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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 <u>correct switch</u> has been <u>correctly isolated</u>.

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

Table 1

RightSwitch facilitates lockout procedures involving both multiple and single isolation officers.

1.1 Multiple Isolation Officers

Where site isolations are performed by multiple isolation officers, one located in the field and the other at the MCC isolation switch connected via a two way radio, operation of the MCC isolation switch and DeadEasy and RightSwitch indications can be observed at the same time. In this case, use of the key switch and the Amber LED indicator is unnecessary. Figure 1 illustrates the suggested arrangement.





1.2 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 DeadEasy LED transitions, at the same time. In addition, identity

confusion must be prevented should multiple equipment 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 DeadEasy and Amber LED indicator location to confirm DeadEasy and Amber LED operation. The key switch and Amber LED indicator correlation verifies the match of the isolation switch and field equipment.

The location of the key switch and the Amber LED indicator may be swapped at installation 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 because 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 – Single Isolation Officer "MCC First" Installation

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 – Single Isolation Officer "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:

- Single Isolation Officer MCC First, lockout procedures will be performed, or
- Multiple or Single Isolation Officer Field First, lockout procedures will be performed

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

3.1 Mechanical Installation

The DeadEasy and RightSwitch Human Machine Interface comprise a 22.5mm diameter circular indicator lamp holder. It is installed through a hole as depicted in Figure 4 and is retained by a lamp holder, back nut.



Figure 4 – DeadEasy and RightSwitch Human Machine Interface Front View Cutout

Orientate the DeadEasy Human Machine Interface with the black LED on top as shown in Figure 5a. 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). Orientate the RightSwitch Human Machine Interface with the PCB on top as shown in Figure 5b.



Figure 5a – DeadEasy HMI Orientation



Figure 5b – RightSwitch Indicator Orientation

Additional mounting (if required) is as follows:

- Key Switch (RS32KS) = 16mm diameter, adjacent to (<20mm) DeadEasy or RightSwitch indicator
- Amber LED (RS32II) = 8mm diameter

3.2 Electrical Installation

MCC and Field Panel installation steps are detailed below for both Single Isolation Officer MCC First and Multiple or Single Isolation Officer Field First arrangements. The installation method below assumes that DeadEasy installation is complete and the MCC and field panel is mounted in place prior to commencing.

3.2.1 Single Isolation Officer MCC First Installation



<u>Figure 6 – Single Isolation Officer MCC</u> <u>First - MCC Internal Arrangement</u>



<u>Figure 7 – Single Isolation Officer MCC First -</u> <u>Field Panel Internal Arrangement</u>

The following detailed installation procedure is recommended:

- 1. At the MCC, open the DeadEasy controller case and set internal Dip switches for MCC First installation as per the DeadEasy Installation & Operation Manual
- 1. Remove the DeadEasy Indicator (DE32HMI) from the MCC
- 2. Install the RightSwitch Key Switch (RS32KS) in the MCC with the key hole in a vertical orientation
- 3. Install the RightSwitch Indicator (RS32HMI) with RightSwitch MCC PCB (RS32M) attached, into the MCC using the orientation shown in Figure 5b.
- 4. Plug the key switch into the "SW" connector on the RightSwitch MCC PCB (RS32M)
- 5. Plug the DeadEasy HMI cable (DE32HMIC) into the RJ45 connector labelled "DE32" on the RightSwitch MCC PCB (RS32M)
- 6. Plug a RightSwitch HMI cable (RS32HMIC) into the RightSwitch Indicator (RS32HMI) and into the RJ45 connector labelled "RSHMI" on the RightSwitch MCC PCB (RS32M)
- 7. Set the MCC First/Field First selector switch on the RightSwitch MCC PCB (RS32M) to "MF"
- 8. Attach the MCC First Isolation Procedure label to the MCC adjacent to the RightSwitch Indicator (RS32HMI)
- 9. At the Field Panel, install the Amber LED (RS32II) into the Field Panel
- 10. Install the DeadEasy Indicator (DE32HMI) with RightSwitch Field PCB (RS32F) attached, into the Field Panel using the orientation shown in Figure 5a.
- 11. Plug the Amber LED (RS32II) into the "LED" connector on the RightSwitch Field Panel PCB (RS32F)
- 12. Plug a RightŚwitch HMI cable (RS32HMIC) into the DeadEasy Indicator (DE32HMI) and into the RJ45 connector labelled "DEHMI" on the RightSwitch Field PCB (RS32F)
- 13. Set the MCC First/Field First selector switch on the RightSwitch Field Panel PCB (RS32F) to "MF"
- 14. Attach the MCC First Isolation Procedure label to the Field Panel adjacent to the DeadEasy Indicator (DE32HMI)

3.2.2 Multiple or Single Isolation Officer Field First Installation



<u>Figure 8 – Multiple or Single Isolation</u> <u>Officer Field First - MCC Internal</u> <u>Arrangement</u>



<u>Figure 9 – Multiple or Single Isolation Officer</u> <u>Field First - Field Panel Internal Arrangement</u>

The following detailed installation procedure is recommended:

- 2. At the MCC, open the DeadEasy controller case and set internal Dip switches for Field First installation as per the DeadEasy Installation & Operation Manual
- 3. Remove the DeadEasy Indicator (DE32HMI) from the MCC
- 4. Install the RightSwitch Indicator (RS32HMI) with RightSwitch MCC PCB (RS32M) attached, into the MCC using the orientation shown in Figure 5b.
- 5. Plug the DeadEasy HMI cable (DE32HMIC) into the RJ45 connector labelled "DE32" on the RightSwitch MCC PCB (RS32M)
- 6. Plug a RightSwitch HMI cable (RS32HMIC) into the RightSwitch Indicator (RS32HMI) and into the RJ45 connector labelled "RSHMI" on the RightSwitch MCC PCB (RS32M)
- 7. Set the MCC First/Field First selector switch on the RightSwitch MCC PCB (RS32M) to "FF"
- 8. Attach the Field First Isolation Procedure label to the MCC adjacent to the RightSwitch Indicator (RS32HMI)
- 9. At the Field Panel, if Single Isolation Officer Field First is required, install the RightSwitch Key Switch (RS32KS) in the Field Panel with the key hole in a vertical orientation. If Multiple Isolation Officer only is required the RightSwitch Key Switch (RS32KS) need not be installed.
- 10. Install the DeadEasy Indicator (DE32HMI) with RightSwitch Field PCB (RS32F) attached into the Field Panel using the orientation shown in Figure 5a.
- If Single Isolation Officer Field First is required, plug the RightSwitch Key Switch (RS32KS) into the "SW" connector on the RightSwitch Field PCB (RS32F). If Multiple Isolation Officer only is required the RightSwitch Key Switch (RS32KS) need not be connected.
- 12. Plug a RightSwitch HMI cable (RS32HMIC) into the DeadEasy Indicator (DE32HMI) and into the RJ45 connector labelled "DEHMI" on the RightSwitch Field PCB (RS32F)
- 13. Set the MCC First/Field First selector switch on the RightSwitch Field Panel PCB (RS32F) to "FF"
- 14. Attach the Field First Isolation Procedure label to the Field Panel adjacent to the DeadEasy Indicator (DE32HMI)

3.3 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.

3.4 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 selfadhesive labels. Depending on whether the installation is a Single Isolation Officer MCC First or Multiple/Single Isolation Officer 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 Single Isolation Officer MCC First or Multiple/Single Isolation Officer Field First labels respectively. In the case of Multiple Isolation Officer usage the Field First procedure label can be followed. Without the Key Switch (RS32KS) connected Step 2 below is redundant.

Isolation Verification Procedure							Isolation Verification Procedure					
Location	Step	Power	Key	Self Test	LED		Location	Step	Power	Key	Self Test	LED
	1	I	0	-			Field	1	I	0	-	
MCC	2	0	0	-				2	I	I	-	
	3	0	I	-			MCC	3	I	I	-	•+
Field	4	0	I	-	•+•			4	0	I	-	
Field	5	0	I	Touch) +)		Field	5	0	I	Touch	
MCC	6	0	0	-			Field	6	0	0	-	
DANGER DANGER Isolation Verification Procedure must illuminate required LED only. Isolation Verification Procedure must illuminate required LED only. If in doubt, call an electrician. Isolation Verification Procedure must illuminate required LED only.						LED only.						

Figure 10 – Single Isolation Officer MCC First Procedure Label

Figure 11 – Multiple/Single Isolation Officer 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 submerse 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 DeadFasy					
Human Machine	Super Bright (clear when off) LEDs as follows:					
Indicator	De-energised – Green					
(RS32HMI)	 Energised – Red 					
()	 Key Switch Match – Amber 					
	Size - Standard 22 5mm Diameter x 50D 7/8" Diameter x 2' D					
	Temperature - 0C to 70C 32E to 158E					
	Ingress Protection – IP66, NEMA 4X					
MCC Printed Circuit	MCC printed circuit board, connects to:					
Board (RS32M)	DeadEasy Module					
	BightSwitch Indicator					
	Cable to Field Panel					
	Key Switch					
	Size -55 mm 2'1/8" H x 48mm 1' 7/8" W					
	Temperature - $0C$ to $70C$.32E to 158E					
	Mounting – Attaches to HMI					
Field Panel Printed	Field Panel printed circuit board, connects to:					
Circuit Board (RS32F)	DeadEasy Indicator					
· · · · · · · · · · · · · · · · · · ·	Cable to Field Panel					
	Key Switch					
	Amber I ED					
	Size $= 55$ mm 2'1/8" H x 48mm 1' 7/8" W					
	Temperature - $0C$ to $70C$.32E to 158E					
	Mounting – Attaches to HMI					
Key switch (RS32KS)	Key trapped in "On" position					
	Ingress Protection - IP67, NEMA 6.					
	Temperature20C to 65C4F to 149F.					
	Size – 16mm Diameter Cutout x 38D, 5/8" Cutout Diameter x 1' 1/2"D					
	Cable Length – 0.3m, 1ft					
Isolator Indicator	Amber LED					
(RS32II)	Ingress Protection - IP66, NEMA 4X					
	Temperature - 0C to 85C, 32F to 185F					
	Cutout – 8mm Diameter, 3/8" Diameter					
	Cable Length – 0.3m, 1ft					
RightSwitch Indicator	CAT 5 Patch lead					
Cable (RS32HMIC)	Cable Length – 0.3m, 1ft					
Fault Tolerance	Green & Red LEDs series connected with DE32HMI.					
	Refer to DeadEasy datasheet for more information.					
MCC to Field Panel	CATV, Maximum Length = 500m, 1640ft, RJ45 connector terminated					
Cable						
(site supplied)						
Approvals	Reter to DeadEasy Approvals					

<u>Table 2</u>

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	Indicator / Field Panel printed circuit board selector switch conflict	Check required configuration and set selector switches correctly
procedure Or		Check key switch and amber LED connections to Indicator / Field Panel printed circuit boards. Check the CAT V
RightSwitch LED indication conflicting DeadEasy LED indication	Wiring incomplete	cable for short circuit, open circuit and cross connections using a LAN cable tester
Or	Faulty LED or key switch	Test LED and key switch, or swap with known working unit. to identify faulty
DeadEasy Controller Alarm Code 3 - HMI		component and replace
Initialisation or Alarm Code 11 - Self Test Request	Faulty Indicator / Field Panel printed circuit board	Swap with known working unit to identify faulty component and replace

Table 3