ALLEN-BRADLEY
BULLETIN 160
E - STOP CIRCUIT

APPLICATION NOTE #160 - 2

PURPOSE

The purpose of this document is to provide guidelines for wiring and control schemes for the Bulletin 160 AC Drive. This document is to be used as a suggestion only. Users must ensure that installations meet applicable codes and are suitable for the existing conditions.

The Bulletin 160 User Manual 0160-5.15 should be used as a reference to ensure that proper wire selection, routing and fusing guidelines are followed.

WHAT THIS NOTE CONTAINS

The stop circuitry described in this document can be utilized to quickly remove power from the motor should an E-Stop (All - STOP) be initiated. This circuitry will not control the braking of the motor but will allow the motor to coast to a stop.

Other means of "braking" the motor and connected load should be utilized for rapid stopping the machine if required.

The normal operation of the drive (start/stop functions) should be through the control inputs, **NOT** the E-STOP.

INTENDED AUDIENCE

This application note is intended to be used by personnel familiar with the hardware components and programming procedures necessary to operate the Bulletin 160.

WHERE IT IS USED

The diagrams, parameter settings and auxiliary hardware used in this application are designed to address specific issues in many different applications. Some changes by the Users may be necessary to apply the concepts of this document to a specific application.

TERMS AND DEFINITIONS

Input contactor - labeled IC is located between the line supply and the drive.
Stop/Enable - control input to the drive at TB3 terminal 8 used to stop or disable the inverter.

DESCRIPTION

The method to accomplish the E-STOP is by coordinated control of the STOP/ENABLE input of the drive and an INPUT CONTACTOR. The STOP/ENABLE signal must be present at terminal 8 located on TB3 to "enable" the drive. This signal is used as a hardware permissive to allow the drive inverter section to operate.

The E-STOP button should open the STOP/ENABLE circuit and also interrupt power to the coil of the INPUT CONTACTOR. This circuit will turn off the drive output and remove power from the drive. Refer to Figure 1 for the circuit diagram.

APPLICATION CONSIDERATIONS

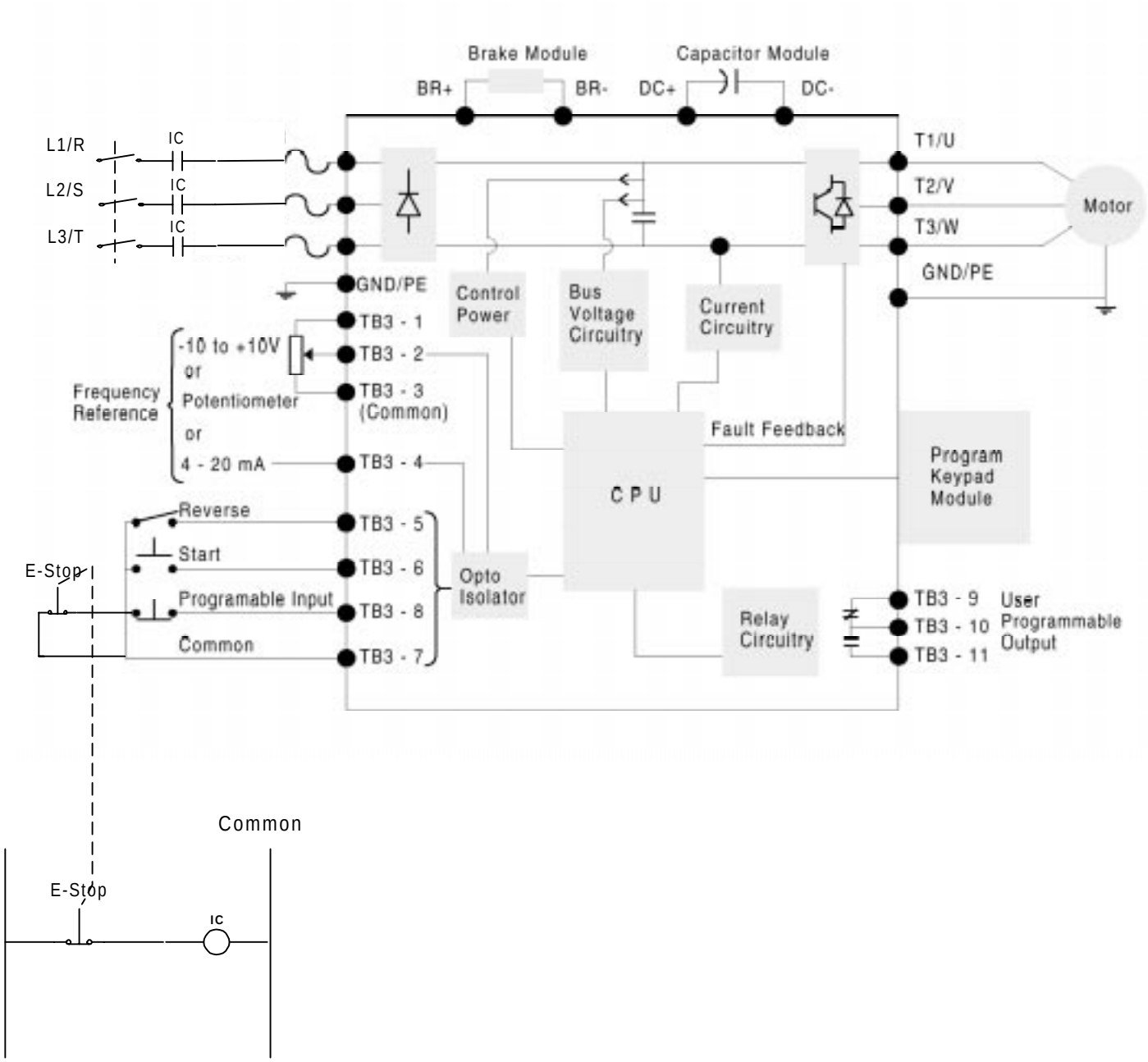
Several items will affect the actual timing of each circuit. The following items should be considered prior to implementing these circuits for use during an E-STOP.

The Auto Restart function of the drive will be "active" when two-wire control of the start/stop functions is used. If these inputs are logically true, the drive will restart when the ENABLE input returns. Extreme caution should be exercised when using the Auto Restart function.

Systems using this control configuration should utilize a separate "reset" switch or appropriate logic to ensure that the drive is not unintentionally started when the ENABLE signal is reapplied.

- The input contactor must remain de-energized for at least one minute after power has been removed from the drive.

FIGURE 1


Brake Module
Capacitor Module
BR+
BR-
DC+
DC-
L1/R
L2/S
L3/T
IC
T1/U
T2/V
T3/W
Motor
GND/PE
Control Power
Bus Voltage Circuitry
Current Circuitry
TB3 - 1
TB3 - 2
TB3 - 3 (Common)
TB3 - 4
-10 to +10V
or
Potentiometer
or
4 - 20 mA
Frequency Reference
Fault Feedback
C P U
Program Keypad Module
Reverse
Start
Programable Input
Common
E-Stop
TB3 - 5
TB3 - 6
TB3 - 8
TB3 - 7
Opto Isolator
Relay Circuitry
TB3 - 9
TB3 - 10
TB3 - 11
User Programmable Output
Common
E-Stop
IC