

CSI SPECIFICATION: Wireless Mesh Network

SECTION: 230913 Instrumentation and Control Devices for HVAC Part 1 – General

1.1 Summary

Applicable general requirements for electrical Work specified within Division 23 Specification Sections apply to this Section.

1.2 References

- A. IEEE 802.15.4 – Low-Rate Wireless Networks
- B. ThreadGroup.org

1.3 Submittals

Product Data:

- [Mesh Network Extender 041](#)
- [Wireless Mesh Indoor Sensor 042](#)
- [Wireless Mesh Outdoor Sensor 043](#)

1.4 Quality Assurance

Manufacturer Qualifications: Manufacturer shall be a firm engaged in the manufacture of specified products of types and sizes required, and whose products have been in satisfactory use in similar service for a minimum of ten years.

The manufacturer shall have a valid ISO 9001 certification and an applicable quality assurance system that is regularly reviewed and audited by a third-party registrar. Manufacturing, inspection, and testing procedures shall be developed and controlled under the guidelines of the quality assurance system.

The manufacturer or their representative shall have service, repair, and technical support services available during Monday through Friday during standard business hours.

All work performed and all materials used shall be in accordance with the National Electrical Code, and with applicable local regulations and ordinances. Process controllers, assemblies, materials, and equipment shall be listed and labeled by Underwriter's Laboratories or by a testing agency acceptable to authorities having jurisdiction and marked for intended use.

1.5 Limited Warranty

The liability of tekmar under this warranty is limited. The Purchaser, by taking receipt of any tekmar product ("Product"), acknowledges the terms of the Limited Warranty in effect at the time of such Product sale and acknowledges that it has read and understands same.

The tekmar Limited Warranty to the Purchaser on the Products sold hereunder is a manufacturer's pass-through warranty which the Purchaser is authorized to pass through to its customers. Under the Limited Warranty, each tekmar Product is warranted against defects in workmanship and materials if the Product is installed and used in compliance with tekmar's instructions, ordinary wear and tear excepted. The pass-through warranty period is for a period of twenty-four (24) months from the production date if the Product is not installed during that period, or twelve (12) months from the documented date of installation if installed within twenty-four (24) months from the production date.

The liability of tekmar under the Limited Warranty shall be limited to, at tekmar's sole discretion either (a) the cost of parts and labor provided by tekmar to repair defects in materials and workmanship of the defective product; or (b) to the exchange of the defective product for a warranty replacement product; or (c) to the granting of credit limited to the original cost of the defective product. Such repair, exchange, or credit shall be the sole remedy available from tekmar, and, without limiting the foregoing in any way, tekmar is not responsible, in contract, tort, or strict product liability, for any other losses, costs, expenses, inconveniences, or damages, whether direct, indirect, special, secondary, incidental, punitive, or consequential, arising from ownership or use of the product, or from defects in workmanship or materials, including any liability for fundamental breach of contract.

The pass-through Limited Warranty applies only to those defective Products returned to tekmar during the warranty period. This Limited Warranty does not cover the cost of the parts or labor to remove or transport the defective Product, or to reinstall the repaired or replacement Product, all such costs and expenses being subject to Purchaser's agreement and warranty with its customers.

Any representations or warranties about the Products made by Purchaser to its customers which are different from or in excess of the tekmar Limited Warranty are the Purchaser's sole responsibility and obligation. Purchaser shall indemnify and hold tekmar harmless from and against any and all claims, liabilities and damages of any kind or nature which arise out of or are related to any such representations or warranties by Purchaser to its customers.

The pass-through Limited Warranty does not apply if the returned Product has been damaged by negligence by persons other than tekmar, accident, fire, Act of God, abuse or misuse; or has been damaged by modifications, alterations or attachments made

subsequent to purchase which have not been authorized by tekmar; or if the Product was not installed in compliance with tekmar's instructions and/or the local codes and ordinances; or if due to defective installation of the Product; or if the Product was not used in compliance with tekmar's instructions.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, WHICH THE GOVERNING LAW ALLOWS PARTIES TO CONTRACTUALLY EXCLUDE, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE, DURABILITY OR DESCRIPTION OF THE PRODUCT, ITS NON-INFRINGEMENT OF ANY RELEVANT PATENTS OR TRADEMARKS, and ITS COMPLIANCE WITH OR NON-VIOLATION OF ANY APPLICABLE ENVIRONMENTAL, HEALTH OR SAFETY LEGISLATION; THE TERM OF ANY OTHER WARRANTY NOT HEREBY CONTRACTUALLY EXCLUDED IS LIMITED SUCH THAT IT SHALL NOT EXTEND BEYOND TWENTY-FOUR (24) MONTHS FROM THE PRODUCTION DATE, TO THE EXTENT THAT SUCH LIMITATION IS ALLOWED BY THE GOVERNING LAW.

Product Warranty Return Procedure All Products that are believed to have defects in workmanship or materials must be returned, together with a written description of the defect, to the tekmar Representative assigned to the territory in which such Product is located. If tekmar receives an inquiry from someone other than a tekmar Representative, including an inquiry from Purchaser (if not a tekmar Representative) or Purchaser's customers, regarding a potential warranty claim, tekmar's sole obligation shall be to provide the address and other contact information regarding the appropriate Representative.

Part 2 – Products

General

A wireless mesh network is a communication system consisting of interconnected devices that provide seamless coverage across a broad area. The Wireless Mesh Network offers a dependable, scalable, and secure framework for linking low-power devices.

Mesh Network Extender 041

The control shall:

1. Have a Thread 802.15.4 radio that operates at 2.4 GHz.
2. Have an LED indicating the power status.
3. Have an LED indicating the network status.
4. Have a join button that initiates joining the wireless mesh network.
5. Have a reset button.
6. Join a wireless mesh network.
7. Have up to a maximum of 32 connected wireless sensors.
8. Have a USB-C port for electrical power.
9. Have a USB-C to 120Vac wall plug power supply adapter.

10. Have a mounting bracket and two #4 flat head wood screws.
11. Have a NEMA 1 rated enclosure.
12. Have an operating temperature range of 32°F to 104°F (0°C to 40°C).

Security Cover 041SC

The cover shall:

1. Install the Mesh Network Extender 041 on top of a North American electrical outlet cover while utilizing one of the electrical outlets.
2. Provide access to the second electrical outlet for other devices.
3. Provide a tamper-resistant enclosure for the Mesh Network Extender 041.
4. Mount to the wall using wood screws or two-sided removable tape.

Wireless Indoor Sensor 042

The sensor shall:

1. Have a Thread 802.15.4 radio that operates at 2.4 GHz.
2. Have an LED indicating the power status.
3. Have an LED indicating the network status.
4. Have a join button that initiates joining the wireless mesh network.
5. Have a reset button.
6. Be powered using two AA alkaline batteries.
7. Have an expected battery life of up to 3 years.
8. Have a NEMA 1 rated enclosure.
9. Have an operating temperature range of 32°F to 122°F (0°C to 50°C).
10. Join a wireless mesh network by connecting to a Smart Steam Control 289, Smart Boiler Control 294, or a Mesh Network Extender 041.
11. Measure the ambient temperature, relative humidity and battery power status and send the telemetry to a Smart Steam Control 289 or Smart Boiler Control 294.
12. Be remotely monitored using a web and/or mobile app.
13. Have the sensor connectivity status monitored by a cloud service backend.
14. Have alert notifications sent by SMS text message and/or email in the event of low or high temperature, low battery, and disconnection from the mesh network.

Wireless Outdoor Sensor 043

The sensor shall:

1. Have a Thread 802.15.4 radio that operates at 2.4 GHz.
2. Have an LED indicating the power status.
3. Have an LED indicating the network status.
4. Have a join button that initiates joining the wireless mesh network.
5. Have a reset button.
6. Be powered using two AA lithium batteries.
7. Have an expected battery life of up to 3 years.

8. Have a NEMA 4X rated enclosure.
9. Have an operating temperature range of -40°F to 140°F (-40°C to 60°C).
10. Join a wireless mesh network by connecting to a Smart Steam Control 289, Smart Boiler Control 294, or a Mesh Network Extender 041.
11. Measure the ambient temperature and battery power status and send the telemetry to a Smart Steam Control 289 or Smart Boiler Control 294.
12. Be remotely monitored using a web and/or mobile app.
13. Have the sensor connectivity status monitored by a cloud service backend.
14. Have alert notifications sent by SMS text message and/or email in the event of low or high temperature, low battery, and disconnection from the mesh network.

END OF SECTION