Isolation Verification Control
Mining - Marine - Transit – Solutions

Safe Habits

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Isolation Verification Control- Operational Features

Part No- LSLIVC

The LSLIVC Isolation Verification control module from Lingona is 12/24VDC device designed to implement a safe working environment for all employees. The voltage indication is a true reference voltage with isolation verification, 4 options available through an easy selection process on an internal DIP SWITCH and a second DIP SWITCH for voltage application of either 12v or 24v DC. The isolation verification control also measures the difference between the isolator battery and machine side and determines if there is a voltage drop to capture isolator internal connection failures, and also if the case that the machine’s isolator is turned off whilst the machine is running, the isolation control will measure the voltage drop between the battery and the machine to determine this occurrence and will activate a warning led/alarm and with a 20 second delay interlock relay to cut out either ignition or start solenoid depending on the customers requirements.

By selecting the required DIP SW, the below image screen will change to suit the below desired options available.

4 X Optional Control Features

1. BATTERY ISOLATION CONTROL
2. STARTER MOTOR ISOLATION CONTROL
3. ALTERNATOR VOLTAGE CONTROL
4. VOLTAGE STATUS REFERENCE

Features include

- ISOLATION VERIFICATION
- ISOLATION CONTROL INTERLOCK
- ISOLATION INDICATION
- VOLTAGE STATUS
- OVER/UNDER VOLTAGE WARNING/ INDICATION
- OVER/UNDER VOLTAGE CONTROL INTERLOCK
- DUAL VOLTAGE OPTION (12 OR 24VOLT DC APPLICATION)
- ISOLATION VOLTAGE DROP AND OPEN CIRCUIT PROTECTION
Operational Features - Continued

IMPORTANT INSTRUCTIONS 1 of 2

SYSTEM AWARENESS WARNING>

This system is a visual isolation reference and verifies isolation electronically. Always perform a positive verification on any system at any time if risks apply.

A recommendation to ensure regular maintenance and system checks are completed every 500 hrs, on the isolation verification controlling system and replace the unit every 2 years if working in any harsh environments including the mining industry.

IMPORTANT INSTRUCTIONS 2 of 2

To ensure the LSLIVC Isolation Verification control modules operate/ functions correctly, if the machine/ system has a radio system or two way system wired to the battery side of the isolation switch, the following diagram shows the correct circuit diagram/ also the correct isolated voltage converter that must be used to ensure that the verification system will function correctly.

The Correct Installation Electrical Diagram For:
BATTERY LIVE RADIOS Circuits (Page 1 of 2)
(Ensure an isolated converter is used)

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The Operating Voltage Selection DIP SWITCH

The LSLIVC Isolation Verification control module from Lingona is 12/24VDC, to select the correct operating voltage, the VOLTAGE DIP SWITCH selection is in the rear of the enclosure, by removing the 4 x screws from the rear panel, the DIP SWITCH can be accessed to adjust.

![3D VIEW of DIP SWITCH](image)

<table>
<thead>
<tr>
<th>Selection DIP SW Settings</th>
<th>Sensitivity Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1- 12 VOLT DC</td>
<td></td>
</tr>
<tr>
<td>S2- 24 VOLT DC</td>
<td></td>
</tr>
</tbody>
</table>

Note- To access the APPLIACION VOLTAGE DIP SW setting, remove the rear cover plate from the enclosure to access.

The Function Selection DIP SWITCH

The Isolation Verification control is a true reference voltage with isolation verification, 4 options available through an easy selection process on an internal DIP SWITCH by removing the rear access panel. By selecting the required DIP SW, the below image screen will change to suit the below desired options available. Ensure when ever adjusting the DIP SWITCH settings, the supply voltage must be turned OFF.

![3D VIEW of DIP SWITCH](image)

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<thead>
<tr>
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</tr>
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<td></td>
</tr>
<tr>
<td>S2- Starter Motor Isolation</td>
<td></td>
</tr>
<tr>
<td>S3- Alternator Reference Voltage</td>
<td></td>
</tr>
<tr>
<td>S4- Voltage Status Reference</td>
<td></td>
</tr>
</tbody>
</table>

Note- To access the APPLIACION VOLTAGE DIP SW setting, remove the rear cover plate from the enclosure to access.
SW1- Battery Isolation Verification

Features.

- **ISOLATION VERIFICATION**
  Measures / illustrates positive isolation and verifies with a visual status either ON/OFF, measuring both the positive and negative sides of the dual battery isolation switch. By measuring the difference between the battery positive and machine vehicle positive, also the difference between the battery negative and vehicle negative to confirm this isolation.

- **ISOLATION CONTROL INTERLOCK**
  When the isolation is verified and safe, the LCD Screen will confirm with a visual isolation OFF display, with the interlock external relay device option, the interlock function can isolate either, key supply/ ignition control wires to suit the customer demand/ preferences. The isolation verification control also measures the difference between the isolator battery and machine side and determines if there is a voltage drop to capture isolator internal connection failures, and also if the case that the machine’s isolator is turned off during the machine is running, the isolation control will measure the voltage drop between the battery and the machine to determine this occurrence and will activate a warning led/alarm and with a 20 second delay interlock relay to cut out ignition.

- **ISOLATION INDICATION**
  The LCD screen illustrates the positive isolation status, with a second external option to have a LED visual in a required location like the dash console in the cabin.

- **VOLTAGE STATUS**
  The LCD display will show the current voltage status when ever the machine battery isolation switch is turned on, or if the isolation switch in the case is turned off but still shows a voltage reference.
  When ever the case the isolation switch is turned off and the voltage is confirmed that the status is zero ( with tolerance of up to 5volts dc to allow for above ground surface back feed voltages) the display will show battery isolation OFF with an indication of ZERO VOLTS reference, this is when the display confirms isolation and the screens changes colour to GREEN for safe operation maintenance.

- **OVER/UNDER VOLTAGE WARNING/ INDICATION & INTERLOCK**
  The control module measures and controls the over and under voltage status to protect not only the machine electrics but assists in the service life expectancy of the batteries, but protecting them from over and under voltage cell damage.
  **12 volt application - When the system falls below 9 volts or above 15 volts**
  **24 volt application – When the system falls below 18 volts or above 30 volts**
  In the case of over or under voltage is detected with a slosh period of 20 seconds, the control module in normal system operation will have a positive output to engage a relay, if an over or under voltage fault occurs or a system fault, the out put signal will drop away after 20 seconds to open circuit the desired control system either key supply, ignition supply or start control wiring to prevent any further damage to the battery service life, with an external LED/ALARM combo to alert the operator.
SW1- Battery Isolation Verification

WIRING DIAGRAM

The ISOLATION VERIFICATION KIT INCLUDES-

1 X LSLIVC KIT- INCLUDE THE DISPLAY ONLY, ENSURE INDICATOR LIGHTS ARE LED PILOT PANEL LIGHTS ONLY MAX 500mA only.
- PARTS NOT INCLUDED: CIRCUIT BREAKERS, EXTERNAL RELAY INTERLOCK, PLUG CONNECTORS, LED IND’s.

Battery Isolation Verification Control Module
SW2- Starter Motor Isolation Verification

Features,

- **ISOLATION VERIFICATION**

  Measures / illustrates positive isolation and verifies with a visual status either ON/OFF. The starter motor isolation device measures the positive starter motor isolation only, by measuring the difference between the vehicle positive and starter motor positive verifying to confirm this isolation.

- **ISOLATION CONTROL INTERLOCK**

  When the isolation is verified and safe, the LCD Screen will confirm with a visual isolation OFF display, with the interlock external relay device option, the interlock function can isolate either, key supply/ ignition or start control wires to suit the customer demand/ preferences.

- **ISOLATION INDICATION**

  The LCD screen illustrates the positive isolation status, with a second external option to have a LED visual in a required location like the dash console in the cabin.

- **VOLTAGE STATUS**

  The LCD display will show the current voltage status when ever the machine battery isolation switch is turned on, or if the isolation switch in the case is turned off but still shows a voltage reference. When ever the case the isolation switch is turned off and the voltage is confirmed that the status is zero ( with tolerance of up to 5volts dc to allow for above ground surface back feed voltages) the display will show battery isolation OFF with an indication of ZERO VOLTS reference, this is when the display confirms isolation and the screens changes colour to GREEN for safe operation maintenance.

- **OVER/UNDER VOLTAGE WARNING/ INDICATION & INTERLOCK**

  The control module measures and controls the over and under voltage status to protect not only the machine electrics but assists in the service life expectancy of the batteries, but protecting them from over and under voltage cell damage.

  **12 volt application** - When the system falls below 9 volts or above 15 volts
  **24 volt application** – When the system falls below 18 volts or above 30 volts

  In the case of over or under voltage is detected with a slosh period of 20 seconds, the control module in normal system operation will have a positive output to engage a relay, if an over or under voltage fault occurs or a system fault, the output signal will drop away after 20 seconds to open circuit the desired control system either key supply, ignition supply or start control wiring to prevent any further damage to the battery service life, with an external LED/ALARM combo to alert the operator.
SW2- Starter Motor Isolation Verification

Wiring Diagram

The ISOLATION VERIFICATION KIT INCLUDES:

1 X LSLIVC KIT- INCLUDE THE DISPLAY ONLY, ENSURE INDICATOR LIGHTS ARE LED PILOT PANEL LIGHTS ONLY MAX 500mA only.
- PARTS NOT INCLUDED> CIRCUIT BREAKERS, EXTERNAL RELAY INTERLOCK, PLUG CONNECTORS,LED IND's.

Starter Motor Isolation Verification Control Module

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SW3- Alternator Reference Voltage

Features:

- **ALTERNATOR POSITIVE VERIFICATION & SYSTEM VOLTAGE REFERENCE**
  Measures / illustrates positive voltage with a visual status.
  The Alternator reference voltage device measures the positive feed from the isolator main supply to ensure as a cross reference system voltage check.
  The system has a visual reference voltage display for quick and easy voltage reference by eliminating hazardous testing situations or not having to pull apart guarding or using multi meters whilst the machine is running.
  The LCD display will show the current voltage status when ever the machine battery isolation switch is turned on.

- **ALTERNATOR “R” TERMINAL REFERENCE VOLTAGE**
  Measures / illustrates the “R” terminal reference voltage as well to confirm the alternators charge systems is functioning correctly., with the display as a second positive isolation and verifies with a visual status either ON/OFF if the system needs to be worked on.
  The system has a visual reference voltage display for quick and easy voltage reference by eliminating hazardous testing situations or not having to pull apart guarding or using multi meters whilst the machine is running.

- **OVER/UNDER VOLTAGE WARNING/ INDICATION & INTERLOCK**
  The control module measures and controls the over and under voltage status to protect not only the machine electrics but assists in the service life expectancy of the batteries, but protecting them from over and under voltage cell damage.
  12 volt application - When the system falls below 9 volts or above 15 volts
  24 volt application – When the system falls below 18 volts or above 30 volts
  In the case of over or under voltage is detected with a slosh period of 20 seconds, the control module in normal system operation will have a positive output to engage a relay, if an over or under voltage fault occurs or a system fault, the output signal will drop away after 20 seconds to open circuit the desired control system either key supply, ignition supply or start control wiring to prevent any further damage to the battery service life, with an external LED/ALARM combo to alert the operator.
SW3- Alternator Reference Voltage

Wiring Diagram

The ISOLATION VERIFICATION KIT INCLUDES-

1 X LSLIVC KIT- INCLUDE THE DISPLAY ONLY, ENSURE INDICATOR LIGHTS ARE LED PILOT PANEL LIGHTS ONLY MAX 500mA only.

- PARTS NOT INCLUDED> CIRCUIT BREAKERS, EXTERNAL RELAY INTERLOCK, PLUG CONNECTORS, LED IND’s.

Alternator Reference Voltage Verification Control Module

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Features,

- **VOLTAGE STATUS REFERENCE**

  Measures / illustrates positive voltage with a visual status.
  The system has a visual reference voltage display for quick and easy voltage reference by eliminating hazardous testing situations or not having to pull apart guarding or using multi meters whilst the machine is running.
  The LCD display will show the current voltage status when ever the machine battery isolation switch is turned on.

- **OVER/UNDER VOLTAGE WARNING/ INDICATION & INTERLOCK**

  The control module measures and controls the over and under voltage status to protect not only the machine electrics but assists in the service life expectancy of the batteries, but protecting them from over and under voltage cell damage.

  - **12 volt application - When the system falls below 9 volts or above 15 volts**
  - **24 volt application – When the system falls below 18 volts or above 30 volts**

  In the case of over or under voltage is detected with a slosh period of 20 seconds, the control module in normal system operation will have a positive output to engage a relay, if an over or under voltage fault occurs or a system fault, the output signal will drop away after 20 seconds to open circuit the desired control system either key supply, ignition supply or start control wiring to prevent any further damage to the battery service life, with an external LED/ALARM combo to alert the operator.

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**Battery Voltage**

- **26.8v**
  - **Charging System OK**

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SW4- Voltage Status Reference

Wiring Diagram

The ISOLATION VERIFICATION KIT INCLUDES-

1 X LSLIVC KIT - INCLUDE THE DISPLAY ONLY, ENSURE INDICATOR LIGHTS ARE LED PILOT PANEL LIGHTS ONLY MAX 500mA only.
- PARTS NOT INCLUDED> CIRCUIT BREAKERS, EXTERNAL RELAY INTERLOCK, PLUG CONNECTORS, LED IND’s.

Voltage Status Reference Control Module

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Isolation Verification Control  Part No- LSLIVC

Enclosure Dimensions