

## Product Information

# Control 800 Electrochemical Converters

## Conductivity and pH



- Specifically Designed for Biotech Applications
- Enabling Multi-Range Conductivity Measurements
- Supporting Multi- and Single-use Systems

### 6 Measurements

### 2 Sensors

### 1 Converter

### C800 Electrochemical Converter

The Control 800 series of electrochemical converters combines high performance digital conductivity and analog pH measurements with intuitive operation. It has been designed for easy integration into skids and panels to cover a wide range of bioprocess applications in both, conventional stainless steel and single-use systems.

### Easy Integration

- Front side USB-C for cloning of standard configurations and firmware updates
- Compact stainless steel housing for integration in small cabinets
- 3 NAMUR compliant mA outputs per channel ( $\mu\text{S}/\text{cm}$ ,  $\text{mS}/\text{cm}$ , T, pH, mV)

### Simple Operation

- Low reflection-, bright LED graphic display
- All measurement values at a glance
- Keyboard designed for operation with gloves
- Ready for use with pre-calibrated conductivity sensors and pH electrodes
- USB front-side access to event logger data
- High visibility signal LEDs for clear status indication

### ACx Conductivity Sensors

The ACF60/ACS60 conductivity sensor features a special six-electrode, four-pole design. The arrangement of the four current electrodes around the two potential electrodes results in a reliable and precise measurement. This unique design also provides greatly reduced sensitivity to polarization. The combination of optek C800 and ACF60/ACS60 conductivity sensors allows a wide dynamic range from 0 – 10  $\mu\text{S}/\text{cm}$  up to 0 – 850  $\text{mS}/\text{cm}$  with the same sensor.

### Proven 6-Electrode Design for Accurate Results

- Wide measurement range 0  $\mu\text{S}/\text{cm}$  up to 850  $\text{mS}/\text{cm}$
- Multi-Range capability
- Only one-point calibration required
- Excellent accuracy at very low and high conductivities
- Outstanding linearity
- Insensitive to polarization
- No drift under changing chemical conditions
- Sanitary design (3A certified)
- FDA compliant (USP Class VI)

### Available for Single-use Applications

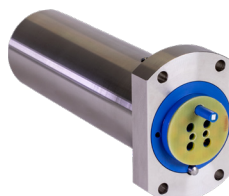
- Same advanced ACx technology for single-use applications
- Pre-calibrated Single Use Cells (S.U.C.) for plug and play
- Minimized hold-up volumes
- Available with hose barb or clamp connectors ( $\frac{1}{4}$ " to 1")



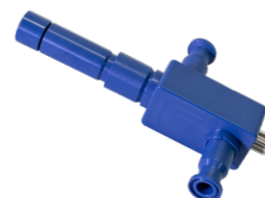
optek ACF60  
Conductivity Sensor



optek ACS60  
Conductivity Probe



optek ACF60-SU-35  
Conductivity Sensor  
(used with Single Use Cell)




optek Single Use Cell (SUC23) for  
Conductivity, pH and Temperature  
Measurements

## Specifications

Technical Data	C800
<b>Configurations</b>	C820: 1 Conductivity sensor (optek ACF, ACS), 3 mA outputs C821: 1 Conductivity sensor (optek ACF, ACS), 1 analog pH electrode, 6 mA outputs C822: 2 Conductivity sensors (optek ACF, ACS), 6 mA outputs
<b>Housing</b>	Front panel mounting in control cabinets - Dimensions front: 110 x 110 mm (4.33 x 4.33 in.) - Cut-out dimensions: H 92 mm (3.62 in.) W 92 mm (3.62 in.) D 130 mm (5.12 in.) - Material: stainless steel / polyester / ABS / PUR-foam - Protection: front IP66 / rear IP20 (mains supply secured against accidental touching)
<b>Display</b>	3.5" LCD graphic display (320 x 240 pixels), Monochrome display Backlight: LED (white)
<b>Operation</b>	Membrane keyboard (navigation keys) Software based menu operation
<b>LED</b>	One LED (green): power on, one LED (red-flashing): system failure
<b>mA-outputs</b>	Up to six 0/4 to 20 mA (NAMUR) functionally galvanically isolated (min. 500 V DC) for connection to SELV / PELV - Accuracy: < 0.5 % - resolution: < 0.05 % - load: < 500 Ohm
<b>Digital outputs</b>	2 x (NC/NO) Min. switching voltage: 5V DC, Max. switching voltage: 30 V DC, Max. switching current: 500 mA
<b>USB interface</b>	USB type C interface (frontside) for data exchange, (copy of parameter sets, firmware update, eventlogger read-out) File system format: FAT32, Storage medium: USB-C stick (not included in delivery)
<b>Conductivity inputs</b>	Inputs for one or two optek conductivity sensors ACF/ACS series Measuring range: 0 to 10 µS/cm to 850 mS/cm (depending on optek ACx sensor connected) Resolution: 0.001 µS/cm integrated temperature sensor: Pt1000 (RTD), accuracy: ±0.25°C at 25°C (77°F)
<b>pH input (only version C821)</b>	Input for one pH electrode, model C821 - measuring range 0 - 14 pH - accuracy: ±0.01 pH - resolution: 0.01 pH - Resolution Pt1000: 0.04 K - resolution Pt100: 0.4 K - diagnosis: glass impedance, diaphragm breakthrough - Measurement response time: diagnostics enabled: < 3 s diagnostics disabled: < 1 s
<b>Cable lengths (sensor)</b>	2, 3, 5, 10, 15, 20, 30 m (7, 10, 16, 33, 49, 66, 98 ft) max. cable length at pH depends on the pH electrode
<b>Power supply (fixed, secured against accidental touching)</b>	Nominal voltage : 24V DC Input voltage range : 19.6V DC to 30V DC Voltage supply tolerance during operation : ± 20 Power consumption maximum : 13W Inrush current (< 0.5 ms) : 16 A
<b>Ambient conditions</b>	- Temperature during operation (no direct sunlight): - converter: -10 to 55 °C (14 to 131 °F) - Temperature during transport (no direct sunlight): -20 to 70 °C (-4 to 158 °F)
<b>Software languages</b>	English, German, French, Spanish, Russian, Portuguese, Chinese, Japanese, Korean

Data given are subject to changes without prior notice.

Technical Data	ACF60 / ACS60	Accuracy* ACF60 / ACS60	
<b>Material (wetted)</b>	PEEK (FDA, USP class VI) Electrodes: • Stainless Steel 1.4435 (SS 316L), df < 1%, BN2 or • Hastelloy 2.4602 Hastelloy C22	0 to 10 µS/cm	± 1 % of measuring value ± 0.2 µS/cm
<b>Port-gaskets</b>	O-ring: EPDM (FDA, USP Class VI), ... others on request	0 to 250 mS/cm	± 1 % of measuring value ± 0.2 µS/cm
<b>Process pressure</b>	20 bar (290 psi) up to 50 °C (122 °F) 10 bar (145 psi) up to 100 °C (212 °F) 4 bar (58 psi) up to 135 °C (275 °F)	250 to 500 mS/cm	± 2 % of measuring value ± 0.2 µS/cm
<b>Process temperature</b>	Permanent: -10 to 90 °C (14 to 194 °F) Peak 30 min/day: -10 to 135 °C (14 to 275 °F)	500 to 850 mS/cm	± 5 % of measuring value ± 0.2 µS/cm
<b>Ambient temperature</b>	Operation: -10 °C to 40 °C (14 °F to 104 °F) Transport: -20 °C to 70 °C (-4 °F to 158 °F)	* Calibrated	
<b>Temperature sensor</b>	Integrated Pt1000 RTD (IEC Class A) Accuracy: ± 0.25 °C at 25 °C (77 °F) (T ambient - T process) ≤ ± 20 °C (± 68 °F)		
<b>Protection</b>	IP65	 <p>For more information, technical details or a quote please contact your local optek subsidiary or agent. Visit our website for direct access to technical information: <a href="http://www.optek.com">www.optek.com</a></p>	
<b>Measuring range</b>	Any measuring range between: 0 to 10 µS/cm to 850 mS/cm		

Pressure and temperature ratings specified herein may be subject to limitations - see instruction manual.

The appropriate choice of material for all wetted parts is the sole responsibility of the user. Data given are subject to changes without prior notice.

Technical Data	SUC Holder Including ACF60-SU-35
<b>Material (non wetted)</b>	Stainless Steel 1.4435 (SS 316L)
<b>Measuring range</b>	0 µS/cm to 150 mS/cm Accuracy: ± 2 % of measuring value ± 0.4 µS/cm (dependent on ambient and process temperature being equal)
<b>Temperature compensation of conductivity sensor</b>	Accuracy ≤ 0.8 % of measuring value at temperature conditions (T ambient - T process) ≤ ± 20 °C (± 68 °F)
<b>Protection</b>	IP65

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