

1 YEAR
WARRANTY

Ω OMEGA® **User's Guide**



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CDE-285X SERIES **Conductivity Sensors**



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SAFETY INSTRUCTIONS



1. Depressurize and vent system prior to installation or removal.
2. Confirm chemical compatibility before use.
3. Do not exceed maximum temperature/pressure specifications.
4. Wear safety goggles or faceshield during installation/service.
5. Do not alter product construction.
6. When using chemicals or solvents care should be taken and appropriate eye, face, hand, body, and/or respiratory protection should be used.

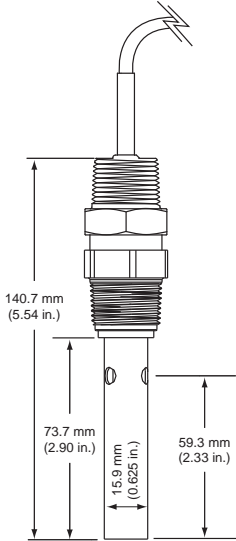


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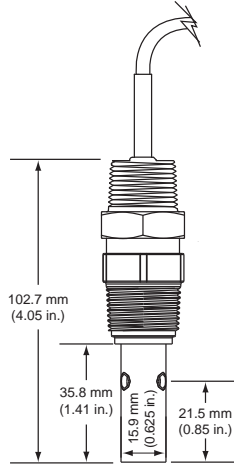
1. Specifications
2. Cell constant selection
3. Installation
4. Wiring
5. Maintenance
6. Ordering information

1. Dimensions

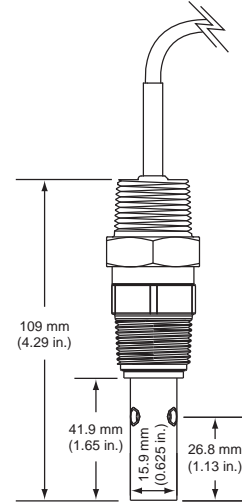
CDE-2851 (ISO) 0.01 cm⁻¹



CDE-2852 (ISO) 0.1 cm⁻¹



**CDE-2853 (ISO) 1.0 cm⁻¹
CDE-2854 (ISO) 10.0 cm⁻¹**



2. Specifications

Instrument Compatibility CDTX-285X, CDTX-90-3 (P),
DPU91 via DPU90-C

Shipping Weight:

CDE-2851 (ISO) 0.34 kg (0.74 lb.)
CDE-2852, 2853, 2854 (ISO) 0.30 kg (0.66 lb.)

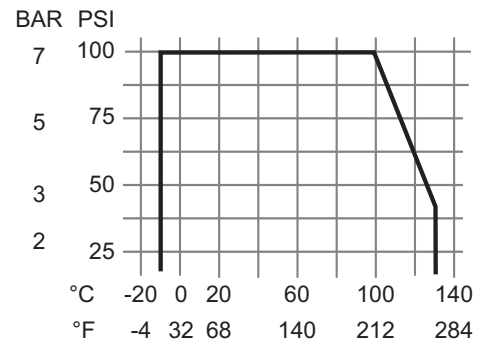
Process connection:

Non-ISO versions 3/4 in. NPT
-ISO versions ISO 7/1-R 3/4

Cable 4.6 m (15 ft) std., 22 AWG,
3 conductor with shield,
max length 30 m (100 ft).

Performance:

Accuracy ±2% of cell value*
*When custom cell and temperature are entered into the DPU-90(P)
Temp. measurement PT1000
Temp. response time (τ):
CDE-2851 5 s
CDE-2852 10 s
CDE-2853 20 s
CDE-2854 30 s



Operating temperature/pressure:
(with thread engagement per ANSI B1.20.1)

All versions:
-10 °C to 100 °C @ 6.90 bar (14 °F to 212 °F @ 100 psi)
-10 °C to 131 °C @ 2.76 bar (14 °F to 268 °F @ 40 psi)

Storage temperature -20 °C to 131 °C
(-4 °F to 268 °F)

Wetted materials:

Threaded fitting PVDF
Insulator PVDF
Insulator O-ring (CDE-2853/2854) ... FPM
Electrode contacts 316L stainless steel

2. Cell Constant Selection

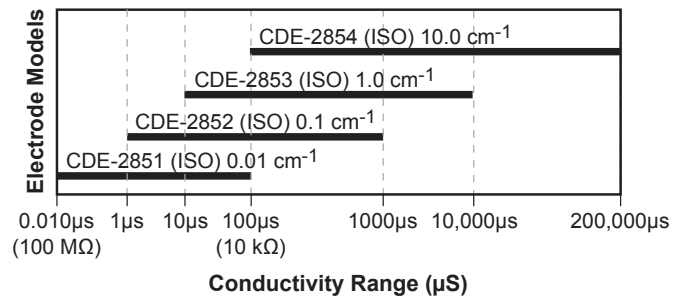
The nominal process value should be near the center of the range. Ranges below are for use with Omega Conductivity Instruments:

- CDE-2851 (0.01 cm⁻¹) 0.010 to 100 μS (10 kΩ to 100 MΩ)
- CDE-2852 (0.1 cm⁻¹) 1 to 1000 μS (1 MΩ to 1 kΩ)
- CDE-2853 (1.0 cm⁻¹) 10 to 10,000 μS
- CDE-2854 (10.0 cm⁻¹) 100 to 200,000 μS

Custom cell certificate

The sensor includes a label on the sensor cable listing the custom cell constant and temperature offset. The information provided on the label should be entered in the transmitter/controller. See individual product manual for details.

Signet Conductivity/Resistivity Electrode Ranges



3. Installation

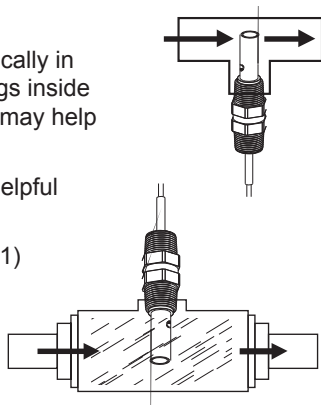
- Inspect threads to ensure integrity. Do not install an electrode with damaged threads.
- Apply sealant or PTFE tape to threads.
- Wetted materials include 316L stainless steel, PVDF and FPM (FPM O-ring inside CDE-2853, CDE-2854). Check for chemical compatibility before installing electrode.
- Electrodes are supplied with 4.6 m (15 ft) of cable. It may be extended to a maximum 30 m (100 ft).
- When using 9900, maximum cable length is 30.5 m (100 ft).

3.1 In-Line Installation

If the electrode is mounted vertically in a tee, do not recess the openings inside the tee. Mounting upside down may help prevent air entrapment.

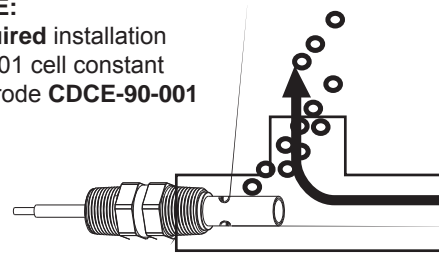
An oversized tee may also be helpful for in-line installations.

At least 4 threads (ANSI B1.20.1) must be engaged to provide pressure capacity per published specifications.



NOTE:

Required installation for 0.01 cell constant electrode **CDCE-90-001**

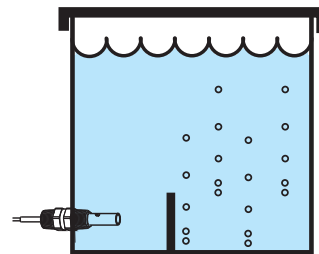


The preferred installation for in-line applications directs flow straight into the electrode. This configuration dislodges entrapped air bubbles, and provides the best continuous sampling of the fluid content.

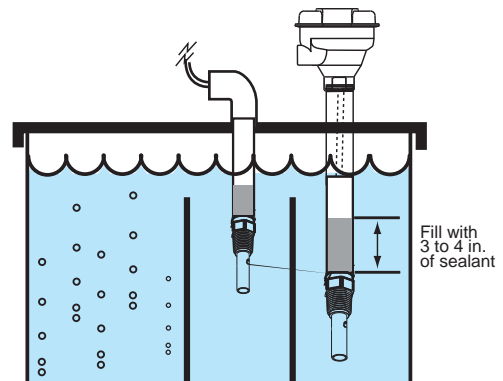
3.2 Submersible installation

1. Feed cable into watertight conduit.
2. Apply thread sealant to the electrode before threading conduit onto electrode. Avoid twisting the cable.
3. Secure cable with conduit or cable gland.
4. For additional defense against possible accumulation of condensation at the back seal area of the electrode, fill the lower 75 mm to 100 mm (3 in. to 4 in.) of conduit or extension pipe with a flexible sealant such as silicone.

3/4 in. NPT or ISO 7/1-R 3/4



In aerated vessels install the electrode in a stillwell to prevent air from being trapped inside the electrode.

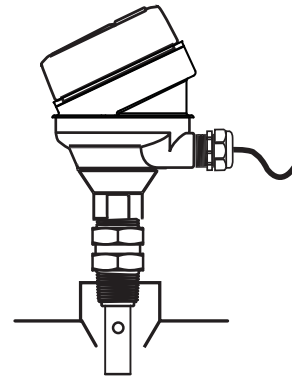


4. Wiring

- Do not route electrode cable in conduit containing AC power wiring. Electrical noise may interfere with electrode signal.
- Routing electrode cable in grounded metal conduit will help prevent electrical noise and mechanical damage.
- Seal cable entry points to prevent moisture damage.

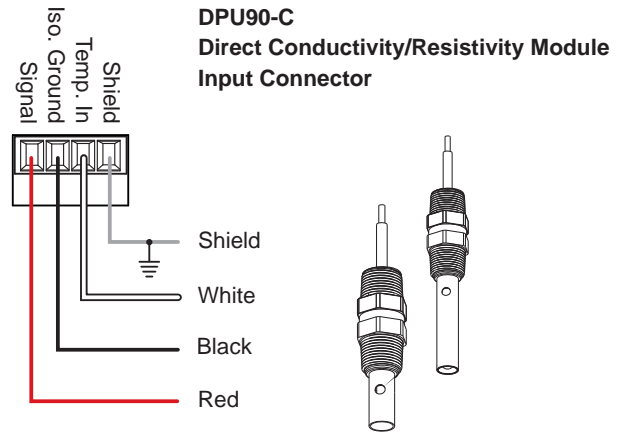
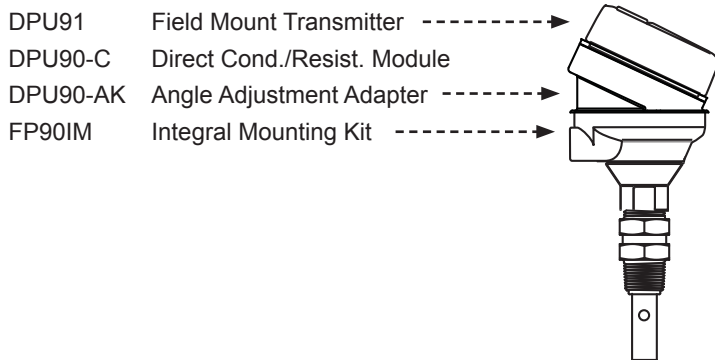
Integral installation detail

- FP90IM Integral Kit and FPM-5000-LTCK Liquid Tight Connector kit are required. (See Parts and Accessories on back page).
- Cut the cable to approx. 15 cm (6 in.).
- Strip outer cable cover back 5 cm (2 in.).
- Strip each conductor to expose 1 cm (3/8 in.) of bare wire.
- Tin each conductor with solder for best results.

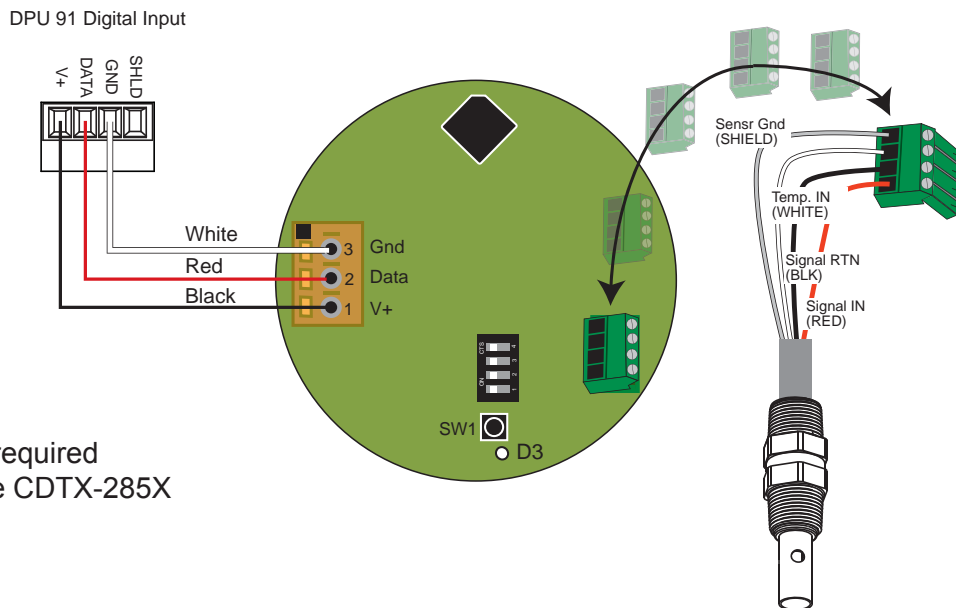


DPU91
DPU90-C
DPU90-AK
FP90IM

DPU91 via DPU90-C Direct Conductivity/Resistivity Module



DPU91 or DPU91P via CDTX-285X Sensor Electronics



Note:
DPU90-C not required
when using the CDTX-285X

5. Maintenance

Conductivity electrodes require little maintenance except for periodic cleaning in installations where contaminants are present.

- Keep metal surfaces clean and free of coatings.

6. Ordering Information

| Mfr. Part No. | Description |
|----------------------|---|
| CDE-2851 | Cell 0.01, 4.6 m (15 ft) cable, NPT |
| CDE-2851-ISO | Cell 0.01, 4.6 m (15 ft) cable, ISO |
| CDE-2852 | Cell 0.1, 4.6 m (15 ft) cable, NPT |
| CDE-2852-ISO | Cell 0.1, 4.6 m (15 ft) cable, ISO |
| CDE-2853 | Cell 1.0, 4.6 m (15 ft) cable, NPT |
| CDE-2853-ISO | Cell 1.0, 4.6 m (15 ft) cable, ISO |
| CDE-2854 | Cell 10.0, 4.6 m (15 ft) cable, NPT |
| CDE-2854-ISO | Cell 10.0, 4.6 m (15 ft) cable, ISO |
| CDTX-2850-IM | Sensor Electronics, $\frac{3}{4}$ in. NPT j-box, one input, one 4 to 20 mA output |
| CDTX-2850-RM | Sensor Electronics, Universal Mount j-box, one input, one 4 to 20 mA output |
| CDTX-2851 | CDTX-2850 electronics with CDE-2851 sensor (Digital signal, NPT, 0.01 cell) |
| CDTX-2851-ISO | CDTX-2850 electronics with CDE-2851-ISO sensor (Digital signal, ISO, 0.01 cell) |
| CDTX-2852 | CDTX-2850 electronics with CDE-2852 sensor (Digital signal, NPT, 0.1 cell) |
| CDTX-2852-ISO | CDTX-2850 electronics with CDE-2852-ISO sensor (Digital signal, ISO, 0.1 cell) |
| CDTX-2853 | CDTX-2850 electronics with CDE-2853 sensor (Digital signal, NPT, 1.0 cell) |
| CDTX-2853-ISO | CDTX-2850 electronics with CDE-2853-ISO sensor (Digital signal, ISO, 1.0 cell) |
| CDTX-2854 | CDTX-2850 electronics with CDE-2854 sensor (Digital signal, NPT, 10.0 cell) |
| CDTX-2854-ISO | CDTX-2850 electronics with CDE-2854-ISO sensor (Digital signal, ISO, 10.0 cell) |

Parts and Accessories

| | |
|---------------|--|
| FP90IM | $\frac{3}{4}$ in. Integral mounting kit |
| FPM-5000-LTCK | Liquid-tight connector kit, one set, PG 13.5 |
| DPU90-AK | Angle Adjustment Adapter |

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

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RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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