sensor, 3 oz. (90 g) tube 559810

Note: We can also provide measuring and control instruments mounted and wired, e.g. on PVC board or in a control cabinet. See PCM Systems in Feed & Control Packages section.

Sensors: Peracetic Acid Measurement

The peracetic acid sensor shaft is made of stainless steel (counter electrode) with a gold working electrode. Installation length 4.7” (120 mm), 0.5” (12 mm) Ø. P 2.10 B, complete with membrane cap 809150

A pH sensor is also required as a reference electrode for peracetic acid measurement REFP - SE 1000505

Temperature sensor Pt 100 for temperature compensation of peracetic acid measurement; necessary when temperature fluctuations can occur in the measurement medium. Pt 100 SE 305063

A coaxial measuring line with an SN6 connector is required for direct connection of a temperature sensor:
- SN6 open end 6 ft. (2 m) long 305030
- SN6 open end 15 ft. (5 m) long 305039
- SN6 open end 30 ft. (10 m) long 305040

When distances between the measuring unit and sensor exceed 30 ft. (10 m), it is recommended to use a temperature signal converter which transmits the temperature signal via a 2-wire connection at 4-20 mA. Temperature compensation input should be taken into consideration when selecting the D1C-Perox controller from the identity code.

Signal converter 4-20 mA Pt 100 V1 809128

Two-wire cable for connection between point-of-use signal converter 4-20 mA and controller - priced per foot (specify length). 7740215
**Perox Signal Converter**

The signal converter controls and activates the peracetic acid sensor and evaluates the sensor signal. It is screw-mounted directly on the head of the sensor.

The signal converter has a length of approx. 8.1” (205 mm) and a 1.25” (32 mm) Ø.

**Signal converter for peracetic acid measurement**

A changeover switch for the two measuring ranges 10 - 200 and 100 - 2000 mg/L peracetic acid is located on the inside; the standard scope of delivery includes a measuring line with SN6 plug connector to facilitate connection to the reference electrode.

**Part No.**

Perox-micro-P 1.30-mA

741128

**In-line Sensor Housing**

The DLG-PER in-line sensor housing must be used for peracetic acid measurement where all (max. 3) individual sensors are installed in a measuring cup. A limit sensor must also be used which switches off the power supply for the signal converter when the measuring cup is removed. The DLG-PER in-line sensor housing features a body made of rigid PVC with a transparent polyamide cup and measurement water connection with 1/2” MNPT fittings.

**Part No.**

DLG-PER In-line sensor housing

1000165

(includes limit sensor with 2 n/o contacts)

Two-wire cable for connection between the limit switch on the DLG-PER and the controller - priced per foot (specify length)

7740215

For calibration of the DLG-PER in-line sensor housing, we recommend a magnetic stirrer to facilitate flow independent calibration.

**Part No.**

Magnetic stirrer 115 VAC

7790915

Stirrer magnet

7790916

Mounting bracket for magnetic stirrer PVC

1000166

(includes screws with wall anchor)

**Accessories/Spare Parts**

Replacement membrane cap:

M 2.0 B for peracetic acid

809154

Polishing paste for Perox sensor, 3 oz. (90 g) tube

559810
ProMinent® diaLog DACb

ProMinent® diaLog DACb

Water parameter analysis made easy – with the DULCOMETER® diaLog DACb. With its specially designed functionalities, processing or interference variables and switchover of control parameters, it closes the control circuit between DULCOTEST® sensors and ProMinent® metering pumps.

The two measuring and control channels of the DULCOMETER® diaLog DACb can be individually configured to meet customer requirements. Everything that you need for the reliable treatment of industrial process water, potable water, and swimming pool water.

Your Benefits

- Simple operation thanks to a clearly arranged display
- More for your money: two measuring and control channels
- Versatile use: all common measured variables can be set per Channel and reconfigured as needed
- Control from everywhere: LAN-capable and convenient remote access via integrated web server
- Maximum flexibility: individually adjustable to different operating statuses, example: Day-Night mode
- Excellent process safety and reliability: precise metering by time-based monitoring of control variables
- Minimal time and effort: effortless duplication of device settings
- Precise monitoring and documentation: Event, calibration and measured data logger with easy-to-access SD memory card
- Optimum communication: Integration into customer networks through different fieldbus systems (PROFIBUS® DP and Modbus RTU, PROFINET)

Technical Details

- Measured variables: pH, ORP, chlorine, chlorine dioxide, chlorite, bromine, conductivity, peracetic acid, hydrogen peroxide, ozone, dissolved oxygen and fluoride
- Method of installation, degree of protection: Combination housing (wall mounting, control panel mounting, pillar assembly) IP 67 and IP 66
- Control: two measuring and control channels, each with independent monodirectional PID controller (optional: two bidirectional PID controllers)
- Temperature compensation for pH and for chlorine dioxide process sensor CDP, pH compensation for chlorine
- Digital inputs for the processing of control signals, of process water limit contacts, remote stop control and to monitor the liquid levels in chemical storage tanks
- Control outputs for electronically controlled metering pumps and solenoid valves
- Interference variable processing: simple control of water parameters in flowing water by processing the flow in the control algorithm
- Adaptation of the controller set point to changed process conditions is possible via remote control by means of the mA signal of a PLC Programmable Logic Controller or with higher requirements via the fieldbus option
**ProMinent® DACb**

**DACb Multi-parameter Controller: Technical data**

- **Measuring range mV connection type:**
  - pH: 0.00 - 14.00
  - ORP voltage: (-1500) - (+1500) mV
- **Connection type mA (amperometric measured variables, measuring ranges corresponding to the sensors):**
  - Chlorine
  - Chlorine dioxide
  - Chlorite
  - Bromine
  - Ozone
  - Hydrogen peroxide (PER sensor)
  - Hydrogen peroxide (PEROX sensor with PEROX transducer V2 Order No. 1047979)
  - Peracetic acid
  - Dissolved oxygen
- **Connection type mA (potentiometer measured variables, measuring ranges corresponding to the transmitter):**
  - pH
  - ORP voltage
  - Fluoride
  - Conductivity (measuring ranges corresponding to the transmitters):
    - via Transmitter 0/4 - 20 mA
  - Temperature: via Pt 100/Pt 1000, measuring range 32ºF - 302ºF
- **Resolution**
  - pH: 0.01
  - ORP voltage: 1 mV
  - Temperature: 32.18ºF
  - Amperometric analysis (chlorine etc.): 0.001/0.01 ppm, 0.01 vol.%, 0.1 vol.%
- **Accuracy** 0.3% based on the full-scale reading
- **Measurement input pH/ORP (input resistance > 0.5 x 1012 Ω)**
- **Temperature compensation**
  - Pt 100/Pt 1000 for pH, chlorine dioxide (CDP) sensor and fluoride
  - Correction range 32ºF - 302ºF
- **pH compensation range for chlorine**
  - Sensor CLE 3 and CLE 3.1: 6.5 - 8.5, sensor CBR: 6.5 - 9.5
- **Disturbance signals**
  - Flow via 0/4 - 20 mA or contact water meter 1 - 500 Hz, the interference variable acts on both channels
- **Control characteristic**
  - PID control
  - Control 2 x bidirectional control
  - Analogue outputs 2 (3) x 0/4 - 20 mA electrically isolated, max. load 450 Ω, range and assignment (measured, correction, control variable) can be set
  - Control outputs 2 x 2 pulse frequency outputs for metering pump control 2 relays (limit value, 3-point step or pulse length control)
- **Alarm relay** 250 V ~3 A, 700 VA contact type changeover contact
- **Digital control inputs** 2 (5) as a remote-control input for the functions pause control / sample water fault, parameter set switch-over, level monitoring of chemical tanks
- **Electrical connection**
  - 90 – 253 V, 50/60 Hz, 25 VA, 24 V DC
  - PROFIBUS®-DP, Modbus RTU, PROFINET
- **Ambient temperature**
  - 32ºF - 122ºF (for use indoors or with a protective enclosure)
- **Enclosure rating**
  - Wall-mounted: IP 66 and IP 67 (NEMA 4X) Installation in the control cabinet: IP 54
- **Tests and approvals**
  - CE, MET (corresponding to UL according to IEC 61010)
- **Housing material**
  - PC with flame proofing equipment
- **Dimensions** 9.84 x 8.66 x 4.80 mm (WxHxD)
- **Weight** 2.86 lb
ProMinent® DACb

DACb Multi-parameter Controller: Technical data

Standard equipment

Basic measuring variable

• AA: 2 measuring channels with freely selectable measured variables for mA, including interference variable and pH compensation for chlorine
• VA: 2 measuring channels with freely selectable measured variables for mV (pH and ORP) and mA, including interference variable and pH compensation for chlorine
• VV: 2 measuring channels for pH and ORP
• L3: 2 measuring channels for the measured variable conductive conductivity
• PID controller with pulse frequency-based metering pump control for 2 metering pumps
• 2 analog outputs for measured value, correction value or control variable (dependent on the optional equipment)
• 4 digital inputs for sample water fault detection, pause and parameter switch-over
• 2 output relays selectable as limit value, cycle timer, real-time timer or intermittent programmable control output
• Measured variables and language selection during commissioning
• Temperature compensation of the pH, chlorine dioxide (CDP) and fluoride measurement via Pt 100/Pt 1000
• Saving and transfer of device parameters by means of the SD card
• Calibration and event data logger (without SD card, data is saved in the controller)
• Interference variable processing (flow) via frequency (contact water meter)
• Subsequent upgrade of the software function by means of an activation key or firmware update

Optional equipment for 3rd pH measuring channel

Package 2

• 3rd mA output
• Two additional metering pumps control
• External remote set-point via an analog signal for Channel 1

Package 3

• Third complete measuring and control channel with PID controller
• 3rd analog output for measured value, correction value or control variable (depending on the optional equipment)
• 3 additional digital inputs: level monitoring, pause and sample water alarm for Channel 2
• Temperature compensation of the pH, chlorine dioxide (CDP) and fluoride measurement

Package 4

• Combination of packages 2 and 3 (only one Channel for amperometric sensors is available with the interference variable mA)

Communication options:

• Measurement data logger with SD card
• Visualization of the measured data using a web server via LAN NS, PC/tablet and web browser
• PROFIBUS®-DP, Modbus RTU

Hardware extension:

• Protective RC circuit for output relay: Protects the output relay if inductive loads are to be switched (example: solenoid valves or motors), not with 24 V DC electrical connector

A complete measuring point comprises:

• Transmitter/controller DACb (see identity code)
• Fitting: DGMa, DLG III, immersion fitting
• pH sensor (identity code-dependent)
• ORP sensor (identity code-dependent)
• Chlorine, chlorine dioxide, chlorite, bromine, dissolved oxygen sensor
• Transducer for pH or ORP dependent on the cable length (> 10 m)
• Sensor cable
## ProMinent® DACb

**Identcode Ordering System DACb**

<table>
<thead>
<tr>
<th>DACb</th>
<th>Version:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Type of Mounting:
- **W**: Wall mounted

### Logo:
- 00: with ProMinent Logo

### Operation Voltage:
- 6: 100-230VAC, 50/60Hz

### Channel 1 & 2
- AA: mA/mA Measurement input
- L3: 2x Conductivity, conductivity, Temperature
- VA: mV/mA Measurement input
- W: mV/mV Measurement input

### Channel 3:
- 4: M&C + 2DP + 3DI + FFWRD + pH

### Software Presets:
- 0: No default settings

### Channel Connections:
- 0: Channel 1, 2 & 3 hardwired
- 1: 1x mV input on SN6 connection
- 2: 2x mV input on SN6 connection
- 3: 3x mV input on SN6 connection

### Connection of Digital Sensors:
- Without

### Communication:
- 0: None
- A: Mod RTU (RS485 or R232)
- B: PROFIBUS DPV1
- E: Ethernet/LAN with Web Server

### Data Logger:
- 1: with Data Logger

### Hardware Upgrade:
- 0: None

### Approvals:
- 01: CE

### Certificates:
- 0: without

### Document Language:
- EN

---

**ProMinent®**

solenoid-driven metering pumps

motor-driven metering pumps

pump spare parts & accessories

DULCOTEST®

DULCOMETER®

polymer blending & dry feed solutions
### ProMinent® DACb Reagentless Analyzers

#### DACb Complete Package Part Numbers

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package Type</th>
<th>Part Number</th>
<th>Package Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1055407</td>
<td>2 PPM Total Chlorine</td>
<td>1083297</td>
<td>5 PPM Total/Total Chlorine</td>
</tr>
<tr>
<td>1055408</td>
<td>2 PPM Free Chlorine/pH</td>
<td>1093232</td>
<td>5 PPM Free/Total Chlorine/pH</td>
</tr>
<tr>
<td>1080700</td>
<td>2 PPM Total Chlorine/pH</td>
<td>1049062</td>
<td>10 PPM Total Chlorine</td>
</tr>
<tr>
<td>1083296</td>
<td>2 PPM Total/Total Chlorine</td>
<td>1049063</td>
<td>10 PPM Free Chlorine/pH</td>
</tr>
<tr>
<td>1093231</td>
<td>2 PPM Free/Total Chlorine/pH</td>
<td>1080702</td>
<td>10 PPM Total Chlorine/pH</td>
</tr>
<tr>
<td>1079048</td>
<td>5 PPM Total Chlorine</td>
<td>1083296</td>
<td>10 PPM Free/Total Chlorine/pH</td>
</tr>
<tr>
<td>1080701</td>
<td>5 PPM Total Chlorine/pH</td>
<td>1081716</td>
<td>20 PPM Total Chlorine/pH</td>
</tr>
<tr>
<td>1079050</td>
<td>5 PPM Free Chlorine/pH</td>
<td>1093233</td>
<td>10 PPM Total Chlorine/pH</td>
</tr>
<tr>
<td>1058259</td>
<td>10 PPM Fluoride/ 2 PPM Total Chlorine</td>
<td>1093227</td>
<td>10 PPM Fluoride</td>
</tr>
<tr>
<td>1082570</td>
<td>2,000 PPM Hydrogen Peroxide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1093229</td>
<td>200 PPM Peracetic Acid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1093230</td>
<td>2,000 PPM Peracetic Acid</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Free Chlorine Package**

**Fluoride/ Total Chlorine Package**
ProMinent® Compact Controller

Overview: Compact

The Measuring Transducer DULCOMETER® Compact with control function for the measured variables pH and redox provides basic functions for applications in water treatment. It has a fixed configuration with the following features.

Summary of advantages:
- Measured variables pH and ORP (can be changed on the controller)
- Operation independent of the operating language (use of abbreviations, such as CAL, PARAM, CONFIG, ERROR)
- Illuminated display
- 3 LED display operating state (relay 1 / 2 active, Error)
- Sensor monitoring for pH
- P and PID control characteristics
- Selectable control direction (raise or lower measured value)
- Pulse frequency relay for control of metering pump
- Power relay can be configured as an alarm, limit value or pulse width modulated control output for metering pumps (connection function or switch on operating voltage)
- Analog output 4-20 mA can be configured as a writer output or control output
- Digital input to switch off the control or to process a sample water limit contact by remote control
- Temperature sensor input (Pt 1000) for temperature compensation of the pH and chlorine value

Applications
- Waste water treatment
- Treatment of drinking water
- Swimming pool water treatment

Technical Data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Specification Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range:</td>
<td>pH: 0.00 - 14</td>
</tr>
<tr>
<td></td>
<td>ORP: -1000 - +1000 mV</td>
</tr>
<tr>
<td>Resolution:</td>
<td>pH: 0.01 pH</td>
</tr>
<tr>
<td></td>
<td>ORP: 1 mV</td>
</tr>
<tr>
<td>Correction variable:</td>
<td>Temperature for pH via Pt 1000</td>
</tr>
<tr>
<td>Correction range:</td>
<td>32 - 248 °F, (0 - 120 °C)</td>
</tr>
<tr>
<td>Control characteristic:</td>
<td>P/PID</td>
</tr>
<tr>
<td>Control:</td>
<td>1-way controller with selectable control direction (raise/lower)</td>
</tr>
<tr>
<td>Signal current output:</td>
<td>1 x 4-20 mA galvanically isolated max. load 400 Ω</td>
</tr>
<tr>
<td></td>
<td>Range and assignment (measured or actuating variable) can be set</td>
</tr>
<tr>
<td>Control outputs:</td>
<td>1 pulse frequency output for control of the metering pump</td>
</tr>
<tr>
<td></td>
<td>1 relay (alarm or limit value relay or pulse length control)</td>
</tr>
<tr>
<td></td>
<td>1 x analog output 4-20 mA</td>
</tr>
<tr>
<td>Electrical connection:</td>
<td>90 - 253 V ~</td>
</tr>
<tr>
<td>Ambient temperature:</td>
<td>14 - 140 °F, (-10 - +60 °C)</td>
</tr>
<tr>
<td>Enclosure rating:</td>
<td>IP 67</td>
</tr>
<tr>
<td>Dimensions:</td>
<td>135 x 125 x 75 mm (H x W x D)</td>
</tr>
<tr>
<td>Weight:</td>
<td>1.10 lbs, (0.5 kg)</td>
</tr>
</tbody>
</table>

Part no.

Compact controller for pH/ORP

1050627
**ProMinent® DMT Transmitters**

**Overview: DMT**

DULCOMETER® DMT type transmitters are compact 2-wire transmitters for measured variables pH, redox, chlorine, conductive conductivity, temperature. Easily combined with programmable memory controllers.

**Summary of advantages:**
- Reliable measurement
- High level of operating safety, e.g. probe monitoring (pH), electrical isolation
- Simple flexible installation
- Full text user guidance
- Automatic buffer recognition (pH)
- Autoranging (conductivity)
- Compact design
- Switch between pH, redox and temperature

**Applications:** process control, food and beverage industry, chemical and pharmaceutical industries, water treatment, waste water treatment, power plant

---

**Technical Data**

**Measurement range:**
- pH -1.00 - 15.00
- -1200…+1200 mV redox voltage
- 0.01…50.0 ppm/l chlorine
- -20 - +150 °C
- 1 µS/cm - 200 mS/cm (autoranging)

**Cell constant:**
- pH 0.01
- 1 mV
- 0.1 % from measurement range for chlorine
- 0.1 °C
- Conductivity 1/1000 of display value (min. 0.001 µS/cm)

**Reproducibility:**
- 0.5 % from measurement range

**Measurement input:**
- mV terminal (pH, redox); input resistance >5 x 10¹¹ Ω
- Chlorine terminal (DMT chlorine probes)
- Pt 100/1000 terminal
- Conductivity terminal (2 or 4 wire connector)

**Correction variable:**
- Temperature via Pt 100/1000 (pH, chlorine, conductivity)

**Correction range:**
- Chlorine: 5 - 45 °C, pH: 0 - 100 °C, Cond: 0 - 100 °C

**Current output:**
- 4 - 20 mA, fault current 23 mA

**Supply voltage:**
- 16 - 40 V DC

**Feed voltage:**
- 2-wire transmitter, 16 - 40 V DC, nominal 24 V PROFIBUS® DP version, 16 - 30 V DC, nominal 24 V communication interface:

**Communication interface:** PROFIBUS® DP (wall-mounted version only)

**Ambient temperature:**
- -5 - +55 °C

**Climatic conditions:**
- up to 95 % relative humidity (non-condensing)

**Enclosure rating:**
- IP 65 (wall/pipe mounted)
- IP 54 (control panel installation)

**Display:**
- graphical display

**Housing:**
- PPE

**Dimensions:**
- 125 x 135 x 75 mm (WxHxD)

**Weight:**
- approx. 450 g

---

**A complete measuring station comprises the following:**
- Measuring transducer DMTa (see Identcode)
- In-line probe housing: DGMa..., DLG III ..., immersible in-line probe housing
- Chlorine sensor
- Assembly set for chlorine sensor
- pH sensor
- Redox sensor
- Temperature sensor Pt 100 /Pt 1000
- Conductivity sensor
- Sensor cable
- PROFIBUS®-DP connection accessories
<table>
<thead>
<tr>
<th>DMT</th>
<th>Version:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

**Type of Mounting:**
- W: Wall mounted (also rail mounted)
- S: Control panel installation

**Logo:**
- 0: With ProMinent® logo

**Electrical connection:**
- 9: Ring main 4-20 mA (two wire technology), operating voltage 16-40 V DC, nominal 24 V DC
- 5: PROFIBUS® DP, operating voltage 16 - 30 V DC, nominal 24 V DC (only if communication interface = PROFIBUS® DP)

**Communication interface:**
- 0: None
- 4: PROFIBUS® DP (assembly type W only)

**Measured variable 1:**
- P: pH
- R: Redox
- T: Temperature
- C: Chlorine
- L: Conductivity

**Enclosure rating:**
- 0: Standard

**Language:**
- E: English

- **Presetting A, probe:**
  - 0: Standard ProMinent® buffer solution pH 4-7-10

- **Presetting B, probe:**
  - 0: Autom. Temperature measurement (standard)
  - 1: Manual temperature measurement
  - 2: Autom./manual temperature measurement
  - 9: No temperature measurement

- **Presetting C, output:**
  - 0: Prop. Measured variable (standard)
  - 1: Manual adjustable current value
  - 2: Proportional or manual
  - 3: Proportional or manual hold
  - 4: 4 mA constant current

- **Presetting C:**
  - 0: Standard
## ProMinent® Portable DT Photometer

### Overview: Photometer
- **Photometer DT1, DT2, DT3 and DT4**
  - Portable compact Photometer
  - Simple to operate with support text
  - Reliable, simple measurement of chlorine, chlorine dioxide, fluoride, chlorite, H₂O₂, bromine, ozone, pH and cyanuric acid
  - Self-diagnostic

### Applications:
- Swimming pool, drinking water, process water

### Technical Data

#### Measurement range of DT1:
- 0.05...6.0 mg/l free chlorine (DPD 1) + total chlorine (DPD3)
- 0.1...13.0 mg/l bromine (DPD 1)
- 0.05...11 mg/l chlorine dioxide (DPD 1)
- 0.03...4.0 mg/l ozone (DPD 4)
- pH 6.5...8.4 (phenol red)
- 1...80 mg/l cyanuric acid

#### Measurement range of DT2B:
- 0.05...2.0 mg/l fluoride
- 0.05...6.0 mg/l free chlorine and total chlorine
- 0.05...11.0 mg/l chlorine dioxide

#### Measurement ranges, DT3:
- 1 - 50 / 40 - 500 mg/l hydrogen peroxide

#### Measurement ranges, DT4:
- 0.03 - 2.5 mg/l chlorite, 0.05 - 11 mg/l chlorine dioxide, 0.05 - 6 mg/l chlorine

#### Measuring tolerance:
Dependent upon measured value and measuring method

#### Battery:
9 V battery (approx. 600 x 4-minute measurement cycles)

#### Ambient temperature:
41 - 104° F (5 - 40 °C)

#### Relative humidity:
30 - 90 % (non-condensing)

#### Housing material:
ABS

#### Keypad:
Polycarbonate

#### Dimensions:
7.5 x 4.3 x 2.2 in (190 x 110 x 55 mm (LxWxH))

#### Weight:
approx. 1 lb. (0.4 kg)

### Part Numbers

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DT1 photometer</td>
<td>complete with carrying case</td>
<td>1003473</td>
</tr>
<tr>
<td>DT3 photometer</td>
<td>complete with carrying case</td>
<td>1023143</td>
</tr>
<tr>
<td>DT4B photometer</td>
<td>complete with carrying case</td>
<td>1039318</td>
</tr>
</tbody>
</table>

Photometers supplied with accessories, container vessels and reagents.

### Consumable items:

<table>
<thead>
<tr>
<th>Item</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPD 1 buffer, 15 ml</td>
<td>1002857</td>
</tr>
<tr>
<td>DPD 1 reagent, 15 ml</td>
<td>1002858</td>
</tr>
<tr>
<td>DPD 3 solution, 15 ml</td>
<td>1002859</td>
</tr>
<tr>
<td>Phenol red tablets R 175 (100 in each)</td>
<td>305532</td>
</tr>
<tr>
<td>Cyanuric acid tablets R 263 (100 in each)</td>
<td>305531</td>
</tr>
<tr>
<td>SPADNS reagent, 250 ml for fluoride detection</td>
<td>1010381</td>
</tr>
<tr>
<td>Calibration standard fluoride 1 mg/l for calibration of photometer (fluoride detection)</td>
<td>1010382</td>
</tr>
<tr>
<td>3 spare cells: round cells with covers for DPD phenol red and cyanuric acid detection (DT1 and DT2B)</td>
<td>1007566</td>
</tr>
<tr>
<td>3 spare cells for fluoride detection (DT2A and B)</td>
<td>1010396</td>
</tr>
<tr>
<td>DPD reagents set, 15 ml each: 3 x DPD 1 buffer, 1 x DPD 1 reagent, 2 x DPD 3 solution</td>
<td>1007567</td>
</tr>
<tr>
<td>Chlorine dioxide tablets Nr. 1 R 127</td>
<td>501317</td>
</tr>
<tr>
<td>Chlorine dioxide tablets Nr. 2 R 128</td>
<td>501318</td>
</tr>
<tr>
<td>Phenol red tablets R 175 (100 in each)</td>
<td>305532</td>
</tr>
<tr>
<td>Cyanuric acid tablets R 263 (100 in each)</td>
<td>305531</td>
</tr>
</tbody>
</table>

### Spare parts

#### Chlorite meter:
- Foamer for expulsion of chlorine dioxide (DT4) 1022754
- 3 No. spare cuvettes for chlorite determination 1007566

#### H₂O₂ meter:
- Reagent for H₂O₂ (DT3), 15 ml 1023636
- Spare cuvettes, 5 No., for H₂O₂ (DT3) 1024072
ProMinent’s microFLEX controller is the perfect economical solution that provides the latest in water management technology for Cooling Towers and Boilers. The microFLEX water treatment controller offers a worry-free thermal flow switch that does not require any user adjustments. It also integrates built-in diagnostics with real-time monitoring in a compact design (5.9"W x 5.9"H x 3.5"D).

### Features
- **Models:** Boiler, Cooling, Condensate diverter, Closed loop – reverse conductivity
- **Inhibitor Modes:** Bleed & Feed, Bleed then Feed, Percent Time, Meter Volume
- **Inputs:** Conductivity, Meter, System status
- **Outputs:** Two Powered Relays
- **Standard:** Single point calibration, 2 Line – 16 Character LCD, Built-In Diagnostics NEMA 4X Enclosure, CE Approved, 5 Key Universal Keypad
- **Options:** Web Browser Interface for remote view and configuration or Dry contact alarm or 4-20mA out on conductivity

### MicroFLEX Controllers

#### M02 Series Version:
- **A**

<table>
<thead>
<tr>
<th>Application</th>
<th>MicroFLEX 2 Controller Version A: Two relay controller with conductivity and temperature inputs, single inhibitor feed based on water meter input, bleed or % time with overfeed protection, flow switch/status input, 2 line display and 5 key universal keypad.</th>
</tr>
</thead>
<tbody>
<tr>
<td>COIN</td>
<td>Cooling Tower</td>
</tr>
<tr>
<td>BBIN</td>
<td>Boiler</td>
</tr>
<tr>
<td>CLAH</td>
<td>Closed loop reverse conductivity</td>
</tr>
<tr>
<td>CMAH</td>
<td>Condensate monitor</td>
</tr>
</tbody>
</table>

#### Expansion Option:
- **XX** None
- **CL** 4-20 mA output on conductivity
- **LB** Ethernet networking
- **AR** Dry contact alarm relay

#### Remote Communications:
- **0** None

#### Approvals:
- **01** Standard

### Identcode Ordering System
ProMinent® Cooling Tower & Boiler Controllers

MultiFLEX Controllers

ProMinent’s MultiFLEX water treatment controllers exemplify the latest in water management technology. Packed with features, the MultiFLEX line of products are designed to provide the highest degree of control and flexibility. With one MultiFLEX you can control and monitor multiple towers, multiple boilers, or tower/boiler combos.

Features
M Control up to 4 Towers at once
M Control up to 8 Boilers at once
M Web Browser Accessible
M LAN Accessible
M Up to 14 Analog Inputs
M Twelve Digital Inputs
M Ten Relay Outputs
M Works with Trackster 3 Software
M 4 Line, 20 Character Backlit Display
M Easily Upgraded with Plug-in Modules
M Fully Programmable
M Ethernet with user definable static IP address
M NEMA 4X Enclosure
M 120 or 240VAC 50/60Hz, Switch Selectable
M CE Approved
M Supports “Percentage Time Bleed & Feed”
M 5-Key Universal Keypad

ProMinent® Cooling Tower & Boiler Controllers

DULCOMETER® Instrumentation

DULCOTEST® Sensors

Polymer Blending & Dry Feed Solutions

Product Overview

Motor-Driven Metering Pumps

Solenoid-Driven Metering Pumps

Part, Spare Parts & Accessories

215
## Identcode Ordering System (M5)

**M05 Series Version:**

A

### MultiFLEX 5 Controller Version A:

Includes 5 universally controlled powered (120/240VAC) relays, 6 status/water meter digital inputs, 7 analog input/output channels, a 4 line 20 character back lit display, 5 key universal keypad and an Ethernet port with Browser communications. Can be programmed for cooling, boiler, process or mixture of all on one unit.

**Application:**

- B: Boiler
- T: Tower, combination, or monitor
- X: Custom application with factory configuration

### I/O Expansion Slot 'A' and 'B':

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XX</td>
<td>None</td>
</tr>
<tr>
<td>B1</td>
<td>Single Boiler Conductivity with Blowdown Relay</td>
</tr>
<tr>
<td>BM</td>
<td>Single Boiler Conductivity - Monitor</td>
</tr>
<tr>
<td>B2</td>
<td>Dual Boiler Conductivity with Blowdown Relay</td>
</tr>
<tr>
<td>BB</td>
<td>Dual Boiler Conductivity - Monitor</td>
</tr>
<tr>
<td>CC</td>
<td>Boiler Condensate Conductivity/Temp - Relay</td>
</tr>
<tr>
<td>CN</td>
<td>Boiler Condensate Conductivity/Temp - Monitor</td>
</tr>
<tr>
<td>PC</td>
<td>Single Boiler Condensate pH - Relay</td>
</tr>
<tr>
<td>PN</td>
<td>Single Boiler Condensate pH - Monitor</td>
</tr>
<tr>
<td>CO</td>
<td>Cooling Tower Conductivity/Temp - Relay</td>
</tr>
<tr>
<td>CM</td>
<td>Cooling Tower Conductivity/Temp - Monitor</td>
</tr>
<tr>
<td>PH</td>
<td>Single Cooling Tower pH - Relay</td>
</tr>
<tr>
<td>PM</td>
<td>Single Cooling Tower pH - Monitor</td>
</tr>
<tr>
<td>PP</td>
<td>Dual Cooling Tower pH - Relay</td>
</tr>
<tr>
<td>P2</td>
<td>Dual Cooling Tower pH - Monitor</td>
</tr>
<tr>
<td>FT</td>
<td>Single pH/Temperature (Temperature compensated pH)</td>
</tr>
<tr>
<td>OR</td>
<td>Single ORP - Relay</td>
</tr>
<tr>
<td>OM</td>
<td>Single ORP - Monitor</td>
</tr>
</tbody>
</table>

*Options marked are tower only:

- RR: Dual ORP - Relay
- O2: Dual ORP - Monitor
- OP: ORP and pH - Relay
- MM: ORP and pH - Monitor
- CR: Single corrosion rate
- DC: Dual corrosion rate
- CI: Single 4-20 mA Input - Relay
- IM: Single 4-20 mA Input - Monitor
- RI: Dual 4-20 mA Input 1 relay
- RI2: Dual 4-20 mA Input 2 relays
- RI4: Dual 4-20 mA Input (isolated) Monitor
- RI5: Dual 4-20 mA Input (isolated) 1 relay
- RR*: Dual ORP - Relay
- O2*: Dual ORP - Monitor
- PP*: ORP and pH - Relay
- MM*: ORP and pH - Monitor
- CR*: Single corrosion rate
- DC*: Dual corrosion rate
- CI*: Single 4-20 mA Input - Relay
- IM*: Single 4-20 mA Input - Monitor
- RI*: Dual 4-20 mA Input 1 relay
- RI2*: Dual 4-20 mA Input 2 relays
- RI4*: Dual 4-20 mA Input (isolated) Monitor
- RI5*: Dual 4-20 mA Input (isolated) 1 relay
- PO*: ORP and pH - Relay
- PO*: ORP and pH - Monitor
- CO*: Cooling Tower Conductivity/Temp - Relay
- CM*: Cooling Tower Conductivity/Temp - Monitor
- PH*: Single Cooling Tower pH - Relay
- PM*: Single Cooling Tower pH - Monitor
- PP*: Dual Cooling Tower pH - Relay
- PM*: Dual Cooling Tower pH - Monitor
- FT*: Single pH/Temperature (Temperature compensated pH)
- OR*: Single ORP - Relay
- OM*: Single ORP - Monitor

### I/O Expansion Slot 'C' and 'D':

Use same selection options as expansion slot 'A' and 'B'

### I/O Expansion Slot 'E' and 'F':

Use same selection options as expansion slot 'A' and 'B'

### I/O Expansion Slot 'G':

Use same choices as Slot A/B except only single expansion card options allowed

**Pre-wired power relay plug box:**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>One outlet</td>
</tr>
<tr>
<td>2</td>
<td>Two outlets</td>
</tr>
<tr>
<td>3</td>
<td>Three</td>
</tr>
<tr>
<td>4</td>
<td>Four</td>
</tr>
</tbody>
</table>

**Inhibitor powered relays (tower only):**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>One</td>
</tr>
<tr>
<td>2</td>
<td>Two</td>
</tr>
<tr>
<td>3</td>
<td>Three</td>
</tr>
<tr>
<td>4</td>
<td>Four</td>
</tr>
</tbody>
</table>

**Timed biocide powered relays:**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>One</td>
</tr>
<tr>
<td>2</td>
<td>Two</td>
</tr>
<tr>
<td>3</td>
<td>Three</td>
</tr>
<tr>
<td>4</td>
<td>Four</td>
</tr>
</tbody>
</table>

**Internal boiler treatment:**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>One</td>
</tr>
<tr>
<td>2</td>
<td>Two</td>
</tr>
<tr>
<td>3</td>
<td>Three</td>
</tr>
<tr>
<td>4</td>
<td>Four</td>
</tr>
</tbody>
</table>

**Remote communications:**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>Feed verification (1)</td>
</tr>
<tr>
<td>2</td>
<td>Feed verification (2)</td>
</tr>
</tbody>
</table>

**Feed verifications:**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>Feed verification (1)</td>
</tr>
<tr>
<td>2</td>
<td>Feed verification (2)</td>
</tr>
<tr>
<td>3</td>
<td>Feed verification (3)</td>
</tr>
<tr>
<td>4</td>
<td>Feed verification (4)</td>
</tr>
</tbody>
</table>

**Operating Voltage:**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>115 VAC 50/60 Hz</td>
</tr>
<tr>
<td>2</td>
<td>230 VAC 50/60 Hz</td>
</tr>
</tbody>
</table>

**M05**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>One</td>
</tr>
<tr>
<td>2</td>
<td>Two</td>
</tr>
<tr>
<td>3</td>
<td>Three</td>
</tr>
<tr>
<td>4</td>
<td>Four</td>
</tr>
<tr>
<td>5</td>
<td>Five</td>
</tr>
<tr>
<td>6</td>
<td>Six</td>
</tr>
<tr>
<td>7</td>
<td>Seven</td>
</tr>
<tr>
<td>8</td>
<td>Eight</td>
</tr>
</tbody>
</table>

---

**ProMient® Cooling Tower & Boiler Controllers**

**Identcode Ordering System (M5)**

---

**Series Version:**

A

**Application:**

- B: Boiler
- T: Tower, combination, or monitor
- X: Custom application with factory configuration

**I/O Expansion Slot 'A' and 'B':**

Use same selection options as expansion slot 'A' and 'B'

**I/O Expansion Slot 'C' and 'D':**

Use same selection options as expansion slot 'A' and 'B'

**I/O Expansion Slot 'E' and 'F':**

Use same selection options as expansion slot 'A' and 'B'

**I/O Expansion Slot 'G':**

Same choices as Slot A/B except only single expansion card options allowed

**Pre-wired power relay plug box:**

- 0: None
- 1: One outlet
- 2: Two outlets
- 3: Three outlets
- 4: Four outlets
- 5: Five outlets

**Inhibitor powered relays (tower only):**

- 0: None
- 1: One
- 2: Two
- 3: Three
- 4: Four

**Timed biocide powered relays:**

- 0: None
- 1: One
- 2: Two
- 3: Three
- 4: Four

**Internal boiler treatment:**

- 0: None
- 1: One
- 2: Two
- 3: Three
- 4: Four
- 5: Five
- 6: Six
- 7: Seven
- 8: Eight

**Remote communications:**

- 0: None
- 1: Feed verification (1)
- 2: Feed verification (2)
- 3: Feed verification (3)
- 4: Feed verification (4)

**Operating Voltage:**

- A: 115 VAC 50/60 Hz
- B: 230 VAC 50/60 Hz

---

**ProMient® Cooling Tower & Boiler Controllers**

**Identcode Ordering System (M5)**

---

**Series Version:**

A

**Application:**

- B: Boiler
- T: Tower, combination, or monitor
- X: Custom application with factory configuration

**I/O Expansion Slot 'A' and 'B':**

Use same selection options as expansion slot 'A' and 'B'

**I/O Expansion Slot 'C' and 'D':**

Use same selection options as expansion slot 'A' and 'B'

**I/O Expansion Slot 'E' and 'F':**

Use same selection options as expansion slot 'A' and 'B'

**I/O Expansion Slot 'G':**

Same choices as Slot A/B except only single expansion card options allowed

**Pre-wired power relay plug box:**

- 0: None
- 1: One outlet
- 2: Two outlets
- 3: Three outlets
- 4: Four outlets
- 5: Five outlets

**Inhibitor powered relays (tower only):**

- 0: None
- 1: One
- 2: Two
- 3: Three
- 4: Four

**Timed biocide powered relays:**

- 0: None
- 1: One
- 2: Two
- 3: Three
- 4: Four

**Internal boiler treatment:**

- 0: None
- 1: One
- 2: Two
- 3: Three
- 4: Four
- 5: Five
- 6: Six
- 7: Seven
- 8: Eight

**Remote communications:**

- 0: None
- 1: Feed verification (1)
- 2: Feed verification (2)
- 3: Feed verification (3)
- 4: Feed verification (4)

**Operating Voltage:**

- A: 115 VAC 50/60 Hz
- B: 230 VAC 50/60 Hz

---

**ProMient® Cooling Tower & Boiler Controllers**

**Identcode Ordering System (M5)**

---

**Series Version:**

A

**Application:**

- B: Boiler
- T: Tower, combination, or monitor
- X: Custom application with factory configuration

**I/O Expansion Slot 'A' and 'B':**

Use same selection options as expansion slot 'A' and 'B'

**I/O Expansion Slot 'C' and 'D':**

Use same selection options as expansion slot 'A' and 'B'

**I/O Expansion Slot 'E' and 'F':**

Use same selection options as expansion slot 'A' and 'B'

**I/O Expansion Slot 'G':**

Same choices as Slot A/B except only single expansion card options allowed

**Pre-wired power relay plug box:**

- 0: None
- 1: One outlet
- 2: Two outlets
- 3: Three outlets
- 4: Four outlets
- 5: Five outlets

**Inhibitor powered relays (tower only):**

- 0: None
- 1: One
- 2: Two
- 3: Three
- 4: Four

**Timed biocide powered relays:**

- 0: None
- 1: One
- 2: Two
- 3: Three
- 4: Four

**Internal boiler treatment:**

- 0: None
- 1: One
- 2: Two
- 3: Three
- 4: Four
- 5: Five
- 6: Six
- 7: Seven
- 8: Eight

**Remote communications:**

- 0: None
- 1: Feed verification (1)
- 2: Feed verification (2)
- 3: Feed verification (3)
- 4: Feed verification (4)

**Operating Voltage:**

- A: 115 VAC 50/60 Hz
- B: 230 VAC 50/60 Hz

---
### Identcode Ordering System (M10)

**M10**

#### MultiFLEX 10 Controller Version A:
- Includes 10 universally controlled powered (120/240VAC) relays, 12 status/water meter digital inputs, 14 analog input/output channels, 4 line 20 character backlit display, 5 key universal keypad and an Ethernet port with Browser communications. Can be programmed for cooling, boiler, process or a mixture of all on one unit.

#### Application:
- B Boiler
- T Tower, combination, or monitor
- X Custom application with factory configuration

#### I/O Expansion Slot 'A' and 'B' (*options marked are tower only):

<table>
<thead>
<tr>
<th>XX None</th>
<th>RR* Dual ORP - Relay</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1 Single Boiler Conductivity with Blowdown Relay</td>
<td>O2* Dual ORP - Monitor</td>
</tr>
<tr>
<td>BM Single Boiler Conductivity - Monitor</td>
<td>OP* ORP and pH - Relay</td>
</tr>
<tr>
<td>B2 Dual Boiler Conductivity with Blowdown Relay</td>
<td>MM* ORP and pH - Monitor</td>
</tr>
<tr>
<td>BB Dual Boiler Conductivity - Monitor</td>
<td>CR* Single corrosion rate</td>
</tr>
<tr>
<td>CC Boiler Condensate Conductivity/Temp - Relay</td>
<td>DC* Dual corrosion rate</td>
</tr>
<tr>
<td>CN Boiler Condensate Conductivity/Temp - Monitor</td>
<td>CI Single 4-20 mA Input - Relay</td>
</tr>
<tr>
<td>PC Single Boiler Condensate pH - Relay</td>
<td>IM Single 4-20 mA Input - Monitor</td>
</tr>
<tr>
<td>PN Single Boiler Condensate pH - Monitor</td>
<td>2I Dual 4-20 mA Input 1 relay</td>
</tr>
<tr>
<td>CO* Cooling Tower Conductivity/Temp - Relay</td>
<td>2D Dual 4-20 mA Input 2 relays</td>
</tr>
<tr>
<td>CM* Cooling Tower Conductivity/Temp - Monitor</td>
<td>2M Dual 4-20 mA Input Monitor</td>
</tr>
<tr>
<td>PM* Single Cooling Tower pH - Monitor</td>
<td>I3 Dual 4-20 mA Input (isolated) 1 relay</td>
</tr>
<tr>
<td>PP* Dual Cooling Tower pH - Relay</td>
<td>I4 Dual 4-20 mA Input (isolated) Monitor</td>
</tr>
<tr>
<td>P2* Dual Cooling Tower pH - Monitor</td>
<td>IO Single 4-20 mA Output</td>
</tr>
<tr>
<td>PT* Single pH/Temp (Temperature compensated pH)</td>
<td>OO Dual 4-20 mA Output</td>
</tr>
<tr>
<td>OR* Single ORP - Relay</td>
<td>RT Rate to Stroke driver</td>
</tr>
<tr>
<td>OM* Single ORP - Monitor</td>
<td></td>
</tr>
</tbody>
</table>

#### I/O Expansion Slot 'C' and 'D':
- Use same selection options as expansion slot 'A' and 'B'

#### I/O Expansion Slot 'E' and 'F':
- Use same selection options as expansion slot 'A' and 'B'

#### I/O Expansion Slot 'G' and 'H':
- Use same selection options as expansion slot 'A' and 'B'

#### I/O Expansion Slot 'I' and 'J':
- Use same selection options as expansion slot 'A' and 'B'

#### I/O Expansion Slot 'K' and 'L':
- Use same selection options as expansion slot 'A' and 'B'

#### I/O Expansion Slot 'M' and 'N':
- Use same selection options as expansion slot 'A' and 'B'

#### Pre-wired power relay plug box:

| 0 None | 6 Six outlets |
| 1 One outlet | 7 Seven outlets |
| 2 Two outlets | 8 Eight outlets |
| 3 Three outlets | 9 Nine outlets |
| 4 Four outlets | A Ten outlets |
| 5 Five outlets |

#### Inhibitor powered relays (tower only):

| 0 None | 3* Three |
| 1* One | 4* Four |
| 2* Two |

#### Timed biocide powered relays:

| 0 None | 5 Five |
| 1 One | 6 Six |
| 2 Two | 7 Seven |
| 3 Three | 8 Eight |
| 4 Four |

#### Internal boiler treatment:

| 0 None | 1 Feed verification (1) |
| 1 One | 2 Feed verification (2) |
| 2 Two | 3 Feed verification (3) |
| 3 Three | 4 Feed verification (4) |
| 4 Four |

#### Remote communications:

| 0 None |

#### Feed verifications:

| 0 None |

#### Operating Voltage:

- A 115 VAC 50/60 Hz
- B 230 VAC 50/60 Hz
**Overview AEGIS II**

The most innovative and flexible water treatment controller available

The new AEGIS II provides reliable control and offers the most flexible communication options to optimize efficiency and profitability for all your cooling, boiler, and waste water or disinfection applications.

**Features:**

- Built In Wireless Access Point, Bluetooth and Ethernet
- New Keypad design for easy menu navigation
- Enhanced responsive browser views for Smart Phones and Tablets
- Flurometer connection via 4-20mA or (Future) direct Modbus
- 8 digital inputs for multiple flow meters for status indicators
- 10 Status LED’s
- Integral Data Logger
- (Future) Optional Modbus/BACnet communications
- 9 Flexible control outputs include: ON/OFF setpoint or time based control & Frequency (Pulse) Proportional or volumetric control
- Conductivity, pH, ORP, Corrosion, Chlorine, Bromine, PAA, CLO2, Fluorescence and more
<table>
<thead>
<tr>
<th><strong>Technical Data AEGIS II</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rating - Detail</strong></td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td><strong>Analog-Digital I/O</strong></td>
</tr>
<tr>
<td>Conductivity Serial Sensor</td>
</tr>
<tr>
<td>Conductivity Sensor</td>
</tr>
<tr>
<td>Fixed Temperature Sensor Input</td>
</tr>
<tr>
<td>Fixed 4-20 mA Current Loop Input</td>
</tr>
<tr>
<td>4-20 mA Current</td>
</tr>
<tr>
<td>Manual-Inventory-Inputs</td>
</tr>
<tr>
<td><strong>Communications User Interface</strong></td>
</tr>
<tr>
<td>Keypad - OLED</td>
</tr>
<tr>
<td>10/100 Mbps, TCP/IP Ethernet, wifi, (Optional LAN, Future Modbus &amp; Modbus RTU)</td>
</tr>
<tr>
<td><strong>Controls for ON/OFF &amp; Variable Frequency</strong></td>
</tr>
<tr>
<td>Sequential Volume Setpoints</td>
</tr>
<tr>
<td>Blocking</td>
</tr>
<tr>
<td>Interlocking</td>
</tr>
<tr>
<td>Biocide Event Controls</td>
</tr>
<tr>
<td><strong>System</strong></td>
</tr>
<tr>
<td>Electrical</td>
</tr>
<tr>
<td>Fusing for 2 AC powered loads</td>
</tr>
<tr>
<td>Surge Suppression</td>
</tr>
<tr>
<td>Enclosure</td>
</tr>
</tbody>
</table>
# DULCOMETER® Cooling Tower & Boiler Controllers

## AEGIS II Part Numbered Packages

### AEGIS II - Cooling Tower (with Panel)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1079066</td>
<td>Conductivity, dual biocide</td>
</tr>
<tr>
<td>1079067</td>
<td>Conductivity, dual biocide, pH w/acid feed</td>
</tr>
<tr>
<td>1079068</td>
<td>Conductivity, dual biocide, ORP w/bleach feed</td>
</tr>
<tr>
<td>1079069</td>
<td>Conductivity, dual biocide, pH w/acid feed, ORP w/bleach feed</td>
</tr>
<tr>
<td>1079070</td>
<td>Conductivity, dual biocide, pH w/acid feed, ORP w/bleach feed, CS and CU corrosion</td>
</tr>
</tbody>
</table>

### AEGIS II - Cooling Tower (with Pyxis)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1082241</td>
<td>Conductivity, dual biocide-includes Pyxis</td>
</tr>
<tr>
<td>1082242</td>
<td>Conductivity, dual biocide, pH w/acid feed-includes Pyxis</td>
</tr>
<tr>
<td>1082243</td>
<td>Conductivity, dual biocide, ORP w/bleach feed-includes Pyxis</td>
</tr>
<tr>
<td>1082244</td>
<td>Conductivity, single bio, pH w/acid feed, ORP w/bleach feed-includes Pyxis</td>
</tr>
<tr>
<td>1081939</td>
<td>Conductivity, single bio, pH w/acid feed, ORP w/bleach feed, CS and CU corrosion, includes Pyxis</td>
</tr>
</tbody>
</table>

### AEGIS II - Cooling Tower with Little Dipper

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1082245</td>
<td>Conductivity, dual biocide-includes Little Dipper</td>
</tr>
<tr>
<td>1082246</td>
<td>Conductivity, dual biocide, pH w/acid feed-includes Little Dipper</td>
</tr>
<tr>
<td>1082247</td>
<td>Conductivity, dual biocide, ORP w/bleach feed-includes Little Dipper</td>
</tr>
<tr>
<td>1082248</td>
<td>Conductivity, single bio, pH w/acid feed, ORP w/bleach feed-includes Little Dipper</td>
</tr>
<tr>
<td>1082249</td>
<td>Conductivity, single bio, pH w/acid feed, ORP w/bleach feed, CS and CU corrosion, includes Little Dipper</td>
</tr>
</tbody>
</table>

### AEGIS II - Boiler (No Panel)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1079064</td>
<td>Single Boiler - 2</td>
</tr>
<tr>
<td>1079065</td>
<td>Dual Boiler / 2 chemical feed</td>
</tr>
</tbody>
</table>

*Note: Other configurations available, please consult factory.*
**ProMinent® Cooling Tower & Boiler Controllers**

**Overview SlimFlex 5**

The most innovative and flexible water treatment controller available

Say hello to flexible programming with ProMinent’s SlimFlex 5 Built-in WiFi Hotspot. Enhanced, responsive browser views for smart phones and tablets makes programming fast and easy! Built-in Ethernet and integral data logger creates the total communications package for all of your cooling tower and boiler applications.

**Features:**

- Cooling Tower or Boiler
- 5 Flexible control outputs include: ON/OFF setpoint or time based control
- Built In Wireless Access Points, Ethernet and USB
- New Keypad design for easy menu navigation
- Enhanced responsive browser views for Smart Phones and Tablets
- pH and/or ORP along with conductivity
- 6 digital inputs for multiple flow meters or status indicators
- 6 Status LED’s
- 5 Powered relays
- Integral Data Logger
- Conductivity, pH, ORP and Fluorometer
- Email out data and alarms
### Technical Data SlimFlex 5

<table>
<thead>
<tr>
<th><strong>Rating - Detail</strong></th>
<th><strong>Notes</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analog-Digital I/O</strong></td>
<td></td>
</tr>
<tr>
<td>Conductivity Serial Sensor</td>
<td>Tower &amp; Integral Flowswitch sensors</td>
</tr>
<tr>
<td>Conductivity Sensor</td>
<td>Boiler &amp; Condensate sensors</td>
</tr>
<tr>
<td>4-20 mA Current</td>
<td>DC isolated, Manual &amp; Auto modes, Interlocking, Alarm</td>
</tr>
<tr>
<td>Manual-Inventory-Inputs</td>
<td>Track drop counts, inventory, tank level, ppm</td>
</tr>
</tbody>
</table>

| **Communications User Interface** | |
| Keypad - OLED | 9 Key tactile feedback, 3 Function keys, 4 line Backlit | |
| 10/100 Mbps, TCP/IP Ethernet, WiFi | HTML micro web server with user definable IP address | Static IP Browser shows controller in real time |

| **Controls for ON/OFF & Variable Frequency** | |
| Sequential Volume Setpoints | Feed a fixed volume for every make-up volume | Meter only, fault tolerant feed controls |
| Blocking | Any of 5 controls may block any other control | Prevents incompatible concurrent controls |
| Interlocking | Up to 4 contact sets can be ‘AND’ed or ‘OR’ed | Relays control OFF when contact set opens |
| Biocide Event Controls | Each of 5 controls includes 28 timed events | Each control selectable for 1, 7 & 28 day cycles |

| **System** | |
| Electrical | 100-240 VAC, 50/60 Hz, Single Phase | Universal power supply |
| Fusing for 2 AC powered loads | 6.3 Amps @ 250VAC | Alarm on open AC load fuse |
| Surge Suppression | 5 snubbed contacts | RC / Varistor on AC line input |
| Enclosure | Non-metallic, IP 65 / NEMA 4X | 13.46" x 8.94" x 3.07" (342 x 227 x 78 mm) (WxHxD) |
# ProMinent® Cooling Tower & Boiler Controllers

## SlimFlex 5 Part Numbered Packages

### SlimFlex 5 - Cooling Tower Panel

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1095560</td>
<td>Conductivity</td>
</tr>
<tr>
<td>1095561</td>
<td>Conductivity, with dual 4-20mA Output</td>
</tr>
<tr>
<td>1095598</td>
<td>Conductivity, pH</td>
</tr>
<tr>
<td>1095599</td>
<td>Conductivity, pH, with dual 4-20mA Output</td>
</tr>
<tr>
<td>1095600</td>
<td>Conductivity, ORP</td>
</tr>
<tr>
<td>1095601</td>
<td>Conductivity, ORP, with dual 4-20mA Output</td>
</tr>
<tr>
<td>1095562</td>
<td>Conductivity, pH, ORP</td>
</tr>
<tr>
<td>1095563</td>
<td>Conductivity, pH, ORP, dual 4-20mA Output</td>
</tr>
</tbody>
</table>

### SlimFlex 5 - Cooling Tower Panel with Pyxis

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1095603</td>
<td>Conductivity - includes Pyxis</td>
</tr>
<tr>
<td>1095605</td>
<td>Conductivity, with dual 4-20mA Output, includes Pyxis</td>
</tr>
<tr>
<td>1095607</td>
<td>Conductivity, pH, includes Pyxis</td>
</tr>
<tr>
<td>1095609</td>
<td>Conductivity, ORP, includes Pyxis</td>
</tr>
<tr>
<td>1095611</td>
<td>Conductivity, pH, ORP, includes Pyxis</td>
</tr>
</tbody>
</table>

### SlimFlex 5 - Cooling

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1095602</td>
<td>Conductivity, includes Little Dipper</td>
</tr>
<tr>
<td>1095604</td>
<td>Conductivity, with dual 4-20mA Output, includes Little Dipper</td>
</tr>
<tr>
<td>1095606</td>
<td>Conductivity, pH, includes Little Dipper</td>
</tr>
<tr>
<td>1095608</td>
<td>Conductivity, ORP, includes Little Dipper</td>
</tr>
<tr>
<td>1095610</td>
<td>Conductivity, pH, ORP, includes Little Dipper</td>
</tr>
</tbody>
</table>

### SlimFlex 5 - Cooling

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1095564</td>
<td>Single Boiler Blowdown with chemical feed timers</td>
</tr>
<tr>
<td>1095565</td>
<td>Single Boiler Blowdown with chemical feed timers, dual 4-20mA out</td>
</tr>
<tr>
<td>1095566</td>
<td>Dual Boiler Blowdown with chemical feed timers</td>
</tr>
<tr>
<td>1095567</td>
<td>Dual Boiler Blowdown with chemical feed timers, dual 4-20mA out</td>
</tr>
</tbody>
</table>

*Note: Other configurations available, please consult factory.*
## ProMinent® Cooling Tower & Boiler Controllers

### Cooling Tower and Boiler Accessories

#### Analog Sensors

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Controller Choice</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7760768</td>
<td>B,C,D</td>
<td>ORP Sensor Package - Chlorination with cable, Tee and probe holder</td>
</tr>
<tr>
<td>7761399</td>
<td>B,C,D</td>
<td>ORP Electrode, flat faced double junction 100 psi @ 175°F - cable required</td>
</tr>
<tr>
<td>7760729</td>
<td>B,C,D</td>
<td>PHED Sensor Package with cable, Tee and probe holder</td>
</tr>
<tr>
<td>7760998</td>
<td>B,C,D</td>
<td>pH Electrode, flat faced double junction 100 psi @ 175°F - cable required</td>
</tr>
<tr>
<td>7760200</td>
<td>B,C,D</td>
<td>Conductivity/Temperature Electrode 125 psi @ 125°F with Tee - Cooling</td>
</tr>
<tr>
<td>7760021</td>
<td>A,B,C,D</td>
<td>Aquatrac Conductivity/Temperature/Thermal Flow Switch CTF (Cooling)</td>
</tr>
<tr>
<td>7760748</td>
<td>C,D</td>
<td>Corrosion Rate Electrode, Admiralty</td>
</tr>
<tr>
<td>7760746</td>
<td>C,D</td>
<td>Corrosion Rate Electrode, Carbon Steel</td>
</tr>
<tr>
<td>7760747</td>
<td>C,D</td>
<td>Corrosion Rate Electrode, Copper</td>
</tr>
<tr>
<td>7760750</td>
<td>C,D</td>
<td>Corrosion Rate Electrode, Cupro-Nickle</td>
</tr>
<tr>
<td>7760749</td>
<td>C,D</td>
<td>Corrosion Rate Electrode, Stainless Steel</td>
</tr>
<tr>
<td>7760745</td>
<td>C,D</td>
<td>Corrosion Rate Electrode, Zinc</td>
</tr>
<tr>
<td>7760175</td>
<td>A,B,C,D</td>
<td>Aquatrac Thermal Flow Switch 100psi @ 125°F</td>
</tr>
<tr>
<td>7760002</td>
<td>A,C,D</td>
<td>Conductivity Electrode 3/4&quot; NPT - 250psi steam max (Boiler - standard sensor)</td>
</tr>
<tr>
<td>7760191</td>
<td>A,C,D</td>
<td>Conductivity/Temperature Electrode 250psi steam max 3/4&quot; NPT 4 wire</td>
</tr>
<tr>
<td>7760465</td>
<td>B,C,D</td>
<td>pH Electrode, 1/2&quot; NPT SS, 230°F max (Condensate)</td>
</tr>
<tr>
<td>7760203</td>
<td>A,B,C,D</td>
<td>High Pressure Flow Switch 1.5GPM, 400 psi max 3/4&quot; NPT, Bronze</td>
</tr>
</tbody>
</table>

#### Water Meters

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Controller Choice</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7760518</td>
<td>B,C,D</td>
<td>3/4&quot; Contacting head water meter, 1GPC, 3/4&quot; FNPT</td>
</tr>
<tr>
<td>7760515</td>
<td>B,C,D</td>
<td>1&quot; Contacting head water meter, 10GPC, 1&quot; FNPT</td>
</tr>
<tr>
<td>7760516</td>
<td>B,C,D</td>
<td>1 1/2&quot; Contacting head water meter, 100 GPC, 1&quot; FNPT</td>
</tr>
<tr>
<td>7760517</td>
<td>B,C,D</td>
<td>2&quot; Contacting head watermeter 100GPC, 2&quot;FNPT</td>
</tr>
<tr>
<td>7760508</td>
<td>B,C,D</td>
<td>1in Paddlewheel Water Meter Sensor. Supplied in PVC pipe section.</td>
</tr>
<tr>
<td>7760509</td>
<td>B,C,D</td>
<td>1.5&quot; Paddlewheel Water Meter Sensor. Supplied in PVC pipe section.</td>
</tr>
</tbody>
</table>

#### Solenoids and Valves

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Controller Choice</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7760212</td>
<td>A,B,C,D</td>
<td>1/2&quot; Solenoid valve for cooling application. 150 psi max</td>
</tr>
<tr>
<td>7760213</td>
<td>A,B,C,D</td>
<td>3/4&quot; Solenoid valve for cooling application. 150 psi max</td>
</tr>
<tr>
<td>7760214</td>
<td>A,B,C,D</td>
<td>1&quot; Solenoid valve for cooling application. 150 psi max</td>
</tr>
<tr>
<td>7760006</td>
<td>A,B,C,D</td>
<td>Needle valve 1/2&quot;, rated 250 psi steam, color coded shaft, numbered handle</td>
</tr>
<tr>
<td>7760109</td>
<td>A,B,C,D</td>
<td>Orifice Union, 1/2&quot; NPT, 250 psi steam, with four orifice plates</td>
</tr>
<tr>
<td>7760217</td>
<td>A,B,D</td>
<td>Motorized blowdown valve 1/2&quot;NPT, 120VAC, 250psi steam</td>
</tr>
<tr>
<td>7760218</td>
<td>A,B,D</td>
<td>Motorized blowdown valve 3/4&quot;NPT, 120VAC, 250psi steam</td>
</tr>
<tr>
<td>7760013</td>
<td>A,B,D</td>
<td>Motorized blowdown assembly, 1/2&quot;NPT, 120VAC 250psi steam w/needle valve and T</td>
</tr>
</tbody>
</table>

A - microFLEX  B - SlimFlex 5  C - multiFLEX  D - AEGIS II