



# DISSOLVED OXYGEN INSTRUMENTATION

## Dissolved Oxygen Analyzer/Controller

DOCN600 Series  
**\$1675**  
Complete System



- ✓ User-Friendly Design with Front Panel Menu
- ✓ Easy to Read, Large, Bright LED Display
- ✓ Quick and Easy to Calibrate
- ✓ 0 to 20 ppm and 0 to 100% Ranges
- ✓ Altitude Compensation
- ✓ Membrane Perforation Alarm
- ✓ 2 Control Relays with Third Relay for High/Low Alarm
- ✓ NEMA 4X Enclosure

DOCN600 Series dissolved oxygen analyzers/controllers are rugged and dependable.

The large, bright LED digital display is clear even in direct sunlight. Speedy calibration and simple operation make these microprocessor-based instruments suitable for a wide variety of demanding industrial and municipal applications. An intuitive step-through menu gives the user access to functions directly from the front panel. By pressing the MENU key, the operator can scroll through the menu, illuminating an LED beside the selected item and displaying the stored value. Arrow keys are used to change the value. Seldom used or set-once adjustments, such as password activation, are located on DIP switches on the back of the swing-out front panel.

The DOCN600 Series instruments accept the DOE-601 mounting assembly fitted with a DOE-601-SC sensor cartridge containing a precisely stretched permeable membrane, electrodes, and electrolyte. The inexpensive, easy-to-change cartridge is hermetically sealed. Optional mounting hardware includes submersion and "ball float" assemblies.

Calibration can be achieved with 1 of 7 techniques: in the process to a portable meter; in clean water to a portable meter; in a process sample to a lab meter; in a clean water sample to a lab meter; in a saturated process; in saturated clean water; and in air. To calibrate, press the MENU key until the CALIBRATION LED

DOE-601 mounting assembly with cable, \$520, shown smaller than actual size.

DOE-601-SC DO sensing cartridge, \$310.

DO cartridge securing nut.



DOCN601, \$845, shown much smaller than actual size.

lights up. Use the arrow keys to set the value, determined with one of the above calibration methods. Press the ENTER key twice. The unit is now calibrated.

The DOCN600 Series provides 3 analog outputs: 4 to 20 mA, 0 to 5 Vdc, and 0 to 1 mA. The instrument can also control external devices with its 2 independent relays. An alarm relay has both high and low setpoints with a fixed deadband. When this relay is energized, the ALARM LED on the front panel illuminates to indicate an alarm condition. Factory-set for bidirectional control, both control relays can be set to control either a rising or falling process, with easily programmed RELAY ON and RELAY OFF setpoints.

A self-diagnostics program indicates any system errors or faults by turning the STATUS LED on the front panel from green to red. The operator then selects STATUS from the menu to determine the fault code. The operator's manual indicates the source and likely remedy for the fault. When the fault is corrected, the STATUS LED will turn back to green.

DOCN600 Series instruments feature a rugged NEMA 4X fiberglass-reinforced polyester enclosure. They are ideal for heavy-duty outdoor applications, such as those involving municipal and industrial wastewater.



## Specifications

### Accuracy:

% Saturation: ± 1%

ppm: ± 0.1

Temp: ± 0.2°C

### Resolution:

% Saturation: 0.1

ppm: 0.01

Temp: 0.1°C

**Repeatability:** 0.1% of span or better

**Stability:** 0.1% of span per 24 hours non-cumulative

### Temperature Drift:

**Zero:** 0.01% of span per °C

**Span:** 0.01% of span per °C

**Response Time:** 20 seconds to 90% of value upon step change at 20°C (68°F)

**Display:** 3½ digit, 7-segment, 2.7 mm (½") LED display; 4 LED indicators: status, alarm, relay A, relay B

**Measuring Range:** 0 to 20.00 ppm or 0 to 250% saturation of dissolved oxygen

**Temperature:** 0 to 40°C (32 to 104°F)

### Power Requirements:

**DOCN602:** 98 to 132 Vac, 50/60 Hz (less than 10 VA), or 196 to 264 Vac 50/60 Hz, (less than 10 VA)

### Ambient Conditions:

**Temperature:** -30 to 50°C (-22 to 122°F)

**Humidity:** 0 to 90% RH, non-condensing

### Control Relays:

**Control Relays:** 2, rated 5 A @ 115/230 Vac; 5 A @ 30 Vdc, SPDT

**Bidirectional Relays:** Factory-preset for bidirectional control; can be individually field-set for rising or falling process

**On/Off Setpoints:** Field selectable full scale

**Fail-Safe:** Normal or fail-safe operation

### Alarm Relay:

**Number:** 1 high and low alarm relay

**Rating:** 5 A 115/230 Vac; 5 A 30 Vdc, SPDT

**Alarm High:** Field selectable full scale

**Alarm Low:** Field selectable full scale

**Deadband:** Fixed at 2% of full scale

**Fail-Safe:** Normal or fail-safe operation indicate status of 2 control relays and alarm relay

### Analog Outputs:

**Non-Isolated:** 0 to 1 mA, 100 W maximum load

**Non-Isolated:** 0 to 5 Vdc, 1000 W minimum load

**Isolated:** 4 to 20 mA, 800 W maximum load

**Output:** Isolated from the input, the ground, line power and all other outputs

**Range:** Expand outputs can be scaled to represent any segment of the instrument scale to a minimum of 10% of full scale

**Output Holds:** The analog outputs are automatically placed on hold when the instrument is placed in the menu mode

**Temperature:** The 0 to 1 mA and 0 to 5V DC output can be selected to track either the dissolved oxygen level of the process or the temperature of the process

### Temperature Compensation:

Automatic 0 to 40°C (32 to 104°F)

**Diagnostics:** Invalid entries identified by flashing LEDs, 2-color STATUS LED indicates system status: green, no fault; red, system fault, status menu value indicates system problem and likely solution, alarm LED turns red when alarm relay is energized, indicating high/low process value or memory loss, test display value and analog outputs can be manually set to any value for testing and diagnostic purposes

### Safety and Security:

**Operator:** Password protected (activated by DIP switch)

**Memory:** Non-volatile (EPROM)

**Microprocessor:** Watchdog timer monitors microprocessor, instrument automatically returns to online operation if left in menu mode for more than 10 minutes and no key is pressed

**Enclosure:** NEMA 4X molded fiberglass reinforced polyester enclosure with four 2.7 mm (½") conduit holes and mounting feet for surface mount; a NEMA 4X plug is provided for 1 hole

### Mounting:

**Standard:** Surface mount

**Optional:** Panel mount kit or pipe mount kit

**Dimensions:** 176 H x 165 W x 108 mm D (6.9 x 6.5 x 4.25")

**Weight:** 1.6 kg (3.5 lb)

## Sensor Specifications (DOE-601 with DOE-601-SC)

**Temperature Range:** 0 to 40°C (32 to 104°F)

**Wetted Materials:** PVC and FEP

**Failure Alarm:** 5 A SPDT relay closes if membrane is punctured, LED on panel is illuminated

**Cable:** Integral 8 m (26'); 300 m (1000') maximum distance to analyzer

**Dimensions:** 105.4 mm L (4.15"), 48 mm dia. (1.89")

**Cartridge:** DOE-601-SC, hermetically sealed

**Mounting:** 1½ NPT

### Mounting Hardware:

#### Floatation Mounting:

DOE-600-BFMK consists of ball float, extension pipe, swivel bracket, junction box and 15.5 m (50') of interconnect cable

#### Submersion Mounting:

DOE-600-SMK consists of 1.2 m (4') PVC pipe, junction box and 15.2 m (50') of interconnect cable

Recommended Reference Book:  
Advanced Reservoir Engineering,  
**FW-323, \$100.**  
See Section Y  
For Additional Books



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## To Order (Specify Model Number)

Model No.	Price	Description
DOCN601	\$845	Dissolved oxygen controller, surface mount, 110 Vac
DOCN601-PM	925	Dissolved oxygen controller, panel mount, 110 Vac
DOCN601-PIPE	925	Dissolved oxygen controller, pipe mount, 110 Vac
DOCN602	845	Dissolved oxygen controller, 220 Vac
DOCN602-PM	925	Dissolved oxygen controller, panel mount, 220 Vac
DOCN602-PIPE	925	Dissolved oxygen controller, pipe mount, 220 Vac

## Accessories

Model No.	Price	Description
DOCN600-PM	\$128	DOCN600 panel mounting kit
DOCN600-PIPE	128	DOCN600 pipe mounting kit
DOE-601	520	1½ NPT mounting assembly and cable
DOE-601-SC	310	Hermetically sealed sensor cartridge
DOE-600-BFMK	798	Floatation mounting kit consists of ball float, extension pipe, swivel bracket, junction box and 15 m (50') of cable
DOE-600-SMK	227	Submersion mounting kit consists of 1.2 m (4') PVC pipe, junction box and 15 m (50') of cable

Comes complete with operator's manual.

**Ordering Examples:** DOCN601, surface mount DO controller, DOE-601, mounting assembly and cable, DOE-601-SC, sensor cartridge, \$845 + 520 + 310 = \$1675.

DOCN601-PM, panel mount DO controller, DOE-601, mounting assembly and cable, DOE-601-SC, sensor cartridge, \$925 + 520 + 310 = \$1755.

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