



HVACR MASTER DISTRIBUTOR

WWW.GLOBALTHESOURCE.COM

1648 NORTHLAKE PASS

UNIVERSAL CITY, TX 78148

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Terms & Conditions

Orders and Payments to:

Global
1648 Northlake Pass
Universal City, Texas 78148

Telephone: 1.800.531.5967
210.226.8100
Fax: 1.800.336.6890
210.226.9696

Minimum Order

Minimum Order.....\$100.00
A \$25 minimum order fee will apply to all orders that do not meet the minimum requirement

Freight

Effective January 1, 2009 prepaid freight orders of \$2,000.00 or more within the continental United States. In Addition, any fuel surcharges charged to Global from our common carriers on prepaid shipments will be included on order acknowledgements and added to the wholesaler’s invoice. Claims for shortages or any other discrepancies must be reported within 10 days following receipt of shipment. Freight policy may be changed without notice.

Pricing

Prices are those in effect at the time of shipment and subject to change without notice.

Special Orders

Orders for non-stock items are non-cancelable and non-refundable.

Return Policy

ALL REQUESTS FOR PRODCUT RETURNS MUST BE PRE-APPROVED BY GLOBAL. CONTACT THE GLOBAL CUSTOMER SERVICE DEPARTMENT FOR ASSISTANCE.

Warranty Policy & Procedure

Turbo200 Series Multi-Value Capacitors— Five (5) years
AmRad U.S.A. Made Capacitors— Five (5) years
All other Global products— One (1) year

Global warrants that goods purchased for resale will be free from defects in material and workmanship under normal use and regular service and maintenance for the time periods stated from the date of purchase from Global.

This warranty shall not apply to any products which have been repaired or altered to affect its proper operation or subjected to misuse, improper installation or accident.

If a product is defective due to workmanship or materials, is removed within the applicable warranty period and returned to Global in accordance with the procedure described below, Global will, at its option, replace or credit the wholesaler for the purchase price of the product.

WARRANTY PROCEDURE

1. Wholesaler must first obtain a return goods authorization number by contacting Global Customer Service.
2. Goods must be returned freight prepaid and properly identified by the “RGA Number”
3. Goods found to be defective in workmanship or materials will be replaced or credited at the lowest Global Wholesale Price paid by the wholesaler within the expressed warranty period.

The expressed warranty above constitutes the entire warranty of Global with respect to the products purchased from Global and IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR PARTICULAR PURPOSE. IN NO EVENT SHALL GLOBAL BE RESPONSIBLE FOR ANY CONSEQUENTIAL DAMAGES OF ANY NATURE WHATSOEVER.



AIR CONDITIONING PRODUCTS

**A/C WIRING KITS
CONDUIT & FITTINGS
DISCONNECTS & PULLOUTS
HVAC EQUIPMENT HANGER
CONDENSATE FLOAT SWITCH**

A/C Wiring Kits

240 Volt, Single Phase A/C SEALPROOF® Power Whip

- Type: LFNC-B, Non-metallic
- Max Temperature Rating: 90°C (dry) 75°C (wet)
- Grounding: NEC® 250.118(1)
- Available in 1/2 inch and 3/4 inch conduit size
- 4 foot and 6 foot lengths
- Designed for easy installation
- Resists corrosion, oil, and water outdoor, sunlight resistant
- Lower installation cost
- Time saving convenience
- UL File Reference: E96572
- NEC 410, 430, 440, 250, 356
- RoHS Compliant



Call for specialty whips



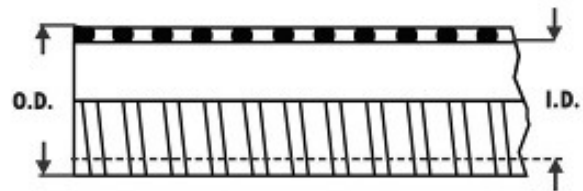
Disconnect/Whip Kit
Part No. 8064/8077

Global No.	Size	Fitting	Wire Size	Case Qty
8070	1/2" x 4'	Straight-Straight	#10THHN	20
8071	1/2" x 4'	1-Straight-1-90°	#10THHN	20
8072	1/2" x 6'	Straight-Straight	#10THHN	20
8073	1/2" x 6'	1-Straight-1-90°	#10THHN	20
8073BULK	1/2" x 6'	1-Straight-1-90°	#10THHN	200
8074	3/4" x 4'	Straight-Straight	#8THHN	16
8075	3/4" x 4'	1-Straight-1-90°	#8THHN	16
8076	3/4" x 6'	Straight-Straight	#8THHN	16
8077	3/4" x 6'	1-Straight-1-90°	#8THHN	16
8077BULK	3/4" x 6'	1-Straight-1-90°	#8THHN	125

Conduit

Sealproof® UL Type B Flexible, Nonmetallic Liquid-Tight Conduit

- Made in the USA
- Listed under the Underwriter's Laboratories File No. E-129973
- CSA Certified by Canadian Standards Association
- 3/8 inch thru 2 inch trade size
- Use with SEALPROOF® straight or right angle connectors
- May also be used with metallic connectors for liquid-tight conduit
- Resists corrosion, abrasion, oil, water, acid, metal shavings, and rough environments
- Resists abuse, pull and crushing
- UL Rating: 80°C dry, 60°C wet. 70°C oil resistant
- Outdoor, sunlight resistant, direct burial
- CSA rating - 18°C to 75°C, File No. LL-84705
- Smooth inside for easier wire pulling, no hazardous sharp edges or burrs, will not damage conductors
- Light weight and lower installed cost
- Quick installation, cuts with utility knife or PVC cutter
- Integral rigid & flexible PVC construction

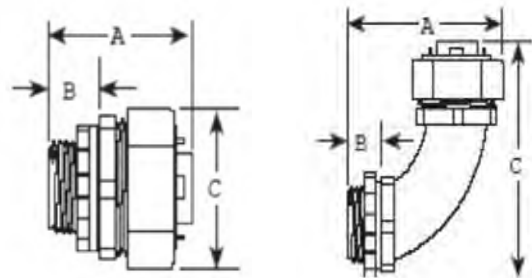


Global No.	Size	O.D. Min-Max	I.D. Min-Max	Case Qty
8040	1/2" x 100' Roll	.820 - .840"	.622 - .642"	1
8040-25	1/2" x 25' Roll			1
8040-50	1/2" x 50' Roll			1
8041	3/4" x 100' Roll	1.030 - 1.050"	.820 - .840"	1
8041-25	3/4" x 25' Roll			1
8041-50	3/4" x 50' Roll			1
8050	1" x 100' Roll	1.290 - 1.315"	1.041 - 1.066"	1

Metallic Fittings

Straight 90° and Zinc Diecast Liquid-Tight Conduit Connectors

- Available 3/8" through 4"
- For use with both Metallic Liquid Tight Conduit and Nonmetallic Liquid Tight Type B
- Zinc die cast construction resists salt water, weak acids, gasoline, alcohol, oil, grease, & common solvents
- Resistant to outdoor weather conditions
- No disassembly required. Instead, the installer simply twists the conduit or tubing onto the ferrule, tightening the domed sealing nut. The completed assembly can then be secured in the chassis by the locknut (or first secure the connector into an NPT threaded hole)
- No threading of the conduit or tubing required to install, eliminating the possibility of cutting the conduit & creating leak paths
- Complete conduit/connector system is reusable. Conduit will not wind tight onto the connector during assembly & can be easily removed by pulling while turning clockwise
- Suitable for indoor/outdoor use; for original equipment manufacturers or field installers
- Lower installed cost
- "O" Ring & zinc locknut included

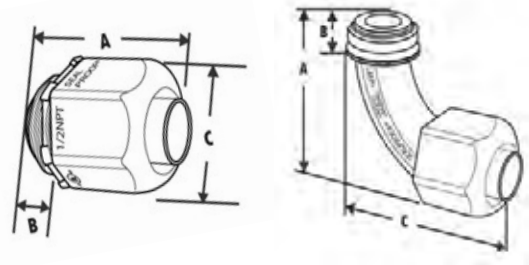


Global No.	Size	Type	K.O. Size	Dim. A	Dim. B	Dim. C	Case Qty
8042M	1/2"	Straight	1/2"	1.58"	1.18"	0.53"	100
8043M	3/4"	Straight	3/4"	1.69"	1.57"	0.58"	100
8044M	1"	Straight	1"	2.06"	1.81"	0.58"	50
8045M	1/2"	90°	1/2"	2.24"	2.46"	0.53"	100
8046M	3/4"	90°	3/4"	2.47"	2.79"	0.55"	100
8047M	1"	90°	1"	3.46"	3.86"	0.58"	50

Non-Metallic Fittings

Sealproof® Nonmetallic Liquid-Tight Screw-on Connectors

- Listed under the Underwriter's Laboratories
- Available 3/8 inch through 2 inch
- All nylon construction resists salt water, weak acids, gasoline, alcohol, oil, grease, and common solvents
- No disassembly required. Instead, the installer simply pushes the conduit or tubing onto the ferrule, tightening the domed sealing nut. The completed assembly can then be secured in the chassis by the locknut (or first secure the connector into a NPT threaded hole)
- No threading of the conduit or tubing required to install, eliminating the possibility of cutting the conduit and creating leak paths
- Complete conduit/connector system is reusable. Conduit will not wind tight onto the connector during assembly and can be easily removed by pulling while turning in a clockwise direction
- Suitable for indoor/outdoor use; for original equipment manufacturers or field installers
- Lower installed cost
- Molded of type nylon 6. Flammability classification 94V-2: temperature index 125°C
- Smooth internal surfaces for easier wire installation around corner angles
- One-piece or multi-piece design
- "O" Ring and steel locknut included

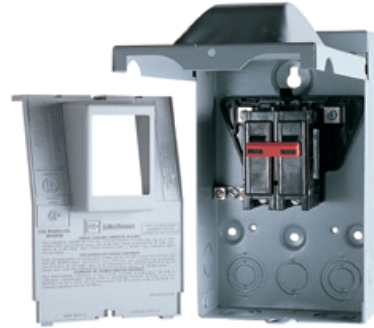


Global No.	Size	Type	K.O. Size	Dim. A	Dim. B	Dim. C	Case Qty
8042	1/2"	Straight	1/2"	1.750"	0.500"	1.250"	100
8042X	1/2"	Straight Multi-Piece	1/2"	2.000"	0.540"	1.400"	100
8043	3/4"	Straight	3/4"	1.800"	0.625"	1.500"	100
8043X	3/4"	Straight Multi-Piece	3/4"	2.200"	0.635"	1.700"	100
8044	1"	Straight	1"	—	—	—	50
8045	1/2"	90°	1/2"	1.875"	0.500"	3.125"	100
8045X	1/2"	90° Multi-Piece	1/2"	2.120"	0.500"	3.120"	100
8046	3/4"	90°	3/4"	2.375"	0.625"	3.500"	100
8046X	3/4"	90° Multi-Piece	3/4"	2.500"	0.520"	3.600"	100
8047	1"	90°	1"	—	—	—	50

Disconnects

Molded Case Switch Disconnect

- Operates same as a light switch
- Plug-in molded case switch eliminates the need for pullout handles
- No need for replacement pullout handles due to loss or theft



Global No.	Eaton No.	Main Amp Rating	Wire Size Range Cu/Al 60°C or 75°C	Max Hp Rating		Case Qty
				120V	240V	
Galvanized Steel						
8068	DPB222R	60A	#14-3	—	10	10
80643P	DPU362RA	60A	#14-4	15	30	10

Disconnects

A/C Disconnect w/ GFI Receptacle

- 60Amp, 240V, Non-Fused & 30Amp, Fused
- NEMA 3R enclosure
- Built-in 100V ground fault receptacle
- Rotating receptacle for easy wiring
- Complies with 2000 NEC #210.63, 210.8, and 406.8
- Code requires a 15Amp receptacle be installed within 25 feet of HVACR equipment

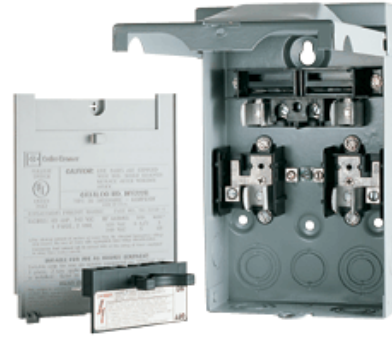


Global No.	Eaton No.	Main Amp Rating	Wire Size Range Cu/Al 60°C or 75°C	Max Hp Rating		Case Qty
				120V	240V	
Galvanized Steel						
8062GFI	DPF221RGF15	30A	#14-3	2	3	10
Non-Metallic						
8064GFI	DPU222RGF15	60A	#14-3	—	10	10

Pullouts

Fused Pullouts

- Standard pullout when fused protection is required
- On/Off control provided by a pullout handle
- Pullout handle can be conveniently stored in the compartment in the OFF position, helping prevent the handle from being misplaced
- Protective shield cannot be removed until the pullout handle is removed, disconnecting the power



Global No.	Eaton No.	Main Amp Rating	Wire Size Range Cu/Al 60°C or 75°C	Max Hp Rating		Case Qty
				120V	240V	
Galvanized Steel						
8062	DPF221R	30A	#14-3	2	3	10
8063	DPF222R	60A	#14-3	3	10	10
Non-Metallic						
8062NM	ACD221RNM-A2	30A	#14-2	2	3	10
8063NM	ACD222RNM-A2	60A	#14-2	3	10	10

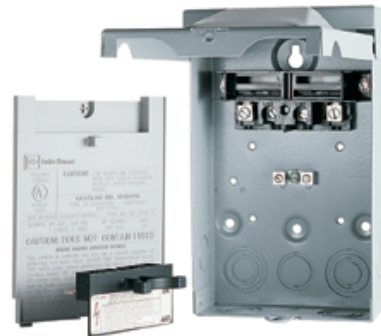
Pullouts

Non-Fused Pullouts

- Standard pullout when fused protection is not required
- On/Off control provided by a pullout handle
- Pullout handle can be conveniently stored in the compartment in the OFF position, helping prevent the handle from being misplaced
- Protective shield cannot be removed until the pullout handle is removed, disconnecting the power



Pullout Handle
Global Part No. 8061



Global No.	Eaton No.	Main Amp Rating	Wire Size Range Cu/Al 60°C or 75°C	Max Hp Rating		Case Qty
				120V	240V	
Galvanized Steel						
8064	DPU222R	60A	#14-3	—	10	10
Non-Metallic						
8064NM	ACD222URNM-A2	60A	#14-2	—	10	10

Disconnect/Pullout Cross Reference

Description	Global	Eaton	Square D®	GE®	Siemens® (Murray®)	Milbank	Midwest
Metallic/Galvanized Steel Enclosure							
30A fused	8062	DPF221R	—	TF30R	WF2030	U3830	U035F2
60A fused	8063	DPF222R	—	TR60R	WF2060	U3860	U065F1
60A non-fused	8064	DPU222R	—	TRN60R	—	U3800	U065P010
60A non-fused compact design	—	DPU222R	—	—	WNFC2060	—	—
60A molded case switch	8068	DPB222R	Q0200TR	TNA60R1	WNAS2060	—	U065NA1
60A non-fused with ground fault receptacle	—	DPU222RGF	—	TFN60RGFR	WN2060GFCI	U3822-20GR	U065P010
30A fused with ground fault receptacle	8062GFI	DPF221RGF	—	—	WF2030GFCI	—	U035F010
60A fused with ground fault receptacle	—	DPF222RGF	—	—	WF2060GFCI	—	U065F010
60A non-fused with 1/2-inch wire harness	—	DPU222R12W	—	—	—	—	—
60A non-fused with 3/4-inch wire harness	—	DPU222R34W	—	—	—	—	—
60A three-phase 600V molded case switch	80643P	DPU362RA	—	—	—	—	U0653F
Non-Metallic/Polycarbonate Enclosure							
30A fused	8062NM	ACD221RNM-A2	—	TPF30R	WF2030PL	—	P035F
60A fused	8063NM	ACD222RNM-A2	—	TPF60R	WF2060PL	—	P065F
60A non-fused	8064NM	ACD222URNM-A2	—	TPN60R1	WN2060PL	—	P065P1
60A molded case switch	B60NARNM	B60NARNM-A2	Q0200TRNM	TPNA60R1	WNAS2060PL	—	P065NA1
30A fused with 15A ground fault receptacle	—	DPF221RGF15WRTR	—	—	—	—	—
30A fused with 20A ground fault receptacle	—	DPF221RGF20WRTR	—	—	—	—	—
60A fused with 15A ground fault receptacle	—	DPF222RGF15WRTR	—	—	—	—	—
60A fused with 20A ground fault receptacle	—	DPF222RGF20WRTR	—	—	—	—	—
60A non-fused with 15A ground fault receptacle	8064GFI	DPU222RGF15WRTR	—	—	—	—	—
60A non-fused with 20A ground fault receptacle	—	DPU222RGF20WRTR	—	—	—	U3822-20GWR	—

Disconnect/Pullout Dimensions

Dimensions in inches (mm)

Global	Eaton	Height	Width	Depth	Weight lbs (kg)
Metallic/Galvanized Steel Enclosure					
8062	DPF221R	8.70 (220.9)	5.40 (137.2)	3.15 (80.0)	27 (12)
8063	DPF222R	8.70 (220.9)	5.40 (137.2)	3.15 (80.0)	27 (12)
8064	DPU222R	8.70 (220.9)	5.40 (137.2)	3.15 (80.0)	27 (12)
8068	DPB222R	8.60 (218.4)	5.30 (134.6)	3.74 (95.0)	34 (15)
—	DPU222R12W ^①	14.75 (374.6)	12.50 (317.5)	4.00 (101.6)	6 (3)
—	DPU222R34W ^①	14.75 (374.6)	12.50 (317.5)	4.00 (101.6)	6 (3)
—	DPU222RGF20	13.00 (330.2)	7.50 (190.5)	4.75 (120.7)	8 (4)
—	DPF221RGF20	13.00 (330.2)	7.50 (190.5)	4.75 (120.7)	8 (4)
—	DPF222RGF20	13.00 (330.2)	7.50 (190.5)	4.75 (120.7)	8 (4)
—	DPU222RGF15	13.00 (330.2)	7.50 (190.5)	4.75 (120.7)	8 (4)
8062GFI	DPF221RGF15	13.00 (330.2)	7.50 (190.5)	4.75 (120.7)	8 (4)
	DPF222RGF15	13.00 (330.2)	7.50 (190.5)	4.75 (120.7)	8 (4)
	DPF221RGF15WRTR	13.00 (330.2)	7.50 (190.5)	4.75 (120.7)	8 (4)
	DPF221RGF20WRTR	13.00 (330.2)	7.50 (190.5)	4.75 (120.7)	8 (4)
	DPF222RGF15WRTR	13.00 (330.2)	7.50 (190.5)	4.75 (120.7)	8 (4)
	DPF222RGF20WRTR	13.00 (330.2)	7.50 (190.5)	4.75 (120.7)	8 (4)
	DPU222RGF15WRTR	13.00 (330.2)	7.50 (190.5)	4.75 (120.7)	8 (4)
	DPU222RGF20WRTR	13.00 (330.2)	7.50 (190.5)	4.75 (120.7)	8 (4)
80643P	DPU632R	8.60 (218.4)	5.30 (134.6)	3.74 (94.9)	4 (2)
Non-Metallic/Polycarbonate Enclosure					
8062NM	ACD221RNM-A2	8.63 (219.0)	6.26 (159.0)	4.33 (109.9)	15 (7)
8063NM	ACD222RNM-A2	8.63 (219.0)	6.26 (159.0)	4.33 (109.9)	15 (7)
8064NM	ACD222URNM-A2	8.63 (219.0)	6.26 (159.0)	4.33 (109.9)	15 (7)
B60NARNM	B60NARNM-A2	8.63 (219.0)	6.26 (159.0)	4.33 (109.9)	18 (8)

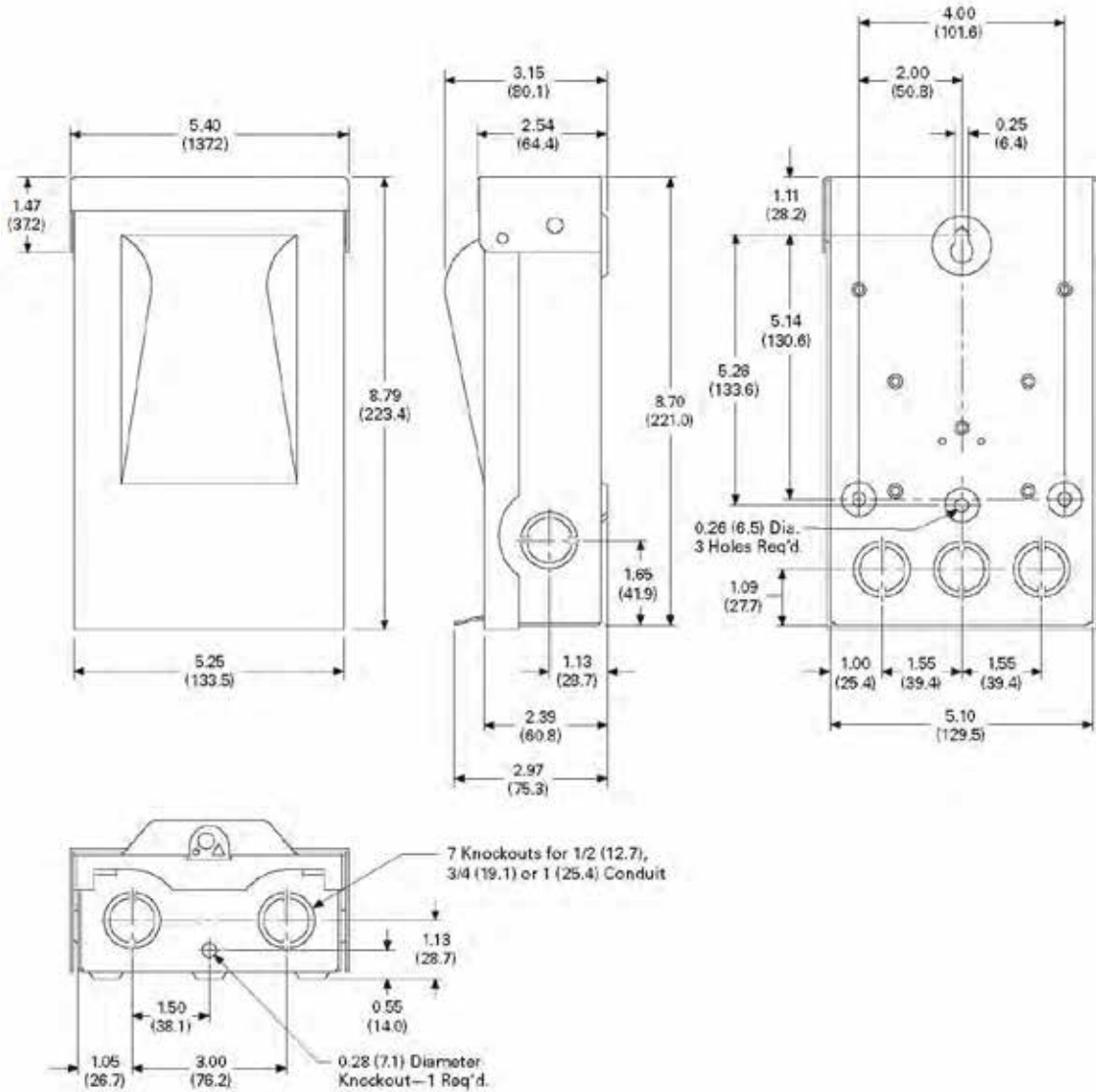
Note

① Eaton Quick Pro designated item

Disconnect/Pullout Dimensions

Approximate Dimensions in Inches (mm)

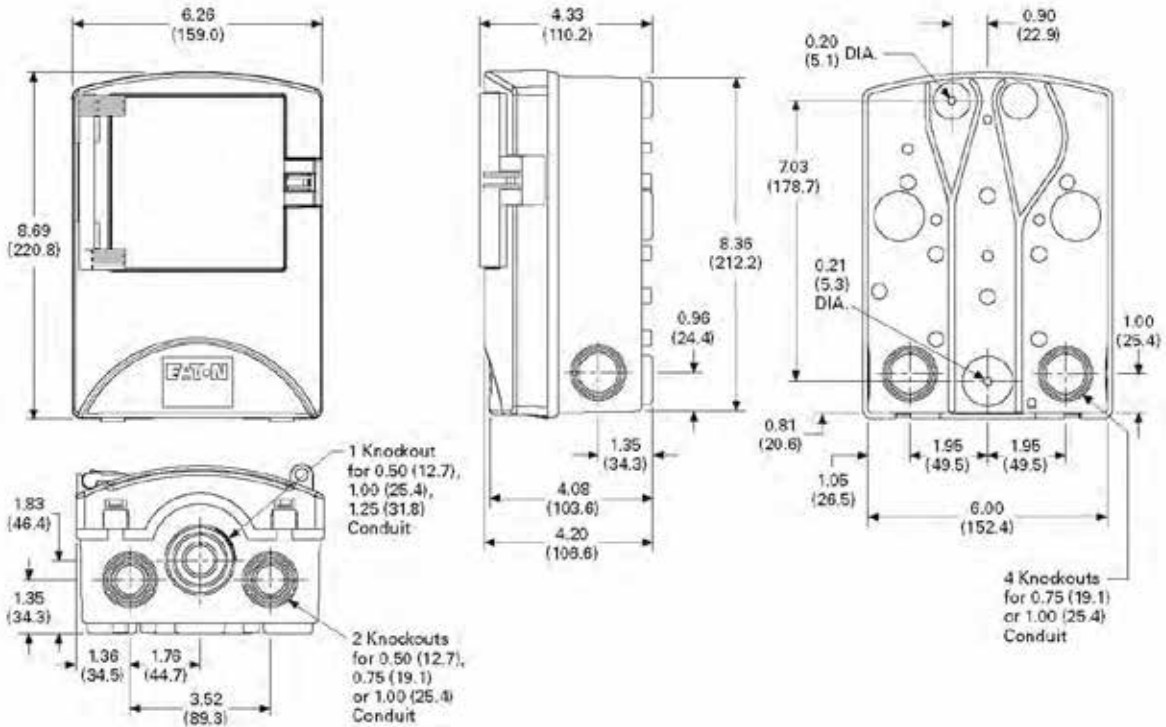
DPF221R, DPF222R, DPU222R, DPU222R12W, DPU222R34W



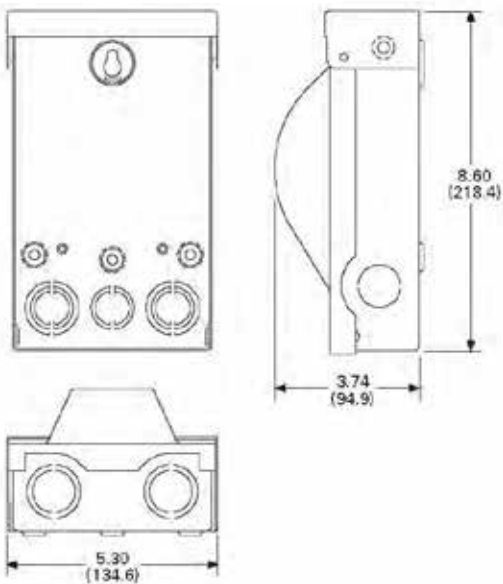
Disconnect/Pullout Dimensions

Approximate Dimensions in Inches (mm)

ACD221RNM-A2, ACD222RNM-A2, ACD222URNM-A2, B60NARNM-A2



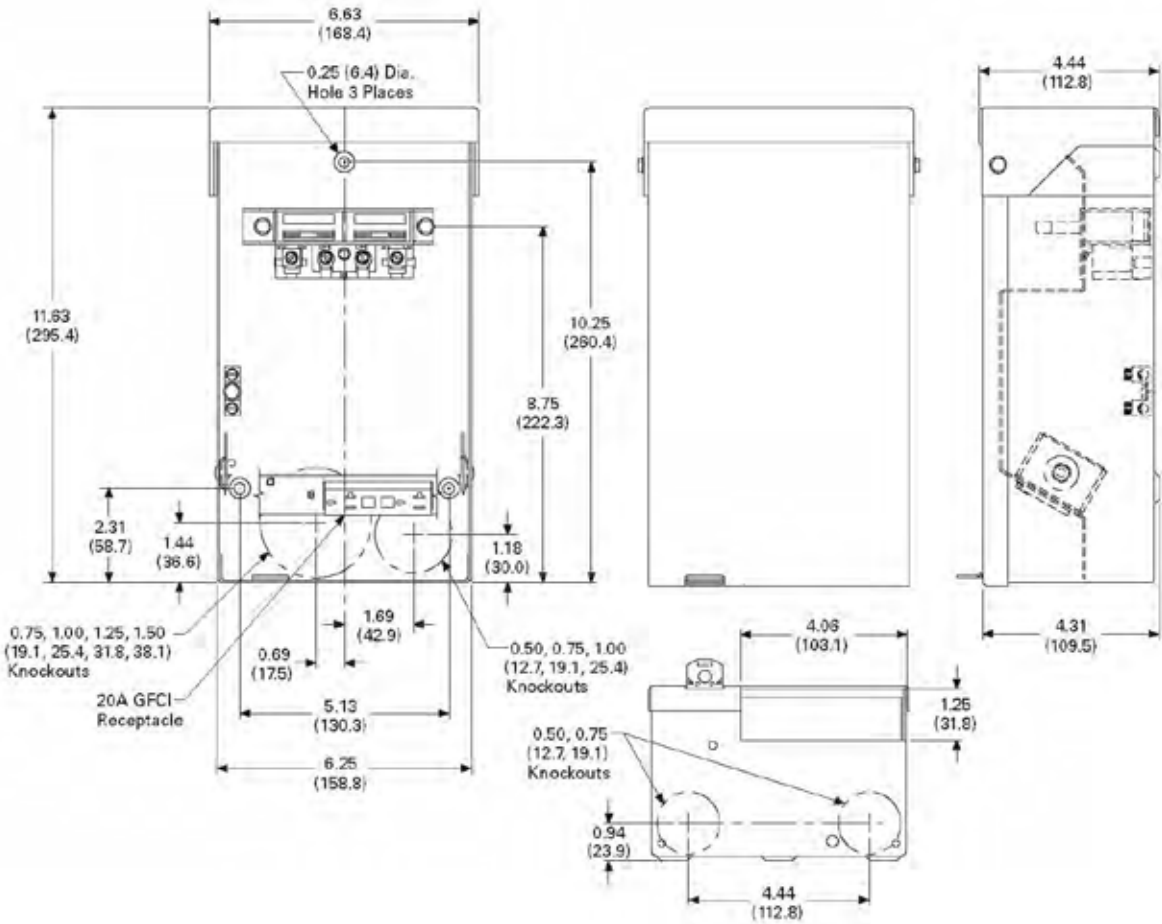
DPB222R and DPU632A



Disconnect/Pullout Dimensions

Approximate Dimensions in Inches (mm)

DPU222RGF20, DPF221RGF20, DPF222RGF20, DPU222RGF15, DPF221RGF15, DPF222RGF15, DPF221RGF15WRTR, DPF221RGF20WRTR, DPF222RGF15WRTR, DPF222RGF20WRTR, DPU222RGF15WRTR, DPU222RGF20WRTR



Equipment Hanger

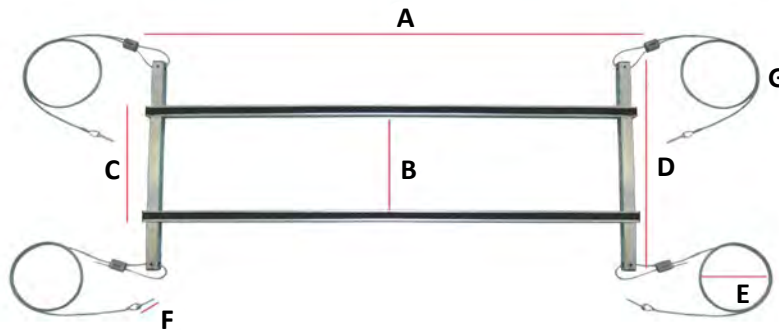
The Hung-Rite HVAC Equipment Hanger is a fully assembled HVAC equipment support unit capable of holding up to a five ton air handler, or a furnace and coil set weighing up to 400 lbs. Unbox, unfold, make your holes, and hang it rite. Have that unit installed in as little as 15 minutes! The hanger utilizes cable locks for quick leveling and is equipped with a 3½" bolt for suspension in a variety of places. Hung-Rite's Hanger gives proper support to eliminate equipment buckling and leaves equipment unobstructed for future maintenance. Pre-drilled holes are located on the arms, for threaded rod during your commercial installations. All of which is available fully assembled in a slender package, and ready for your use!

Features and Benefits:

- Hanger comes fully assembled and ready for installation
- Uses padding to reduce vibration, for quieter equipment operation
- Cable locks allow easy leveling of your equipment
- Hanger is collapsible, and easy to take anywhere!
- HVAC contractor designed
- Has separate holes drilled for threaded-rod installations
- Supports up to a 5 ton air handler or furnace & coil weighing up to 400 lbs



Global No.	Description	Pallet Qty
Hung-Rite	A/C Equipment Hanger 66"	50
Hung-R56	A/C Equipment Hanger 56"	50



Label	Name	Measurement
A	Unit Length	66 in.
B	Inner Arm Width	13 in.
C	Outer Arm Width	16 ½ in.
D	Unit Width	30 in.
E	Cable Length	10 ft.
F	Bolt Length	3 ½ in.
G	Cable Width (Diameter)	3/32"

Drain-Alert

Drain-Alert is versatile for primary and auxiliary drain pan outlets. It is compact to fit better in vertical applications. Sensor comes with 1/4" opening water level washer which may be replaced by 3/4" opening water level washer (included).

Features and Benefits:

- Can be used for metal and plastic pans
- No gluing or cutting existing drain lines
- 72" leads for either "R" or "Y" terminal
- Used on all 24 Volt systems
- See-through body
- Durable- high impact resistance & low scratch resistance
- Contains UV light inhibitor to protect against sunlight
- Easy to install
- 2 year warranty
- Made in the USA



Drain-Alert



Drain-Alert Plenum

Quick Clip

The Quick Clip is a remote safety switch control designed to clip onto the side of the auxiliary drain pan. It is magnetic and comes completely sealed with factory pre-wired leads. This switch has been designed to work in conjunction with water only and upon the rising of the float, the circuit will break open and the system will shut off.

Features and Benefits:

- Can be used for metal and plastic pans
- Pre-wired 18-48" or 18-60" leads
- Used on all 24 Volt systems
- Durable- high impact-resistance & low scratch-resistance
- Contains UV light inhibitor to protect against sunlight
- Easy to install
- 2 year warranty
- Made in the USA



Quick Clip

Global No.	Description	Case Qty
Drain Alert	Condensate Float Switch	10
Drain Alert PL	Condensate Float Switch Plenum Wire	10
QuickClip	Remote Safety Switch Control	10



CAPACITORS

UNIVERSAL TURBO CAPACITORS
USA MADE CAPACITORS
GLOBAL RUN CAPACITORS
BMI START CAPACITORS



- A. DSC-Tester** – See the dual values of a motor run capacitor and compressor run capacitor simultaneously on the screen as you test.
- B. TurboMAC™** – Replaces any one of 57 different single or dual values up to 52.5MFD, with a voltage rating up to 290VAC
- C. Turbo200X®** – Run capacitor that replaces any of the higher range single or dual capacitors used in scroll compressors and higher efficiency A/C units, values up to 97.5MFD 370/400V
- D. TurboMini®** – A permanent replacement run capacitor for fan size values 2.5MFD to 15MFD
- E. Turbolytic™ JR** – More compact start capacitor offers combined values up to 227MFD
- F. Turbolytic™ 50** – Motor start capacitor can replace any of the most popular values up to 302MFD
- G. Turbo200®** - Run capacitor that replaces over 200 single or dual values up to 67.5MFD
- H. Turbo Easy Start 4** – Universal 2-wire hard start
- I. TurboMini® Oval** – A permanent replacement run capacitor for fan size values 2.5MFD to 15MFD



Universal Turbo Capacitors									
Specifications	TurboMini	TurboMini Oval	Turbo200	Turbo200X	TES4	Turbolytic 50	Turbolytic JR	TurboRMAC	TurboMeter
Case Qty	50	50	20	16	8	16	20	18	1 ea
Value Range	2.5 to 15MFD	2.5 to 15MFD	2.5 to 67.5MFD	Up to 97.5MFD	Up to 324 MFD	Up to 302MFD	Up to 227MFD	Up to 52.5MFD	All
Voltage Range	370/440V	370/440V	370/440V	370/440V	Up to 324V	Up to 330V	Up to 330V	Up to 290V	

For your safety and performance, the Turbo®200 series has been tested and approved to the highest certification level of UL (Underwriters Laboratories) Standard 810; **10,000 AFC; Protected.** (As required for all “original equipment” motor-run capacitors).

The Turbo®200 is produced under one or more American Radionic patent numbers: 3,921,041; 4,028,595; 4,312,027; 4,312,145; 5,313,360; 6,014,308. Additional US and foreign Patents Pending. The Turbo®200 is designed, developed and manufactured by American Radionic Co, Inc, Palm Coast Florida USA.



AmRad's Turbo200 Motor-Run Capacitors A Capacitor Warehouse in Your Pocket!



With the Turbo200 you will **ALWAYS** have the correct motor-run capacitor values on site!

Turbo200- Replaces over 200 single and dual capacitors up to 67.5 mfd at 370/440V

Turbo200X- Replaces over 350 single and dual capacitors up to 97.5 mfd at 370/440V

Turbo200 Mini- Offers 7 popular single values ("fan sizes") up to 15 mfd at 370/440V

The Turbo200 capacitors are industrial-grade, permanent replacement parts.

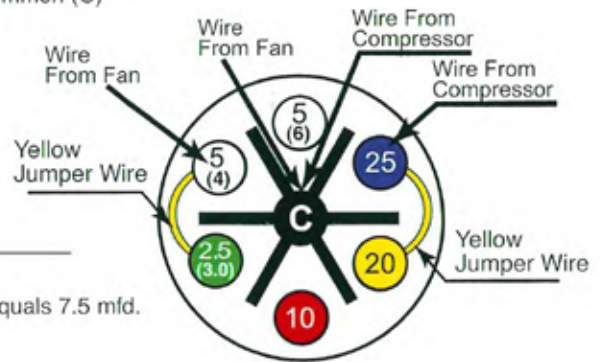
*Incorporated with the same film dielectric technology used in AmRad's motor-run capacitors. Turbo200 capacitors are safety protected using a UL approved safety interrupter- the same safety mechanisms used in all AmRad capacitors.

Turbo200 Capacitor Wiring Instructions

EXAMPLE: Using the Turbo200® to replace a 45+7.5 microfarad dual-value capacitor.

Steps:

- 1) Make note of the wires which are attached to the fan motor (F), common (C) and compressor (Herm) terminals of the capacitor being replaced.
- 2) To achieve the 45.0 microfarad for the compressor (HERM): Using one (1) yellow jumper wire, connect the 25 mfd to the 20 mfd which then equals a 45 mfd.
- 3) Connect one of the wires from the compressor to the 25 MFD.
- 4) Connect the other wire(s) from the compressor to the common (C). [The common is the center black terminal].
- 5) To obtain a 7.5 mfd for the fan (F): Using one (1) yellow jumper wire, connect either one of the 5 mfd's to the 2.5 mfd which then equals 7.5 mfd.
- 6) Connect one wire from the fan to the 5.0 mfd which has been jumped to the 2.5 mfd (as shown).
- 7) Connect the other wire from the fan motor to the common (C). [The common is the center black terminal].



Note: Jumper wires are supplied with the TURBO200®.

This is just a partial list of the many single and dual-value capacitors that can be replaced with AmRad's Turbo® 200

30/3	25/5	25/7.5	25/10	30/5	30/7.5	30/10	30/12.5	35/4	35/5
35/7.5	35/10	40/5	40/7.5	40/10	45/5	40/3	45/7.5	45/10	50/5
50/7.5	50/10	50/12.5	55/5	55/7.5	55/10	55/12.5	60/7.5	60/4	60/4
30/4	45/12.5	35/12.5	60/6	60/5	35/6	45	50	60	65

This is just a partial list of the many single and dual-value capacitors that can be replaced with AmRad's Turbo.200X

60/10	70/5	70/10	80/5	80/7.5	80/10	90/5	90/7.5	70	80
25/12.5	30/7.5	30/5	35/5	40/7.5	45/5	50/5	50/10	55/7.5	60/5

FEATURES:

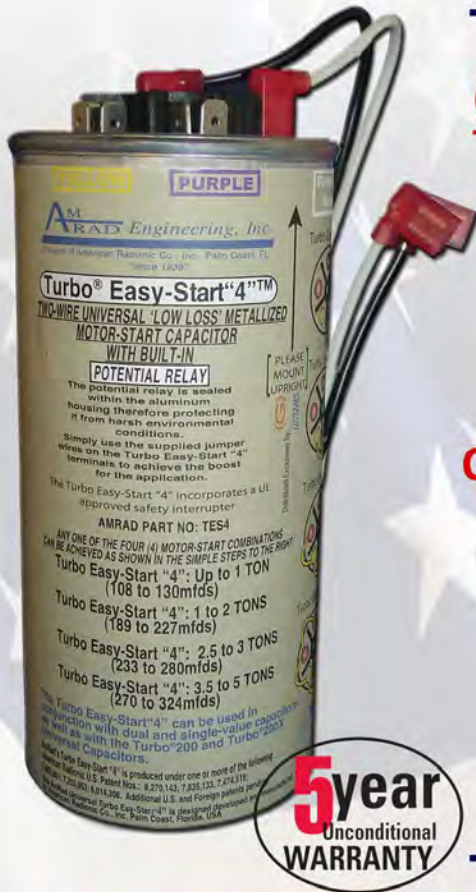
- All brass plated terminals which have been plated to increase performance, reliability, prevent corrosion and improve conductivity.
- TURBO200- conforms to applicable U.L. requirements including 10,000 AFC. U.L. File number E133000. (CYWT2) Internally Protected.

Voltage Ratings : 370 VAC or 440 VAC @ 60 Hz .		
Model	Voltage Range	Includes
Turbo®200	2.5 mfd to 67.5 mfd	Jumper wires and color coded chart to derive the exact values you need
Turbo®200X	5 mfd to 97.5 mfd	

The Turbo®200 is produced under one or more American Radionic United States patent numbers: 8,270,143; 7,835,133, 7,474,519; 7,423,861; 7,203,053; 6,014,308; 5,313,360; 4,312,145; 4,312,027; 4,028,595. The Turbo®200 series is designed, developed and manufactured by American Radionic Co, Inc., Palm Coast, Florida 32137 USA

AmRad's TURBO EASY-START™ 4

...Another AmRad Invention for the Service Technician



ONE UNIVERSAL EASY-START 4 can be used in place of any one of the **FOUR** commonly used Hard-Start kits on the market today.

Can be used in over 90% of refrigeration and air conditioning applications.

The modern*, high-microfarad capacitor and potential relay are enclosed with in hermetically-sealed aluminum housing (protecting it from harsh environments).

No relay wire...

It's "Easy to Use"
It's "Easy to Start"

Simply select the capacitance for your equipment.

*Incorporated with the same film dielectric technology used in AmRad's motor run capacitors. The TES4 is safety protected using a UL approved safety interrupter- the same safety mechanisms used in all AmRad capacitors.

Turbo Easy-Start™ 4 Wiring Instructions

	AMRAD MODEL NO. TURBO EASY-START™ 4"	APPLICATION 2.5 TO 3 TONS	CAPACITANCE 233 TO 280 mfd
SIMPLY USE THE SUPPLIED JUMPER WIRE ON THE TURBO EASY-START "4" TERMINALS TO ACHIEVE THE BOOST FOR THE APPLICATION.			
TURBO EASY-START™ 4" CAPACITANCE (MFD) RANGE REQUIRED [233 to 280 mfd]		JUMPER WIRE REQUIRED Jumper Wire B	
EXAMPLE 1	<p>Turbo Easy-Start™ 4" Standard Dual-Value Motor-Run Capacitor</p> <p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE MOTOR-RUN CAPACITOR ARE NOT SHOWN IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start™ 4" CONNECTED TO STANDARD DUAL-VALUE MOTOR-RUN CAPACITOR</p> <p>Step 1: Using jumper wire B, connect the purple, yellow and red terminals to the corresponding colored terminals on the Easy-Start "4" as shown.</p> <p>Step 2: Connect the black wire (common) from the Turbo Easy-Start "4" to the COMMON (C) terminal of the standard dual-value motor-run capacitor as shown.</p> <p>Step 3: Connect the white wire from the Turbo Easy-Start "4" to the HERM terminal of the standard dual-value motor-run capacitor as shown. [Shown connected to a 80+10mfd dual-value capacitor]. [Typical Air Conditioning Application]</p>	
	<p>Turbo Easy-Start™ 4" Turbo®200X Universal Motor-Run Capacitor</p> <p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE TURBO®200X MOTOR-RUN CAPACITOR ARE NOT SHOWN IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start™ 4" CONNECTED TO A TURBO®200 UNIVERSAL CAPACITOR</p> <p>Step 1: Using jumper wire B, connect the purple, yellow and red terminals to the corresponding colored terminals on the Easy-Start "4" as shown.</p> <p>Step 2: Connect the black wire (common) from the Turbo Easy-Start "4" to the COMMON (C) terminal of the Turbo®200X Universal Capacitor as shown.</p> <p>Step 3: Connect the white wire from the Turbo Easy-Start "4" to the 50MFD terminal of the Turbo®200X Universal capacitor as shown. [The Turbo Easy-Start 4 is shown connected to a Turbo®200X which has been wired to provide 80mfd for the herm (compressor) and a 10mfd fan value]. [Typical Air Conditioning Application]</p>	
	<p>Turbo Easy-Start™ 4" Standard Single-Value Motor-Run Capacitor</p> <p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE MOTOR-RUN CAPACITOR ARE NOT SHOWN IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start™ 4" CONNECTED TO A STANDARD SINGLE-VALUE MOTOR-RUN CAPACITOR</p> <p>Step 1: Using jumper wire B, connect the purple, yellow and red terminals to the corresponding colored terminals on the Easy-Start "4" as shown.</p> <p>Step 2: Connect the black wire (common) from the Turbo Easy-Start "4" to one of the terminals of the standard single value motor-run capacitor as shown.</p> <p>Step 3: Connect the white wire from the Turbo Easy-Start "4" to the other terminal of the standard single value motor-run capacitor as shown. [Shown connected to a 80mfd single-value capacitor]. [Typical Commercial Refrigeration Application]</p>	

AmRad's Easy-Start "4" is produced under one or more of the following U.S. Patents: 8,270,143; 7,835,133, 7,474,519; 7,423,861; 7,203,053; 6,014,308; 5,313,360; 4,312,145; 4,312,027; 4,028,595.

AmRad's Turbolytic™50 and Turbolytic™Jr The World's First Multiple-Value Motor-Start Capacitors



5 year
Unconditional
WARRANTY

ONE Turbolytic™ 50 can
replace any one of
64 DIFFERENT motor-start
capacitance values!

Turbolytic 50- Replaces 50 popular
values up to 302 mfd at 330VAC

Turbolytic Jr- Replaces 12 of the
most popular values up to 227 mfd
at 330VAC

**The Turbolytic™50 and Turbolytic™Jr are
industrial-grade, permanent replacement parts.**

*Incorporated with the same film dielectric technology used in AmRad's motor-run capacitors. the Turbolytic™50 and Turbolytic™Jr are safety protected using a UL approved safety interrupter- the same safety mechanisms used in all AmRad capacitors.

TurboTM50 Wiring Instructions

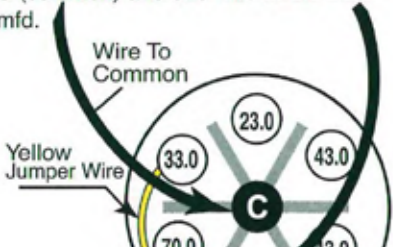
By the simple use of jumper wires (supplied), combine the motor start capacitor values needed. See the chart below. These are the most popular motor start capacitance values use in air conditioning and refrigeration.

Items 1 to 14 (up to 270 - 324 microfarads) are available in the TurboTM50

For lower capacitance values, the smaller TurboTMJr covers all ranges up to and including 189-227 microfarads

The TurboTM50 size is: 2.5 inch round (base) X 5.75 inch height (not including terminals)

The TurboTMJr size is: 2.5 inch round (base) X 4.50 inch height (not including terminals)

THE "COMMON" SIDE OF THE CAPACITOR IS THE BLACK TERMINAL	ITEM	TO REPLACE A CAPACITOR IN THIS RANGE*	USE THESE MFD VALUES ON THE TURBOLYTIC TM 50	FINAL REPLACEMENT VALUE WHICH THEN FALLS WITHIN THE APPROPRIATE RANGE (IN MFD)
<p>EXAMPLE : Using the TurboTM 50 to replace a 108-130 mfd motor-start capacitor - (Item 6)</p> <p>Step 1) Use one yellow jumper wire and connect the red terminal (33 mfd) and purple terminal (90 mfd) together. This will equal 123 mfd (which falls within the 108-130 mfd range).</p> <p>Step 2) Take the wires which were disconnected from the old motor-start capacitor and connect one wire to C (common) and one wire to the 90.0 mfd.</p> 	1	21-25 MFD	23 =	23 MFD TOTAL
	2	30-36 MFD	33 =	33 MFD TOTAL
	3	34-53 MFD	43 =	43 MFD TOTAL
	4	72-88 MFD	43 + 43 =	86 MFD TOTAL
	5	88-108 MFD	70 + 33 =	103 MFD TOTAL
	6	108-130 MFD	90 + 33 =	123 MFD TOTAL
	7	124-149 MFD	70 + 43 + 23 =	136 MFD TOTAL
	8	135-155 MFD	90 + 33 + 23 =	146 MFD TOTAL
	9	145-174 MFD	90 + 70 =	160 MFD TOTAL
	10	161-193 MFD	70 + 90 + 23 =	183 MFD TOTAL
	11	176-216 MFD	70 + 90 + 43 =	203 MFD TOTAL
	12	189-227 MFD	70 + 90 + 33 + 23 =	216 MFD TOTAL
	13	233-288 MFD	70 + 90 + 43 + 43 + 23 =	269 MFD TOTAL
	14	270-324 MFD	23 + 33 + 43 + 43 + 70 + 90 =	302 MFD TOTAL

[*Note: Motor-Start microfarad (mfd) capacitance values are always shown as a range (low to high)].

The TurboTM50 is produced under one or more American Radionic United States patent numbers: 7,474,519; 7,423,861; 7,203,053; 6,014,308. Additional patents pending. This series is designed, developed and manufactured by American Radionic Co, Inc.

AmRad's Turbo57™RMAC

Innovation for the Appliance and Window A/C Service Technician



Designed specifically to replace capacitors installed in window air conditioning units.

The Turbo57™RMAC can replace any one of **57 DIFFERENT** single and dual value capacitors!

Turbo57RMAC- replaces 57 different single and dual value motor-run capacitors for use with 110, 115, or 120V (AC) rated room air conditioners

The Turbo57™RMAC is an industrial-grade, permanent replacement part.

*Incorporated with the same film dielectric technology used in AmRad's motor-run capacitors. The Turbo57™RMAC is safety protected using a UL approved safety interrupter- the same safety mechanisms used in all AmRad capacitors.

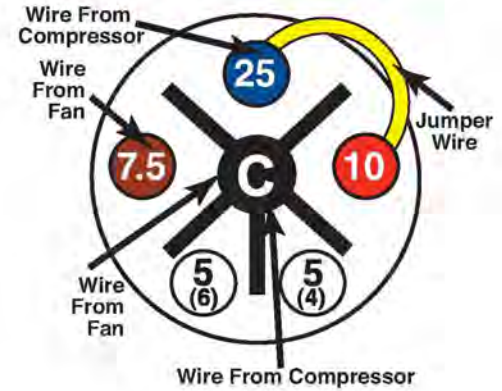
TurboRMAC™ Wiring Instructions

EXAMPLE: To replace a 35+7.5 microfarad dual value capacitor

Steps:

- 1) Make note of the wires which are attached to the fan motor (F), common (C) and compressor (Herm) terminals of the capacitor being replaced.
- 2) To achieve the 35.0 microfarad for the compressor (HERM): Using one (1) yellow jumper wire, connect the 25 mfd to the 10 mfd (as shown). This now provides 35 microfarads (mfd).
- 3) Connect one of the wires from the compressor to the 25 microfarad terminal.
- 4) Connect the other wire(s) from the compressor to the common (C). [The common is the center black terminal].
- 5) To obtain the 7.5 microfarad for the fan (F), connect one wire from the fan motor to the 7.5 terminal.
- 6) Connect the other wire from the fan motor to the common (C). [The common is the center black terminal].

35 + 7.5 MFD



The Turbo®57RMAC Enhanced is produced under one or more American Radionic United States patent numbers: 7,835,133, 7,474,519; 7,423,861; 7,203,053; 6,014,308. Additional patents pending. This series is designed, developed and manufactured by American Radionic Co, Inc.

U.S.A CAPACITORS

MADE IN AMERICA BY AMERICANS

- ★ **MADE AND ASSEMBLED IN PALM COAST, FL**
- ★ **MANUFACTURED BY AMERICAN RADIONIC, THE MANUFACTURERS OF TURBO PRODUCTS**
- ★ **ALL USA CAPACITORS ARE 370/440 SINGLE AND DUAL VOLTAGE**
- ★ **BACKED BY A 5 YEAR WARRANTY VS. TYPICAL ONE YEAR WARRANTY PROVIDED BY OTHER MANUFACTURERS**
- ★ **EACH CAPACITOR TESTED MULTIPLE TIMES THROUGHOUT THE MANUFACTURING PROCESS**
- ★ **OIL FILLED WITH A PATENTED NON-PCB OIL**
- ★ **10,000 AFC PROTECTED**
- ★ **UL 810 APPROVED**
- ★ **OEM APPROVED**



USA MADE CAPACITORS

- ★ Manufactured in Palm Coast, Florida
- ★ 370/440V Single & Dual Capacitance
- ★ 5 Year Warranty
- ★ Oil Filled with a Patented Non-PCB Oil
- ★ 10,000 AFC Protected
- ★ UL 810 Approved
- ★ OEM Approved



AMERICAN MADE PRODUCTS. 100% GUARANTEED.



Single Capacitance

GLOBAL NO.	MFD	VOLTAGE	CAN	CASE QTY
USA2027	3	370/440	Oval	100
USA2028	4	370/440	Oval	100
USA2029	5	370/440	Oval	100
USA2030	6	370/440	Oval	100
USA2031	7.5	370/440	Oval	100
USA2035	10	370/440	Oval	100
USA2037	12.5	370/440	Oval	100
USA2204	5	370/440	Round	100
USA2206	7.5	370/440	Round	100
USA2207	10	370/440	Round	100
USA2208	12.5	370/440	Round	100
USA2209	15	370/440	Round	100
USA2211	20	370/440	Round	100
USA2212	25	370/440	Round	100
USA2213	30	370/440	Round	100
USA2214	35	370/440	Round	100
USA2215	40	370/440	Round	50
USA2216	45	370/440	Round	50
USA2217	50	370/440	Round	50
USA2218	55	370/440	Round	50
USA2219	60	370/440	Round	50
USA2220	65	370/440	Round	50
USA2228	70	370/440	Round	50
USA2229	80	370/440	Round	50

Dual Capacitance

GLOBAL NO.	MFD	VOLTAGE	CAN	CASE QTY
USA2224A	20/3	370/440	Round	50
USA2224	20/4	370/440	Round	50
USA2222	20/5	370/440	Round	50
USA2224BA	25/3	370/440	Round	50
USA2225	25/5	370/440	Round	50
USA2225B	25/705	370/440	Round	50
USA2227BA	30/3	370/440	Round	50
USA2226	30/5	370/440	Round	50
USA2272B	30/7.5	370/440	Round	50
USA2226BA	35/3	370/440	Round	50
USA2227	35/5	370/440	Round	50
USA2291	35/7.5	370/440	Round	50
USA2227B	35/10	370/440	Round	50
USA2274	40/3	370/440	Round	50
USA2235	40/5	370/440	Round	50
USA2232	40/7.5	370/440	Round	50
USA2232A	40/10	370/440	Round	50
USA2236A	45/3	370/440	Round	50
USA2236	45/5	370/440	Round	50
USA2233	45/7.5	370/440	Round	50
USA2234	45/10	370/440	Round	50
USA2237A	50/3	370/440	Round	50
USA2237	50/5	370/440	Round	50
USA2238	50/7.5	370/440	Round	50
USA2240	55/5	370/440	Round	50
USA2218A	55/7.5	370/440	Round	50
USA2218BA	55/10	370/440	Round	50
USA2220B	60/5	370/440	Round	50
USA2221B	60/7.5	370/440	Round	50
USA2221BA	60/10	370/440	Round	50
USA2221	70/5	370/440	Round	25
USA2222A	70/7.5	370/440	Round	25
USA2220BA	70/10	370/440	Round	25
USA2222BA	80/5	370/440	Round	25
USA2223B	80/7.5	370/440	Round	25
USA2223BA	80/10	370/440	Round	25

Trust the



www.globalthesource.com

AMARAD Engineering

MADE IN AMERICA
Trusted and Verified!

(G) GLOBAL
HVACR MASTER DISTRIBUTOR

Motor Run - Single Capacitance

Global capacitors are batch tested in a UL Certified lab in the United States and are backed with a two year warranty.

Contact Global for specific size requirements and case quantities.



370V			
Oval		Round	
Global No.	MFD	Global No.	MFD
2002	2	2201	2
2003	3	2202	3
2004	4	2203	4
2005	5	2204	5
2006	6	2205	6
2007	7.5	2206	7.5
2008	10	2207	10
2009	12.5	2208	12.5
2014	20	2209	15
2015	25	2210	17.5
2017	30	2211	20
2018	35	2212	25
2021	40	2213	30
2023	45	2214	35
2022	55	2215	40
2024	60	2216	45
2053B	80	2217	50
		2218	55
		2219	60
		2228	70
		2229	80

440V			
Oval		Round	
Global No.	MFD	Global No.	MFD
2026	2	2250	2
2027	3	2251	3
2028	4	2252	4
2029	5	2253	5
2030	6	2254	6
2031	7.5	2255	7.5
2032	10	2256	10
2033	12.5	2257	12.5
2034	15	2258	15
2036	17.5	2259	17.5
2035	20	2260	20
2040	25	2261	25
2041	30	2262	30
2043	35	2263	35
2045	40	2264	40
2048	45	2265	45
2051	50	2266	50
2052	55	2267	55
2054	60	2299B	60
2060	75	2295	65
2053BA	80		



370V			
Oval		Round	
Global No.	MFD	Global No.	MFD
2057	15/5	2220	15/5
2058	15/10	2221	15/10
2059	17.5/5	2222	20/5
2062	20/4	2222B	20/7.5
2063	20/5	2223	20/10
2064	20/10	2224	20/15
2164	20/15	2224BA	25/3
2065	25/3	2224B	25/4
2066	25/5	2225	25/5
2061	25/7.5	2225B	25/7.5
2167	25/10	2277	25/10
2068	30/3	2227B	30/3
2069	30/5	2231	30/4
2093	30/7.5	2226	30/5
2093B	30/10	2226B	30/15
2070	35/3	2226BA	35/3
2071	35/4	2276	35/4
2072	35/5	2227	35/5
2091	35/7.5	2291	35/7.5
2073	35/10	2227BA	35/10
2174	40/3	2274	40/3
2075	40/5	2274B	40/4
2094	40/7.5	2235	40/5
2076	45/5	2232	40/7.5
2179	50/5	2236	45/5
2079	55/5	2233	45/7.5
2092A	55/7.5	2234	45/10
2078	60/5	2237	50/5
2095	60/7.5	2238	50/7.5
2096	60/10	2239	50/10
		2240	55/5
		2218A	55/7.5
		2218BA	55/10
		2219BA	60/3
		2220B	60/5
		2221B	60/7.5
		2221BA	60/10
		2222A	70/7.5
		2222BA	80/5
		2223B	80/7.5
		2223BA	80/10

Motor Run - Dual Capacitance

Global capacitors are batch tested in a UL Certified lab in the United States and are backed with a two year warranty.

Contact Global for specific size requirements and case quantities.

440V			
Oval		Round	
Global No.	MFD	Global No.	MFD
2080	10/5	2275	10/5
2081	15/5	2268	15/5
2082	15/10	2269	20/5
2084	20/5	2270	20/15
2083	20/15	2271	25/5
2184	25/5	2271B	25/7.5
2182	25/7.5	2271BA	25/15
2188	25/10	2230	30/3
2195	25/15	2272	30/5
2187	30/5	2272B	30/7.5
2170	30/7.5	2286	35/3
2186	35/3	2273A	35/4
2185	35/5	2273	35/5
2194	35/7.5	2294	35/7.5
2189	40/3	2294B	35/10
2190	40/5	2293	40/3
2196	40/7.5	2294BA	40/4
2172	40/10	2290	40/5
2191	45/5	2298A	40/7.5
2191B	45/7.5	2297	45/5
2193	50/5	2299	45/7.5
2192	55/5	2299A	50/5
2052A	55/7.5	2299BA	50/7.5
2192B	55/10	2267B	55/5
		2267A	55/7.5
		2298B	60/5
		2298	60/7.5
		2298BA	60/10
		2299AA	80/5

Motor Start Capacitors

BMI's Motor Start units are non-polarized aluminum electrolytic capacitors designed for intermittent AC duty. These capacitors are used in starting fractional horsepower, single-phase electric motors, as well as in gear motor applications. The capacitors are housed in rugged plastic cases, which require no added insulation. Mounting hardware, end caps and brackets are available to facilitate mounting.

Features:

- Plastic Case, Moisture and Oil Resistant
- Voltages from 110 VAC- 330 VAC
- 091A Meets EIA Type 1 Specifications
- 092A Meets EIA Type 2 Specifications
- UL Recognized Capacitors

General Specifications:

- **Operating Temperature:**
-40 to +65°C
- **Voltage Range:**
110 - 330 VAC
- **Capacitance Range:**
21 - 1280µF
- **Capacitance Tolerance:**
-0%/+20%
- **Operating Frequency:**
50 - 60Hz
- **Case Size**
8 Standard Sizes from 1.437" x 2.750" - 2.562" x 4.365"
- **Termination:**
¼" Quick Disconnect Terminals (Std.)
- **Performance Specifications:**
Meets Requirements of EIA-463-A 091A Meets Type 1 Heavy Duty, Specifications 092A Meets Type 2, Standard Duty, Specifications.



110/125V		
Global No.	MFD	Can Size
1002	21-25	1
1003	25-30	1
1004	30-36	1
1005	36-43	1
1006	43-52	1
1007	53-64	1
1007A	64-77	1
1008	72-86	1

110/125V Cont.		
Global No.	MFD	Can Size
1009	88-106	1
1010	108-130	1
1011	124-149	1
1012	130-156	1
1013	145-174	1
1014	161-193	1
1015	189-227	1
1016	200-240	1
1017	216-259	1
1018	233-280	1
1018A	243-292	1
1019	270-324	1
1020	300-360	1
1021	324-389	1
1022	340-408	2
1023	378-454	2
1024	440-480	2
1024A	430-516	2
1025	460-552	2
1026	540-648	4
1027	590-708	4
1027A	645-774	4
1028	708-850	4
1028A	800-900	7
1028AB	815-978	7
1029	829-995	7
1030	1000-1200	7

Motor Start Capacitors Cont.

220/250V		
Global No.	MFD	Can Size
1038	21-25	1
1039	25-30	1
1040	30-36	1
1041	36-43	1
1042	43-52	1
1043	53-64	1
1043A	64-77	2
1044	72-86	4
1045	88-106	4
1046	108-130	4
1047	130-156	4
1048	124-149	4
1049	145-174	4
1050	161-193	5
1051	189-227	6
1052	216-259	6
1053	233-280	6
1053A	243-292	7
1054	270-324	7
1054A	297-356	7

330V		
Global No.	MFD	Can Size
1055	21-25	2
1056	25-30	2
1057	30-36	2
1058	36-43	2
1059	43-52	4
1060	53-64	4
1060A	64-77	4
1061	72-86	4
1062	88-106	4
1063	108-130	7
1064	130-156	7
1065	124-149	7
1066	145-174	7
1067	161-193	7
1068	189-227	7
1069	216-259	7
1071	270-324	7

Can Size		
No.	Diameter (inches)	Length (inches)
1	1.4375	2.75
2	1.4375	3.375
3	1.4375	4.375
4	1.8125	3.375
5	1.8125	4.375
6	2.0625	3.375
7	2.0625	4.375



DEFINITE PURPOSE CONTACTORS

**EATON CONTACTORS
AUXILIARY CONTACT KITS
HEATER PACKS DEFINITE
PURPOSE STARTERS**

Eaton Contactors— Compact Series

20–40A, Compact Single- and Two-Pole—C25

Eaton’s 20–40A, single- and two-pole, Type C25 contactors from Eaton’s electrical sector feature a compact, efficient design with a low VA coil and straight-through wiring. New contactor housing design effectively limits dust and other contaminants from magnet structure—reduces or eliminates noise. These economically priced, UL recognized/ CSA certified, ampere rated devices are well suited for use in heating/ air conditioning, refrigeration, data processing and food service applications.

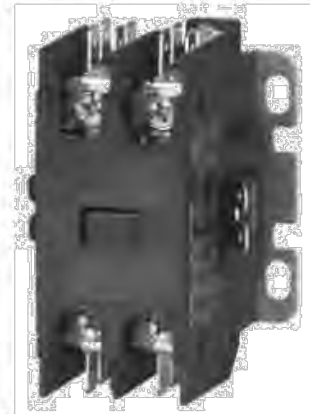
Standards and Certifications:

- UL Recognized Components: UL File Number E1491, Guides NLDX2 and NLDX8
- CSA Certified Components: CSA C22.2 No. 14-05, File Number 238083 Class 3211 84
- IEC 60947-4-1
- EN 60947-4-1
- ARI 780/790 Standard
- CE
- RoHS Compliance

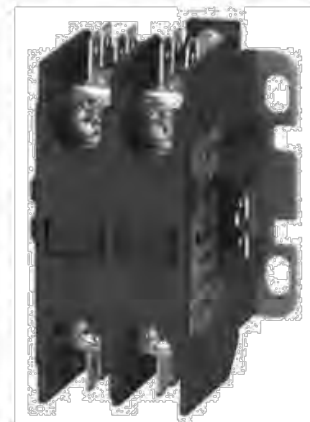
Global No.	Eaton No.	Description	Case Qty 50
4140	C25CNB125T	1 Pole + Shunt 25A 24V	
4141	C25CNB125A	1 Pole + Shunt 25A 120V	
4142	C25CNB125B	1 Pole + Shunt 25A 208/240V	
4143	C25CNB130T	1 Pole + Shunt 30A 24V	
4144	C25CNB130A	1 Pole + Shunt 30A 120V	
4145	C25CNB130B	1 Pole + Shunt 30V 208/240V	
4101	C25BNB220T	2 Pole 20A 24V	
4102	C25BNB220A	2 Pole 20A 120V	
4103	C25BNB220B	2 Pole 20A 208/240V	
4104	C25BNB225T	2 Pole 25A 24V	
4105	C25BNB225A	2 Pole 25A 120V	
4106	C25BNB225B	2 Pole 25A 208/240V	
4107	C25BNB230T	2 Pole 30A 24V	
4108	C25BNB230A	2 Pole 30A 120V	
4109	C25BNB230B	2 Pole 30A 208/240V	
4109B	C25DND230C	2 Pole 30A 480V	
4161C	C2BNB240T	2 Pole 40A 24V	
4161CL	C25BNF240T	2 Pole w/ Lug 40A 24V	
4162C	C25BNB240A	2 Pole 40A 120V	
4162CL	C25BNF240A	2 Pole w/ Lug 40A 120V	
4163C	C25BNB240B	2 Pole 40A 208/240V	
4163CL	C25BNF240B	2 Pole w/ Lug 40A 208/240V	



Compact 1-Pole



Compact 1-Pole with Shunt



Compact 2-Pole

Eaton Contactors— Compact Series

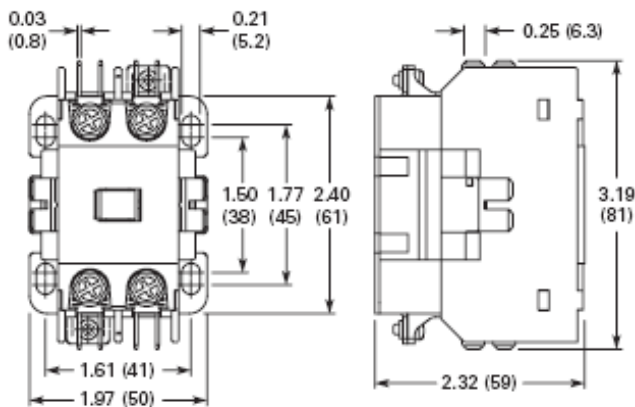
Compact Contactors Product Selection— Open Type									
Ampere Ratings ①					Max. Motor Horsepower		Max. Motor Kilowatts		Catalog No. ②
Inductive Full Load	Resistive	Locked Rotor			115V	230V	115V	230V	
		240-277V	480V	600V					
Single-Pole									
25	30	150	50	40	2	3	1.5	2.2	C25ANB125_
30	40	150	75	50	2	5	1.5	3.7	C25ANB130_
40	50	240	200	160	3	7-1/2	2.2	5.5	C25ANB140_
Single-Pole with Shunt									
25	30	150	50	40	2	3	1.5	2.2	C25CNB125_
30	40	150	75	50	2	5	1.5	3.7	C25CNB130_
40	50	240	200	160	3	7-1/2	2.2	5.5	C25CNB140_
Double Pole									
20	30	120	100	80	1-1/2	3	1.1	2.2	C25BNB220_
25	35	150	125	100	2	3	1.5	2.2	C25BNB225_
30	40	150	125	100	2	5	1.5	3.7	C25BNB230_
40	50	240	200	160	3	7-1/2	2.2	5.5	C25BNB240_

① Rating per pole.

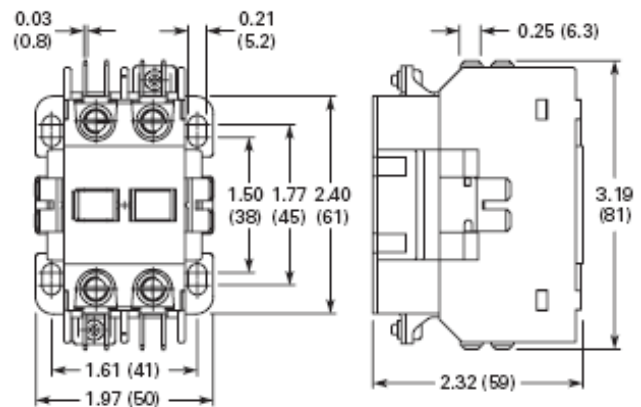
② Incomplete Catalog Number. Replace underscore (_) in Catalog Number with Coil Suffix letter from **Magnet Coil Selection**

AC Coil Voltage 50/60 Hz	Coil Suffix
24	T
110 – 120	A
208 – 240	B
277	H
380 – 415 (50 Hz); 440 – 480 (60 Hz)	C

Coil Characteristics			
AC Coil Voltage 50/60 Hz	Max. Inrush VA	Max. Sealed VA	Max. Sealed Watts
One-Pole			
24	33	6	2
120	33	6	2
208/240	33	6	2
277	33	6	2
Two-Pole			
24	41	6.5	3
120	41	6.5	3
208/240	41	6.5	3
277	41	6.5	3
480	41	6.5	3



1-Pole and 1-Pole + Shunt
Ship. Wt.: 0.5 lb. (0.2 kg)



2-Pole
Ship. Wt.: 0.7 lb. (0.3 kg)

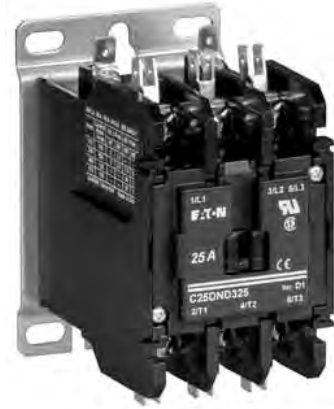
Eaton Contactors— Standard Series

15–360A, Two-, Three- and Four-Pole—C25

Type C25 Definite Purpose Contactors 15A through 360A, from Eaton’s electrical sector incorporate most competitive contactor mounting dimensions into a single baseplate. Contactors are dual-rated with inductive and resistive ratings as well as horsepower and kilowatt ratings. C25 contactors are furnished with pressure plates and quick connect terminals as standard on 15, 25 and 30A devices and with box lugs and quick-connect terminals on 40, 50, 60 and 75A. Contactors will accept add-on auxiliary contacts—order factory assembled or as kits for field installation. The separately available snap-on mechanical interlock permits interlocking two contactors for reversing or two-speed applications. Contactors rated 15–50A only are available with DIN rail mount as a factory installed option.

Standards and Certifications:

- UL Recognized Components UL File No. E-1491, Guide NLDX2
- UL recognized, CSA certified and conform to ARI 780
- CSA Certified Components: File No. LR353, Class 3211 04, 481301 and 122201
- IEC 60947-4-1
- EN 60947-4-1
- CE mark
- RoHS Compliance (15A to 50A and 90A)



Global No.	Eaton No.	Description	Case Qty 20
4161	C25DNF240T	2 Pole 40A 24V	
4162	C25DNF240A	2 Pole 40A 120V	
4163	C25DNF240B	2 Pole 40A 208/240V	
4163A	C25DNF240C	2 Pole 40A 480V	
4110	C25DND325T	3 Pole 25A 24V	
4111	C25DND325A	3 Pole 25A 120V	
4112	C25DND325B	3 Pole 25A 208/240V	
4113	C25DND330T	3 Pole 30A 24V	
4114	C25DND330A	3 Pole 30A 120V	
4115	C25DND330B	3 Pole 30A 208/240V	
4113C	C25DND330C	3 Pole 30A 480V	
4116	C25DNF340T	3 Pole 40A 24V	
4117	C25DNF340A	3 Pole 40A 120V	
4118	C25DNF340B	3 Pole 40A 208/240V	
4118C	C25DNF340C	3 Pole 40A 480V	

Global No.	Eaton No.	Description	Case Qty 10
4128	C25FNF350T	3 Pole 50A 24V	
4129	C25FNF350A	3 Pole 50A 120V	
4130	C25FNF350B	3 Pole 50A 208/240V	
4130C	C25FNF350C	3 Pole 50A 480V	
4131	C25FNF360T	3 Pole 60A 24V	
4132	C25FNF360A	3 Pole 60A 120V	
4133	C25FNF360B	3 Pole 60A 208/240V	
4133C	C25FNF360C	3 Pole 60A 480V	
4134	C25FNF375T	3 Pole 75A 24V	
4135	C25FNF375A	3 Pole 75A 120V	
4136	C25FNF375B	3 Pole 75A 208/240V	
4137	C25GNF390T	3 Pole 90A 24V	
4138	C25GNF390A	3 Pole 90A 120V	
4139	C25GNF390B	3 Pole 90A 208/240V	
4119	C25ENF440T	4 Pole 40A 24V	
4120	C25ENF440A	4 Pole 40A 120V	
4121	C25ENF440B	4 Pole 40A 208/240V	

Eaton Contactors— Standard Series

IEC/CE Ratings (IEC 60947-4-1, EN 60947-4-1) for 15A through 50A C25D_Contactors

C25D_ Inductive Rating	AC-1 (Ic)		AC-3 (Ie)		AC-4 (Ie)		AC-8a	
	480V	600V	480V	600V	480V	600V	480V	600V
15A	20A	20A	15A	15A	15A	—	15A	15A
25A	30A	30A	25A	25A	25A	—	25A	25A
30A	40A	40A	30A	30A	30A	—	30A	30A
40A	50A	—	40A	—	40A	—	40A	—
50A	65A	65A	50A	50A	50A	—	50A	50A

DC Ratings (15A to 50A Only)

Voltage	2-Pole, 15 – 30A Inductive			2-Pole, 40A Inductive			3-Pole, 15 – 30A Inductive			3-Pole, 40A Inductive		
	UL/CSA		DC-3/DC-5	UL/CSA		DC-3/DC-5	UL/CSA		DC-3/DC-5	UL/CSA		DC-3/DC-5
	FLA	hp	I _e	FLA	hp	I _e	FLA	hp	I _e	FLA	hp	I _e
240V DC 3 Poles in Series	—	—	—	—	—	—	4	3/4	4	5	1	5
120V DC 3 Poles in Series	—	—	—	—	—	—	8	3/4	8	10	1	10
120V DC 2 Poles in Series	5.5	1/2	5.5	8	3/4	8	5.5	1/2	5.5	8	3/4	8
120V DC per Pole	2	1/10	2	3.5	1/4	3.5	2	1/10	2	3.5	1/4	3.5
24V DC per Pole	15	—	15	20	—	20	15	—	15	20	—	20

Contactor Torque Ratings

Contactor Size	Terminal	Wire Range	Tightening Torque
15 – 50A ①	8–32 Binding Head Screw	12 – 14 AWG	22 lb-in
	Screw/Pressure Plate	8 – 14 AWG	15 lb-in
	Box Lug	12 – 14 AWG	15 lb-in
		10 AWG	25 lb-in
8 AWG		40 lb-in	
60 – 75A ②	Box Lug	4 – 6 AWG	45 lb-in
		10 – 14 AWG	40 lb-in
		8 AWG	45 lb-in
90A	Box Lug	3 – 6 AWG	50 lb-in
120A	Box Lug	1/0 – 14 AWG	60 lb-in
		8 AWG	40 lb-in
		4 – 6 AWG	45 lb-in
200 – 300A	Box Lug	3 – 1/0 AWG	50 lb-in
		6 – 350 MCM	200 lb-in
360A	Box Lug	2 – 750 MCM	550 lb-in

Lighting Duty Ratings

C25D_ Inductive Rating	Tungsten & Ballast (480V)
25A	30A
30A	40A
40A	50A
50A	60A

① The box lugs on the 15 – 50A device can accept 2 conductors per pole, the upper section will accept 4 – 14 AWG and the lower section will accept 6 – 14 AWG.

② The box lugs on the 60 – 75A device can accept 2 conductors per pole, the upper section will accept 3 – 14 AWG and the lower section will accept 6 – 14 AWG.

Eaton Contactors— Standard Series

C25 Contactors Product Selection— Open Type

Ampere Ratings				Max. Motor Horsepower		Max. Motor Kilowatts		Number of Poles	Open Type with Metal Mounting Plate	Open Type with DIN Rail Adapter
Inductive Full Load	Resistive per Pole	Line Voltage	Locked Rotor	1-Phase	3-Phase	1-Phase	3-Phase		Catalog No. ①②	
15	20	115	90	3/4	—	0.40	—	2	C25DND215_	C25DRD215_
		230	90	2	3	1.5	2.2	3	C25DND315_	C25DRD315_
		460	75	—	5	—	3.7	—		
		575	60	—	5	—	3.7	—		
25	35	115	150	2	—	1.5	—	2	C25DND225_	C25DRD225_
		230	150	3	7-1/2	2.2	5.5	3	C25DND325_	C25DRD325_
		460	125	—	10	—	7.5	—	C25END425_	
		575	100	—	10	—	7.5	—		
30	40	115	180	2	—	1.5	—	2	C25DND230_	C25DRD230_
		230	180	5	10	3.7	7.5	3	C25DND330_	C25DRD330_
		460	150	—	15	—	11	—	C25END430_	
		575	120	—	15	—	11	—		
40	50	115	240	3	—	2.2	—	2	C25DNF240_	C25DRF240_
		230	240	7-1/2	10	5.5	7.5	3	C25DNF340_	C25DRF340_
		460	200	—	20	—	15	—	C25ENF440_	
		575	160	—	20	—	15	—		
50	65	115	300	3	—	2.2	—	2	C25DNJ250_	C25DRJ250_
		230	300	10	15	7.5	11	3	C25DNJ350_	C25DRJ350_
		460	250	—	30	—	22	—		
		575	200	—	30	—	22	—		
60	75	115	360	5	—	3.7	—	2	C25FNF260_	NA
		230	360	10	20	7.5	15	3	C25FNF360_	
		460	300	—	40	—	30	—		
		575	240	—	40	—	30	—		
75	90	115	450	5	—	3.7	—	2	C25FNF275_	NA
		230	450	15	20	11	18.5	3	C25FNF375_	
		460	375	—	50	—	37	—		
		575	300	—	50	—	37	—		
90	120	115	540	7-1/2	—	5.7	—	2	C25GNF290_	NA
		230	540	20	30	15.1	22	3	C25GNF390_	
		460	450	—	50	—	37	—		
		575	360	—	50	—	37	—		
120	140	115	720	—	—	—	—	3	C25HNE3120	NA
		230	720	—	—	—	—	—	—	
		460	720	—	—	—	—	—		
		575	570	—	—	—	—	—		
200	200	240	1200	—	—	—	—	3	C25KNE3200	NA
		480	1200	—	—	—	—	—	—	
		600	1000	—	—	—	—	—	—	
300	300	240	1800	—	—	—	—	3	C25KNE3300	NA
		480	1800	—	—	—	—	—	—	
		600	1500	—	—	—	—	—	—	

Eaton Contactors— Standard Series

C25 Contactors Product Selection— Open Type Cont.

Ampere Ratings				Max. Motor Horsepower		Max. Motor Kilowatts		Number of Poles	Open Type with Metal Mounting Plate	Open Type with DIN Rail Adapter
Inductive Full Load	Resistive per Pole	Line Voltage	Locked Rotor	1-Phase	3-Phase	1-Phase	3-Phase		Catalog No. ① ②	
360	360	240	2320	—	—	—	—	3	C25LNE3360	NA
		480	2320	—	—	—	—		—	
		600	1900	—	—	—	—		—	

- ① Incomplete Catalog Number. Replace underscore(_) in Catalog Number with Magnet Coil Suffix from table below.
- ② Carton quantities including 20 individually packaged units are available for 2- and 3-pole units through 60A inductive.
- ③ Contactors with DC coils (only available up to 75A) include an early break NC auxiliary contact, C320KGD1.
- ④ Available only for 15A through 75A contactors and 4-pole contactors.
- ⑤ Available through 75A.
- ⑥ Available through 120A.
- ⑦ Available 120 – 360A.
- ⑧ Available 15 – 90A, others 240V
- ⑨ Available through 50A.
- ⑩ 104 – 120V 50/60 Hz for 60A, 75A and all 4-Pole Contactors (25A-40A).
- ⑪ Class H AC Coils available as option for 15A – 50A Contactor. Add **2** before AC Coil Suffix letter.

Magnet Coil Selection

Voltage		Coil Suffix
60 Hz	50 Hz	
AC ⑪		
12 ⑤	12	R
24 ⑥	24	T
110 – 120 ⑩	110 – 120	A
208 ⑦	—	E
208 – 240 ⑧	208 – 240	B
240 ⑨	220	J
277	—	H
—	380 – 415	L
440 – 480	440 – 480	C
550 – 600	550 – 600	D
DC ③		
12		1R
24		1T
48		1W
120		1A ④

Contactor Accessories— Auxiliary Contact Kits

Optional Features — Factory Installed

To order C25, C65, A25 and B25 Contactors and Starters with options listed below, change the basic Catalog Number listed in the Selection Table as noted.

Description	Code Letter	*
-------------	-------------	---

Terminals — 15 through 40A

Replace letter in the 6th position of Catalog Number with Code Letter listed below. EXAMPLE: Change C25DND215 to C25DNC215.

Pressure Plate Without Quick Connect Terminals With Quick Connect Terminals	C D	N/C Standard		
		2-Pole	3-Pole	4-Pole
Binding Head Screws Without Quick Connect Terminals With Quick Connect Terminals	A B	N/C N/C		
Lugs Without Quick Connect Terminals With Quick Connect Terminals	E F			

Terminals — 50 through 75A

Replace letter in the 6th position of Catalog Number with Code Letter listed below. EXAMPLE: Change C25FNF250 to C25FNE250.

Lugs Without Quick Connect Terminals With Quick Connect Terminals	E F	N/C Standard		
		2-Pole	3-Pole	4-Pole

Auxiliary Contacts

Add Code Letter listed below to complete Catalog Number using Code Letter listed below. EXAMPLE: Change C25DND215A to C25DND215AA.

Description	With Standard Pressure Plate Terminals		With Quick Connect Terminals	
	Code Letter	*	Code Letter	*

For 15 through 90A

Factory Installed	A B C D E	F G H J K
1NO		
1NC		
1NO-1NC		
2NO		
2NC		

For 120 through 360A

	A C D E	—
1NO		
1NO-1NC		
2NO		
2NC		

Special Marking

Special contactor marking, consult local sales office.

90A available only with binding head screw and quick connect terminals.



NEMA 1 Enclosure
Cat. No. C799B19

Separate Enclosures — NEMA 1

Application	Catalog Number	*
15 through 40A, 2- and 3-Pole	C799B18	
50 and 60A, 2- and 3-Pole or 25 through 40A, 4-Pole	C799B19	

Optional Features — For Field Installation



Side Mounted Auxiliary Contact

Auxiliary Contact Kits (Side Mounted)

Heavy-Duty Pilot Rated for 10A at 600V AC				
Circuit	With Standard Pressure Plate Terminals		With Pressure Plate and Quick Connect Terminals	
	Catalog Number	*	Catalog Number	*

For 15 through 75A

Circuit	C320KG1 KG2 KG3 KG4 KG5	C320KG11 KG12 KG13 KG14 KG15
1NO		
1NC		
1NO-1NC		
2NO		
2NC		

For 90A

Circuit	—	C320DPG10 DPG01 DPG11 DPG20
1NO		
1NC		
1NO-1NC		
2NO		

For 120 through 360A

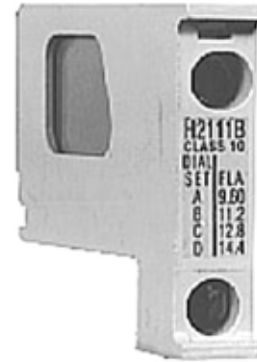
Circuit	C320KGS20 KGS21 KGS22	—
1NO		
1NC		
1NO-1NC		

Contactor Accessories— Heater Packs

Fast Trip— Class 10 Heater Packs

- Manual or Automatic Reset
- Heater packs are shipped 3 to a carton

Heater packs H2101B to H2117B are to be used only with Series B overload relays. The load lugs are built into the overload relay base to allow load wiring prior to heater pack installation. The previous heater design had integral load lugs. The Series B heater packs are electrically equivalent to the previous heater design.



Fast Trip— Class 10 Heater Packs					
Global No. (Includes 3 Heater Packs) ①	Motor Full Load Ampere Rating ②				Overload Relay Size
	Dial Position				
	A	B	C	D	
For Use with NEMA Sizes 00-0 Series C, NEMA Sizes 1-2 Series B, IEC Sizes A-F Series C, IEC Sizes G-K Series B					
H2101B-3	.260	.313	.367	.420	32A or 75A
H2102B-3	.384	.464	.543	.623	
H2103B-3	.570	.688	.806	.924	
H2104B-3	.846	1.02	1.20	1.37	
H2105B-3	1.28	1.55	1.83	2.10	
H2106B-3	1.92	2.33	2.74	3.15	
H2107B-3	2.30	2.79	3.28	3.77	
H2108B-3	3.38	4.10	4.82	5.54	
H2109B-3	4.96	6.03	7.09	8.16	
H2110B-3	7.07	8.58	10.1	11.6	
H2111B-3	9.60	11.2	12.8	14.4	
H2112B-3	14.4	17.5	20.7	23.8	
H2113B-3	18.7	21.8	25.0	28.1	
H2114B-3	23.5	27.3	31.0	34.8	
For Use with Size 2, IEC Sizes G-K Only— Series B					
H2115B-3	28.3	32.6	37.0	41.3	75A
H2116B-3	36.6	42.3	48.1	53.8	
H2117B-3	53.8	80.8	67.9	74.9	

- ① Set of 3 heater packs are required for both single- and three-phase applications
- ② For motor full load amperes between listed values, adjust dial clockwise for higher or counterclockwise for lower motor currents. The currents listed are for 1.5 service factor motors. A position adjustment is provided for 1.0 service factor motors.



Definite Purpose Contactors

Global Part Number	Poles	Amps	Volts	C-H	GE	GE	Square D	Furnas	Furnas Centurion	Products Unlimited	Mars GE	Mars GE	Arrow Hart	Mars Series 910
C25ANB125T	1	25	24	C25ANB125T	CR83CC1A1H					3100Y1001350			C251U10	
C25ANB125A	1	25	120	C25ANB125A	CR83CC1AA1					3100Y10T1350			C251U20	
C25ANB125B	1	30	208/240	C25ANB125B	CR83CC1AB1					3100Y10U1350			C251U30	
C25ANB130T	1	25	24	C25ANB130T	CR83CC1AH1					3100Y10D2350			C301U10	
C25ANB130A	1	30	120	C25ANB130A	CR83CC1AA1					3100Y10T2350			C301U20	
C25ANB130B	1	30	208/240	C25ANB130B	CR83CC1AB1					3100Y10U2350			C301U30	
C25ANB140T	1	40	24	C25ANB140T	CR83CC1AH1					3100Y10016350				
C25ANB140A	1	40	120	C25ANB140A	CR83CC1AA1					3100Y10T16350				
C25ANB140B	1	40	208/240	C25ANB140B	CR83CC1AB1					3100Y10U16350				
4140	1.5	25	24	C25CNB125T	CR83CC1AH1					3100Y1501350			C251NU10	
4141	1.5	25	120	C25CNB125A	CR83CC1AA1					3100Y15T1350			C251NU20	
4142	1.5	25	208/240	C25CNB125B	CR83CC1AB1					3100Y15U1350			C251NU30	
4143	1.5	30	24	C25CNB130T	CR83CC1AH1	CR453CC3HAA				3100Y15D2350	13101		C301NU10	91311
4144	1.5	30	120	C25CNB130A	CR83CC1AA1					3100Y15T2350	13102		C301NU20	91312
4145	1.5	30	208/240	C25CNB130B	CR83CC1AB1					3100Y15U2350	13103		C301NU30	91313
C25CNB140T	1.5	40	24	C25CNB140T	CR83CC1AH1					3100Y15016350				
C25CNB140A	1.5	40	120	C25CNB140A	CR83CC1AA1					3100Y15T16350				
C25CNB140B	1.5	40	208/240	C25CNB140B	CR83CC1AB1					3100Y15U16350				
4101	2	20	24	C25ENB220T	CR83CC2AH1					3100Y2001350CL				
4102	2	20	120	C25ENB220A	CR83CC2AA1					3100Y20T1350CL				
4103	2	20	208/240	C25ENB220B	CR83CC2AB1					3100Y20U1350CL				
C25ENB220C	2	25	24	C25ENB220C	CR83CC2AH1					3100Y20D1350CL				
4104	2	25	120	C25ENB225A	CR83CC2AA1					3100Y20T1350CL				
4105	2	25	208/240	C25ENB225B	CR83CC2AB1					3100Y20U1350CL				
C25ENB225C	2	25	480	C25ENB225C	CR83CC2AH1					3100Y20D16350CL				
4107	2	30	24	C25ENB230T	CR83CC2AH1					3100Y20016350CL	13104		C202U10	91321
4108	2	30	120	C25ENB230A	CR83CC2AA1					3100Y20T16350CL	13105		C202U20	91322
4109	2	30	208/240	C25ENB230B	CR83CC2AB1					3100Y20U16350CL	13106		C202U30	91323
C25ENB230C	2	30	480	C25ENB230C	CR83CC2AH1					3100Y20D16350CL	13107		C302U10	91421
4111C	2	40	24	C25ENB240T	CR83CC2AH1					3100Y20T16350CL	13108		C302U20	91422
4112C	2	40	120	C25ENB240A	CR83CC2AA1					3100Y20U16350CL	13109		C302U30	91423
4113C	2	40	208/240	C25ENB240B	CR83CC2AB1					3100Y20D16350CL	13107			
C25DN0225T	2	25	24	C25DN0225T	CR83CC2AH1					3100Y20016350	13108			
C25DN0225A	2	25	120	C25DN0225A	CR83CC2AA1					3100Y20T16350	13109			
C25DN0225B	2	25	208/240	C25DN0225B	CR83CC2AB1					3100Y20U16350				
C25DN0225C	2	25	480	C25DN0225C	CR83CC2AH1					3100Y20D16350				
C25DN0230T	2	30	24	C25DN0230T	CR83CC2AH1					3100Y20019350				
C25DN0230A	2	30	120	C25DN0230A	CR83CC2AA1					3100Y20T19350				
C25DN0230B	2	30	208/240	C25DN0230B	CR83CC2AB1					3100Y20U19350				
C25DN0230C	2	30	480	C25DN0230C	CR83CC2AH1					3100Y20D19350				
4161	2	40	24	C25DNF240T	CR83AD2AH1					3100Y20010350				
4162	2	40	120	C25DNF240A	CR83AD2AA1					3100Y20T10350				
4163	2	40	208/240	C25DNF240B	CR83AD2AB1					3100Y20U10350				
C25DNF240C	2	40	480	C25DNF240C	CR83AD2AH1					3100Y20D10350				
C25FN250T	2	50	24	C25FN250T	CR83FE2AH1					3100Y20016350				
C25FN250A	2	50	120	C25FN250A	CR83FE2AA1					3100Y20T16350				
C25FN250B	2	50	208/240	C25FN250B	CR83FE2AB1					3100Y20U16350				
C25FN250C	2	50	480	C25FN250C	CR83FE2AH1					3100Y20D16350				
C25FN260T	2	60	24	C25FN260T	CR83FF2AH1					3100Y20017350				
C25FN260A	2	60	120	C25FN260A	CR83FF2AA1					3100Y20T17350				
C25FN260B	2	60	208/240	C25FN260B	CR83FF2AB1					3100Y20U17350				
C25FN260C	2	60	480	C25FN260C	CR83FF2AH1					3100Y20D17350				
C25FN275T	2	75	24	C25FN275T	CR83EG2AH1					3100Y20017350				
C25FN275A	2	75	120	C25FN275A	CR83EG2AA1					3100Y20T17350				
C25FN275B	2	75	208/240	C25FN275B	CR83EG2AB1					3100Y20U17350				
C25FN275C	2	75	480	C25FN275C	CR83EG2AH1					3100Y20D17350				



Definite Purpose Contactors

Global Part Number*	Poles	Amps	Volts	C-H	GE	GE	GE	Square D	Furnas	Furnas Centurytron	Products Unlimited	Mars GE	Mars GE	Arrow Hart	Mars Series 910
C25GNF290T	2	90	24	C25GNF290T	CR335EH2BH1	CR335EH2BH1	8910DPA02V14	42GE154J106	42GE154J106	42GE154J106	3186Y200R0350			ACC200U10	
C25GNF290A	2	90	120	C25GNF290A	CR335EH2BA1	CR335EH2BA1	8910DPA02V02	42GE154F106	42GE154F106	42GE154F106	3186Y201900350			ACC300U20	
C25GNF290B	2	90	208/240	C25GNF290B	CR335EH2BB1	CR335EH2BB1	8910DPA02V09	42GE154G106	42GE154G106	42GE154G106	3186Y20300350			ACC300U30	
C25GNF290C	2	90	480	C25GNF290C	CR335EH2BC1	CR335EH2BC1	8910DPA02V06	42GE154H106	42GE154H106	42GE154H106	3186Y20400350			ACC200U10	91231
4110	3	25	24	C25DND025T	CR335AB3AH1	CR335AB3AH1	8910DPA23V14	41NB30AJM	42AF35AJ	42AF35AJ	3100Y3000350	13101	13110	ACC200U10	
4111	3	25	120	C25DND025A	CR335AB3AA1	CR335AB3AA1	8910DPA23V02	41NB30AFM	42AF35AF	42AF35AF	3100Y3010350	13102	13111	ACC200U20	
4112	3	25	208/240	C25DND025B	CR335AB3AB1	CR335AB3AB1	8910DPA23V09	41NB30AGM	42AF35AG	42AF35AG	3100Y3030350	13103	13112	ACC200U30	
C25DND025C	3	25	480	C25DND025C	CR335AD3AC1	CR335AD3AC1	8910DPA23V06	41NB30AHM	42AF35AH	42AF35AH	3100Y3040350			ACC300U60	
4113	3	30	120	C25DND030T	CR335AC3AH1	CR335AC3AH1	8910DPA33V14	42BE35AJ106	42BF35AJ	42BF35AJ	3100Y3000350	13007	13113	ACC300U10	91331
4114	3	30	240	C25DND030A	CR335AC3AA1	CR335AC3AA1	8910DPA33V02	42BE35AF106	42BF35AF	42BF35AF	3100Y3010350	13008	13114	ACC300U20	91332
4115	3	30	208/240	C25DND030B	CR335AC3AB1	CR335AC3AB1	8910DPA33V09	42BE35AG106	42BF35AG	42BF35AG	3100Y3030350	13009	13115	ACC300U30	91333
C25DND030C	3	30	480	C25DND030C	CR335AC3AC1	CR335AC3AC1	8910DPA33V06	42BE35AH106	42BF35AH	42BF35AH	3100Y3040350			ACC300U60	
4116	3	40	24	C25DNF340T	CR335AD3BH1	CR335AD3BH1	8910DPA43V14	42CE35AJ106	42CF35AJ	42CF35AJ	3100Y30010350	13013	13116	ACC400U10	91431
4117	3	40	120	C25DNF340A	CR335AD3BA1	CR335AD3BA1	8910DPA43V02	42CE35AF106	42CF35AF	42CF35AF	3100Y3010350	13014	13117	ACC400U20	91432
4118	3	40	208/240	C25DNF340B	CR335AD3BB1	CR335AD3BB1	8910DPA43V09	42CE35AG106	42CF35AG	42CF35AG	3100Y3030350	13015	13118	ACC400U30	91433
C25DNF340C	3	40	480	C25DNF340C	CR335AD3BC1	CR335AD3BC1	8910DPA43V06	42CE35AH106	42CF35AH	42CF35AH	3100Y3040350			ACC400U60	
4128	3	50	24	C25DNF350T	CR335FE3BH1	CR335FE3BH1	8910DPA53V14	42DE35AJ106	42DF35AJ	42DF35AJ	3100Y30016350	13619		ACC500U10	91531
4129	3	50	120	C25DNF350A	CR335FE3BA1	CR335FE3BA1	8910DPA53V02	42DE35AF106	42DF35AF	42DF35AF	3100Y3016350	13620		ACC500U20	91532
4130	3	50	208/240	C25DNF350B	CR335FE3BB1	CR335FE3BB1	8910DPA53V09	42DE35AG106	42DF35AG	42DF35AG	3100Y3016350	13621		ACC500U30	91533
C25DNF350C	3	50	480	C25DNF350C	CR335FE3BC1	CR335FE3BC1	8910DPA53V06	42DE35AH106	42DF35AH	42DF35AH	3100Y30316350			ACC500U60	
4131	3	60	24	C25DNF360T	CR335FF3BH1	CR335FF3BH1	8910DPA63V14	42EE35AJ106	42EF35AJ	42EF35AJ	3100Y30017350	13625		ACC600U10	91631
4132	3	60	120	C25DNF360A	CR335FF3BA1	CR335FF3BA1	8910DPA63V02	42EE35AF106	42EF35AF	42EF35AF	3100Y3017350	13626		ACC600U20	91632
4133	3	60	208/240	C25DNF360B	CR335FF3BB1	CR335FF3BB1	8910DPA63V09	42EE35AG106	42EF35AG	42EF35AG	3100Y3017350	13627		ACC600U30	91633
C25DNF360C	3	60	480	C25DNF360C	CR335FF3BC1	CR335FF3BC1	8910DPA63V06	42EE35AH106	42EF35AH	42EF35AH	3100Y30H17350			ACC600U60	
4134	3	75	24	C25DNF375T	CR335EG3BH1	CR335EG3BH1	8910DPA73V14	42FE35AJ106	42FE35AJ106	42FE35AJ106	3186Y30075350	13240		ACC700U10	91731
4135	3	75	120	C25DNF375A	CR335EG3BA1	CR335EG3BA1	8910DPA73V02	42FE35AF106	42FE35AF106	42FE35AF106	3186Y30175350	13241		ACC700U20	91732
4136	3	75	208/240	C25DNF375B	CR335EG3BB1	CR335EG3BB1	8910DPA73V09	42FE35AG106	42FE35AG106	42FE35AG106	3186Y30175350	13242		ACC700U30	91733
C25DNF375C	3	75	480	C25DNF375C	CR335EG3BC1	CR335EG3BC1	8910DPA73V06	42FE35AH106	42FE35AH106	42FE35AH106	3186Y30H75350			ACC700U60	
4137	3	90	24	C25GNF390T	CR335EH3BH1	CR335EH3BH1	8910DPA83V14	42GE35AJ106	42GE35AJ106	42GE35AJ106	3186Y3000350	13260		ACC900U10	
4138	3	90	120	C25GNF390A	CR335EH3BA1	CR335EH3BA1	8910DPA83V02	42GE35AF106	42GE35AF106	42GE35AF106	3186Y3010350	13261		ACC900U20	
4139	3	90	208/240	C25GNF390B	CR335EH3BB1	CR335EH3BB1	8910DPA83V09	42GE35AG106	42GE35AG106	42GE35AG106	3186Y3030350	13262		ACC900U30	
C25GNF390C	3	90	480	C25GNF390C	CR335EH3BC1	CR335EH3BC1	8910DPA83V06	42GE35AH106	42GE35AH106	42GE35AH106	3186Y3040350			ACC900U60	
4147	3	120	24	C25HNE3120T	CR335GJ3AA1	CR335GJ3AA1						13281			
4148	3	120	120	C25HNE3120A	CR335GJ3AB1	CR335GJ3AB1						13282			
4149	3	120	208/240	C25HNE3120B											
4180	3	200	24	C25KNE3000T											
4181	3	200	120	C25KNE3200A											
4182	3	200	208/240	C25KNE3200B											
C25END425T	4	25	24	C25END425T	CR335AB4AH1	CR335AB4AH1	8910DPA24V14	42AF25AJ	42AF25AJ	42AF25AJ	3100Y400350			ACC340U10	
C25END425A	4	25	120	C25END425A	CR335AB4AA1	CR335AB4AA1	8910DPA24V02	42AF25AF	42AF25AF	42AF25AF	3100Y4018350			ACC340U20	
C25END425B	4	25	208/240	C25END425B	CR335AB4AB1	CR335AB4AB1	8910DPA24V09	42AF25AG	42AF25AG	42AF25AG	3100Y40H8350			ACC340U30	
C25END425C	4	25	480	C25END425C	CR335AB4AC1	CR335AB4AC1	8910DPA24V06	42AF25AH	42AF25AH	42AF25AH	3100Y40H9350			ACC340U60	
C25END430T	4	30	24	C25END430T	CR335AC4AH1	CR335AC4AH1	8910DPA34V14	42BE25AJ106	42BF25AJ	42BF25AJ	3100Y4003350	13010		ACC40U10	
C25END430A	4	30	120	C25END430A	CR335AC4AA1	CR335AC4AA1	8910DPA34V02	42BE25AF106	42BF25AF	42BF25AF	3100Y4010350	13011		ACC40U20	
C25END430B	4	30	208/240	C25END430B	CR335AC4AB1	CR335AC4AB1	8910DPA34V09	42BE25AG106	42BF25AG	42BF25AG	3100Y4030350	13012		ACC40U30	
C25END430C	4	30	480	C25END430C	CR335AC4AC1	CR335AC4AC1	8910DPA34V06	42BE25AH106	42BF25AH	42BF25AH	3100Y40H3550			ACC40U60	
4119	4	40	24	C25ENF440T	CR335AD4BH1	CR335AD4BH1	8910DPA44V14	42CE25AJ106	42CF25AJ	42CF25AJ	3100Y40010350	13016		ACC40U10	
4120	4	40	120	C25ENF440A	CR335AD4BA1	CR335AD4BA1	8910DPA44V02	42CE25AF106	42CF25AF	42CF25AF	3100Y4010350	13017		ACC40U20	
4121	4	40	208/240	C25ENF440B	CR335AD4BB1	CR335AD4BB1	8910DPA44V09	42CE25AG106	42CF25AG	42CF25AG	3100Y40U10350	13018		ACC40U30	
C25ENF440C	4	40	480	C25ENF440C	CR335AD4BC1	CR335AD4BC1	8910DPA44V06	42CE25AH106	42CF25AH	42CF25AH	3100Y40H10350			ACC40U60	

Eaton Starters

25–60A, Single- and Three-Phase—A25, B25

A25 and B25 Definite Purpose Starters from Eaton’s electrical sector combine the features and flexibility of the C25 Definite Purpose Contactors and Freedom Series Bi-metallic Ambient Compensated Overload Relays mounted on a common mounting plate.

Standards and Certifications:

- UL Recognized Components UL File #E-1491, Guide NLDX2
- CSA Certified Components File #LR353, Guide 380W-1.14 Class 3211 04



B25 & A25 Single– and Three Phase Starters (Open Type)

Global No. ①				Ampere Rating			Max Motor Hp		Max Motor KW	
Single-Phase		Three-Phase		Inductive Full Load	Line Voltage	Locked Rotor	1-Phase	3-Phase	1-Phase	3-Phase
Common Control	Separate Control	Common Control	Separate Control							
B25CNC25	B25SNC25	A25CNC25	A25SNC25	25	115	150	2	—	1.5	—
					230	150	3	7.5	2.2	5.5
					460	125	—	10	—	7.5
					575	100	—	10	—	7.5
B25CNC30	B25SNC30	A25CNC30	A25SNC30	30	115	180	2	—	1.5	—
					230	180	5	10	3.7	7.5
					460	150	—	15	—	11
					575	120	—	15	—	11
B25CNE40	B25SNE40	A25CNE40	A25SNE40	40	115	240	3	—	2.2	—
					230	240	7.5	10	5.5	7.5
					460	200	—	20	—	15
					575	160	—	20	—	15
—	—	A25CNE50	A25SNE50	50	115	300	—	—	—	—
					230	300	—	15	—	11
					480	250	—	30	—	22
					575	200	—	30	—	22
—	—	A25CNE60	A25SNE60	60	115	360	—	—	—	—
					230	360	—	20	—	15
					460	300	—	40	—	30
					575	240	—	40	—	30

① Starters do not include heater packs

Starters Include:

- 3 Pole C25 Contactor
- Ambient Compensated Overload Relay
- Selectable Manual or Automatic Reset

When Ordering Specify:

Global part number plus coil suffix

Example: A25CNC30 → Plus 120V Coil A → Oder A25CNC30A

Magnetic Coil Selection

AC		DC ①		
Voltage		Coil	Voltage	Coil Suffix
60 Hertz	50 Hertz			
12	12	R	12	1R
24	24	T	24	1T
104-120	104-120	A	48	1W
208-240	208-240	B	120	1A ②
277	—	H		
—	380-415	L		
440-480	440-480	C		
550-600	550-600	D		

① Starters with DC coils include an early break auxiliary contact

② Available only for 50A and 60A starters



ELECTRICAL SERVICE PRODUCTS

**CIRCUIT BREAKERS
LOAD CENTERS
SAFETY SWITCHES
SURGE PROTECTORS**

Eaton Circuit Breakers

- Classified Replacement Circuit Breakers are considered suitable, by Underwriters Laboratories, for use in another manufacturer's panelboard
- Tested extensively in numerous GE, Square D, Siemens, Murray, Thomas and Betts and Crouse-Hinds panels
- Retailers can streamline inventory by carrying one manufacturer's circuit breakers vs. multiple manufacturers

**UL Classified to fit Virtually Any Panel...
Even Square D® Homeline**



CL Classified– Interchangeable Breakers 1"Type

Global No.	Description	Amp Rating	Square D® Homeline	Replaces					Case Qty
				Crouse Hinds	General Electric	ITE/Siemens	Murray	Thomas & Betts	
CL115	One Pole 120/240VAC 10,000 A/C	15	HOM115	MP115	THQL1115	Q115	MP115	TB115	10
CL120		20	HOM120	MP120	THQL1120	Q120	MP120	TB120	10
CL125		25	HOM125	MP125	THQL1125	Q125	MP125	TB125	10
CL130		30	HOM130	MP130	THQL1130	Q130	MP130	TB130	10
CL135		35	HOM135	MP135	THQL1135	Q135	MP135	TB135	10
CL140		40	HOM140	MP140	THQL1140	Q140	MP140	TB140	10
CL145		45	HOM145	MP145	THQL1145	Q145	MP145	TB145	10
CL150		50	HOM150	MP150	THQL1150	Q150	MP150	TB150	10
CL215		Two Pole 120/240VAC 10,000 A/C	15	HOM215	MP215	THQL2115	Q215	MP215	TB215
* CL220	20		HOM220	MP220	THQL2120	Q220	MP220	TB220	5
CL225	25		HOM225	MP225	THQL2125	Q225	MP225	TB225	5
* CL230	30		HOM230	MP230	THQL2130	Q230	MP230	TB230	5
CL235	35		HOM235	MP235	THQL2135	Q235	MP235	TB235	5
* CL240	40		HOM240	MP240	THQL2140	Q240	MP240	TB240	5
CL245	45		HOM245	MP245	THQL2145	Q245	MP245	TB245	5
* CL250	50		HOM250	MP250	THQL2150	Q250	MP250	TB250	5

* Denotes available in Clam Shell

CHQ Classified– Series 3/4" Type

Global No.	Description	Amp Rating	Square D®	Case Qty	Global No.	Description	Amp Rating	Square D®	Case Qty
CHQ115	One Pole 120/240VAC 10,000 A/C	15	Q0115	10	CHQ215	Two Pole 120/240VAC 10,000 A/C	15	Q0215	5
CHQ120		20	Q0120	10	CHQ220		20	Q0220	5
CHQ125		25	Q0125	10	CHQ225		25	Q0225	5
CHQ130		30	Q0130	10	CHQ230		30	Q0230	5
CHQ135		35	Q0135	10	CHQ235		35	Q0235	5
CHQ140		40	Q0140	10	CHQ240		40	Q0240	5
CHQ145		45	Q0145	10	CHQ245		45	Q0245	5
CHQ150		50	Q0150	10	CHQ250		50	Q0250	5
					CHQ260		60	Q0260	5



Eaton Circuit Breakers

CH– Series 3/4" Type			
Global No.	Description	Amp Rating	Case Qty
CH115	One Pole 120/240VAC 10,000 A/C	15	10
CH120		20	10
CH125		25	10
CH130		30	10
CH140		40	10
CH150		50	10
CH160		60	10
CH215	Two Pole 120/240VAC 10,000 A/C	15	5
CH220		20	5
CH225		25	5
CH230		30	5
CH235		35	5
CH240		40	5
CH245		45	5
CH250		50	5
CH260		60	5
CH270		70	5
CH280		80	5
CH2100		100	5
CH2125		125	5



CHGF– Series 3/4" Type				
Ground Fault Circuit Interrupters (GFCI)				
Global No.	Description	Amp Rating	Square D®	Case Qty
CHQ115GF	One Pole 120/240VAC 10,000 A/C	15	Q0115GFI	10
CHQ120GF		20	Q0120GFI	10
CHQ130GF		30	Q0130GFI	10
CHQ215GF	Two Pole 120/240VAC 10,000 A/C	15	Q0215GFI	5
CHQ220GF		20	Q0220GFI	5
CHQ230GF		30	Q0230GFI	5
CHQ240GF		40	Q0240GFI	5
CHQ250GF		50	Q0250GFI	5



CHQ Surge Arrester			
Global No.	Description	Square D®	Case Qty
CHQSA	Two Pole 120/240VAC Phase to Ground	Q02175SB	10



Eaton Load Centers

1-Phase Main Lug Load Centers

- CH load centers are listed under UL File E8741
- Solid copper bus and branch fingers
- Multiple knockouts for easy installations



1-Phase 3-Wire — 120/240V AC— Insulated/Bondable Neutral

Global No.	Main Amp Rating	Max Number 3/4-inch (25.4mm)		Enclosure Type	Type of Trim (Included)	Box Size	Wire Size Range Cu/Al 60° C or 75° C for Main Lugs
		Space	Poles				
CH2L40SP ②	40	2	4 ①	Indoor	Surface No Door	5	#14-6
CH2L40RP ②③		2	4 ①	Outdoor	—	5R	
CH2L40FP ②		2	4 ①	Indoor	Flush No Door	5	
CH2L70SP ②	70	2	4 ①	Indoor	Surface No Door	5	#14-2
CH2L70RP ②③		2	4 ①	Outdoor	—	5R	
CH2L70FP ②		2	4 ①	Indoor	Flush No Door	5	
CH2L125SP ②	125	2	4 ①	Indoor	Surface No Door	6	#14-1/10
CH2L125RP ②③		2	4 ①	Outdoor	—	6R	
CH2L125FP ②		2	4 ①	Indoor	Flush No Door	6	
CH4L125SP ④	125	4	8 ①	Indoor	Surface No Door	7	#14-1/10
CH4L125RP ③④		4	8 ①	Outdoor	—	7R	
CH4L125FP ④		4	8 ①	Indoor	Flush No Door	7	
CH8L125SP ⑤	125	8	16 ①	Indoor	Surface No Door	7	#6-1/10
CH8L125RP ③⑤		8	16 ①	Outdoor	—	7R	
CH8L125FP ⑤		8	16 ①	Indoor	Flush No Door	7	

- ① Requires the use of CHNT breakers
- ② Suitable for use as service equipment when not more than two service disconnecting mains are provided or when not used as a lighting and appliance panelboard (see Article 408-34 of the NEC)
- ③ Rainproof panels are furnished with hub closure plates.
- ④ Suitable for use as service equipment when not more than two service disconnecting mains are provided or when not more than six service disconnecting mains are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC)
- ⑤ Suitable for use as service equipment when a main breaker is used or when not more than six service disconnecting mains are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

P Suffix = Specifically packaged for retail sales.



Equipment Ground Bar Kits

Global No.	Description
GBK5	For 2/4 Circuit
GBK10	For 4/8 & 8/16 Circuit

Box Size Chart (inches)

Box	H	W	D
5	9 7/16	4 1/2	3
5R	9 7/16	4 1/2	3
6	12	6 7/8	4 1/2
6R	12	6 7/8	4 1/2
7	13	11	3 9/16
7R	13	11	3 9/16

Eaton Safety Switches— General Duty

General Duty— Fusible

Eaton's general duty fusible safety switches offer premium function and safety features. They have ample wiring space, visible double break rotary blade mechanisms, a side opening door on all enclosures, interlocking mechanism to prevent easy access when the switch is in the ON position, and clearly visible ON/OFF indication.



DG325NRK

120/240V General Duty, Fusible, Single-Throw								
System	Ampere Rating	Fuse Type Provision	Maximum Horsepower Ratings ^①				NEMA 1 Enclosure Indoor	NEMA 3R Enclosure Rainproof
			Single-Phase AC		Three-Phase AC	DC		
			120V	240V	240V	250V	Global/Eaton No.	Global/Eaton No.
Plug Type— Two-Wire (One Blade, One Fuse, S/N) - 120 Vac ^②								
	30	Plug (Type S, T, or W)	1/2—2	—	—	—	DP111NGB	—
Plug Type— Three-Wire (Two Blades, Two Fuses, S/N) - 120/240 Vac								
	30	Plug (Type S, T, or W)	1/2—2	1-1/2—3	—	—	DP221NGB	DG221NRB
Cartridge Type— Two-Pole Two-Wire (Two Blades, Two Fuses) - 240 Vac								
	30	—	—	1-1/2—3	3—7-1/2	—	③	③
	60	—	—	3—10	7-1/2—15	—	③	③
	100	—	—	7-1/2—15	15—30	—	③	③
	200	—	—	15	25—60	—	③	③
	400	H	—	—	50—125	—	DG225FGK ^{④⑤}	DG225FRK ^{④⑤}
	600	H	—	—	75—200	—	DG226FGK ^{④⑤}	DG226FRK ^{④⑤}
Cartridge Type— Three-Wire (Two Blades, Two Fuses, S/N) - 120/240 Vac								
	30	H	—	1-1/2—3	3—7-1/2 ^⑥	—	DG221NGB	DG221NRB
	60	H	—	3—10	7-1/2—15 ^⑥	—	DG222NGB	DG222NRB
	100	H	—	7-1/2—15	15—30 ^⑥	—	DG223NGB	DG223NRB
	200	H	—	15	25—60 ^⑥	—	DG224NGK	DG224NRK
	400	H	—	—	50—125 ^⑥	50	DG225NGK	DG225NRK
	600	H	—	—	75—200 ^⑥	—	DG226NGK	DG226NRK

Notes

- ① Maximum hp ratings apply only when dual element time delay fuses are used.
- ② These switches do not have an interlock that prevents door from being opened when switch is in the ON position.
- ③ Use three-wire catalog numbers below.
- ④ Solid neutral bars are not included.
- ⑤ **WARNING!** Switch is not approved for service entrance unless a neutral kit is installed.
- ⑥ Grounded B phase rating, UL listed.

All general-duty safety switches are individually packaged.

Accessories are limited in scope on general-duty safety switches. In addition, clear line shields are available as an accessory on 200–600A general-duty switches. Catalog Numbers: 200A = 70-7759-11, 400A = 70-8063-8, 600A = 70-8064-8.

Eaton Safety Switches— General Duty Cont.

120/240V General Duty, Fusible, Single-Throw								
System	Ampere Rating	Fuse Type Provision	Maximum Horsepower Ratings ①				NEMA 1 Enclosure Indoor	NEMA 3R Enclosure Rainproof
			Single-Phase AC		Three-Phase AC	DC		
			120V	240V	240V	250V	Global/Eaton No.	Global/Eaton No.
Cartridge Type—Three-Pole Three-Wire (Three Blades, Three Fuses) - 240 Vac								
	30	—	—	—	—	—	②	②
	60	—	—	—	—	—	②	②
	100	—	—	—	—	—	②	②
	200	—	—	—	—	—	②	②
	400	H	—	—	50–125	—	DG325FGK③④	DG325FRK③④
	600	H	—	—	75–200	—	DG326FGK③④	DG326FRK③④
Cartridge Type—Four-Wire (Three Blades, Three Fuses, S/N) - 120/240 Vac								
	30	H	—	1-1/2–3	3–7-1/2	—	DG321NGB	DG321NRB
	60	H	—	3–10	7-1/2–15	—	DG322NGB	DG322NRB
	100	H	—	7-1/2–15	15–30	—	DG323NGB	DG323NRB
	200	H	—	15	25–60	—	DG324NGK	DG324NRK
	400	H	—	—	50–125	—	DG325NGK	DG325NRK
	600	H	—	—	75–200	—	DG326NGK	DG326NRK

Notes

- ① Maximum hp ratings apply only when dual element time delay fuses are used.
- ② Use four-wire catalog numbers below.
- ③ Solid neutral bars are not included.
- ④ **WARNING!** Switch is not approved for service entrance unless a neutral kit is installed.
- ⑤ Use three-wire catalog numbers below.
- ⑥ Drilled to accept field installed neutral kits.

All general-duty safety switches are individually packaged.

Accessories are limited in scope on general-duty safety switches. In addition, clear line shields are available as an accessory on 200–600A general-duty switches. Catalog Numbers: 200A = 70-7759-11, 400A = 70-8063-8, 600A = 70-8064-8.

Eaton Safety Switches— General Duty

General Duty— Non-Fusible

Eaton's general duty non-fusible safety switches provide a means to manually connect or disconnect the load from the source. They are available in NEMA 1 general purpose or NEMA 3R rainproof enclosures and are suitable for service entrance applications. Switches are load break rated.



DG321UGB

120/240V General Duty, Non-Fusible, Single-Throw							
System	Ampere Rating	Maximum Horsepower Ratings				NEMA 1 Enclosure Indoor	NEMA 3R Enclosure Rainproof
		Single-Phase AC		Three-Phase AC	DC		
		120V	240V	240V	250V	Global/Eaton No.	Global/Eaton No.
Two-Pole Two-Wire (Two Blades) - 240 Vac							
	30	2	3	—	—	DG221UGB ④	DG221URB ④
	60	3	10	—	—	DG222UGB ④	DG222URB ④
	100	—	15	—	—	DG223UGB ④	DG223URB ④
	200	—	—	—	—	④ ⑤	④ ⑤
Three-Pole, Three-Wire (Three Blades) - 240 Vac							
	30	2	3	7-1/2	—	DG321UGB ④	DG321URB ④
	60	3	10	15	—	DG322UGB ④	DG322URB ④
	100	—	15	30	—	DG323UGB ④	DG323URB ④
	200	—	15	60	—	DG324UGK ④	DG324URK ④
	400	—	—	125	—	DG325UGK ⑥	DG325URK ⑥
	600	—	—	200	—	DG326UGK ⑥	DG326URK ⑥

Notes

- ① Maximum hp ratings apply only when dual element time delay fuses are used.
- ② Use four-wire catalog numbers below.
- ③ Solid neutral bars are not included.
- ④ **WARNING!** Switch is not approved for service entrance unless a neutral kit is installed.
- ⑤ Use three-wire catalog numbers below.
- ⑥ Drilled to accept field installed neutral kits.

All general-duty safety switches are individually packaged.

Accessories are limited in scope on general-duty safety switches. In addition, clear line shields are available as an accessory on 200–600A general-duty switches. Catalog Numbers: 200A = 70-7759-11, 400A = 70-8063-8, 600A = 70-8064-8.

Eaton Safety Switches— Heavy Duty

Heavy Duty— Fusible

Eaton’s heavy duty fusible safety switches offer the ability to manually open and close a circuit and provide over-current protection by means of field-installed fuses. Switches are 100% load break and 100% load make rated and are suitable for service entrance use. Fuse pullers are built in on NEMA 4X and NEMA 12 enclosures through 200 amperes. Tangential knockouts on NEMA 1 and NEMA 3R enclosures through 200A.



DH361FRK

600 Vac Heavy Duty, Fusible, Single-Throw, 277/480-600V										
System	Ampere Rating	Fuse Type Provision	Maximum Horsepower Ratings with Time Delay Fuses						NEMA 1 Enclosure Indoor	NEMA 3R Enclosure Rainproof
			Single-Phase Ac		Three-Phase AC		DC			
			480V	600V	480V	600V	250V	600V	Global/Eaton No.	Global/Eaton No.
Three-Pole— 480 Vac– 600 Vac, 250 Vdc (Suitable for Service Entrance Use with a Neutral Kit Installed)										
	30	H	7-1/2	10	15	20	—	—	DH361FGK	DH361FRK
	60	H	20	25	30	50	—	—	DH362FGK	DH362FRK
	100	H	30	40	60	75	—	—	DH363FGK	DH363FRK
	200	H	50	50	125	150	—	—	DH364FGK	DH364FRK
	400	H	—	—	250	350	—	—	DH365FGK	DH365FRK
	600	H	—	—	400	500	—	—	DH366FGK	DH366FRK
	800	L	—	—	500	500	—	—	DH367FGK	DH367FRK
	1200	L	—	—	500	500	—	—	DH368FGK	DH368FRK
Four-Wire (Three Blades, Three Fuses, S/N) 480 Vac– 600 Vac, 250 Vdc										
	30	H	7-1/2	10	15	20	—	—	DH361NGK	DH361NRK
	60	H	20	25	30	50	—	—	DH362NGK	DH362NRK
	100	H	30	40	60	75	—	—	DH363NGK	DH363NRK
	200	H	50	50	125	150	—	—	DH364NGK	DH364NRK
	400	H	—	—	250	350	—	—	DH365NGK	DH365NRK
	600	H	—	—	400	500	—	—	DH366NGK	DH366NRK
	800	L	—	—	500	500	—	—	DH367NGK	DH367NRK
	1200	L	—	—	500	500	—	—	DH368NGK	DH368NRK

Eaton Safety Switches— Heavy Duty

Heavy Duty— Non-Fusible

Eaton’s heavy duty non-fusible safety switches provide a means to manually connect or disconnect the load from the source. The heavy duty non-fusible safety switch is available in a variety of enclosures including NEMA 1, 3R, 12, 4, and 4X. Switches are 100% load-break and 100% load-make rated and are suitable for service entrance use. Available from 30A to 1200A.



600 Vac Heavy Duty, Non-Fusible, Single-Throw, 277/480-600V

System	Ampere Rating	Maximum Horsepower Ratings with Time Delay Fuses								NEMA 1 Enclosure Indoor	NEMA 3R Enclosure Rainproof
		Single-Phase Ac			Three-Phase AC			DC			
		240V	480V	600V	240V	480V	600V	250V	600V	Global/ Eaton No.	Global/ Eaton No.

Three-Pole— 480 Vac— 600 Vac, 250 Vdc (Suitable for Service Entrance Use with a Neutral Kit Installed)

	30	3	7-1/2	10	10	20	30	5	—	DH361UGK	DH361URK
	60	10	20	25	20	50	60	10	—	DH362UGK	DH362URK
	100	20	40	50	40	75	100	20	—	DH363UGK	DH363URK
	200	15	50	50	60	125	150	40	—	DH364UGK	DH364URK
	400	—	—	—	125	250	350	50	—	DH365UGK	DH365URK
	600	—	—	—	200	400	500	—	—	DH366UGK	DH366URK
	800	—	—	—	—	500	500	—	—	DH367UGK	DH367URK
	1200	—	—	—	—	500	500	—	—	DH368UGK	DH368URK

Eaton Surge Protectors

Whole Home Surge Protectors

Type 2 Surge Protection (CHSPT2 Series)

Permanently connected Type 2 SPDs are intended for installation on the load side of the service equipment overcurrent device, including SPDs located at the branch panel. CHSPT2 products provide Type 2 surge protection in accordance with UL 1449 3rd Edition. These units can be mounted outside of any manufacturer's loadcenter or inside an Eaton Surge/Surge Ready loadcenter.

Features:

- AC power protection
- Available in Micro (Good), Max (Better) and Ultra (Best) series levels
- Universally connects to any manufacturer's loadcenter (breaker box)
- Quick connect design—easy to mount telephone and cable protection modules
- LED status indication



- ① CHSP installed at the service entrance panel.
- ② SurgeTrap™ surge traps and strips located where sensitive electronics are plugged in.



CHSPT2ULTRA



CHSPT2MAX



CHSPT2MICRO

Global No.	Enclosure	Voltage	Phase	Frequency (Hz)	MCOV	VPR	I _n	SCCR	Surge Current Capacity
CHSPT2ULTRA	NEMA 4	120/240 Vac rated line voltage	Single	60	150V L-N, 300V L-L	600V L-N, 1000V L-L, 800V N-G, 600V L-G	20 kA ^⑥	22 kA	108 kA (L1-N 54 kA, L1-G 54 kA, L2-N 54 kA, L2-G 54 kA)
CHSPT2MAX	NEMA 4	120/240 Vac rated line voltage	Single	60	150V L-N, 300V L-L	600V L-N, 1000V L-L, 800V N-G, 600V L-G	10 kA	22 kA	72 kA (L1-N 36 kA, L1-G 36 kA, L2-N 36 kA, L2-G 36 kA)
CHSPT2MICRO	NEMA 4	120/240 Vac rated line voltage	Single	60	150V L-N, 300V L-L	600V L-N, 1000V L-L, 800V N-G, 600V L-G	5 kA	22 kA	36 kA (L1-N 18 kA, L1-G 18 kA, L2-N 18 kA, L2-G 18 kA)

- ① MCOV: Maximum Continuous Operating Voltage that may be applied to the device per mode.
- ② VPR: Voltage Protect on Rating is the measured limiting voltage after a surge event.
- ③ I_n: Nominal Discharge Current is the current that the device can withstand for 15 impulses.
- ④ SCCR: The amount of current the product can withstand under short-circuit conditions .
- ⑤ Surge Current Capacity: The maximum one time surge current rating per phase.
- ⑥ When used with a 50A two-pole circuit breaker, 10 kA when used with a 15A two-pole circuit breaker.



FUSES

FUSE ACCESSORIES
AUTO-RESET FUSE KIT
CLASS CC
CLASS RK5
SMALL DIMENSION
LOW VOLTAGE

Fuse Accessories— Fuse Holders

HLQ

- UL Recognized, Guide IZLT2, File E14853
- CSA Certified, Class 6225-01, File 47235
- Fuse and knob are an integral one-piece unit. There are no replacement knobs (caps)
- HLQ carrier comes with 6" of #18 red insulated solid copper wire attached to the line side

HLR

- UL Recognized, 12A, 300 Vac, Guide IZLT2, File E14853
- CSA Certified, 12A, 300 Vac, Class 6225-01, File 47235
- HLQ carrier comes with 6" of #18 red insulated solid copper wire attached to the line side

HRF

- Bayonet type knob
- Temperature Rating (RTI): 140°C

HRK

- 8" (203mm) #14 lead wires
- Three springs furnished to accept different fuse lengths
- Flammability rating: UL 94V0

HKP-HH

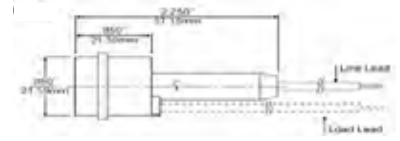
- UL Recognized: IZLT2, E14853
- CSA Component Acceptance: Class 6225-01, File 47235
- For 1/4" x 1 1/4" (6.3 x 32mm) fuses
- Bayonet-type knob
- Vibration resistant

HPS-RR

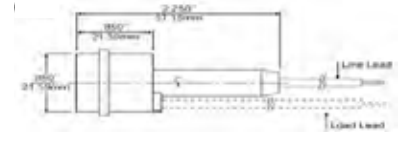
- Agency Information: UL Recognized, Guide IZLT2, File E14853
- CSA Certified: Class 6225-01, File 47235
- Flammability Rating: UL 94 HB
- Bayonet-type knob
- Combination ½" quick-connect/solder terminals (Standard solder type terminals available.)
- The -EE, -JJ, -FF, and -RR holders are UL Recognized for applications requiring branch circuit protection
- Do not put tension on line (rear) terminal



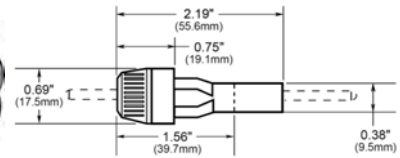
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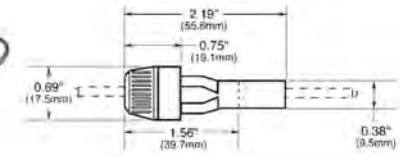
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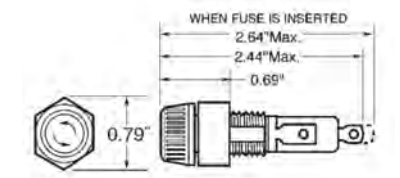
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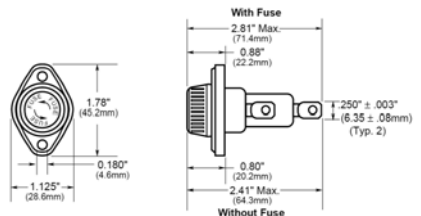
HRK



HKP-HH



HPS-RR



Fuse Holders				
Global No.	Other	Mars No.	Description	Case Qty 10
HLQ	—	81607	In-Line Fuse Holder for GMQ & GLQ Fuses	
HLR	LHR000 (Littelfuse)	—	In-Line Fuse Holder for GLR, GMF, & GRF Fuses, 12A, 300V	
HRF	—	—	In-Line Fuse Holder for SFE Fuse, 20A, 32V	
HRK	—	81993	In-Line Universal Fuse Holder, 1/4" Diameter	
HKP-HH	—	82994	Panel Mount Fuse Holder w/ 1/4" quick-connect, 15A, 250V	
HPS-RR	—	82991	Panel Mount Fuse Holder for Class CC fuses , 30A, 600V	

Fuse Accessories— Fuse Reducers

263- Fuse Reducers for Class H & K Dimension Fuses: NON, REN, NOS, RES

263-R- Fuse Reducers for Class R Dimension Fuses: FRN-R, LPN-RK, FRS-R, LPS-RK KTN-R, KTS-R

Features and Benefits:

- Fuse reducers install in fuse clips to permit the installation of smaller size fuses than those for which the clips are designed
- Reducers fit into most panels or switches including the dead-front type
- Strong contact is maintained both mechanically and electrically
- There are no reducers to go from 250V to 600V or 600V to 250V
- There are no reducers for switching from one Class to another
- There are no reducers for Class T fuses
- By design Class L fuses do not require reducers
- UL Listed (Guide # IZZR, File #E12853)
- CSA Certified (Class 6225-01, File #47235)



Fuse Reducers							
Global No.	Other	Mars No.	Poly Bag	Fuse Block Size (Amps)	Fuse Size (Amps)	Description	Case Qty 4
263	—	81975	X	60	30	NON 250V Class H Reducers	
263R	—	—		60	30	FRN-R 250V Class R Reducers	

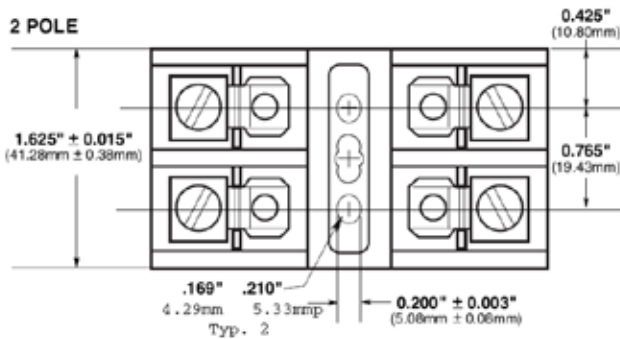
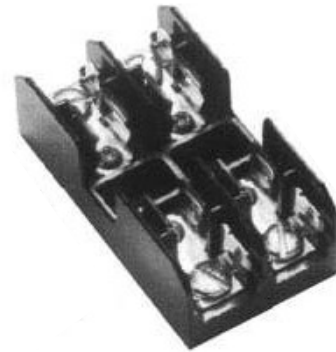
Fuse Accessories— Heat Limiters

Heat Limiter				
Global No.	Other	Mars No.	Description	Case Qty 4
WUR	—	82979	Heat Limiter	
WZJ	—	—	Heat Limiter	

Fuse Accessories— Fuse Blocks

BM Series- Type M Supplementary Fuseblocks

- Ampere Rating: 1/10 to 30 Amperes
- Voltage Rating: 600 Volts AC
- Withstand Rating: 10,000 A RMS Sym. or interrupting rating of the fuse used, whichever is lower.
- Agency Information:
U.L. Recognized, U.L. 512, Guide IZLT2, File E14853, CSA Certified, C22.2 No. 39, Class 6225-01, File 47235. For use with any 13/32" X 1 1/2" Fuses (Bussmann KTK, FNQ, FNM, BAF, BAN and AGU)
- U.L. Flammability: 94 V0
- Torque Rating: 18 lb-in
- Material: Thermoplastic



FUSEBLOCK LABEL (EXAMPLE SHOWN)



Fuse Blocks				
Global No.	Other.	Mars No.	Description	Case Qty 10
BM6032SQ	—	—	Supplementary Fuse Block for 13/32" X 1-1/2" Fuses, 2 Pole	

Fuse Accessories— Fuse Box Covers

Box covers for standard electrical boxes that provide fused outlet, fused switch or circuit fuse protection

Features and Benefits:

- Cooper Bussmann® Box Cover Units provide a low-cost method of controlling and protecting small motors when used with Cooper Bussmann® Type T, Fusetrone®, dual element fuses
- Provide low-cost supplementary protection and disconnection of 125V or less, single phase circuits

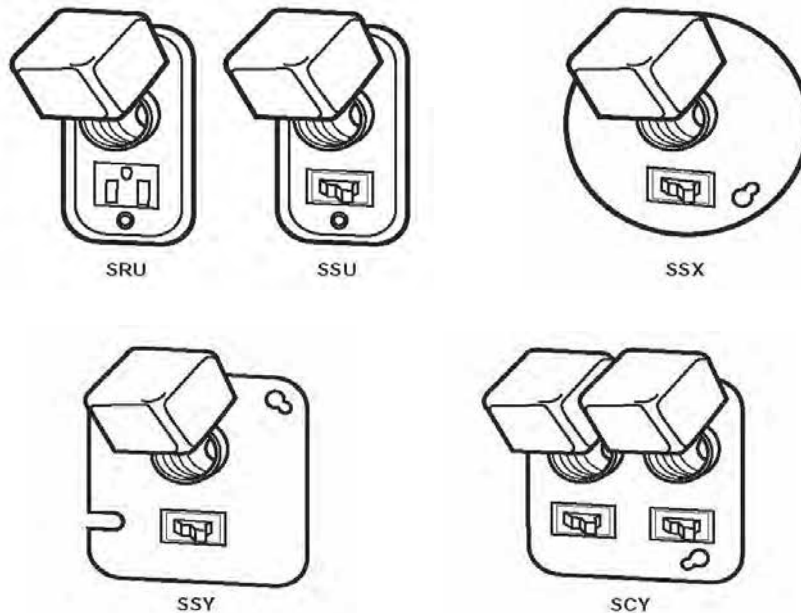


Fuse Box Cover

Global No.	Replaces		Box Type	Receptacle Fuseholder		Outlet to Load		Switch Control ¹	Motor ² Size (Max.)	General Data	Agency Information
	Other	Mars No.		Single	Double	125V	250V				
SRU	ESRU (Edison)	84793	2 ¼" Handy	X		X			½" HP	125V, 15A	U.L.
SSU	CSU (Cefco), ESSU (Edison)	84795		X				X	½" HP	125 Vac (do not use on dc), 15A	U.L., CSA
SSX	—	84814	4" Octagon	X				X	½" HP	125 Vac (do not use on dc), 15A	U.L., CSA
SSY	CSY (Cefco)	84794	4" Square	X				X	½" HP	125 Vac (do not use on dc), 15A	U.L., CSA
SCY	—	—				X		X (2)	½" HP (2)	125 Vac (do not use on dc); can protect two motors, 15A	U.L.

¹ Switch turns power to fused load OFF or ON

² U.L. Guide JAMZ, File E6491; CSA Class 6225-01, File 47235



Auto-Reset Fuse Kit

The Auto-Reset Fuse kit is a solid-state device that resets when short is removed. Wires simply plug into most plastic-type fuse sockets. Terminals are also included for wire-in applications.

Features and Benefits:

- Saves time and money— no more running to the parts store to replace burned out fuses
- One year warranty

Global No.	Description	Case Qty
GARF-3	3 Amp, 40 Volt	25
GARF-5	5 Amp, 75 Volt	25



Class CC– Time Delay

Time-Delay, Branch Circuit, Rejection-Type Fuse

Dimensions: 13/32" x 1-1/2" (10.3 x 38.1mm)
Volts: 600Vac (or less), 300Vdc (15-20A)
Amps: 1/4-30A
IR: 200kA RMS Sym, 20kA DC
Agency Information: CE, Std. 248-4, Class CC, UL Listed, Guide JDDZ, File E4273, CSA Certified; Class 1422-02, File 53787

Typical Applications:

- Line Protection, Small Control Transformers
- Industrial Control
- Isolated, In-Line Fuse Holders

Features:

- Time delay compatible with inrush characteristic of small control transformers
- Current limitation at Class CC levels provides maximum component short-circuit current rating protection
- 200kA interrupting rating provides high ratings for control circuit locations
- Class CC rejection feature, with appropriate fuse block, prevents inserting lesser-rated supplementary fuses



FNQ-R						
Global No.	Description / Case Qty 10			Mars No.	Other	
FNQ-R-1/2	600V	13/32" x 1-1/2"	Time Delay 1/2A	82933	ATQR (Ferraz/Shawmut)	
FNQ-R-1	600V	13/32" x 1-1/2"	Time Delay 1A	82936/82715	HCTR (Edison)	
FNQ-R-1-3/10	600V	13/32" x 1-1/2"	Time Delay 1-3/10A	—	KLDR (Littelfuse)	
FNQ-R-1-1/2	600V	13/32" x 1-1/2"	Time Delay 1.5A	—		
FNQ-R-2	600V	13/32" x 1-1/2"	Time Delay 2A	82941		
FNQ-R-2-1/2	600V	13/32" x 1-1/2"	Time Delay 2.5A	—		
FNQ-R-3	600V	13/32" x 1-1/2"	Time Delay 3A	82942/82716		
FNQ-R-3.5	600V	13/32" x 1-1/2"	Time Delay 3.5A	—		
FNQ-R-4	600V	13/32" x 1-1/2"	Time Delay 4A	82943		
FNQ-R-5	600V	13/32" x 1-1/2"	Time Delay 5A	82944		
FNQ-R-6	600V	13/32" x 1-1/2"	Time Delay 6A	82945		
FNQ-R-7-1/2	600V	13/32" x 1-1/2"	Time Delay 7.5A	—		
FNQ-R-8	600V	13/32" x 1-1/2"	Time Delay 8A	—		
FNQ-R-10	600V	13/32" x 1-1/2"	Time Delay 10A	82947		
FNQ-R-15	600V	13/32" x 1-1/2"	Time Delay 15A	82227		
FNQ-R-20	600V	13/32" x 1-1/2"	Time Delay 20A	82948		
FNQ-R-25	600V	13/32" x 1-1/2"	Time Delay 25A	—		
FNQ-R-30	600V	13/32" x 1-1/2"	Time Delay 30A	—		

Class CC— Fast-Acting

Fast-Acting, Branch Circuit, Rejection-Type Fuse

Dimensions: 13/32" x 1-1/2" (10.3 x 38.1mm)
Volts: 600Vac (or less)
Amps: 1/10-30A
IR: 200kA RMS Sym
Agency Information: CE, Std. 248-4, Class CC, UL Listed, Guide JDDZ, File E4273, CSA Certified, File 53787, Class 1422-02

Typical Applications:

- Specialized Circuits
- Industrial Control
- Isolated, In-Line Fuse Holders (street lighting)

Features:

- Current limitation at Class CC levels provides maximum component short-circuit current protection
- 200kA interrupting rating provides high ratings for control circuit locations
- Class CC rejection feature, with appropriate fuse block, prevents inserting lesser-rated supplementary fuses



KTK-R						
Global No.	Description / Case Qty 10			Mars No.	Other	
KTK-R-2/10	600V	13/32" x 1-1/2"	Fast Acting 2/10A	—	ATMR (Gould)	
KTK-R-3/10	600V	13/32" x 1-1/2"	Fast Acting 3/10A	—	CTK-R (Cefco)	
KTK-R-6/10	600V	13/32" x 1-1/2"	Fast Acting 6/10A	—	HCLR (Edison)	
KTK-R-3/4	600V	13/32" x 1-1/2"	Fast Acting 3/4A	—	KLKR (Littelfuse)	
KTK-R-1/2	600V	13/32" x 1-1/2"	Fast Acting 1/2A	—		
KTK-R-1	600V	13/32" x 1-1/2"	Fast Acting 1A	—		
KTK-R-1-1/2	600V	13/32" x 1-1/2"	Fast Acting 1.5A	—		
KTK-R-2	600V	13/32" x 1-1/2"	Fast Acting 2A	82977		
KTK-R-2-1/2	600V	13/32" x 1-1/2"	Fast Acting 2.5A	—		
KTK-R-3	600V	13/32" x 1-1/2"	Fast Acting 3A	82966		
KTK-R-3-1/2	600V	13/32" x 1-1/2"	Fast Acting 3.5A	—		
KTK-R-4	600V	13/32" x 1-1/2"	Fast Acting 4A	82967		
KTK-R-5	600V	13/32" x 1-1/2"	Fast Acting 5A	—		
KTK-R-6	600V	13/32" x 1-1/2"	Fast Acting 6A	—		
KTK-R-7	600V	13/32" x 1-1/2"	Fast Acting 7A	—		
KTK-R-8	600V	13/32" x 1-1/2"	Fast Acting 8A	—		
KTK-R-9	600V	13/32" x 1-1/2"	Fast Acting 9A	—		
KTK-R-10	600V	13/32" x 1-1/2"	Fast Acting 10A	82971		
KTK-R-12	600V	13/32" x 1-1/2"	Fast Acting 12A	82976		
KTK-R-15	600V	13/32" x 1-1/2"	Fast Acting 15A	82968		
KTK-R-20	600V	13/32" x 1-1/2"	Fast Acting 20A	82981		
KTK-R-25	600V	13/32" x 1-1/2"	Fast Acting 25A	—		
KTK-R-30	600V	13/32" x 1-1/2"	Fast Acting 30A	—		
KTK-R-100	600V	13/32" x 1-1/2"	Fast Acting 100A	—		

Class RK5– Dual Element, Time Delay

Dual Element, Time-Delay Fuse

*ECN-R replaces HAC-R

Volts: 250Vac (or less), 125Vdc

Amps: 1-600A

IR: 200kA RMS Sym.

Agency Information: CE, Std. 248-12, Class RK5, UL Listed, Guide JDDZ, File E162363, CSA Certified, C22.2 No. 248.12, Class 1422-02, File 700489

- Typical Applications:**
- AC power distribution system mains, feeders, and branch circuits
 - Protection of motors and motor branch circuits
 - Protection of transformers and other inductive loads
 - All general-purpose applications including lighting, heating and other non-inductive loads

Features:

- True dual-element construction allows sizing of 125% FLA for motor backup protection.
- Superior overload and cycling capabilities.
- Current limiting provides component short-circuit protection.



1-60Amp



70-600Amp

ECN-R				
Global No.	Description / Case Qty 10		Mars No.	Other
ECN-R-5	250V	Dual Element Time Delay 5A	82024	CRN-R (Cefco)
ECN-R-10	250V	Dual Element Time Delay 10A	82032	FLNR (Littelfuse)
ECN-R-15	250V	Dual Element Time Delay 15A	82034	FRN-R (Bussmann)
ECN-R-20	250V	Dual Element Time Delay 20A	82036	HAC-R (Bussmann)
ECN-R-25	250V	Dual Element Time Delay 25A	82037	LON-R (Cefco)
ECN-R-30	250V	Dual Element Time Delay 30A	82038	TR (Ferraz/Shawmut)
ECN-R-35	250V	Dual Element Time Delay 35A	82039	TRR (Ferraz/Shawmut)
ECN-R-40	250V	Dual Element Time Delay 40A	82040	
ECN-R-45	250V	Dual Element Time Delay 45A	82041	
ECN-R-50	250V	Dual Element Time Delay 50A	82042	
ECN-R-60	250V	Dual Element Time Delay 60A	82043	
ECN-R-70	250V	Dual Element Time Delay 70A	82044	
ECN-R-80	250V	Dual Element Time Delay 80A	82045	
ECN-R-100	250V	Dual Element Time Delay 100A	82074	
ECN-R-125	250V	Dual Element Time Delay 125A	82049	
ECN-R-200	250V	Dual Element Time Delay 200A	82052	

Class RK5– Dual Element, Time Delay

Dual Element, Time-Delay Fuse -- 10 seconds (minimum) at 500% rated amps, Current-Limiting

* ECS-R replaces DLS-R

Volts: 600Vac (or less), 200Vdc

Amps: 1-600A

IR: 200kA RMS Sym.

Agency Information: CE, Std. 248-12, Class RK5, UL Listed, Guide JDDZ, File E162363, CSA Certified, HRCI-R C22.2 No. 248.12, Class 1422-02, File 53787

- Typical Applications:**
- AC power distribution system mains, feeders, and branch circuits
 - Protection of motors and motor branch circuits
 - Protection of transformers and other inductive loads
 - All general-purpose applications including lighting, heating and other non-inductive loads

Features:

- True dual-element construction allows sizing of 125% FLA for motor backup protection.
- Superior overload and cycling capabilities.
- Current limiting provides component short-circuit protection.



1-60Amp

70-600Amp

ECS-R			
Global No.	Description / Case Qty 10	Mars No.	Other
ECS-R-5	600V Dual Element Time Delay 5A	82124	
ECS-R-10	600V Dual Element Time Delay 10A	82132	CRS-R (Cefco)
ECS-R-15	600V Dual Element Time Delay 15A	82134	DLS-R (Bussmann)
ECS-R-20	600V Dual Element Time Delay 20A	82136	FLSR (Littelfuse)
ECS-R-25	600V Dual Element Time Delay 25A	82137	FRS-R (Bussmann)
ECS-R-30	600V Dual Element Time Delay 30A	82138	
ECS-R-35	600V Dual Element Time Delay 35A	82139	LOS-R (Cefco)
ECS-R-40	600V Dual Element Time Delay 40A	82140	TRS (Ferraz/Shawmut)
ECS-R-45	600V Dual Element Time Delay 45A	82147	TRSR (Ferraz/Shawmut)
ECS-R-50	600V Dual Element Time Delay 50A	82141	
ECS-R-60	600V Dual Element Time Delay 60A	82142	
ECS-R-70	600V Dual Element Time Delay 70A	82143	
ECS-R-80	600V Dual Element Time Delay 80A	82144	
ECS-R-90	600V Dual Element Time Delay 90A	82145	
ECS-R-100	600V Dual Element Time Delay 100A	82146	
ECS-R-125	600V Dual Element Time Delay 125A	82148	
ECS-R-150	600V Dual Element Time Delay 150A	82149	
ECS-R-200	600V Dual Element Time Delay 200A	82151	

Class RK5– Dual Element, Time Delay

Dual Element, Time-Delay Fuse – 10 seconds (minimum) at 500% rated amps (8 seconds for 0-30A sizes)

- Volts:** 250Vac (or less), 125Vdc (1/10-60A, 110-200A), 250Vdc (225-600A)
- Amps:** 1/10-400A
- IR:** 200kA RMS Sym., 20kA DC
- Agency Information:** CE, Std. 248-12, Class RK5, UL Listed, Guide JDDZ, File E4273, CSA Certified, Class 1422-01, File 53787
- Typical Applications:**
- Power Panel Boards
 - Motor Control Centers
 - Combination Starters
 - Machinery Disconnects

Features:

- Separate overload and short-circuit elements provide time delay for sizing as close as 125% of motor FLA
- 2:1 selective coordination amp ratio (within the Cooper Bussmann RK5 fuse family) prevents over current events from opening upstream Fusetron fuses
- Insulated end caps for 225A-600A fuses reduces exposure to live parts and extends air gap to distance between blades of adjacent mounted fuses or to housing



FRN-R				
Global No.	Description / Case Qty 10		Mars No.	Other
FRN-R-1/10	250V	Dual Element Time Delay 1/10A	—	CRN-R (Cefco)
FRN-R-3/10	250V	Dual Element Time Delay 3/10A	—	FLNR (Littelfuse)
FRN-R-6/10	250V	Dual Element Time Delay 6/10A		LON-R (Cefco)
FRN-R-1/2	250V	Dual Element Time Delay 1/2A	82006	TR (Ferraz/Shawmut)
FRN-R-1	250V	Dual Element Time Delay 1A	82009	TRR (Ferraz/Shawmut)
FRN-R-1-1/4	250V	Dual Element Time Delay 1-1/4A	—	
FRN-R-2-1/2	250V	Dual Element Time Delay 2.5A	82017	
FRN-R-3	250V	Dual Element Time Delay 3A	82019	
FRN-R-3-2/10	250V	Dual Element Time Delay 3-2/10A	82020	
FRN-R-4	250V	Dual Element Time Delay 4A	82021	
FRN-R-5	250V	Dual Element Time Delay 5A	82024	
FRN-R-6	250V	Dual Element Time Delay 6A	82026	
FRN-R-6-1/4	250V	Dual Element Time Delay 6-1/4A	82027	
FRN-R-7	250V	Dual Element Time Delay 7A	82029	
FRN-R-8	250V	Dual Element Time Delay 8A	82030	
FRN-R-10	250V	Dual Element Time Delay 10A	82032	
FRN-R-15	250V	Dual Element Time Delay 15A	82034	
FRN-R-17.5	250V	Dual Element Time Delay 17.5A	82035	
FRN-R-20	250V	Dual Element Time Delay 20A	82036	
FRN-R-25	250V	Dual Element Time Delay 25A	82037	
FRN-R-30	250V	Dual Element Time Delay 30A	82038	

Class RK5– Dual Element, Time Delay

FRN-R Cont.				
Global No.	Description / Case Qty 10		Mars No.	Other
FRN-R-35	250V	Dual Element Time Delay 35A	82039	CRN-R (Cefco)
FRN-R-40	250V	Dual Element Time Delay 40A	82040	FLNR (Littelfuse)
FRN-R-45	250V	Dual Element Time Delay 45A	82041	LON-R (Cefco)
FRN-R-50	250V	Dual Element Time Delay 50A	82042	TR (Ferraz/Shawmut)
FRN-R-60	250V	Dual Element Time Delay 60A	82043	TRR (Ferraz/Shawmut)
FRN-R-70	250V	Dual Element Time Delay 70A	82044	
FRN-R-75	250V	Dual Element Time Delay 75A	—	
FRN-R-80	250V	Dual Element Time Delay 80A	82045	
FRN-R-90	250V	Dual Element Time Delay 90A	82046	
FRN-R-100	250V	Dual Element Time Delay 100A	82047	
FRN-R-110	250V	Dual Element Time Delay 110A	82048	
FRN-R-125	250V	Dual Element Time Delay 125A	82049	
FRN-R-150	250V	Dual Element Time Delay 150A	82050	
FRN-R-200	250V	Dual Element Time Delay 200A	82052	
FRN-R-300	250V	Dual Element Time Delay 300A	—	
FRN-R-400	250V	Dual Element Time Delay 400A	82056	

Class RK5– Dual Element, Time Delay

Dual Element, Time-Delay Fuse – 10 seconds (minimum) at 500% rated amps

Volts: 600Vac (or less), 300Vdc
Amps: 1/10-600A
IR: 200kA RMS Sym., 20kA @ 300Vdc
Agency Information: CE, Std. 248-12, Class RK5, UL Listed, Guide JDDZ, File E4273, CSA Certified, Class 1422-02, File 53787

- Typical Applications:**
- Power Panel Boards
 - Motor Control Centers
 - Combination Starters
 - Machinery Disconnects

- Features:**
- 2:1 selective coordination ratio (within RK5 fuse family) prevents electrical shutdowns from extending beyond the failed circuit
 - Insulated end caps for 70-600A fuses reduces exposure to live parts and extends air gap to distance between blades of adjacent mounted fuses or to housing



FRS-R					
Global No.	Description / Case Qty 10			Mars No.	Other
FRS-R-3/10	600V	Dual Element Time Delay	3/10A	—	CRS-R (Cefco)
FRS-R-4/10	600V	Dual Element Time Delay	4/10A	—	FLSR (Littelfuse)
FRS-R-1	600V	Dual Element Time Delay	1A	82109	FRS-R (Bussmann)
FRS-R-2.5	600V	Dual Element Time Delay	2.5A	—	LOS-R (Cefco)
FRS-R-3-1/2	600V	Dual Element Time Delay	3.5A	—	TRS (Ferraz/Shawmut)
FRS-R-5	600V	Dual Element Time Delay	5A	82124	TRSR (Ferraz/Shawmut)
FRS-R-6	600V	Dual Element Time Delay	6A	82125	
FRS-R-10	600V	Dual Element Time Delay	10A	82132	
FRS-R-15	600V	Dual Element Time Delay	15A	82134	
FRS-R-17	600V	Dual Element Time Delay	17A	—	
FRS-R-20	600V	Dual Element Time Delay	20A	82136	
FRS-R-25	600V	Dual Element Time Delay	25A	82137	
FRS-R-30	600V	Dual Element Time Delay	30A	82138	
FRS-R-35	600V	Dual Element Time Delay	35A	82139	
FRS-R-40	600V	Dual Element Time Delay	40A	82140	
FRS-R-45	600V	Dual Element Time Delay	45A	82147	
FRS-R-50	600V	Dual Element Time Delay	50A	82141	
FRS-R-60	600V	Dual Element Time Delay	60A	82142	
FRS-R-70	600V	Dual Element Time Delay	70A	82143	
FRS-R-80	600V	Dual Element Time Delay	80A	82144	
FRS-R-90	600V	Dual Element Time Delay	90A	82145	
FRS-R-100	600V	Dual Element Time Delay	100A	82146	
FRS-R-125	600V	Dual Element Time Delay	125A	82148	
FRS-R-150	600V	Dual Element Time Delay	150A	82149	
FRS-R-200	600V	Dual Element Time Delay	200A	82151	
FRS-R-400	600V	Dual Element Time Delay	400A	—	

Small Dimension— ¼" X 1"

Fast-Acting Fuse

Dimensions: 1/4" x 1" (6.4 x 25.4mm)
Volts: 250Vac (1/200-10A), 32Vac (15-30A)
Amps: 1/200-30A
IR: 35A (1/200-1A @ 250Vac), 100A (1-1/4-3A @ 100Vac), 200A 410A @ 250Vac) 1000A (15-30A @ 32Vac)
Agency Information: CE, Std. 248-14, UL File E19180 UL Listed, Guide JDYX, 0-5A UL Recognized, Guide JDYX2, 6-20A CSA File 53787; Class 1422-01

Typical Applications: Electronic Circuits

Features:

- Size rejects insertion of other fuse types



AGX			
Global No.	Description / Case Qty 5	Mars No.	Other
AGX-1/10	250V 1/4" x 1" Fast Acting 1/10A	—	361 (Littelfuse)
AGX-1/4	250V 1/4" x 1" Fast Acting 1/4A	—	8AG (Cefco)
AGX-1/2	250V 1/4" x 1" Fast Acting 1/2A	82484	BGX (Brush)
AGX-1	250V 1/4" x 1" Fast Acting 1A	82486	EGX
AGX-1-1/2	250V 1/4" x 1" Fast Acting 1.5A	—	GGX (Ferraz/Shawmut)
AGX-2	250V 1/4" x 1" Fast Acting 2A	82488	
AGX-3	250V 1/4" x 1" Fast Acting 3A	—	
AGX-4	250V 1/4" x 1" Fast Acting 4A	—	
AGX-5	250V 1/4" x 1" Fast Acting 5A	—	
AGX-6	250V 1/4" x 1" Fast Acting 6A	—	
AGX-7	250V 1/4" x 1" Fast Acting 7A	—	
AGX-8	250V 1/4" x 1" Fast Acting 8A	—	
AGX-10	250V 1/4" x 1" Fast Acting 10A	—	
AGX-15	250V 1/4" x 1" Fast Acting 15A	—	
AGX-20	250V 1/4" x 1" Fast Acting 20A	—	
AGX-25	250V 1/4" x 1" Fast Acting 25A	—	

Small Dimension– ¼" X 1¼"

Fast-Acting Fuse

- Dimensions:** 1/4" x 1 1/4" (6.4 x 31.7mm)
- Volts:** 250Vac/125Vdc (1/4-15A, 20-30A)*, 250Vac (18A)
- Amps:** 1/4-30A
- IR:** 35A (1/4-1A @ 250Vac), 100A (1 1/2-3A @ 250Vac), 200A (4-10A @ 250Vac), 750A (12-15A @ 250Vac), 400A (18-20A @ 250Vac), 10kA (1/4-15A @ 125Vac), 1kA (18-30A @ 125Vac), 10kA (1/4-15, 20A @ 125Vdc), 400A (25-30A @ 125Vdc), 200A (25-30A @ 250Vac)
- Agency Information:** CE, Std. 248-14 UL Listed, Guide JDYX File E19180, 1/4-15A; UL Recognized, Guide JDYX2, File E19180, 18-30A; CSA Certification, Class 1422-01 & 1422-30, File 53787, 1/4-30A
- Typical Applications:** Electronic Circuits
- Construction:** Ceramic tube with nickel-plated brass end caps
- Features:**
- Ceramic body allows for higher amp/volt rating combinations



ABC						
Global No.	Description / Case Qty 5			Mars No.	Other	
ABC-1	250V	1/4" x 1-1/4"	Fast Acting 1A	82404	314 (Littelfuse)	
ABC-2	250V	1/4" x 1-1/4"	Fast Acting 2A	82405	3AB (Cefco)	
ABC-3	250V	1/4" x 1-1/4"	Fast Acting 3A	82407	BBC (Brush)	
ABC-4	250V	1/4" x 1-1/4"	Fast Acting 4A	82408	GAB (Ferraz/Shawmut)	
ABC-5	250V	1/4" x 1-1/4"	Fast Acting 5A	82409		
ABC-7	250V	1/4" x 1-1/4"	Fast Acting 7A	82411		
ABC-8	250V	1/4" x 1-1/4"	Fast Acting 8A	82412		
ABC-10	250V	1/4" x 1-1/4"	Fast Acting 10A	82413		
ABC-12	250V	1/4" x 1-1/4"	Fast Acting 12A	82414		
ABC-15	250V	1/4" x 1-1/4"	Fast Acting 15A	82415		
ABC-20	250V	1/4" x 1-1/4"	Fast Acting 20A	82416		
ABC-25	250V	1/4" x 1-1/4"	Fast Acting 25A	82417		
ABC-30	250V	1/4" x 1-1/4"	Fast Acting 30A	82418		

Small Dimension— ¼" X 1¼"

Fast-Acting Fuse

Dimensions: 1/4" x 1 1/4" (6.4 x 31.7mm)
Volts: 250Vac (1/20-10A) 32Vac (12-30A)
Amps: 1/20-30A
IR: 35A (1/20-1A @ 250Vac), 100A (1 1/4-3A @ 250Vac), 200A (4-10A @ 250Vac), 10kA (1/20-10A @ 125Vac), 1000A (12-30A @ 32Vac)

Agency Information: CE, UL Listed, Guide JDYX, File E19180, 0-10A UL Recognized, Guide JDYX2, File E19180, 12-30A CSA Certification, Class 1422-01, File 053787, 1/20-30A

Typical Applications: Electronic Circuits

Construction: Glass tube with nickel-plated brass end caps

Features:

- Original electronic glass tube fuse
- Fast-acting for maximum protection
- Wide amp/volt ratings allow versatility of protecting electronic circuits



AGC						
Global No.	Description / Case Qty 5	Mars No.	Other			
AGC-6/10	250V 1/4" x 1-1/4" Fast Acting 6/10A	—	311 (12-30) (Littelfuse)			
AGC-1/8	250V 1/4" x 1-1/4" Fast Acting 1/8A	—	312 (1/10 -10)			
AGC-1/4	250V 1/4" x 1-1/4" Fast Acting 1/4A	82450	(Littelfuse)			
AGC-3/8	250V 1/4" x 1-1/4" Fast Acting 3/8A	—	362 (Littelfuse)			
AGC-1/2	250V 1/4" x 1-1/4" Fast Acting 1/2A	82453	3AG (Ferraz/Shawmut)			
AGC-3/4	250V 1/4" x 1-1/4" Fast Acting 3/4A	82445	BGC (Brush)			
AGC-1	250V 1/4" x 1-1/4" Fast Acting 1A	82456	GGC (Ferraz/Shawmut)			
AGC-1-1/4	250V 1/4" x 1-1/4" Fast Acting 1-1/4A	82457	MTH (Bussmann)			
AGC-1-1/2	250V 1/4" x 1-1/4" Fast Acting 1.5A	82458				
AGC-2	250V 1/4" x 1-1/4" Fast Acting 2A	82460				
AGC-2.5	250V 1/4" x 1-1/4" Fast Acting 2.5A	82461				
AGC-3	250V 1/4" x 1-1/4" Fast Acting 3A	82462				
AGC-3-2/10	250V 1/4" x 1-1/4" Fast Acting 3-2/10A	82459				
AGC-3-1/2	250V 1/4" x 1-1/4" Fast Acting 3.5A	—				
AGC-4	250V 1/4" x 1-1/4" Fast Acting 4A	82463				
AGC-5	250V 1/4" x 1-1/4" Fast Acting 5A	82464				
AGC-6	250V 1/4" x 1-1/4" Fast Acting 6A	82465				
AGC-6-1/4	250V 1/4" x 1-1/4" Fast Acting 6-1/4A	—				
AGC-7	250V 1/4" x 1-1/4" Fast Acting 7A	—				
AGC-7.5	250V 1/4" x 1-1/4" Fast Acting 7.5A	82466				
AGC-30	250V 1/4" x 1-1/4" Fast Acting 30A	82473				

Small Dimension— ¼" X 1¼"

Time-Delay Fuse

Dimensions: 1/4" x 1 1/4" (6.35 x 31.75mm)
Volts: 250Vac (or less), 125Vdc (20A- 30A)
Amps: 1/4-30A
IR: 35A (1/4-1A @250Vac), 100A (11/2-2A @ 250Vac), 200A (21/2-10A @ 250Vac), 750A (12-15A @ 250Vac), 1500A (20-30A @ 250Vac), 10kA (1/4-30A @ 125Vac), 10kA (20-30A @ 125Vdc)

Agency Information: CE, Std. 248-14, UL Listed, Guide JDYX, File E19180, 0-20A CSA Certification, Class 1422-01, File 53787, 0-20A. UL Recognized, Guide JDYX2, File E19180, 25-30A, CSA Component Acceptance, Class 1422-30, 25-30A

Typical Applications: Electronic Circuits

Construction: Ceramic tube with nickel-plated brass end caps

Features:

- Ceramic body allows for higher amp/volt rating combinations
- Inventory consolidation by replacing MDL fuses allows for reduced SKU investment and minimizing potential for misapplying fuse



MDA				Mars No.	Other
Global No.	Description / Case Qty 5				
MDA-8	250V	1/4" x 1-1/4" Time Delay	8A	—	326 (Littelfuse) 3AB-SB Cefco)
MDA-10	250V	1/4" x 1-1/4" Time Delay	10A	—	MDX (Bussmann) MSL (Bussmann)

Small Dimension– ¼" X 1¼"

Time-Delay Fuse

- Dimensions:** 1/4" x 1 1/4" (6.4 x 31.7mm)
- Volts:** 250Vac (1/16-8A), 32Vac (9-30A)
- Amps:** 1/16-30A
- IR:** 35A (1/16-1A @ 250Vac),100A (1 1/4-3A @ 250Vac), 200A (4-8A @ 250Vac), 10000A (1/16-8A @ 125Vac),1000A (9-30A @ 32Vac)
- Agency Information:** CE, UL Listed, Guide JDYX, File E19180, 1/16-8A; CSA Certification Class 1422-01, 1/16-8A; UL Recognized, Guide JDYX2, File E19180, 9-30A; CSA Component Acceptance, Class 142230, 9-30A
- Typical Applications:** Electronic Circuits
- Construction:** Glass tube, nickel-plated brass end caps
- Features:**
 - Time-delay allows close sizing on inductive circuits



MDL						
Global No.	Description / Case Qty 5			Mars No.	Other	
MDL-1/2	250V	1/4" x 1-1/4" Time Delay	1/2A	81631	313 (Littelfuse)	
MDL-3/4	250V	1/4" x 1-1/4" Time Delay	3/4A	—	3AG-SB	
MDL-2	250V	1/4" x 1-1/4" Time Delay	2A	82507	GDL (Ferraz/Shawmut)	
MDL-3	250V	1/4" x 1-1/4" Time Delay	3A	82510		
MDL-4	250V	1/4" x 1-1/4" Time Delay	4A	82512		
MDL-5	250V	1/4" x 1-1/4" Time Delay	5A	82513		
MDL-8	250V	1/4" x 1-1/4" Time Delay	8A	82517		
MDL-10	250V	1/4" x 1-1/4" Time Delay	10A	82518		
MDL-15	250V	1/4" x 1-1/4" Time Delay	15A	82519		
MDL-20	250V	1/4" x 1-1/4" Time Delay	20A	81633		

Small Dimension– 5mm X 20mm

Fast-Acting Fuse

Dimensions: 5mm x 20mm (0.197" x 0.788")

Volts: 250Vac (63mA-2.5A), 125Vac (3.15-15A)

Amps: 63mA-15A

IR: 35A (63mA- 1A @ 250Vac,p.f. = 0.7-0.8), 10kA (63mA-6A @ 125Vac,p.f. = 0.7-0.8), 100A (1.25-2.5A @ 250Vac, p.f. = 0.7-0.8), 200A (7-8A @ 125Vac, p.f. = 1.0), 150A (10-15A @ 125Vac, p.f. = 1.0)

Agency Information: CE, Std.248-14 UL Listed Guide JDYX, File E19180, 0-6A, UL Recognized, Guide JDYX2, File E19180, 7-15A, CSA Certified, Class 1422-01, File 53787, 0-6

Typical Applications: Electronic Circuits

Construction: Glass tube, nickel-plated brass end caps

Features:

- Fast-acting for maximum protection



GMA						
Global No.	Description / Case Qty 5			Mars No.	Other	
GMA-500MA	250V	5mm x 20mm Fast Acting	500mA	—	235 (Littelfuse)	
GMA-1	250V	5mm x 20mm Fast Acting	1A	81181	GGM (Ferraz/Shawmut)	
GMA-1-1/2	250V	5mm x 20mm Fast Acting	1.5A	—		
GMA-1-6/10	250V	5mm x 20mm Fast Acting	1-6/10A	—		
GMA-2-1/2	250V	5mm x 20mm Fast Acting	2.5A	—		
GMA-5	250V	5mm x 20mm Fast Acting	5A	81185		

Small Dimension– 5mm X 20mm

Medium Time-Delay Fuse

- Dimensions:** 5mm x 20mm (0.197" x 0.788")
- Volts:** 250Vac (63mA-3.15A), 125Vac (3.5-10A)
- Amps:** 63mA-10A
- IR:** 35A (63mA- 1A @ 250Vac, p.f. = 0.7-0.8), 10kA (63mA-6A @ 125Vac, p.f.= 0.7-0.8), 100A (1.25-3.15A @ 250Vac, p.f. = 0.7-0.8), 200A (6.3-10A @ 125Vac, p.f.= 1.0)
- Agency Information:** CE, Std. 248-14, UL Listed Guide JDYX, File E19180, 0-6.3A, UL Recognized, Guide JDYX2, File E19180, 7-8A, CSA Certified, Class 1422-01, File 53787, 0-6.3A
- Typical Applications:** Electronic Circuits
- Construction:** Glass tube, nickel-plated brass end caps
- Features:**
- Conforming to UL standards



GMC						
Global No.	Description / Case Qty 5			Mars No.	Other	
GMC-150MA	250V	5mm x 20mm	Medium Time Delay	150mA	—	GSC (Ferraz/Shawmut)
GMC-1	250V	5mm x 20mm	Medium Time Delay	1A	82883	
GMC-1-1/2	250V	5mm x 20mm	Medium Time Delay	1.5A	—	

Low Voltage– Automotive Blade

Fast-Acting Blade Fuse

Volts: 32Vdc
Amps: 1-40A
IR: 1000A
Agency Information: UL Recognized, (3-40A) (Guide JFHR2, File E56412), SAE Standard J1284

Typical Applications: Automotive

Construction: Colored plastic housing with zinc fuse element

Features:

- Color coded plastic housing for easy identification of fuse ratings



ATC						
Global No.	Description / Case Qty 5			Mars No.	Other	
ATC-3	Fast Acting Automotive Blade	Violet	3A	82230	ATO (Littelfuse)	
ATC-4	Fast Acting Automotive Blade	Pink	4A	82232		
ATC-5	Fast Acting Automotive Blade	Tan	5A	82231		
ATC-7-1/2	Fast Acting Automotive Blade	Brown	7.5A	82233		
ATC-10	Fast Acting Automotive Blade	Red	10A	82234		
ATC-15	Fast Acting Automotive Blade	Blue	15A	82235		
ATC-20	Fast Acting Automotive Blade	Yellow	20A	82236		
ATC-25	Fast Acting Automotive Blade	Clear	25A	82237		
ATC-30	Fast Acting Automotive Blade	Green	30A	82238		

Low Voltage– Automotive Blade

Fast-Acting Mini Blade Fuse

Volts: 32Vdc
Amps: 2-30A
IR: 1000A
Typical Applications: Automotive
Construction: Colored plastic housing with zinc fuse element

Features:

- Color coded plastic housing for easy identification of fuse ratings



ATM						
Global No.	Description / Case Qty 5			Mars No.	Other	
ATM-3	Fast Acting Mini Automotive Blade	Violet	3A	—	—	
ATM-10	Fast Acting Mini Automotive Blade	Red	10A	81354		

Low Voltage– Fast-Acting Midget

Fast-Acting Supplementary Fuse

Dimensions: 13/32" x 1 1/2 " (10.3 x 38.1mm)
Volts: 250Vac (or less)
Amps: 1-1/2-10A
IR: 10kA @ 125Vac (2/10-30A), 35A (2/10-1A @ 250Vac) 100A (11/2-3A @ 250Vac), 200A (4-10A @ 250Vac) 750A (12A- 15A @ 250Vac), 200A (20-30A @ 250Vac)

Agency Information: CE, Std. 248-14, UL 0-15/250V, Guide JDYX, File E19180 CSA Certified, 0-15/250V, Class 1422-01, File 53787

Typical Applications:

- General Purpose Circuits
- Lighting Circuit Protection
- Meter Circuits

Features:

- Low cost supplemental protection of 125V and 250V non-inductive circuits
- Upgrade with LP-CC product to reduce SKU investment and minimize potential arc-flash hazards. 3. (and minimize potential for misapplying fuse)



BAF			
Global No.	Description / Case Qty 10	Mars No.	Other
BAF-1-1/2	250V 13/32" x 1-1/2" Fast Acting 1.5A	—	BLF (Littelfuse) MOL (Edison)
BAF-10	250V 13/32" x 1-1/2" Fast Acting 10A	—	OTM (Ferraz/Shawmut)

Low Voltage– Fast-Acting Midget

Fast-Acting Supplementary Fuse

- Dimensions:** 13/32" x 13/8" (10.3 x 34.9mm)
- Volts:** 600Vac (1/10-5A), 250Vac (6 - 10A), 48Vac (12-30A)
- Amps:** 1-20A
- IR:** 10kA RMS Sym.
- Agency Information:** CE, Std. 248-14, UL Listed, 0-5A/600V, Guide JDYX, File E19180, CSA Certified, 0-5A/600V, Class 1422-01, File 53787
- Typical Applications:**
- Control Circuits
 - Lighting Ballasts
 - Meter Circuits
- Construction:** Fiber cartridge
- Features:**
- Low cost supplemental protection of non-inductive circuits
 - Reduced interchangeability with other supplemental fuses minimizes misapplication



BBS						
Global No.	Description / Case Qty 10			Mars No.	Other	
BBS-1	600V	13/32" x 1-3/8"	Fast Acting 1A	82608	BLS (Littelfuse)	
BBS-2	600V	13/32" x 1-3/8"	Fast Acting 2A	82609	CBS (Cefco)	
BBS-3	600V	13/32" x 1-3/8"	Fast Acting 3A	82610	EBS (Edison)	
BBS-4	600V	13/32" x 1-3/8"	Fast Acting 4A	82611		
BBS-5	600V	13/32" x 1-3/8"	Fast Acting 5A	82612		
BBS-10	600V	13/32" x 1-3/8"	Fast Acting 10A	—		
BBS-15	600V	13/32" x 1-3/8"	Fast Acting 15A	—		
BBS-20	600V	13/32" x 1-3/8"	Fast Acting 20A	—		

Low Voltage– Fast-Acting Midget

Fast-Acting Supplementary Fuse

- Dimensions:** 13/32" x 1 1/2" (10.3 x 38.1mm)
Volts: 600Vac (or less)
Amps: 1/10-30A
IR: 100kA RMS Sym. (UL)
Agency Information: CE, Std. 248-14, UL Listed, Guide JDYX, File E19180
Typical Applications:
- Control Circuits
 - Lighting Circuit Protection
 - Meter Circuits

Features:

- Low cost supplemental protection of 600V or less non-inductive circuits
- Upgrade with LP-CC product to reduce SKU investment and minimize potential arc-flash hazards



KTK			
Global No.	Description / Case Qty 10	Mars No.	Other
KTK-2	600V 13/32" x 1-1/2" Fast Acting 2A	82911	ATM (Gould)
KTK-3	600V 13/32" x 1-1/2" Fast Acting 3A	82916	CTK (Cefco)
KTK-5	600V 13/32" x 1-1/2" Fast Acting 5A	82913	KLK (Littelfuse)
KTK-10	600V 13/32" x 1-1/2" Fast Acting 10A	82917	MCL (Edison)
KTK-15	600V 13/32" x 1-1/2" Fast Acting 15A	82919	
KTK-20	600V 13/32" x 1-1/2" Fast Acting 20A	82920	
KTK-30	600V 13/32" x 1-1/2" Fast Acting 30A	82922	
KTK-35	600V 13/32" x 1-1/2" Fast Acting 35A	—	

Low Voltage– General Purpose

General Purpose, Non-Current-Limiting Fuse

Volts: 250Vac, 125Vdc
Amps: 1/8-600A
IR: 50kA RMS Sym. (NON & NOS Class K5 0-60A), 10kA RMS Sym. (NON & NOS Class H65-600A), 50kA @ 125Vdc (NON Class K5 0-60A), 10kA @ 125Vdc (NON Class H 65-100A)

Agency Information: CE, UL Listed – 250V: Class K5 (0-60A), Std. 248-9, Class H (65-600A), Std. 248-6, (125Vdc: NON 0-100), 600V: Class K5 (0-60A), Std. 248-9, Class H (70-600A), Std. 248-6, Guide JDDZ, File E4273, CSA Certified – 250V: (0-12, 65-600), 600V: (0-600), Class 1421-01, File 53787

Typical Applications: Light Duty Circuit Locations

Features:

- Original fuse providing circuit protection



NON			
Global No.	Description / Case Qty 10	Mars No.	Other
NON-1	250V One Time General Purpose 1A	—	10KOTN (Cefco)
NON-5	250V One Time General Purpose 5A	—	50KOTN (1-60) (Cefco)
NON-10	250V One Time General Purpose 10A	82210	EON (Brush)
NON-15	250V One Time General Purpose 15A	82212	KON (Edison)
NON-20	250V One Time General Purpose 20A	82213	NLN (Littelfuse)
NON-25	250V One Time General Purpose 25A	82214	OT (Ferraz/Shawmut)
NON-30	250V One Time General Purpose 30A	82215	
NON-35	250V One Time General Purpose 35A	82216	
NON-40	250V One Time General Purpose 40A	82217	
NON-45	250V One Time General Purpose 45A	82218	
NON-50	250V One Time General Purpose 50A	82219	
NON-60	250V One Time General Purpose 60A	82220	
NON-70	250V One Time General Purpose 70A	82221	
NON-80	250V One Time General Purpose 80A	—	
NON-100	250V One Time General Purpose 100A	82224	

Low Voltage– General Purpose

General Purpose, Non-Current-Limiting Fuse

Volts: 600Vac
Amps: 15-250A
IR: 50kA RMS Sym. (NON & NOS Class K5 0-60A), 10kA RMS Sym. (NON & NOS Class H65-600A), 50kA @ 125Vdc (NON Class K5 0-60A), 10kA @ 125Vdc (NON Class H 65-100A)

Agency Information: CE, UL Listed – 250V: Class K5 (0-60A), Std. 248-9, Class H (65-600A), Std. 248-6, (125Vdc: NON 0-100), 600V: Class K5 (0-60A), Std. 248-9, Class H (70-600A), Std. 248-6, Guide JDDZ, File E4273, CSA Certified – 250V: (0-12, 65-600)†, 600V: (0-600), Class 1421-01, File 53787

Typical Applications: Light Duty Circuit Locations

Features:

- Original fuse providing circuit protection



NOS			
Global No.	Description / Case Qty 10	Mars No.	Other
NOS-15	600V One Time General Purpose 15A	82251	10KOTS (Cefco)
NOS-20	600V One Time General Purpose 20A	82252	50KOTS (15-60) (Cefco)
NOS-25	600V One Time General Purpose 25A	82253	
NOS-30	600V One Time General Purpose 30A	82254	EOS (Brush)
NOS-35	600V One Time General Purpose 35A	82255	KOS (Edison)
NOS-40	600V One Time General Purpose 40A	82256	NLS (Littelfuse)
NOS-60	600V One Time General Purpose 60A	82259	
NOS-250	600V One Time General Purpose 250A	—	OTS (Ferraz/Shawmut)

Low Voltage– In-line Non-Rejection

Fast-Acting, Non-Rejection, Inline Fuse

Volts: 300Vac (or less)
Amps: 3/16-15A
IR: 10kA
Agency Information: CE, Std. 248-14, UL Listed, 0- 15A/300Vac (Guide JDYX, File E19180), CSA Certified, 0-10A/300V (Class 1422-01, File 53787)

Typical Applications: In-Line Lighting Ballast Protection

Construction: Glass Tube

Features:

- In-line, fast-acting circuit protection



GLR					
Global No.	Description / Case Qty 5			Mars No.	Other
GLR-1/2	300V	Fast Acting, Non-Rejecting	1/2A	—	LGR (Littelfuse)
GLR-1	300V	Fast Acting, Non-Rejecting	1A	81176	SLR (Ferraz/Shawmut)
GLR-1-6/10	300V	Fast Acting, Non-Rejecting	1-6/10A	82887	
GLR-1-1/2	300V	Fast Acting, Non-Rejecting	1.5A	82886	
GLR-2	300V	Fast Acting, Non-Rejecting	2A	—	
GLR-3	300V	Fast Acting, Non-Rejecting	3A	81177	
GLR-4	300V	Fast Acting, Non-Rejecting	4A	—	
GLR-5	300V	Fast Acting, Non-Rejecting	5A	81178	
GLR-6	300V	Fast Acting, Non-Rejecting	6A	—	
GLR-7	300V	Fast Acting, Non-Rejecting	7A	—	
GLR-8	300V	Fast Acting, Non-Rejecting	8A	—	
GLR-9	300V	Fast Acting, Non-Rejecting	9A	—	
GLR-10	300V	Fast Acting, Non-Rejecting	10A	82891	
GLR-12	300V	Fast Acting, Non-Rejecting	12A	—	
GLR-15	300V	Fast Acting, Non-Rejecting	15A	82890	

Low Voltage– In-line Non-Rejection

Time-Delay, Non-Rejection, In-line Fuse

- Volts:** 300Vac (or less)
- Amps:** 3/10- 10A
- IR:** 10kA
- Agency Information:** CE, Std. 248-14 0-10A, UL Listed (Guide JDYX, File E19180), CSA Certified, (Class 1422-01, File 53787)
- Typical Applications:** In-Line Lighting Ballast Protection
- Construction:** Glass Tube
- Features:**
 - In-line, time-delay circuits protection



GMF					
Global No.	Description / Case Qty 5			Mars No.	Other
GMF-2	300V	Time Delay, Non-Rejecting	2A	—	LMF (Littelfuse)
GMF-3-2/10	300V	Time Delay, Non-Rejecting	3-2/10A	82888	SMF (Ferraz/Shawmut)

Low Voltage– *Inline Rejection*

Time Delay, Size-Rejecting, Inline Fuse

Volts: 300Vac (or less)

Amps: 1/2-6 1/4A

IR: 10kA

Agency Information: CE, Std. 248-14, UL Listed (Guide JDYX, File E19180), CSA Certified, (Class 1422-01, File 53787)

Typical Applications: In-Line Lighting Ballast Protection

Features:

- In-line, fast-acting circuit protection



GMQ					
Global No.	Description / Case Qty 5			Mars No.	Other
GMQ-1-6/10	300V	Time Delay, Size Rejecting	1-6/10A	—	—
GMQ-2-1/2	300V	Time Delay, Size Rejecting	2.5A	—	
GMQ-3-2/10	300V	Time Delay, Size Rejecting	3-2/10A	82880	
GMQ-4	300V	Time Delay, Size Rejecting	4A	82884	
GMQ-5	300V	Time Delay, Size Rejecting	5A	—	

Low Voltage– Plug Fuses

Adapters for Using Type S Rejection Fuses in Edison Base Fuse Sockets

Typical Applications: Plug fuse installations where it is desirable to restrict fuse amp ratings

Features:

- Fustat adapters screw into the “Edison” thread fuse sockets of standard fuse boxes making it easy to retrofit existing fuse installations
- Available in various amp ratings to cover a wide range of rating requirements



Fuse Adapters			
Global No.	Description / Case Qty 10	Mars No.	Other
SA-1-1/4	Adapter for S Series 1-1/4A	—	ESA (Edison)
SA-1-6/10	Adapter for S Series 1-6/10A	—	SAO (Littelfuse)
SA-6-1/4	Adapter for S Series 6-1/4A	82379	
SA-8	Adapter for S Series 8A	—	
SA-10	Adapter for S Series 10A	—	
SA-15	Adapter for S Series 15A	82382	
SA-20	Adapter for S Series 20A	82383	
SA-30	Adapter for S Series 30A	82384	

Low Voltage– Plug Fuses

Dual-Element, Time-Delay Plug Fuse

- Dimensions:** S - Rejection base, T - Edison base
- Volts:** 125Vac
- Amps:** S Series: 1-1/4-30A, T Series: 3/10-30A
- IR:** 10kA RMS Sym.
- Agency Information:** CE, Std. 248-11, Type S and T: UL Listed (0-61/4) Guide JFHR, File E56412 (7-30A) Guide JEFV, File E12112; CSA Certified, Class 1423-01, File 53787
- Typical Applications:**
- S Series - Residential Load Centers
 - T Series - Box Cover Units for small motor overload protection
 - Applications benefiting from fuse rejection (S Series only)
- Construction:**
- S - Plastic base with rejection threads
T - Brass threads with plastic body
- Features:**
- Time-delay, dual-element T Series Edison base plug fuses provide small motor overload protection when used with box cover units
 - Time-delay, dual-element S Series plug fuses provide a rejection feature (when used alone or with Fustat adapters to retrofit Edison base holders) to prevent overfusing of branch circuits



S & T Series					
Global No.	Description / Case Qty 4			Mars No.	Other
S Series					
S-1-1/4	125V	Time Delay, Rejection Base	1-1/4A	82307	3780 (.25-30) (Bussmann) SOO (Littelfuse)
S-1-6/10	125V	Time Delay, Rejection Base	1-6/10A	82308	
S-2	125V	Time Delay, Rejection Base	2A	82311	
S-2-8/10	125V	Time Delay, Rejection Base	2-8/10A	—	
S-3	125V	Time Delay, Rejection Base	3A	82315	
S-3-2/10	125V	Time Delay, Rejection Base	3-2/10A	82316	
S-4	125V	Time Delay, Rejection Base	4A	82318	
S-5	125V	Time Delay, Rejection Base	5A	82320	
S-6	125V	Time Delay, Rejection Base	6A	—	
S-6-1/4	125V	Time Delay, Rejection Base	6-1/4A	82323	
S-7	125V	Time Delay, Rejection Base	7A	—	
S-8	125V	Time Delay, Rejection Base	8A	82325	
S-10	125V	Time Delay, Rejection Base	10A	82327	
S-12	125V	Time Delay, Rejection Base	12A	82328	
S-14	125V	Time Delay, Rejection Base	14A	—	
S-15	125V	Time Delay, Rejection Base	15A	82330	
S-20	125V	Time Delay, Rejection Base	20A	82331	
S-25	125V	Time Delay, Rejection Base	25A	82332	
S-30	125V	Time Delay, Rejection Base	30A	82333	

Low Voltage– Plug Fuses Cont.

<i>S & T Series Cont.</i>					
Global No.	Description / Case Qty 4		Mars No.	Other	
<i>T Series</i>					
T-1-1/4	125V	Time Delay, Edison Base	1-1/4A	82334	3785 (.3-30)
T-1-6/10	125V	Time Delay, Edison Base	1-6/10A	—	(Bussmann)
T-2-1/4	125V	Time Delay, Edison Base	2-1/4A	—	GT (Ferraz/Shawmut)
T-3-2/10	125V	Time Delay, Edison Base	3-2/10A	82338	TOO (Littelfuse)
T-4	125V	Time Delay, Edison Base	4A	82339	
T-5	125V	Time Delay, Edison Base	5A	82340	
T-6	125V	Time Delay, Edison Base	6A	—	
T-6-1/4	125V	Time Delay, Edison Base	6-1/4A	82341	
T-8	125V	Time Delay, Edison Base	8A	82342	
T-10	125V	Time Delay, Edison Base	10A	82343	
T-12	125V	Time Delay, Edison Base	12A	—	
T-15	125V	Time Delay, Edison Base	15A	82346	
T-20	125V	Time Delay, Edison Base	20A	82347	
T-25	125V	Time Delay, Edison Base	25A	82348	
T-30	125V	Time Delay, Edison Base	30A	82349	

Low Voltage– Plug Fuses

Time-Delay, Loaded Link Plug Fuse

Dimensions: SL - Rejection base, TL - Edison base

Volts: 125Vac

Amps: 15-30A

IR: 10kA RMS Sym.

Agency Information: CE, Std. 248-11, UL Listed, Guide JEFV, File E12112

Typical Applications:

- Small motor and inductive load circuits with high in-rush current levels
- Used with box cover units to provide equipment protection
- Applications benefiting from fuse rejection (SL Series only)

Construction: SL - Plastic base with rejection threads
TL - Brass threads with plastic body

Features:

- Time-delay loaded link TL Series Edison base plug fuses pass motor overload starting currents without opening and allow closer sizing to motor load for added protection
- Time-delay loaded link SL Series fuses provide a rejection feature (when used alone or with Fustat adapters to retrofit Edison base holders) to help prevent overfusing



SL & TL Series					
Global No.	Description / Case Qty 4			Mars No.	Other
SL Series					
SL-15	125V	Time Delay, Rejection Base	15A	82330	3770 (15-30) (Bussmann) GLS (15-30)
SL-20	125V	Time Delay, Rejection Base	20A	82331	SLO (15-30) (Littelfuse)
TL Series					
TL-15	125V	Time Delay, Rejection Base	15A	82350	3740 (15-30) (Bussmann)
TL-20	125V	Time Delay, Rejection Base	20A	82351	GTL (15-30) (Ferraz/Shawmut)
TL-25	125V	Time Delay, Rejection Base	25A	82352	
TL-30	125V	Time Delay, Rejection Base	30A	82353	TLO (15-30) (Littelfuse)

Low Voltage– SC Series

Fast-Acting (1/2-6A), Time-Delay (7-60A) Fuse

Volts: 600Vac (1/2-20A), 480Vac (25-60A),
170Vdc (1/2-20A), 300Vdc
(30 & 60A only)

Amps: 1/2-60A

IR: 100kA RMS Sym., 10kA DC

Agency Information: CE, Std. 248-5, Class G, UL Listed,
Guide JDDZ, File E4273, CSA Certified,
Class 1422-01, File 53787

Typical Applications:

- Fusible Branch Panel boards
- HVAC Branch Circuit Protection



SC Series			
Global No.	Description / Case Qty 10	Mars No.	Other
SC-1	600V Fast Acting 1A	82271	AG (Ferraz/Shawmut)
SC-2	600V Fast Acting 2A	82290	SEC (Edison)
SC-3	600V Fast Acting 3A	82272	SLC (Littelfuse)
SC-5	600V Fast Acting 5A	82273	
SC-8	600V Fast Acting 8A	82275	
SC-10	600V Time Delay 10A	82276	
SC-15	600V Time Delay 15A	82278	
SC-20	600V Time Delay 20A	82279	
SC-25	480V Time Delay 25A	82280	
SC-30	480V Time Delay 30A	82281	
SC-35	480V Time Delay 35A	82282	
SC-40	480V Time Delay 40A	82283	
SC-50	480V Time Delay 50A	82285	
SC-60	480V Time Delay 60A	82286	

Low Voltage– Time-Delay Midget

Time-Delay Supplementary Fuse

Dimensions: 13/32" x 11/2" (10.3 x 38.1mm)
Volts: 250Vac (or less)
Amps: 1/10-30A
IR: 35A (1/10-1A @ 250Vac), 100A (11/8-31/2A @ 250Vac) 200A (4-10A @ 250Vac), 10kA (1/10-10A @ 125Vac), 10kA (12-30A @250Vac)

Agency Information: CE, Std. 248-14, UL Listed, 0-30/250Vac; File E19180, Guide JDYX, CSA Certified, 1-30/250Vac; Class 1422-01, File 53787

Typical Applications:

- General Purpose Circuits
- Lighting Circuit Protection
- Meter Circuits

Features:

- Low cost supplemental protection of 125V and 250V inductive circuits



FNM						
Global No.	Description / Case Qty 10			Mars No.	Other	
FNM-8/10	250V	13/32" x 1-1/2"	Time Delay 8/10A	82953	CNM (Cefco)	
FNM-1	250V	13/32" x 1-1/2"	Time Delay 1A	82958	FLM (Littelfuse)	
FNM-2	250V	13/32" x 1-1/2"	Time Delay 2A	82959	FNW (Bussmann)	
FNM-2-1/2	250V	13/32" x 1-1/2"	Time Delay 2.5A	—	MEN (Edison)	
FNM-3	250V	13/32" x 1-1/2"	Time Delay 3A	82960	TRM (Ferraz/Shawmut)	
FNM-5	250V	13/32" x 1-1/2"	Time Delay 5A	82965		
FNM-6-1/4	250V	13/32" x 1-1/2"	Time Delay 6-1/4A	—		
FNM-7	250V	13/32" x 1-1/2"	Time Delay 7A	—		
FNM-10	250V	13/32" x 1-1/2"	Time Delay 10A	82969		
FNM-15	250V	13/32" x 1-1/2"	Time Delay 15A	82970		
FNM-20	250V	13/32" x 1-1/2"	Time Delay 20A	82972		

Low Voltage– Time-Delay Midget

Time-Delay Supplementary Fuse

- Dimensions:** 13/32" x 11/2" (10.3 x 38.1mm)
- Volts:** 500Vac (or less)
- Amps:** 1/10-30A
- IR:** 10kA RMS Sym.
- Agency Information:** CE, Std. 248-14, UL Listed, Guide JDYX, File E19180 CSA Certified, Class 1422-01, File 53787
- Typical Applications:**
 - Control Transformer 480V Primary Protection
 - Lighting Circuit Protection
 - Meter Circuits

- Features:**
- Low cost supplemental protection of transformers and relays at 500V or less



FNQ			
Global No.	Description / Case Qty 10	Mars No.	Other
FNQ-3/10	500V 13/32" x 1-1/2" Time Delay 3/10A	—	ATQ (Ferraz/Shawmut)
FNQ-1	500V 13/32" x 1-1/2" Time Delay 1A	82936	CNQ (Cefco)
FNQ-1-1/4	500V 13/32" x 1-1/2" Time Delay 1-1/4A	—	FLQ (Littelfuse)
FNQ-3	500V 13/32" x 1-1/2" Time Delay 3A	82942	MEQ (Edison)
FNQ-5	500V 13/32" x 1-1/2" Time Delay 5A	82944	
FNQ-10	500V 13/32" x 1-1/2" Time Delay 10A	82947	
FNQ-15	500V 13/32" x 1-1/2" Time Delay 15A	82952	
FNQ-20	500V 13/32" x 1-1/2" Time Delay 20A	82948	
FNQ-25	500V 13/32" x 1-1/2" Time Delay 25A	82949	
FNQ-30	500V 13/32" x 1-1/2" Time Delay 30A	82951	



HEATING PRODUCTS

HEAT RESTRING KITS
HEAT SEQUENCERS

Heat Restraining Kits



Heating Element Coil Kits and Accessories

Global No.	Description
5001	2500W @ 240V, 1800W @ 208V, 18"
5002	3000W @ 240V, 2250W @ 208V, 18½"
5003	4000W @ 240V, 3000W @ 208V, 26½"
5004	5000W @ 480V, 23"
5005	5000W @ 240V, 3750W @ 208V, 28"
5005NF	5000W @ 240V, w/o fuse
5006	6000W @ 240V, 4500W @ 208V, 26"
5007	Fuse Link, 300° F
5007A-10	Fuse Link, 300° F, 10 Pack
5007B-10	Fuse Link, 350° F, 10 Pack
5008	Male Ceramic Insulator, 250V
5008-10	Male Ceramic Insulator, 250V, 10 Pack
5009	Female Ceramic Insulator, 250V
5009-10	Female Ceramic Insulator, 250V, 10 Pack
5010	Ribbed Ceramic Insulator, 250V
5010-10	Ribbed Ceramic Insulator, 250V, 10 Pack
5011	Ceramic Fuse Link, 300° F
5011-3	Ceramic Fuse Link, 300° F, 3 Pack
5011R-3	Ceramic Fuse Link, 300° F, 3 Pack, Round
5012	Ceramic Fuse Link
5013	Ceramic Fuse Link
5025	Hex Nut
5026	Lock Washer
5027	Flat Washer

Heat Sequencers

Electric Heat Sequencers- ZC24A34 Series

The following models will replace sequencers in almost any electric heating system. Sequencers may be used on both separate blower and element and combination blower and element systems. Select the sequencers based on the number of circuits to be switched. When more than one sequencer is required, just wire the sequencers in series with the last switch of each sequencer energizing the control circuit of the next sequencer. If the sequencers control the fan/blower circuit, the first switch, M-1-M2, of each sequencer must always control the fan. This assures that the fan will remain on until all elements are de-energized.

Features and Benefits:

- Solid state PTC heaters
- Replaces most Klixon and TOD brands
- Quick-connect terminals
- Shock and vibration resistant
- Mounts in any position
- Contact ratings– to 25A at 120 or 240V, and 12.5A at 480V
- Full-load rating auxiliary contacts
- Standard operating ambience between -50° F (-45.5° C) and 165° F (73.8° C)
- UL File E237660, UL873; CSA approved



Standard Timings:

Global No.	Timings	Switches	Action	Timings—ON					Timings—OFF					Case Qty
				M1-M2	M3-M4	M5-M6	M7-M8	M9-M10	M1-M2	M3-M4	M5-M6	M7-M8	M9-M10	
24ZC-1	1	1	SPST	1-20	—	—	—	—	40-110	—	—	—	—	160
24ZC-2	1	1	SPST	—	—	30-90	—	—	—	—	1-30	—	—	160
24ZC-3	1	2	DPST	1-20	§ 1-20	—	—	—	40-110	§ 40-110	—	—	—	160
24ZC-4	1	2	DPST	—	—	30-90	§ 30-90	—	—	—	1-30	§ 1-30	—	160
24ZC-5	2	3	1 DPST/ 1 SPST	1-110	§ 1-110	1-110	—	—	1-110	§ 1-110	1-110	—	—	80
24ZC-6	2	4	2 DPST	1-110	§ 1-110	1-110	§ 1-110	—	1-110	§ 1-110	1-110	§ 1-110	—	80
24ZC-14	4	5	1 SPST/ 2 DPST	1-160	§ 1-160	1-160	1-160	1-160	1-160	§ 1-160	1-160	1-160	1-160	—

Table Notes:

(1) M1-M2 and M3-M4 are always first switches to turn ON and to turn OFF. All other switches are random ON and random OFF.

(2) 24A34-14 switch contacts designated F1-F2 instead of M1-M2.

§ These contacts switch simultaneously

ON TIME– Elapsed time to make contacts after heater is energized (min to max)

OFF TIME- Elapsed time to make contacts after heater is de-energized (min to max)

OFF Timings are determined after PTC heater has been electrified for a total of 5 minutes.

Standard Timings determined at 25° C. Timings at temperatures above or below 25° will vary.

Heat Sequencers Cont.

Electrical Ratings (24ZC-1—24ZC-14):

Single Load Contact Ratings (All Models)								
VAC	Resistive (Non-Inductive)				Motor Ratings (Inductive)		Pilot Duty	UL Endurance Cycles
	NO Contacts (terminals 1-3)		NC Contacts (terminals 1-2)		Full Load	Locked Rotor		
	Watts	Amps	Watts	Amps				
120	3000	25.0	1200	10.0	10.0A	60.0A	125VA	100K
240	6000	25.0	1200	5.0	5.0A	30.0A	125VA	
480	6000	12.5	—	—	3.0A	18.0A	480VA	

Combined Load Contact Ratings (all Models):

30A @ 240 VAC Example: 23A non-inductive + 7 FLA / 42 LRA inductive

Heater Pole:

24 VAC .018 (Anticipator)

0.75 A Max Inrush

0.16 to 0.20 Amps Steady State

Ambient Rating: -50° to 165°F

Heat Sequencers— Air Handler Applications

Heat Pump Air Handler Applications— 24ZC-15

The 24ZC-15 utilizes a single bi-metal disc in a single pole double throw configuration. The SPDT switch action allows for a single set of timings. Mainly used in heat pump air handlers by providing a delay to the blower motor in cooling mode.



Standard Timings:

Model	Timing	Switches	Heat	Cool
24ZC-15	1	1	1-25	65-115

Electrical Ratings:

NO Contacts— Terminals 1-3						
VAC	Resistive (Non-Inductive)		Motor Ratings (Inductive)		Pilot Duty	UL Endurance Cycles
	Watts	Amps	Full Load	Locked Rotor		
120	3000	25	14	72	125	30K
240	6000	25	7	42	125	
480	6000	25	3	18	480	

NC Contacts— Terminals 1-2			
VAC	Resistive (Non-Inductive)		Pilot Duty
	Watts	Amps	
120	1200	10.0	125
240	1200	5.0	125

Heat Sequencer Cross Reference

Global	Zettler	Supco	Gem	Mars	Watsco	Klixon	White Rogers	Robertshaw	OEM
24ZC-1 — —	ZC24A34-1 — —	Q101	GS101 — —	33241 33841 —	TDR10 — —	6000AONI-98 — —	24A34-1 24A34-7 24A34-13	611-241 — —	Goodman® B1290906 Lennox® 12F20 & 58C9701 York® 525-37322-000
24ZC-2 — —	ZC24A34-2 — —	Q102	GS102 — —	33242 33842 —	TDR15 — —	6000AONI-97 — —	24A34-2 — —	611-242 — —	Carrier® 40CF680020
24ZC-3 — — —	ZC24A34-3 — — —	Q103	GS103 — — —	33244 33844 — —	TDR20 — — —	6000AONI-87 60000EO-102 — —	24A34-3 — — —	611-244 — — —	ICP® / Carrier® HN67QC005 ICP® / Carrier® HQ1056789 Goodman® BT1256504
24ZC-4 — —	ZC24A34-4 — —	Q104	GS104 — —	33245 33845 —	TDR25 — —	60000E049 — —	24A34-4 — —	611-245 — —	York® 525-37325-000 ICP® / Carrier® HN67QC006
24ZC-5 — —	ZC24A34-5 — —	Q105	GS105 — —	33232 33832 —	TDR30 — —	51172-32 — —	24A34-5 24A34-54 —	611-232 — —	York® 525-37327-000 Coleman® 3120A357
24ZC-6 — —	ZC24A34-6 — —	Q106	GS106 — —	33233 33833 —	TDR35 — —	51172-33 — —	24A34-6 — —	611-233 — —	ICP® / Carrier® HN67QC008 ICP® / Carrier® P284-1313
24ZC-14	ZC24A34-14	Q107	GS107	33848	—	51172-35-1	24A34-14	611-007	York® 525-37328-000

1. All sequencers have a 24 volt heater

2. Part numbers are intended solely for identification, items offered are not represented to be manufactured by the company that built the original equipment.



HVAC CONTROLS

MINIATURE PRESSURE SWITCHES MOTOR PROTECTION

Miniature Pressure Switches

Global offers a complete line of pressure controls for fixed set point, low and high pressure, manual reset, and fan cycling applications.

Specifications:

- 18" Leads
- 1/4" female flare fitting
- Direct line mount
- Contacts rated 6 amps, 24-240 VAC



Denotes R-410A Switches

Global No.	Klixon No.	Mars No.	Cut Out	Cut In
Fan Cycling Controls				
GFC-340	20PS116KA264G126G	33340	126	264
GFC-341	20PS107KA275K210K	33341	210	275
Low Pressure– N.O.				
GLP-329	PS80-K2-F0305-020-005	33329	5	20
GLP-330	PS80-K2-F0307-025-005	33330	10	25
GLP-342	—	33342	75	100
GLP-362	PS80-K2-F0316-050-005	33362	25	50
GLP-363	PS80-K2-F0325-080-005	33363	25	80
GLP-364	PS80-K2-F0326-080-005	33364	40	80
GLP-371	—	43371	15	40
GLP-372	—	43372	22	50
GLP-373	—	43373	25	40
GLP-374	—	43374	60	95
GLP-375	—	43375	90	120
High Pressure– N.C.				
GHP-353	PS80-K1-0334-200-150	33353	200	150
GHP-354	PS80-K1-0336-250-150	33354	250	150
GHP-355	PS80-K1-0341-300-200	33355	300	200
GHP-356	PS80-K1-0348-350-250	33356	350	250
GHP-357	PS80-K1-0357-400-200	33357	400	200
GHP-358	PS80-K1-0358-400-300	33358	400	300
GHP-359	PS80-K1-0359-450-250	33359	450	250
GHP-361	—	33361	600	475
GHP-365	—	43365	590	490
GHP-366	—	43366	610	500
GHP-367	—	43367	650	500
GHP-376	—	43376	610	500
Manual Reset– N.C.				
Global No.	Klixon No.	Mars No.	Open Pressure	Features
GMR-350	29PSL004-1	33350	415	1/4" Copper Tube
GMR-352	29PSP002-1	33352	425	Panel Mount Cap Tube
GMR-365	29PSL012-24	33365	410	1/4" Flare Footing

3-Phase Motor Protection

AC-2020 — 3-Phase Compressor Protector



FEATURES

- Automatic Voltage Ranging
- Universal Control Voltage
- Condition/Fault Indicators
- Automatic/Manual Reset
- Last Fault Memory
- Delay-On-Make
- Delay-On-Break
- Auxiliary Contacts
- Easy Installation

PROTECTS AGAINST

- Phase Loss
- Under Voltage
- Over Voltage
- Phase Reversal
- Short Cycling

DESCRIPTION

The AC 2020 compressor protector provides multimode time delays, reset selections and a memory capability which indicates, using LED's, the last fault condition. This offers not only protection for the compressor in adverse electrical conditions but also a method to readily determine the type of fault occurrence.

OPERATING VOLTAGE

Auto Ranges	
240 VAC	190-270 VAC, Adj., 50/60 Hz
480 VAC	380-540 VAC, Adj., 50/60 Hz

SPECIFICATIONS

MAXIMUM VOLTAGE:	550 VAC	
TRIP POINTS:		
UNDER VOLTAGE:	-10% of Setting	
OVER VOLTAGE:	+10% of Setting	
HYSTERESIS:	5% of Nominal Setting	
PHASE SEQUENCE:	ABC (Will Not Operate On CBA Sequence)	
POWER REQUIRED:	<5 VA	
CONTROL VOLTAGE:	19-288 VAC	
OUTPUT RATING:	278 VA Inductive; 10 Amps Resistive @ 240 VAC	
CONFIGURATION		
CONTROL:	SPST-N.O.	
AUXILIARY:	SPDT	
RESPONSE TIMES		
PICK-UP:	Auto Mode	Delay Mode
	.05 to 5 Min. (Adj.)	3 Min. (Fixed)
	Delay-on-Make	Delay-on-Break
DROP-OUT:	Over/Under Voltage, Phase Loss	
	2 Seconds (Approximately)	
MODE SELECTIONS:	Automatic; Manual; Delay-On-Break	
RESET SWITCH:	With Memory, Without Memory, Auto Reset, Manual Reset	
TRANSIENT WITHSTAND:	1500 V @ 8 x 20 Microseconds	
TEMPERATURES		
OPERATE:	-40°F to +165°F	
STORAGE:	-40°F to +190°F	
TERMINATIONS:	(12) #8-32 Screw Terminals	
ENCLOSURE:	Style "E", LEXAN® Surface Mounted	

3-Phase Motor Protection

AC-301 — Phase Loss Monitor



DESCRIPTION

Continuously monitors the three phase lines for adverse conditions such as Phase Loss (single phasing), Under Voltage (brown outs) and Phase Reversal (improper sequence). They will also detect a Power Failure or Thermostat Interruption. When any of the mentioned occur, the control relay drops out.

The Universal Output of the AC-301 is capable of operation on control voltages of 24, 120 or 208/240 VAC and employs a built in bypass circuit for allowing continuous current flow through the thermostat's compensating resistor while the timer output is off. The bypass circuitry is required only when the system control voltage is 24 VAC.

SPECIFICATIONS

DROP OUT RANGE:

- 1 Ø LOW: 83% of Adjustment Setting
- 3 Ø LOW: 90% of Adjustment Setting

TEMPERATURES

- OPERATE: -40°F to +150°F
- STORAGE: -40°F to +190°F

PHASE SEQUENCE: ABC (Will Not Operate CBA)

TIME DELAY: 0.2 to 8 Minutes, Adjustable; Delay-On-Make

RELAY OUTPUT: 10 Amps @ 120 VAC

INDICATORS

- GREEN LED: Glows When Voltages Are Normal
- RED LED: Glows When Relay Picks Up

RESET: Automatic (After Delay)

POWER CONSUMPTION: 3 Watts (Approximately)

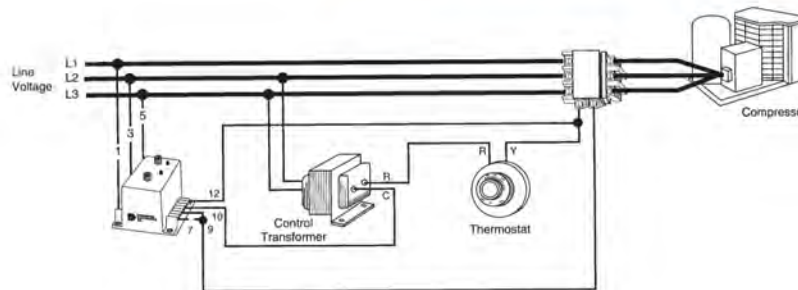
ENCLOSURE: Style "E"

TERMINATIONS: #8-32 Screw Terminals

TRANSIENT PROTECTION: 1000 Volts for 8 Milliseconds

MODEL NUMBER	OPERATING VOLTAGE	DROP OUT		PICK UP	DELAY ON DROP OUT
		1 Ø LOW	3 Ø LOW		
AC-301-230	190-270	158-224	171-243	1 Volt	0.5 Seconds
AC-301-380	350-440	290-365	315-396	Above	2.0 Seconds
AC-301-440	430-480	357-398	387-432	Drop Out	2.0 Seconds

All voltages referenced are 50/60 Hz



3-Phase Motor Protection

SLA Series — Phase Monitor Relay



DESCRIPTION

Any system using 3-Phase motors needs Phase Monitor protection. These monitors operate independently of motor size or power requirement of the system. When the phase sequence is correct and full line voltage is present on all three phases, the internal relay picks up. When incorrect phase sequence or phase loss occurs or the line voltages fall below the trip point, the relay drops out. Both DELTA AND WYE systems may be monitored. In WYE systems, connections to neutral are not required. The LED's glow when all conditions are normal.

SPECIFICATIONS

VOLTAGE: All Voltages Referenced are Phase-to-Phase, 50/60 Hz
DROP OUT: 1Ø Low: 83% of Setting
 3Ø Low: 90% of Setting

RELAY SOCKET NEEDED:
RB-08 Recommended for Style A Enclosure. See page 3 for details. For Fig. 2, use part number RB-11 Relay Socket (not shown)



FILE NUMBERS
 UL: E55826 CSA: LR40123

MODEL NO.	OPERATING VOLTAGE	1Ø LOW	3Ø LOW	PIN CONFIGURATION	AGENCY APPROVAL	LED	RESET	ENCLOSURE STYLE
SLA-120-ASA	95-130 Adj	79-108	85-117	Figure 1	● & CSA	Yes	Auto	A
SLA-230-ASA	190-270 Adj	158-224	171-243	Figure 1	● & CSA	Yes	Auto	A
SLA-380-ASA	350-440 Adj	290-365	315-396	Figure 1	---	Yes	Auto	A
SLA-440-ASA	430-480 Adj	378-461	410-500	Figure 1	---	Yes	Auto	A
SUA-120-ALA	95-130 Adj	79-108	85-117	Figure 1	● & CSA	Yes	Auto	A
SUA-230-ALA	190-270 Adj	158-224	171-243	Figure 1	● & CSA	Yes	Auto	A
SUA-380-ASA	350-440 Adj	290-365	315-396	Figure 1	● & CSA	Yes	Auto	A
SUA-440-ASA	430-480 Adj	378-461	410-500	Figure 1	● & CSA	Yes	Auto	A
* SUA-120-ALAU	95-130 Adj	79-108	85-117	Figure 1	▲ & CSA	Yes	Auto	A
* SUA-230-ALAU	190-270 Adj	158-224	171-243	Figure 1	▲ & CSA	Yes	Auto	A
SLA-120-ALA	95-130 Adj	79-108	85-117	Figure 2	---	No	Auto	A
SLA-230-ALA	190-270 Adj	158-224	171-243	Figure 2	●	Yes	Auto	A
SLA-120-ALE	95-130 Adj	79-108	85-117	Figure 3	▲ & CSA	Yes	Auto	E
SLA-230-ALE	190-270 Adj	158-224	171-243	Figure 3	▲ & CSA	Yes	Auto	E
SLA-380-ALE	350-440 Adj	290-365	315-396	Figure 3	▲ & CSA	Yes	Auto	E
SLA-440-ALE	430-480 Adj	357-398	387-432	Figure 3	▲ & CSA	Yes	Auto	E
SLA-575-ALE	525-625 Adj	436-519	473-563	Figure 3	▲ & CSA	Yes	Auto	E
SLA-120-ALER	95-130 Adj	79-108	85-117	Figure 3	▲ & CSA	Yes	Manual	E
SLA-230-ALER	190-270 Adj	158-224	171-243	Figure 3	▲ & CSA	Yes	Manual	E
SLA-380-ALER	250-440 Adj	290-396	315-396	Figure 4	▲ & CSA	Yes	Manual	E
SLA-440-ALER	430-480 Adj	357-398	387-432	Figure 4	▲ & CSA	Yes	Manual	E
SLA-120-AFN	120	100	108	Figure 5	●	No	Auto	N
SLA-208-AFN	208	173	187	Figure 5	●	No	Auto	N
SLA-220-AFN	220	183	198	Figure 5	●	No	Auto	N
SLA-230-AFN	230	191	207	Figure 5	●	No	Auto	N
SLA-240-AFN	240	199	216	Figure 5	●	No	Auto	N



* UL LISTED ONLY WHEN USED WITH RB-08 SOCKET

● UL Recognized
 ▲ UL Listed

NOTES: ALL MODELS AVAILABLE WITH FIXED OPERATING VOLTAGES
 ALL MODELS AVAILABLE IN 400 Hz OPERATION - CONSULT FACTORY

3-Phase Motor Protection

SLM Series — Microprocessor Controlled Phase Monitor



FILE NUMBERS
UL: E55826 CSA: LR40123

FEATURES

- Fault Indicators
- External Adjustments
- Auto/Manual Reset
- Delay-On-Make
- Last Fault Memory
- DPDT Contacts
- Low Power Consumption
- Compact Packaging

PROTECTS AGAINST

- Phase Loss
- Under Voltage
- Over Voltage
- Phase Unbalance
- Phase Reversal
- Frequency Shift
- Phase Shift
- Uniform Restart In Multiple Load Installations

MODEL NO.	NOMINAL PHASE TO PHASE VOLTAGE SET POINTS	MAXIMUM VOLTAGE
SLM-120-ASE	105, 110, 115, 120, 125, 130	143 VAC
SLM-230-ASE	200, 210, 220, 230, 240, 250	275 VAC
SLM-380-ASE	350, 365, 380, 390, 400, 415	457 VAC
SLM-440-ASE	440, 450, 460, 470, 480, 490	540 VAC
SLM-575-ASE	525, 550, 575, 600	690 VAC

DESCRIPTION

The SLM Series are completely digital monitoring devices designed to detect a wide variation of incoming line abnormalities. Not only are they designed to protect your valuable equipment against Phase Loss, Under Voltage, and Phase Reversal but they allow for the added protection of Over Voltage, Phase Unbalance, Frequency Shift, and Phase Shift. With three modes of operation available in one package, the user has the freedom to choose Auto, Manual, or Memory functions to aid in the prevention of equipment failure and for use as a diagnostic tool.

SPECIFICATIONS

PHASE SEQUENCE: ABC (Will Not Operate On CBA Sequence)

TRIP POINTS:

UNDER VOLTAGE: -10% of Setting
OVER VOLTAGE: +10% of Setting

FREQUENCY TRIP POINTS:

DROP-OUT: ±4% of 60 Hz (380 V, 50 Hz)
PICK-UP: ±3% of 60 Hz (380 V, 50 Hz)

UNBALANCE TRIP POINTS:

DROP-OUT: 7%
PICK-UP: 5%

OUTPUT RATING:

DPDT, 360 VA Inductive; 1/2 hp 3 A Resistive @ 600 VAC

RESPONSE TIMES

OPERATE:

Sampling 2 Seconds
Delay-on-Make (Sampling Delay) + (1.5 seconds to 5 minute delay)
Adjustable in one (1) minute increments

RELEASE:

Under Voltage: 1.5 Sec., (Approximately)
Over Voltage: 1.5 Sec., (Approximately)
Frequency Shift: 1.5 Sec., (Approximately)
Unbalance: 2.0 Sec., (Approximately)
* Phase Loss/Shift: 1.0 Sec., (Approximately)

RESET MODES:

Automatic; Manual; Automatic with Memory

LED INDICATORS:

DESIGNATION	COLOR	STATE	CONDITION:
Time Delay/Normal	Green	Flashing	Timing
		ON	Output Energized
Under Voltage	Red	ON	Fault
Over Voltage	Red	ON	Fault
Phase Sequence, Shift	Red	ON	Fault
Frequency Shift	Red	ON	Fault
Unbalance	Red	ON	Fault

POWER REQUIRED: 7 VA Typical

TRANSIENT WITHSTAND: 2500 Volts for 10 ms

TEMPERATURES

OPERATE: 0°C to +155°C
STORAGE: -45°C to +85°C

CONFIGURATION

CONTROL: SPST-N.O.
AUXILIARY: SPDT

ENCLOSURE:

Style "E", LEXAN® Surface Mounted

TERMINATIONS:

(12) #8-32 Screw Terminals

AGENCY APPROVALS:

UL Listed; File #E55826
CSA Certified
File #LR40123

3-Phase Motor Protection

SLU Series — Multi-Mode Phase Monitor with Relay



SLU-100-ASA

SLU-100-ASD



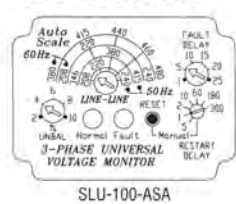
FEATURES

- DIN Rail Mount & Plug-In Style Available
- Adjustable Restart Delay
- Adjustable Fault Delay
- Manual or Automatic Reset
- Adjustable Operating Range: 200-500 VAC 3-Phase Nominal

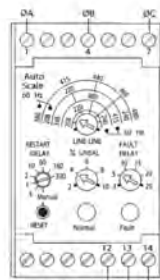
PROTECTS AGAINST

- Phase Loss
- Phase Unbalance
- Phase Reversal
- Over/Under Voltage
- Over/Under Frequency
- Phase Shift

TOP LABELS



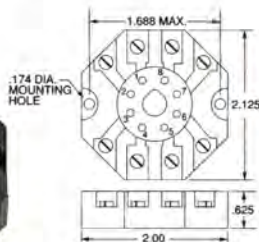
SLU-100-ASA



SLU-100-ASD



RB-08



DESCRIPTION

Phase Monitor Relays (3-Phase Monitors) provide cost-effective protection against premature equipment failure caused by voltage faults on 3-Phase systems (Wye or Delta). Until recently, different phase monitors were required to address voltage range and protection requirements for each individual power and motor circuit. The SLU Series multimode phase monitoring relay, was designed for the convenience of electricians, maintenance managers and engineers. A single SLU Phase Monitoring Relay can be easily adjusted for the voltage, imbalance percentage and time delay requirements to protect against unbalanced voltages or single phasing regardless of any regenerative voltages.

AUTO RANGING SCALES

Frequency	Nominal Line-to-Line Voltages	Adjustable Range
60 Hz	208, 220, 240	200-250
60 Hz	380, 415, 440, 460, 480	360-500
50 Hz	208, 220, 240	200-250
50 Hz	346, 380, 415	330-430

SPECIFICATIONS

VOLTAGE BAND

DROP-OUT: ±10% of Range Setting (Under/Over)
 PICK-UP: ±7% of Range Setting (Under/Over)

PHASE SEQUENCE:

ABC (Will Not Operate On CBA Sequence)

PHASE UNBALANCE:

2% to 10%, Adjustable Drop-out

PHASE SHIFT:

13° Drop-out, 12° Pick-up (Phase-Loss)

RESPONSE TIMES

POWER UP: 2.5 S Minimum
 FAULT DELAY: 0.1 to 25 S, Adjustable
 SEVERE FAULT: 100mS (Phase-Loss, Unbalance or Phase Reversal)
 RESTART: 0.5 to 300 S, Adjustable (Automatic Reset)

HYSTERESIS:

10% of Setting

RELAY OUTPUT:

SPDT, 10A @ 240 VAC Resistive, 1/2 HP @ 240 VAC

FREQUENCY SHIFT:

±4% Drop-out, ±3%, Pick-up 50 or 60 Hz

INDICATORS

NORMAL (GREEN LED):
 FAULT (RED LED):

FLASHING

Fault Delay Active
 Restart Delay Active

CONTINUOUS

Relay Energized
 Relay De-energized

TEMPERATURES

OPERATE: 0°C to +55°C
 STORAGE: -45°C to +85°C

REPEAT ACCURACY:

1% @ Fixed Condition

TERMINALS:

Slotted Screw Terminal Clamps, 12AWG Max. (DIN Rail Only)

ENCLOSURE

STYLE A: LEXAN® Dust Cover
 DIN RAIL: 35mm DIN Rail, 14 Term Polycarbonate Housing

Relay Socket Recommended

UL Recognized and CSA Certified for 10A@600VAC. The molded thermoplastic base has brass, nickel plated inserts with #6-32 steel, nickel plated screws.



MINI SPLITS

SINGLE ZONE

MULTI ZONE

LIGHT COMMERCIAL

MINI SPLIT ACCESSORIES



WILLIS

BENEFITS



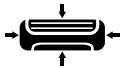
4 Way Air Outlet

The louver can be adjusted vertically and horizontally this will help maximise the comfort of your home.



Intelligent Defrost

The defrosting operation is only performed when needed, this reduces energy waste by eliminating unnecessary defrost while maximising warm comfort.



Compact Design

With state of the art innovations such as an integrated evaporator and incorporated rear base casing our indoor units are more compact.



Auto Clean

After powering off, the cross fan stays operational until the inside of the indoor unit is dry, this way your unit will stay clean and healthy.



Quiet

The axial fan innovative design and the strengthened motor bracket will minimize the vibrations and noise level outside. The integrated rear base and evaporator makes our indoor unit one of the quietest.



High Efficiency

Cutting edge chips for precise inverter control high efficiency electronic expansion valves for precise refrigerant flow, optimized cross fan designed for larger air flow volume.



Sleep Mode

Willis comfy sleep curve will maintain the ideal temperature until morning to ensure your comfort.



I Feel

The mini sensor in the remote controller senses the surrounding temperature. The air flow and set temperature of the indoor unit is adjusted accordingly for optimal comfort level. The integrated rear base and evaporator makes our indoor unit one of the quietest.



Certifications

All our products are



SINGLE-ZONE
VIKING

16 SEER INVERTER
9,000 BTU TO 24,000 BTU



- Auto Swing (vertical)
- Multiple Fan Speeds
- Dehumidify
- Pan Heater
- Heated Belt Around Compressor
- Intelligent Defrost
- Intelligent Pre-Heating
- Comfortable Sleep Mode
- LED Display
- Automatic Operation
- Self-diagnosis
- Memory Function
- Control Lock
- Fan Delay Function
- Timer

MODEL		WST 09MH16S	WST 12MH16S	WST 18MH16S	WST 24MH16S
Power Supply		208-230V, 60Hz, 1Ph	208-230V, 60Hz, 1Ph	208-230V, 60Hz, 1Ph	208-230V, 60Hz, 1Ph
Cooling Current	A	3.9	5.4	8.3	11.5
Rated Current Heating	A	5.3	6.9	11.8	13.0
System Performance					
Dehumidification	pt/h	1.69	1.69	3.8	4.5
Cooling Capacity	Btu/h	9,000 (3,800 - 11,500)	12,000 (3,300 - 12,500)	18,000 (4,500 - 21,000)	22,000 (6,400 - 24,000)
Heating Capacity	Btu/h	9,000 (3,300 - 11,500)	12,000 (3,400 - 12,500)	19,200 (4,000 - 23,000)	24,200 (4,100 - 26,600)
SEER/EER		16 / 10.2	16 / 9.8	16 / 10.6	16 / 10.0
HSPF/COP		8.5 / 3.4	8.5 / 3.1	8.5 / 2.3	9.5 / 2.53
Indoor Unit					
Airflow	CFM	330 / 282 / 194 / 141	341 / 294 / 206 / 153	471 / 400 / 330 / 271	589 / 441 / 306 / 206
Sound Pressure Level	dB(A)	43 / 38 / 32 / 26	44 / 39 / 33 / 28	48 / 43 / 38 / 34	49 / 43 / 39 / 34
Unit Dimensions	in.	30.3 x 11.1 x 7.9	30.3 x 11.1 x 7.9	34.0 x 12.0 x 8.5	40.1 x 12.4 x 8.7
Net/Gross Weight	lbs	19 / 25	20 / 27	24 / 31	33 / 44
Outdoor Unit					
Compressor Type		ROTARY	ROTARY	ROTARY	ROTARY
Sound Pressure Level	dB(A)	49	52	56	53
Unit Dimensions	in.	28.0 x 21.7 x 12.5	28.0 x 21.7 x 12.5	37.6 x 27.6 x 15.6	37.6 x 27.6 x 15.6
Net/Gross Weight	lbs	62 / 68	66 / 73	104 / 114	115 / 126
Refrigerant/Charge	oz.	R410A / 26.1	R410A / 35.3	R410A / 52.9	R410A / 54.7
Line Set Size (Liquid - Suction)	in.	1/4" - 3/8"	1/4" - 3/8"	1/4" - 1/2"	1/4" - 1/2"
Pre-Charge	ft	25	25	25	25
Max. Line Run	ft	50	50	82	82
Max. Elevation	ft	33	33	33	33
MCA	A	10	10	15	17
MOCP	A	15	15	25	25
Wire Size/# Wires	14AWG*4 Stranded, unshielded				

SINGLE-ZONE
COMMODORE

16-22 SEER INVERTER
9,000 BTU TO 36,000 BTU



- Auto Swing (vertical)
- Multiple Fan Speeds
- Low Voltage Start-up

- Intelligent Defrost
- Intelligent Pre-Heating
- Comfortable Sleep Mode
- LED Display
- Automatic Operation

- Memory Function
- Control Lock
- Fan Delay Function
- Timer



MODEL		WCM 09MH22S	WCM 12MH20S	WCM 18MH18S	WCM 24MH18S	WCM 36MH16S
Power Supply		115V, 60Hz	115V, 60Hz	208-230V, 60Hz	208-230V, 60Hz	208-230V, 60Hz
Cooling Current	A	7	11	6.7	7.9	15.9
Rated Current Heating	A	7.5	11.25	7.3	9.3	15.5
System Performance						
Dehumidification	pt/h	1.69	2.96	3.8	5.28	7.40
Cooling Capacity	Btu/h	9,000 (4,435 - 12,000)	12,000 (4,500 - 14,000)	18,000 (5,970 - 22,350)	21,400 (9,600 - 25,000)	33,600 (7,400 - 36,000)
Heating Capacity	Btu/h	9,500 (3,200 - 12,500)	13,000 (3,250 - 14,000)	19,800 (4,100 - 22,000)	23,000 (4,300 - 26,000)	34,600 (15,000 - 36,000)
SEER/EER		22 / 14.2	20 / 12.0	18 / 12.0	18 / 12.0	16 / 9.2
HSPF/COP		9.8 / 4.1	9.6 / 3.2	10.0 / 3.5	10.0 / 3.2	8.2 / 2.9
Indoor Unit						
Airflow	CFM	329/294/253/217	300/276/253/217	500/459/383/324	588/471/412/353	821/706/677
Sound Pressure Level	dB(A)	38/34/30/26	40/36/32/26	49/44/40/35	53/45/41/37	59/56/53
Unit Dimensions	inch	33.3 x 10.8 x 7.1	33.3 x 10.8 x 7.1	37.0 x 11.7 x 7.9	39.7 x 12.4 x 8.6	53.1 x 12.8 x 10
Net/Gross Weight	lbs	24 / 31	24 / 31	29 / 38	35 / 46	44 / 60
Outdoor Unit						
Compressor Type		ROTARY	ROTARY	ROTARY	ROTARY	ROTARY
Sound Pressure Level	dB(A)	53	55	56	58	65
Unit Dimensions	inch	33.4 x 21.3 x 12.6	33.4 x 21.3 x 12.6	37.6 x 27.6 x 15.6	38.6 x 31.1 x 16.8	38.6 x 31.1 x 16.8
Net/Gross Weight	lbs	79 / 90	88 / 97	99 / 110	132 / 146	154 / 163
Refrigerant	oz.	R410A	R410A	R410A	R410A	R410A
Line Set Size (Liquid - Suction)	in.	1/4" - 3/8"	1/4" - 3/8"	1/4" - 1/2"	1/4" - 5/8"	1/4" - 5/8"
Max. Line Run	ft	50	50	82	82	100
Max. Elevation	ft	33	33	33	33	33
MCA	A	22	23	13	16	24
MOCP	A	20	20	25	25	35
Wire Size/# Wires		14AWG*4 Stranded, unshielded				

WILLIS
SPECIALITIES
SINGLE ZONE
WITH
CONSOLE

21-19 SEER INVERTER
9,000 BTU TO 12,000 BTU



MODEL		WCS 09MH21S	WCS 12MH19S
Sound Pressure Level	dB(A)	40/38/36/33/30/26/25	43/40/38/37/35/32/27
Dehumidification	pt/h	1.69	2.96
Dimension W x H x D	in	20.12 x 15.59 x 0.95	20.12 x 15.59 x 0.95
Net/Gross Weight	Lbs	33.1	33.1
Air Flow (Min-Max)	m3/h	250 / 500	280 / 600
	CFM	147 / 294	164 / 353
Piping Connection	gas	in	3/8
	liquid	in	1/4

What is the "Willis Advantage"?

1. Access to one of the most comprehensive lines of mini-splits and multi-zones in North America.
2. The flexibility of dealing with a family owned supplier who cares about your needs. Flexible terms, flexible product offerings, flexible warranties, flexible stocking programs, flexible support programs all tailored to your needs
3. The strength of a company which is devoted to the wholesale distributor and the wholesale representative. Too many manufacturers just look out for themselves, and do not honor their commitments if it is inconvenient. Willis is different. Try us out and see what you think.
4. The strength of experience: Some of our staff members have been in the mini-split and VRF business segment since the beginning. They know the products, the manufacturers, and the needs of the market, and they bring that knowledge to you
5. Quality products by the biggest and most successful manufacturers in the world
6. Aggressive pricing

MULTI ZONE

OUTDOOR & INDOOR UNIT

MULTI ZONE OUTDOOR SERIE 2

18,000 - 56,000 BTU
16 SEER

MULTI ZONE INDOOR UNIT

- Wallmount
- Slimduct
- Cassette



What is the "Willis Advantage"?

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INDOOR UNIT MATCH

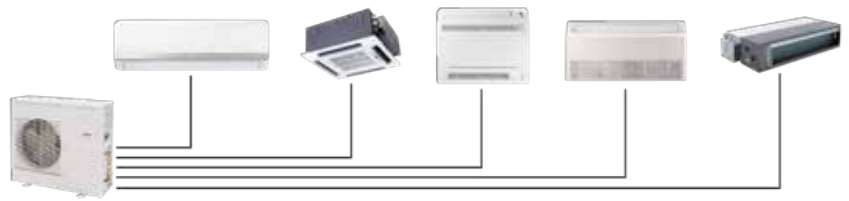
AVAILIBILITIES	MULTI ZONE SERIE 2	MULTI ZONE SERIE 3
WALLMOUNT	●	
SLIMDUCT	●	●
CASSETTE	●	●

**MULTI-ZONE
OUTDOOR
SERIE 2**

**MULTI-MIX
SUPER MULTI-MIX
18,000 - 56,000 BTU
16 SEER**



MULTI-MIX (MULTI PORTS)



SUPER MULTI-MIX (2-3 PORT DISTRIBUTION BOX)



MODELS Outdoor Unit			WMO 18MH16S	WMO 24MH16S	WMO 30MH16S	WMO 36MH16S	WMO 42MH16S	WMO 48MH16S	WMO56 MH16S
Number of ports			2 ports	3 ports	4 ports	4 ports	5 ports	Up to 8 units	Up to 9 units
Capacity	Cooling	Btu/h	18,000 (7,000-21,000)	26,000 (7,500-33,000)	29,000 (7,500-34,000)	34,000 (8,530-34,120)	41,000 (8,530-46,403)	48,000 (3,410-54,590)	53,000 (3,410-61,420)
	Heating	Btu/h	19,000 (8,530-22,600)	29,000 (7,500-35,000)	30,500 (7,500-36,000)	35,800 (10,662-40,944)	44,500 (10,662-47,768)	54,500 (4,090-58,000)	61,500 (4,090-63,120)
SEER			16	16	16	16	16	16	16
HSPF			8.2	8.2	8.2	8.2	8.2	8	8
Power Supply			208-230V, 60Hz, 1Ph	208-230V, 60Hz, 1Ph	208-230V, 60Hz, 1Ph	208-230V, 60Hz, 1Ph	208-230V, 60Hz, 1Ph	208-230V, 60Hz, 1Ph	208-230V, 60Hz, 1Ph
Power input	Cooling	W	1,650 (680-2,800)	3,050 (650-4,500)	3,450 (650-4,500)	4,300	4,400	5,000	5,600
	Heating	W	1,640 (680-2,800)	2,800 (980-3,950)	2,850 (980-3,950)	3,600	4,600	4,400	5,200
Rated current	Cooling	A	8.09	14.96	16.93	19.2	19.5	23	23
	Heating	A	8.05	13.74	13.98	15.81	20.5	23	23
Airflow	CFM		942/1,530	1,412/1,942	1,412/1,942	2,177	3,237	3,766	4,120
	m3/h		1,600/2,600	2,400/3,300	2,400/3,300	3,700	5,500	6,400	7,000
Operating range	Cooling	°C	-5 ~ 43	-5 ~ 43	-5 ~ 43	-5 ~ 48	-5 ~ 48	-15 ~ 48	-15 ~ 48
	Heating	°C	-15 ~ 24	-15 ~ 24	-15 ~ 24	-15 ~ 27	-15 ~ 27	-20 ~ 24	-20 ~ 24
Sound Pressure Level		dB(A)	56	59	59	59	58	57	57
Piping Connection	Gas	inch	2x3/8	3x3/8	4x3/8	2x3/8 & 1x1/2 & 1x5/8	2x3/8 & 2x1/2 & 1x5/8	5/8	5/8
	Liquid	inch	2x1/4	3x1/4	4x1/4	3x1/4 & 1x3/8	4x1/4 & 1x3/8	3/8	3/8
Dimensions WxHxD		inch	35.4x23.5 x14.9	37.2x27.6 x15.6	37.2x27.6 x15.6	36.2x31.1 x16.8	40x43.4 x17.3	53.14x35.44 x13.39	53.14x35.44 x13.39
Net/Gross Weight		Lbs	94.8/105.8	134.5/145.5	136.7/147.7	152.6/165	225/247	255.74	255.74
Max. Total Distance		ft.	66	196	230	230	262	443	476
Max. Single Distance		ft.	33	66	66	66	82	180	180
Max Elevation		ft.	16	33	33	50	50	100	100
Pre-charge		ft.	25	25	25	25	25	25	25
MCA		A	13	20	26	28	29	30	30

MULTI-ZONE
INDOOR SYSTEM
WALLMOUNT

SERIE 2 ONLY
9,000 BTU TO 18,000 BTU
Easy Install



MODEL		WMI 09MH16S	WMI 12MH16S	WMI 18MH16S
Sound Pressure Level	dB(A)	41/37/35/26	42/38/36/28	46/44/40/35
Dehumidification	pt/h	1,27	2,96	3,8
Dimension W x H x D	in	33.3 x 10.8 x 7.1	33.3 x 10.8 x 7.1	37 x 11.7x 7.9
Net/Gross Weight	Lbs	22.1/27.6	22.1/27.6	28.7/35.3
Air Flow	CFM	218/330	218/341	324/500
Piping Connection	gas	in	3/8	1/2
	liquid	in	1/4	1/4

MULTI-ZONE
INDOOR SYSTEM
SLIMDUCT

SERIE 2 & 3
9,000 BTU TO 24,000 BTU
Powerful & Concealed



MODEL		WMDT24MH16S	WMDT24KCH21S
Sound Pressure Level	dB(A)	42/34	
Dehumidification	pt/h	5.28	
Dimension W x H x D	in	43.3 x 24.2 x 7.9	
Net/Gross Weight	Lbs	68/90	
Air Flow (Min-Max)	m3/h	1,000	
	CFM	589	
Piping Connection	gas	in	5/8
	liquid	in	3/8

MULTI-ZONE
INDOOR SYSTEM
CASSETTE

SERIE 2 & 3
12,000 BTU TO 24,000 BTU
Breeze Free Discharge


WILLIS
MULTI-ZONE



MODEL			WMCT12MH16S WMCT12KCH21S	WMCT18MH16S WMCT18KCH21S	WMCT24MH16S WMCT24KCH21S
Sound Pressure Level	dB(A)		42/46	42/46	35/39
Dehumidification	pt/h		2.96	3.80	5.28
Dimension W x H x D	body	in	22.4x9.1x22.4	22.4x9.1x22.4	33.1x9.5x33.1
	panel	in	25.6x2x25.6	25.6x2x25.6	37.4x2.4x37.4
Net/Gross Weight	Lbs		40/51	40/51	62/77
Air Flow		m3/h	600	600	1,180
		CFM	353	353	694
Piping Connection	gas	in	3/8	1/2	5/8
	liquid	in	1/4	1/4	3/8

MULTI-MIX COMBINATIONS

We propose many combinations according to your specific needs. You can find below all possible combinations for 18, 24, 30, 36 and 42 outdoor unit model.

The icon represents our Wallmount indoor unit but you can do combinations with our other multi-zone products: Console, Floor-ceiling, Slimduct and Cassette.

You can find on our website willisac.com the possible combinations for 48 and 56 outdoor unit model in Multi-Mix Combinations section.

Depending on the selected outdoor unit you can do several combinations between one to nine indoor unit.



One Unit



Two Units



Three Units



Four Units



Five Units

MULTI-MIX COMBINATIONS POSSIBILITIES

COMBINATIONS	WMO18MH16S WMO18KCH22S	WMO24MH16S WMO21KCH21S	WMO30MH16S WMO30KCH21S	WMO36MH16S WMO36KCH21S	WMO42MH16S WMO42KCH21S
09 + 09	●	●	●	●	●
09 + 12	●	●	●	●	●
09 + 18		●	●	●	●
09 + 24				●	●
12 + 12		●	●	●	●
12 + 18		●	●	●	●
12 + 24				●	●
18 + 18		●	●	●	●
18 + 24				●	●
24 + 24				●	●
09 + 09 + 09		●	●	●	●
09 + 09 + 12		●	●	●	●
09 + 09 + 18		●	●	●	●
09 + 09 + 24				●	●
09 + 12 + 12		●	●	●	●
09 + 12 + 18			●	●	●
09 + 12 + 24				●	●
09 + 18 + 18				●	●
09 + 18 + 24				●	●
09 + 24 + 24					●
12 + 12 + 12		●	●	●	●
12 + 12 + 18			●	●	●
12 + 12 + 24				●	●
18 + 18 + 18				●	●
18 + 18 + 24					●
09 + 09 + 09 + 09			●	●	●
09 + 09 + 09 + 12			●	●	●
09 + 09 + 09 + 18				●	●
09 + 09 + 09 + 24				●	●
09 + 09 + 12 + 12			●	●	●
09 + 09 + 12 + 18				●	●
09 + 09 + 18 + 18				●	●
09 + 12 + 12 + 12				●	●
09 + 12 + 12 + 18				●	●
09 + 12 + 12 + 24					●
09 + 12 + 18 + 18					●
09 + 18 + 18 + 18					●
12 + 12 + 12 + 12				●	●
12 + 12 + 12 + 18					●
12 + 12 + 12 + 24					●
12 + 12 + 18 + 18					●
09 + 09 + 09 + 09 + 09					●
09 + 09 + 09 + 09 + 12					●
09 + 09 + 09 + 09 + 18					●
09 + 09 + 09 + 09 + 24					●
09 + 09 + 09 + 12 + 12					●
09 + 09 + 09 + 12 + 18					●
09 + 09 + 09 + 18 + 18					●
09 + 09 + 12 + 12 + 12					●
09 + 09 + 12 + 12 + 18					●
09 + 12 + 12 + 12 + 12					●
09 + 12 + 12 + 12 + 18					●
12 + 12 + 12 + 12 + 12					●

1-to-1 Commercial Series



The Willis 1-to-1 Commercial Series of Air Conditioners was designed for applications where the requirements are greater and/or more complex than the typical residence. They offer great flexibility as you can mix and match from a variety of indoor unit types (floor, ceiling, cassette, or duct type) to best suit the architectural design. Installation is easier and less costly than conventional HVAC systems as no welding is required. The 1-to-1 Commercial Series is available in sizes ranging from 18k to 48k BTUs (1.5 to 4 tons) which are ideal for cooling, and heating, spaces from 130 Square feet up to 1075 square feet.

1-to-1 Commercial Inverter Series

Higher Efficiency & More Energy Saving

From the lowest temperature setting in cooling mode to the highest setting in heating mode, the 1-to-1 Commercial Series has been engineered for maximum efficiency system by adopting many energy saving technologies.

All DC Inverter Design

Both the indoor and outdoor units are designed with a high-efficiency DC brushless motor which is 30% more efficient compared with a conventional AC motor. As a result the entire system consumes 15% less energy under low operating frequency.



The system runs on a high-efficiency DC inverter compressor developed by Willis. The high-efficiency DC inverter compressor adopts 180° sine wave space-vector inverter driving technology providing extremely reliable and stable operation even in frequency as low as 10Hz.



1 Watt Standby Function

When in standby status, the power consumption of the entire system is only 1Watt.

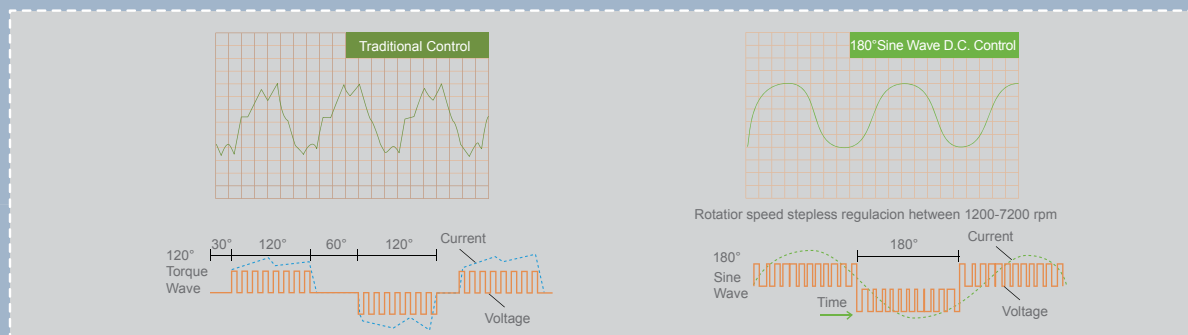
Based on an average of 6760 hours in a year and a power consumption in standby mode of a normal unit is approximately 10W, this equates to a reduction of 67.6KWhours per year.

I-demand Function

When the I-demand function is selected on the controller the output capacity of unit will be limited so as not to exceed 75% of the maximum rated power.

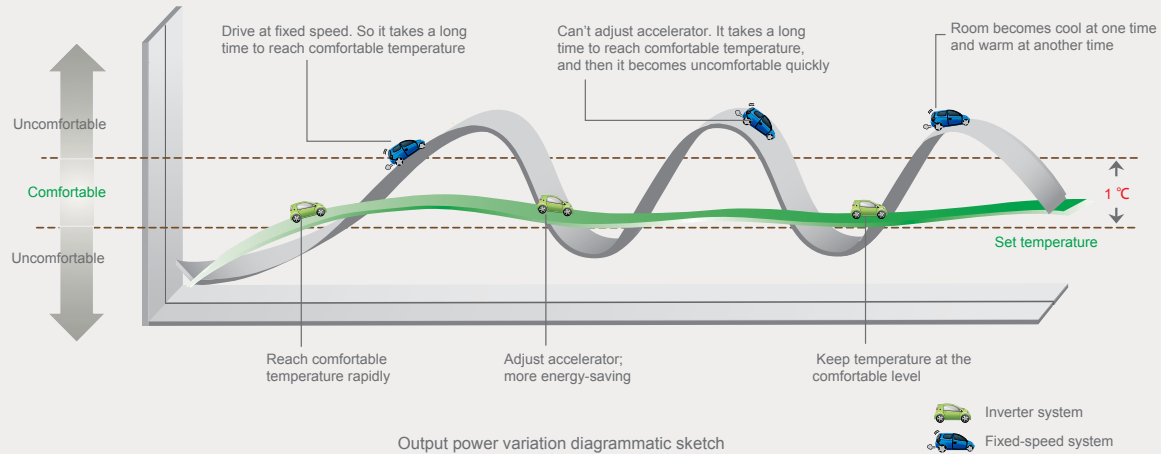
180° Sine Wave Technology

The DC inverter is equipped with 180° vector control ensuring the stable operation for compressor, and resulting in energy savings of up to 20% per year compared with the normal air conditioner.



Precise Temperature Control Technology

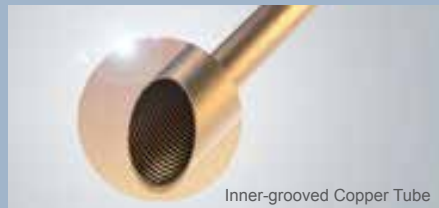
The Inverter technology controls the output by delivering only the required capacity according to the load variation from 10% to 120% while maintaining the room temperature within 2°F of the temperature setting.



High Efficiency Heat Exchanger

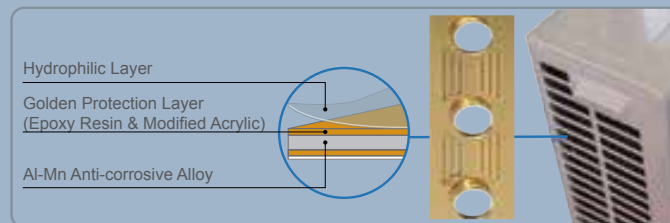
■ Inner grooved High Efficiency Copper Tube

The inner grooved design increases the heat exchange area of the refrigerant and enhances heat exchanging performance.



■ The slit type fin enlarges heat exchange area significantly. Compared to the normal fin, the heat exchange efficiency of the slit type fin is improved by 5%.

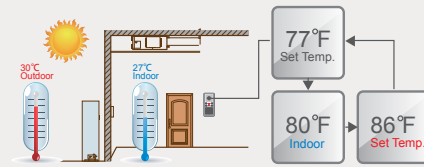
The primary material used in the Golden Fin is Al-Mn (Aluminum-Manganese) an anti-rust alloy which is coated with a special Golden Protection Layer (Components: Epoxy Resin & Modified Acrylic, Silicon free). In salt spray testing, the anti-corrosive performance was found to be 200% to 300% higher than the standard Blue Fin.



More Convenient & More Comfortable

Multiple Temperature Displays

Whether using the wired, or wireless remote control, you can freely switch between temperature displays opting for either; Indoor set temperature, indoor ambient temperature, or outdoor ambient temperature.



Setting Function of Indoor Dual Temperature Sensors

For better control of the indoor ambient temperature and improved comfort, both the indoor unit and the wired controller are equipped with a temperature sensor. The system will automatically operate based on the temperature sensor selected by the user.



Cold Air Prevention Function

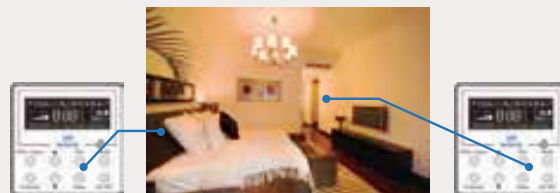
When the unit just starts heating or the outdoor unit just finishes defrosting the temperature of indoor evaporator can be quite low. If the indoor fan operates in this case, cold air will blow out. To improve user comfort when heating in winter the cold air prevention function is enabled so that the unit will not blow out air until it's warm.

Power-off Memory Function

When the power-off memory function is activated the unit will automatically operate at the previous setting mode when power returns after a power failure.

Control of Dual Wired Controllers

For added convenience you can have two wall mounted controllers in separate locations both controlling the same indoor unit/zone.



I-FEEL Function

The I-FEEL function utilizes a mini sensor in the remote controller to sense its surrounding temperature. The indoor unit can therefore adjust the air flow volume and temperature accordingly to provide maximum comfort precisely in the portion of the room where you are sitting.



Water Leak Protection (Optional)

To prevent water leakage if, for any reason, the water does not drain out properly this function will be activated automatically and the unit will shut down when the volume of water in the indoor unit reaches a certain level.

Optional Water Pump

The system can be equipped with water pump to solve the inconvenient drainage problem in some projects. If the water cannot drain out properly, the water pump will start drainage automatically to eliminate potential water leakage.

Air Handling Function

Variety of Optional Health Filters



Photocatalytic Filter

This filter is able to completely oxidize and degrade organic contaminants. It can effectively eliminate 99.9% of bacteria, viruses and unpleasant smell.



Catechin Filter

Catechin is extracted from green tea. It can effectively eliminate 95% of carcinogenic agents, such as staphylococcus, streptococcus, salmonella, etc.



Activated Carbon Filter

Activated carbon can effectively adsorb smoke, pet odors, and other unpleasant odors.



Silver Ion Filter

Silver ion is able to sterilize 99% of bacteria by suppressing proliferation of mold and bacteria and preventing the causes of unpleasant odors.

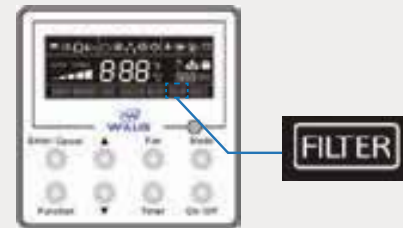


Multi-function Filter

You can combine any 3 filters from 6 different types available including; acarobacterium filter, silver ion filter, catechin filter, chitin filter, formaldehyde beater filter and vitamin C filter, to meet a variety of needs simultaneously.

Filter Cleaning Reminder Function

Filter cleaning reminder function can be set according to the cleaning cycle determined by the user. It is important that the air return inlet's filter be cleaned regularly but since every operating environment is different the cleaning cycle may vary.

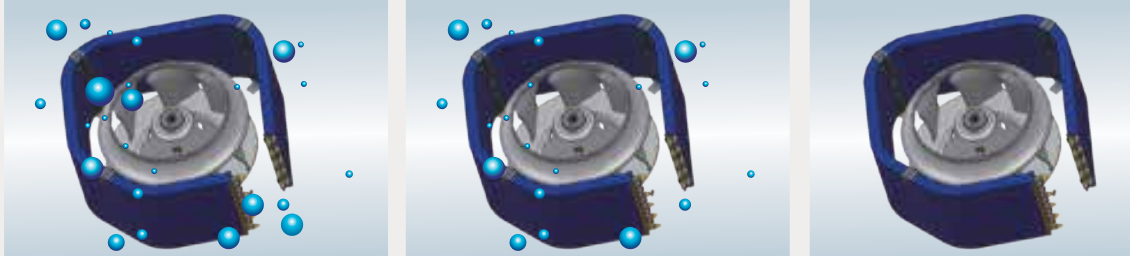


Pollution level and corresponding time

Pollution level	Accumulated operating time(hour)	Pollution level	Accumulated operating time(hour)	Pollution level	Accumulated operating time(hour)
10	5500	20	1400	30	100
11	6000	21	1800	31	200
12	6500	22	2200	32	300
13	7000	23	2600	33	400
14	7500	24	3000	34	500
15	8000	25	3400	35	600
16	8500	26	3800	36	700
17	9000	27	4200	37	800
18	9500	28	4600	38	900
19	10000	29	5000	39	1000

Auto Clean(X-FAN)

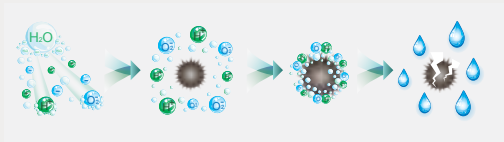
Standing water in the indoor unit can be the cause of unhealthy bacteria. The design of the 1-to-1 Commercial Series system eliminates water creating a healthier environment.



Cold Plasma Health Function (Optional)

■ The cold plasma generator provides an effective sterilization, killing more than 90% of bacteria. It also removes odor while improving the air quality by adding more negative oxygen ions.

■ All of the indoor units can be equipped with a cold plasma generator option.



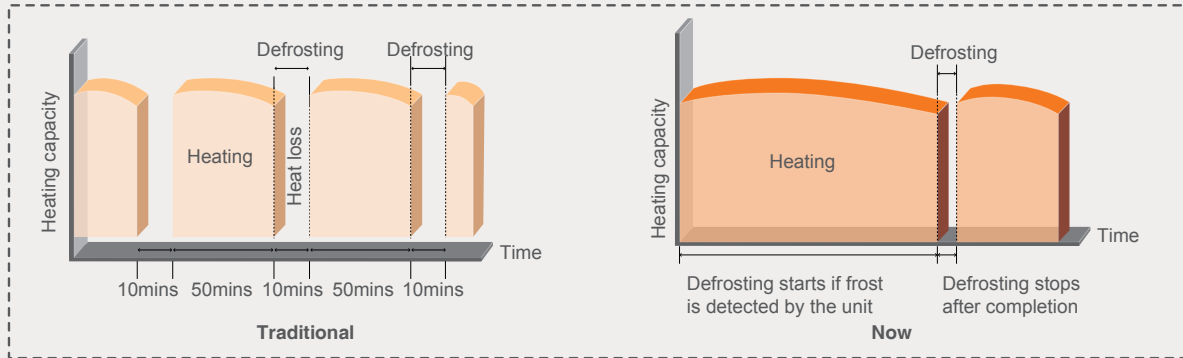
Low Temperature Drying Function

■ In special circumstances of low temperature with high humidity the normal drying effect of air conditioning is not favorable. The 1-to-1 Commercial Series system can dehumidify the air even when the temperature is set to as low as 53°F for added comfort and stability.

Reliable System Design

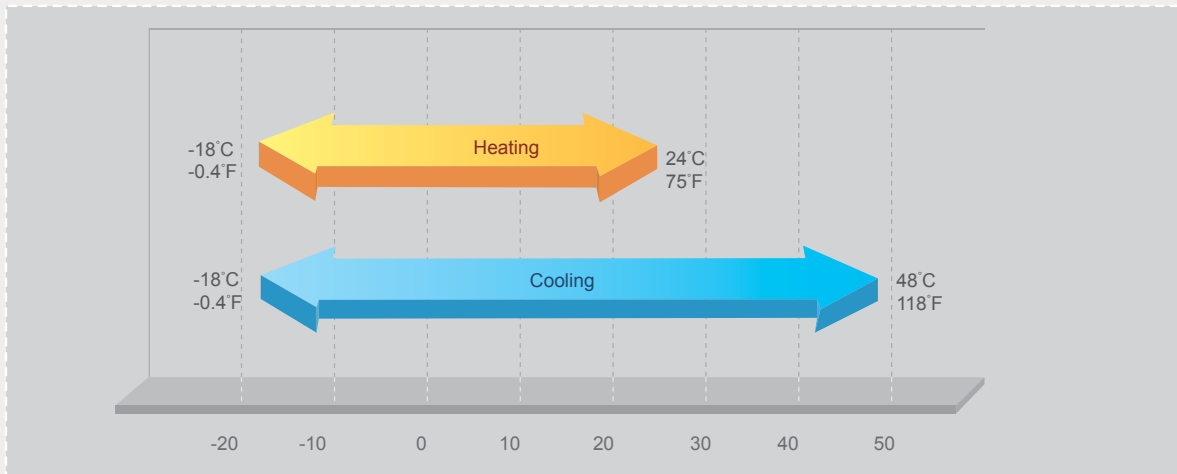
Intelligent Defrosting

Whereas traditional systems stop heating while they undergo a scheduled defrost cycle, the 1-to-1 Commercial Series is designed to only enter the defrost mode when it is necessary, thereby saving energy and increasing comfort.



Wide Ambient Operation Range

The unit is suitable for both low ambient temperature area and standard ambient temperature area.



Anti-Freezing Protection

When the system detects frost on the outdoor condenser unit, the compressor will automatically shut down stop for protection.

45°F Heating Function

The 45 °F heating function is mainly applied in winter when the house is vacant. When this function is activated the unit will maintain a stable temperature of 45 °F to prevent power wastage and harm to some housewares caused by freezing due to low indoor temperatures.

More Intelligent Control

Remote Controller



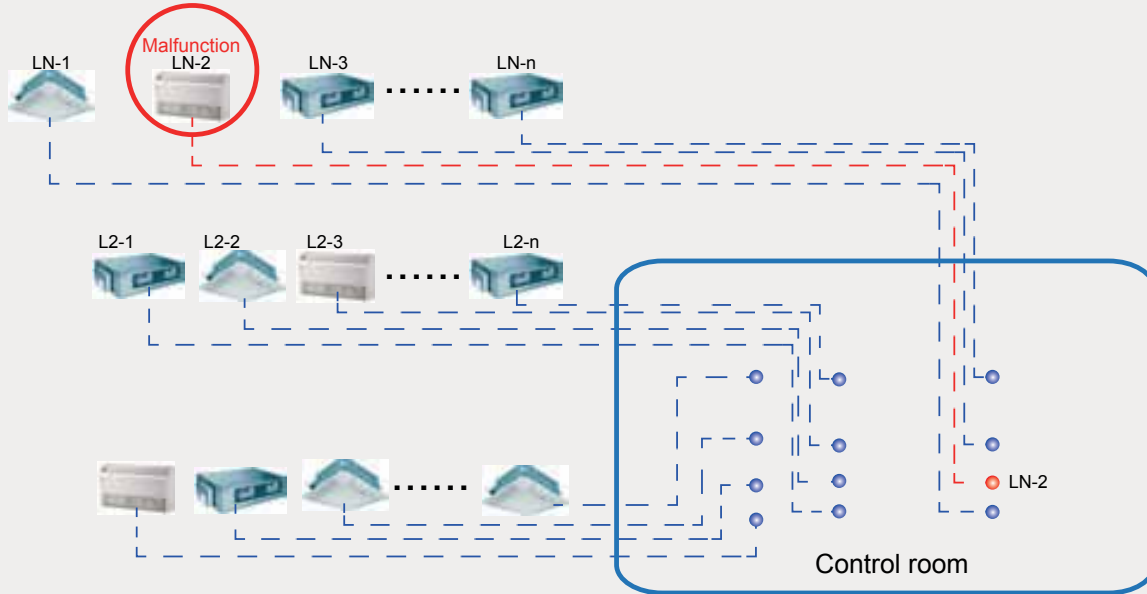
Centralized Control Function

The indoor unit is equipped with an interface that can be managed by the smart zone controller. This wireless device can control a maximum of 16 indoor units and can manage the power on/off, mode, fan speed, temperature setting and timer of one single unit, or a whole group of units.



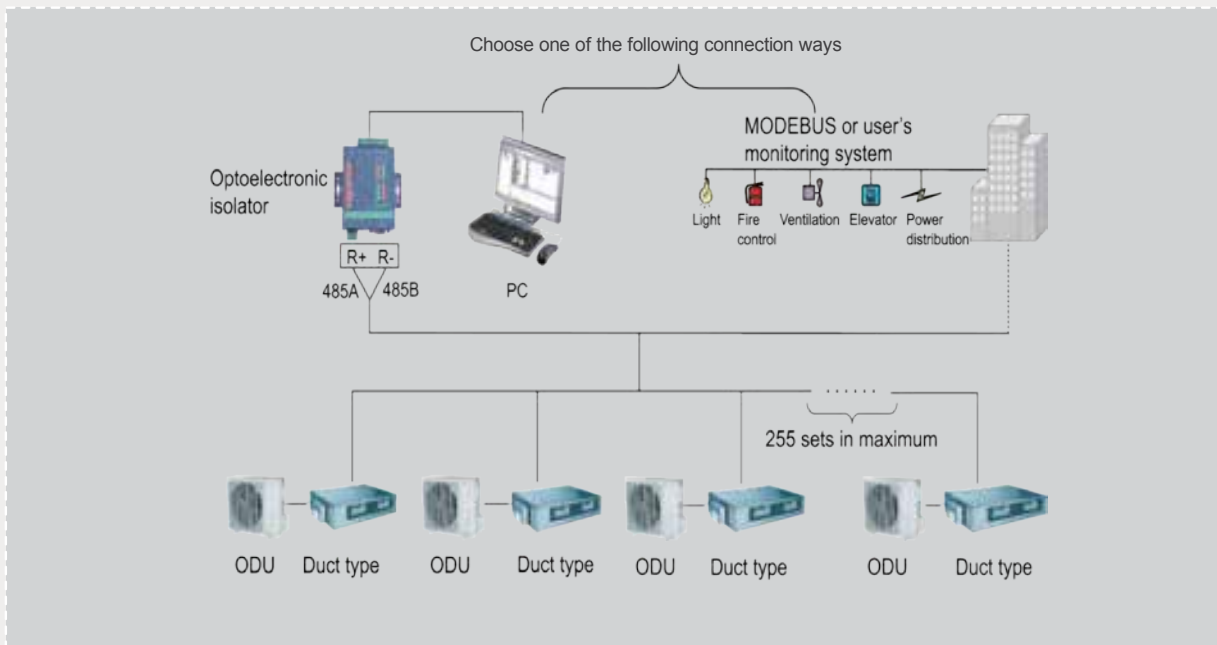
Malfunction Relay Warning Alert

The system can be configured with a warning apparatus. When a certain unit stops due to malfunction, the warning apparatus will give out an alert to notify the administrator that maintenance is required.



Building Management System Interface (MODBUS Protocol) and Long-distance Monitoring

The system comes with a built in MODBUS interface. (If the unit is to be connected with a building management system, please consult your dealer for the development of MODBUS protocol). When activated, the system operation information will be sent to the building management system in order to control and monitor the units.



Non-polar Communication Wire

For the communication between the indoor unit PCB and outdoor unit PCB, and the communication between wired controller and indoor mainboard, you can use non-polar communication wire. General 2-core power cord or telephone wire can be used as the communication wire, instead of the shielded twisted pair wire.



Before



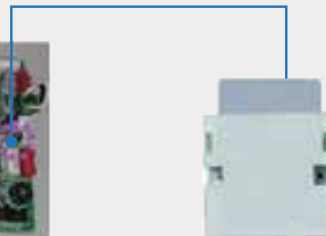
Now

Optional Card Control Function

For certain projects, like hotels, there is an optional card control function. When this function is set and gate control accessories are connected, the gate will control unit on/off according to the card status. When the card is removed the unit automatically turns to standby status. When the card is re-inserted the system will resume operating according to the previous settings.



Indoor unit mainboard



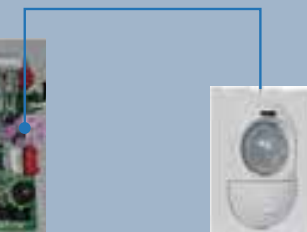
Gate control accessory

Optional Human Induction Function

If required, the human induction module is an optional accessory. When this function is activated and human induction module is connected, the unit will operate according to the previous setting if the unit detects that there is someone in the room. If the unit has been operating for a while and detects that there is nobody in the room, the unit will turn off automatically and enter standby mode.



Indoor unit mainboard

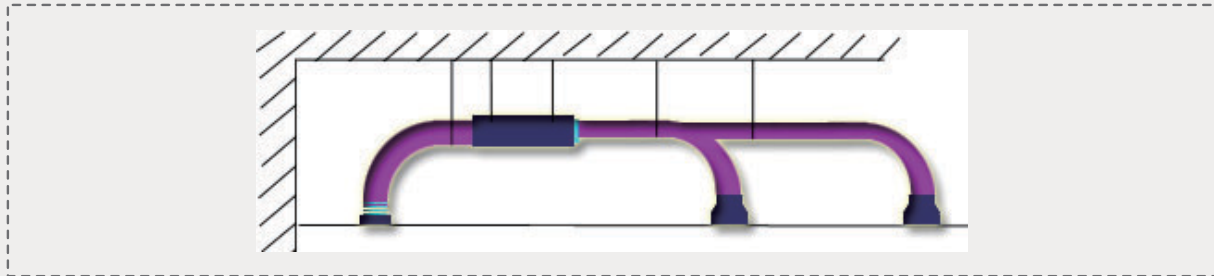


Human induction module

Indoor Unit Features

Duct Type Indoor Unit

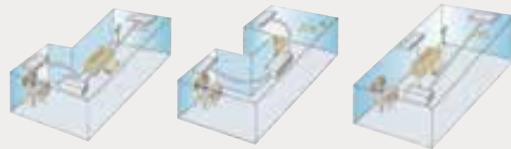
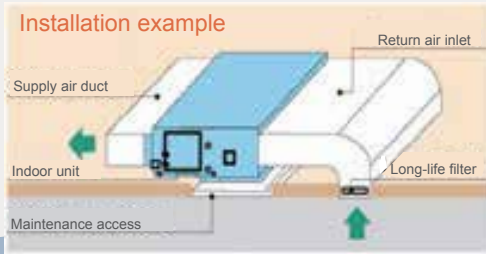
- The static pressure can be adjusted within a range of 0 to 150Pa depending on various installation requirements.



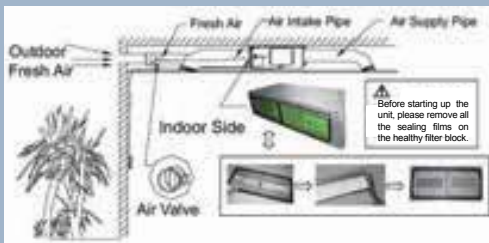
- **Adjustable Fan Speed**
There are three fan speeds available (high, medium and low) on the indoor units to meet different requirements.

- **Highly Flexible Installation**
Highly flexible installation is possible to satisfy various needs.

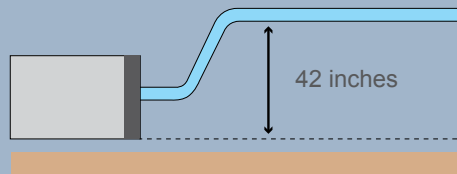
Flexible and easy to install in L shape, U shape and large rooms.



- **Fresh Air Control (optional)**



- **Drain Pump Lift (optional)**



Cassette Type

■ 3-dimensional Blade for quiet operation

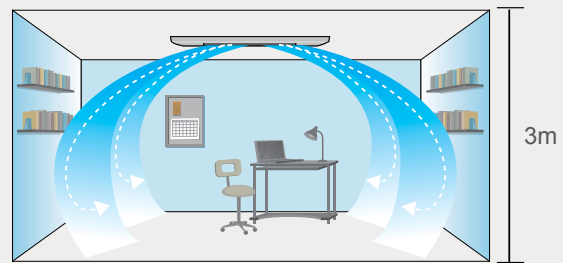


■ High Ceiling Applications

The 24K to 48K units are applicable for ceiling heights of up to 15 feet

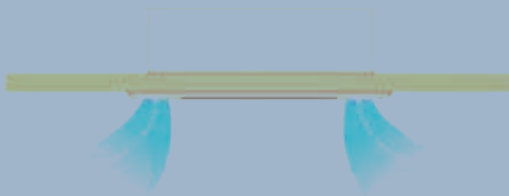


Units below 24K are applicable for ceiling heights below 10 feet.



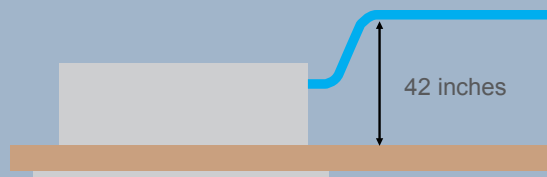
■ Comfortable Airflow

Air can be blown in different directions with 30 to 60 degrees of swing angle for even temperature distribution.



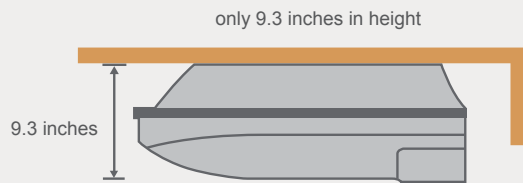
■ Water Drainage Pump

The standard drain pump has an increased lift of 42 inches.



Floor or Ceiling Type Indoor Unit

■ Compact Design



■ Wide Discharge Range

The air supply range is efficiently wider due to the cross directional sweep motion.



■ Easy Maintenance

Convenient disassembly and maintenance are possible thanks to the unique design.

■ Microcomputer Control

All of the control functions are controlled by a microcomputer which not only shows all running modes and temperatures but also has a malfunction diagnosis and data search function.

■ Flexible Installation

These indoor units can be installed on either the ceiling or the floor.



Ceiling Type



Floor Standing Type

Product Lineup

Model	Outdoor unit			LCO18KCH16S	
	Indoor unit			Duct LCD18KCH16S	Cassette LCC18KCH16S
Capacity	Cooling		BTU/h	17100	17100
	Heating		BTU/h	18800	18400
SEER / HSPF			Btu/h.W	16.00/9.50	16.00/9.00
Power supply			Ph/V/Hz	208/230-60-1	208/230-60-1
Power input	Cooling		kW	1.55	1.70
	Heating		kW	1.65	1.80
Current Input	Cooling		A	7.93	8.70
	Heating		A	8.44	9.21
Refrigerant charge volume			kg/Oz	1.4/49.4	1.4/49.4
Indoor Unit	Air Pressure Level		CFM	585	445
			m ³ /h	1000	760
	ESP	Rated	Pa	25	-
		Range	Pa	0-30	-
	Sound pressure level(H/M/L)		dB(A)	39/36/28	46/44/37
	Dimension (W×D×H)	Outline	inch	40.8×28.4×10.5	26.2×23.5×9.4
		Package	inch	44.2×31.4×12.7	30.4×28.9×11.8
Net weight/Gross weight		Lbs	72.8/83.8	44.1/52.9	
Panel	Dimension (W×D×H)	Outline	inch	-	26.4×26.4×2.0
		Package	inch	-	30.0×30.0×4.1
	Net weight/Gross weight		Lbs	-	7.7/11.0
Outdoor Unit	Sound pressure level(H/M/L)		dB(A)	-	56/—/—
	Dimension (W×D×H)	Outline	inch	-	37.6×15.6×27.6
		Package	inch	-	40.5×18.0×29.5
	Net weight/Gross weight		Lbs	-	105.8/114.7
Connecting pipe diameter	Outdoor diameter	Gas	inch(mm)		1/2
		Liquid	inch(mm)		1/4
	Max. distance	Height/Length	m		
Loading quantity (within panel)	40'GP		set	93	95
	40'HQ		set	95	105

Model	Outdoor unit			LCO24KCH16S	
	Indoor unit			Duct LCD24KCH16S	Cassette LCC24KCH16S
Capacity	Cooling		BTU/h	23800	23800
	Heating		BTU/h	27200	27200
SEER / HSPF			Btu/h.W	16.00/10.00	18.00/10.00
Power supply			Ph/V/Hz	208/230-60-1	208/230-60-1
Power input	Cooling		kW	2.23	2.23
	Heating		kW	2.36	2.36
Current Input	Cooling		A	11.41	11.41
	Heating		A	12.07	12.07
Refrigerant charge volume			kg/Oz	2.2/77.6	2.2/77.6
Indoor Unit	Air Pressure Level		CFM	820	765
			m ³ /h	1400	1300
	ESP	Rated	Pa	25	-
		Range	Pa	0-75	-
	Sound pressure level(H/M/L)		dB(A)	46/44/40	46/42/38
	Dimension (W×D×H)	Outline	inch	50.4×22.0×10.6	36.1×33.1×9.4
		Package	inch	53.1×23.5×11.1	45.2×37.7×13.4
Net weight/Gross weight		Lbs	75.0/86.0	59.5/83.8	
Panel	Dimension (W×D×H)	Outline	inch	-	37.5×37.5×2.4
		Package	inch	-	40.7×40.9×5.2
	Net weight/Gross weight		Lbs	-	15.4/24.3
Outdoor Unit	Sound pressure level(H/M/L)		dB(A)	-	57/—/—
	Dimension (W×D×H)	Outline	inch	-	38.6×16.8×31.1
		Package	inch	-	42.6×19.2×33.7
	Net weight/Gross weight		Lbs	-	152.1/163.2
Connecting pipe diameter	Outdoor diameter	Gas	inch(mm)		5/8
		Liquid	inch(mm)		3/8
	Max. distance	Height/Length	m		
Loading quantity (within panel)	40'GP		set	70	56
	40'HQ		set	86	71

T1,60HZ,R410A

Model	Outdoor unit		LCO48KCH16S		
	Indoor unit		Duct	Cassette	
			LCD48KCH16S	LCC48KCH16S	
Capacity	Cooling	BTU/h	48000	48000	
	Heating	BTU/h	54500	54500	
SEER / HSPF		Btu/h.W	16.00/9.00	16.00/9.00	
Power supply		Ph/V/Hz	208/230-60-1	208/230-60-1	
Power input	Cooling	kW	5.15	5.50	
	Heating	kW	5.15	4.80	
Current Input	Cooling	A	26.34	28.13	
	Heating	A	26.34	24.55	
Refrigerant charge volume		kg/Oz	4.0/141.1	4.0/141.1	
Indoor Unit	Air Pressure Level		CFM	1470	1350
			m³/h	2500	2300
	ESP	Rated	Pa	50	-
		Range	Pa	0-125	-
	Sound pressure level(H/M/L)		dB(A)	53/49/45	52/47/41
	Dimension (W×D×H)	Outline	inch	52.8×29.5×13.8	35.8×35.8×11.4
		Package	inch	56.0×33.0×17.9	40.3×39.1×14.8
	Net weight/Gross weight		Lbs	123.5/143.3	94.8/110.3
Panel	Dimension (W×D×H)	Outline	inch	-	40.9×40.9×2.6
		Package	inch	-	448×44.8×5.5
	Net weight/Gross weight		Lbs	-	17.6/26.5
Outdoor Unit	Sound pressure level(H/M/L)		dB(A)	59/-/-	
	Dimension (W×D×H)	Outline	inch	37.7×16.2×53.1	
		Package	inch	41.1×17.8×59.1	
	Net weight/Gross weight		Lbs	231.5/253.6	
Connecting pipe diameter	Outdoor diameter	Gas	inch(mm)	5/8	
		Liquid	inch(mm)	3/8	
	Max. distance	Height/Length	m	15/70	
Loading quantity (within panel)	40'GP		set	38	43
	40'HQ		set	48	50

Control System Lineup

Product series			Duct type	Cassette type	
					
Controlling system					
Wireless remote controller	LC-YB1FA		○	●	
	LC-YV1FB7F		○	○	
	LC-YV1FB7		○	○	
	LC-YB1FAF		○	○	
	LC-YAM1F		○	○	
	LC-YAM1FF		○	○	
Wired controller	LC-Z4K351J		●	○	
	LC-Z4K351CJ		○	○	
Smart Zone Controller	LC-CE-50-24/E		○	○	

Note:
● means standard, ○ means optional.



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Trust the (G)

GLOSSARY

AIRFLOW

A measure of the amount of air per unit of time that passes through the device. It is measured either in CFM (cubic foot per minute) or m³/h (cubic meter per hour).

COP

COP stands for Coefficient of Performance. It is the ratio between the cooling or heating provided and the electrical power consumption.

EER

EER stands for Energy Efficiency Rating. It measures the ratio of output power to the input power.

REFRIGERANT

A refrigerant is the substance used to «move» the heat outside (or inside) of the room where the device is. We use the refrigerant R-410A as it is environment friendly and allows for the design of smaller and more efficient systems compared to R-22.

BTU/h

BTU or Btu is the British thermal unit. It is the amount of energy needed to cool or heat 1 pound of water by 1°F. The Btu/h is the unit of power used in HVAC. It corresponds to approximately 0.29 Watt.

DEHUMIDIFICATION

A measure of the amount of water per unit of time that the device is able to extract from the ambient air. It is measured in Pth.

HSPF

HSPF stands for Heating Seasonal Performance Factor. It is the ratio between the seasonal heating output and the electricity used.

SEER

SEER stands for Seasonal Energy Efficiency Ratio. It is the ratio between the seasonal cooling output and the electricity used.

SOUND PRESSURE LEVEL

Sound Pressure is the force of a sound on a surface perpendicular to its direction. It is measured in Pa (Pascal). The lowest sound pressure that can be heard is 2x10 Pa. The Sound Pressure Level is a comparison of the measured sound to the lowest sound pressure hearable. The units are expressed in terms of dB (decibel) which is not linear, that is, if the pressure is doubled, the Sound Pressure Level increases by 6dB. For example, the lowest hearable sound is 0dB while a quiet room is 40dB.

BlueDiamond®

condensate removal pumps

MicroBlue®

With no additional silencing accessories required, not only is the MicroBlue® a silent running pump but it can also be mounted in any orientation whilst operating both wet and dry continuously. The MicroBlue® is a dual voltage pump which uses proven thermistor level sensing technology to remove the risk of stuck or sunken float switches.



3 year warranty

Performance

Max flow	Max head	Max suction lift
1.3 gallons/hour	16 foot	6 foot

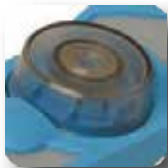
***Dual Voltage- 110V and 230V**

Sensing Options

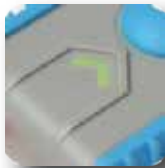
MicroBlue® pump available with the following option:

Reservoir sensor

X85-003 (HLA PACK)



Unique patented pumping principle

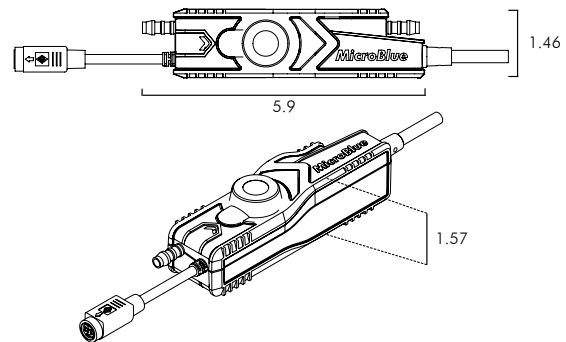


Indicator



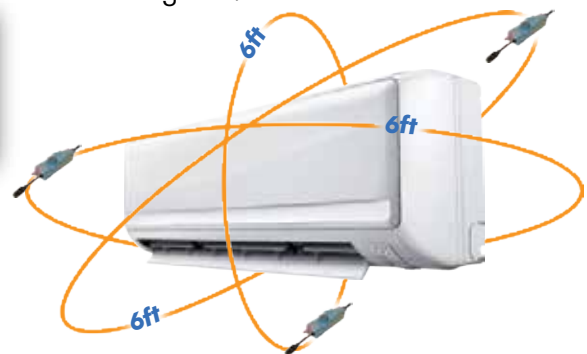
DIN plug

Dimensions (")



Installation Options

The MicroBlue® can be mounted in any orientation up to 6ft away from the air conditioning unit.



Trust the **(G)**

800.531.5967

info@globalthesource.com

www.globalthesource.com

Performance

- 3.7 g/hour flow
- 23 ft head
- 16.5 ft suction lift
- quiet 21dB
- integral fail safe alarm



MaxiBlue™ uses the same advanced unique technology as the Blue Diamond range. Designed for high humidity environments it benefits from being a small powerful pump that is controlled by our patented sensing technology - only senses when water is present offering an energy efficient drainage solution.

With a higher performance the MaxiBlue™ is ideally suited for mid range air conditioning systems. Its exceptional reliability is backed by a multi year warranty and class leading performance/suction lift has led it to be installed in environments that are both demanding and expensive to access for maintenance.

Model	110v	208v - 230v	Max Current Draw	Hz
			115v 230v	
Reservoir	X87 - 711	X87 - 721	0.7A 0.035A	60

Manufactured by:
Charles Austen Pumps Ltd



Global the Source
 1648 Northlake Pass, Universal City, TX 78148
 Tel: 800.531.5967 Fax: 800.336.6890
 Email: info@globalthesource.com
 www.globalthesource.com

Trust the **(G)** **3** year Warranty

MaxiBlue™ options



Reservoir sensing with alarm contacts

Dimensions
 L x W x H
 3.5" x 1.42" x 1.59"

Optional Accessories



16ft Extension Cable



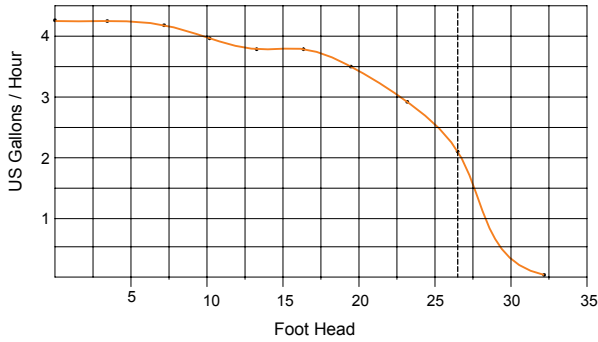
Mounting Feet



MultiTank

Performance/Technical

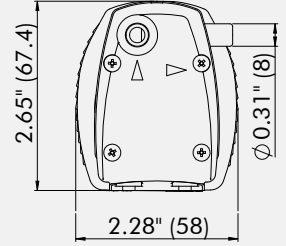
Plot of Flow Rate Against Head



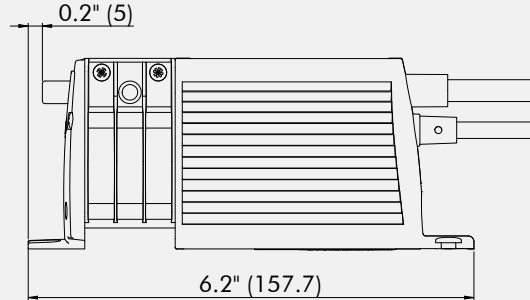
MaxiBlue™

Fit smart, fit fast, made to last

- Proven rotary diaphragm technology
- Flow rate up to 3.7 g/hr
- Dry suction lift up to 16.5 ft
- Self priming
- Energy efficient
- Exceptionally quiet (21dB) and no vibrations
- Powered by unique water sensors
- Thermally protected
- Integral overflow safety switch

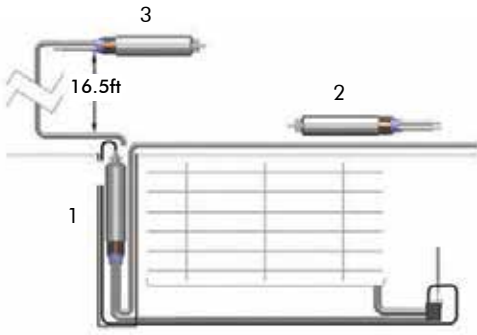


Specifying MaxiBlue™



dimensions
in inches
weight 1.5lb

Siting - Installation Possibilities



Reservoir Sensor (energy efficient) - Connect drip tray to reservoir in which the presence of condensate trips the hi-low solid state level sensors to switch pump on/off. Runs pump only when condensate produced.

Alarm shuts off A/C in fault mode, restarts when clear. Volt free, high level alarm is suitable to connect into City Multi with either CN4F or CN31 drain safety connector, Mr Slim P&M series.

- ① inside line hide ② above ceiling ③ remote

MaxiBlue™ pump is slim enough to fit into line hide or ducting, powerful enough for distant location and quiet enough for ceiling mounting. It's your choice. Commissioning is so easy, link pump to sensing option with single wire DIN plug and connect in/out tubing provided - plug and play, fit and forget!

Revolutionary pumping principle



Patented rotary diaphragm pump

Making all these advantages possible is our advanced rotary diaphragm technology. The condensate is drawn into the pump by vacuum then mechanically driven within a re-inforced elastomer diaphragm to the outlet under pressure. This system even tolerates suspended solids and light slurries and also happily runs dry.

MaxiBlue - Fit smart, fit fast, made to last

Global the Source

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Email: info@globalthesource.com
www.globalthesource.com

Trust the (G)

Manufactured by:
**Charles Austen
Pumps Ltd**



Too good to be true?

- 13.2 g/hour flow
- 66.5 ft head
- 23 ft suction lift/self priming
- ultra reliable – multi year warranty
- quiet 22dB
- slimline/lightweight 2.2lb
- integral failsafe alarm



Plenum Rated

MegaBlue™ has the performance to overcome installation difficulties – just plug and play, fit and forget.

Proven in service the revolutionary patented principle makes it inherently reliable and is backed by our multi year warranty.

You can limit service calls to stalled or clogged mini pumps.

With new MegaBlue™ there's no penalty up front but big savings on installation and in service beyond.

Keep in the truck to keep out of trouble.

Model	110v - 230v	Max Current Draw	Hz
Reservoir	X87 - 835	0.3A 0.15A	50-60

Global the Source

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www.globalthesource.com

Manufactured by:
**Charles Austen
Pumps Ltd**



3 year
Warranty

Trust the (G)

MegaBlue™ options



Reservoir sensing
with alarm contacts

Dimensions
L x W x H
2.76" x 1.97" x 2.20"

Optional Accessories



16ft Extension Cable



Mounting Feet



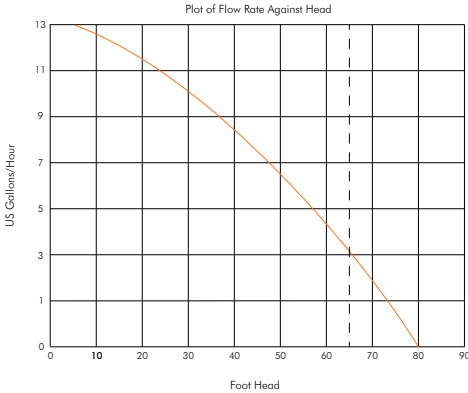
MultiTank



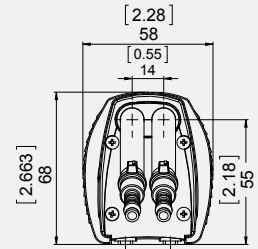
MegaBlue™

All the reliability with extra performance

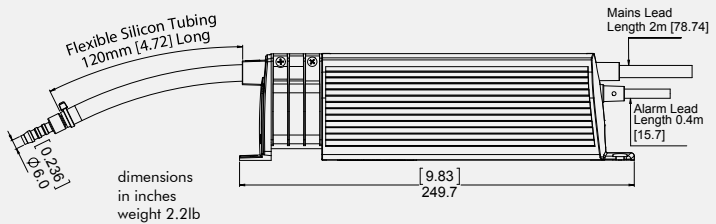
Performance/Technical



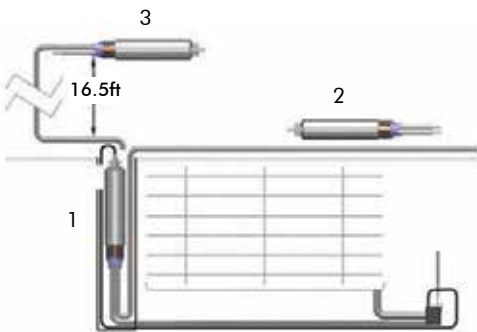
- Exceptional performance from a small package:-
- Flow rate up to 13.2 g/hr
- Max head 66.5 ft (pumps up 6 storeys!)
- Dry suction lift 23 ft - self priming
- Very quiet and low vibration
- Thermally protected pump



Specifying MegaBlue™



Siting - Installation Possibilities



Pump kit - Complete with in and out tubing and connections, anti vibration feet and mountings, integral alarm module and 3 wire power cord (6.5ft)

Reservoir Sensor (energy efficient) - Connect drip tray to reservoir in which the presence of condensate trips the hi-low solid state level sensors to switch pump on/off. Runs pump only when condensate produced.

Alarm shuts off A/C in fault mode, restarts when clear. Volt free, high level alarm is suitable to connect into City Multi with either CN4F or CN31 drain safety connector, Mr Slim P&M series.

- ① inside line hide
- ② above ceiling
- ③ remote

MegaBlue™ pump is slim enough to fit into line hide or ducting, powerful enough for distant location and quiet enough for ceiling mounting. It's your choice. Commissioning is so easy, link pump to sensing option with single wire DIN plug and connect in/out tubing provided - plug and play, fit and forget!

Revolutionary pumping principle



Patented rotary diaphragm pump.

Making all these advantages possible is our advanced rotary diaphragm technology. The condensate is drawn into the pump by vacuum then mechanically driven within a re-inforced elastomer diaphragm to the outlet under pressure. This system even tolerates suspended solids and light slurries and also happily runs dry.

MegaBlue - All the reliability with extra performance

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Manufactured by
Charles Austen Pumps Ltd





RELAYS & TRANSFORMERS

**RELAYS
TRANSFORMERS
FAN CENTERS**

Fan Relays

Global general purpose fan relays are value priced and UL recognized. The Global GFR series includes a universal mounting bracket and will replace the most popular products in use today.



340 Series



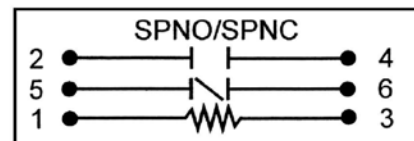
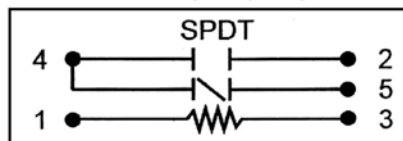
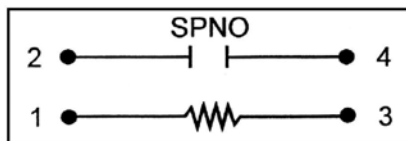
290, 360, 370, 380 Series

Fan Relays														
Global No.	Coil VAC	Contact Type	Contact Rating											
			Locked Rotor Inrush				Resistive				Full Load Inductive			
			120	250	277	480	120	250	277	480	120	250	277	480
GFR-290	24	SPNO	18	18	—	—	16	16	—	—	8	8	—	—
GFR-291	120													
GFR-292	208/240													
GFR-293	24	SPDT	60	48	42	—	18	18	18	—	12	8	7	—
GFR-294	120													
GFR-295	208/240													
GFR-340	24	DPDT	72	—	36	18	15	—	15	10	—	—	6	3
GFR-341	120													
GFR-342	208/240													
GFR-343	24	SPDT												
GFR-370	24	SPDT	60	48	42	—	18	18	18	—	12	8	7	—
GFR-372	120													
GFR-374	208/240													
GFR-377	277													
GFR-380	24	SPNO/SPNC	60	48	42	—	18	18	18	—	12	8	7	—
GFR-382	120													
GFR-384	208/240													

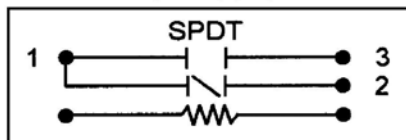
Case Qty 100

Wiring Diagrams

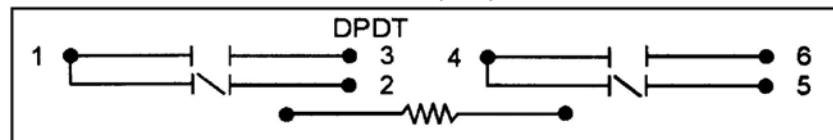
SERIES 290, 360, 370, 380



SERIES 343



SERIES 340, 341, 342



Fan Relay Cross Reference

Global No.	Coil VAC	Contacts	JARD	MARS	Packard	Supco	Diversitech
GFR-290	24	SPNO	JFR-290	90290	PR290Q	90290	D90-290Q
GFR-291	120	SPNO	JFR-291	90291	PR291Q	90291	D90-291Q
GFR-292	208/240	SPNO	JFR-292	90292	PR292Q	90292	D90-292Q
GFR-293	24	SPDT	JFR-293	90293	PR293Q	90293	D90-293Q
GFR-294	120	SPDT	JFR-294	90294	PR294Q	90294	D90-294Q
GFR-295	208/240	SPDT	JFR-295	90295	PR295Q	90295	D90-295Q
GFR-340	24	DPDT	JFR-340	90340	PR340	90340	D-90340
GFR-341	120	DPDT	JFR-341	90341	PR341	90341	D-90341
GFR-342	208/240	DPDT	JFR-342	90342	PR342	90342	D-90342
GFR-343	24	SPDT	JFR-343	90343	—	—	—
GFR-370	24	SPDT	JFR-370	90370	PR370	90370	D90-370
GFR-372	120	SPDT	JFR-372	90372	PR372	90372	D90-372
GFR-374	208/240	SPDT	JFR-374	90374	PR374	90374	D90-374
GFR-377	277	SPDT	JFR-377	—	—	—	—
GFR-380	24	SPNO/SPNC	JFR-380	90380	PR380	90380	D90-380
GFR-382	120	SPNO/SPNC	JFR-382	90382	PR382	90382	D90-382
GFR-384	208/240	SPNO/SPNC	JFR-384	90384	PR384	90384	D90-384

Potential Relays

The Global line of potential relays are superior in both price and performance. These relays assist in the control of air conditioning, heating or refrigeration system compressor motors.

Features and Benefits:

- 50A switching capability
- SPST-NC configurations
- .250" quick connect termination
- ISO 9001 certified
- UL, CUR SA11095
- Non-position sensitive design*
- Universal mounting— complete with screws



Potential Relays			
Global No.	Hold Voltage	Pick-Up Voltage	Drop Out Voltage
GPR-63	170	140-153	30-65
GPR-64	395	245-275	60-140
GPR-65	336	171-184	55-90
GPR-66	395	208-239	60-130
GPR-67	420	300-328	75-121
GPR-68	495	323-352	75-135
GPR-69	336	180-195	40-105
GPR-70	253	285-305	35-77
GPR-71	420	212-232	60-121

Case Qty 75

Potential Relay Cross Reference				
Global No.	JARD No.	MARS No.	MARS No.	General Electric Groups
GPR-63	JPR-63	19002	19163	2J, 2K, 2L, 2M, 5n, 7J, 7K, 7L, 7M, 7n, 8L, 8M, 8N
GPR-64	JPR-64	19003	19164	3A, 3B, 3AV, 3AU, 4A, 4B, 6A, 6B, 6AV, 10A, 10B, 10AU, 10A
GPR-65	JPR-65	19004	19165	3P, 3R, 3AP, 5P, 5R, 5S, 5T, 22S
GPR-66	JPR-66	19005	19166	3U, 3V, 3AT, 6U, 6V, 6W
GPR-67	JPR-67	19006	19167	3C, 3D, 3AA, 4C, 4D, 4BK, 6C, 6D, 6AA, 10C, 10D, 26A, 26B, 26C, 26D
GPR-68	JPR-68	19007	19168	3e, 3F, 3AB, 3AC, 4e, 4F, 4G, 6e, 6F, 6G, 10H, 10AB, 10AC, 26e, 26F, 26G, 26H, 27e, 27F, 27G
GPR-69	JPR-69	19008	19169	3S, 3T, 10S, 10T, 25S, 25T, 10AS
GPR-70	JPR-70	19009	19170	5B, 5C, 5D, 5AA, 8B, 8C, 8D
GPR-71	JPR-71	19010	19171	6TV, 6TW, 10V

Time Delay Relays— *Delay on Break*



Delay on Break			
Global/ICM No.	Global /ATC No.	Description	
ICM200B	—	3 Min, Spade Term, 18-30V	
ICM200FB	AC5053	3 Min, 2-Wire, 18-30V	
ICM201B	AC5005	5 Min, Spade Term, 18-30V	
ICM201FB	AC5055	5 Min, 2-Wire, 18-30V	
ICM203B	AC503	Adjustable, .03-10 Min, Spade, 18-240V	Adjustable, .01-5 Min, Spade, 18-240V
ICM203FB	—	.03-10 Min, 2-Wire, Adjustable, 18-24V	
ICM204B	—	3 Min, w/ Brownout, 18-30V	
ICM205B	—	5 Min, w/ Brownout, 18-30V	
ICM206B	—	10 Min, Adjustable w/ Brownout, 18-30V	

Time Delay Relays— *Delay on Make*



Delay on Make			
Global/ICM No.	Global/ATC No.	Description	
ICM100B	—	3 Min, Spade Term, 18-30V	
ICM100FB	ASC6003	3 Min, 2-Wire, 18-30V	
ICM101B	—	5 Min, Spade Term, 18-30V	
ICM101FB	—	5 Min, 2-Wire, 18-30V	
ICM102B	AC800	Adjustable, .03-10 Min, Spade, 18-240V	Adjustable, .02-8 Min, Spade, 18-240V
ICM102F	—	Adjustable, .03-5 Min, 2-Wire, 18-240V	
ICM103B	—	Adjustable, 10-1023 Sec, Precise Select, Spade, 18-240V	
ICM104B	—	Adjustable: 10-1000 Sec, Precise Digital, 1 N.O./ 1 N.C., Spade, 18-240V	
ICM105B	—	Adjustable for Compressor Staging, .03-5 Min, w/o Cooling Anticipator Circuit, 18-240V	
ICM175B	—	Adjustable for Low Ambient Startup, Bypass Timer, 10-1000 Sec, Spade, 18-240V	

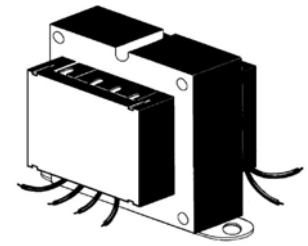
Foot Mount Transformers– Open Construction

- Safety agency approved
- Inherently limited design provides protection from short circuiting

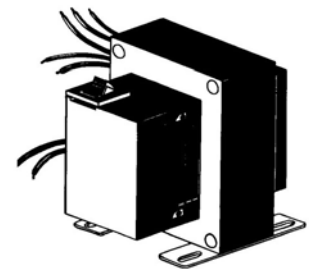
Open Construction, Wire Leads					
Global No.	Jard No.	Mars No.	VA	Primary VAC	Secondary VAC
GT2031F	2031F	44501	20	120/208/240	24
GT4011F	4011F	44502	40	120	24
GT4021F	4021F	44503	40	208/240	24
GT4031F	4031F	44504	40	120/208/240	24
GT4032F*	4032F	44505	40	120/208/240	2.5/12./24
GT40271F	40271F	44507	40	277	24
GT5031F	50531F	44508	50	120/208/240	24
GT5032F	5032F	44509	50	120/208/240	2.5/12./24
GT7531F*	7531F	44510	75	120/208/240	24

Case Qty 10

*In-line fuse protection



GT4031F



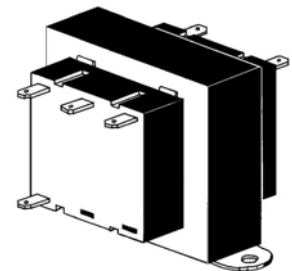
GT7541C

Foot Mount Transformers– Open Construction

- All models feature a UL recognized manual reset circuit breaker
- Safety agency approved

Closed Construction With Circuit Breaker					
Global No.	Jard No.	Mars No.	VA	Primary VAC	Secondary VAC
GT5041C	5041C	44511	50	120/208/240/480	24
GT6041C	6041C	44512	60	120/208/240/480	24
GT7541C	7541C	44513	75	120/208/240/480	24
GT7541STC	7541STC	44514	75	120/277/380/575	24
GT10041C	10041C	44514	100	120/208/240/480	24
GT10041STC	10041STC	44516	100	120/277/380/575	24

Case Qty 10



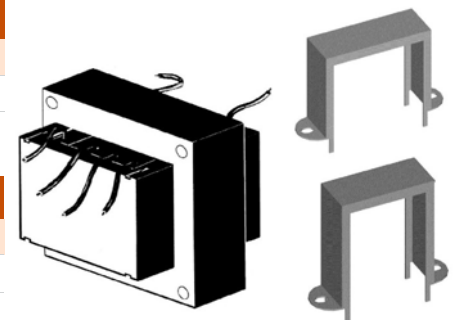
GT40310EM

Closed Construction, Quick Connect Terminals					
Global No.	Jard No.	Mars No.	VA	Primary VAC	Secondary VAC
GT40310EM	40310EM	44517	40	120/208/240	24

Case Qty 10

3 Way Mounting					
Global No.	Jard No.	Mars No.	VA	Primary VAC	Secondary VAC
*GT4031VM	4031VM	44518	40	120/208/240	24

*Includes 2 brackets

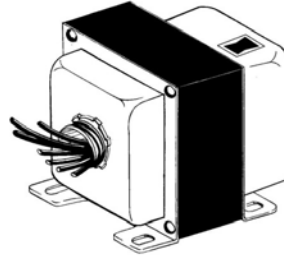


GT4031VM

Hub Mount Transformers

Available either in 50VA or 75 VA, these 2 versatile transformers replace Honeywell® AT150F and AT175F. All leads pass through the chase nipple.

- Model 5041MCB, 50 VA, Model 7541MCB, 75 VA
- Plate mount or foot mount
- Four inputs including 120/208/240/480 VAC
- UL Recognized



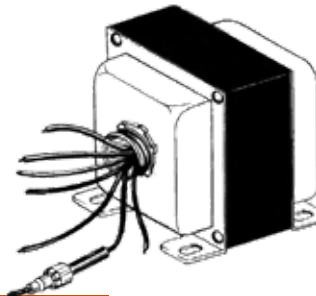
With Circuit Breakers and Multiple Inputs of 120/208/240/480 VAC

Global No.	Jard No.	Mars No.	VA	Primary VAC	Secondary VAC
GT5041MCB	5041MCB	44519	50	120/208/240/480	24
GT7541MCB	7541MCB	44520	75	120/208/240/480	24

Case Qty 10

Multi-Mount Transformers

- Optional 3-way mounting for maximum flexibility
- Safety agency approved
- Welded laminations for quiet operation



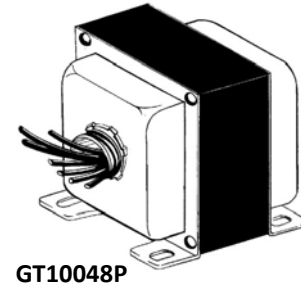
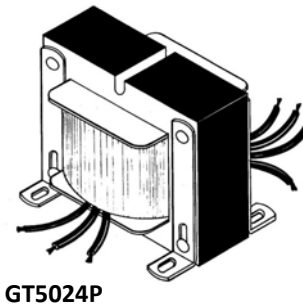
Closed Construction, 4" X 4" Plate

Global No.	Jard No.	Mars No.	VA	Primary VAC	Secondary VAC
GT4011M	4011M	44522	40	120	24
GT4021M	4021M	44523	40	208/240	24
GT4031M	4031M	44524	40	120/208/240	24
GT5031M	5031M	44525	50	120/208/240	24
GT5032M	5032M	44526	48	120/208/240	2.5/12/24
GT7541M	7541M	44527	75	120/208/240/480	24
GT7541STM	7541STM	44528	75	120/240/277/575	24

Case Qty 10

Power Transformers

- Several models with dual voltage output
- Welded laminations for quiet operation
- Conservative heat rise characteristics



Global No.	Description	Jard No.	Mars No.	VA	Primary VAC	Secondary VAC
GT5024P	Foot mount, wire leads	5024P	44536	50	208/240	120/24
GT7524P	Foot mount, wire leads	7524P	44538	75	208/240/480	120/24
GT10048P	Fully enclosed junction box ready	75481P	44539	100	480	120

Case Qty 10

Product Overview

CALCULATION OF VA REQUIREMENTS:

Transformer power is rated by the VA (Voltage-Ampere) capability. To determine the required transformer VA, multiply the transformer output voltage (VAC) by the current required (Amps.) to power the load.

VA=Volts x Amperes

To determine the maximum output current of a transformer, divide the transformer VA rating by the transformer output voltage (VAC).

Amperes=VA ÷ VAC

COLOR CODES FOR TRANSFORMER LEADS:

Primary Side:	Common	120	208	240	277	380	480	575
	White	Black	Red	Orange	Brown	Yellow	Violet	Gray
Secondary Side:	Common	2.5	12	24				
	Blue	Violet	Gray	yellow				



Transformer Cross Reference

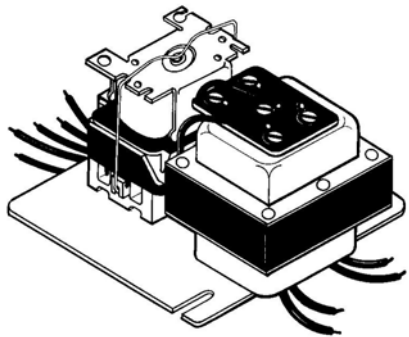
Global	Jard	Mars	Honeywell	Universal	White Rogers	Packard
GT2031F	2031F	50351	AT20A1123	UET114		PF42420
GT4011F	4011F	50352, TR405, 50201	AT40A1121 AT140B1206	—	90-T40F1	PF12440
GT4021F	4021F	50353, TR406, 50202	AT40A1139 AT140B1032	—	90-T40F2	PF22440
GT4031F	4031F	50354, 50217, TR123, 50203	AT40A1121 AT40A1139 AT140B1214	UET105 UET115	90-T40F3	PF42440
GT4032F	4032F	50355, 50356, TR401, 50205	—	UET101	—	PF32440
GT40241F	40241F	50356	—	—	—	—
GT40271F	40271F	50306	AT87A1189	—	—	PF27440
GT4031OEM	4031OEM	50362, 50363, T100E, 50213	—	—	—	—
GT5031F	5031F	50358	AT150B1146	—	90-T50F3	—
GT7531F	7531F	50324	—	UET175	—	PF52475F
GT5041C	5041C	50327, TC500C/B, 50227	—	—	90-T50C3	—
GT6041C	6041C	50316	—	UET160	90-T60C3	PF52460
GT7541C	7541C	50321, 50231, T750C/B	AT88A1005 AT88A1021 AT88A1047	UET179R UET175	90-T75C3	PF52475
GT7541STC	7541STC	—	—	—	—	—
GT10041C	10041C	50341, 50340	—	—	—	PF524100
GT10041STC	10041STC	—	—	—	—	—
GT2031M	2031M	50301	AT120A1004	—	—	—
GT4011M	4011M	50302	AT72D1683 AT140A1000	UET112	90-T40M1	PM12440
GT4031M	4031M	50303, 50304	AT40A1018 AT140A1026 AT72D1683 AT72D1691 AT140A1018	UET113	90-T40M3 90-T40M2	PM32440 PM42440
GT5031M	5031M	50314	AT87A1106 AT87A1007 AT87A1049 AT87A1056 AT150A1007	UET150	90-T50M3	PM44450
GT5032M	5032M	50333	—	UET111	—	PM43448
GT7541M	7541M	50320, 50322, 50324, 50326	AT88A1005 AT88A1021 AT88A1047 AT175A1008 AT175F1023	—	—	—
GT4011FC GT40118FC	4011FC 40118FC	24013/24020	R828TA1048	—	90-113	FC90113
GT4031FC	4031FC	24010/24022	R8285B1053	—	90-118	FC90119
GT5041MCB	—	5041MCB	—	—	—	—
GT7541MCB	—	7541MCB	—	—	—	—

Fan Centers

Fan Center controls provide convenient low voltage control of one and two speed fan motors and auxiliary circuits in heating, cooling or heating/cooling applications. Each Global fan center control is a reliable, compact unit consisting of a 24 volt control transformer and a plug-in switching relay mounted on a 4" square electrical junction box cover. All line voltage connections are made inside the box with color coded pre-stripped leads. Low voltage connections are made at a convenient terminal board mounted to the transformer.

Features and Benefits:

- Plug-in style relay for easy field replacement
- Pre-stripped, color coded leads simplify wiring
- Combination screw/solder terminals for low voltage wiring
- Standard double-throw relays handle both one and two speed motors



Global No.	VA	Primary VAC	Secondary VAC	Contact Type	HP Rating
GT40118FC	40	120	24	DPDT	3/4
GT4031FC	40	208/240	24	DPDT	3/4

Case Qty 10



SPECIALTY PRODUCTS

**A/C LEAK FREEZE
CLEANERS & DEGREASERS
LA-CO PRODUCTS
TAPES & SEALANTS
WIRE NUTS
POWER CORDS
KLEENHANZ®
SQUEEGEE SUPREME**



A/C Leak Freeze

A/C Leak Freeze will stop leaks of refrigerant gas in HVACR air conditioning systems, refrigeration and appliances in homes and commercial buildings. A/C Leak Freeze is suspended until it mixes with the refrigerant. A/C Leak Freeze is activated by refrigerant escaping at the site of a leak — forming a chemical weld and sealing the leak. A/C Leak Freeze is compatible with all standard refrigerant gases. It's polymer-free, tested to be non-clogging to the A/C compressor and recovery unit — it's a permanent fix. A/C Leak Freeze with Magic Frost provides all the benefits of A/C Leak Freeze plus extends compressor life and reduces noise, improves A/C system lubrication and reduces friction. It cleans and revitalizes the A/C system while reducing energy consumption. A/C Leak Freeze with Magic Frost enhances the performance of older A/C systems.



Part No.	Description	Case Qty
Per Cartridge		
00277	.5 oz. A/C Leak Freeze—R	1
00280	1.5 oz. A/C Leak Freeze	1
00282	1.5 oz. A/C Leak Freeze w/ Magic Frost	1
00281	2 oz. A/C Leak Freeze	1
00283	2 oz. A/C Leak Freeze w/ Magic Frost	1
Clam Shell w/ Adapter		
00284	1.5 oz. A/C Leak Freeze	24
00286	1.5 oz. A/C Leak Freeze w/ Magic Frost	24
00285	2 oz. A/C Leak Freeze	24
00287	2 oz. A/C Leak Freeze w/ Magic Frost	24
Adapters		
00290	5/16" Adapter	5
00292	1/4" Adapter	5

Counter Display Includes:		
00280	1.5 oz. A/C Leak Freeze	5
00284	1.5 oz. A/C Leak Freeze w/ Adapter	3
00282	1.5 oz. A/C Leak Freeze w/ Magic Frost	6
00286	1.5 oz. A/C Leak Freeze w/ Magic Frost w/ Adapter	3
00292	1/4" Adapter	5

Floor Display Includes:		
00280	1.5 oz. A/C Leak Freeze	21
00284	1.5 oz. A/C Leak Freeze w/ Adapter	18
00282	1.5 oz. A/C Leak Freeze w/ Magic Frost	24
00286	1.5 oz. A/C Leak Freeze w/ Magic Frost w/ Adapter	18
00292	1/4" Adapter	15



Counter Display
Part No. 00289



Floor Display
Part No. 00298



La-Co Products

Part No.	Description	Case Qty
G32850	All Temp Leak Detect	24
G08910	Bic EZ Break Compound	24
G11511	Bloc-It 10 oz.	24
G11509	Cool Gel 1 qt.	12
G11575	Heat Seal Stik	12
G11577	Heat Seal Stik 3/8 oz.	12
G44072	Low Density Teflon Tape 1/2" X 250"	144
G79711	Pierce 12 oz.	24
G12219	Pipe Joint Stik	24
G12110	Pipe Tite 1/2 pt.	24
G11775	Plasto Joint Stik	144
G22107	Regular Flux Paste 1 lb.	24
G22101	Regular Flux Paste 2 oz.	48
G22104	Regular Flux Paste 4 oz.	48
G79706	Rust Buster Zoom Spout 4 oz.	24
G96023	Sharpie #15- Black	72
G22302	Silver Brazing Flux Paste	48
G42009	Slic-Tite Paste 4 oz.	24
G42019	Slic-Tite Paste 8 oz.	24
G41600	Slic-Tite Stik	24
G79704	Zoom Spout Oiler	24
G969820	Valve Action Paint Marker (white, yellow, red, blue, black, green)	48



Tapes

Tape, Permagum		
Part No.	Description	Case Qty
7500	Cork Tape, 1/8" X 2" X 30`	1
7501	Foam Tape, 1/8" X 2" X 30`	56
7502	Mastagum, 3/8" X 25`	1
7504	Mastagum, 2 lb. Slug	1



Power Cords

For multiple uses and suitable for a replacement power cord for air conditioners, refrigerators, freezers, microwaves.

Part No.	Description	Case Qty
8065	6' Pigtail, 115V, 90° Plug, 16 Gauge	50
8065S	6' Pigtail, 115V, Straight Plug, 16 Gauge	50
8066	3' Pigtail, 115V, 90° Plug, 16 Gauge	100
8067	6' Pigtail, 124V, 12 Gauge	25
L-2144	9' Extension Cord, 14 Gauge	15
L-2157	9' Extension Cord, 20A, 120V	—
L-2281	25' Extension Cord, 115V	—
L-2283	50' Extension Cord, 115V	—
L-2717	20' Extension Cord	—



Wire Nuts

Easy-Twist® Wire Connectors are well known for giving you more - in less twists, less labor, less time. Flame retardant UL 94V-2 thermoplastic shell provides excellent electrical insulation. Temperature rating 105°C (221°F), fixed, precise square wire spring provides secure gripping of conductors. Deep skirt entry provides protection from flashover and shorts. Sure-grip ribs improve gripping ability and comfort, compact design ensures proper installation – especially in tight spaces. Threaded funnel entry guides the wires into the connector easily, pre-twisting of wires is not necessary, 1,000 volt maximum in fixtures and signs.



Part No.	Description	Wire Range	Quantity
WN-1	Grey, 300V 22-14 AWG	max: 1 #14 w/1 #20 min: 2 #22	100/Box
WN-2	Blue, 300V 22-14 AWG	max: 3 #16 min: 2 #22	100/Box
WN-3	Orange, 600V max 20-14 AWG	max: 4 #16 w/1 #20 min: 1 #18 w/1 #20	100/Box
WN-4	Yellow, 600V max 22-10 AWG	max: 1 #10 w/2#14 w/1 #16 min: 3 #20	100/Box
WN-5	4 Pack, Orange/Yellow/Red/Blue	—	—
WN-6	Red, 600V max 22-8 AWG	max: 3 #10 min: 3 #18	100/Box
WN-1J	Grey, 300V 22-14 AWG	max: 1 #14 w/1 #20 min: 2 #22	300/Jar
WN-2J	Blue, 300 V 22-14 AWG	max: 3 #16 min: 2 #22	300/Jar
WN-3J	Orange, 600V max 20-14 AWG	max: 4 #16 w/1 #20 min: 1 #18 w/1 #20	300/Jar
WN-4J	Yellow, 600V max 22-10 AWG	max: 1 #10 w/2#14 w/1 #16 min: 3 #20	200/Jar
WN-6J	Red, 600V max 22-8 AWG	max: 3 #10 min: 3 #18	350/Jar
WN-7J	Blue, 300 V 22-14 AWG	max: 3 #16 min: 2 #22	50/Jar



Kleenhanz®

Kleenhanz® is an alcohol free, superior germ and bacteria killing hand cleaning and sanitizing wipe that leave your hands feeling soft while providing persistent germ killing protection.

Features and Benefits:

- Alcohol-free hand cleaning and sanitizing wipe that kills 99.9% of germs and bacteria on contact
- Won't dry out hands or irritate cuts and scrapes
- Creates a physical barrier to germs
- Non-flammable and non-toxic
- Formula is over 99% water based



KH0001W

KH0015P

KH0030C

KH0070CR

KH0250P

KH0500C

Global No.	Description	# of Towelettes	Case Qty
KA0030C	Kleenzall™ Decreaser Wipes	30/Canister	12 Canisters
KA0075C	Kleenzall™ Decreaser Wipes	75/Canister	6 Canisters
KH0001W	Kleenhanz® Bag (individually wrapped)	100/Bag	10 Bags
KH0015P	Kleenhanz® On-The-Go Tray	15/Pack	48 Packs
KH0030C	Kleenhanz® Small Canister	30/Canister	24 Canisters
KH0070CR	Kleenhanz® Large Canister	70/Canister	12 Canisters
KH0250P	Kleenhanz® Towelette Dispenser Refill	250/Pack	12 Packs
KH0500C	Kleenhanz® 500ct. Pail	500/Pail	4 Pails

Kleenzall®

- Cleans and absorbs contaminants
- Uses a dual textured towel which works quickly to loosen and remove dirt and grease
- Uses VOC compliant formula
- Can be used to clean equipment
- No more smudged invoices
- Keep your tools in new working order
- Shake hands with your customers without them shying away



KA0030C

KA0075C



Squeegee Supreme

The Squeegee Supreme not only smoothes out tape on duct work, but cuts it as well.

Features and Benefits:

- 2 tools in one
- Retractable blade for safety
- Works with all duct tape
- Made in the USA



Global No.	Description	Case Qty
SS-4	Squeegee with blade; 4 pack	24 Packs



TOOLS

THE JOB KNOB SHORT-PRO TOOL

The Job Knob

Many acetylene tanks do not come with a mechanism on the valve to open them, only a metal shank. The Job Knob offers the user the ability to open and close the valve with ease without jeopardizing the integrity of the shank. The Job Knob also **magnetically** stays with the tank in use until the time of exchange, where it can easily slide onto the new tank valve. **Caution:** make sure valve stem is completely shut off and hoses are bled before storing tanks.

Features and Benefits:

- Open/close valve with ease
- No more stripping the stem
- Fits large and small tanks
- Stays on magnetically
- Removable- easily slides onto new tank valve
- 2 lb. draw from magnet
- Temperature range: -50/+400



Global No.	Description
Job Knob	Acetylene Tank Knob

Acetylene Safety Info:

These were copied and pasted directly from OSHA.gov and are open to interpretation.

1910.253(b)(5)(ii)(E)

Cylinders not having fixed hand wheels shall have keys, handles, or nonadjustable wrenches on valve stems while these cylinders are in service. In multiple cylinder installations only one key or handle is required for each manifold.

1910.253(b)(5)(ii)(Q)

A hammer or wrench shall not be used to open cylinder valves. If valves cannot be opened by hand, the supplier shall be notified.

1910.253(b)(5)(iii)(L)

Where a special wrench is required it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel-gas flow can be quickly turned off in case of emergency. In the case of Mani folded or coupled cylinders at least one such wrench shall always be available for immediate use.

ALSO

Special Rules for the use of Acetylene Cylinders (provided courtesy of National Welders Supply Inc. <http://www.nwsc.com>)

1. Acetylene should never be used at a pressure exceeding 15 pounds per square inch.
2. Acetylene cylinders should be used and stored in an upright position to avoid possibility of drawing out acetone.
3. Keep sparks and flame away from Acetylene cylinders.
4. Never use Acetylene from cylinders through blowpipes or other devices equipped with shut off valves on the Acetylene supply connections, without reducing the pressure through a suitable regulator attached to the cylinder valve.
5. After removing valve cap, open valve for a moment to clear opening of dust or dirt particles.
6. After attaching regulator and before cylinder valve is opened, see that adjusting screw of the regulator is released. Always keep the Acetylene cylinder valve key or wrench on the cylinder while in use. Never open an Acetylene cylinder valve more than one full turn; then, in case of fire, the valve can be closed immediately.
7. Before regulator is removed from a cylinder, close the cylinder valve and release all gas from regulator.
8. Never attempt to transfer Acetylene from one cylinder to another nor to mix any other gas with it in the cylinder.
9. The wrench used for opening the cylinder valve should always be kept on the valve stem when cylinder is in use.
10. When returning empty cylinders, see that valves are closed to prevent evaporation of acetone.
11. Never, under any circumstances, attempt to refill an Acetylene cylinder.
12. Never test for Acetylene leaks with an open flame. Use an approved leak detector or solution.

Short-Pro Tool

Automatic reset circuitry used to quickly locate shorts in 24VAC circuits while protecting controls from damage.

Features and Benefits:

- Automatic resets when lead (short) is removed
- Saves time— no more running to the parts store for fuses
- Saves money— no more burned out fuses while troubleshooting
- Saves equipment— circuit board and/or transformer is protected from not having the right size fuse
- East to use— when light is on, the short exists; when light goes off, the short is fixed
- 12" leads with alligator clips
- One year warranty



Global No.	Description	Case Qty
GSPT	24V Circuit Tester	25



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