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SIS Quad Sense Short Installation Guide

For traffic signals requiring electrical disconnection under BS EN 12767, the SIS Quad disconnection system will provide complete isolation in under 0.2 seconds.

PSU and Monitor Boards
The SIS Quad equipment is designed to fit into a standard 3U rack, either within a signal controller cabinet or a separate MEC cabinet. The PSU will require a 240V mains supply rated at 3 amps, this will power to up to 8 monitor boards.

The monitor boards offer two modes of operation, normal and sense mode. Under normal operation the system will only isolate equipment following an impact, which will be indicated by a solid red channel LED. This can only be reset by repairing/replacing the damaged equipment and replacing/resetting the impact sensor. In sense mode the system will respond to an impact as per normal mode, but in addition it will also monitor a group of isolators controlling a single pole. If an isolator trips due to a wiring or equipment fault the system will register this and turn off all other isolators on that pole. The monitor board channel red LED will flash if this has occurred, to indicate why the channel has tripped. The default setting when supplied by NAL will be normal mode, sense mode can activated by a DIP switch on the monitor board (switches 5 to 8 corresponding to channels 1 to 4). The system will require a power down to make these changes. DIP switches 1 to 4 will turn off any unused channels.

The monitor boards have two fault outputs. The outputs are supplied normally open circuit, without power, going closed circuit with power on. F1 will go open circuit to indicate a pole strike or, and F2 will go open circuit to indicate sense activation or system fault. In the event of loss of power to the SIS system both F1 and F2 will give an open circuit output. Fault outputs can also be changed to open circuit by moving the two jumpers on the monitor board. Note It is important that any unused channels are switched off.

Isolators
The system will require a number of isolators, usually mounted on high hat DIN rail in the back of the controller cabinet or MEC. The isolators are arranged in vertical rows in pole order, with pole 1 at the top left. There must be sufficient isolators to enable all cores to a pole to be disconnected on impact. To achieve this we supply isolators in 2, 3, 4 and 5 pole versions, combinations of up to 6 isolators will provide enough terminations for all equipment on the traffic signal pole.

The isolators have shunt trips on the left hand side which are soft wired to the Quad board backplane. Where there is more than one isolator for a signal pole, the additional isolators will be connected in parallel so that they all are tripped together. The system can cope with up to 6 isolators wired together, giving a possible 30 connections.
Note
Under certain exceptional conditions ELI testing could possibly cause SIS isolators to trip. In this situation we would advise using separate cable cores for testing or the "Soft Test" option if available.

Sensor Cabling
Each traffic signal pole will require one impact sensor, which requires two cable cores. With the now widespread introduction of ELV sites it is now no longer necessary to have a separate cable for the two cores required for the impact sensor. Any two spare cores in a multi-core cable can be used providing it is ELV .If the site should be LV then a separate sensor cable will be required, a one pair loop feeder cable is recommended.
The sensor inputs are soft wired from a terminal block to the monitor board backplane, if NAL carry out the installation this will all be prewired before delivery to the customer.

Testing
As the SIS system has an independent power supply to the signal controller the signal lamps can remain off whilst the system is tested.

Once all items comprising the SIS system are connected all isolators should be switched on. Then the SIS system should be powered up, the yellow flashing LED on the front of the monitor board will indicate the system is running. The SIS system will at power up learn the state of all the isolators. It is now possible to test the full functions of the installed SIS system. Note: Functions will be dependent on DIP switch settings.

Each pole fitted with an impact sensor should be visited and the sensor operated by hand, or disconnected to create an open circuit to simulate sensor operation. It is preferable to operate the sensor itself where practicable.
With the sensor operated or an open circuit created, the SIS system should be checked to ensure the correct red channel LED is lit and steady and that the correct isolators have tripped. Whilst the open circuit remains the isolators should be operated to ensure they will not reconnect whilst an open circuit is present.

These tests should be carried out on all poles fitted with isolators before any signals are illuminated.

For more details please see the SIS Quad manual.