2024
CPDP276 Issue 1

CRAIG & DERRICOTT

ROLLING STOCK CATALOGUE

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ABOUT US

Established in 1922, British manufacturing company Craig & Derricott specialises in the design, manufacture and overhaul of low voltage electrical switchgear & control gear, rail rolling stock components and LED lighting.

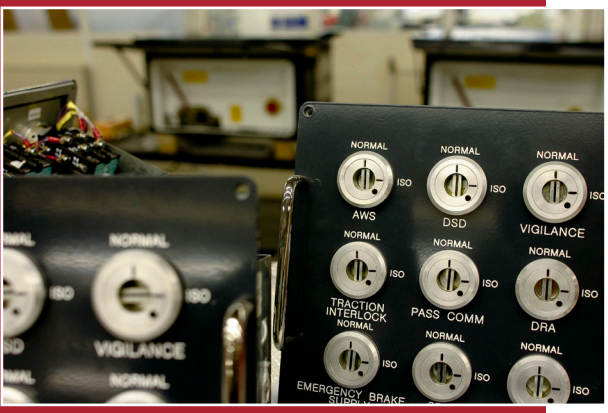
Craig & Derricott has been a component supplier to the passenger transportation sector for more than 60 years and in that time we have earned a reputation for well-engineered products. This is especially so in the Rail industry where we supply to both the Rolling Stock & Infrastructure areas.

Our rolling stock range covers products designed for use on trains worldwide. The range includes LED lighting, rotary actuators, driver's key switches, panels, footswitches, door pressels, passenger communication devices, shoegear earthing equipment & isolation switches.

Rail infrastructure covers a wide spectrum of environments and we have supplied equipment into many including station platforms, escalators, maintenance bays and trackside areas. For these areas we have a comprehensive range of isolation equipment to suit most applications.

Craig & Derricott became part of the Addtech group in 2017. Addtech is a Swedish technology group that develops and sells high-tech components, products and systems to companies and the service industries around the world. Addtech is a publicly traded company and currently consists of more than 145 operating companies that are all market leaders in their niches.

WHAT WE DO



DESIGN INNOVATION

Working closely with our customers we are able to create innovative products to meet customer specification and fully comply with relevant railways standards.

ENGINEERED SOLUTIONS

We have a wide variety of products that can cover both rolling stock and infrastructure applications. We can reverse engineer components or equipment to deliver a direct replacement.

Infrastructure	Products that offer isolation, control and protection for low voltage systems as well as lighting solutions in both above ground or below ground environments.
Rolling Stock	Lighting products, cab control switches, system isolation switches, power isolation and earthing switches, coupling switching devices and many more.

OVERHAUL SERVICE

Recognising the need to keep trains in service, we offer overhaul programs to replace end of life products (both our own and third parties) and rebuild them to almost as new state.

REPAIR SERVICE

We offer a simple return procedure, to return a broken or faulty unit, to include a fault diagnosis, a quote to repair the unit and once agreed, repair the unit and return.

INVESTIGATION SERVICE

If there is a component or system with reliability issues, we are able to offer a service to fully investigate a problem and make the necessary recommendations to fix the problem.

ENGINEERING

WORKING WITH RAIL ASSET MANUFACTURERS, OWNERS, OPERATORS AND MAINTAINERS.

RAIL ENVIRONMENT – WE UNDERSTAND KEY DEMANDS AND REQUIREMENTS

We ensure products are designed and manufactured in accordance with rail standards and specifications for EMC, Shock & vibration and material fire performance. Equally, we have the knowledge and understanding to meet the expectations of designers, owners, operators, maintainers and passengers.

BESPOKE SOLUTIONS – ABILITY TO DELIVER NEW PRODUCTS FOR NEW AND EXISTING ROLLING STOCK AND RAIL INFRASTRUCTURE

We innovate. If there isn't an off-the-shelf solution that meets your specific requirements, we will develop one. We integrate and adapt new or existing products to provide a complete solution.

COOPERATION - WE'RE WITH YOU ALL THE WAY THROUGH THE DEVELOPMENT PROCESS

We don't just deliver product solutions, where required we can provide a fully documented product file that details risk assessments, control plans, work instructions and compliance statements.

RELIABILITY GROWTH – OUR OWN AND THIRD-PARTY PRODUCTS

- Investigate and report system / equipment failures to root cause
- Propose improvements and recommendations
- Develop, test and document prototype performance during in service trials

ASSET LIFE MANAGEMENT – OUR OWN AND THIRD-PARTY PRODUCTS

- Equipment strip down and condition assessment to define overhaul scopes and to support VMS optimisation and LCC prediction.
- Undertake refurbishment and overhaul of our own and third-party products

We're effective because we listen to our customers, develop bespoke solutions for their individual needs and ensure long term support is available. We ensure our projects are scoped and managed by our expert team providing over 60 years of combined industry knowledge. If you're looking for industry experts to deliver your projects, we are here to help.

CONTENTS

LED LIGHTING

VEHICLE CONTROL GEAR

INFRASTRUCTURE

CASE STUDIES

CONTACT US

LED LIGHTING

Craig & Derricott's range of LED lighting products are designed to cover a wide variety of Railway applications that have been developed and approved to meet railway rolling stock standards. Our LED products are easy and safe to fit into new and existing light fittings. They offer all the benefits of LED technology, long life and low power consumption, therefore reducing life cycle costs and your environmental impact.

- Five Year Warranty
- Lifetime Maintenance Free
- Compliant with the Low Voltage Directive
- High Reliability LED Technology
- Energy Saving - Low Power Consumption
- Quality Technical Support

Craig & Derricott LED Lights have all been designed to meet Railway Rolling Stock stringent standards.

EN50155	Rolling stock electronic equipment
EN50121-3-2	Railway electro-magnetic compatibility
EN61373	Railway application shock & vibration
EN45545-2	Fire protection hazard level 3 (HL3)
EN60081	Double capped tubes dimensional compliant
EN60529	IP40 ingress protection

T8 LED TUBE LIGHTS

Craig & Derricott offer a range of LED tube lighting that incorporates a unique adjustable and lockable endcap, allowing for fast and repeatable installation to optimise the direction of light distribution

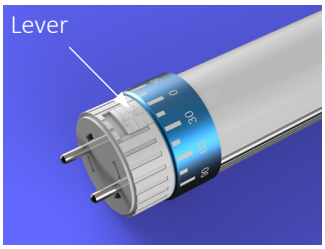
Our long life LED tubes have low energy power consumption resulting in reduced life cycle costs. Manufactured from recyclable materials, minimising the environmental impact allowing for easy and safe disposal unlike fluorescent tubes that contain hazardous substances that require costly removal.

Each tube switches on instantly with excellent consistent light output and tightly controlled colour temperature, with a beam angle of 180°. To optimise the light distribution, our tubes are supplied with unique rotating lockable endcaps. These can be adjusted to a specific angle in order to meet the desired lighting requirement. Clear index marking is on each end of the tube to ensure an accurate and repeatable setting.

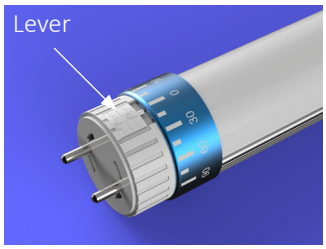
Our LED tubes offer a safe and easy installation. They are designed to connect directly to common voltage supplies available in passenger rolling stock and eliminating the need for costly inverters. Where required, we can supply inverter bypass harnesses for retro fit installations, making the change from fluorescent lighting to LED lighting trouble free. If existing lamp holders have become brittle and worn over time, C&D can supply new fittings to ensure continued reliability.

The LED tube range covers three standard supply voltages. Each tube has a clear colour coded indicator to represent the correct voltage.

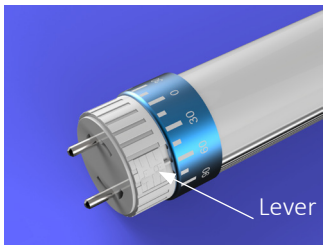
ROTATING ENDCAP OPERATION



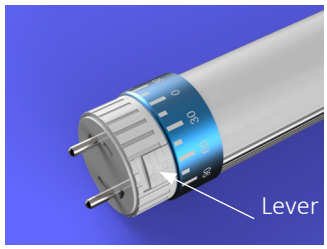
1. Locked Position



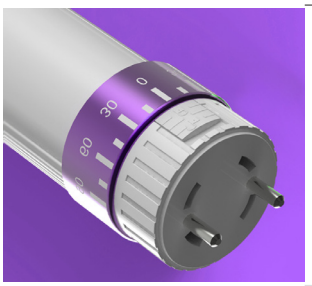
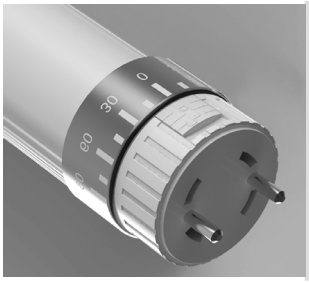
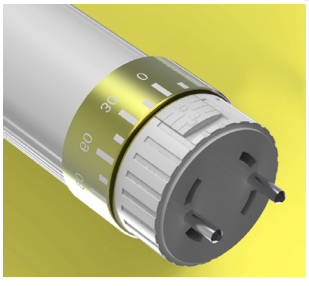
2. Slide lever to release



3. Rotate to required position

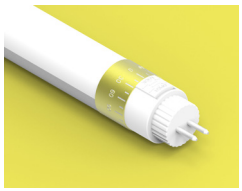


4. Return lever to locked position

	Cat. No.	Nom. Tube Length	Weight	Nominal Voltage	Power Consumption	Colour Temp. (±5%)
	LED450/24/T8/**/2	450mm	150g	24VDC (16.8V - 30V)	8W	** NW Natural White 4000K
	LED600/24/T8/**/2	600mm	182g		9.5W	
	LED900/24/T8/**/2	900mm	255g		13.5W	
	LED1200/24/T8/**/2	1200mm	328g		14.5W	
	LED1500/24/T8/**/2	1500mm	399g		25W	
	LED1800/24/T8/**/2	1800mm	462g		30W	
	LED450/52/T8/**/2	450mm	150g	52VDC (36.4V – 65V)	8W	** PW Pure White 5000K
	LED600/52/T8/**/2	600mm	175g		9.5W	
	LED900/52/T8/**/2	900mm	297g		13.5W	
	LED1200/52/T8/**/2	1200mm	305g		14.5W	
	LED1500/52/T8/**/2	1500mm	429g		25W	
	LED1800/52/T8/**/2	1800mm	493g		30W	
	LED450/110/T8/**/2	450mm	150g	110VDC (67.2V - 137.5V)	8W	**CW Cool White 6000K
	LED600/110/T8/**/2	600mm	196g		9.5W	
	LED900/110/T8/**/2	900mm	269g		13.5W	
	LED1200/110/T8/**/2	1200mm	340g		14.5W	
	LED1500/110/T8/**/2	1500mm	407g		25W	
	LED1800/110/T8/**/2	1800mm	476g		30W	

T5 LED TUBE LIGHTS

Craig & Derricott offer a range of T5 LED tube, a direct replacement for T5 fluorescent tubes. With high reliability LED and driver technology and built in drive electronics, these tubes offer significant energy savings and zero maintenance costs. Each tube has flicker free lighting with an instant start.



Cat. No.	Nom. Tube Length	Nominal Voltage	Weight (g)	Colour Temp. (±5%)
LED563/24/T5/**	563mm	24VDC (16.8V- 32V)	205	** NW Natural White 4000K
LED863/24/T5/**	863mm		235	
LED1163/24/T5/**	1163mm		390	
LED1463/24/T5/**	1463mm		430	
LED563/110/T5/**	563mm	110VDC 67V- 140V	205	** PW Pure White 5000K
LED863/110/T5/**	863mm		235	
LED1163/110/T5/**	1163mm		390	
LED1463/110/T5/**	1463mm		430	
LED563/230/T5/**	563mm	230VAC (161V-253V)	205	**CW Cool White 6000K
LED863/230/T5/**	863mm		235	
LED1163/230/T5/**	1163mm		390	
LED1463/230/T5/**	1463mm		430	

2G7 & 2G11 LED STICK LIGHTS

To compliment our LED tube range, Craig & Derricott offer a series of 2G7 & 2G11 LED stick lights for the rail market.

Cat. No.	Nom. Tube Length	Tube Fitting	Nominal Voltage	Weight (g)	Colour Temp. (±5%)
LED152/24/2G7/**/2	152mm	2G7	24VDC	49	** NW Natural White 4000K
LED152/110/2G7/**/2			110VDC	54.3	
LED152/24/2G11/**/2	152mm	2G11	24VDC	83.5	** PW Pure White 5000K
LED152/110/2G11/**/2			110VDC	90	
LED220/24/2G11/**	220mm	2G11	24VDC	101.7	
LED220/110/2G11/**	220mm		110VDC	101.7	
LED322/24/2G11/**	322mm	2G11	24VDC	165	**CW Cool White 6000K
LED416/24/2G11/**	416mm			214	

BA9 LED LAMPS

This high intensity encapsulated LED lamp is compact in size and are designed to fit BA9 lampholders. These instant start LED lamps offer a bright and consistence light, while available in a variety of colour temperatures. With reliable LED technology and reduced heat dissipation, these energy efficient lamps are the perfect drop in replacement for existing luminaires.

Cat. No.	Fitting	Nominal Voltage	Weight (g)	Colour Temp. (±5%)
LEDBA9SC/24/NW/2	BA9	24V DC	7	NW Natural White 4000K
LEDBA9SC/24/PW/2	BA9	24V DC	7	PW Pure White 5000K
LEDBA9SC/24/CW/2	BA9	24V DC	7	CW Cool White 6000K

ACCESSORIES

Craig & Derricott offer a range accessories for their LED lighting products.

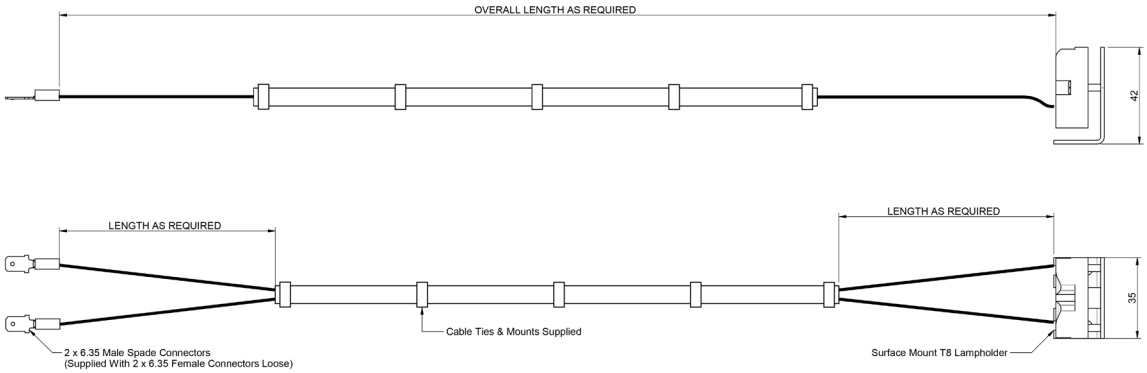
Cat. No.	Description	Terminals
101791	T8 replacement surface mount lamp holder	Screw 0.5 - 2.5mm²
101793	T8 replacement surface mount spring adjustable lamp holder	Screw 0.5 - 2.5mm²
81100	T8 centre support clip for 1500mm+ tubes	-
100305	T5 replacement surface mount lamp holder	Push-in 0.5 - 1mm²
81062	T5 centre support clip for 1500mm+ tubes	-
109238	2G7 replacement surface mount lamp holder	Push-in 0.5 - 1mm²
101485	2G11 replacement surface mount lamp holder	Push-in 0.5 - 1mm²
TPC2170	2G11 surface mount clip	-

BYPASS HARNESS

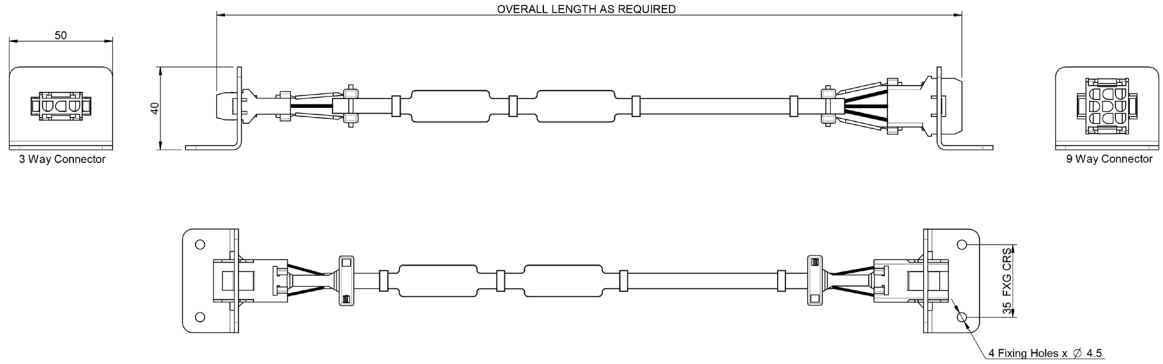
Our DC LED tubes are designed to be directly powered making existing fluorescent invertors/ballast redundant. To enable reconnection after removal, Craig & Derricott offer a range of wiring harness and lamp holders to ensure straight forward retro fit of lighting.

Contact our sales team to discuss your requirements today.

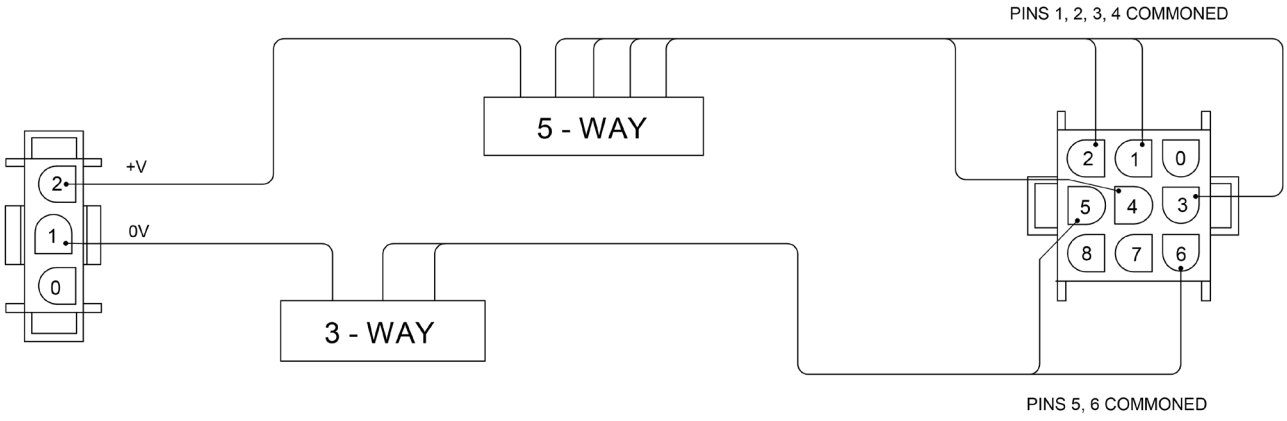
BYPASS HARNESS 2 WIRE



BYPASS HARNESS 4 WIRE



TYPICAL WIRING SCHEMATIC



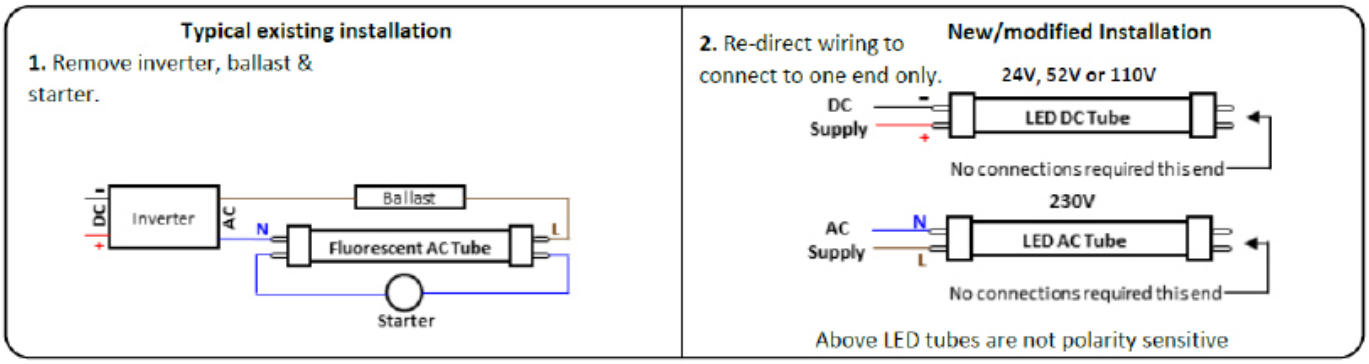
TECHNICAL SPECIFICATION

	T8 LED TUBES						T5 LED TUBES			
Nom. Tube Length (mm)	450	600	900	1200	1500	1800	563	863	1163	1463
Power Consumption	8W	9.5W	13.5W	14.5W	25W	30W	9W	12W	15W	23W
Light intensity (Lumens)	800	1232	1787	1951	3257	3582	1170	1560	1950	2290
Weight	Please See Pg. 2						Please See Pg. 3			
Connector	2 PIN G13						2 PIN G5.3			
Connector Rotation	± 90°									
Colour Render Index	≥ 80									
Beam angle	180°									
LED Life	65,000 hrs (time to 70% of the initial light output)									
IP Rating	IP 40									
Operating Temperature Range	-25°C to +55°C									
MTBF MIL-HDBK-217F (40°)	100,000 hrs									
Switch Cycles	100,000 (UIC555)									

	LED152*2G7**		LED152*2G11**		LED220**		LED322**	LED416**
Nominal Voltage	24VDC	110VDC	24VDC	110VDC	24VDC	110VDC	24VDC	
Light Intensity (Lumens)	400		430		1200		1320	1760
Power Consumption	6W		10W		10W		16W	18W
Connector	2G7 4 Pins		2G11 4 Pins		2G11 4 Pins			
Beam Angle	180°							
Colour Render Index	≥ 80							
Weight	Please See Pg. 3							
Operating Temperature	-25°C to + 55°C							
IP Rating	IP40							
LED Life	65,000 hrs (time to 70% of the initial light output)							
MTBF MIL-HDBK-217F (40°C) (hrs)	100,000 hours							
Switch Cycles	100,000 (UIC555)							

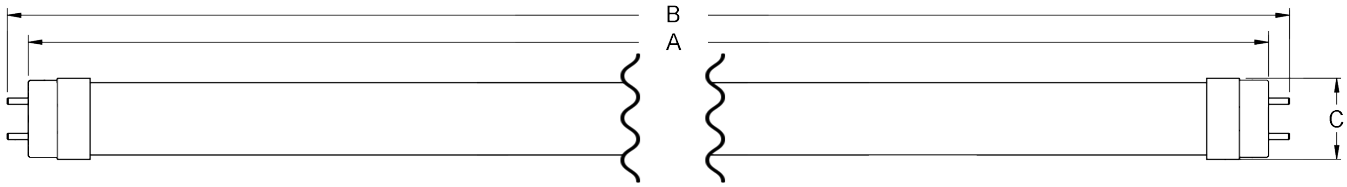
	BA9
Nominal Voltage	24VDC
Light Intensity (Lumens)	300
Power Consumption	1W
Connector	BA9
Beam Angle	45°
Colour Render Index	≥ 80
Weight	7g
Operating Temperature	-25°C to + 55°C
IP Rating	IP40
LED Life	65,000 hrs (time to 70% of the initial light output)
MTBF MIL-HDBK-217F (40°C) (hrs)	100,000 hours
Switch Cycles	100,000 (UIC555)

T5 & T8 LED CONNECTION DIAGRAMS



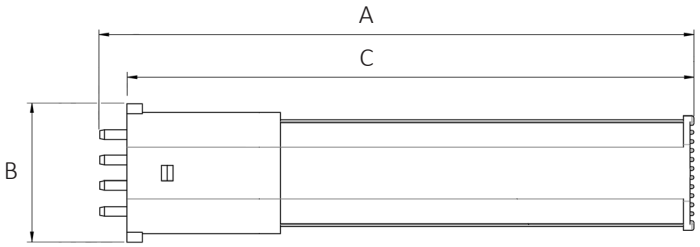
DIMENSIONS

T5 & T8 LED

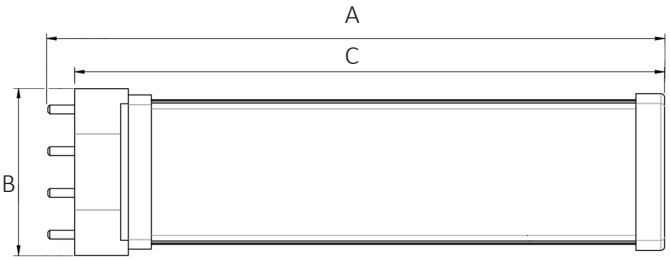


		T8 LED TUBES						T5 LED TUBES			
Nom. Tube Length (mm)		450	600	900	1200	1500	1800	563	863	1163	1463
Dimensions (mm)	A	437.4	589.8	894.6	1199.4	1500	1763.8	549	849	1149	1449
	B	451.6	604.0	908.8	1213.6	1514.2	1778.0	563	863	1163	1463
	C	26						16 (end cap) | 23 (body)			

2G7

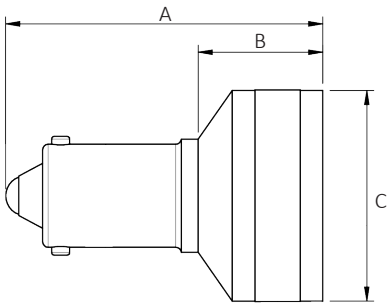


2G11



		LED152*2G7**	LED152*2G11**	LED220**	LED322**	LED416**
Dimensions (mm)	A	152.67	163.51	227	329	423
	B	36	43	43	43	43
	C	145.87	156.71	220	322	416

BA9 LAMP



VEHICLE CONTROL GEAR

We offer a wide range of vehicle control gear, including driver cab controls, passenger (internal and external) interfaces, push button actuators and rotary panels. Each component is designed around the safety features associated with each vehicle class and can be tailored to any customer specifications.

If there isn't an off-the-shelf solution that meets your specific requirements, we will design one. Working closely with our customers we can create products to meet the project specification and fully comply with relevant railways standards. We can integrate and adapt new or existing products to provide a complete solution.

22 & 30 SERIES ACTUATORS

A range of IP65 robust actuators built to meet the stringent requirements of railway rolling stock standards. Ergonomically designed, this range of actuators gives a clear visual indication of normal and operated status. A robust stainless steel locking cover can be added and of our switches. Switches with gold plated contacts for low current applications can be supplied to special order.

MATERIAL & FINISH

- Zinc die cast body with satin chrome finish
- Aluminium rotary actuator with powder coated paint finish
- N309B1 has a Polyamide Actuator (30mm Ø barrel)

COMPLIANCE

- EN61373 compliant (with rotary switch fitted)
- EN60947-3 compliant (with rotary switch fitted)

	Cat. No.	Description	Barrel	Switch Type
	N309B1	Rotary actuator with an indication line	30mm	20A Mini-Rotary or R6 / R16
	22/ZTF	Full width 'T Bar' knob and line insert switch actuator supplied in a satin black finish with a white indication line	22mm	20A Mini-Rotary
	22/ZT	Full width 'T Bar' knob and half width line insert switch actuator supplied in a satin black finish with a white indication line	22mm	20A Mini-Rotary
	22/ZPL	Extended single sided knob and half width line insert switch actuator supplied in a satin black finish with a white indication line	22mm	20A Mini-Rotary
	22/ZP	Short single sided knob and half width line insert switch actuator supplied in a satin black finish and a white indication line	22mm	20A Mini-Rotary
	TBA 0200	Stainless steel locking cover for use with N309B1 actuator to prevent unauthorized operation of the switch. Allows for the insertion of two sealing wire/devices. The cover can be engraved to the customers requirements.	30mm	-
	MRA 0246	Stainless Steel locking cover for use with 22/Z actuators to prevent unauthorized operation of the switch. Allows for the insertion of two sealing wire/ devices.	22mm	-

300 SERIES ACTUATORS

The 300 series switch actuators are designed in both non latching and latching types to prevent resetting without the use of a separate key. These are designed to be used with Mini Rotary and R6/ R16 rotary panel switches and offer options for operations by knob, driver's key or combination key. They are robust to meet the stringent requirements of the Rail Industry.

TYPES

- 331 / 332 knob operated with visual indication of switch position (aluminium barrel)
- 301 / 302 drivers key operated with visual indication of switch position (aluminium barrel)
- 303 combination key switch (B key end) with visual indication of switch position (anodised aluminium barrel)
- 304 combination key switch (A & C key end) with visual indication of switch position (stainless steel barrel)

*1 When the rotary switch is fitted to the actuator, up to 16 normally open or normally closed contacts or other combinations (8 switch bases) to meet customer applications can be configured, this will also vary the length of the switch.

PART NUMBER CONFIGURATION

There are many standard switch sequences available and almost any switching configuration can be accommodated by contacting the Internal Sales team. Switches can be supplied with Gold plated contact for low current applications. Add the number of contacts to the part number to create your switch sequence.
E.g., 331KK3-4NO-4NC | 302DK1-2NO | 304DK1-3NC

COMPLIANCE

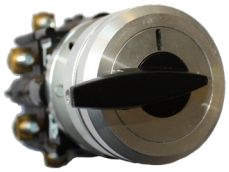
- EN61373 compliant (with rotary switch fitted)
- EN60947-3 compliant (with rotary switch fitted)

Combination Key Ends

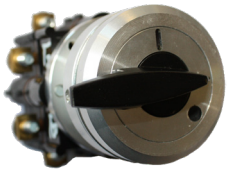
 A End

 B End

 C End



Shown as satin chrome finish



Shown as satin chrome finish

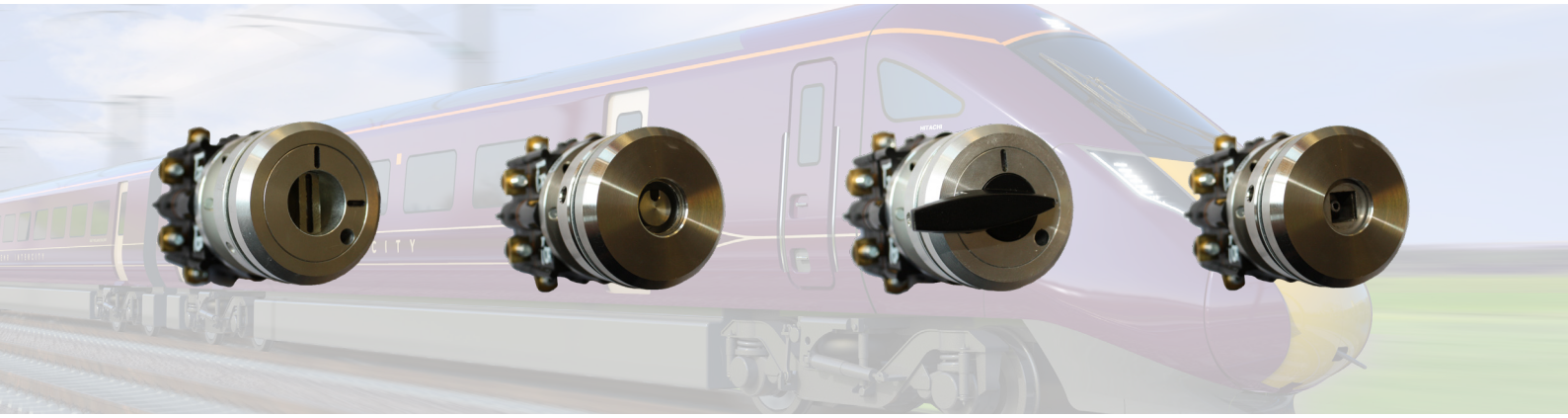
Cat. No.	Description	Latch Type	Panel Fixing
331KK3-*1	Non-latching knob operation 2 position switch in a satin chrome finish with a black indication line.	Non-latching	Ø30.5 single hole
331KK4-*1	Non-latching knob operation 2 position switch supplied in a matt black anodised finish with a white indication line.	Non-latching	Ø30.5 single hole
332KK3-*1	Latching knob operation 2 position switch supplied in a satin chrome finish with a black indication line. Resetting is only possible by using the high security key actuator which is inserted from the front of panel.	Latching in operated position	Ø30.5 single hole
332KK4-*1	Latching knob operation 2 position switch supplied in a matt black anodised finish with a white indication line. Resetting is only possible by using the high security key actuator which is inserted from the front of panel.	Latching in operated position	Ø30.5 single hole

	Cat. No.	Description	Latch Type	Panel Fixing
 Shown as satin chrome finish	301DK1-*[1]	Non-latching drivers key operation 2 position switch actuator supplied in a satin chrome finish with a black indication line.	Non-latching	Ø30.5 single hole
	301DK2-*[1]	Non-latching drivers key operation switch actuator supplied in a matt black anodised finish with a white indication line.	Non-latching	Ø30.5 single hole
 Shown as satin chrome finish	302DK1-*[1]	Latching drivers key operation switch actuator supplied in a satin chrome finish with a black indication line. Resetting is only possible by using the high security key actuator which is inserted from the front of panel.	Latching in operated position	Ø30.5 single hole
	302DK2-*[1]	Latching drivers key operation switch supplied in a matt black anodised finish with a white indication line. Resetting is only possible by using the high security key actuator which is inserted from the front of panel.	Latching in operated position	Ø30.5 single hole
	303DK1-*[1]	Combination key operated non-latching switch supplied in stainless steel. This switch is operated by the B end of the combination key.	Non-latching	Ø30.5 single hole
	304DK1-*[1]/SR	Combination key operated spring return switch supplied in stainless steel. This switch is operated by the Gated key ‘A end’ of the combination key.	Spring Return	Ø30.5 single hole
	304DK1-*[1]	Combination key operated stay-put switch supplied in stainless steel. This switch is operated by the Gated key ‘A end’ of the combination key.	Stay-Put	Ø30.5 single hole
	304DK2-*[1]/SR	Combination key operated spring return switch supplied in stainless steel. This switch is operated by the Carriage key ‘C end’ of the combination key.	Spring Return	Ø30.5 single hole
	304DK2-*[1]	Combination key operated stay-put switch supplied in stainless steel. This switch is operated by the Carriage key ‘C end’ of the combination key.	Stay-Put	Ø30.5 single hole
	CDK1	Spare reset key	-	-

R6, R16 AND MINI ROTARY SWITCHES

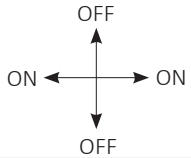
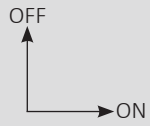
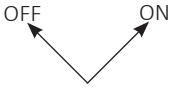
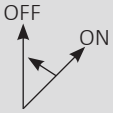
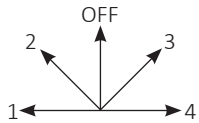
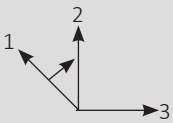
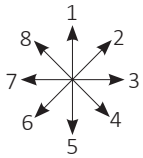
This range of panel mounted rotary switches cover ratings of 6A, 16A and 20A. They are designed for integration into rolling stock cab desks and control panels.

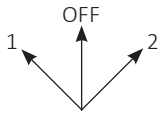
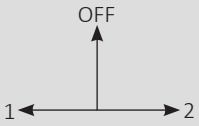
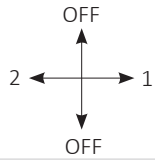
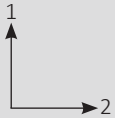
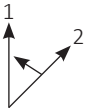
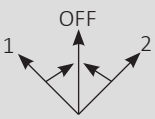
The modular contact block design enables a myriad of switching configurations together with the many actuators that features both 'Thumb Knob' and 'Combination Key' actuation with proven reliability. This range of switches remains the first choice for Panel and Cab Desk builders and is integrated into many of the new trains being built in the UK today.



STANDARD INDEXING

The following are examples to show the versatility in combining our contact blocks to precisely give the configuration our customers require. Further combinations can be manufactured on request.

Indexing	Seq. No	Position Type
	SEQ1	OFF / ON Unrestricted, 90° Four Position, Stay-Put Off / On / Off / On
	SEQ1/1	OFF / ON Unrestricted, 90° Two Position, Stay-Put Off / On
	SEQ1/2	OFF / ON Restricted, 90° / 45° Two Position, Stay-Put Off / On
	SEQ1/SR	OFF / ON Restricted, 45° Two Position, Spring Return Off / On
	SEQ 5/4	MULTI-POSITION Restricted, 45° Five Position, Stay-Put 1 / 2 / Off / 3 / 4
	SEQ 6/SR	MULTI-POSITION Restricted, 45° & 90° Three Position, Spring Return 1> 2 / 3
	SEQ 1/8	MULTI-POSITION Unrestricted, 45° Eight Position, Stay-Put 1/ 2/ 3/ 4/ 5/ 6/ 7/ 8

Indexing	Seq. No	Position Type
	SEQ3/3	CHANGEOVER Restricted, 45° Three Position, Stay-Put 1 / Off / 2
	SEQ 3/4	CHANGEOVER Restricted, 90° Three Position, Stay-Put 1 / Off / 2
	SEQ 3	CHANGEOVER Unrestricted, 90° Four Position, Stay-Put Off / 1 / Off / 2
	SEQ 2/1	CHANGEOVER Restricted, 90° Two Position, Stay-Put 1 / 2
	SEQ 2/SR	CHANGEOVER Restricted, 45° Two Position, Spring Return 1 < 2
	SEQ 3/SR	CHANGEOVER Restricted, 45° Three Position, Spring Return 1 > Off < 2

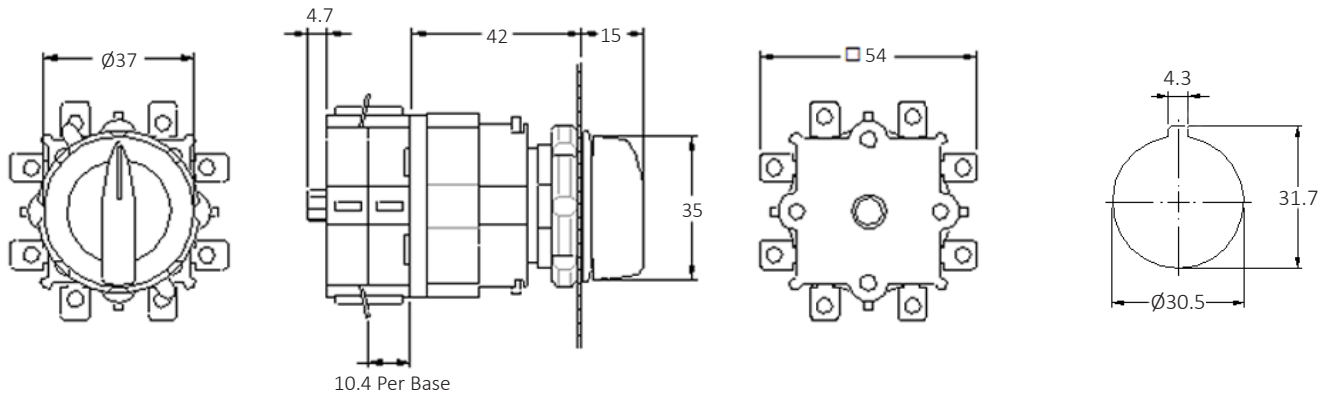
R6/R16 AND MINI ROTARY TECHNICAL SPECIFICATION

	Unit	Sym.	Category	R6	R16	20A Mini-Rotary
Thermal rating	A	I_{th}		6	16	20
Position indexing options				90° and 45°	90° and 45°	90° and 45°
Isolation voltage	V	U_i		690	690	690
Switching characteristics	A	AC20A	250V / 415V	6	16	20
		AC21A	250V / 415V	6	16	20
		AC22A	250V / 415V	6	16	20
		AC23A	250V	6A / 0.75kW	16A / 2.5kW	20A / 3.0kW
			415V	6A / 2.5kW	16A / 5.5kW	20A / 9.5kW
Operational current (DC21)	I_e	DC21	220V	-	-	0.66
			110V	-	-	2.5
			55V	-	-	16.0
			30V	-	-	18.0
Rated short time withstand	A		1 sec	120	240	434
Max. BS 88 backup fuse	A			6	20	32
Contact material *				Silver / Nickel	Silver / Nickel	Fine Silver
Mechanical cycles			Operational	> 0.5 x 10^6	> 0.5 x 10^6	> 0.5 x 10^6
Terminal size				M3.5	M3.5	M4

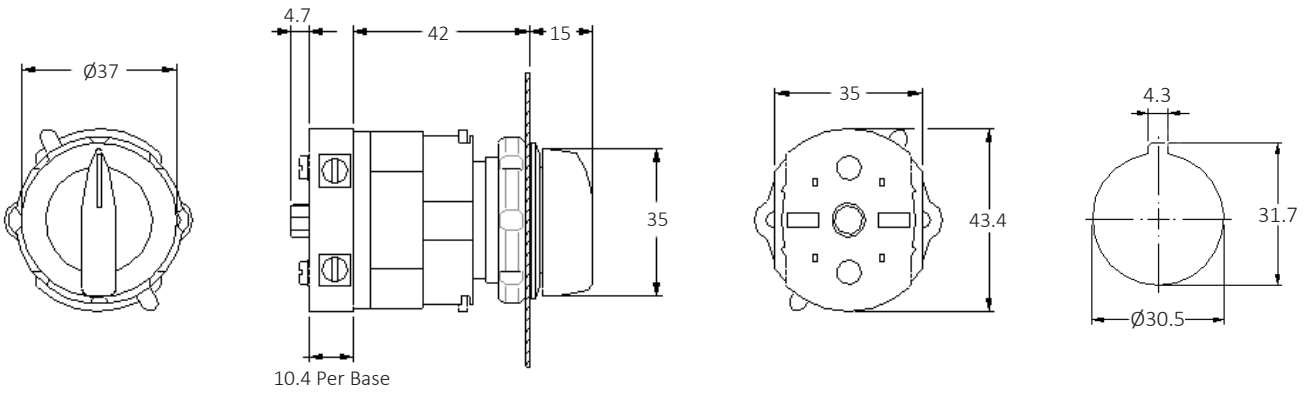
Gold plated contacts available on request

DIMENSIONS

N309B1 WITH 20A MINI-ROTARY

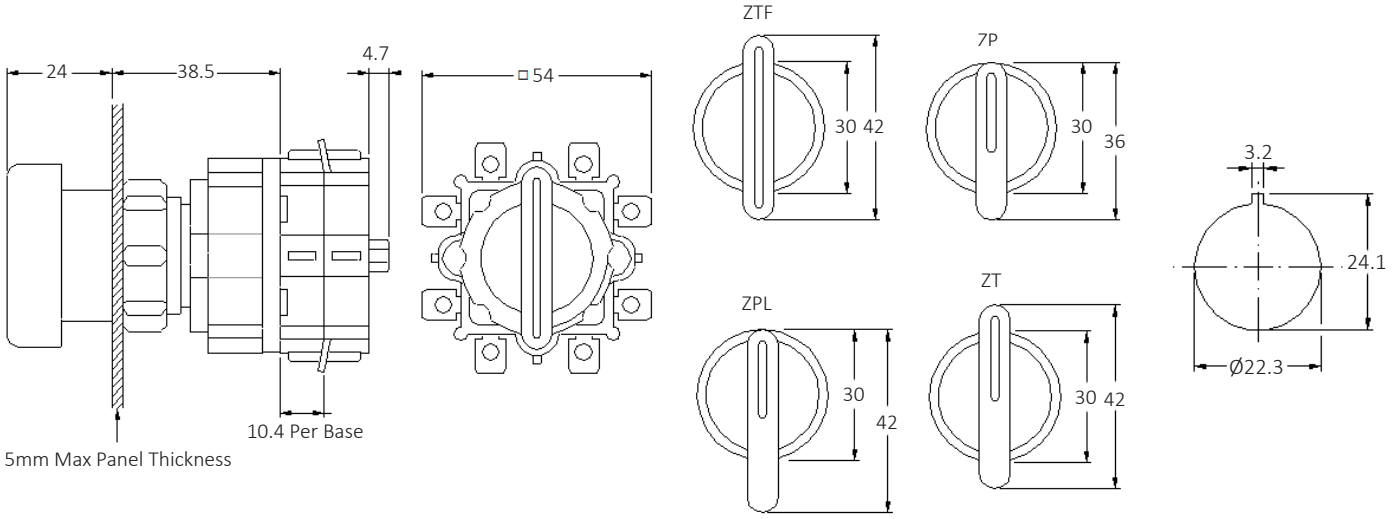


N309B1 WITH R6 / R16 ROTARY SWITCH

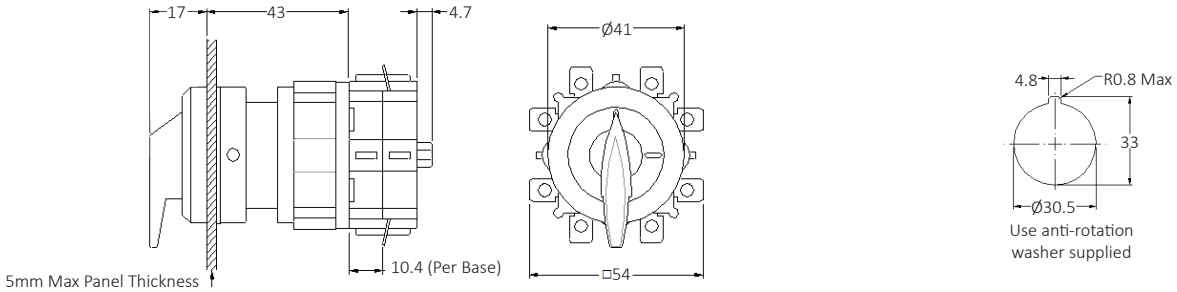


DIMENSIONS

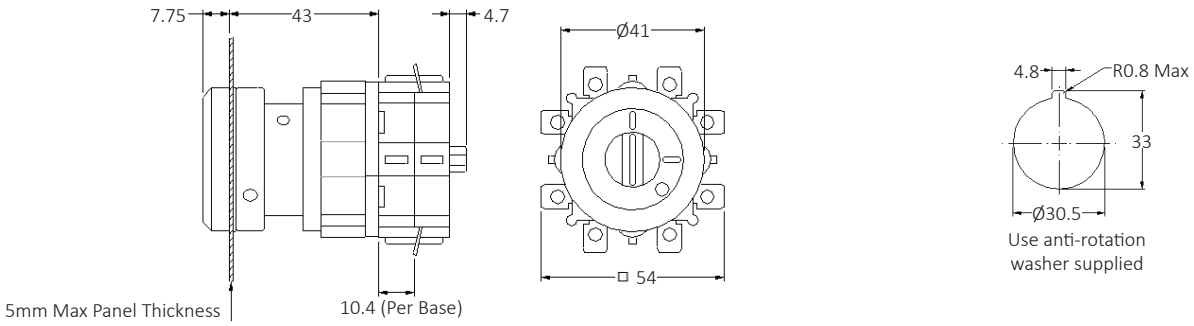
ZT / ZP WITH 20A MINI-ROTARY



331KK / 331KK DRIVERS KEY SWITCH

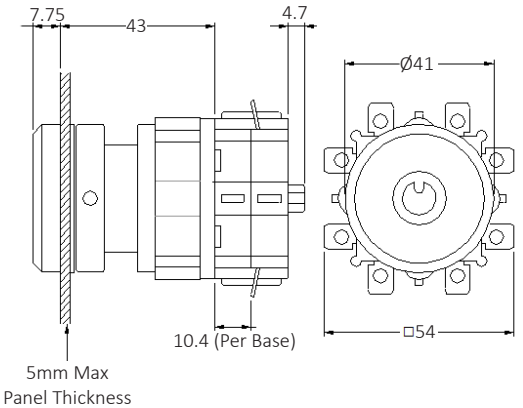


301DK / 302DK DRIVERS KEY SWITCH

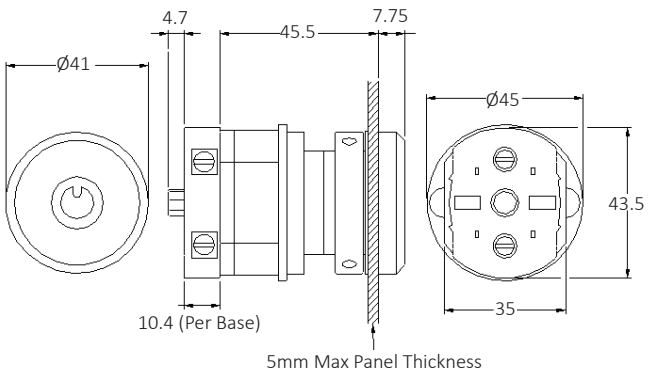


303DK / 304DK DRIVERS KEY SWITCH

20A Mini-Rotary Switch



R6 / R16 Rotary Switch



32 SERIES ACTUATORS

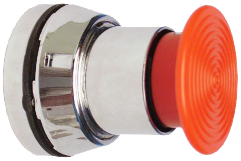
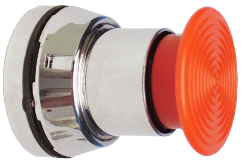
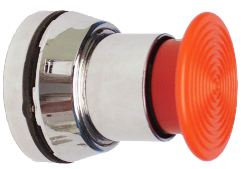
The 32 Series offers several options suitable for Emergency Stop use with contact blocks with a generous rating to meet safety requirements. The user can fit contact blocks to an actuator, giving flexibility without rating constraints. To ensure that low power circuits can also be covered, options with gold plated contacts are available. There are a variety of supporting accessories, including shrouds and flap covers. These are supplied in several variations to suit different levels of security.

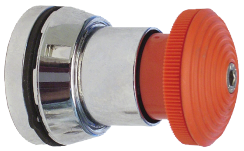
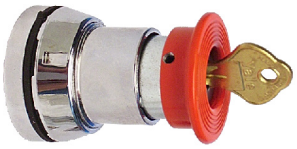
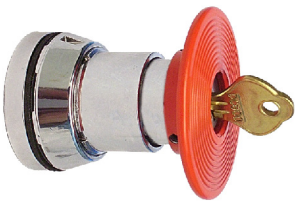
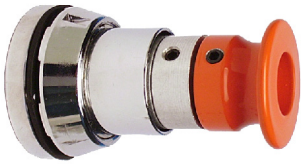
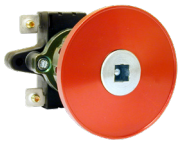
MATERIAL & FINISH

- All actuators, pilot lamp bodies and locking rings are produced in aluminium with a silver anodised finish.

COMPLIANCE

- EN61373 compliant (with rotary switch fitted)
- EN60947-3 compliant (with rotary switch fitted)

	Cat. No.	Description	Panel Fixing	Contact Block Range
	PR PG PY PZ PB PW	IP65 moulded plastic full guard actuator with spring return. Cap colour: Red Green Yellow Blue Black White	Ø32	NDCT or S1
	PMR PMB PMG PMY PMZ	IP65 moulded plastic mushroom actuator with spring return. Button colour: Red Black Green Yellow Blue	Ø38	NDCT or S1
	PMLR PMLB	IP65 die-cast mushroom actuator with spring return. Button colour: Red Black	Ø54	NDCT or S1
	PMRH PMBH PMGH PMYH PMZH	IP65 pull-to-reset moulded plastic mushroom actuator- stayput. Button colour: Red Black Green Yellow Blue	Ø38	NDCT or S1
	PMLRH PMLBH	IP65 pull-to-reset die-cast mushroom actuator - stayput. Button colour: Red Black	Ø54	NDCT or S1
	PMR-U12 PMB-U12 PMG-U12 PMY-U12 PMZ-U12	IP65 moulded plastic twist-to-reset mushroom actuator- stayput. Button colour: Red Black Green Yellow Blue	Ø38	NDCT or S1

	Cat. No.	Description	Panel Fixing	Contact Block Range
	PMLR-U12 PMLB-U12	IP65 die-cast twist-to-reset mushroom actuator- stayput. Button colour: Red Black	Ø54	NDCT or S1
	PMR-U59	IP65 red die-cast twist-to-reset mushroom actuator- stayput.	Ø38	NDCT or S1
	PMRA-U19 PMBA-U19	IP65 die-cast key reset mushroom actuator - stayput. 2 x DC800 series keys are supplied as standard. Button colour: Red Black	Ø38	NDCT or S1
	PMLRA-U19 PMLBA-U19	IP65 die-cast key reset mushroom actuator - stayput. 2 x DC800 series keys are supplied as standard. Button colour: Red Black	Ø54	NDCT or S1
	PMARH-U51	IP65 red die-cast pull-to-reset mushroom actuator- stayput. Designed specifically to work beneath flap covers to allow access for resetting.	Ø32	NDCT or S1
	PBSP2899 PBSP2160	IP65 key reset red aluminium actuator and snap action switch supplied with 1 N/O and 1 N/C contacts. The unit is designed to latch when operated and can be supplied with either 'A' or 'C' end key operation of the drivers combination key to reset / release.	Ø22.5	LPMA
	PMLR-U94-M*[1]	Red aluminium twist-to-reset emergency push button actuator supplied with an integral rotary switch. The switch can be fitted with a shroud to prevent accidental operation. The actuator features six finger dimples to facilitate reset when the shroud is fitted.	Ø32	MR
	TPA0152	Emergency Stop Button with Illuminated Shroud with loom and connector.		MR

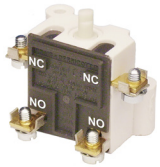
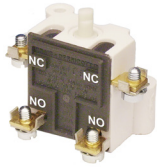
ACCESSORIES

We offer a wide range of accessories suitable for this range. All flap covers can be engraved. Contact sales to discuss your requirements.

	Cat. No.	Description
	U33/S	Grey die-cast aluminium half shroud. Gives protection against accidental operation of mushroom actuators. Captive under actuator.
	U33/WP/S	Grey die-cast aluminium half shroud. Gives protection against accidental operation of mushroom actuators. Fixed separately and supplied with gasket.
	U260-R	Grey/Red die-cast aluminium non-locking flap cover. Spring loaded to the flap is kept closed. Used to prevent accidental operation of a pushbutton or similar devices.
	U270-R	Grey/Red die-cast aluminium non-locking flap cover. Used to prevent accidental operation of a pushbutton or similar devices.
	U280-R	Grey/Red die-cast aluminium padlocking flap cover. A sliding plate is fitted which locks the cover in the closed position and allows up to 6 padlocks to be inserted. The cover cannot be opened until the last padlock has been removed. Used to prevent unauthorised access to the actuator.
	U290-R	Grey/Red die-cast aluminium padlocking flap cover. The flap is depressed to actuate the unit with the padlock(s) in position. The actuator remains in the operated position until access is allowed by removal of the padlock(s). Used to prevent unauthorised resetting of stayput actuators.
	U310-R	Grey/Red die-cast aluminium padlocking flap cover. The cover is depressed to operate the pushbutton, and it is manually held down whilst the locking plate and padlock(s) are inserted. The pushbutton remains depressed until the padlock(s) are removed. Used as a hold button.
	PB 1251	Tightening Spanner for all '32 Series' actuators and indicators.
	DC800/KEY	Spare key for key reset actuators.

32 SERIES CONTACT BLOCKS

These contact blocks are designed to be fitted to the 32 series actuators and are supplied in various formats to suit the rail application.
For gold flash contacts, add /GF to the part number

	Cat. No.	Description	Range	No of Contacts
	NCDT1/RT	Contact block with mounting screws. Max 3 contact blocks can be fitted to an actuator.	NCDT	1NO/1NC
	NCDT2/RT	Contact block with mounting screws. Max 3 contact blocks can be fitted to an actuator.	NCDT	2N/O
	NCDT3/RT	Contact block with mounting screws. Max 3 contact blocks can be fitted to an actuator.	NCDT	2N/C
	S1	Contact block with mounting screws and 2 spacer pillars. Max 4 contact blocks can be fitted to an actuator.	S1	1NO/1NC
	S2/MBB	Make before break changeover contact block with mounting screws and 2 spacer pillars. Max 4 contact blocks can be fitted to an actuator.	S1	MBB C/O
	U42	Mounting screws for S1 contact blocks	S1	-
	M*	*Up to 16 normally open or normally closed contact blocks can be factory fitted to actuator. Cannot be purchased separately.	MR	1 N/O or 1 N/C
	LPMA	Contact block is factory fitted to actuator. Cannot be purchased separately.	LPMA	1N/O + 1N/C

32 SERIES CONTACT BLOCK TECHNICAL SPECIFICATION

NCDT CONTACT BLOCK

	Unit	Sym	NCDT	
			a.c.	d.c.
Utilisation Category			AC15	DC13
Rated Insulation Voltage	U_i	V	660	660
Rated Operational Voltage	U_e	V	250	120
Rated Operational Current	I_e	A	4	1
Continuous thermal current	I_{th}	A	10	10

S1 CONTACT BLOCK

	Unit	Sym.	Category	S1
Thermal rating	A	I_{th}		10
Rated voltage	V	U_i		660
Switching characteristics	A	AC	@110V	6
			@250V	3
		DC	@110V	2.5
Contact material				Fine Silver
Mechanical endurance			Standard	1.0×10^6
			Twist to reset	0.5×10^6
Terminal size				M4 screw & clamp
Cable size		mm^2		4

MINI-ROTARY (MR) CONTACT BLOCK

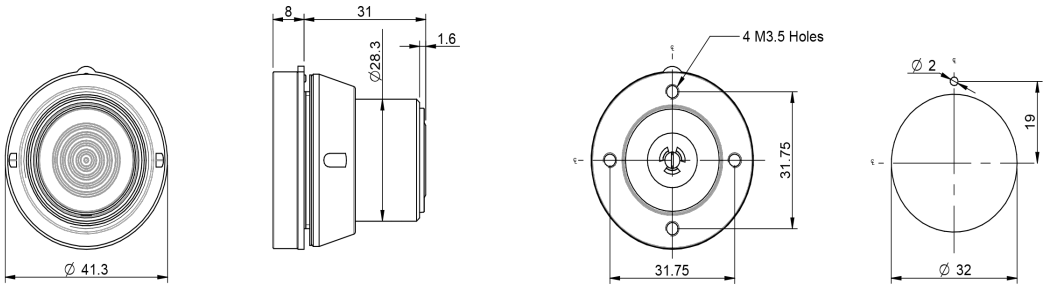
	Unit	Sym.	Category	MR
Thermal rating	A	I_{th}		20
Insulation voltage	V	U_i		690
Switching characteristics	A	AC20A	250V / 415V	20
		AC21A	250V / 415V	20
		AC22A	250V / 415V	20
		AC23A	250V	20A / 3.0kW
			415V	20A / 9.5kW
Operational current (DC21)	A	U_e	220V	0.66
			110V	2.5
			55V	16.0
			30V	18.0
Rated short time withstand	A		1 sec	434
Max. BS 88 backup fuse	A			32
Contact material				Fine Silver*
Mechanical cycles			Operational	$> 0.5 \times 10^6$
Terminal size				M4

LPMA CONTACT BLOCK

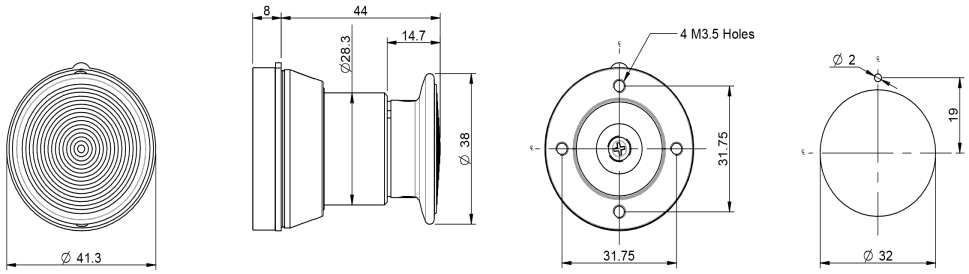
	Sym.	Unit	Category	LPMA	
	A	I_{th}	Pf / T.C.	20	
Rated operational power	AC	V / A	0.75-0.78 lag	24V	20A
				48V	20A
				64V	20A
				110V	20A
				240V	20A
	AC	V / A	Resistive	24V	20A
				48V	20A
				64V	20A
				110V	20A
				240V	20A
	DC	V / A	15mS T.C.	24V	-
				48V	-
				64V	-
				110V	3A
				240V	-
	DC	V / A	Resistive	24V	20A
				48V	20A
				64V	20A
				110V	4A
				240V	0.5A

DIMENSIONS

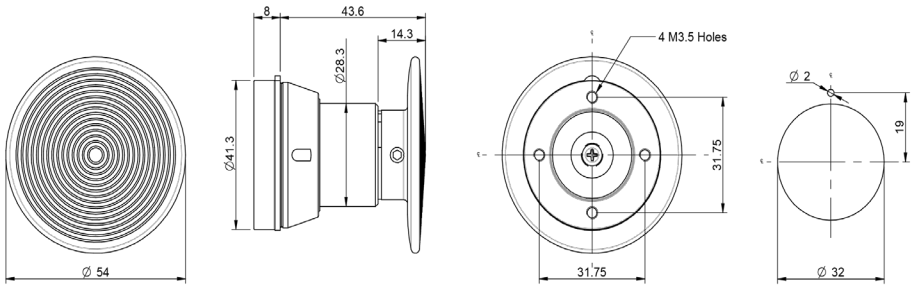
PR / PG / PY / PZ / PB / PW



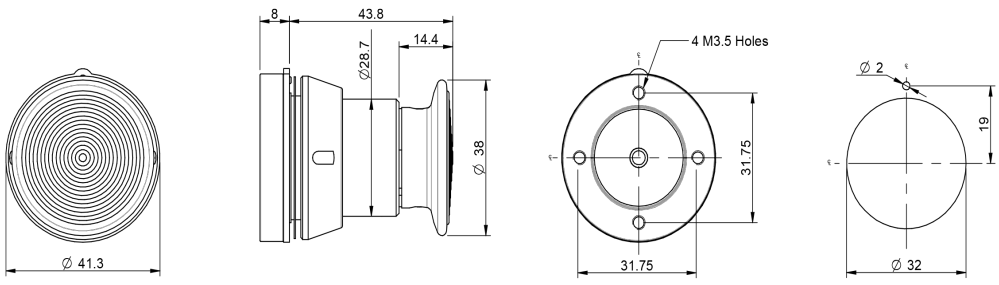
PMR / PMB / PMG / PMY / PMZ



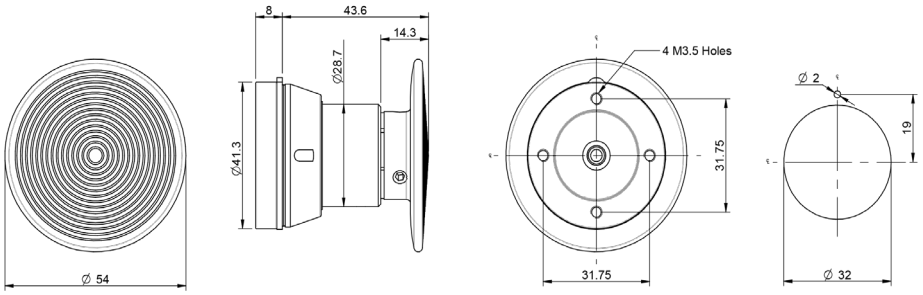
PMLR / PMLB



PMRH / PMBH / PMGH / PMYH / PMZH

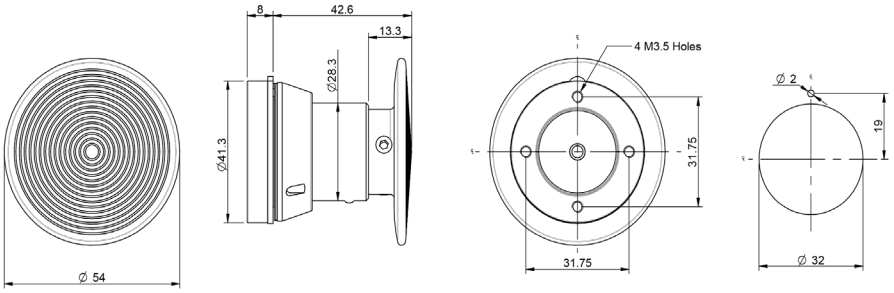


PMLRH / PMLBH

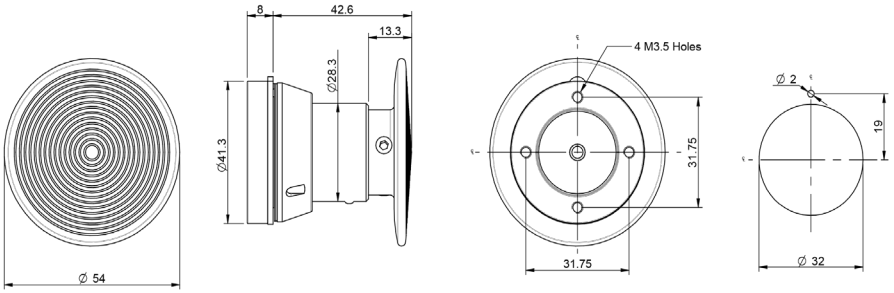


DIMENSIONS

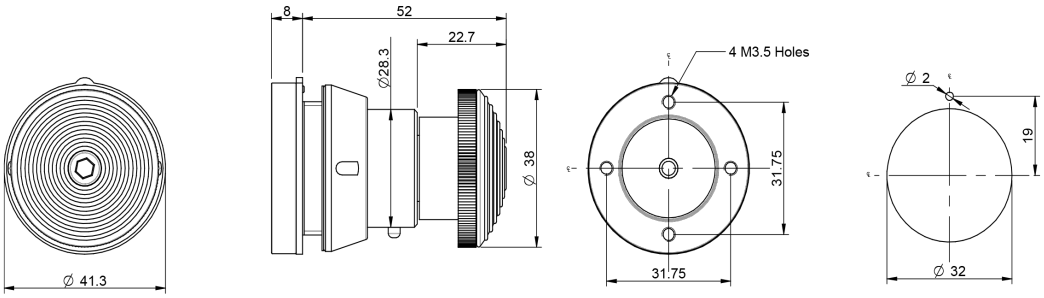
PMR-U12 / PMB-U12 / PMG-U12 / PMY-U12 / PMZ-U12



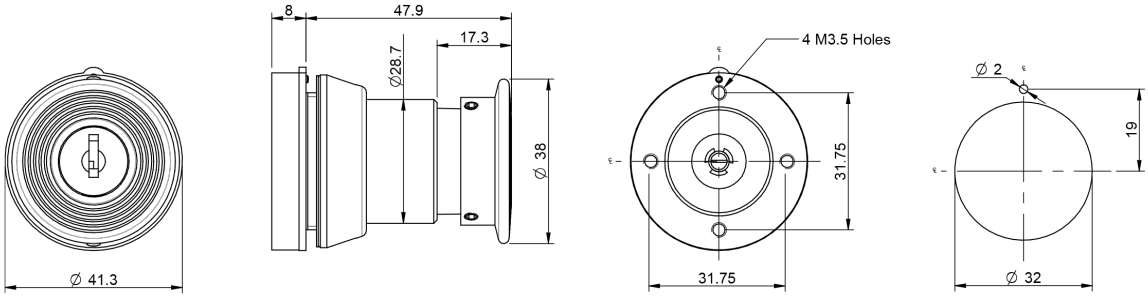
PMLR-U12 / PMLB-U12



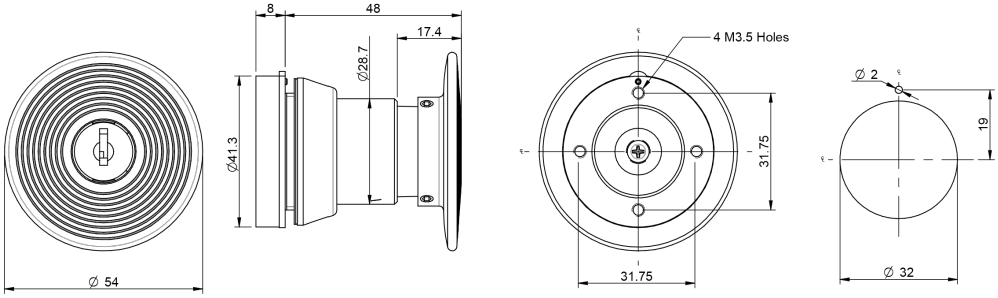
PMR-U59



PMRA-U19 / PMBA-U19

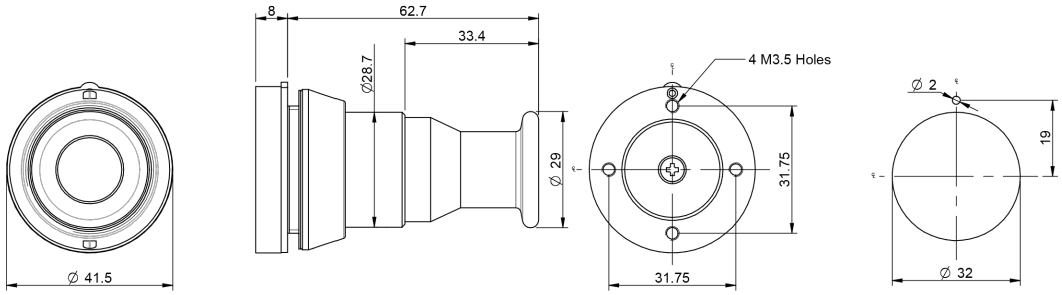


PMLRA-U19 / PMLBA-U19

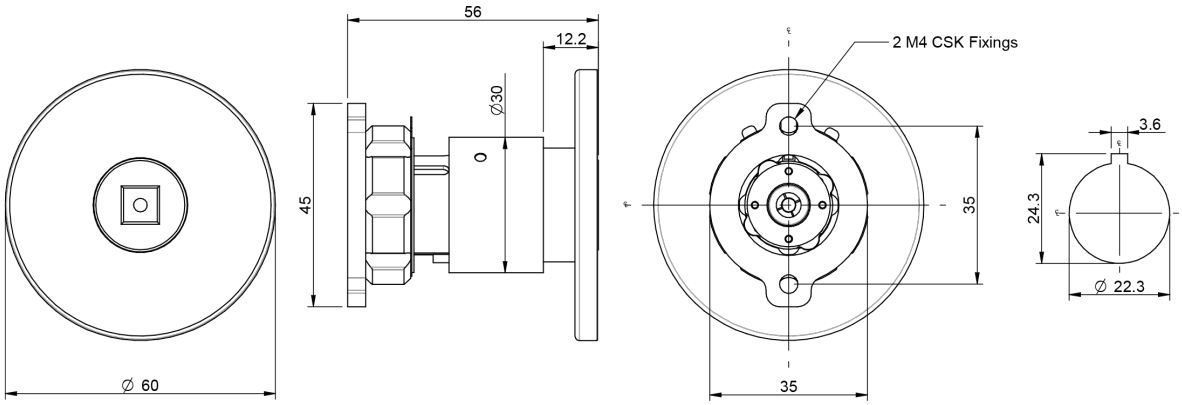


DIMENSIONS

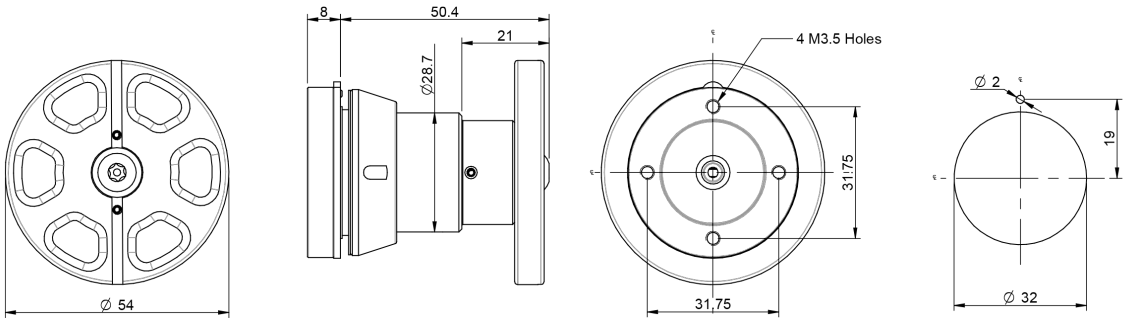
PMARH-U51



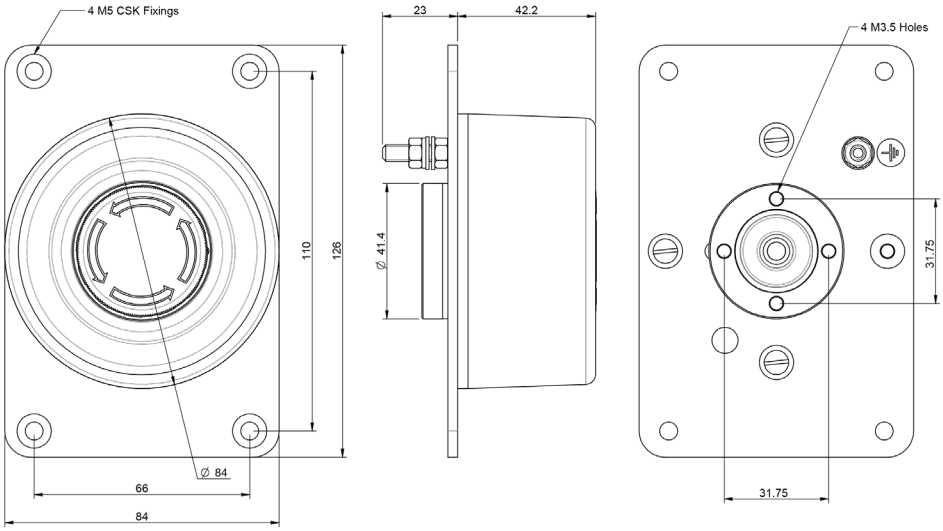
PBSP2899 / PBSP2160



PMLR-U94-M



TPA0152



30 SERIES HEAVY DUTY PUSHBUTTON ACTUATORS

These heavy duty low projection actuators are designed specifically for panel or cab desk installation and designed to accept modular contact blocks. Various AC & DC indicators and illuminated pushbuttons are available to choose from with sealing up to IP65. Square low projection bezels available on request.

MATERIAL & FINISH

- Round low projection bezels.
- Die cast housing and locking rings.
- Quick release contact block adaptor.
- High quality satin finish.

COMPLIANCE

- EN61373 compliant (with rotary switch fitted).

	Cat. No.	Description	No of Contacts
	30P	Pushbutton actuator available in a variety of colours. For your switch to be latching rather than momentary please add 'L' to the part number.	Max 3 NCDT Type or Max 4 M Type
	30PI	Illuminated Pushbutton actuator available in a variety of colours and voltages. For your switch to be latching rather than momentary please add 'L' to the part number.	Max 3 NCDT Type or Max 4 M Type
	30M	Mushroom actuator available in a variety of colours. Textured button surfaces are available to special order	Max 3 NCDT Type
	30I	Indicator available in a variety of colours and voltages.	N/A
	30T	Red Twist-to-Reset actuator.	Max 3 NCDT Type

PART NUMBER CONFIGURATOR

Actuator Type

30PI

30P — Pushbutton
30PI — Pushbutton Illuminated
30M — Mushroom
30I — Indicator
30T — Twist-to-Reset

Latching

L

For your switch to be maintained rather than momentary please add 'L' to the part number.

Colour

/Z

R — Red
B — Black
G — Green
W — White
Y — Yellow
Z — Blue

Voltage

/110

12 — 12VDC
24 — 24VDC
48 — 48VDC
110 — 110VDC
240 — 240VDC

For AC add 'A' the number e.g. 240A- 240VAC. Applicable for Indicator & illuminated push buttons only. Other voltages available on request.

No of Contacts

/2NO2NC

2NO — 2 Normally open
2NC — 2 Normally closed
1NO1NC — 1 Normally open / 1 Normally closed
2NO2NC — 2 Normally open / 2 Normally closed

Up to 3 contact blocks are available on request. Not applicable for Indicators only.

30 SERIES CONTACT BLOCKS

The contact block is designed to be fitted to the 30 series Heavy Duty pushbutton actuators and are supplied in various formats to suit the rail application.

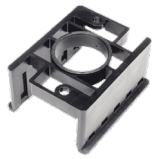
The NCDT*** Type switch contact blocks are available in various normally open or normally closed configurations and are stackable up to 3 tiers.

The M** latching type switch contact blocks are available in both normally open and normally closed configurations and can be fitted using the MHR_5C holders. Illuminated types are provided using MFL and ML units.

	Cat. No.	Description	Range	No of Contacts
	NCDT1/RT	Contact block with mounting screws	NCDT	1NO/1NC
	NCDT2/RT	Contact block with mounting screws	NCDT	2N/O
	NCDT3/RT	Contact block with mounting screws	NCDT	2N/C
	MTI	Modular Contact Block, Momentary	M Type	1N/O
	MTO	Modular Contact Block, Momentary	M Type	1N/C
	MFL	Latching Lamp Module- BA9s- When used as the centre element in the module holder, it provides a maintained unit with the adjacent momentary type modules. Max. 250V 2W.	M Type	-
	MF	Latching Module - When used as the centre element in the module holder, it provides a maintained unit with the adjacent momentary type modules.	M Type	-

30 SERIES HEAVY DUTY PUSHBUTTON ACCESSORIES

Accessories are available for the 30 series pushbutton actuators and illuminated push buttons.

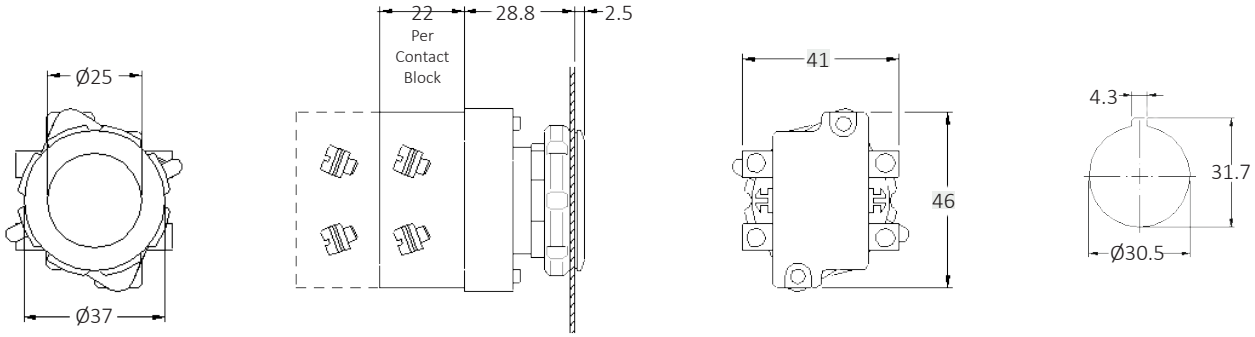
	Cat. No.	Description
	MHR_5C	Holder for up to x5 M-Type modules with fitting screws N.B. Not suitable for emergency stop use
	TBC 0089	Contact block terminal cover (For NCDT contact blocks only)
	TBC 0307	Sheet steel panel locking ring tightening tool Side access tool
	TBC 0308	Panel locking ring tightening tool
	TBC 0361	Push button actuator release tool (yellow clip)
	TBC 0260	Stainless steel full shroud
	TBC 0226	Aluminium half shroud

TECHNICAL SPECIFICATION

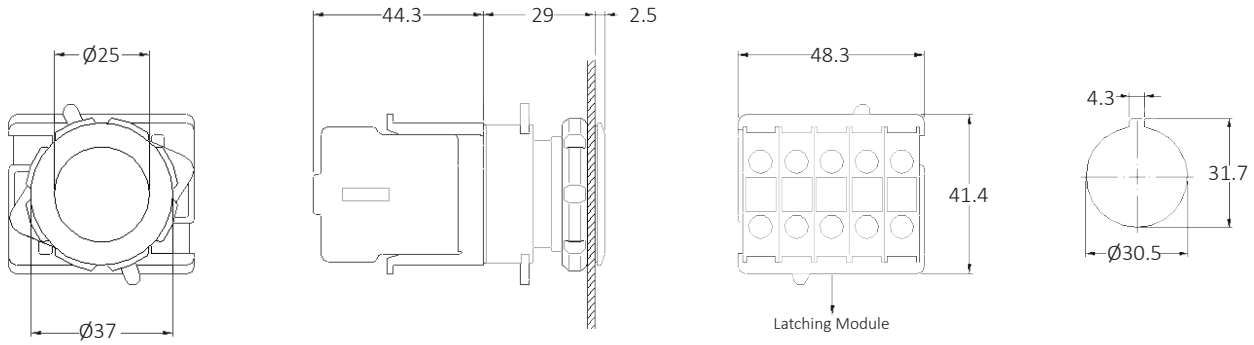
Application	Unit	Sym	NCDT Type		M Type						
			a.c.	d.c.	a.c.		d.c.				
Utilisation Category			AC15	DC13	AC15		DC13				
Rated Insulation Voltage	U_i	V	660	660	600		600				
Rated Operational Voltage	U_e	V	250	120	250	440	24	60	125	250	440
Rated Operational Current	I_e	A	4	1	3	1.6	2	1	0.4	0.2	0.12
Breaking Capacity	I_e		-	-	10				1.1		
Continuous thermal current	I_{th}	A	10	10	16				16		

DIMENSIONS

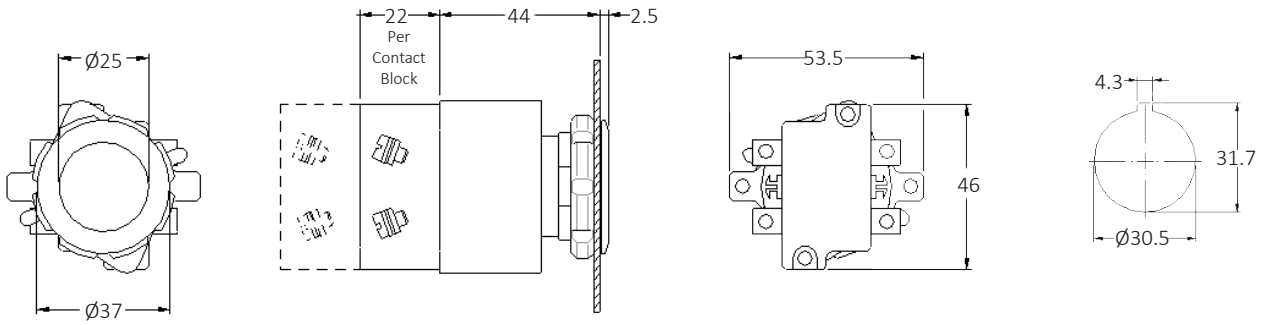
ROUND NON ILLUMINATED PUSHBUTTON ACTUATOR WITH NCDT TYPE CONTACT BLOCKS



ROUND NON ILLUMINATED PUSHBUTTON ACTUATOR WITH LATCHING M TYPE CONTACT BLOCKS

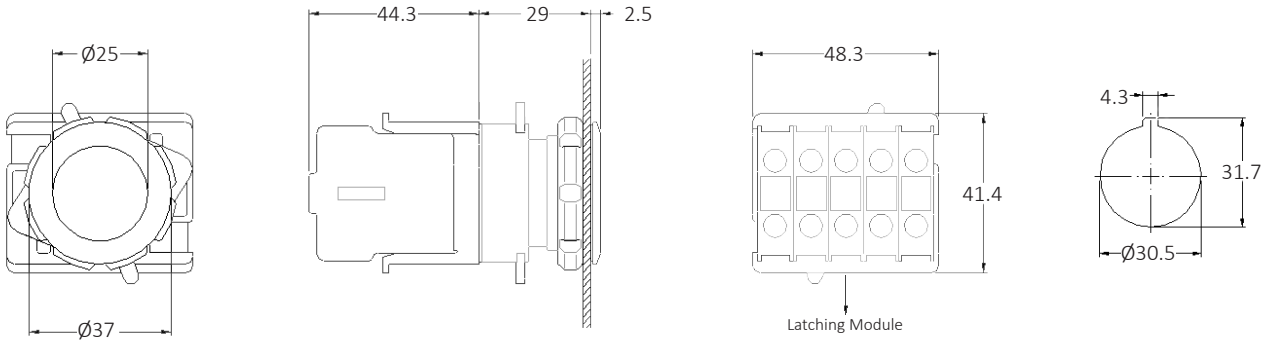


ROUND ILLUMINATED ACTUATOR WITH NCDT TYPE CONTACT BLOCKS

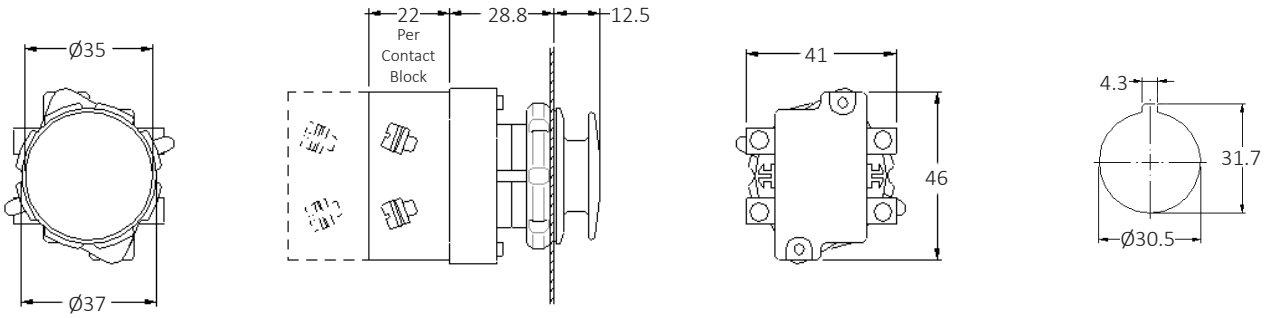


DIMENSIONS

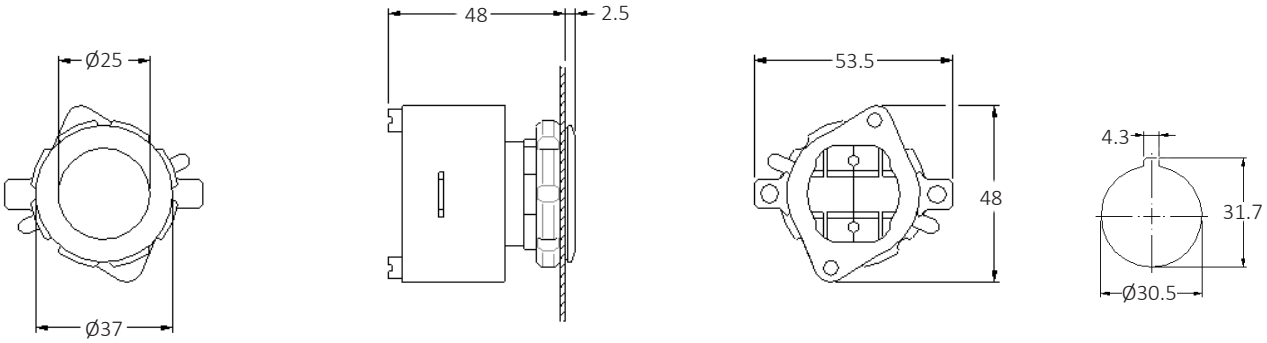
ROUND ILLUMINATED ACTUATOR WITH LATCHING M TYPE CONTACT BLOCKS



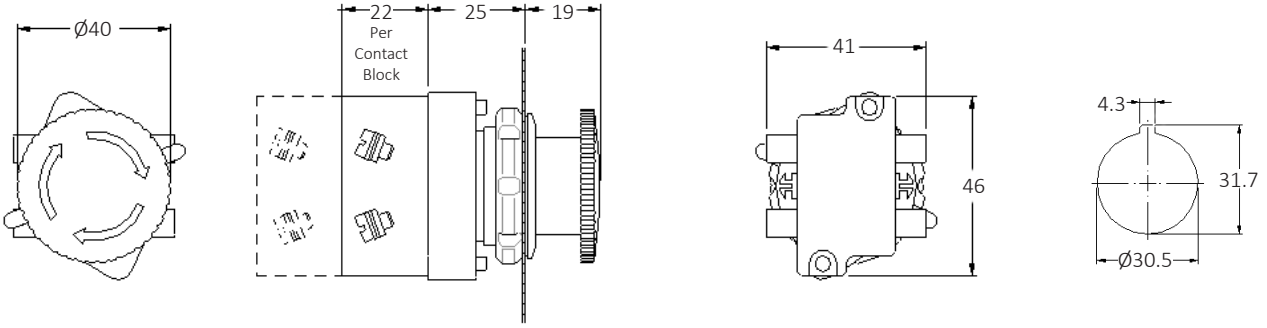
ROUND MUSHROOM PUSHBUTTON ACTUATOR WITH NCDT TYPE CONTACT BLOCKS



ROUND INDICATOR LAMP



TWIST-TO-RESET ACTUATOR WITH NCDT TYPE CONTACT BLOCKS

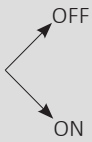


DRIVERS REMINDER APPLIANCE (DRA) SWITCH

A driver's reminder appliance (DRA) is a manual switch in the driving cab of a passenger train. When operated it glows bright red and prevents the driver from being able to apply power. Train drivers are required to "set" the DRA when they stop their train either at a red signal or after passing a caution signal. When set, the DRA serves to remind the driver to seek authority proceed or to proceed at caution. The driver must "reset" the DRA to be able to apply traction power.

Many train builders and operators are moving away from push-pull switches and are opting for rotary switches which require a smaller footprint on the driver's desk.

We offers a range of rotary DRA switches which can be supplied in a wide variety of mechanical and electrical configurations to suit the needs of individual vehicles and operators. They can be provided as switches alone, or pre-wired to a harness and connector and optionally fitted in a bespoke panel to provide a drop-in solution for new build and retrofit applications.

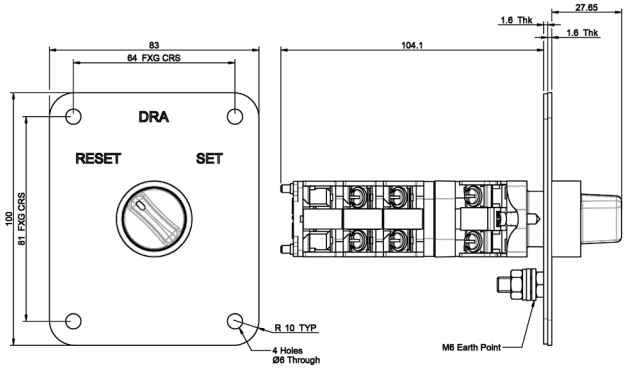
Cat. No.	Description	Switch Type	Switch Position
TPA0415	45° 2 position "RESET" / "SET" DRA switch. Slow make depending action contact type. Supplied with 4 fixing hole legend plate.	Ø22 with illuminated head	
TPA0431	45° 2 position "OFF" / "ON" DRA switch. Slow make depending action contact type. Supplied with 4 fixing hole legend plate.	Ø22 with illuminated head	

TECHNICAL SPECIFICATION

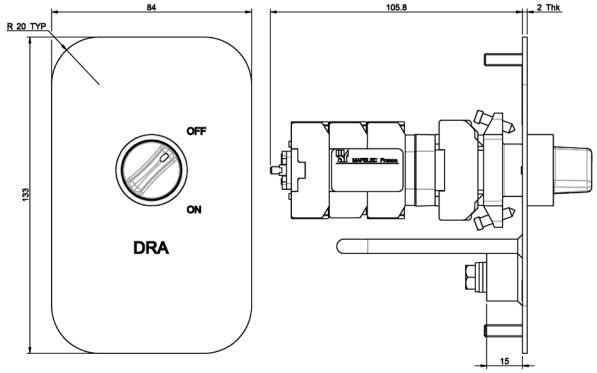
	Sym.	Unit	Category	TPA0431 / TPA0415
Rated thermal current	I_{th}	A		20
Rated insulation voltage	U_i	V		630
Rated surge voltage	U_{im}	kV		6
Operating power			AC-12 AC-15 DC-12 DC-15	230V/15A & 400V/8A 230V/8A & 400V/8A 24V/15A & 110V/8A 24V/4A & 110V/1A
Operational voltage of LED circuit		V		24- 48
No of LEDs				2
Max. no of contacts				16 (8 stacks)
Operating temp.		°C		-40°C to +70°C
Service life				300,000 operations
Connection			Screw and bracket Single or double	min 1x 0.22 mm² | max. 2x2.5 mm² 6.35 mm clip

DIMENSIONS

TPA0415

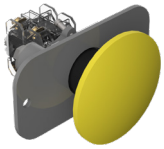


TPA0431



FOOTSWITCHES

We manufacture a wide range of footswitches which typically find applications in the driver's footwell and as door controls. The table below gives some examples of the breadth and versatility of the range, please contact us to discuss your specific requirements.

	Cat. No.	Description
	TPA 0006 + TPA 0007	Passenger emergency footswitch installed in the drivers cab.
	TPA 0407 + TPA0425	Low profile IP65 footswitch installed on the floor outside the Internal Kitchen Door in the First Class Catering Car. They are foot operated to enable handsfree access by the train crew catering service. The press to operate sealed switch is housed in an IP65 grey powder coated mild steel enclosure with an easy fit 4 way Deutch connector.
	TBA 0261	Robust heavy duty brake override footswitch, supplied in IP65 stainless steel casing.

TECHNICAL SPECIFICATION

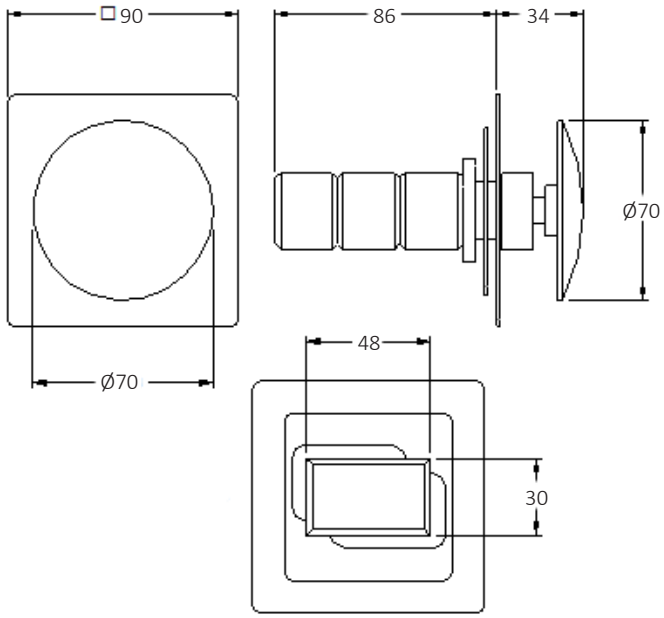
	Unit	TPA0006	TPA0007	TPA0407 / TPA0425	TBA0261
Application		Passenger emergency override with mounting panel	Passenger emergency override with mounting panel	Catering car galley door	Passenger emergency override
Function		1 x N/O, 1 x N/C, 2 x C/O	1 x N/C, 1 x C/O	1 x C/O	2 x N/O, 2 x N/C
Cable length (m)		1.5	1.5	Internal cable connection	Supplied w/o wiring
Cable csa (mm2)		1.5	1	0.5	Supplied w/o wiring
Termination		Entrelec 12-way socket	Deutsch 6-way socket	Deutsch 4-way plug and socket	Direct to contact blocks
Maximum voltage (AC, resistive load)	V	600	600	250	See NCDT on page 24
Rated current (thermal)	A	10	10	7.5	See NCDT on page 24
Minimum whetting current @220V	mA	10	10	1 mA @ 4 V	See NCDT on page 24
Utilisation power ratings		AC 15: 230 / 400 V- 8 / 4 A DC 13: 24 V / 10 A	AC 15: 230 / 400 V- 8 / 4 A DC 13: 24 V / 10 A	12 V dc: 6 A resistive / 6 A inductive @ L/R = 5 mS. 24 V dc: 6 A resistive / 5 A inductive @ L/R = 5 mS.	See NCDT on page 24
Contact plating		Ag/Ni, optional gold flash	Ag/Ni, optional gold flash	Gold flash over Ag/Ni	See NCDT on page 24
Minimum mechanical / electrical life		1 x 10^6 mechanical 1 x 10^5 @ AC 15, DC 13	1 x 10^6 mechanical 1 x 10^5 @ AC 15, DC 13	1 x 10^6 mechanical	See NCDT on page 24
Storage temp range	°C	-40 to +70	-40 to +70	-30 to +50	See NCDT on page 24
Operation temp range	°C	-25 to +70	-25 to +70	-30 to +50	See NCDT on page 24

FOOTSWITCHES STANDARD COMPLIANCE

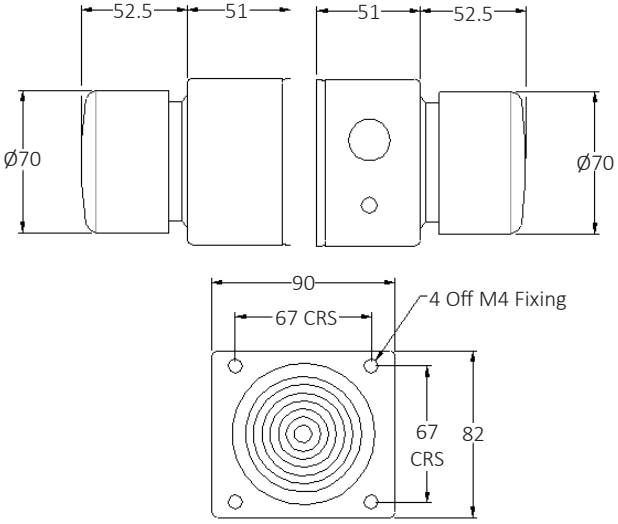
	TPA0006	TPA0007	TPA0407 / TPA0425	TBA0261
EN 60529: IP rating when installed in panel or enclosure	IP40 minimum	IP40 minimum	IP65	IP65
EN 45545-2 / NF F 16-101, 102	Yes, NF F 16-102	Yes, NF F 16-102	Yes	Yes
EN 61373	Yes	Yes	Yes	Yes
EN 60947-5	Yes	Yes	Yes	Yes

DIMENSIONS

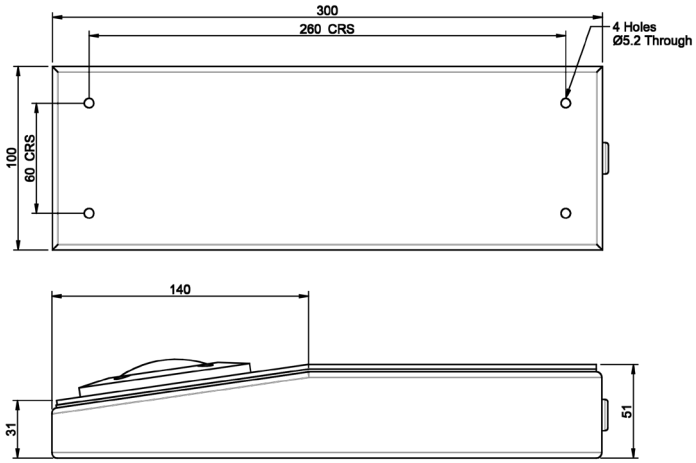
TPA 0006 / TPA 0007



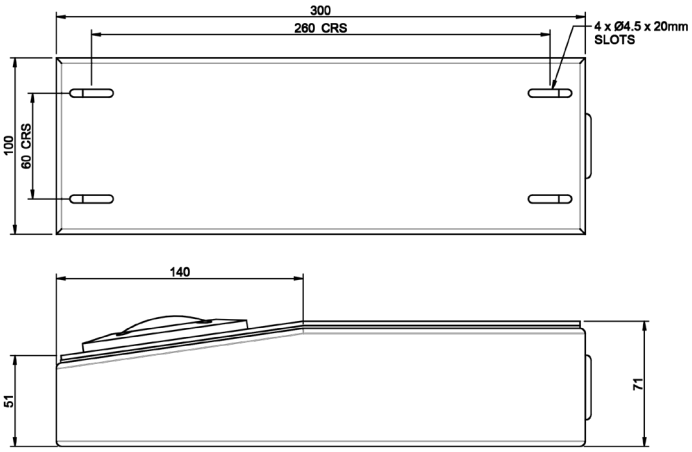
TPA 0261



TPA 0407



TPA 0425



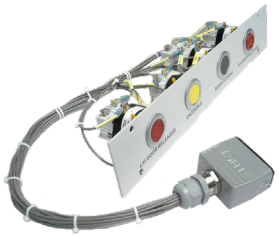
CONTROL PANELS

C&D manufacture complete panel assemblies ready to fit into your vehicle. All aspects of panel design are customisable, from the layout and lettering of the panel to the electrical and mechanical interfaces, so as to provide a look and feel that is consistent with the vehicle's concept. We can utilize C&D switches and indicators but also others on request to ensure the customer has the styling they require.

	Cat. No.	Description
	TPA0248*	These are 4 saloon door control panel with loom and connector, situated behind the driver (one on the left wall , one right wall, two central to enable driver to control the opening of passenger doors). Designed for TFL 92 tube stock. */1 – Cab desk side 1 */2 – Cab desk side 2 */3 – Backwall side 2 */4 – Backwall side 4
	TPA0300*	External cab crew access "open / close" push button door panel. These are fitted either side of the drivers door on the outside of the train to enable the driver to gain access to the cab. Designed for TFL Central Line. *V- Driver side *H- Instructor side
	TPA0433	An IP66 square panel mounted L3 crew door switch fitted externally at driver door position. Designed for Hitachi.
	TPA0436	An IP66 external panel mounted L1 crew switch and "Out of Service" illuminated indicator panel to allows access to crew /catering staff. Designed for Hitachi.
	TPA0438	An IP66 crew door access switch panel designed and fitted to the outside of the brand new Hitachi high speed class 810.
	TPA0090	Passenger operated call for aid control panel. This unit allows on-board crew to respond to passengers and was supplied by C&D as part of a retrofit programme for the Tyne and Wear Metro.

CONTROL PANELS

Whether you are looking for cab panels, train managers' panels or passenger controls and interfaces, C&D is your one-stop supplier.

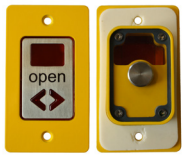
	Product Range	Description
	Safety System Isolation Panels	A range of assembled safety system isolation panels incorporate c&d's latching and non-latching driver key operated actuators and mini-rotary or R6/R16 rotary panel switches, each configured and wired to meet the customer's functional requirements. Electrical interfaces to the vehicle wiring are provided to the customer's specification, and may utilise fixed connectors or flying harnesses.
	Crew Control Panels	Cab desks provide the vehicle designer with many challenges: an uncluttered, ergonomic layout facing the driver often hides complex functionality and inter-connection requirements behind the panel. Each panel can be as simple as required in design and workmanship, while using bespoke connectors to provide the perfect solution to a tight space constraint.
	Overhaul, Modification, Re-Purposing	Rolling stock represents a major capital commitment, and overhauling and re-purposing are two ways of enhancing asset value and return-on-investment. We work with rolling stock operators, maintainers and owners to overhaul, modify and re-purpose existing control panels, regardless of their age, condition and complexity. If you are looking to breathe new life into old panels, we can help.
	Retrofit	Over the life of a vehicle, many new functions may be added. We can offer a complete design and manufacture package to provide panels for retrofit, taking into account existing space constraints, design conventions and aesthetics. We can incorporate our own switches and indicators with any customer's bespoke typeface.
	Call for Aid	We designed and manufactured bespoke Call for Aid devices for many fleets, both in the UK and abroad. In the passenger space these can incorporate pull-handles or latching push buttons, as well as indicators and audio facilities.

EXTERNAL DOOR CONTROL PANELS

Mechanical 'Pushbutton' style actuators suited for Passenger Doors to replace obsolete & non-compliant actuators. Suitable for Class 165, 166, 323, 365, 465 and 466 vehicles. We can provide a complete service from concept design through to manufacturing, working within Industry Regulatory requirements (RVAR) and the product design aspirations of the customer.

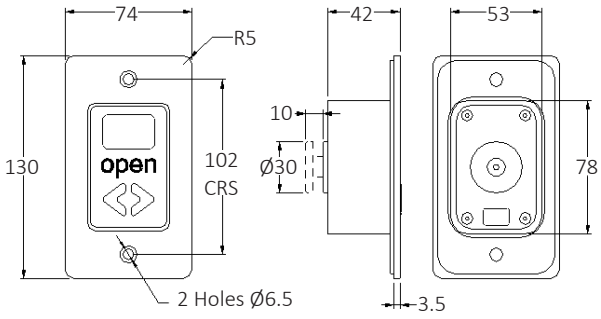
FEATURES AND BENEFITS

- Suitable with both Inductive Proximity Sensor & Mechanical Pushbutton door operations
- UL 94 Compliant
- PRM TSI Compliant
- Designed for existing Door Systems
- Operating Force <15N
- Contrasting Surface Colour (Optional colours to suit application)
- Visual Indication when Operable
- Tactile function markings
- Palm Operable (Flush or Raised Pressel Options)
- Designed for easy maintenance

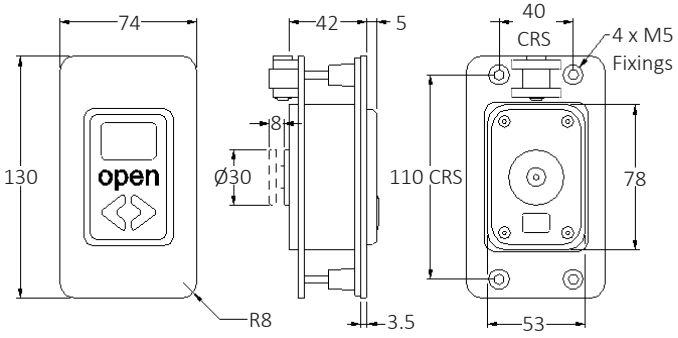
	Cat. No.	Description	Train Class
	TBA0348	Yellow mechanical IP65 palm operable flush Pushbutton door pressel.	Class 323 Trains
	TBA0384	Yellow mechanical IP65 palm operable raised Pushbutton door pressel.	Class 165, 166 & 365 Trains
	TBA0407	White mechanical IP65 palm operable raised Pushbutton door pressel.	Class 465/2, 465/9 & 466 Trains

DIMENSIONS

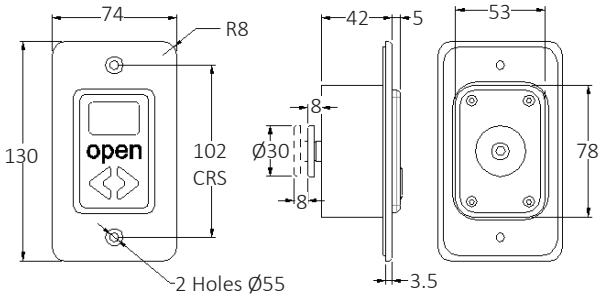
TBA0348



TBA0384



TBA0407



INFRASTRUCTURE

Following the London Kings Cross fire of 1987, the resulting Fennell enquiry prompted the introduction of additional fire precautions for ‘Sub-surface Railway Stations’. These additional requirements were introduced under section 12 of the Fire Precautions Act 1971, and since then have been known simply as Section 12 regs. These regulations have been revoked and partly replaced with:- ‘The Fire Precautions (Sub-surface Railway Stations) (England) Regulations 2009.

Rail infrastructure covers a wide range including ATS and switchgear and Craig & Derricott has supplied equipment into station platforms, escalators, maintenance bays, trackside and more.

Standards Applied: BS EN 60947-3, BS EN 12101-3, BS EN 60529, S1069, S1085, S1109, Directive 2006/42/EU, Directive 2014/35/EU, Directive 2014/30/EU.

TFL (LU) APPROVED SWITCHGEAR

A range of enclosed switchgear that has been designed for the isolation and distribution of electrical supplies, for use on sub-surface and surface railway station installations. All units meet the stringent LUL-TFL fire regulations and international low-voltage switchgear standards required for rail installations.

DIE-CAST ALUMINIUM & STAINLESS STEEL

This range of isolators are available in 25A & 40A. Supplied in either IP65 Die-Cast Aluminium enclosures finished in Light Grey (RAL 7035) LU S1085 compliant paint or IP65 Stainless Steel Grade 304 enclosures in a natural brushed finish.

Each unit is supplied with earthing points on both the lid and base, plus an external stud for earth bonding. The Die-Cast handle is padlockable in both 'Off' and 'On' positions. Optional security head fixing screws and external mounting brackets are available on request. Engraved traffolyte labels in various colours can be supplied attached to the side of the enclosure or supplied loose for fitting adjacent to the isolator.

Cat. No.	Rating	Format	Encl. Size	Encl. Material	Encl. Colour	IP Rating	Cable Entries
DCG252/LUL2	25A	2P	FA	Die-Cast Aluminium	Light Grey (RAL 7035)	IP65	1xM20 + 1xM25 Top & Btm
DCG253/LUL2		3P					
DCG253NL/LUL2		3P+NL					
DCG253EB/LUL2		3P+2EB Aux					
DCG254/LUL2		4P					
DCG402/LUL2	40A	2P	FB	Die-Cast Aluminium	Light Grey (RAL 7035)	IP65	2 x M25 Top & Btm
DCG403/LUL2		3P					
DCG403NL/LUL2		3P+NL					
DCG403EB/LUL2		3P+2EB Aux					
DCG404/LUL2		4P					
DS252/LUL2	25A	2P	A	Stainless Steel Grade 304	Natural Brushed Finish	IP65	2 x M20
DS253/LUL2		3P					
DS253NL/LUL2		3P+NL					
DS253EB/LUL2		3P+2EB Aux					
DS254/LUL2		4P					
DS402/LUL2	40A	2P	B	Stainless Steel Grade 304	Natural Brushed Finish	IP65	2 x M20 + 2 x M25
DS403/LUL2		3P					
DS403NL/LUL2		3P+NL					
DS403EB/LUL2		3P+2EB Aux					
DS404/LUL2		4P					

ACCESSORIES

Cat. No.	Description
SS/SEC	Set of 4 fixing screws for stainless steel enclosures
SS/SEC/TOOL	Security screwdriver bit for stainless steel enclosures
DC/SEC	Set of 4 fixing screws for die-cast aluminium enclosures
DC/SEC/TOOL	Security screwdriver bit for die-cast aluminium enclosures
EFA	External fixing feet for 25A Stainless Steel
EFB	External fixing feet for 40A Stainless Steel
EFD25	External fixing feet for 25A Die-Cast Aluminium
EFD40	External fixing feet for 40A Die-Cast Aluminium

TECHNICAL SPECIFICATION

Data supplied against tests to IEC/BS EN 60947-3.

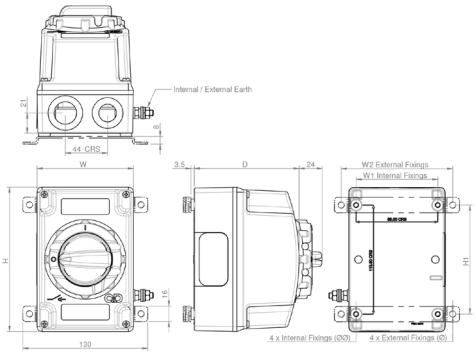
Die-Cast Aluminium Switchgear	Sym.	Unit	Category	25A	40A
Rated thermal current	I_{the}	A		25	40
Rated Insulation voltage	U_i	V		690	690
Rated Impulse voltage	U_{imp}	kV		6	4
Rated operational current (3 phase AC 50/60Hz)	I_e	A	415V AC23A	25	40
Rated operational power	P_e	kW	415V	11	18.5
Conditional short circuit current	Fuse gG	kA / Fuse (A)	415V	50 / 32	50 / 40
Recommended connecting capacity			Terminal type		
		mm²	Flexible cable	6	10
		mm²	Rigid cable	10	16
		mm	Stud/Cu Palm Width	-	-
		Nm	Tightening torque	1.2	2

Stainless Steel Switchgear	Sym.	Unit	Category	25A	40A
Rated thermal current	I_{the}	A		25	40
Rated insulation voltage	U_i	V		690	690
Rated impulse voltage	U_{imp}	kV		6	6
Rated operational current (3 phase AC 50/60Hz)	I_e	A	400V AC23A	21	35
Rated operational power	I_e	kW	230V	3	6
	P_e		400V	11	18.5
Rated short time withstand current	I_{cw}	A	1 sec	500	1100
Max. fuse size for short circuit protection	gG	kA	10kA	35	80
			25kA	32	63
			50kA	32	63
Recommended connecting capacity		-	Terminal type		
		mm²	Flexible cable	6	16
		mm²	Rigid cable	10	25
		Nm	Tightening torque	1.2	1.2

DIMENSIONS

TFL/LU DIE-CAST ALUMINIUM

Size FA



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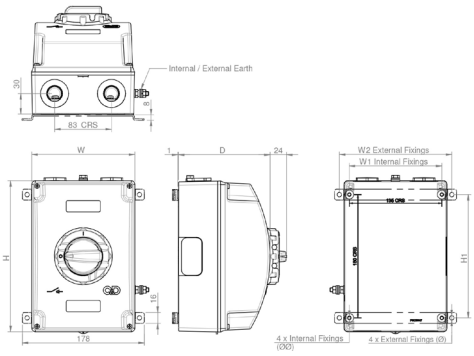
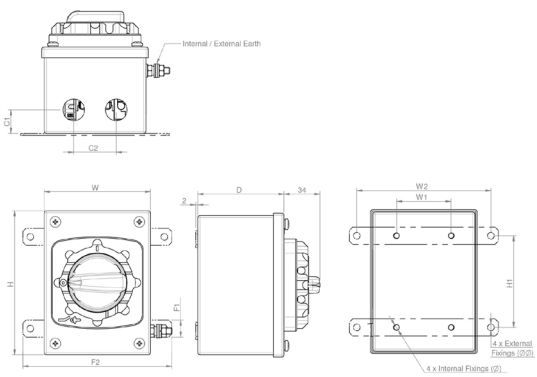


TFL/LU STAINLESS STEEL

Size A- B



Encl. Size	Overall Dims. H	W	D	Fixing Details H1	W1	W2	Ø	Ø Ø
FA	150	100	109	113.5	85	116	6.5	4
FB	220	150	133.5	180	135	164	6.5	4
A	135	100	81	86	52	126	6.5	5.5
B	175	130	99	126	81	155	6.5	5.5

TFL (LU) APPROVED SWITCHGEAR

A range of enclosed switchgear that has been designed for the isolation and distribution of electrical supplies, for use on sub-surface and surface railway station installations. All units meet the stringent LUL-TFL fire regulations and international low-voltage switchgear standards required for rail installations.

SHEET STEEL

A range of isolators and fuse combination units, supplied in IP65 hinged door Sheet Steel enclosure, coated in a protective LU S1085 Compliant Paint Finish: Grey (RAL 7035) powder coat finish, the range comes standard in a three phase and switched neutral configuration and is generously sized to allow easy cable connection. Current ratings of 40A- 800A for Switch Disconnectors and 32A - 630A for fuse combination units are offered in this style.

Each enclosure has removable top and bottom gland plates and a metal anodised aluminium operating handle lockable in both ON and OFF positions. These are also interlocked with the switching device in the ON position preventing unsafe access. All operating handles accept 3 padlocks with a 6.3mm shackle, optional castell locking available on request.

The switch-disconnector range is fire rated for F200, designed specifically for installations where the supply must be maintained for 120 minutes at 200°C

Isolators

Cat. No.	Rating	Format	Encl. Size	Encl. Material	Encl. Colour	IP Rating	Cable Entries
DCG00403N/LUL2	40A	3P+N	1	Sheet Steel	Light Grey (RAL 7035)	IP65	Gland Plates
DCG00633N/LUL2	63A	3P+N	1				
DCG00803N/LUL2	80A	3P+N	3				
DCG01003N/LUL2	100A	3P+N	3				
DCG01253N/LUL2	125A	3P+N	4				
DCG01603N/LUL2	160A	3P+N	4				
DCG02003N/LUL2	200A	3P+N	5				
DCG02503N/LUL2	250A	3P+N	7				
DCG03153N/LUL2	315A	3P+N	8				
DCG04003N/LUL2	400A	3P+N	8				
DCG06303N/LUL2	630A	3P+N	10				
DCG08003N/LUL2	800A	3P+N	10				

Fuse Combination Units

Cat. No.	Rating	Format	Encl. Size	Encl. Material	Encl. Colour	IP Rating	Cable Entries
SFDCG00323N/LUL2	32A	3P+N	2	Sheet Steel	Light Grey (RAL 7035)	IP65	Gland Plates
SFDCG00633N/LUL2	63A	3P+N	2				
SFDCG01003N/LUL2	100A	3P+N	4				
SFDCG01603N/LUL2	160A	3P+N	4				
SFDCG02003N/LUL2	200A	3P+N	6				
SFDCG02503N/LUL2	250A	3P+N	6				
SFDCG03153N/LUL2	315A	3P+N	9				
SFDCG04003N/LUL2	400A	3P+N	9				
SFDCG06303N/LUL2	630A	3P+N	11				

ACCESSORIES

Cat. No.	Description
SAUXKITA	Auxiliary Contact For 32A- 160A Fuse Combination Units
SAUXCO	Auxiliary Contact For 40A- 200A Switch Disconnectors
SAUXKITC	Auxiliary Contact For 200A- 400A Fuse Combination Units & 400A- 800A Switch Disconnectors
SAUXKITB	Auxiliary Contact For 250A Switch Disconnectors
SAUXKITD	Auxiliary Contact For 630A Fuse Combination Units

TECHNICAL SPECIFICATION

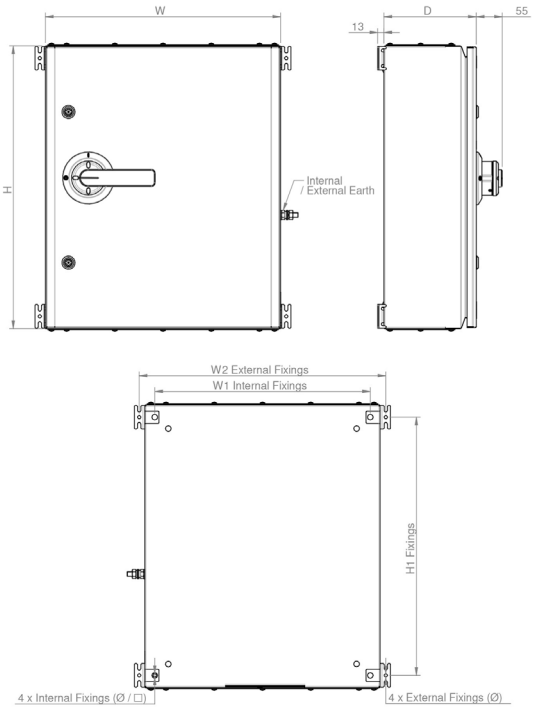
Data supplied against tests to IEC/BS EN 60947-3.

Sheet Steel Isolators	Sym	Unit	Category	40A	63A	80A	100A	125A	160A	200A	250A	315A	400A	630A	800A
Rated thermal current	I_{the}	A		40	63	80	100	125	160	200	250	315	400	630	800
Rated insulation voltage	U_i	V		690	690	690	690	690	690	690	1000	1000	1000	1000	1000
Rated impulse voltage	U^{imp}	kV		6	6	8	8	8	8	8	12	12	12	12	12
Rated operational current	I_e	A	400V AC23A	36	47	80	100	125	132	132	250	315	400	630	720
Rated operational power	P_e	kW	400 / 415V AC23A	18.5	25	47	59	63	75	75	132	160	200	315	355
Short circuit making capacity	I_{cm}	kA	Peak value	2.7	2.9	3.7	3.7	4	5	5	13.6	34	34	34	34
Short circuit withstand (1sec)	I_{cw}	kA	rms value	1.1	1.3	2.6	2.6	2.8	3	3	8	17	17	17	17
Min. mechanical endurance		-	Operations (103)	250	250	50	50	50	50	50	16	10	10	10	10
Min. electrical endurance		-	415V at 0.65 pf	-	-	-	-	-	-	-	1,000	1,000	1,000	500	500
Connecting capacity		-	Terminal type												
		mm^2	Min/Max	6/25	6/25	6/50	6/50	6/70	6/795	6/795	120	185	240	2x185	2x240
		mm	Stud/Cu palm width	-	-	-	-	-	8x25	8x25	10x30	10x30	10x30	12x40	12x40
		Nm	Tightening torque	1.2	1.2	5	5	5	12	12	10	10	10	14	14

Sheet Steel Fuse Comb.		Sym	Unit	Category	32A	63A	100A	160A	200A	250A	315A	400A	630A
Rated thermal current		I_{the}	A		32	63	100	160	200	250	315	400	630
Rated insulation voltage		U_i	V		750	750	750	750	1000	1000	1000	1000	1000
Rated impulse voltage		U^{imp}	kV		12	12	12	12	12	12	12	12	12
Rated operational current	AC	I_e	A	415V AC23A	32	63	100	100	200	250	315	400	630
	DC			220V DC23A	-	-	100/4	100/4	200/3	250/3	315/3	400/3	630/3
Rated conditional (fused) short circuit	kA	kA	kA	S/C current rms	80	80	80	80	80	80	80	80	80
	A	A	A	back-up fuse gG	32	63	100	160	200	250	315	400	630
Min. mechanical endurance			-	Operations	20000	20000	20000	20000	16000	16000	16000	16000	10000
Min. electrical endurance			-	415V at 0.65 pf	1,500	1,500	1,000	1,000	1,000	1,000	1,000	1,000	1,000
BS fuse format					A3	A3	A4	B1, B2	B1, B2	B1, B3	B1, B3	B1, B4	C1, C2
Connecting capacity			-	Terminal type									
			mm^2	Min	6	16	35	70	95	120	185	240	2x185
			mm	Stud/Cu palm width	-	-	8x20	8x20	10x25	10x25	10x25	10x25	12x50
			Nm	Tightening torque	2.5	2.5	10	10	15	15	15	15	20

DIMENSIONS

Sizes 1- 11



Encl. Size	Overall Dims.			Fixing Details				
	H	W	D	H1	W1	W2	Ø	Ø Ø
1	300	300	150	248	258	324	10.5	7
2	400	400	200	348	358	424	10.5	7
3	400	300	150	348	258	324	10.5	7
4	500	400	200	448	358	424	10.5	7
5	600	400	200	548	358	424	10.5	7
6	600	600	300	548	558	624	10.5	7
7	600	500	200	548	458	524	10.5	7
8	800	600	200	748	558	624	10.5	7
9	800	600	300	748	558	624	10.5	7
10	1000	600	300	948	558	624	10.5	7
11	1000	800	300	948	758	824	10.5	7

TFL (LU) APPROVED SWITCHGEAR

A range of enclosed switchgear that has been designed for the isolation and distribution of electrical supplies, for use on sub-surface and surface railway station installations. All units meet the stringent LUL-TFL fire regulations and international low-voltage switchgear standards required for rail installations.

FIRE RATED

The 20A to 630A F400 Fire Rated product range is supplied in either an IP65 Die-Cast Aluminium enclosure or a hinged door Sheet Steel enclosure, coated in a protective LU S1085 Compliant Paint Finish: Red (RAL3020) powder coat finish. The Die-Cast Aluminium products, 20A-40A, are fitted with a black powder coated Die-Cast Aluminium handle while the Sheet Steel enclosed products, 63A and above, are fitted with a highly durable aluminium operating handle. All units from this range feature the ability to be padlocked in both the OFF and ON positions as standard.

The interior switches are constructed from a high temperature grade thermoset material, designed specifically for installations where the supply must be maintained for 2 hours at 400°C. All units are suitable for enhanced fire rated cables. When using enhanced fire resistant power cables, please check gland sizes to suit the required product. All F400 products are suitable for F300 applications.

Factory fitted auxiliaries on the 20A-125A are fully rated and fire rated to F400. Non-fire rated auxiliaries are available for the 160A-630A hinged door Sheet Steel products on request. Stainless Steel 316L enclosures are also available on request for the hinged door Sheet Steel products.

Cat. No.	Rating	Format	Encl. Size	Encl. Material	Encl. Colour	Cable Entries
F400DDR00202/LUL2	20A	2P	FA	Die-Cast Aluminium	Red RAL 3020	1xM20+1xM25 Top & Btm
F400DDR00203/LUL2		3P				
F400DDR00203NL/LUL2		3P+NL				
F400DDR00203EB/LUL2		3P+2EB Aux				
F400DDR00204/LUL2		4P				
F400DDR00206/LUL2		6P				
F400DDR00252/LUL2	25A	2P	FA	Die-Cast Aluminium	Red RAL 3020	1xM20+1xM25 Top & Btm
F400DDR00253/LUL2		3P				
F400DDR00253NL/LUL2		3P+NL				
F400DDR00253EB/LUL2		3P+2EB Aux				
F400DDR00254/LUL2		4P				
F400DDR00256/LUL2		6P				
F400DDR0040T2/LUL2	40A	2P	FB	Die-Cast Aluminium	Red RAL 3020	2xM25 Top & Btm
F400DDR0040T3/LUL2		3P				
F400DDR0040T3NL/LUL2		3P+NL				
F400DDR0040T3EB/LUL2		3P+2EB Aux				
F400DDR0040T4/LUL2		4P				
F400DDR0040T6/LUL2		6P				
F400SDR00633NL/LUL2	63A	3P+NL	F1	Sheet Steel	Red RAL 3020	Gland Plates
F400SDR00633EB/LUL2		3P+2EB Aux				
F400SDR00803EB/LUL2	80A	3P+2EB Aux	F2	Sheet Steel	Red RAL 3020	Gland Plates
F400SDR00804/LUL2		4P				
F400SDR01253/LUL2	125A	3P	F4	Sheet Steel	Red RAL 3020	Gland Plates
F400SDR01253EB/LUL2		3P+2EB Aux				
F400SDR01254/LUL2		4P				
F400SDR01604/LUL2	160A	4P	F5	Sheet Steel	Red RAL 3020	Gland Plates
F400SDR02004/LUL2	200A	4P	F5	Sheet Steel	Red RAL 3020	Gland Plates
F400SDR02504/LUL2	250A	4P	F5	Sheet Steel	Red RAL 3020	Gland Plates
F400SDR03154/LUL2	315A	4P	F6	Sheet Steel	Red RAL 3020	Gland Plates
F400SDR04004/LUL2	400A	4P	F6	Sheet Steel	Red RAL 3020	Gland Plates
F400SDR06304/LUL2	630A	4P	F8	Sheet Steel	Red RAL 3020	Gland Plates

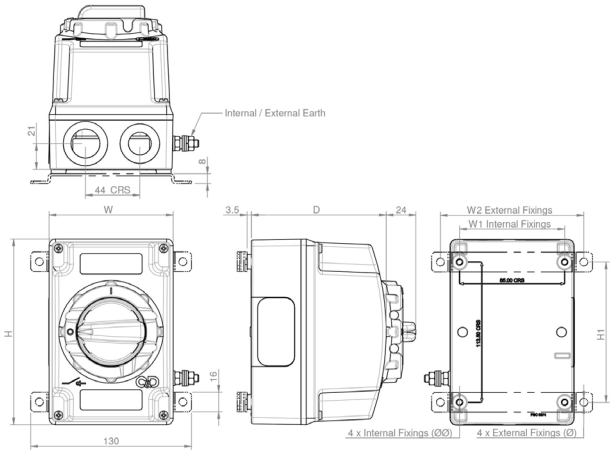
TECHNICAL SPECIFICATION

Data supplied against tests to IEC/BS EN 60947-3.

Fire Rated Isolators	Sym	Unit	Category	20A	25A	40A	63A	80A	125A	160A	200A	250A	315A	400A	630A
Rated thermal current	I_{the}	A		20	25	40	63	80	125	160	200	250	315	400	630
Rated Insulation voltage	U_i	V		690	690	690	690	690	690	1000	1000	1000	1000	1000	1000
Rated Impulse voltage	U_{imp}	kV		6	6	6	6	6	6	12	12	12	12	12	12
Rated operational current	I_e	A	415V AC23A	20	25	40	63	80	100	160	200	250	315	400	630
			690V AC23A	-	-	-	-	-	-	160	200	250	315	350	350
Rated operational power	P_e	kW	415V	9.5	11	18.5	30	40	55	90	110	132	200	200	315
Conditional short circuit current	Fuse gG	kA/Fuse (A)	415V	50/32	50/32	50/40	50/63	50/150	50/200	50/160	50/200	50/250	50/315	50/400	50/630
			690V	40/32	40/32	-	-	50/63	50/63	50/160	50/200	50/250	50/315	50/400	50/630
Short circuit making capacity	I_{cm}	kA	Peak value	-	-	-	-	-	-	35	35	35	65	65	80
Short circuit withstand	I_{cw}	kA	RMS value	-	-	-	-	1.5	1.5	8	8	8	17	17	17
Recommended connecting capacity			Terminal type												
		mm^2	Flexible cable	6	6	10	10	50	50	95	95	120	2/150	2/150	2/185
		mm^2	Rigid cable	10	10	16	25	35	50	95	95	120	2/150	2/150	2/185
		mm	Stud/Cu Palm Width	-	-	-	-	M10/ 21	M10/ 21	M10/ 30	M10/ 30	M10/ 30	M10/ 30	M10/ 40	M10/ 40
		Nm	Tightening torque	1.2	1.2	2	2	12	12	30	30	30	30	30	30

DIMENSIONS

Size FA



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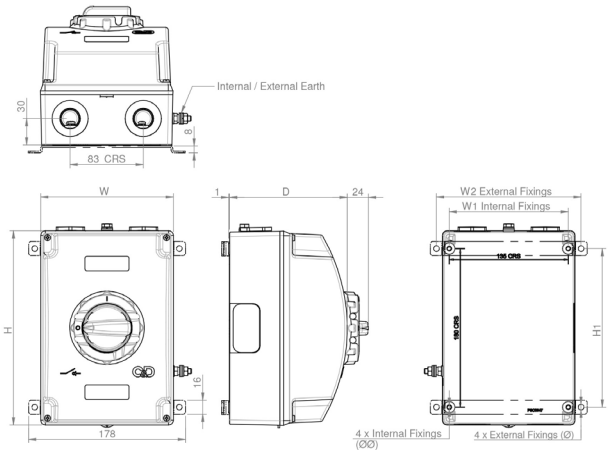
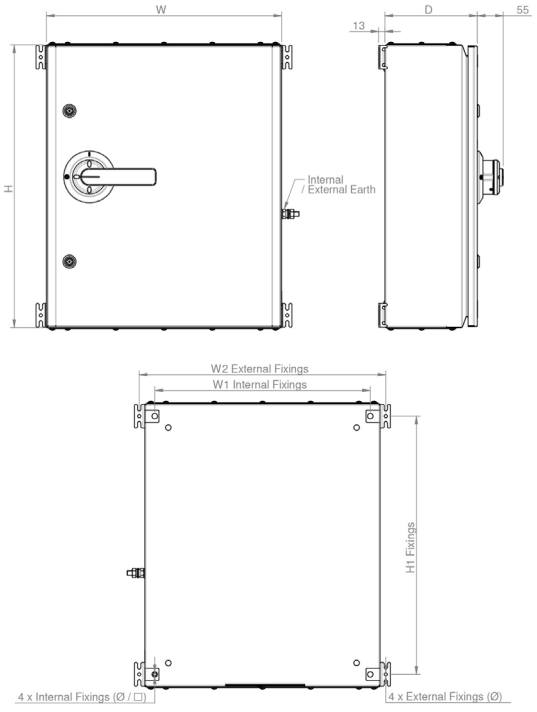


Sizes F1 - F8



Encl. Size	Overall Dims.			Fixing Details				
	H	W	D	H1	W1	W2	Ø	Ø Ø
FA	150	100	109	113.5	85	116	6.5	4
FB	220	150	133.5	180	135	164	6.5	4
F1	300	300	150	248	258	324	10.5	7
F2	400	300	200	348	258	324	10.5	7
F4	500	300	250	448	258	324	10.5	7
F5	600	500	200	548	458	524	10.5	7
F6	800	600	200	748	558	624	10.5	7
F8	1000	600	300	948	558	624	10.5	7

TFL (LU) FORM 4 TYPE 2 AUTOMATIC TRANSFER SWITCHES (ATS)

At the core of each system is a four-pole ABB TruONE transfer switch. Rated 230V or 400V AC the ATS will provide all the essential requirements for automatically switching to a replacement power source. Units are rated from 32A to 250A with a rated frequency of 50/60Hz.

The Single or Three-phase ATS units allow automatic connection of a secondary electrical supply to a load upon failure of the primary supply.

The Bypass function isolates the ATS by bypassing the 'S1' supply or (in the case of dual-line versions) the 'S2' supply directly to the outgoing load, enabling essential maintenance. The 'S1' supply may be bypassed without a break in supply in accordance with life safety recommendations. The key advantage is that both the 'S1' supply and 'S2' supply to the load can be maintained whilst service and repairs can be carried out on the ATS unit.

Supplied in Sheet Steel enclosures up to IP65 with a Light Grey (RAL 7035) paint finish, each enclosure comes standard with a removable gland plate(s). Stainless Steel options are available on request.

Each ATS unit comes standard with incoming isolators for both primary and secondary supplies. Volt-free status relays are included alongside a modbus communication module within the ATS unit in order to connect to the BMS (building management system) and/or life safety systems installed within the building.

The main LED indicator lights show the status of the supplies. A test switch is supplied with a set of 2 keys to allow for testing and commissioning of the ABB TruONE transfer switch. A mains return inhibit feature is accessible through the TruONE HMI. Incoming isolators and the bypass arrangement are separated from each other and from the transfer switch using rigid metallic barriers resulting in Form 4, type 2 separation.

Applied standards: BS EN 60947-1, BS EN 60947-3, BS EN 60947-5-1, BS EN 60947-6-1, BS EN 61439-1, BS 8519, S1069, S1085, S1089, S1109, S1909.

Single Line Bypass

AC33 Rating	Cat. No.		Encl. Size	Encl. Material	Encl. Colour	IP Rating	Max Cable Size
	Single Phase	Three Phase					
32A	ATS0322A234	ATS0324A234	1200x800x300	Sheet Steel	Grey RAL 7035	IP65	16mm² Btm
45A	ATS0452A234	ATS0454A234	1200x800x300	Sheet Steel	Grey RAL 7035	IP65	16mm² Btm
63A	-	ATS0634A234	1200x800x300	Sheet Steel	Grey RAL 7035	IP65	50mm² Btm
100A	-	ATS1004A234	1200x800x300	Sheet Steel	Grey RAL 7035	IP65	70mm² Btm
160A	-	ATS1604A434	1800x1000x400	Sheet Steel	Grey RAL 7035	IP55	70mm² Top
250A	-	ATS2504A434	1800x1000x400	Sheet Steel	Grey RAL 7035	IP55	150mm² Top

Dual Line Bypass

AC33 Rating	Cat. No.		Encl. Size	Encl. Material	Encl. Colour	IP Rating	Max Cable Size
	Single Phase	Three Phase					
32A	ATS0322A244	ATS0324A244	1200x800x300	Sheet Steel	Grey RAL 7035	IP65	16mm² Btm
45A	ATS0452A244	ATS0454A244	1200x800x300	Sheet Steel	Grey RAL 7035	IP65	16mm² Btm
63A	-	ATS0634A244	1200x800x300	Sheet Steel	Grey RAL 7035	IP65	50mm² Btm
100A	-	ATS1004A244	1200x800x300	Sheet Steel	Grey RAL 7035	IP65	70mm² Btm
160A	-	ATS1604A444	1800x1000x400	Sheet Steel	Grey RAL 7035	IP55	70mm² Top
250A	-	ATS2504A444	1800x1000x400	Sheet Steel	Grey RAL 7035	IP55	150mm² Top

TUNNEL LIGHTING & PANELS

Craig & Derricott manufacture bespoke tunnel lighting and panels designed for the rail infrastructure market. Bespoke designs are available on request. Contact our sales team for more information.

	Description
	A permanently illuminated switch box that when activated, turns on the emergency lighting in a tunnel. Supplied in a painted light grey mild steel enclosure. Designed for Cross Rail.
	Illuminated switch box with push-to-reset mushroom actuator. Supplied in a light grey moulded plastic polycarbonate enclosure. Designed for emergency tunnel lighting.
	Illuminated switch box with key-reset mushroom actuator. Supplied in a painted dark grey die-cast aluminium enclosure. Designed for emergency shaft lighting.
	Illuminated switch box with green mushroom actuator. Light ring is activator with the actuator. Supplied in a light grey moulded plastic polycarbonate enclosure. Designed for tunnel directional assistance.

CASE STUDY

Working closely with NI Translink, Craig & Derricott specified a detailed design, manufactured and supplied a complete replacement lighting system to a fleet of CAF built Class 3000 vehicles.

These bespoke LED emergency lighting tubes were engineered with a new photo-luminescent design that allows the tubes to remain illuminated after all power is terminated.

This new design of LED photo-luminescent emergency lighting system with cable harnesses, ancillary hardware and labelling was engineered by Craig & Derricott, specifically to meet the requirements of the customer.

System integration and engineering was provided by the team to ensure the lighting system was compatible with the available power supply, lighting control system and vehicle environment of the CAF rolling stock.

C&D produced dedicated documentation, including installation design documentation and drawings, user manuals, vehicle and equipment maintenance documentation, and system assurance and validation documentation.

Installation, testing and commissioning of the LED system was supported on site throughout First in Class Installation to ensure quality and reliability of the units.

CASE STUDY

The original device supplied by Craig & Derricott was fitted on the Class 357 vehicles to provide safe isolation of control circuits when the vehicle is not coupled.

The original design was a mechanical pneumatic device that required periodic maintenance of the mechanical parts.

Bombardier engaged Craig & Derricott to develop a new drumswitch uncoupling device to eliminate the need for maintenance by the use of relay technology.

The solution maintained the electrical, pneumatic and mechanical interfaces of the original drumswitch while offering a drop-in replacement that was easy to fit and required minimal changes to the vehicle.

Over 150 units were supplied on a managed scheduled change out program.

CASE STUDY

Alstom engaged Craig & Derricott to design and engineer a new call for aid unit that included Voice communication, Led indication and an Emergency grab handle.

This new unit was presented in an aesthetically pleasing housing to complement the train environment and fitted across the fleet of Class 390 west coast mainline vehicles.

This project was awarded as a result of Craig & Derricott's record in designing and manufacturing several similar products which had been supplied previously to Alstom and MTR.

Craig & Derricott also provided an adapted disable access version of the unit with the pull handle replaced with a shrouded pushbutton, allowing for ease of operation and to meet the required regulations.

Up to 1000 unit were supplied across the fleet.

CASE STUDY

The original battery isolation device supplied by Craig & Derricott was fitted on the class 230 vehicles that utilised London Underground carriages with LUL boxed-in style seating.

When Vivarail developed a new version of the class 230 carriages with aircraft style seating it was necessary to relocate the battery isolation device.

Craig & Derricott was engaged to develop a new composite battery isolation switch including switch, contactor and MCB within a reduced space envelope located beneath the vehicle floor.

These devices were successfully adopted and fitted across the fleet.

CASE STUDY

Following the London Kings Cross fire of 1987, additional fire precautions for 'Sub-surface Railway Stations' were established; these were known as Section 12 regulations. In 2015, London Underground introduced standard S1085 to define the requirements for materials installed on lu stations and tunnel infrastructure.

C&D's range of Switch Disconnectors and Automatic Transfer switches are all designed to meet these requirements.

In 2016 Craig & Derricott supplied 23 ATS units for Crossrail, one of the major infrastructure projects in Europe. Then in 2019 C&D supplied over 70 ATS units for the northern line rail extension project from Kennington to Battersea. These successful projects led to Craig & Derricott being able to develop and supply an ATS unit to TFL for Acton Station, during the on-going COVID-19 pandemic.

C&D's ATS2 range is designed to meet S1085 and features switch disconnectors and outgoing fused combination units with segregation to meet form 4 type 2 specifications.

The ATS2 range has become a byword for unparalleled design combined with unimpeachable build quality, safety and ease of installation. The modular solution demonstrates complete flexibility to meet any Rail project design.

CONTACT US

MARTYN DELAHAY - NATIONAL SALES MGR (ROLLING STOCK)

Martyn joined Craig & Derricott in May 2018 as National Sales Manager of Transport Products, selling mainly into the Railway Rolling Stock market.

After studying business and management at the University of Wales, Martyn first moved into the Rail Industry in 1998 becoming Operation Manager of Pullman Rail, a train maintenance company, before joining Schaltbau as Sales Manager. This experience equipped him with a broader knowledge of European Railways standards and supply mechanisms before joining Craig & Derricott.

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STEVE ROUSE - NATIONAL SALES MGR (INFRASTRUCTURE)

Steve joined Craig & Derricott in June 2022 as National Specification Manager, focusing on ATS and switchgear specification in the industrial Market.

He started his work as an electrical engineer apprentice and stayed on the tools for 13 years, before moving into electrical sales and later in his career into specification. Experience gained from the likes of Schneider, MK and Hager all brought him to his role here at C&D. In January 2024, Steve was promoted to National Sales Manager.

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For further information about Craig & Derricott and the range of products we offer, please contact us:

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