

SECTION 26 36 23
AUTOMATIC TRANSFER CONTROLLER

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
1. Institute of Electrical and Electronics Engineers (IEEE): C37.90.1, Standard for Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus.
 2. National Electrical Manufacturers Association (NEMA):
 - a. ICS 1, General Standards for Industrial Control and Systems: General Requirements.
 - b. ICS 2, Industrial Control and Systems Controllers, Contactors, and Overload Relays not more than 2000 volts ac or 750 volts ac.
 3. National Fire Protection Association (NFPA): 70, National Electrical Code (NEC).

1.02 SUBMITTALS

- A. Action Submittals:
1. Descriptive product information.
 2. Dimensional Drawings.
 3. Control diagrams.
- B. Informational Submittals:
1. Operation and Maintenance Data: As specified in Section 01 78 23, Operation and Maintenance Data.

1.03 QUALITY ASSURANCE

- A. Provide the Work in accordance with NFPA 70, National Electrical Code (NEC). Material and equipment shall be labeled or listed by a nationally recognized testing laboratory or other organization in order to provide a basis for approval under NEC.
- B. Materials and equipment manufactured within the scope of standards published by UL shall conform to those standards and shall have an applied UL listing mark.

PART 2 PRODUCTS

2.01 CONTROL MODULE

- A. Physical Characteristics: None.
- B. Functional Characteristics:
 - 1. Microprocessor for sensing and logic control with inherent digital communications capability.
 - 2. Plug-in, industrial grade interfacing relays with dust covers.
 - 3. Connected to circuit breakers by wiring harness.
 - 4. Plug-in printed circuit boards for sensing and control logic.
 - 5. Form-C start contacts, rated 10 amperes, 32V dc, for two-wire engine control, wired to terminal block.
 - 6. Exerciser, adjustable in 15-minute increments, 7-day dial clock to simulate normal power failure and transfer load to generator, complete with door mounted NO LOAD and LOAD selector switch.
 - 7. Adjustable 0-minute to 5-minutes time delay relay for engine starting signal.
 - 8. Adjustable solid state undervoltage sensors for all three phases of normal and for one phase of standby source:
 - a. Pickup 85 percent to 100 percent nominal.
 - b. Dropout 75 percent to 98 percent of pickup setting.
 - 9. Adjustable Frequency Sensors for Standby Source:
 - a. Pickup 90 percent to 100 percent nominal.
 - b. Dropout 87 percent to 89 percent of pickup setting.
 - 10. Control Module with Adjustable Time Delays:
 - a. 0.5-second to 6-second engine start delay.
 - b. 0-minute to 5-minute load transfer to emergency delay.
 - c. 0-minute to 30-minute retransfer to normal delay.
 - d. 0-minute to 30-minute unload running time delay.
 - e. 0-minute to 5-minute time delay neutral on retransfer to normal source.
 - 11. Switch to bypass any of the above time delays during testing.
 - 12. Control Functions: Auto/Manual.
 - 13. Status Functions:
 - a. Indicate Position of Local “Auto/Manual” Switch.
 - b. Source Indication – Primary Source / Alternate Source.
 - c. “AUTO TRANSFER READY” – Yes/No.

C. Performance Characteristics:

1. Operating Description:

- a. Transfer on Loss and Return of Source Voltage.
 - b. The source-transfer control shall utilize the common-bus primary-selective system. The normal condition shall be with the utility source closed to energize the bus, and with the generator source open with its associated circuit available as a standby. The control shall monitor the conditions of both power sources and shall initiate automatic switching when the utility-source voltage has been lost (or reduced to a predetermined level) for a period sufficient to confirm that the loss is not transient. Automatic switching shall open the utility source main breaker and then close the generator breaker to restore power to the bus.
 - c. When normal utility voltage returns and is stable for a preset time, the control shall initiate retransfer to the utility source if in the automatic return mode or await manual retransfer if in the hold return mode. In the hold return mode, if the generator fails and the utility source has been restored, the control shall initiate automatic retransfer to the preferred source.
2. In the automatic return mode, the control shall provide open transition (non-parallel) on retransfer.
3. Communication: Support DNP 3.0 Ethernet PPP Protocol.
- 1) Connection shall be a TCP/IP RJ45 Ethernet connector.

2.02 INDICATORS

A. Physical Characteristics:

1. Green lens to indicate switch position for normal utility power source.
2. Red lens to indicate switch position for standby power source.
3. Green lens to indicate normal utility power source is available within parameters established by pickup and dropout settings.
4. Red lens to indicate standby power source is available within parameters established by pickup and dropout settings.

B. Functional Characteristics:

1. Type: Manufacturer's standard.

C. Performance Characteristics: None.

2.03 METERING

- A. Physical Characteristics: None.
- B. Functional Characteristics:
 - 1. Connect meters to load side of main breaker.
 - 2. Show voltage, current, and kW on an average and per-phase basis, and track and record peak kW.
- C. Performance Characteristics: None.

2.04 FACTORY TESTS

- A. Test to ensure correct:
 - 1. Operation of individual components.
 - 2. Sequence of operation.
 - 3. Transfer time, voltage, frequency, and time delay settings.
- B. Dielectric strength test per NEMA ICS 1.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.02 MANUFACTURER'S SERVICES

- A. Furnish manufacturer's representative in accordance with Section 01 79 00, Demonstration and Training, for the following services at Site, for minimum person-days listed below, travel time excluded:
 - 1. 1/2 person-day for installation assistance, final adjustment, and initial energization of equipment.
 - 2. 1/2 person-day for functional and performance testing.
- B. Furnish startup services and training of Contracting Officer's personnel at such times as requested by Contracting Officer.

END OF SECTION