

EMC COMPLIANCE INSTALLATION

This unit complies with the Electromagnetic Compatibility (EMC) standards listed in the specifications. Compliance to the EMC standards was demonstrated by means of a test set-up using the following installation methods:

1. Unit installed in a metal panel mounted to an open aluminum rack connected to earth ground (protective earth).
2. Shielded (screened) cables for Signal and Control inputs with shield drain wire connected to earth ground at the mounting panel only.

Multi-conductor Cable	Function Used For
Belden #8451 - 2 conductor, #22 AWG twisted pair w/ foil shield and drain wire	Count and Reset Inputs

It should be noted that the methods listed above may not be necessary for every unit installation. For the purpose of EMC testing, the input line on the unit was connected with 25 feet (8 m) of cable. In extremely high EMI environments, additional measures may be needed. Cable length, routing and shield termination are very important and can mean the difference between a successful installation or a troublesome installation.

ADDITIONAL EMC INSTALLATION GUIDELINES

Although this unit is designed with a high degree of immunity to ElectroMagnetic Interference (EMI), proper installation and wiring methods must be followed to ensure compatibility in each application. The type of the electrical noise, source or coupling method into the unit may be different for various installations. Listed below are some additional EMC guidelines for successful installation in an industrial environment.

1. Use shielded (screened) cables for all Signal and Control inputs. The shield (screen) pigtail connection should be made as short as possible. The connection point for the shield depends somewhat upon the application. Listed below are the recommended methods of connecting the shield, in order of their effectiveness.
 - a. Connect the shield only at the panel where the unit is mounted to earth ground (protective earth).
 - b. Connect the shield to earth ground at both ends of the cable, usually when the noise source frequency is above 1 MHz.
 - c. Connect the shield to common of the unit and leave the other end of the shield unconnected and insulated from earth ground.

2. Never run Signal or Control cables in the same conduit or raceway with AC power lines, conductors feeding motors, solenoids, SCR controls, and heaters, etc. The cables should be run in metal conduit that is properly grounded. This is especially useful in applications where cable runs are long and portable two-way radios are used in close proximity or if the installation is near a commercial radio transmitter.
3. Signal or Control cables within an enclosure should be routed as far away as possible from contactors, control relays, transformers, and other noisy components.
4. In extremely high EMI environments, the use of external EMI suppression devices, such as ferrite suppression cores, is effective. Install them on Signal and Control cables as close to the unit as possible. Loop the cable through the core several times or use multiple cores on each cable for additional protection. The following EMI suppression devices (or equivalent) are recommended:

Ferrite Suppression Cores for signal and control cables:
 Fair-Rite # 0443167251 (RLC #FCOR0000)
 TDK # ZCAT3035-1330A
 Steward #28B2029-0A0
5. Long cable runs are more susceptible to EMI pickup than short cable runs. Therefore, keep cable runs as short as possible.

ELECTRICAL CONNECTIONS & COUNT INPUTS

The CUB 3's can be supplied with count input signals from mechanical switch contacts or solid-state switches (*NPN or PNP transistors*) as shown in the diagrams below. Reed switches, mercury-wetted contacts, snap-action limit switches, and silver alloy contacts with wiping action are usually satisfactory choices for mechanical switch input. Heavy "clapper-type" contacts such as used in contactors or large machine tool relays, tungsten contacts, or brush type contacts are not recommended as count input devices.

