INDUSTRIAL CONTROLS INC.
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Wireless Bridge Module Instruction Manual

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Instruction Manual

1.0 Description:

-The Wireless CanBus Bridge provides a two way communication link between a remote operator and drilling equipment. The Wireless Bridge eliminates the use of the hardwired cables and allows the following;

- Eliminate Tripping hazard caused by the GUI cable.
- Minimize downtime
- Minimize operational cost
- Increase production

2.0 Components:

- (2X) Wireless bridge modules

- (3X) Batteries

-Harness and connectors

-Battery compartment

-Mounting Bracket

-Operators manual

3.0 Tools And Hardware Required:

-The wireless bridge modules and battery compartment is fasten to an aluminum metal plate for easier installation. Use either 3/8 bolts or 5/16 bolts. Here is a list of the required tools and hardware for the installation of the Wireless Bridge:

-Four 3/8 or 5/16 bolts with lock washers and nuts.

-Drill, Wrenches and socket set.

-For 3/8 bolt your will need drill bit size of (5/16) with tap.

-For 5/16 bolts you will need drill bit size (F) with tap.

4.0 Installation

The first step for the installation of the wireless bridge is to find a location on the machine to mount the aluminum plate. The wireless module should be installed near the PLC Panel. The area should be easily accessible and have a minimum height of 22 Inches and length of 12 inches, this is to allow extra space for the cables and connectors. Welding a plate with brackets is also optional if the proper location cannot be found. The aluminum plate can either be drilled and tapped or nuts and bolts can also be use for mounting the aluminum plate.

Once the wireless module is fastened to the machine, the next step is to locate the power and safety circuits on the machine. Refer to machines electrical schematics to locate the following circuits. The safety relay contact blocks need to be in series with each circuit loop

-Locate the 24VDC and ground (on ignition) from the machine and connect the wires to terminal block 1 and ground.

-Locate the “main ESTOP loop” circuit and the “eris panel ESTOP loop” circuit for the PLC input. Connect the NC contact to main ESTOP loop circuit, and the NO contact to ERIS Panel ESTOP circuit on Safety Relay 1

-Locate the Tilt switch Circuit coming from the Eris panel and connect the wires to the NC Contact on Safety Relay 2

-Locate the Fire suppression Circuit and connect the wires the NO contact on Safety Relay 3

Once the PLC is powered with a 24VDC source from the machine. The next step is to locate the valve or solenoid for the machine's rotation, please use the machines schematic diagram to locate this circuit. Once the circuit is located, connect and install the safety relay 1 from the Safety Barrier System in series with the signal feed circuit of the rotation solenoid/valve. For redundancy connect and install the safety relay 2 from the Safety Barrier System in series with the power feed circuit of the rotation solenoid/valve.

5.0 Configuration

For the standard configuration of the Safety Barrier System should consist of two IR sensors mounted on both sides of the rear end of the machine, this will safeguard against any personnel entering the danger zone from the back of the machine. The tripod should be setup about 10' (feet) in front of the operator with sensors facing the walls, this barrier will safeguard the operator and workers from entering the danger zone.

If any of the four sensors are not needed, it's important to terminate the input port using the a dummy plug, otherwise the system will see an open connection, and the operator's panel will display a "Yellow" LED. The system cannot be armed if it detects an open connection/yellow LED.

6.0 Testing

-At the beginning of each shift, or after the Safety Barrier System was redeployed in a new location in the mine, it's recommended that the operator does a physical check of the Safety Barrier System to ensure that it is functioning properly. This involves having the operator physically check each sensor by arming the system and walking in front of a sensor and causing it to trip, this should be done for each installed sensor. The "Red" LED on the sensor and operator's panel will turn on.

-The Emergency Button on the operator panel should also be tested.

-Make sure that the eye of the sensor is clean, and that it is not obstructed by debris.

7.0 Functionality

The Safety Barrier System has the ability to monitor four IR sensors, and a minimum of one sensor. It's important to terminate the sensors input ports that are not being used by installing the dummy plugs, otherwise the Safety Barrier System will see an open connection (Yellow LED on the operator's panel) and won't allow the system to be armed. If any of the installed sensors trip or activate, there will be a Red Flashing on the operators panel. If a sensor trip's or activates it was take 8 seconds until a sensor is clear and ready. Once all installed sensors are Cleared, the "Ready" green LED will light up, this indicates that the system is clear and no faults are detected and the Safety Barrier System can be armed by pressing and holding the "Arm" button for 1 second.

Once the system is armed, it will close the integrated relay circuit and allow the operator to drill, if any of the installed sensors trip or gets disconnected, The Safety Barrier System will open the integrated relay circuit and immediately stop the Machines rotation.

8.0 Contacts

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