



5/281 Sandgate Road
 Albion Q 4010
 PO Box 148
 Grange Q 4051
 AUSTRALIA

P: +61 7 3262 5880
 F: +61 7 3262 5884
 info@redbusbar.com
 www.redbusbar.com

RightSwitch 32 Installation & Operation Manual

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1 Overview

RightSwitch ensures that the correct switch is isolated prior to working on electrical equipment.

RightSwitch matches field located equipment to its associated MCC mounted, isolation switch. It also adds field indication to a DeadEasy installation. Together they confirm that the correct switch has been correctly isolated.

Part#	Description	Application
RS32HMI	RightSwitch Indicator	HMI including Red, Green and Amber LEDs for mounting adjacent to switch room isolation switch
RS32KS	RightSwitch Key Switch	Key switch for identity request
RS32II	RightSwitch Isolator Indicator	Amber LED for identity indication
RS32M	RightSwitch MCC PCB	MCC printed circuit board, connects to DeadEasy, RightSwitch Indicator and cable to Field Panel, uses indicator for mounting
RS32F	RightSwitch Field Panel PCB	Field Panel printed circuit board, connects to DeadEasy Indicator and cable to MCC, uses indicator for mounting
RS32HMIC	RightSwitch Indicator Cable	Cable to connect between MCC printed circuit board and RightSwitch Indicator as well as Field Panel printed circuit board and DeadEasy Indicator

Table 1

RightSwitch facilitates lockout procedures involving both single and multiple isolation officers. Single isolation officers utilise the key switch and LED indicator as part of the isolation procedure. In the case of multiple isolation officers, one in the field and another at the MCC, they need not use the key switch and LED indicator as Field Panel, green and red LED transitions can be simultaneously matched with isolation switch transitions.

1.1 Single Isolation Officer

A single isolation officer must match the isolation switch to the field equipment without being able to be at both locations to witness LED transitions, at the same time. In addition, identity confusion must be prevented should multiple isolations be attempted simultaneously. To accommodate these difficulties the officer utilises the key switch to request an identity check at a specific location. The officer then moves to the corresponding LED indicator location to confirm LED operation. The key switch and LED indicator correlation verifies the match of the isolation switch and field equipment.

The location of the key switch and the LED indicator may be swapped to minimise back and forth isolation officer movements. Figure 2 illustrates the suggested arrangement where it is more convenient to commence and complete isolation procedures at the MCC. This may be due to office areas, where staff spend most of their time, being nearest to switch rooms. This is referred to as an "MCC First" installation

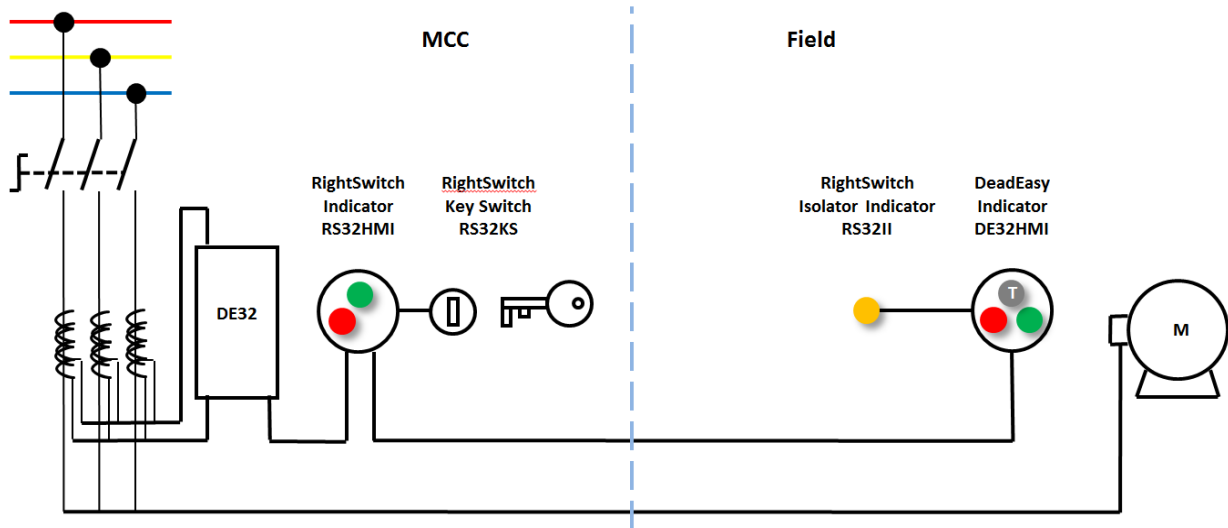


Figure 2 – DeadEasy and RightSwitch – “MCC First” Installation

1.2 Multiple Isolation Officers

In the case where staff arrive at the field equipment location prior to the switch room, locating the key switch in the RightSwitch Field Panel and the LED on the MCC may be more practical. This is referred to as a “Field First” installation. Refer Figure 3.

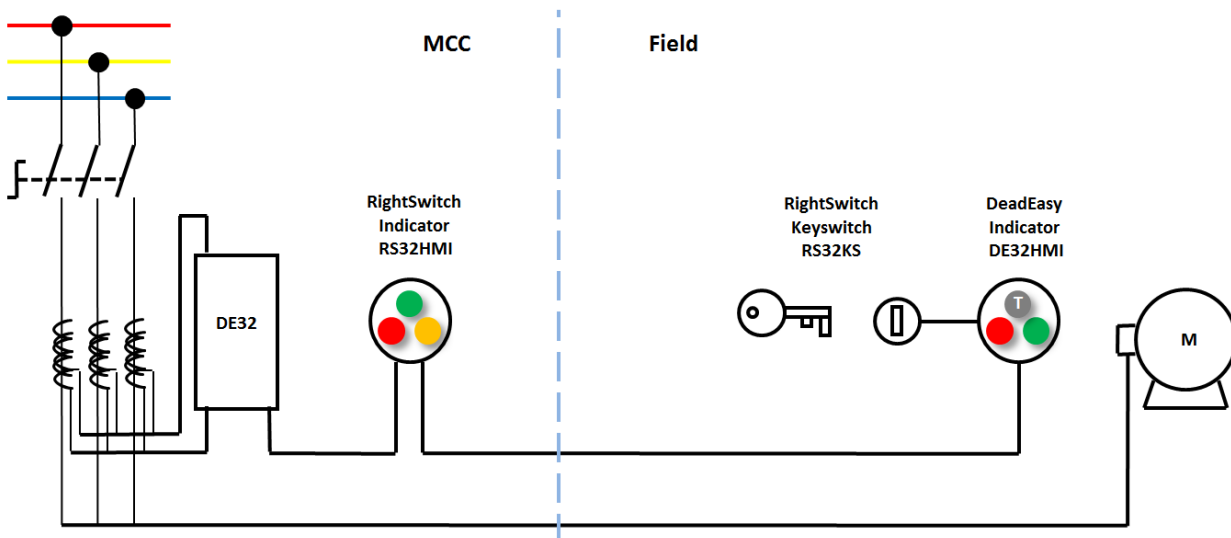


Figure 3 – DeadEasy and RightSwitch – “Field First” Installation

2 Warnings

Please note the following warnings in relation to the installation and operation of RightSwitch:

1. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
2. Refer to the DeadEasy Installation and Operation Manual for DeadEasy Warnings
3. The RightSwitch Isolation Verification Procedure must be adhered to in order to correctly prove the isolation is sound. Should the LED indications deviate from the Isolation Verification Procedure in any way, the user should contact a qualified person to rectify the problem. Until this time the isolation should be regarded as unverified and therefore unsafe.
4. All wiring must be installed by a licensed electrician and in accordance with national standards.

3 Installation

RightSwitch incorporates the following components:

- RightSwitch Indicator
- MCC Printed Circuit Board
- Field Panel Printed Circuit Board
- Key switch
- Amber LED
- HMI Cat 5 Cables

The following site supplied materials will be required to complete the installation:

- Unshielded Twisted Pair (CAT 5 or 6 cable)

Prior to commencing the installation the installer needs to know whether:

- MCC First or Field First lockout procedures will be performed

Refer to the Section 1 Overview for guidance on the above items

3.1 MCC and Field Panel Installation

MCC and Field Panel installation steps are detailed below for both MCC First and Field First arrangements. The installation method assumes that the MCC and field panel are installed prior to commencing the installation of RightSwitch.

Note that the RightSwitch Indicator incorporates an Amber LED. As a result the Field First installation does not require mounting of the separate Amber LED (RS32II).

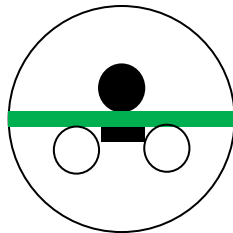


Figure 4 – DeadEasy HMI Orientation

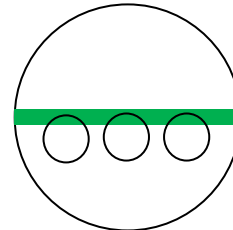


Figure 5 – RightSwitch Indicator Orientation

3.1.1 MCC First Installation

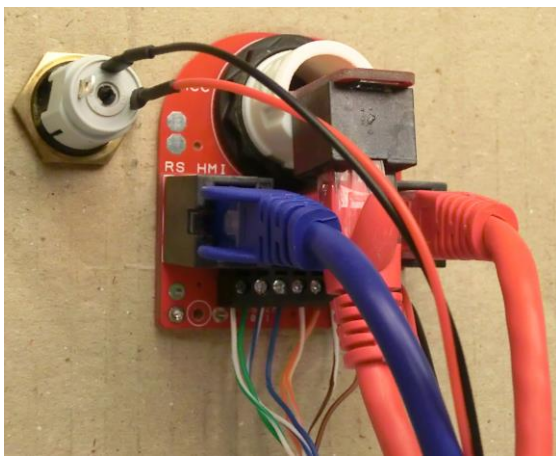


Figure 6 – MCC First - MCC Internal Arrangement



Figure 7 – MCC First - Field Panel Internal Arrangement

In the case of the MCC First arrangement, the following detailed installation procedure is recommended:

1. At the MCC, remove the DeadEasy Indicator (DE32HMI) from the MCC
2. Mark and drill a 16mm hole at the RightSwitch Key Switch (RS32KS) location in the MCC adjacent to the hole (within 200mm) left after removing the DeadEasy Indicator (DE32HMI)
3. Install the RightSwitch Key Switch (RS32KS) in the MCC with the key hole in a vertical orientation
4. Install the RightSwitch Indicator (RS32HMI) with RightSwitch MCC PCB (RS32M) attached, into the MCC using the orientation shown in Figure 5.
5. Plug the key switch into the "SW" connector on the RightSwitch MCC PCB (RS32M)
6. Plug the DeadEasy HMI cable (DE32HMIC) into the RJ45 connector labelled "DE32" on the RightSwitch MCC PCB (RS32M)
7. Plug a RightSwitch HMI cable (RS32HMIC) into the RightSwitch Indicator (RS32HMI) and into the RJ45 connector labelled "RSHMI" on the RightSwitch MCC PCB (RS32M)
8. Set the MCC First/Field First selector switch on the RightSwitch MCC PCB (RS32M) to "MF"
9. Attach the MCC First Isolation Procedure label to the MCC adjacent to the RightSwitch Indicator (RS32HMI)
10. At the Field Panel, mark and drill the positions for an 8mm hole (Amber LED RS32II) and a 25mm hole (DeadEasy HMI DE32HMI) in the Field Panel.
11. Install the Amber LED (RS32II) into the Field Panel
12. Install the DeadEasy Indicator (DE32HMI) with RightSwitch Field PCB (RS32F) attached, into the Field Panel using the orientation shown in Figure 4.
13. Plug the Amber LED (RS32II) into the "LED" connector on the RightSwitch Field Panel PCB (RS32F)
14. Plug a RightSwitch HMI cable (RS32HMIC) into the DeadEasy Indicator (DE32HMI) and into the RJ45 connector labelled "DEHMI" on the RightSwitch Field PCB (RS32F)
15. Set the MCC First/Field First selector switch on the RightSwitch Field Panel PCB (RS32F) to "MF"
16. Attach the MCC First Isolation Procedure label to the Field Panel adjacent to the DeadEasy Indicator (DE32HMI)

3.1.2 Field First Installation

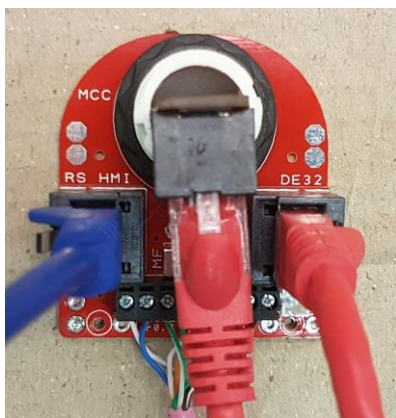


Figure 8 – Field First - MCC Internal Arrangement

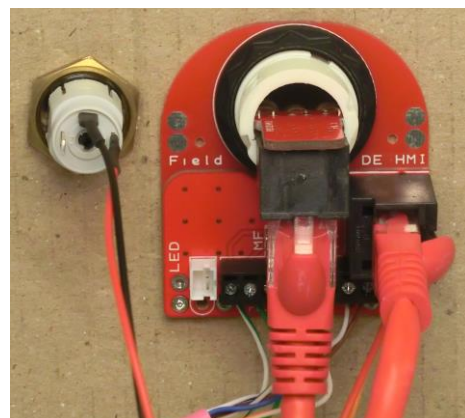


Figure 9 – Field First - Field Panel Internal Arrangement

In the case of the Field First arrangement, the following detailed installation procedure is recommended:

1. At the MCC, remove the DeadEasy Indicator (DE32HMI) from the MCC
2. Install the RightSwitch Indicator (RS32HMI) with RightSwitch MCC PCB (RS32M) attached, into the MCC using the orientation shown in Figure 5.

3. Plug the DeadEasy HMI cable (DE32HMIC) into the RJ45 connector labelled "DE32" on the RightSwitch MCC PCB (RS32M)
4. Plug a RightSwitch HMI cable (RS32HMIC) into the RightSwitch Indicator (RS32HMI) and into the RJ45 connector labelled "RSHMI" on the RightSwitch MCC PCB (RS32M)
5. Set the MCC First/Field First selector switch on the RightSwitch MCC PCB (RS32M) to "FF"
6. Attach the Field First Isolation Procedure label to the MCC adjacent to the RightSwitch Indicator (RS32HMI)
7. At the Field Panel, mark and drill adjacent holes (within 200mm) that comprise a 25mm hole at the DeadEasy Indicator (DE32HMI) location and a 16mm hole at the RightSwitch Key Switch (RS32KS) location in the Field Panel
8. Install the RightSwitch Key Switch (RS32KS) in the Field Panel with the key hole in a vertical orientation
9. Install the DeadEasy Indicator (DE32HMI) with RightSwitch Field PCB (RS32F) attached into the Field Panel using the orientation shown in Figure 4.
10. Plug the RightSwitch Key Switch (RS32KS) into the "SW" connector on the RightSwitch Field PCB (RS32F)
11. Plug a RightSwitch HMI cable (RS32HMIC) into the DeadEasy Indicator (DE32HMI) and into the RJ45 connector labelled "DEHMI" on the RightSwitch Field PCB (RS32F)
12. Set the MCC First/Field First selector switch on the RightSwitch Field Panel PCB (RS32F) to "FF"
13. Attach the Field First Isolation Procedure label to the Field Panel adjacent to the DeadEasy Indicator (DE32HMI)

3.2 Field Cable Installation

The following detailed electrical installation procedure is recommended:

1. Install the Unshielded Twisted Pair cable from the RightSwitch Indicator in the MCC to the DeadEasy Indicator in the Field Panel
2. Terminate the Unshielded Twisted Pair cable at the RightSwitch Indicator in the MCC and the DeadEasy Indicator in the Field Panel taking care to terminate individual cable cores in an identical sequence at both locations

3.3 Post Installation Testing

RightSwitch can be commissioned by simply stepping through the RightSwitch isolation procedure as detailed on the Isolation Verification Procedure labels. If indication differs from the label, it is to be investigated and corrected before placing DeadEasy and RightSwitch into service.

4 Operation

The RightSwitch Isolation Verification Procedure is provided with each RightSwitch in the form of self adhesive labels. Depending on whether the installation is a MCC First or Field First arrangement, different lockout procedures will apply. Refer to the Section 1 Overview for guidance on MCC First or Field First arrangements.

Figures 10 and 11 below depicts both MCC First and Field First labels respectively.

Isolation Verification Procedure					
Location	Step	Power	Key	Self Test	LED
MCC	1	I	O	-	●
	2	O	O	-	●
	3	O	I	-	●
Field	4	O	I	-	● + ●
	5	O	I	Touch	● + ●
MCC	6	O	O	-	●

DANGER

Isolation Verification Procedure must illuminate required LED only.
If in doubt, call an electrician.

Figure 10 – MCC First Procedure Label

Isolation Verification Procedure					
Location	Step	Power	Key	Self Test	LED
Field	1	I	O	-	●
	2	I	I	-	●
MCC	3	I	I	-	● + ●
	4	O	I	-	●
Field	5	O	I	Touch	●
	6	O	O	-	●

DANGER

Isolation Verification Procedure must illuminate required LED only.
If in doubt, call an electrician.

Figure 11 – Field First Procedure Label

The “Self Test” is activated by placing an object (or the operators hand) within 10mm of the Field Panel’s DE32HMI lens cap. The “Self Test” is active while ever the object is positioned in front of the lens cap. This allows the user to witness the transition from the green to the red LED and back to the green LED. This confirms that DeadEasy is still functional after it has reported the test result and therefore establishes that the isolated result, previously reported, is of high integrity.

Should the above procedure be followed and LED lamp indication is different to that identified in the procedure, a problem with either the power supply, isolation, DeadEasy or RightSwitch has been identified. Qualified electrical personnel in these circumstances should perform a thorough inspection of the installation.

5 Maintenance

5.1 Cleaning

To clean RightSwitch, wipe down with a soft cloth that is lightly dampened with water. Do not submerge in water or use chemical or abrasive cleaners.

5.2 Calibration

The Self Test function, by nature, performs a check of all external and internal circuitry. On this basis frequent calibration is unnecessary. However, a calibration check every 5 years or less is recommended.

6 Specifications

Application	Matching of electrical field equipment to switch room located, MCC based isolation switches.
Power Supply	Nil – Powered from DeadEasy
Human Machine Indicator (RS32HMI)	<p>Super Bright (clear when off) LEDs as follows:</p> <ul style="list-style-type: none"> • De-energised – Green • Energised – Red • Key Switch Match – Amber <p>Size - Standard 22.5mm Diameter x 50D, 7/8" Diameter x 2' D Temperature - 0C to 70C, 32F to 158F Ingress Protection – IP66, NEMA 4X</p>
MCC Printed Circuit Board (RS32M)	<p>MCC printed circuit board, connects to:</p> <ul style="list-style-type: none"> • DeadEasy Module • RightSwitch Indicator • Cable to Field Panel • Key Switch <p>Size – 55mm, 2'1/8" H x 48mm, 1' 7/8" W Temperature - 0C to 70C, 32F to 158F Mounting – Attaches to HMI</p>
Field Panel Printed Circuit Board (RS32F)	<p>Field Panel printed circuit board, connects to:</p> <ul style="list-style-type: none"> • DeadEasy Indicator • Cable to Field Panel • Key Switch • Amber LED <p>Size – 55mm, 2'1/8" H x 48mm, 1' 7/8" W Temperature - 0C to 70C, 32F to 158F Mounting – Attaches to HMI</p>
Key switch (RS32KS)	<p>Key trapped in "On" position Ingress Protection - IP67, NEMA 6, Temperature - -20C to 65C, -4F to 149F, Size – 16mm Diameter Cutout x 38D, 5/8" Cutout Diameter x 1' 1/2"D Cable Length – 0.3m, 1ft</p>
Isolator Indicator (RS32II)	<p>Amber LED Ingress Protection - IP66, NEMA 4X Temperature - 0C to 85C, 32F to 185F Cutout – 8mm Diameter, 3/8" Diameter Cable Length – 0.3m, 1ft</p>
RightSwitch Indicator Cable (RS32HMIC)	<p>CAT 5 Patch lead Cable Length – 0.3m, 1ft</p>
Fault Tolerance	<p>Green & Red LEDs series connected with DE32HMI. Refer to DeadEasy datasheet for more information.</p>
MCC to Field Panel Cable (site supplied)	<p>CATV, Maximum Length = 500m, 1640ft, RJ45 connector terminated</p>
Approvals	<p>Refer to DeadEasy Approvals</p>

Table 2

7 Troubleshooting

Table 3 below aims to provide a means to quickly troubleshoot any problem that you may be experiencing with DeadEasy operations.

Symptom	Possible Cause	Remedy
Amber LED not operating as per the isolation verification procedure	Indicator / Field Panel printed circuit board selector switch conflict	Check required configuration and set selector switches correctly
Or	Wiring incomplete	Check key switch and amber LED connections to Indicator / Field Panel printed circuit boards. Check the CAT V cable for short circuit, open circuit and cross connections using a LAN cable tester
RightSwitch LED indication conflicting DeadEasy LED indication	Faulty LED or key switch	Test LED and key switch, or swap with known working unit, to identify faulty component and replace
	Faulty Indicator / Field Panel printed circuit board	Swap with known working unit to identify faulty component and replace

Table 3