January 11, 2017

Divelbiss E-News - January 2017

Aching Bolts and Bones

It is that time of year again, the start of a new year. With the fields sleeping under a cover of snow and farm equipment put away for maintenance. It is also the time we think about the coming year and how we can make it better than the last. Most of us make some kind of commitment to ourselves about eating better and exercising more. These resolutions can be hard to keep by ourselves, so this year I decided to get into shape with my old backhoe.

My old backhoe is almost about as old as I am. Years of digging trenches for drainage tiles and retention ponds. So this year I decided to keep track of the old back hoe's fitness along with mine. I bought this newfangled fitness tracker for mobile equipment from Divelbiss. A little wiring and a little banging and we're ready to

Make Me Smarter

Ladder Logic Diagram Basics

Generally, most PLCs program in ladder logic diagrams. While different manufactures have adapted ladder logic and customized it, they are still based on the original ladder logic principles. In addition to manufacturers´ ladder logic adaptations, there are also standards that can specify how a ladder logic diagram is created. One of the popular standards is IEC-61131. This standard specifies how function blocks are to be implemented as well as other items.

We will use the example of a battery, switch and lamp circuit. The circuit can be shown using relay logic. Figure 4-1 is the original lamp circuit shown using symbology. Figure 4-2 is the same circuit illustrated using relay logic.
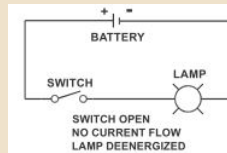

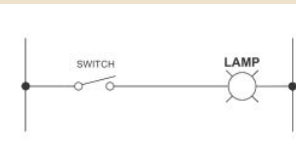Figure 4-1 - Lamp circuit with symbols   Figure 4-2 - Relay logic lamp circuit

While the circuits are drawn differently, they both function the same. When "Switch" closes, the "Lamp" will be energized. Notice, in place of the battery, the circuit is drawn with power rails. Figure 4-3 illustrates the same circuit drawn using ladder logic diagram. Notice

count calories and log machine information. The Divelbiss Fitness tracker records the hydraulic pressure, temperature, torque and how many times a day I have to get out of the cab to go to the bathroom. I was able to quickly identify leaking Hydraulic fluid coming from one of her pressure relief valves and something unmentionable leaking from me! With a little maintenance my old backhoe and I are right as rain, and all the rain means plenty of work for us come spring.
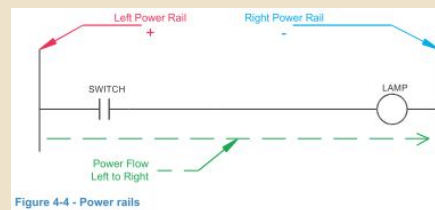
-Chris Bigler - Application Specialist

power rails are standard for ladder logic diagrams. All digital input devices wired to PLC inputs are represented using the same contact symbol regardless of their actual purpose (push-button switches, rocker switches, float switches, etc). All digital outputs wired to PLC outputs are represented using the same coil symbol regardless of their actual purpose (motor, lamp, solenoid, etc).

Figure 4-3 - Ladder logic lamp circuit

The circuit shown in Figure 4-3 is typical of PLC programming. When loaded into the PLC, the PLC will operate according to the ladder diagram. When the actual real-world switch connected to the "Switch" PLC input is energized, then the "Lamp" PLC output will energize, thus energizing the actual real-world lamp connected to the "Lamp" PLC output.
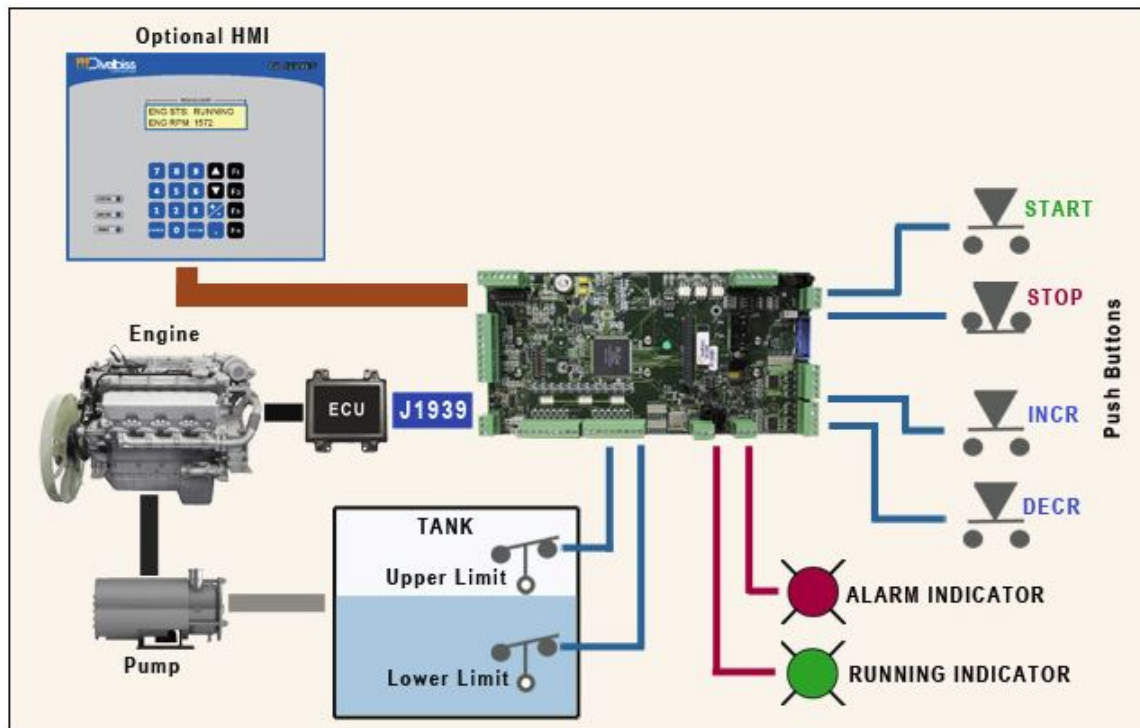
Figure 4-4 illustrates a rung. A rung is one line of a ladder logic diagram (named after a rung on a ladder).

Figure 4-4 - Power rails

Application - Engine Driven Pump with J1939 Control

Engine Driven Pump Control with J1939 Control using Versatile Base (VB-2000) Programmble Logic Controller (PLC).

A tank level is controlled by a Versatile Base Programmable Logic Controller (VB-2000) and an engine driven pump utilizing SAE J1939.

Tank water level is monitored via two float limit switches (Upper Limit and Lower Limit) to the VB-2000 Programmable Logic Controller. When water level reaches the upper limit, the VB-2000 starts the engine and engine driven pump using SAE J1939 communications. The pump will cause the water level to decrease and when the water reaches the lower limit, the VB-2000 stops the engine and engine driven pump via SAE J1939 communications.

As shown, "Start" and "Stop" buttons provide the system start and stop control.

Increase (Incr) and decrease (Decr) buttons allow for the ability to increase or decrease the engine RPM or flow rate set point.

Outputs are shown controlling two indicators (Alarm and Running) to show the current system status.

An optional HMI is shown for more advanced configuration and messaging options.

Working for You - What Does Long-term Support Really Mean?

Introduced in 1980

ICM Bear Bones PLC

Upgraded 2015

P-Series Bear Bones
Programmable Logic Controllers
(PLCs)

Divelbiss Corporation prides itself with providing long term support to all our customers. So what does that really mean?

One example of our commitment to long term support is our Bear Bones Product line. Originally introduced in 1980 it is widely used in case packing equipment, elevator systems and many others. The Bear Bones has been in continuous production for over 36 years. We continue to stock and repair the original Bear Bones controller and address obsolete component issues as they arise. In 2015 Divelbiss released the P-Series Bear Bones controller. This is a drop in replacement for the original Bear Bones controller with additional features including:

- Cellular and WiFi Connectivity
- Ethernet and Serial ports
- Cloud enabled using VersaCloud M2M
- Analog I/O
- Available Keypad and Display
- Networking: J1939, NMEA 2000, OptiCAN, Modbus TCP
- SD card Data logging

The next generation P-Series Bear Bones controller is a powerful controller for new equipment designs, as well as providing additional capabilities to existing applications. A Cloud dashboard, data logging, networking or even just adding a keypad and display to a existing piece of equipment is now easy.

This kind of support doesn't stop with the Bear Bones controller. We provide technical support for anything that we designed and manufactured. The Divelbiss "Vault" contains design books for any product or project that we designed or manufactured since 1974.

Product Highlight - MicroBear Family

MicroBear Family

Designed for low cost and flexibility, the Micro Bear Family of controllers are useable in virtually every segment of industry.

Each Micro Bear Controller is a fully-featured single board controller / PLC which is ideal for OEM's who are seeking a cost-effective, flexible controller on which to standardize. The Micro Bear is suitable for assembly lines, food processing, packaging, textile fabrication, water treatment and mining.

The Micro Bear includes digital inputs, relay outputs, analog features with optional programmable display, pushbuttons and LED Indicators.

- ICM-MB-100 Micro Bear Controller (PLC) with 6 Digital Inputs (9-32VDC), 2 DPDT Relay Outputs, 2 Form C Relay Outputs and 0-5VDC Analog Input. Operates on input power of 9-32VDC.

- ICM-MB-110 Micro Bear Controller (PLC) with 6 Digital Inputs (9-32VDC), 2 DPDT Relay Outputs, 2 Form C Relay Outputs, Two 0-5VDC Analog Inputs, Programmable pushbuttons and LEDs and a 4 Digit Display. Operates on input power of 9-32VDC.

New Years By the Numbers

The Times Square Ball is 12 ft in diamerter, is made of 2,688 crystals, 32,000 LEDs and weighs 11,875 lbs.

44% of American Adults plan to kiss someone at the stroke of midnight.

61% say a prayer.

22% admit to falling asleep before midnight.

45% of Americans make New Years Resolutions, the most popular include:

- Lose Weight
- Get Organized
- Spend Less
- Stay Fit
- Quit Smoking

Complete Our Short Survey!

Receive a multi-tip screwdriver for completing our short survey.

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