

TECHNICAL BULLETIN 1

Safety Relay Module Replacements

Issued by:	Paul Curry		
Date:	22/03/22	Revision:	C
Applies to:	MSR6R/T	(Section 2)	
	PNOZ X2 & X3	(Section 3)	
	BD5935	(Section 4)	
	XPS-AL5110	(Section 5)	
	Omron G9SE-401/DOLD LG5925.04	(section 6)	
Used on:	Various		
Distribution:	Service Engineers, on request.		

1 Introduction

This bulletin provides details for replacing obsolete Safety Relay Modules.

Preferred replacement for older machines, with 24VAC control voltages, is:

- Allen-Bradley, MSR127R
- XYZ Pn: 12628

(Note MSR127RP is identical except for plug-in terminals).

LED Indicators:

PWR: Lit green when unit is powered.

Flashes Green if there is a fault in the E-stop button wiring.

CH1: Lit green when o/p channel 1 is closed.

CH2: Lit green when o/p channel 2 is closed.

Both CH1 and CH2 should be unlit when the unit is first powered up, or the E-stop button is pressed.

Both CH1 and CH2 should be lit after the unit is reset.

There is no user replaceable fuse. External E-stop switch wiring is protected by a self-resetting fuse. If PWR light is not lit, but there is 24V across terminals A1-A2, there is a fault in the E-stop switch wiring. Once the fault is corrected, the fuse will reset automatically.



2 Replacing Allen-Bradley, Guardmaster MSR6R/T

- Used on: Most ProtoTrak and King Rich Manual machines, before March 2016
- XYZ Part Number: 3157

Transfer wiring as per the table below (to avoid making mistakes, it is recommended to transfer one wire at a time):

MSR6R/T Terminals	MSR127R Terminals	Notes
A1	A1	24VAC
A2	A2	0V
S13	S12	ESTOP SW2
S14	S11	
N/A	Link S52-S11	
S23	S21	ESTOP SW3
S24	S22	
X1	S12	RESET
X2	S34	
13	13	Safety O/p 1
14	14	
23	23	Safety O/p 2
24	24	
33	33	Safety O/p 3
34	34	
41	41	No Connection (Auxiliary, NC o/p)
42	42	

3 Replacing 24VAC/DC PILZ PNOZ X2 and X3

- Used on: Various PT 3 machines
- XYZ Part Number: 1733 (X2 model)

NOTE: THIS APPLIES TO THE 24V VERSION ONLY (110VAC version is PNOZ 16s, XYZ PN 1734)

Transfer wiring as per the table below:

PNOZ X2	PNO X3	MSR127R Terminals	Notes
A1		A1	24VAC
A2		A2	0V
S11	S31	S11	ESTOP SW2
S12	S32	S12	
N/A		Link S52-S11	
S21		S21	ESTOP SW3
S22		S22	
S33		S12	RESET
S34		S34	
13		13	Safety O/p 1
14		14	
23		23	Safety O/p 2
24		24	
N/A	33	33	Safety O/p 3
N/A	34	34	
N/A	41	41	Used on PRO 360 (Inverter S3 input)
N/A	42	42	

4 Replacing Dold BD5935

- Used on: Not a standard fitment. May be fitted by non-XYZ service personnel.
- XYZ Part Number: Not a stocked item

Transfer wiring as per the table below:

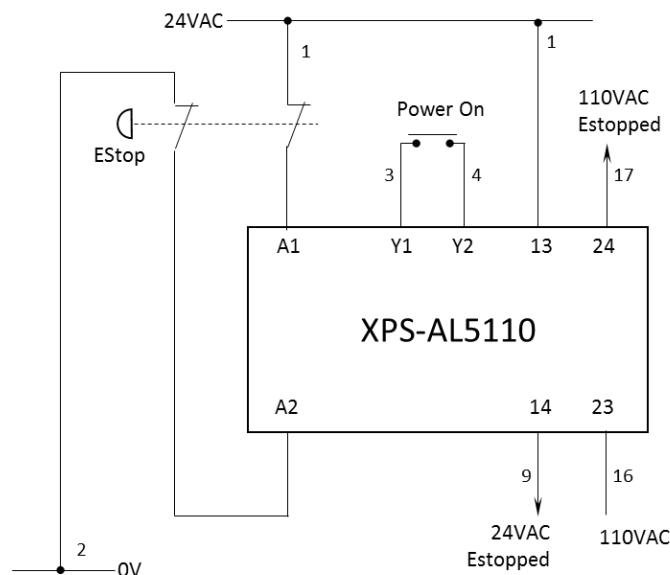
BD5935 Terminals	MSR127R Terminals	Notes
A1	A1	24VAC
A2	A2	0V
S11	S11	ESTOP SW2
S12	S12	
N/A	Link S52-S11	
S21	S21	ESTOP SW3
S22	S22	
S33	S12	RESET
S34	S34	
13	13	Safety O/p 1
14	14	
23	23	Safety O/p 2
24	24	
33	33	Safety O/p 3
34	34	
41	41	No Connection (Auxiliary, NC o/p)
42	42	

5 Replacing Telemecanique/Schneider Preventa XPS-AL5110

- Used on: XYZ1500 (pre approx. yr2000)
- XYZ Part Number: 6315

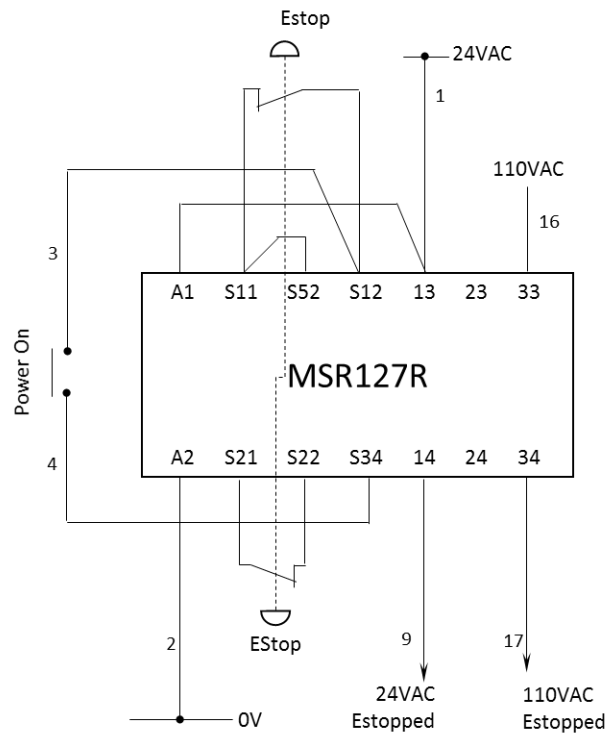
Note: Many of these machines may have already had the XPS-AL5110 relay replaced with the Guardmaster MSR6R/T. If so, see section 2 for details of replacement.

5.1 Original Wiring:



5.2 New Wiring:

- Relay:



- E-Stop Switch:



5.3 Wiring List:

1. Safety Relay Wiring:

Original Wire No	XPS-AL5110 Terminal	MSR127R Terminal	Notes
1	13	13	24VAC
		Link to A1	
9	14	14	24VAC Estopped
3	Y1	S12	Power On
4	Y2	S34	
16	23	33	110VAC
17	24	34	110VAC Estopped
N/A	N/A	Link S11 to S52	Unique to MSR127R
N/A	N/A	A2	New wire; connect to 0V

2. E-stop Switch Wiring

Original Wire No	Switch Panel	MSR127R Terminal	Notes
1	Estop switch 1, Terminal 2	No connection	Remove the two wires from the Estop switch, connect together and insulate.
2	Estop switch 2, Terminal 2	No connection	Remove any wires marked 2 from the E-stop switch, connect together and insulate.
BLACK	Estop switch 1, Terminal 1	S11	Estop SW1-1 (Was connected to XPS-AL, A1)
BLACK	Estop switch 2, Terminal 1	S21	Estop SW2-1 (Was connected to XPS AL, A2)
New wire	Estop switch 1, Terminal 2	S12	Estop SW1-2 (was connected to "1")
New wire	Estop switch 2, Terminal 2	S22	Estop SW2-2 (was connected to "2")

6 Omron G9SE and DOLD LG5925.04

6.1 Application

- OMRON G9SE used on: All LR and HD VMCs, RLX lathes, KMX mills and Kitagawa Quinte on RMX.
- XYZ PN: 15052

In March 2022, supply shortages of the Omron G9SE safety relay module forced the use of an alternative device for spares, as an interim measure:

- DOLD LG5925.0
- XYZ PN: 19300

6.2 Wiring - General

When replacing the Omron G9SE with the DOLD LG5925 (or vice versa) use the following wiring table. To avoid making a mistake, swap over one wire at a time:

G9SE Terminals	LG5925 Terminals	Notes
A1	A1	24VDC
A2	A2	0V
T11	S11	ESTOP Switch Ch 1
T12	S12	
T21	S21	ESTOP Switch Ch 2
T22	S22	
13	13	Safety O/p 1
14	14	
23	23	Safety O/p 2
24	24	
33	33	Safety O/p 3
34	34	
43	43	Safety O/p 4
44	44	
X1	See section 6.4	Auxiliary o/p

6.3 Reset Circuit:

The reset circuit is configured differently depending on whether the module is used for:

- E-stop Monitored Manual Reset

- Door Guard: Automatic reset

E-STOP APPLICATION (manual reset)		
G9SE Terminals	LG5925 Terminals	Notes
T31	S33	Reset Button (inc. NC contacts)
T32	S34	
T33	A1	The wire T33 is connected 24VDC, connect to A1 to avoid short circuits and allow a G9SE to be fitted again. Set Switches as follows: <ul style="list-style-type: none"> • S1 = With Cross Fault Detection • S2 = Manual Start

DOOR GUARD APPLICATION (Automatic reset)		
G9SE Terminals	LG5925 Terminals	Notes
T31	S33	EDM Loop (NC contacts)
T33	S34	
T32	A1	The wire T32 is connected 24VDC, connect to A1 to avoid short circuits and allow a G9SE to be fitted again. Except for HD and LR, see section 6.4. Set Switches as follows: <ul style="list-style-type: none"> • S1 = With Cross Fault Detection • S2 = Automatic Start

Test the E-Stop/door safety functions when finished. In particular:

1. Check the E-stop safety relay does NOT automatically reset when the E-stop button is released (S2 = Manual start),
2. Check the door safety relay automatically resets when the door is closed (S2 = automatic start).

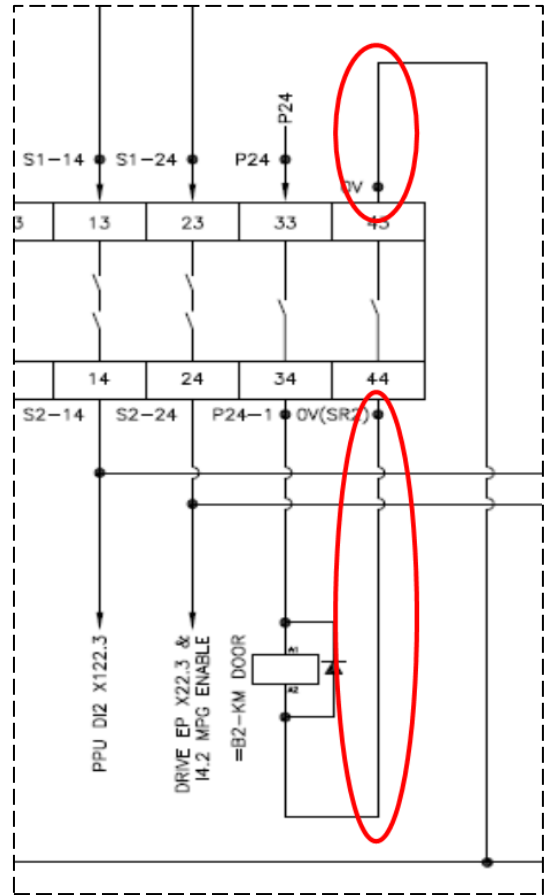
Photograph of finished installation (this one is an LR door application and so has the 0v/0v(SR2) modification – section 6.4). Note, cover removed to get access to S1 and S2:



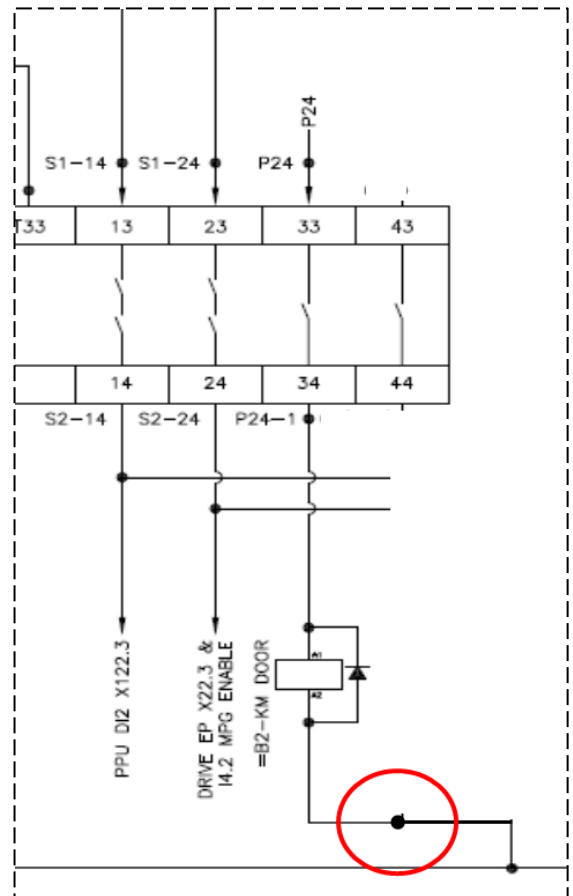
6.4 Auxiliary Output

The auxiliary output is used on door application on LR and HD machines only. There is no Aux O/P on the DOLD LG5925, hence some wiring mods are required:

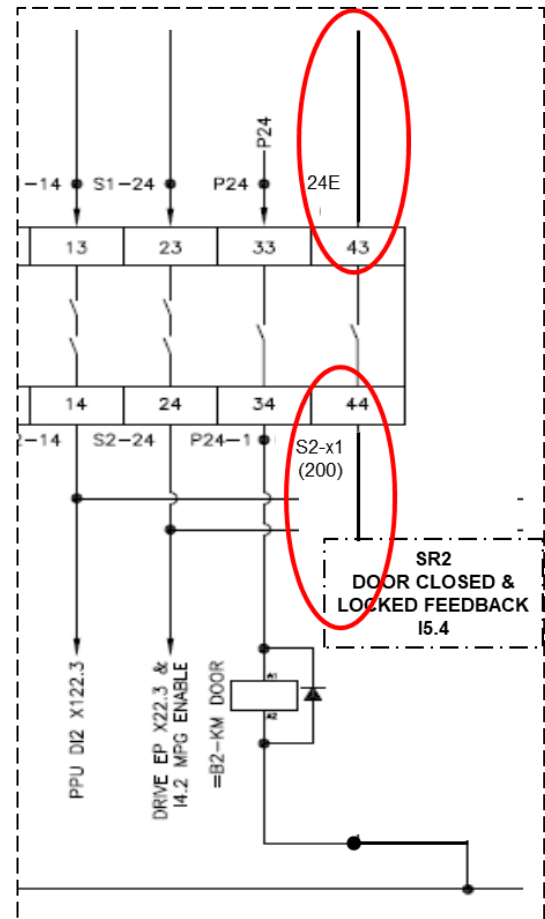
1. Wire up the DOLD unit as per the wiring tables in sections 6.2 and 6.3
2. Remove the "0V" wire from terminal 43 and the "0V(SR2)" wire from terminal 44.



3. Join together using a suitable connector block (e.g XYZ PN 16296) so that the wiring looks like this:



1. Connect the wire "24E" (was in terminal T32 of G9SE) to terminal 43.
2. Connect the wire S2-X1(200)" (was in terminal X1 of G9SE) to terminal 44. Wiring should look like this:



3. Test Door safety function. In particular, check the door safety relay automatically resets when the door is closed (S2 = automatic start).

7 Revision History

Revision	Date	Notes
C	22/03/2022	Add Omron G9SE-401 <-> DOLD LG5925. Title was" E-stop Safety Relay Replacements".
B	04/05/2018	Add Dold BD5935 (discovered on a KR SM1500 – user replacement?)
A	29/02/2016	Update for MSR127R as standard safety relay
-	03/10/2000	1 st release - Preventa XPS-AL5110 to MSR6R/T