



## GE Power Management Control System

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### Technical Note #1

#### GE Power Management Control System

#### NETWORK CABLE

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**Subject:** Cable selection for Modbus Networks

**Applies To:** All Modbus Networks for GE systems or with GE components

The following cables have been approved for use in PMCS RS485 Modbus RTU networks:

1. Belden 3074F - 600V, 18 AWG, 124 ohm, NEC PLTC
2. Belden 9841 - 300V, 24 AWG, 120 ohm, NEC CM
3. Alpha 6412 - 300V, 24 AWG, 120 ohm, NEC CM

The following is required for cable to be used in PMCS RS485 Modbus RTU networks:

1. EIA-485 compliant
2. Twisted pair
3. NEC Article 800-52 - CM type
4. Nominal characteristic impedance of 120-124 ohms
5. Nominal conductor to conductor capacitance of  $\leq 13.5$  pF per foot
6. Nominal DC conductor resistance of  $\leq 24.0$  ohms per 1000 feet (16- 24 AWG)
7. Shielding requirement is 100% foil coverage plus a braided shield
8. Temperature Range is -20C to +70C

Please use the following guidelines when selecting cable for various networks in PMCS.

#### Cabling Within Equipment

For RS485 Modbus RTU networks, use one of the above approved cables which meets the NEC and UL requirements for the application. A 600V requirement may be satisfied by using the Belden 3074F or by applying 600V tubing to either the

Belden 9841 or Alpha 6412. No substitutions permitted.

For commnet networks, use only Belden 8719 (Instrumentation Cable 600V Twisted Pair 16AWG(19x29), 23pF/ft nominal capacitance). No substitutions.

### **Cabling Outside Equipment**

For RS485 Modbus RTU networks, use one of the above approved cables. Note: Belden model number 3074F should be used in place of Belden 9841, as the latter is NOT weather resistant.

See [GEH-6502](#) for termination, shielding, maximum cable run lengths, repeaters, and additional physical wiring details.

### **Keywords**

cable, RS485, commnet, wiring, networks

### **Related Notes**

none

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