

TDDO - Time Delay on Drop-Out Relay

NOTICE

This application note is provided for use as a general example and a guide. Divelbiss assumes no responsibility, liability or warranty regarding this application, its use, functionality or reliability to meet application needs. User assumes all responsibility to ensure all safety precautions are taken when using this application note. This application must not be used alone in applications which would be hazardous to personnel in the event of a failure. Precautions must be taken by the user to provide mechanical and/or electrical safeguards external to this application and controllers shown.

Application Description

A 'Time Delay on Drop-Out Relay' is a useful application when you desire to have a device (output) delay turning off based upon a signal from another source (input). When the input (signal) senses a false to true transition, the device (output) will turn on (true). When the input (signal) senses a true to false transition, a timer will begin timing. When the timer reaches it's pre-programmed setpoint value, the output (device) is then turned off. The output will remain true as long as the input is true. At any point during the timing cycle, if the input goes true, the timer will stop and the output will remain true.

Equipment Used

Solves-it	
Controller P/N:	SI-100 or SI-200
Programming Software:	Divelbiss EZ LADDER
Digital I/O	On-Board
Application Program Filename:	AN-102_SI.dld
Programming Cable:	SI-PGM
Connection Diagram:	Figure 1

Harsh Environment Controller	
Controller P/N:	HEC-1000
Programming Software:	Divelbiss EZ LADDER
Digital I/O	On-Board
Application Program Filename:	AN-102_HEC.dld
Programming Cable:	HEC-910
Connection Diagram:	Figure 2

PCS	
Controller P/N:	PCS-100 (All Models)
Programming Software:	Divelbiss EZ LADDER
Digital I/O	Using ICM-HDIO-03P
Application Program Filename:	AN-102_PCS.dld
Programming Cable:	ICM-CA-34 Figure 3
Connection Diagram:	

Enhanced Baby Bear	
Controller P/N:	ICM-EBB-100 (All Models)
Programming Software:	Divelbiss EZ LADDER
Digital I/O	On-Board
Application Program Filename:	AN-102_EBB.dld
Programming Cable:	ICM-CA-34
Connection Diagram:	Figure 4

Input / Output Description

SW1 : Switch 1. This is a real world input connected to a normally open switch. This switch will act as the trigger for input of the timer. Input address: EBB-XXX = DI1.03, PCS-XXX = DI0.00, HEC-1000 = GPIO, SI-XXX = GPIO

SOL1: Solenoid 1. This is a real world output connected to a solenoid that will be controlled by the timer. Output address: EBB-XXX = DO1.03, PCS-XXX = DO0.00, HEC-1000 = GPO0, SI-XXX = GPO0.

Program Variables

SW1: Boolean (Normally open contact). Type: Input. Default value = 0. Description: Start Button.

SOL1: Boolean (Normally de-energized coil). Type: Output. Default value = 0. Description: Close Solenoid.

TDLY: Timer (time value). Default value = 2 seconds. Description: Delay timer setpoint. This is how long the timer will operate.

ACT: Timer (time value). Default value = 0. Description: Delay timer current value. Will be equal to the current elapsed time.

Program Description

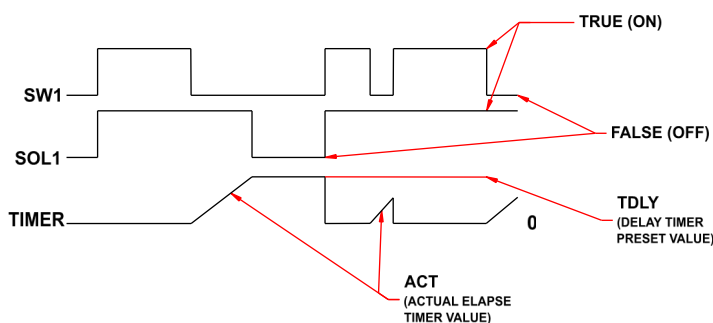
When the SW1 switch is closed, the input is read as true, SOL1 will be true which will cause the solenoid connected to be on (true).

When SW1 is opened, the input senses the true to false transition and the timer will begin timing (SOL 1 will remain true).

If the elapsed time (ACT) equals the preset time (TDLY), TOF1 will turn off the SOL1 output which will cause the solenoid connected to be off (false).

Whenever SW1 goes true (SW1 is closed), the timer will stop, and the SOL1 output will be turned on causing the solenoid to be on (true).

Timing Diagram



Connection Diagrams

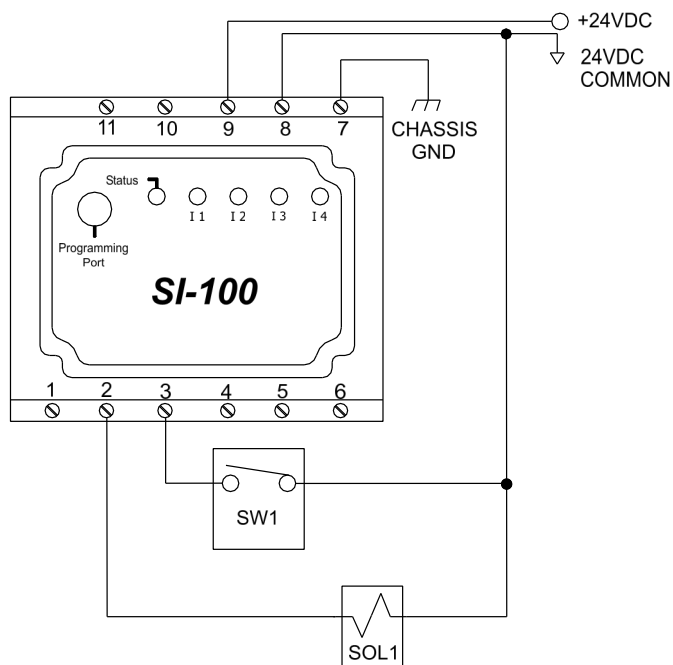


FIGURE 1 - SOLVES-IT CONNECTIONS

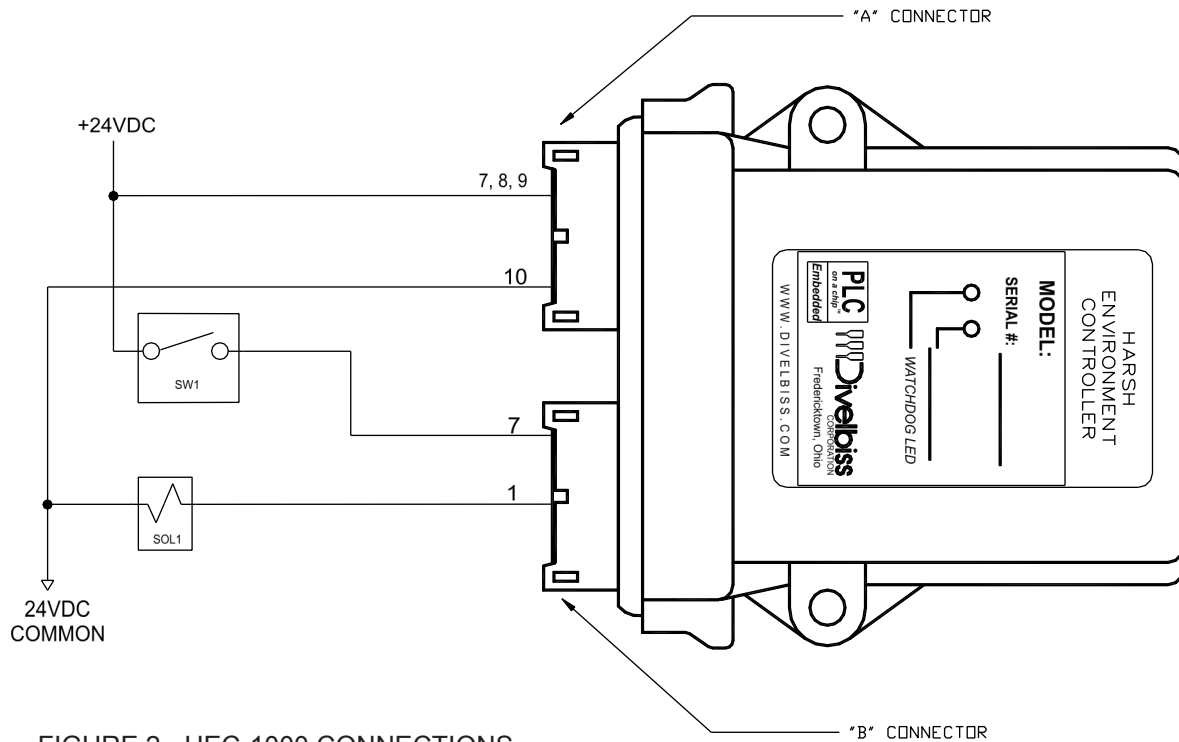


FIGURE 2 - HEC-1000 CONNECTIONS

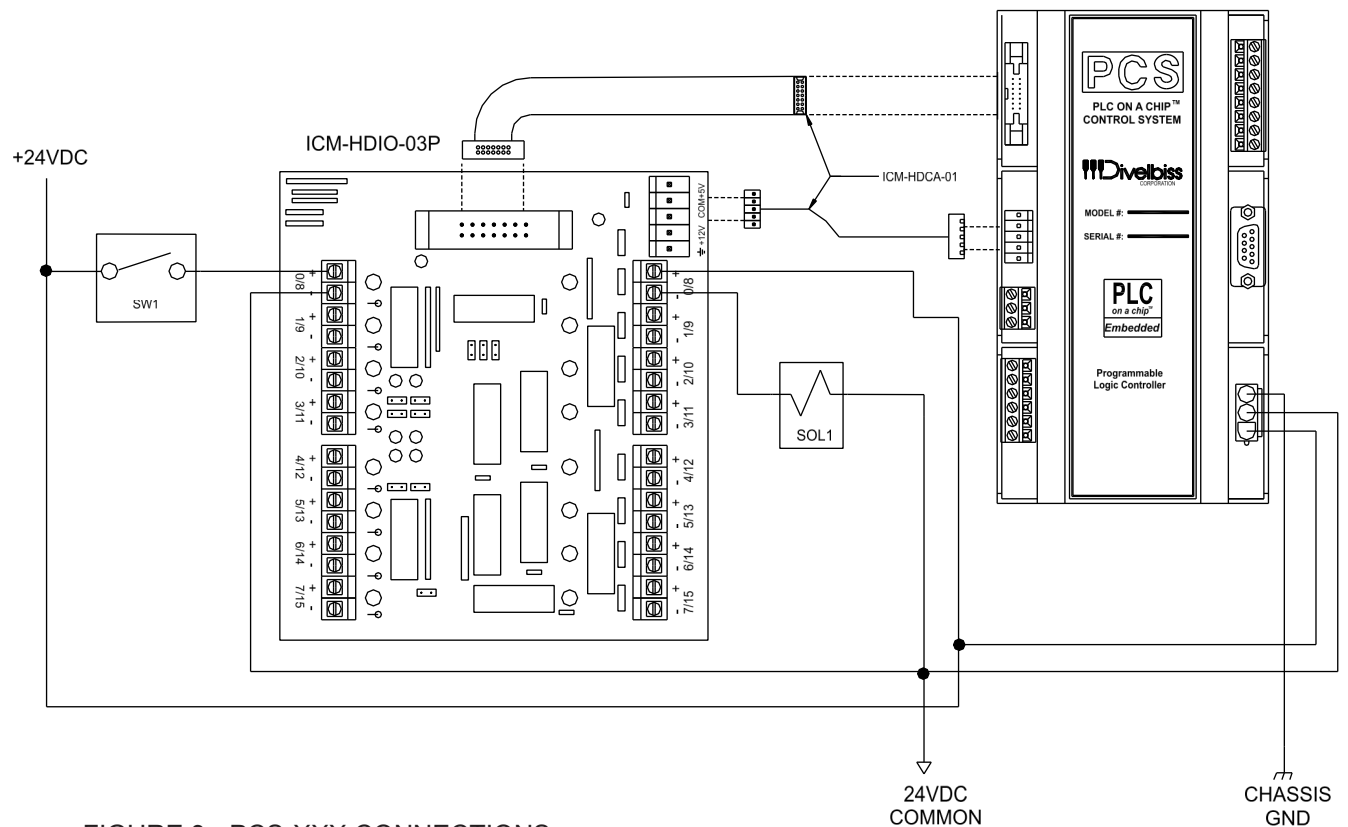


FIGURE 3 - PCS-XXX CONNECTIONS

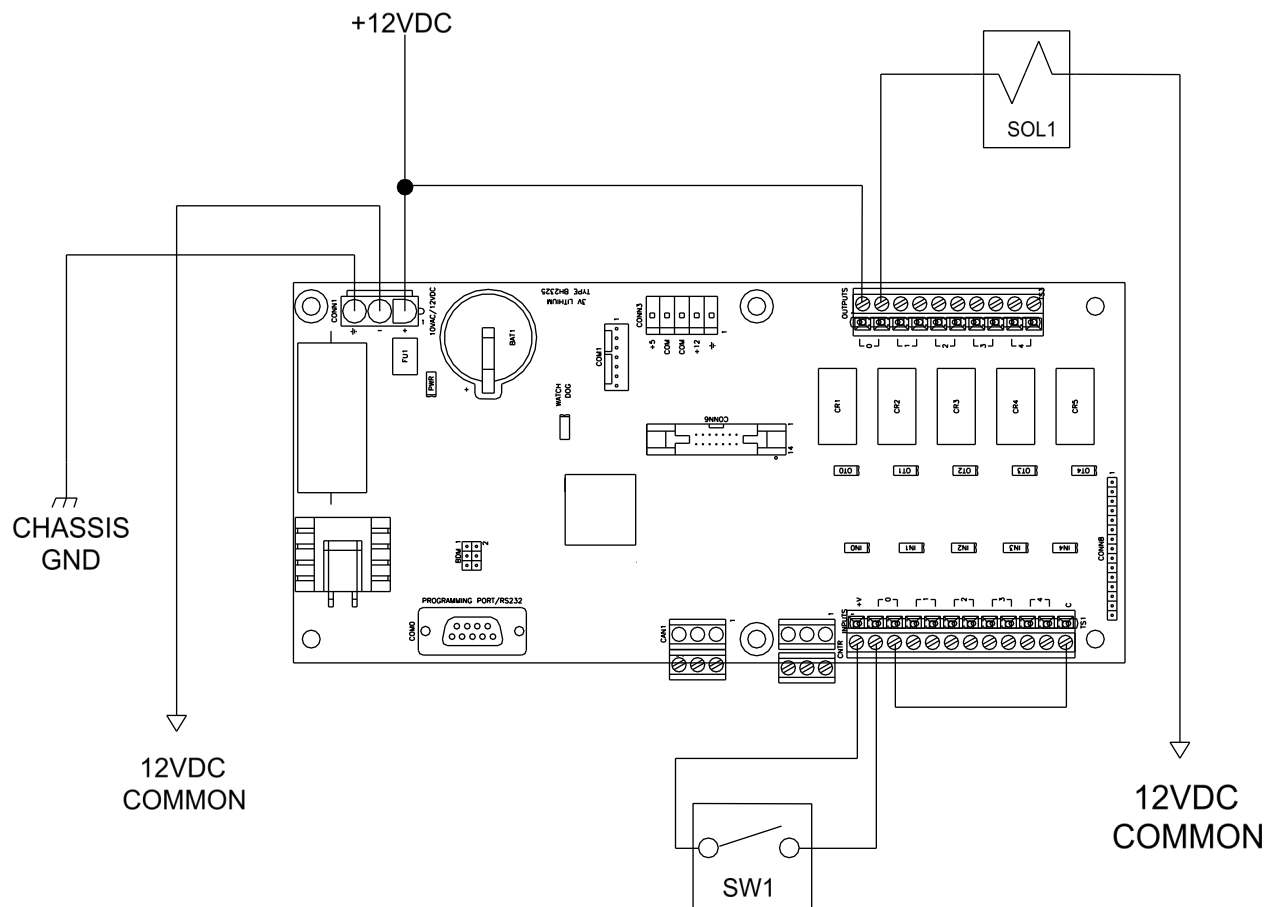


FIGURE 4 - ICM-EBB-XXX CONNECTIONS

Ladder Diagram (SI-100 Version Shown)

