Application Note - AN-101

TDPU - Time Delay on Pickup 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 Pickup Relay' is a useful application when you desire to have a device (output) turn on based upon a signal from another source (input). When the input (signal) senses a false to true transition, a timer will begin timing. When the timer reaches it's pre-programmed setpoint value, the output (device) is then turned on. The output will be maintained as long as the input is maintained. At any point, if the input goes false, the output will also go false.

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-101_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-101_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-101_PCS.dld
Programming Cable:	ICM-CA-34
Connection Diagram:	Figure 3

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-101_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 = GPI0, SI-XXX = GPI0

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.

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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.

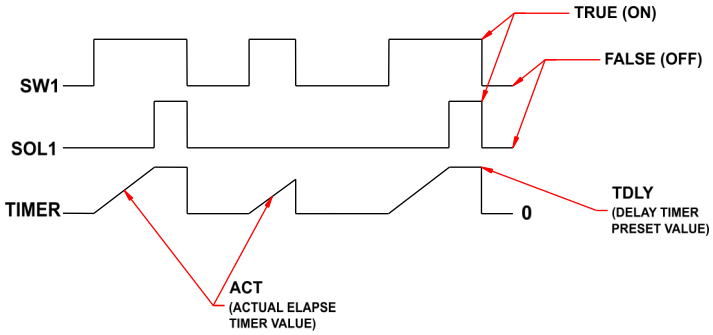
Program Description

When the SW1 switch is closed, the input is read as true , TON1 will begin timing and continue timing as long as SW1 closed (until the TDLY preset is reached).

If the elapsed time (ACT) equals the preset time (TDLY), TON1 will turn on the SOL1 output which will cause the solenoid connected to be on (true).

Whenever SW1 goes false, (SW1 is open), the timer will stop, reset and the SOL1 output will be turned off causing the solenoid to be off (false).

Timing Diagram



Connection Diagrams

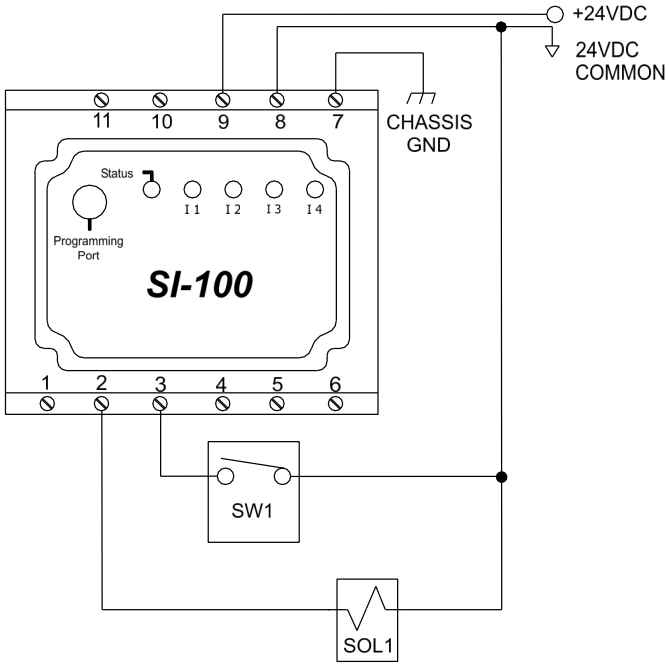


FIGURE 1 - SOLVES-IT CONNECTIONS

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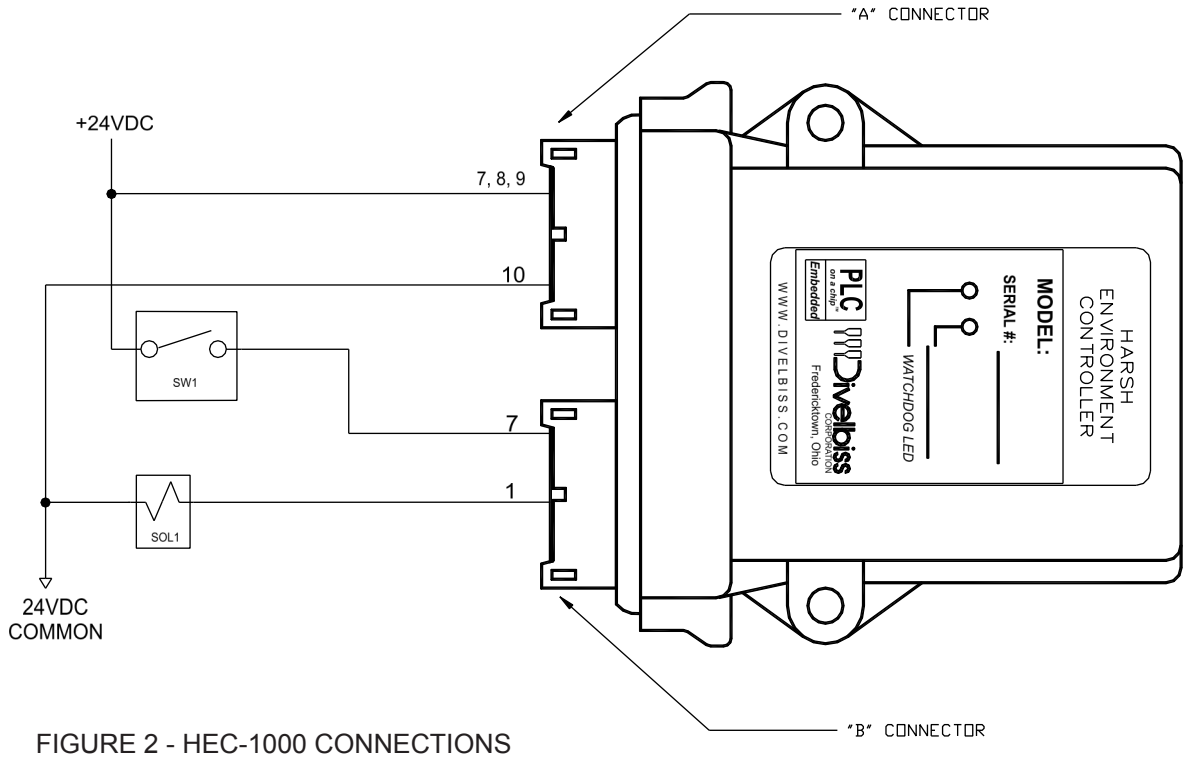

FIGURE 2 - HEC-1000 CONNECTIONS

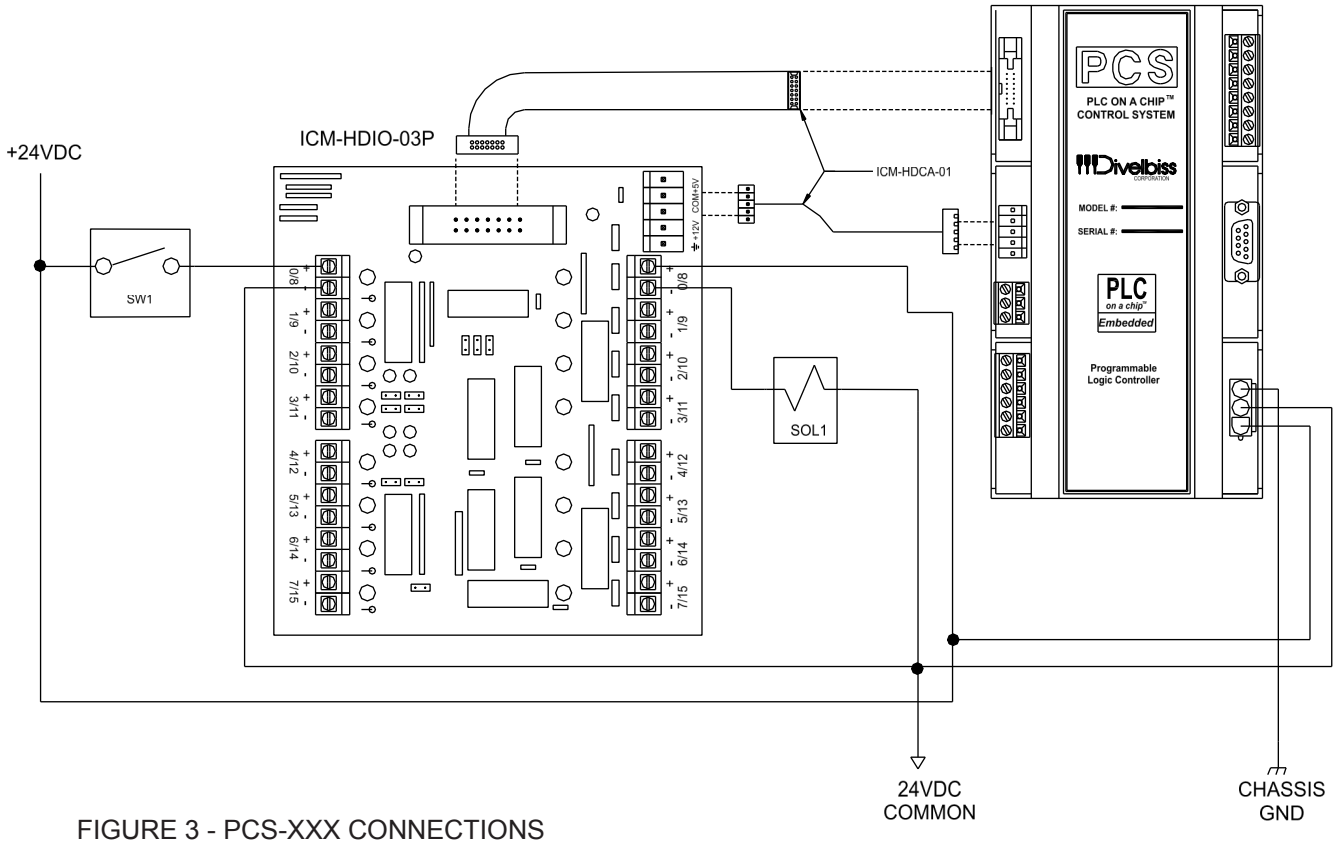

FIGURE 3 - PCS-XXX CONNECTIONS

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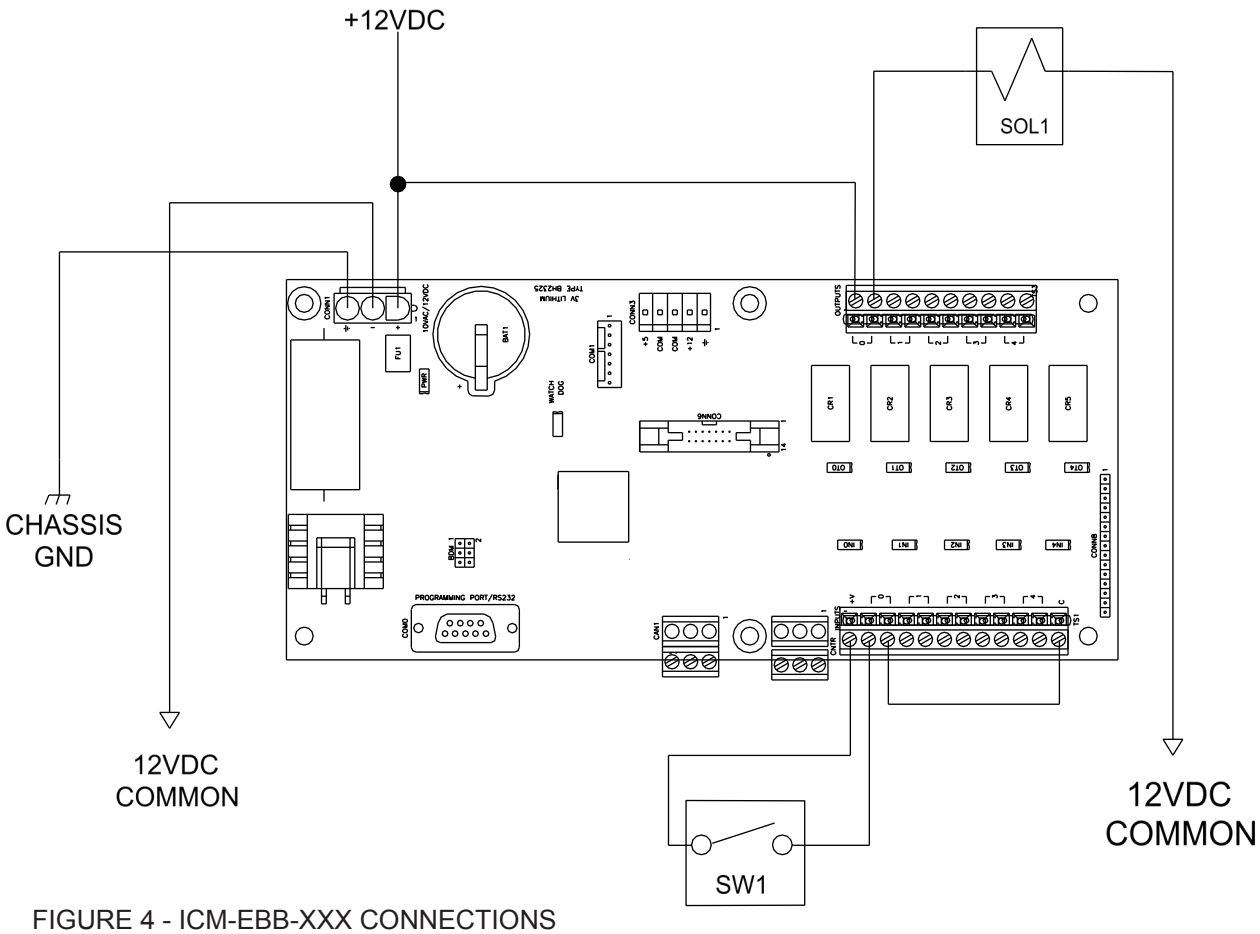
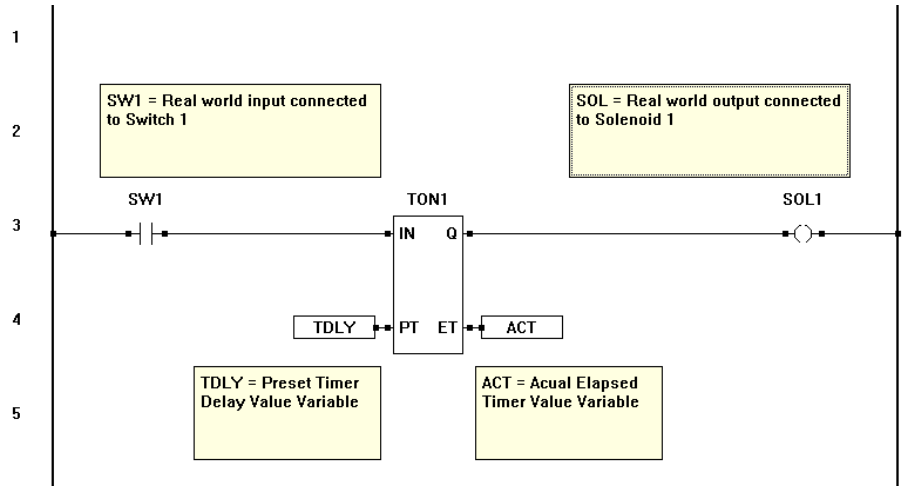


FIGURE 4 - ICM-EBB-XXX CONNECTIONS

Ladder Diagram

(SI-100 Version Shown)



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