

Specifications for MSR9-NI Pilot Wire Relay

To continuously monitor the resistance of the *earth bond*, an electrical measuring signal is fed into the *earth conductor* via a separate *pilot wire*. To cater for the possibility of a short between this pilot and the earth, a *remote module* must be employed.

A loop now exists, consisting of the *pilot wire*, the *remote module* and the *earth wire* in the cable. An intrinsically safe signal is injected into the loop and, by interpreting the voltage and the current flowing, the resistance can be monitored: see Fig 1. The energy level of an intrinsically safe signal is so low that dangerous gases like hydrogen or methane cannot be ignited by it.

Depending on factors such as the length of the supply cable, the nature of the load, variable speed drives or very heavy loads, and the location of the installation, a range of noise signals can be induced or injected into the loop: the signals can vary from high frequency generated by thyristor switching, to 50Hz with an amplitude of up to 50V. New generation relays use a micro controller to filter this noise digitally enabling relays to operate normally with high noise levels.

The **MSR9-NI** is designed to operate in environments with high electrical noise levels, it is immune to electrical noise with an amplitude of up to 12 volts. When the relay detects noise levels above 12 volts it switches to its *restricted operation mode*, in this mode loop resistance measurement is suspended. If the relay is energised the load can be switched off or if the relay is not energised the load can not be switched on while noise levels greater than 12 volts exist. The MSR9-NI automatically reverts to *full operation mode* when noise levels drop to 12 volts or below. Note that when the MP130-NI is used as a replacement for the MSR9-NI in existing installations the remote module must be changed at the same time.

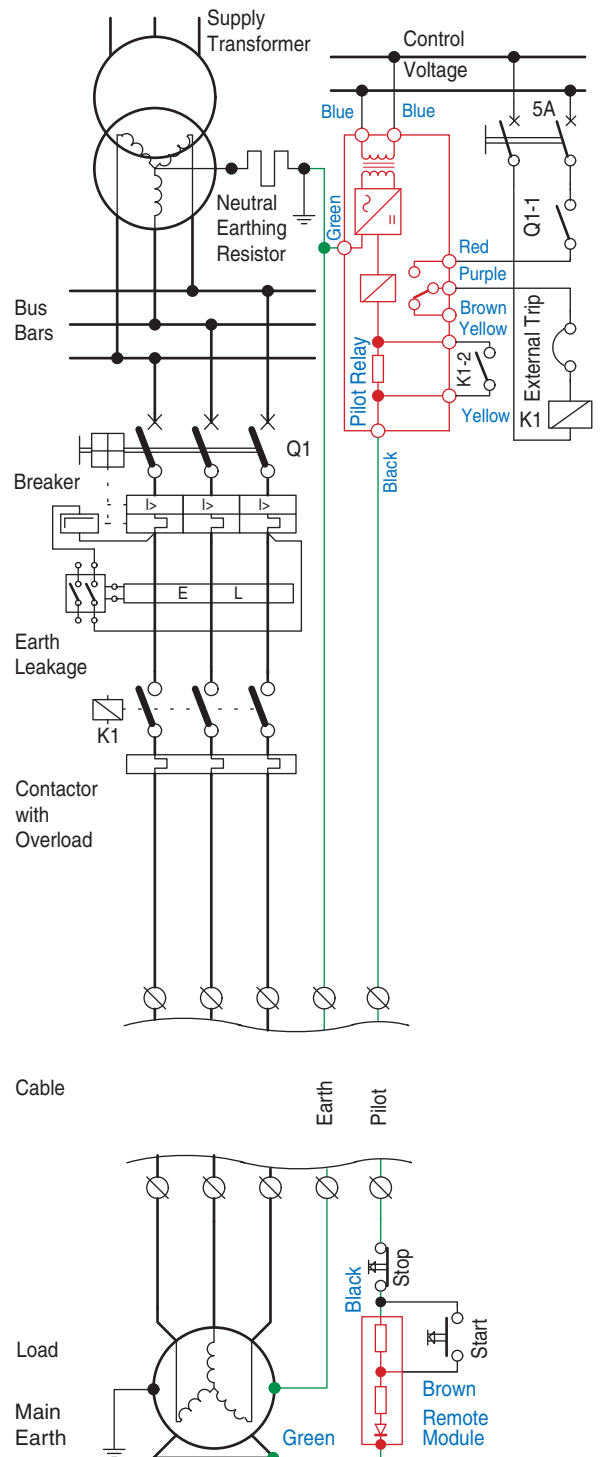


Fig 1
Pilot Wire Control Relay with 3-Wire Module provides continuity sensing & remote control.
Note: The relay shown above is in the OFF state.

Specifications for MSR9-NI Pilot Wire Relay

Control Voltage (Vnom): 550Vac +20% -30% (Orange case)
 380Vac +20% -30% (Orange case)
 220Vac +20% -30% (Red case)
 110Vac +20% -30% (Grey case)
 24Vac +20% -30% (Brown case)

Earth loop detection: 100Ω ± 20%

Electrical noise immunity
 Full operation: <12Vac
 Restricted operation: >12Vac -50Vac

Short circuit detection: if short circuit resistance < 3KΩ

Line-to-pilot fault withstand time

5A restricted earth systems: <2sec

Output Contacts: One potential free C/O rated at 5A 525Vac

Indicators
 Relay not energised: Red - On continuously.
 Relay energised: Red - One flash per second.
 Short circuit detected: Red - Three fast flashes repeated every sec.

Max ambient temp: 45°C

Relay Burden: 10VA

Compliance standard: Complies with the requirements of the
 A.A.C.; Specification 540/1 issue 3
 Classification: SABS Intrinsically safe
 [Ex ib] I/IIc I.A. No. SABS MS/09-636AX

Operation modes
 Loop sensing only: 2-wire Remote Module
 Loop sensing with remote control: 3-wire Remote Module + Pushbutton Station

Compatibility: Direct replacement for MSR9 relays.

Ordering:

Stock No	Description
5001-007	MSR9-550V-NI Pilot Wire Relay (Orange)
5001-009	MSR9-380V-NI Pilot Wire Relay (Orange)
5001-008	MSR9-220V-NI Pilot Wire Relay (Red)
5001-014	MSR9-110V-NI Pilot Wire Relay (Grey)
5001-011	MSR9-24V-NI Pilot Wire Relay (Brown)
5001-010	MSR Connection Leads
5001-003	MSR Pushbutton Station (Yellow)
5001-004	MSR 2-Wire Module (Blue)
5001-005	MSR 3-Wire Module (Blue)

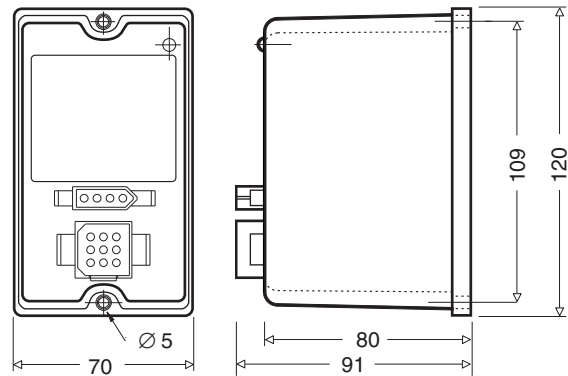
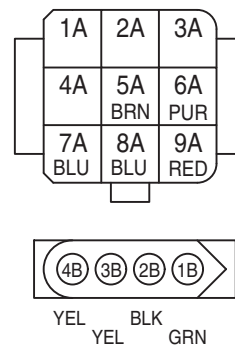


Fig 2
Dimensions of relay (in mm)



1A. - :	Not used	1B. Green :	Earth
2A. - :	Not used	2B. Black :	Pilot
3A. - :	Not used	3B. Yellow :	Feedback
4A. - :	Not used	4B. Yellow :	Feedback
5A. Brown :	N/C-1		
6A. Purple :	Common-1		
7A. Blue :	Supply		
8A. Blue :	Supply		
9A. Red :	N/O-1		

Fig 3
MSR9-NI Plug Connections

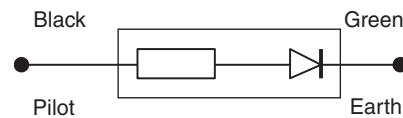


Fig 4
2-Wire Remote Module Connection Diagram

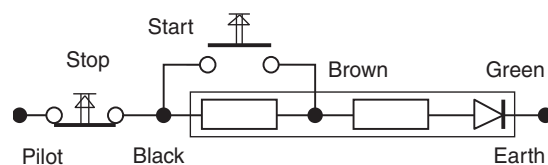


Fig 5
3-Wire Remote Module Connection Diagram