

Drum Sequencer

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 drum sequencer is a powerful function to control multiple channel states (outputs or internal control relays) based upon a pre-designed 'sequence' of operation for the devices. The drum sequencer is programmed with multiple steps, similar to a spreadsheet. Each row represents a 'step' of the drum sequencer and for each step, each column represents the channel ('state of the device or channel to be 0 or 1').

When the drum sequencer is active (enabled), for each pulse or low to high to low transition, the drum sequence will index to the next 'step' and all the devices states will change accordingly. After the last step, the drum sequencer resets and starts from step 1.

Step	Channel			
	1	2	3	4
1	0	0	0	0
2	0	0	0	1
3	0	0	1	0
4	0	1	0	0
5	1	0	0	0

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-103_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-103_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-103_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-103_EBB.dld
Programming Cable:	ICM-CA-34
Connection Diagram:	Figure 4

Input / Output Description

- RESET :** This is a real world input connected to a normally open switch. This switch will act as the trigger to reset the drum sequencer. Input address: EBB-XXX = DI1.07, PCS-XXX = DI0.07, HEC-1000 = GPI5, SI-XXX = GPI3
- TOGGLE :** This is a real world input connected to a normally open push button switch. This switch will act as the trigger to step the drum sequencer. Input address: EBB-XXX = DI1.03, PCS-XXX = DI0.00, HEC-1000 = GPI0, SI-XXX = GPI0
- OUT0:** This is a real world output connected to a 24V DC Lamp that will serve as the output's 'load'. Output address: EBB-XXX = DO1.03, PCS-XXX = DO0.00, HEC-1000 = GPO0, SI-XXX = GPO0.
- OUT1:** This is a real world output connected to a 24V DC Lamp that will serve as the output's 'load'. Output address: EBB-XXX = DO1.04, PCS-XXX = DO0.01, HEC-1000 = GPO1, SI-XXX = GPO1.
- OUT2:** This is a real world output connected to a 24V DC Lamp that will serve as the output's 'load'. Output address: EBB-XXX = DO1.05, PCS-XXX = DO0.02, HEC-1000 = GPO2, SI-XXX = GPO2.
- OUT3:** This is a real world output connected to a 24V DC Lamp that will serve as the output's 'load'. Output address: EBB-XXX = DO1.06, PCS-XXX = DO0.03, HEC-1000 = GPO3, SI-XXX = GPO3.

Program Variables

- RESET:** Boolean (Normally open contact). Type: Input. Default value = 0. Description: Reset Button.
- TOGGLE:** Boolean (Normally open contact). Type: Input. Default value = 0. Description: Step Push Button.
- OUT0:** Boolean (Normally de-energized coil). Type: Output. Default value = 0. Description: Lamp 0.
- OUT1:** Boolean (Normally de-energized coil). Type: Output. Default value = 0. Description: Lamp 1.
- OUT2:** Boolean (Normally de-energized coil). Type: Output. Default value = 0. Description: Lamp 2.
- OUT3:** Boolean (Normally de-energized coil). Type: Output. Default value = 0. Description: Lamp 3.

Program Description

Close and then open the RESET, the drum sequencer will reset and then will be active.

When TOGGLE is toggled (closed then open), the input senses the transitions and drum sequencer will step to the next pre-programmed step and update the output channels accordingly.

The drum sequencer will start at step 1 when it has been reset or when the step input senses another toggle while the drum sequencer is on the last programmed step.

Whenever RESET goes true , the drum sequencer will reset to the first step and will not respond to step pulses or toggles.

Connection Diagrams

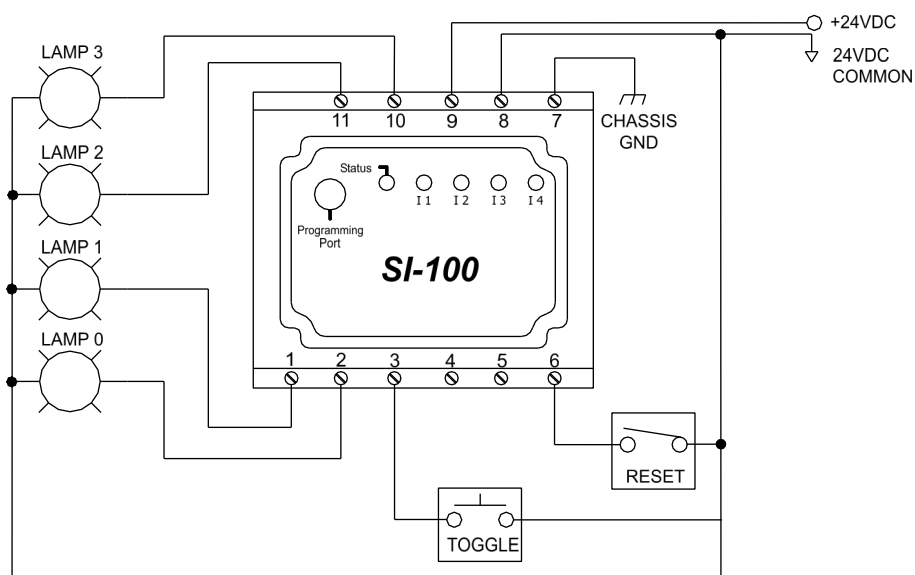


FIGURE 1 - SIVES-IT CONNECTIONS

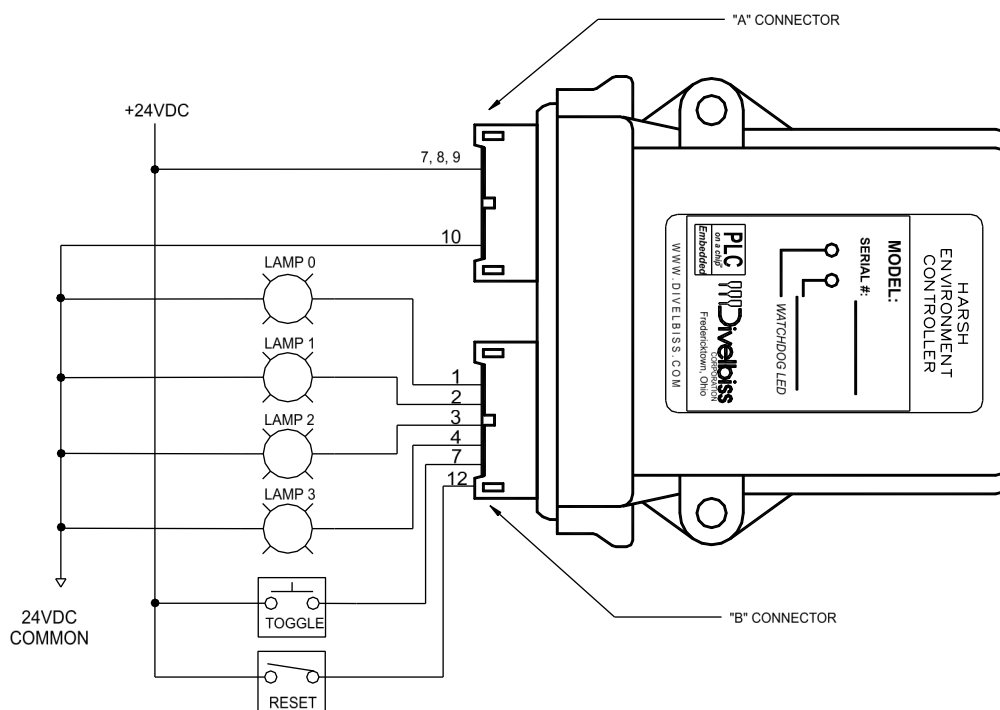


FIGURE 2 - HEC-1000 CONNECTIONS

Connection Diagrams

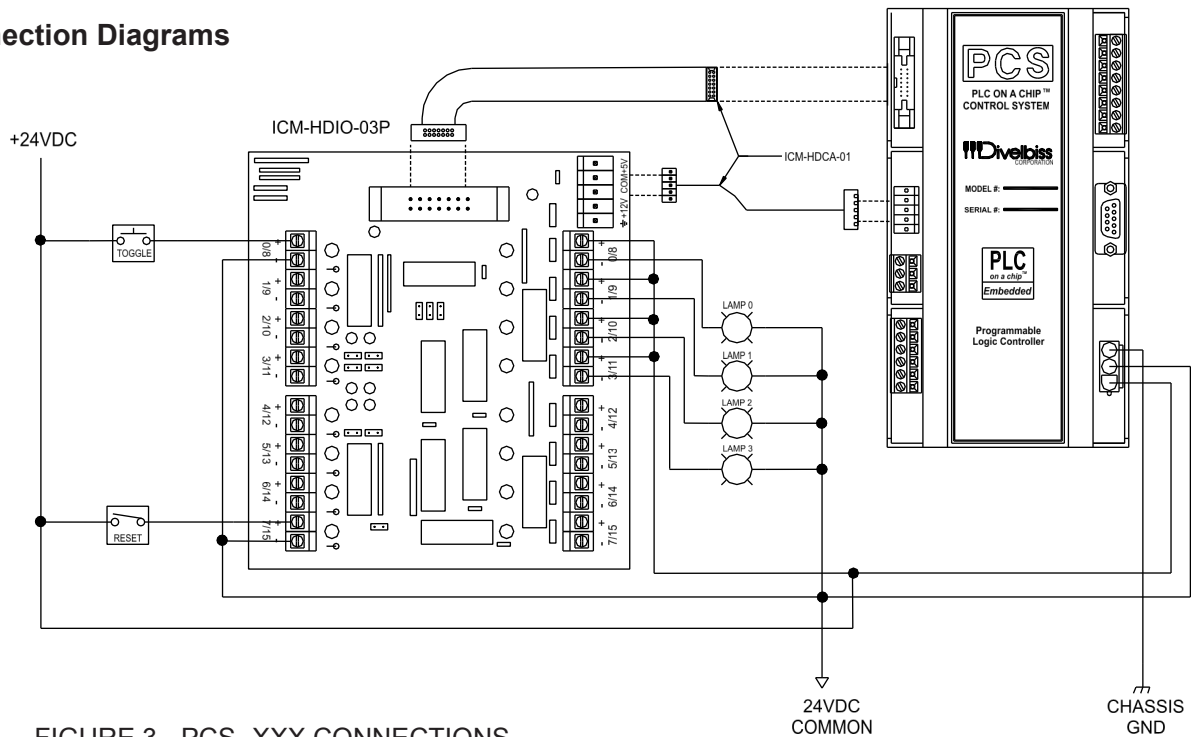


FIGURE 3 - PCS-XXX CONNECTIONS

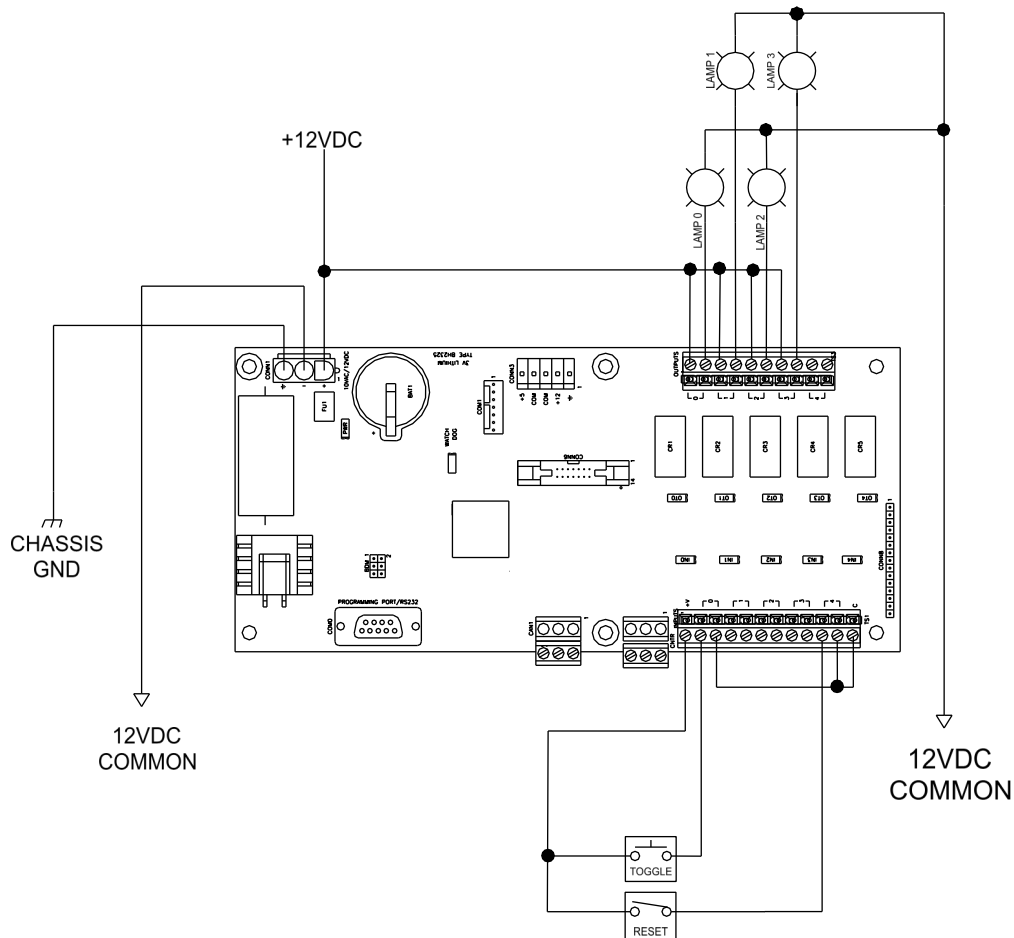


FIGURE 4 - ICM-EBB-XXX CONNECTIONS

Ladder Diagram

