

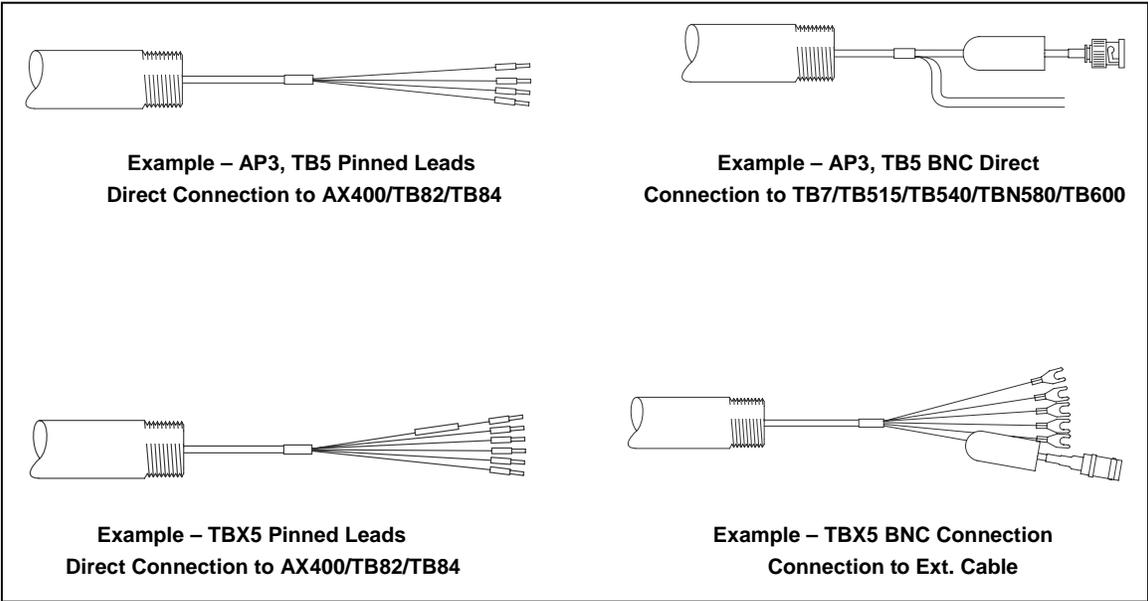
**AP3, TB5, and TBX5 SENSOR CABLE LENGTH GUIDELINES**

ABB offers three basic options for sensor cable.

**Integral Cable - 0 to 30 Foot (9M) Length**

For installations where the pH sensor is close to the analyzer ABB supplies integral cable. Integral cable can be specified to 30 feet (9M) in length but for ease of sensor replacement, cable length should be kept to a minimum. Standard cable has pinned leads to wire directly to the AX400, TB82, or TB84 electronics. ABB also provides an option for a male BNC connector.

When connecting to older pH analyzers such as the TB7, TBN580, TB540, TB515, or TB600 then the BNC connector should be specified. These older instruments have a mating female BNC used for a wiring connection. The BNC connector is also useful for connecting to extension cables (see below). Note that the cable length and wiring connection are specified as part of the model number.

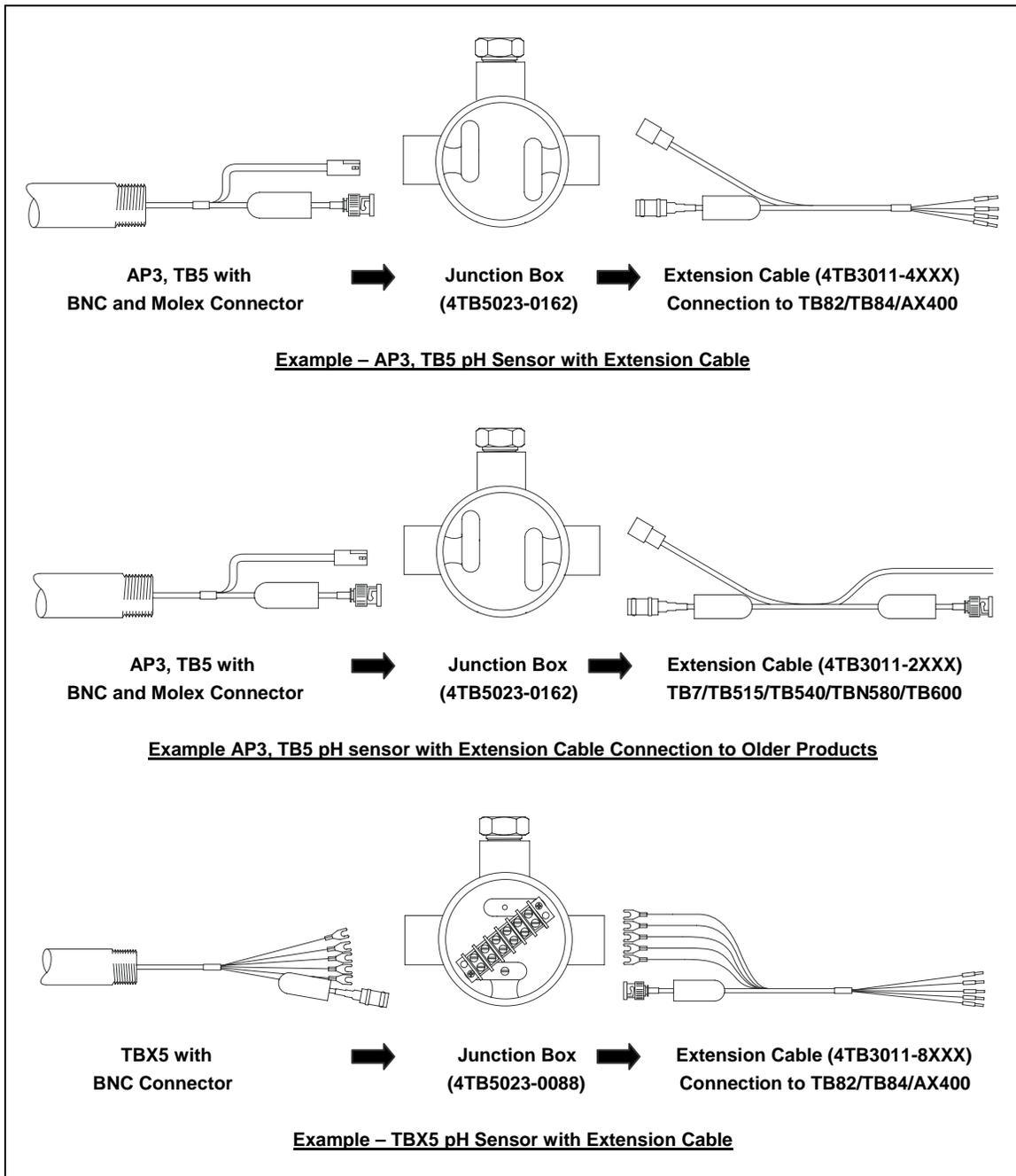


## Extension Cable - 0 to 100 Foot (30M) Length

For installations where the pH sensor is under 100 feet (30M) from the pH analyzer ABB offers an extension cable. The main purpose of using an extension cable is to simplify sensor replacement. pH sensors are consumable products that will need to be replaced periodically. If the sensor cable is run through conduit or a cable tray then this replacement can be difficult.

In these applications, ABB provides an extension cable which can be PERMANENTLY installed between the sensor and the pH analyzer. The sensor has a junction box mounted directly on it or in close proximity to the sensor. The extension cable mates to the pH sensor inside the junction box. Sensor replacement is as simple as opening the junction box and disconnecting the leads. A quick release Molex connector is used on the temperature leads and a BNC connector is used for the pH signal leads.

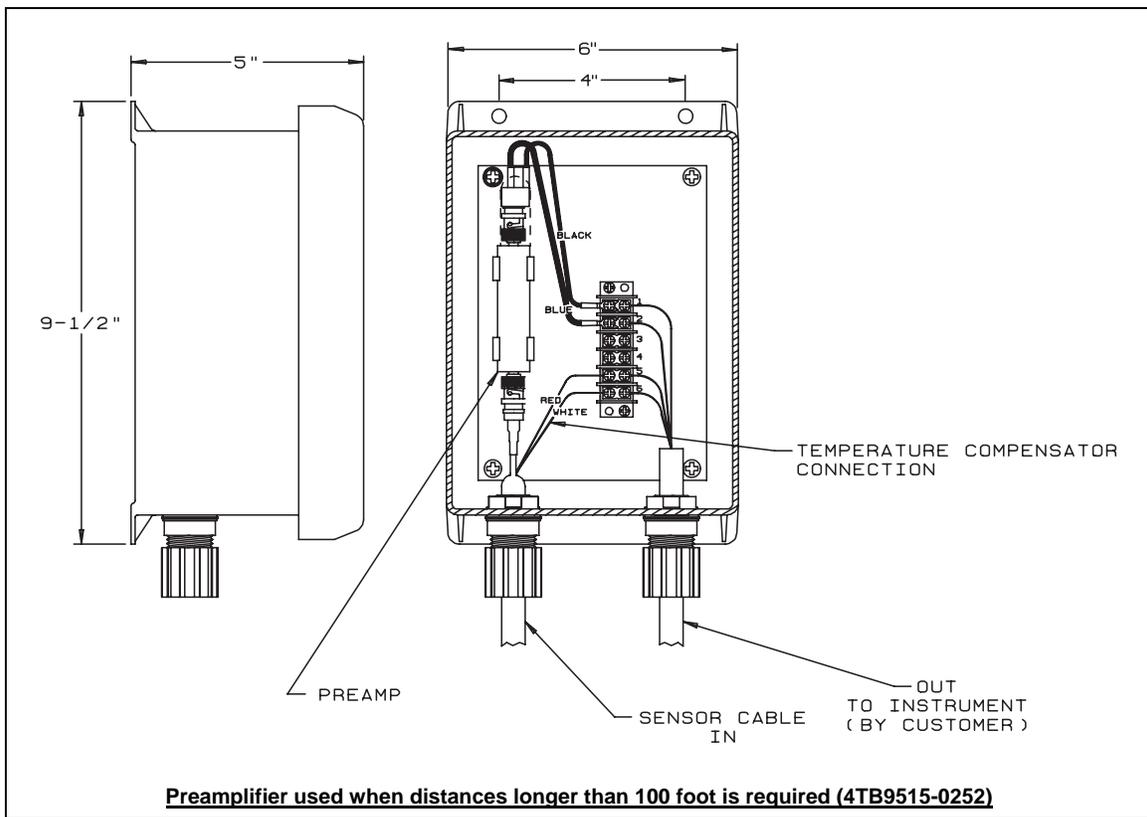
Note that the extra wires for our TBX5 sensors are connected up on a terminal strip within the junction box.



### **Pre-amplifier - 100 to 1000 Foot (30M to 305M) Length**

For installations where the pH sensor will be farther than 100 feet (30M) from the pH analyzer ABB recommends that a pre-amplifier is used. The amplifier strengthens the pH sensor signal so that it can be transmitted up to 1000 feet! In this scenario, the pre-amplifier is mounted on the wall close to the pH sensor. The pH sensor uses a standard integral cable with a BNC connector. The pH sensor cable is then run to the pre-amplifier. Inside the pre-amplifier is a terminal strip where standard copper core wiring (twisted pair) can be connected to the pre-amplifier output. This customer supplied wiring can then be run all the way back to the pH analyzer. The part number for the pH pre-amplifier in a junction box is 4TB9515-0252. The pre-amplifier is battery powered with an expected life of 5 years.

Note – Please contact ABB if this solution will be required with a TBX5 sensor.



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