

Flat Tip Industrial Electrodes: More Than 300 Models, More Than 300 Applications

- Self-cleaning flat tip sensor
- Significantly reduced maintenance requirement
- Models especially designed for plating baths
- PVDF body
- Three junction types: ceramic, Teflon® and open junction
- Built-in potential matching pin
- Four different glass type pH sensors
- ORP electrodes with platinum or gold sensor
- Models with built-in Pt100 or Pt1000 temperature sensor
- Models with internal amplifier powered by the process controller
- 3/4" NPT external thread on both ends for easy installation

HANNA instruments® presents a new series of combination pH and ORP electrodes, including more than 300 models, incorporating over 20 years of electrode manufacturing experience.

The most advanced feature of this series is the electrode shape with flat tip, which virtually eliminates deposits that can foul the electrode, significantly reducing necessary maintenance. This characteristic makes flat tip electrodes ideal for continuous in-line monitoring, and with solutions containing aggressive chemicals.

The PVDF body offers a higher level of mechanical and temperature resistance. Moreover, the PVDF material is non-toxic and compatible with food applications. Each pH and ORP electrode is provided with an internal matching pin that can avoid typical problems caused by grounding loop current, such as:

- progressive damage of the electrode
- fluctuating measurements
- poor process regulation

Select the flat tip electrode that best fits your process requirements, by choosing from the following technical characteristics:

1. Junction

Three junction types are available:

- annular non-clogging Teflon® junction, for testing solutions with high content of suspended solids or for high pressure installation
- open junction, ideal for wastewater analysis
- ceramic junction

2a. Sensitive Glass Membrane (pH Electrodes)

HANNA instruments® has developed four types of specialized glass. First is an extremely durable sensor glass for general purpose industrial use. This glass can withstand sudden impacts and extreme mechanical stress. The remaining types of electrode glass allow continuous monitoring in highly acidic solutions containing fluoride ions, as well as high or low temperature process streams significantly increasing the electrode life.

Glass Type	Application	pH Range	Temperature Range
LT	Low Temperature	0 to 12	-10 to 80°C
HT	High Temperature	0 to 14	0 to 100°C
HF	Acid Samples with F ⁻ (*)	0 to 10	-5 to 60°C

(*) F⁻ max 2 g/L, temperature max 60°C, pH >2

2b. ORP Sensor

ORP electrodes are provided with a platinum sensor for most applications, while a gold sensor is required for measurement of cyanide or highly oxidant environments.

3. Temperature Sensor

The pH electrodes with built-in 3-wire Pt100 or Pt1000 temperature sensor allow the temperature compensation of pH readings, as well as temperature measurements.

4. Connection Type

Electrodes can be provided with wire for direct connection to a transmitter or process controller, or with the standard BNC connector.

5. Built-in Amplifier

Models with a built-in amplifier are necessary for long distance measurements, where it is not possible to install a transmitter.

The internal amplifier can be powered directly from a **HANNA** instruments® process controller.

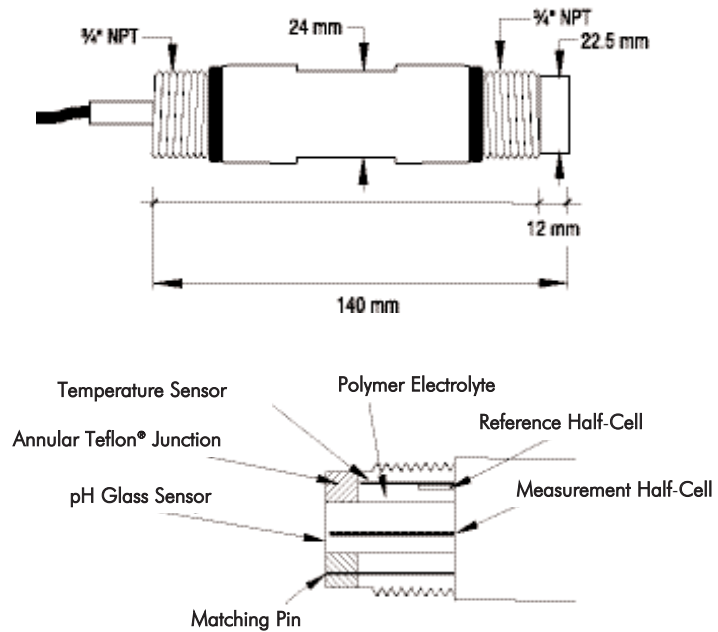
6. Cable Length

Non-amplified electrodes can be provided with a 5, 10 or 15 meter cable (16, 33 or 49 feet), while the amplified models can be provided with a 15, 25, 50 or 75 meter cable (49, 82, 164 or 246 feet).

Flat Tip Industrial Electrodes: More Than 300 Models, More Than 300 Applications



Flat Tip pH Electrodes



Flat Tip pH Electrodes: Ordering Information

- 06: Teflon® junction
- 16: Ceramic junction
- 26: Open junction*

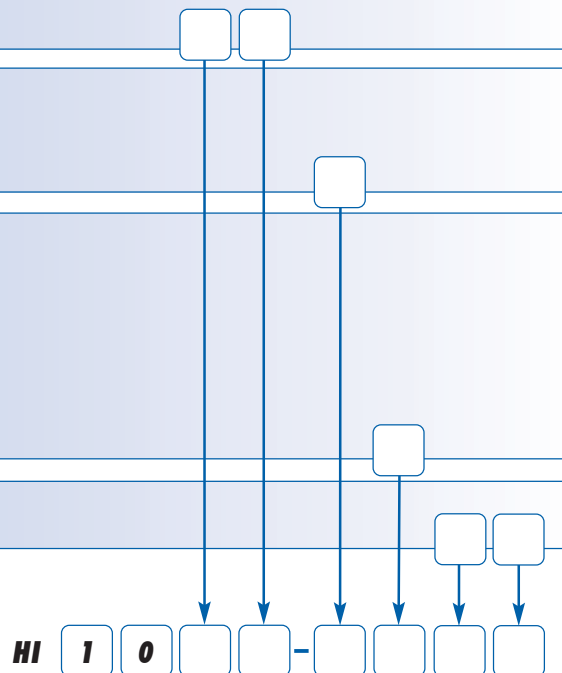
- 1: LT (Low Temperature) glass sensor
- 2: GP (General Purpose) glass sensor
- 3: HT (High Temperature) glass sensor; Titanium Matching Pin
- 4: HF (Fluoride resistant) glass sensor

- 0: BNC connector
- 1: Direct wire connection
- 2: BNC connector + Pt100
- 3: Direct wire connection + Pt100
- 4: BNC connector + Pt1000
- 5: Direct wire connection + Pt1000
- 6: Amplified electrode with BNC connector
- 7: Amplified electrode with BNC connector + Pt100

- 05, 10, 15: Cable length (meters); for non-amplified electrodes
- 15, 25, 50, 75: Cable length (meters); for amplified electrodes

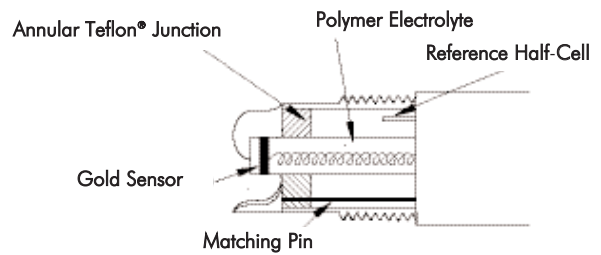
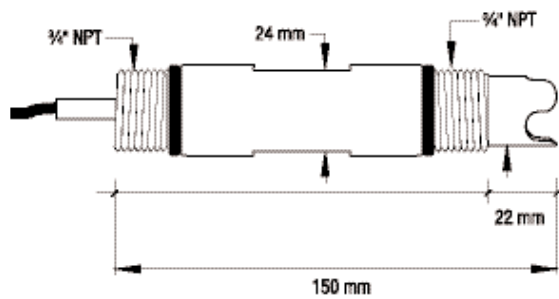
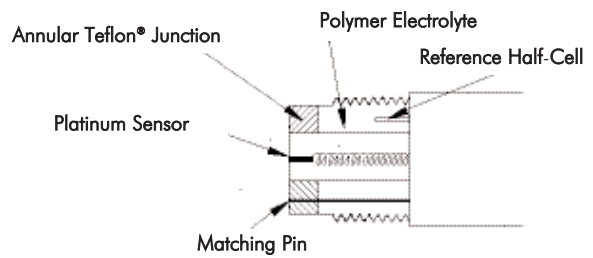
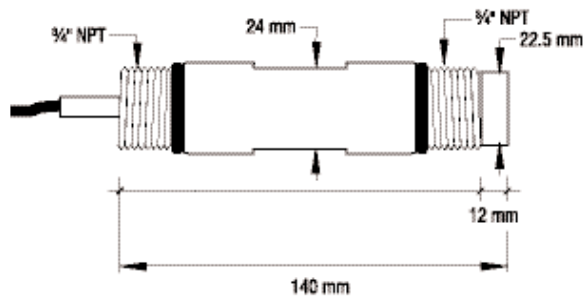
* Open junction is available only with GP glass sensor.

Note: Amplified electrodes feature a built-in amplifier powered by the process controller.



Flat Tip Industrial Electrodes: More Than 300 Models, More Than 300 Applications

Flat Tip ORP Electrodes



Flat Tip ORP Electrodes: Ordering Information

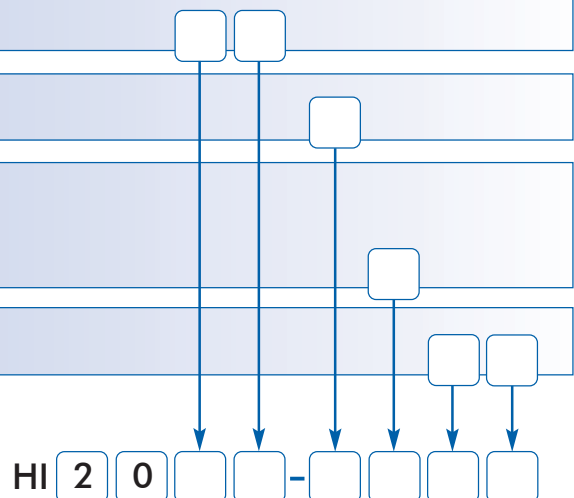
04: Teflon® junction
14: Ceramic junction
24: Open junction

1: Platinum sensor
2: Gold sensor

0: BNC connector
1: Direct wire connection
2: BNC connector + Pt100
6: Amplified electrode with BNC connector

05, 10, 15: Cable length (meters); for non-amplified electrodes
15, 25, 50, 75: Cable length (meters); for amplified electrodes

Note: Amplified electrodes feature a built-in amplifier powered by the process controller.

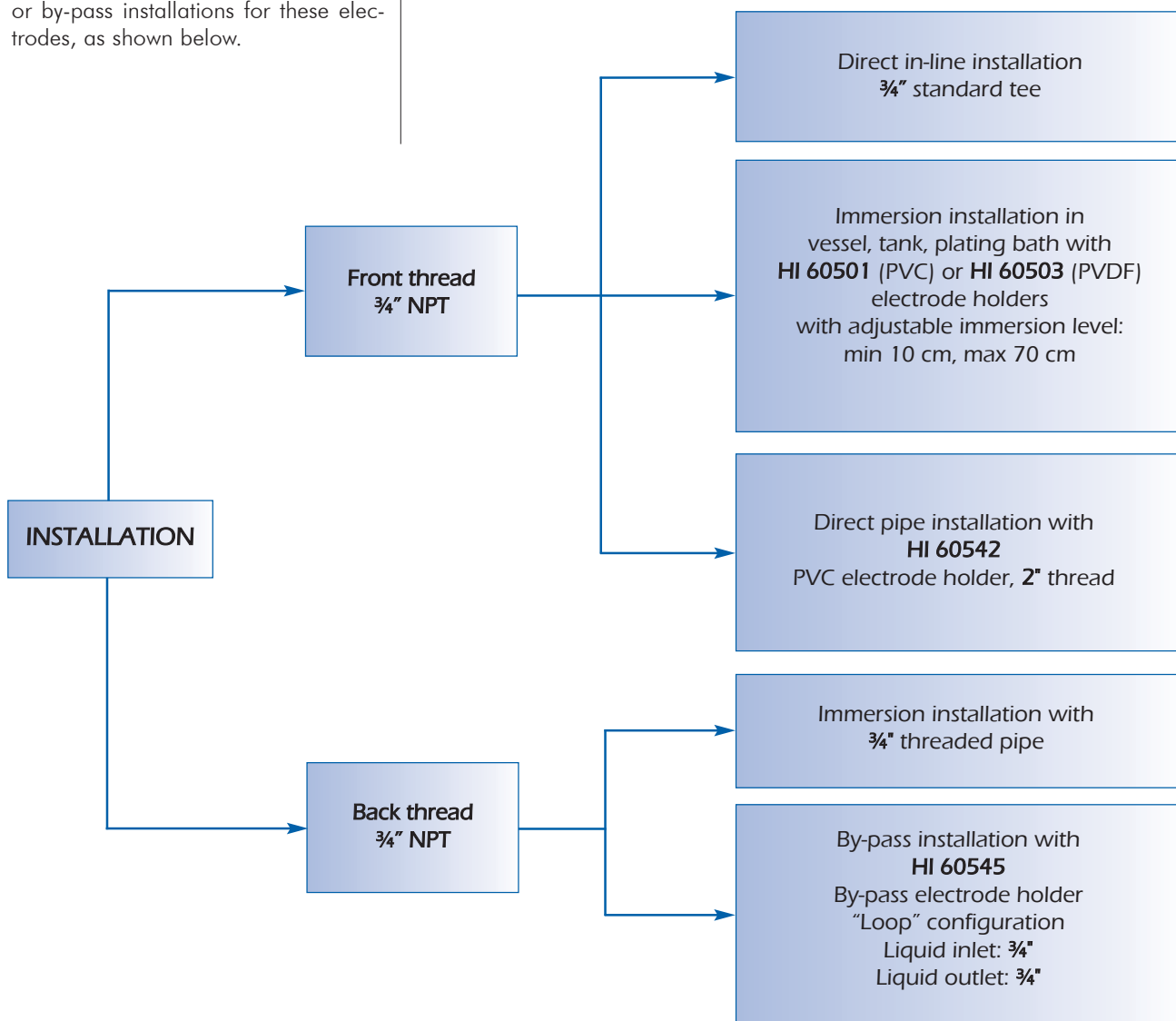


Flat Tip Industrial Electrodes: More Than 300 Models, More Than 300 Applications

Installation

These electrodes have been designed with $\frac{3}{4}$ " external thread on both ends for easy installation.

HANNA instruments® also provides a series of probe holders for in-line, tank or by-pass installations for these electrodes, as shown below.



For a complete description of HANNA instruments® electrode holders, see pages T2.23 to T2.26.