

For Semiconductor Cleaning Processes

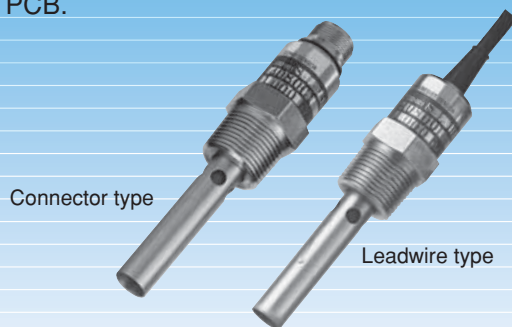
## SLIM48 Resistivity Meter HE-480R



CE marking compliant

### Perfect for Monitoring the Resistivity of Ultra-Pure Water in Cleaning Processes

As part of the final process for cleaning silicon wafers, ever-stricter monitoring of the purity of the ultra-pure water used in the final rinse process is being demanded. The HE-480R has a built-in microprocessor and measures ultra-pure water at high precision during that process. The HE-480R is also an environmentally-friendly product that uses lead-free solder for mounting chips on the PCB.



#### Features

##### High precision measurement of ultra-pure water

The HE-480R's onboard microprocessor calculates the temperature compensation coefficient based on the temperature characteristics of the ultra-pure water and automatically converts it to 25°C resistivity.

##### High precision temperature compensation

The HE-480R employs a platinum temperature resistor (Pt1000 ) in its temperature compensation element, thereby enabling high precision temperature compensation in the range of 0 to 100°C.

##### Selectable temperature compensation function

The HE-480R offers selection of the desired setting between "Pure Water" and "Ultra-Pure Water + Impurities", allowing the implementation of temperature compensation that is most appropriate to the measured liquid.

##### Selectable settings for standard temperature

Because the resistivity of a solution changes along with the temperature of that solution, resistivity is normally displayed at a standard value of 25°C. However, if the solution temperature is always high or if temperature characteristics are nonlinear, that 25°C value may not necessarily be effective. For this reason, the HE-480R is equipped with a function that enables the setting of the standard temperature as required. Since temperature settings can thus be made according to the characteristics of the measured liquid and process conditions, this is perfect for controlling resistivity.

##### Simultaneous display of measured and set parameter values

The HE-480R allows the simultaneous confirmation of measured values when settings and values are called up.

##### Icon-based status display & security function

Instrument status on the HE-480R is indicated through an easy-to-understand icon display that eliminates operational errors. And, by setting a passcode, all key operation can be locked to prevent measurement errors caused by inadvertent operation.

##### Utilization of lead-free solder

Lead-free solder is used for mounting chips on the PCB according to the RoHS directive.

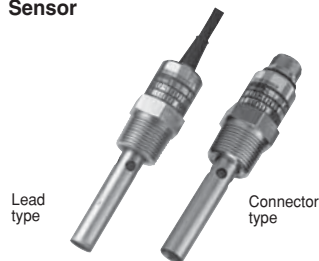
##### CE Marking compliant

## Specifications

Model	HE-480R
Measuring method	Electrode method (2-electrode method)
Cell constant	0.01/cm
Temperature compensation element	Platinum resistance 1000 / 0°C Temperature coefficient 3750ppm/°C standard
Measuring range	Resistivity : 0 to 0.200, 0 to 2.00, 0 to 20.00M ·cm (0 to 2.00, 0 to 20.0, 0 to 200.0k ·m) Temperature : 0 to 100°C
Repeatability	Within ±0.5% of the full scale (in equivalent input)
Linearity	Within ±0.5% of the full scale (in equivalent input)
Transmission output	4 to 20mA DC (input/output isolated type) Maximum load resistance : 900
Contact output	Output : 2points (R1, R2) Contact type : relay contact, SPDT Contact capacity : 240V AC 3A, 30V DC 3A (resistance load) Contact function : selectable from upper and lower limit operation (on/off control), alarm, and maintenance
Calibration function	Resistivity : input of cell constant correction coefficient (parameter input) Temperature : Calibrated by comparing with the reference thermometer
Control operation	Selectable from Previous Hold, Arbitrary Hold and Continuous
Self-diagnosis function	<ul style="list-style-type: none"> <li>• Sensor diagnosis error (short-circuit and disconnection of the temperature sensor)</li> <li>• Out of the measurement range</li> <li>• A/D converter scale over</li> <li>• Converter error</li> </ul>
Temperature compensation	<ul style="list-style-type: none"> <li>• Based on the temperature characteristics of ultra-pure water (reference temperature: 25°C)</li> <li>• Temperature characteristics of NaCl</li> <li>• Based on the reference temperature and user-defined temperature coefficient (reference temperature : 5 to 95°C, temperature coefficient ±5%/°C)</li> <li>• No temperature compensation</li> </ul>
Temperature compensation range	0 to 100°C
Ultra-pure water specific resistance selection	Selectable from 18.23 (standard), 18.18, 18.24M ·cm (Selectable from 182.3, 181.8, 182.4k ·m)
Clipping function	When the measured value is above the upper limit of the measurement range derived from the specified specific resistance, the specified resistance is used as the measured value.
Ambient temperature	-5 to 45°C
Relative humidity	20 to 85% (without dew condensation)
Storage temperature	-25 to 65°C
Power supply	Rated voltage 100 to 240V AC, 50/60Hz, 10VA (max)
Structure	indoor-use, panel installation type, panel case : ABS, terminal : PBT Panel : IP65 dust and water proof structure
External dimensions	48(W)×96(H)×115(D)mm, Case depth : approx. 105mm (when panel-mounted)
Weight	Approx. 400g
Conforming standards	CE marking, FCC Part15
Compatible sensors	ERD/TRD-series specific resistance sensor, cell constant 0.01/cm

Note: Measurement for the range of 0 to 100.0M ·cm (1000k ·m) is measurable without temperature coefficient.

## Sensor



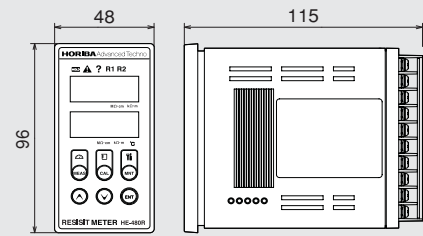
It is recommended that a user should use our standard cable for the connector type sensors.

Model	ERD/ERL-001L-T Lead type	ERD/ERL-001C-T Connector type
Cell constant	0.01/cm approx.	
Liquid end materials	Titanium, PVDF, FPM	
Liquid temperature	0 to 80 °C (0 to 100 °C )	
Liquid pressure	0 to 0.5MPa	
Cable length	10m as standard Max. extension length: 50 m	Our standard cable is additionally required. 10 m (Model: CK-10M) 20 m (Model: CK-20M)
Installation	Threaded diameter: R(PT)3/4	
Combined holder	For ERD sensor: Flow type EFA-30 series	For ERL sensor: Flow type EFA-31 series

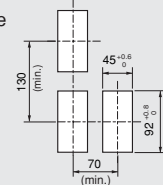
For the high-temperature specification sensors (0 to 100 °C), "N" is used at the end of the model number in place of "T".

## External dimensions Unit: mm (in)

### Converter HE-480R



### Panel Cut Size



### ERD/ERL sensor

ERD sensor: Short cell (Cell length 60 mm)

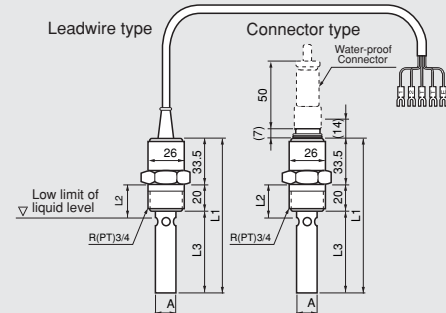
Best for fitting onto pipes.

For the sensor connection, the leadwire type and connector type are available.

ERL sensor: Long cell (Cell length 110 mm)

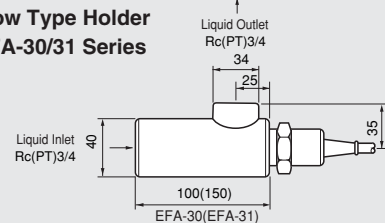
Best for fitting with flanges.

For the sensor connection, the leadwire type and connector type are available. (Direct screwing with 20A pipes is not possible. Use our standard flow type holder.)



	L1	L2	L3	A	Connection	Cell length
ERD-001	115.5	25	60	13.8	Leadwire or connector	Short
ERL-001	165.5	75	110	13.8	Leadwire or connector	Long

### Flow Type Holder EFA-30/31 Series



Please read the operation manual before using this product to assure safe and proper handling of the product.

- The contents of this catalog are subject to change without prior notice, and without any subsequent liability to this company.
- It is strictly forbidden to copy the content of this catalog in part or in full.

## HORIBA ADVANCED TECHNO, Co., Ltd.

<http://www.horiba-adt.jp>

**Head Office**  
31 Miyanonishicho, Kisshoin  
Minami-ku, Kyoto, Japan  
Phone: 81-75-321-7184  
Fax: 81-75-321-7291

**Tokyo Sales Office**  
1-7-8 Higashi-Kanda  
Chiyoda-ku, Tokyo, Japan  
Phone: 81-3-3851-3150  
Fax: 81-3-3851-3140

**• HORIBA, Ltd.**  
**Beijing Representative Office**  
Room 1725, Tower 2, Bright  
Chang An Building, No. 7,  
Jianguomennei Avenue,  
Beijing 100005, China  
Phone: 86 10-6522-7573  
Fax: 86 10-6522-7582

**Shanghai Representative Office**  
Unit F1 16F  
Jiushi Fuxing Mansion,  
No. 918, Huaihai Zhong Road,  
Shanghai, China, 200020  
Phone: 86 21-6415-3689/90  
Fax: 86 21-6415-9746

**Taiwan Representative Office**  
No. 15 Alley6, Lane 485,  
Sec. 1, Kuang Fu Rd.,  
Hsin-Chu, Taiwan, R.O.C.  
Phone: 886 (3) 5799143  
Fax: 886 (3) 5799164

**• HORIBA KOREA Ltd.**  
112-6 Sogong-Dong  
Choong-ku, Seoul, Korea  
Phone: 82 (2) 753-7911  
Fax: 82 (2) 756-4972

**• HORIBA INSTRUMENTS  
Pte. LTD.**  
10 Ubi Crescent  
#05-11/12, Ubi Techpark  
Singapore 408564  
Phone: 65 6745-8300  
Fax: 65 6745-8155

**• HORIBA INSTRUMENTS INCORPORATED**  
**Irvine Facility**  
17671 Armstrong Avenue  
Irvine, CA 92614, U.S.A.  
Phone: 1 (949) 250-4811  
Fax: 1 (949) 250-0924

**Ann Arbor Facility**  
5900 Hines Drive  
Ann Arbor, MI 48108  
U.S.A.  
Phone: 1 (734) 213-6555  
Fax: 1 (734) 213-6525

**• HORIBA / STEC INCORPORATED**  
**Sunnyvale Office**  
1080 E. Duane, Suite. A  
Sunnyvale, CA 94086  
U.S.A.  
Phone: 1 (408) 730-4772  
Fax: 1 (408) 730-8975

**Austin Office**  
9701 Dessau Road  
Suite 605, Austin  
Texas 78754, U.S.A.  
Phone: 1 (512) 836-9560  
Fax: 1 (512) 836-8054

**• HORIBA GmbH**  
Kaplanstrasse 5  
A-3430 Tulln,  
Austria  
Phone: 43 (2272) 65225  
Fax: 43 (2272) 65230

**HORIBA CZECHIA**  
Organizaci slozka Praha  
Petrohradská 13  
CZ-101 00 Praha 10,  
Czech Republic  
Phone: 420 (2) 717-464-80  
Fax: 420 (2) 717-470-64

**• HORIBA INSTRUMENTS  
LIMITED**  
Kyoto Close  
Summerhouse Road  
Moulton Park, Northampton  
NN3 6FL, U.K.  
Phone: 44 (1604) 542600  
Fax: 44 (1604) 542696  
e-mail: hil.semicon@horiba.co.jp

**• HORIBA EUROPE GmbH**  
**Head Office**  
Hans-Mess-Str.6  
D-61440 Oberursel/Ts.  
Germany  
Phone: 49 (6172) 1396-0  
Fax: 49 (6172) 137385

**Dresden office**  
Zur Wetterwarte 10  
Haus 109  
01109 Dresden  
Germany  
Phone: 49 (3518) 896807  
Fax: 49 (3518) 896808

**Leichlingen Facility**  
Julius-kronenberg Strasse  
D-42799 Leichlingen  
Germany  
Phone: 49 (2175) 8978-0  
Fax: 49 (2175) 8978-50

**HORIBA FRANCE**  
Buro Club Gieres  
2 Avenue de Vignate  
38610 Gieres  
Grenoble, France  
Phone: 33 (4) 76634915  
Fax: 33 (4) 76540399

**HORIBA NETHERLANDS**  
Bijsterhuizen 11-58  
6546 AS Nijmegen  
The Netherlands  
Phone: 31 (24) 366-0985  
Fax: 31 (24) 366-0986

**HORIBA SWEDEN**  
Hertig Carlsv'ag 55-57  
S-15138 So'derta'lje  
Sweden  
Phone: 46 (8) 550-80701  
Fax: 46 (8) 550-80567

**HORIBA ITALY**  
Europalace  
Corso Torino 43/45  
10043 Orbassano, Torino, Italy  
Phone: 39 (011) 9040601  
Fax: 39 (011) 9000448

0512YS22