

Traffic Signal Housing

Approved
By: Jeff Rice
Date: 10/28/2020
El Paso County Planning & Community Development



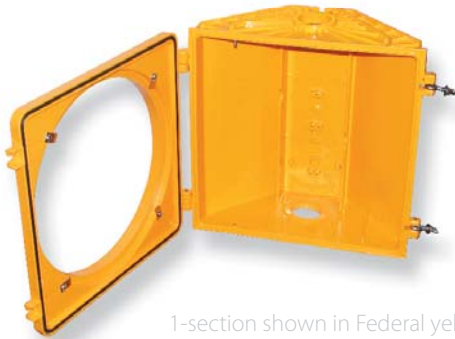
with revisions

8" Diameter

12" Diameter

Aluminum

Polycarbonate



1-section shown in Federal yellow



3-section shown in Federal yellow

Cabinets

Controllers

Signals

Signs

Software

Specialty

Overview

McCain's Traffic Signal Housings, available in eight and twelve inch varieties, provide a durable and low-maintenance housing for standard LED modules as well as McCain incandescent optical assemblies. Manufactured from polycarbonate or aluminum, the housings are compliant with multiple agency standards including the Institute of Transportation Engineers (ITE), Caltrans, and most state Departments of Transportation (DOTs). An industry leader in signal manufacturing and supply, McCain offers an extensive range of materials, configurations, and accessories, including backplates, visors, and signal assemblies, to meet your traffic signal requirements.

Benefits

- Modular design promotes flexible configuration options: one to five sections, vertical, horizontal, and doghouse (5-section cluster)
- Fabricated from aluminum or polycarbonate with 10% fiberglass reinforcement (available without fiberglass reinforcement)
- 8" or 12" diameter
- Weathertight doors
- Custom hardware and terminal block location available

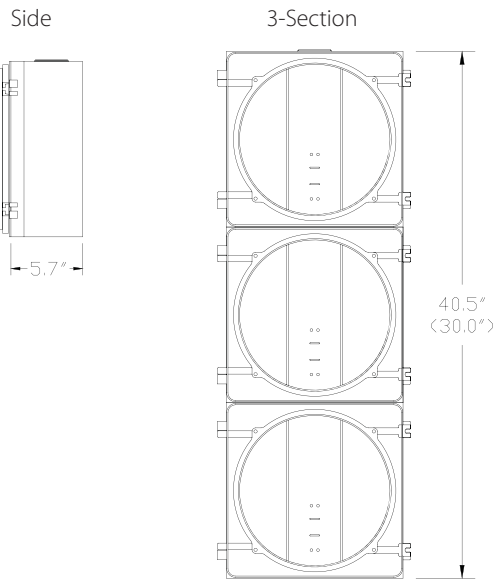
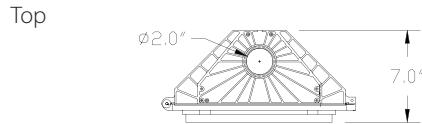
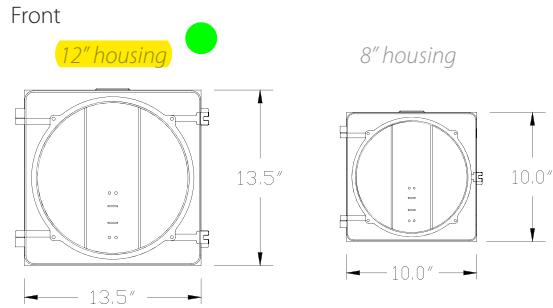
Product Description

The McCain Traffic Signal Housings are modular in design, allowing a multitude of signal housing configurations for standard LEDs as well as McCain incandescent optical assemblies.

Available in polycarbonate and aluminum, each section is injection molded or cast in one piece. Reinforcement ribs and serrated ports, both top and bottom, provide strength and positive locking with other sections and mounting hardware. Positive latching of doors is achieved with stainless steel eyebolts and wing nut assemblies, and the doors feature four metal threaded inserts for visor attachment. A positive seal is assured with an E.P.D.M. rubber gasket creating a moisture-free and dust-tight atmosphere.

Traffic Signal Housings are compatible with McCain backplates and visors, available in both aluminum and ABS. The top and bottom ports allow installation into many framework mounting assemblies.

Traffic Signal Housing



Dimensions are approximate and may vary.

3-section 12" housing shown as an example configuration. 3-section 8" housing height dimensions is listed in parentheses.

Depth for the 8" and 12" housings are approximately the same.

Minor differences between the 8" and 12" may not be shown.

Standard Features

- Modular sections, one-piece, injection molded or cast
- 72-tooth serrated boss and reinforcing ribs, top and bottom
- Brass threaded inserts for visor attachment (4)
- Housings have a cast boss for mounting a 5 or 6-position terminal block; one side of terminal block with fast-on terminals, the other side with screw terminals
- The words red, amber, and green are cast next to each boss to identify light source lead wires
- 5 or 6-position terminal block installed in center section (1) (alternate mounting is available)
- Stainless steel door roll pins and eye bolt/wing nut assemblies
- Integral lugs on the housing and doors with stainless steel roll pins provide effective door hinges
- Weathertight E.P.D.M. rubber door gasket
- Aluminum and polycarbonate, and 8" and 12" housings can be mixed in one signal head

General Specifications

Dimensions:
(1-section) 8": 10.0" H x 10.0" W x 7.0" D
12": 13.5" H x 13.5" W x 7.0" D

Material: Polycarbonate: Ultraviolet and heat stabilized, flame retardant, permanently colored, 10% fiber-glass reinforcement
Aluminum: Type 360, reduced corrosion, increased powder coat adhesion

Finish(es): Polycarbonate: Colored resins integral to housing
Aluminum: Powder coated
Color(s): Federal yellow, signal green, black, or custom colors

Mounting: 2.0" hole top and bottom fits 1.5" NPT fittings

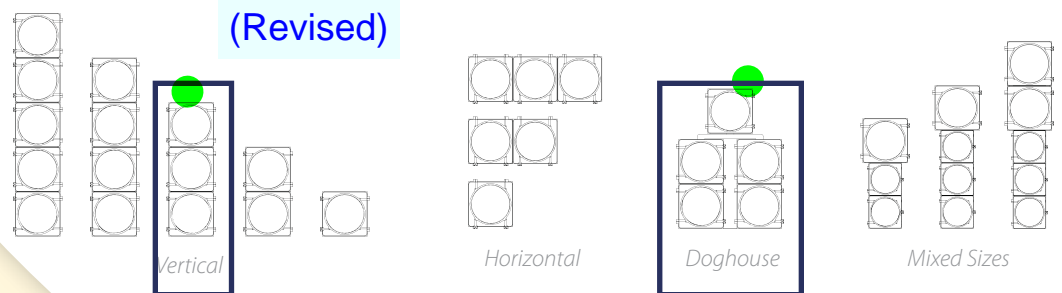
Environmental: Operating temperature: -37°C to +74°C
Humidity: 0 to 95% (non-condensing)

Shipping Weight: Polycarbonate: 8" - 2.1 lbs 12" - 4.2 lbs
(empty, 1-section) Aluminum: 8" - 4.0 lbs 12" - 7.8 lbs

Options

- Fiberglass-free polycarbonate
- Location, quantity, and type of terminal blocks
- Door mounting hardware: Push pin (removable) or roll pin (permanent)
- Visors
- Backplates
- Mounting: Various framework, orientation, and configurations
- Light Source: LED or incandescent
- High-performance (highly directional) signal version

Typical configurations



(Revised)

To learn more about McCain's Integrated Traffic Solutions, please contact info@mccain-inc.com or call (760) 727-8100

McCain

2365 OAK RIDGE WAY // VISTA, CALIFORNIA 92081 // USA // WWW.MCCAIN-INC.COM

© 2009 McCain Inc. Updated 01/27/09. McCain reserves the right to change product specifications without notice. For the most up-to-date information, please contact McCain.

Signal Visors

Aluminum

Polycarbonate

45° Angle

Cap

Full Circle

Scoop

Tunnel



Full Circle



Tunnel



Cap



Scoop



45° Angle

Approved

By: Jeff Rice

Date: 10/09/2020

El Paso County Planning & Community Development



Cabinets

Controllers

Signals

Signs

Software

Specialty

Overview

McCain's Signal Visors increase signal visibility in sunlight while still allowing an unobstructed view for multiple lanes of approaching drivers and pedestrians. McCain produces a range of standard and angled visors including tunnel, full circle, and cap, that offer a variety of signal viewing angles. Whether you are looking for aluminum or polycarbonate, Federal yellow, signal green, black, or custom colors, McCain has the visors to meet your needs.

Benefits

- Increases signal visibility in sunlight
- Available in a variety of materials, sizes, styles, and angles to meet your specific requirements
- Twist-on tabs facilitate ease of installation
- One-piece construction (except Scoop Visor)

Product Description

McCain's Signal Visors, molded polycarbonate or stamped and formed aluminum, are available in eight inch and 12 inch signal configurations. Integrally formed, twist-on mounting tabs make installation and maintenance a snap, and a standard three degree downward tilt facilitates signal visibility.

Specialty visors include the 45° Angle Visor and the Scoop Visor. The 45° Angle Visor comes in two standard lengths, 18" and 27" and in right and left versions. It is designed to narrow visibility for locations such as an angled intersection.

The Scoop Visor is designed to resist snow build-up on signal lenses in colder climates. A louvered vent on top and an open bottom contribute to the increased vertical movement of air across the face of the signal lens thereby increasing resistance to the deposit of snow.

Signal Visors

Standard Features

- One-piece construction (except Scoop)
- Twist-on mounting tabs
- 3° downward tilt

Approved

By: Jeff Rice
Date: 10/09/2020

El Paso County Planning & Community Development

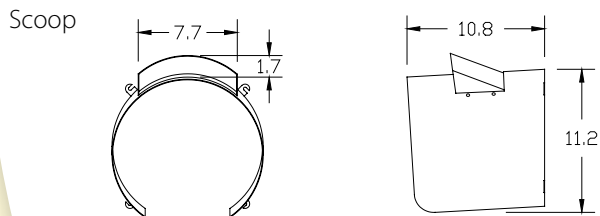
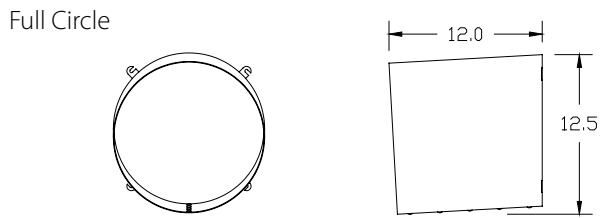
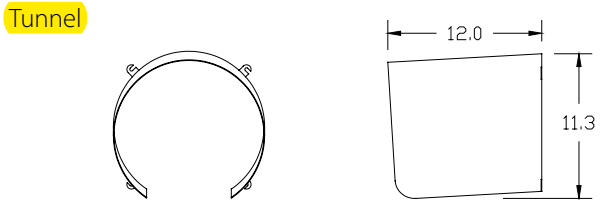
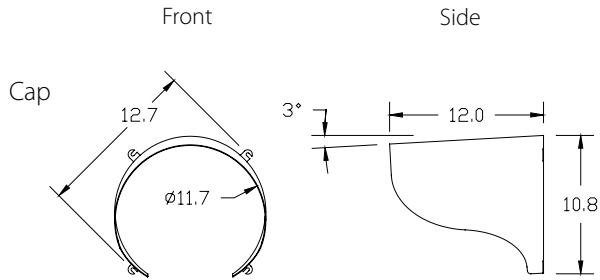


General Specifications

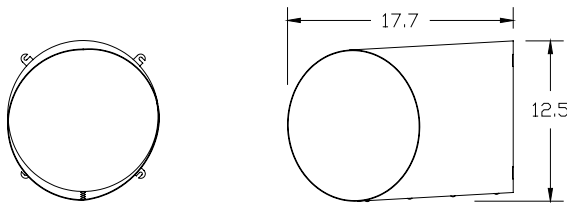
Dimensions:	Standard Visors:	Diameter	Depth
		8"	8"
		12"	12"
	45° Angle Visors:	8"	18"
		12"	18"
		12"	27"
Degree of Tilt:	3° (down)		
Material:	Aluminum: Type 3003, very good corrosion resistance, 0.050" thick Polycarbonate (standard visors only): Ultraviolet and heat stabilized, flame retardant, permanently colored, 0.10" nominal thickness		
Finish(es):	Aluminum: Powder coated Polycarbonate (standard visors only): Colored resins integral to visor		
Color(s):	Exterior: Federal yellow, signal green, black, or custom Interior: Flat black		
Mounting:	Twist-on tabs		
Shipping Weight:	1 - 4 lbs., varies based on material, size, and style		

Options

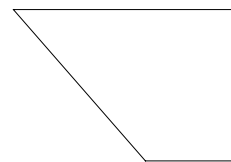
- Other lengths available
- Degree of tilt



45° (18" right angle version)



Top



Dimensions rounded to the nearest 0.1"
All visors shown are 12" signal versions
Dimensions shown in Cap front view and degree of tilt shown in side view are typical of all 12" visors

To learn more about McCain's Integrated Traffic Solutions, please contact info@mccain-inc.com or call (760) 727-8100



2365 OAK RIDGE WAY // VISTA, CALIFORNIA 92081 // USA // WWW.MCCAIN-INC.COM

© 2009 McCain Inc. Updated 03/05/09. McCain reserves the right to change product specifications without notice. For the most up-to-date information, please contact McCain.

Uniform Appearance LED Traffic Signal Modules

Approved

By: Jeff Rice

Date: 10/09/2020

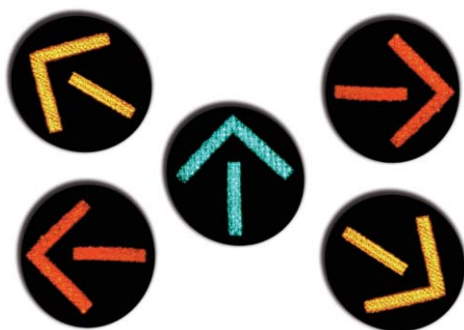
El Paso County Planning & Community Development



- ▲ *Fully compliant to ITE VTCSH-LED Circular Signal Supplement dated 6/27/2005
- ▲ Industry's lowest power for all colors
- ▲ Meets or exceeds ITE intensity, color and uniformity specification, including 49°C / 74°C requirements
- ▲ Temperature compensated power supplies for longer LED life
- ▲ Uniform appearance
- ▲ Expanded view radiation pattern suitable for span wire and steep grade applications
- ▲ Transient suppression exceeds ITE and NEMA specifications (Up to 6KV ring wave)
- ▲ Manufactured with anti-capillary wires
- ▲ Conformal coated power supply
- ▲ Secondary lens treatment for abrasion resistance
- ▲ Patent No. 7,281,818 and other patents pending
- ▲ Intertek/ETL certified and listed on ETL certification program
- ▲ All units operate at 80-135VAC RMS, 60±3Hz

Part Number	Color	Lens Type	Dominant Wavelength (nm)	Typical Wattage at 25°C	Peak Minimum Maintained Luminous Intensity (cd)	*Meets ITE VTCSH LED Circular Signal Supplement	CSA Approved	Size (in)
433-1110-003XL	Red	Tinted	625	6	165	✓	✓	8
433-1170-003XL	Red	Clear	625	6	165	✓	✓	8
433-3130-901XL	Yellow	Tinted	590	7	410	✓	✓	8
433-3170-901XL	Yellow	Clear	590	7	410	✓	✓	8
433-2120-001XL	Green	Tinted	500	8	215	✓	✓	8
433-2170-001XL	Green	Clear	500	8	215	✓	✓	8
433-1210-003XL	Red	Tinted	625	6	365	✓	✓	12
433-1270-003XL	Red	Clear	625	6	365	✓	✓	12
433-3230-901XL	Yellow	Tinted	590	12	910	✓	✓	12
433-3270-901XL	Yellow	Clear	590	12	910	✓	✓	12
433-2220-001XL	Green	Tinted	500	7	475	✓	✓	12
433-2270-001XL	Green	Clear	500	7	475	✓	✓	12

OMNI-DIRECTIONAL, UNIFORM APPEARANCE LED ARROWS



- ▲ *Fully compliant to ITE VTCSH-LED Vehicle Arrow Supplement dated 7/01/2007
- ▲ Allows for mounting in any orientation in the signal head
- ▲ Industry's lowest power for all colors
- ▲ Meets or exceeds ITE intensity, color and uniformity specification, including 49°C / 74°C requirements
- ▲ Temperature compensated power supplies for longer LED life
- ▲ Uniform appearance
- ▲ Transient suppression exceeds ITE and NEMA specifications (Up to 6KV ring wave)
- ▲ Manufactured with anti-capillary wires
- ▲ Conformal coated power supply
- ▲ Secondary lens treatment for abrasion resistance
- ▲ Intertek/ETL certified and listed on ETL certification program
- ▲ All units operate at 80-135VAC RMS, 60±3Hz

Part Number	Color	Lens Type	Typical Wattage at 25°C	Dominant Wavelength (nm)	Peak Minimum Maintained Luminous Intensity (cd)	*Meets ITE Spec	CSA Approved
432-1314-001XOD	Red	Tinted	6	628	56.8	✓	✓
432-1374-001XOD	Red	Clear	6	628	56.8	✓	✓
431-3334-901XOD	Yellow	Tinted	6	590	141.6	✓	✓
431-3374-901XOD	Yellow	Clear	6	590	141.6	✓	✓
432-2324-001XOD	Green	Tinted	6	500	73.9	✓	✓
432-2374-001XOD	Green	Clear	6	500	73.9	✓	✓

Iron 1-Way Hanger Assemblies

Approved

By: Jeff Rice

Date: 10/09/2020

El Paso County Planning & Community Development



Pelco's Span Wire mountings are available in aluminum or iron with 1-1/2" or tri-stud fittings. Balance adjusters provide additional adjustment capabilities, while tether assemblies may be used to anchor the bottom of signals in windy applications.



Span Wire Hanger Assy w/ Signal Closure Kit

SE-3139 - Coating P__=Paint

Note:
Stainless bushing and/or stainless upgrade available.
Specify by including -SB and/or -SS in the part number, i.e., SE-3139-SB-SS-P__.



Span Wire Hanger Assy w/ Iron Balance Adjuster & Signal Closure Kit

SE-3151 - Coating P__=Paint

Note:
Stainless bushing and/or stainless upgrade available.
Specify by including -SB and/or -SS in the part number, i.e., SE-3151-SB-SS-P__.



Span Wire Hanger Assy w/ PAL Balance Adjuster & Signal Closure Kit

SE-3277 - Coating P__=Paint

Note:
Stainless bushing and/or stainless upgrade available.
Specify by including -SB and/or -SS in the part number, i.e., SE-3277-SB-SS-P__.

- Note: 1. All assemblies are supplied standard with stainless steel fasteners and galvanized hardware on span wire clamps.
2. Stainless steel bushing and/or stainless steel upgrade available.
3. See Reference Section for available paint colors.

Signal Accessories

Pelco supplies various accessories for span wire mounted signs and signals. See section T14 for additional components.

Approved

By: Jeff Rice

Date: 10/28/2020

El Paso County Planning & Community Development



Tether Assembly, Tri-Stud Break-Away, Alum



SE-5050

Extender

Blank=No Extender

11=11"

19=19"

72=72"

Coating

PNC=Process No Color

P__=Paint

P33 Black for 3-Section



Note:
Available with or without Extender Bar.

Note:
Stainless bushing and/or stainless upgrade available.
Specify by including -SB and/or -SS in the part number, i.e., SE-5050-SB-SS-PNC.

Tether Assembly, Single-Stud Break-Away, Alum



SE-5058

Extender

Blank=No Extender

11=11"

19=19"

72=72"

Coating

PNC=Process No Color

P__=Paint

P33 Black for Doghouse



Note:
Available with or without Extender Bar.

Extender Bar, Aluminum



SE-0507

Length

11=11"

19=19"

72=72"

Coating

PNC=Process No Color

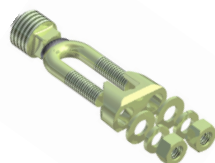
P__=Paint

SE-4028-ZN1 **CGB 3/4", .55"-.65" Wire Range, Zinc 1**



SE-0490-ZN1 **CGB, 3/4", .625"-.75" Wire Range, Zinc 1**

SE-4216-ZN1 **CGB, 1", .55"-.625" Wire Range, Zinc 1**



SM-0906-ZN2 **Opticom Cable Hanger, 1/2" Wire, 7/16"-14 x 3/4"-14 NPT, Iron, Zinc 2**

Note: 1. All assemblies are supplied standard with stainless steel fasteners.
Stainless upgrade to include stainless slotted washer where applicable.
2. See Reference Section for available paint colors.

Aluminum 2-Way, 3-Way & 4-Way Span Wire Hanger Assemblies

Approved

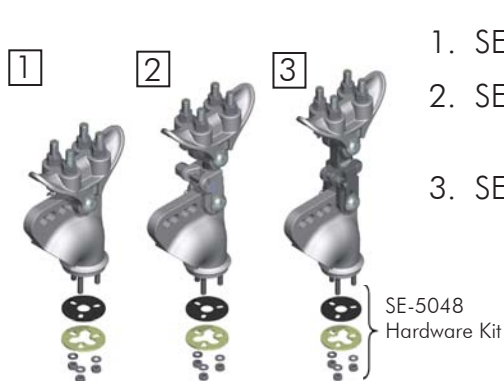
By: Jeff Rice

Date: 10/28/2020

El Paso County Planning & Community Development



Pelco's Span Wire mountings are available in aluminum or iron with 1-1/2" or tri-stud fittings. Balance adjusters provide additional adjustment capabilities, while tether assemblies may be used to anchor the bottom of signals in windy applications.



1. SE-5063 - Coating

2. SE-5088 -

3. SE-5163 -

PNC=Process
No Color
P__=Paint

SE-5048
Hardware Kit

Span Wire Hanger Assy, Tri-Stud

**Span Wire Hanger Assy, Tri-Stud
Iron Balance Adjuster**

**Span Wire Hanger Assy, Tri-Stud
PAL Balance Adjuster**

Note:

Stainless bushing and/or stainless upgrade available.

Specify by including -SB and/or -SS in the part number, i.e., SE-5063-SB-SS-PNC.



**Upper & Lower Arm Assy, 2-Way 17" CTC,
Cast Tri-Stud**

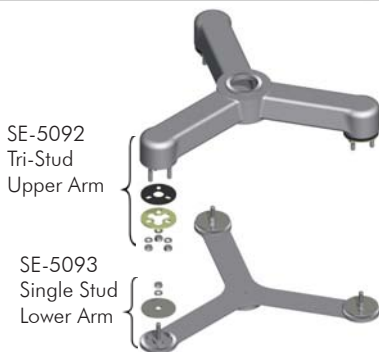
SE-5061 - Coating

PNC=Process No Color
P__=Paint

Notes Reference
This but will need
entrance hanger see
item below with
hanger

Note:

Specify stainless upgrade by including -SS in the part number, i.e., SE-5061-SS-PNC.



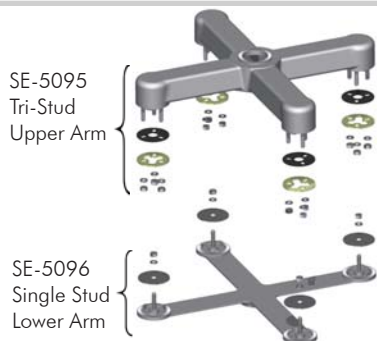
**Upper & Lower Arm Assy, 3-Way 17" CTC,
Cast Tri-Stud**

SE-5094 - Coating

PNC=Process No Color
P__=Paint

Note:

Specify stainless upgrade by including -SS in the part number, i.e., SE-5094-SS-PNC.



**Upper & Lower Arm Assy, 4-Way 17" CTC,
Cast Tri-Stud**

SE-5097 - Coating

PNC=Process No Color
P__=Paint

Note:

Specify stainless upgrade by including -SS in the part number, i.e., SE-5097-SS-PNC.

Note: 1. All assemblies are supplied standard with stainless steel fasteners and galvanized hardware on span wire clamps.

2. Stainless steel bushing and/or stainless steel upgrade available.

3. See Reference Section for available paint colors.

Aluminum 5-Section Cluster Span Wire Hanger Assemblies

Approved

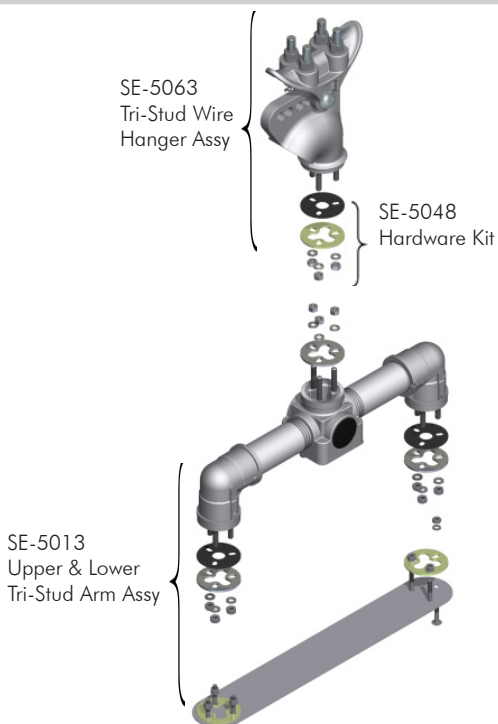
By: Jeff Rice

Date: 10/28/2020

El Paso County Planning & Community Development



Pelco's Span Wire mountings are available in ~~or iron~~ aluminum with 1-1/2" or tri-stud fittings. Balance adjusters provide additional adjustment capabilities, while tether assemblies may be used to anchor the bottom of signals in windy applications.

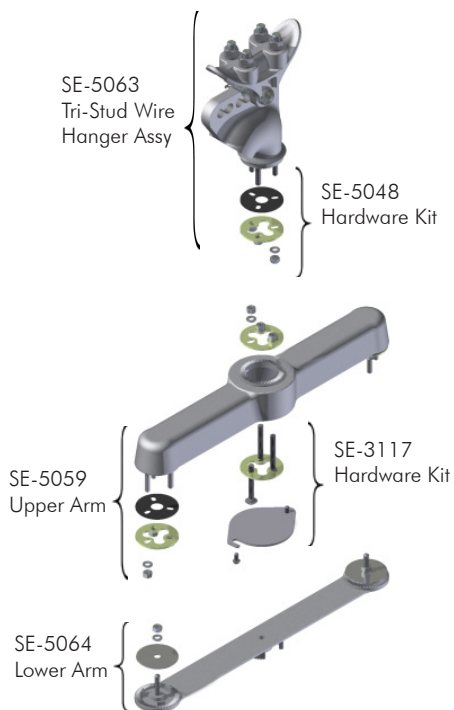


Cluster Assy, 5-Section 16-1/2" CTC Tri-Stud

SE-5166 - Coating
PNC=Process No Color
P__=Paint



Note:
Stainless bushing and/or stainless upgrade available.
Specify by including -SB and/or -SS in the part number, i.e., SE-5166-SB-SS-PNC.



Cluster Assy, 5-Section 17" CTC Tri-Stud

SE-5165 - Coating **P33 Black**
PNC=Process No Color
P__=Paint



Note:
Stainless bushing and/or stainless upgrade available.
Specify by including -SB and/or -SS in the part number, i.e., SE-5165-SB-SS-PNC.

- Note: 1. All assemblies are supplied standard with stainless steel fasteners and galvanized hardware on span wire clamps.
2. Stainless steel bushing and/or stainless steel upgrade available.
3. See Reference Section for available paint colors.

Backplates



Cabinets
Controllers
Signals
Signs
Software
Specialty

Standard Signal Heads

Programmable Signal Heads



High performance 3-section
backplate, 5 inch, louvered



Standard backplate,
8 inch, non-louvered



Standard backplate,
5 inch, louvered

Overview

McCain's Backplates provide a visual contrast between signal heads and the background enhancing signal visibility. Available for standard and programmable signal heads in eight and twelve inch sizes, backplates can be configured for one to five section, cluster, or combination signals. Available in a variety of standard and custom colors to match the signal head, backplates provide an aesthetically pleasing and functional look for your intersection.

Benefits

- Enhances signal visibility by creating an environmental contrast
- Compatible with standard and programmable signal heads
- Available in a multitude of configurations
- 5" or 8" borders
- Standard and custom color options

Product Description

The McCain Backplate collection is ideal for use in conjunction with standard or programmable signal heads. Backplates are available in several types including aluminum, ABS sheet, and vacuum-formed ABS, and the aluminum is available in a louvered style. Vacuum-formed backplates incorporate a 1/2" lip for added strength.

All backplates are available with five or eight inch borders. Mounting methods vary depending on the backplate type.

All backplates have a flat black front face for increased visual contrast against the background. The back face of the backplates is available in a variety of colors to match your current signal housing.

Backplates are also available with reflective tape borders.

Backplates

Approved

By: Jeff Rice
Date: 10/28/2020

El Paso County Planning & Community Development



Standard Features

- Accommodates 8", 12", cluster, and combination signal heads
- 5" or 8" borders (HP available only in 5")
- Aluminum available with or without louvers; ABS, non-louvered only
- Aluminum, ABS, and ABS vacuum formed (high performance signal head backplates are only available in aluminum)
- ABS vacuum formed have flanged edges for added strength

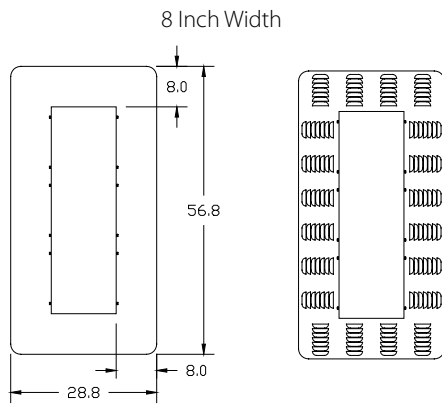
General Specifications

Dimensions:	Varies based on signal configuration
Material:	Aluminum, ABS
Finish(es):	Aluminum: Powder coat ABS: Integrally molded
Color(s):	Face: Flat black Back: Federal yellow, signal green, black, or custom colors
Construction & Attachment:	Depends on style
Signal Mounting:	Elevator Plumbizer (MAS) and standard
Shipping Weight:	Varies based on signal configuration

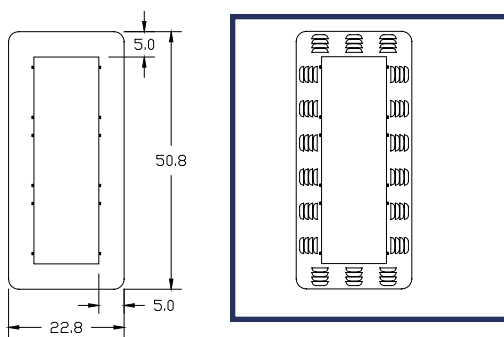
Options

- Modification to allow use of reflective tape on aluminum louvered and non louvered styles
- Aluminum available with flanged edges for added stiffening

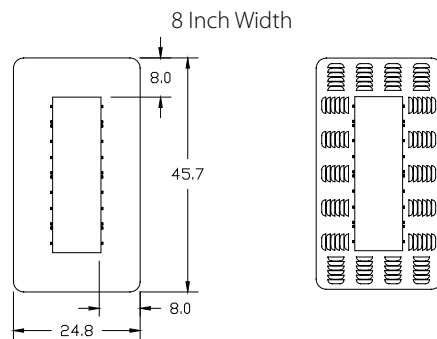
Standard 12" Signal



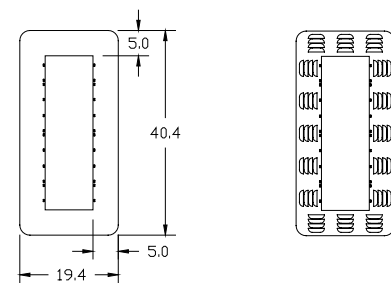
5 Inch Width



Standard 8" Signal

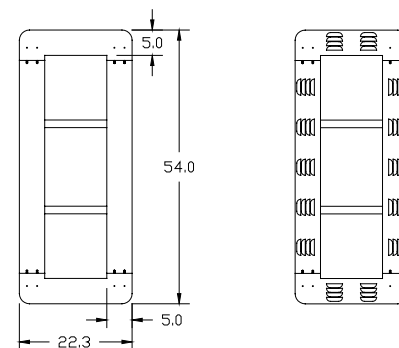


5 Inch Width



Typical 3-section backplates shown as examples
Louvered types approximately the same size as non-louvered
Dimensions rounded to the nearest 0.1"

High Performance 12" Signal



1" or 1 1/2" Tape on
3-Section as Doghouse
may need 1" due to
Louver Interference

To learn more about
McCain's Integrated Traffic
Solutions, please contact
info@mccain-inc.com or
call (760) 727-8100



Example of Reflective Tape
(with louvers)



2365 OAK RIDGE WAY // VISTA, CALIFORNIA 92081 // USA // WWW.MCCAIN-INC.COM

© 2009 McCain Inc. Updated 03/05/09. McCain reserves the right to change product specifications without notice.
For the most up-to-date information, please contact McCain.

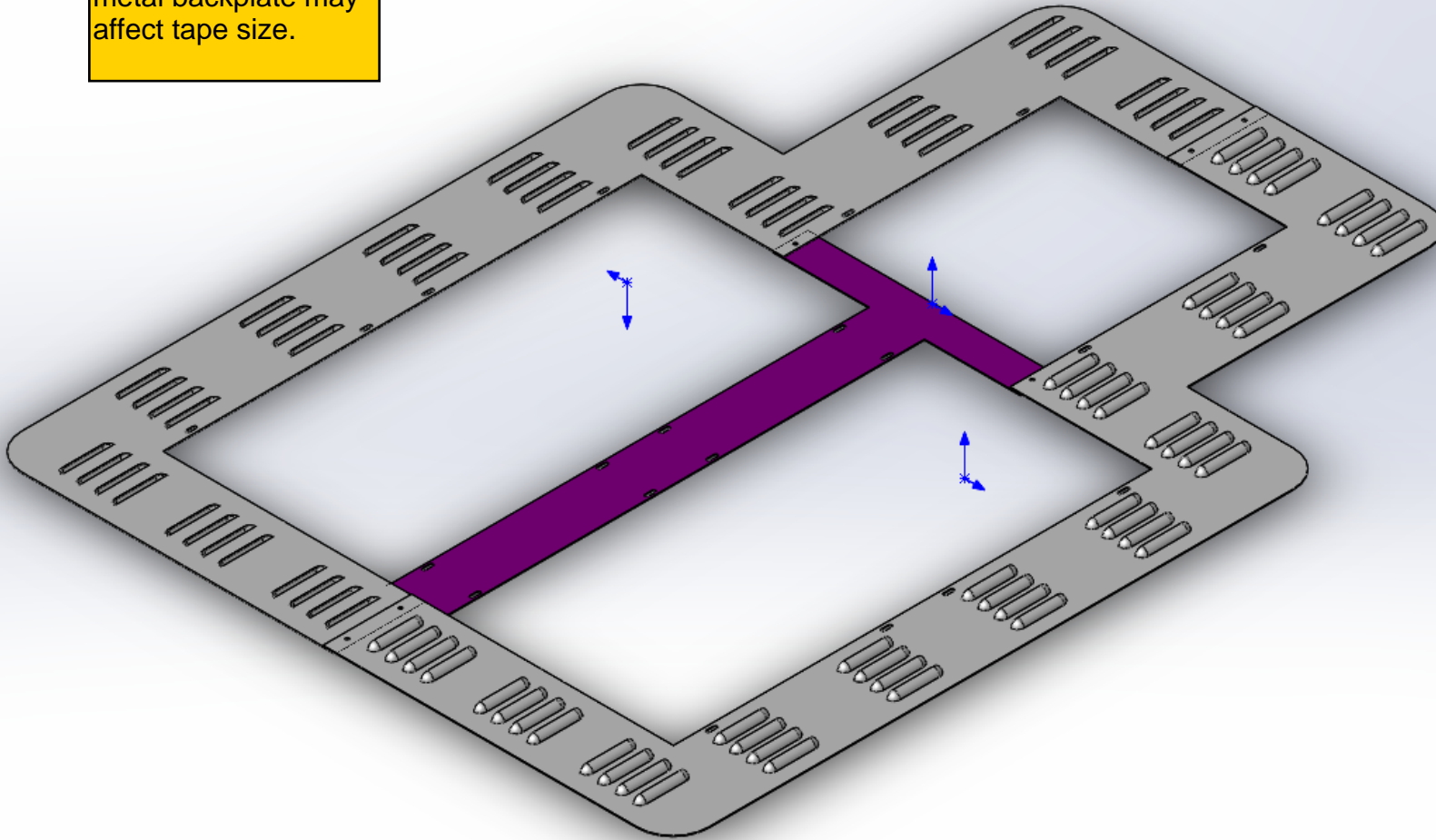
Doghouse, 5-Section Backplate

Louvered: Aluminum / ABS

3M Reflective Yellow Tape Yes / No



Louver Direction on metal backplate may affect tape size.



Approved

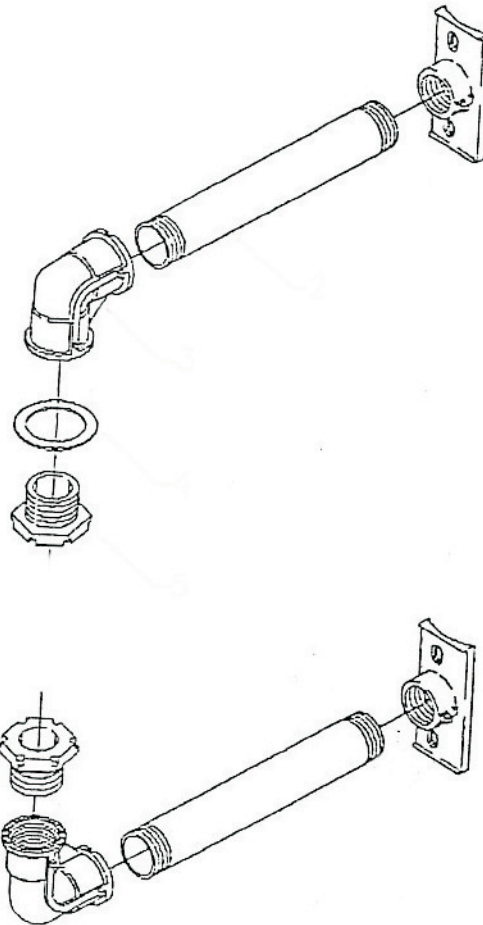
By: Jeff Rice

Date: 10/09/2020

El Paso County Planning & Community Development



Side of Pole Mount **Black** with **Universal** Hub Plates



 **TRAFFIC
SIGNAL
CONTROLS, INC.**

255 Weaver Park Rd
Suite 100
Longmont, CO 80501

Pedestrian Signal Housing

12" Housing
16" Housing
Aluminum
Polycarbonate



16 inch housing
shown in Federal yellow



12 inch housing
shown in black

Overview

McCain's Pedestrian Signal Housings are designed to be used in conjunction with standard or LED pedestrian signal modules to promote pedestrian safety at intersections. McCain housings exceed the Institute of Transportation Engineers (ITE) standards, offering a low maintenance and durable housing in either die cast aluminum or injection molded polycarbonate resin. They are available in 12" or 16" styles, and the 12" housings are available in 1-section or 2-section varieties. The 12" polycarbonate housings are reinforced with a 10 percent fiberglass fill for superior strength and durability unmatched by standard polycarbonate resins. The fiberglass fill is optional on the 16" polycarbonate housings.

Benefits

- 12" or 16" styles
- Rugged aluminum or polycarbonate construction
- Designed for standard symbol or word pedestrian signal modules including LED
- Door-hinge hardware can be removable and reversible or permanently attached
- Highly customizable including a variety of fabrication, mounting, and visor options
- 16" available with *Vantage Visor™* for increased visibility and impact protection

Product Description

The McCain Pedestrian Signal Housing is available in 12" and 16" styles and a variety of configurations including aluminum or polycarbonate construction, with a number of options (see Options for details).

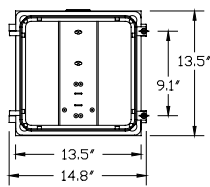
The door is attached with stainless steel detent-type clevis or roll pins and eye bolt/wing nut assemblies. Two equally spaced mounting lugs, integrally cast into the top and bottom of the 16" and the sides of the 12", allow the doors to hinge from either direction. When clevis pins are used, the door and eye bolt assemblies can be removed and rotated without the use of any tools, facilitating maintenance.

All interior mounting locations on the 16" housing are symmetrically positioned, allowing the rotation of components when using the bi-directional McCain Clamshell Mount to mount to the right or left side.

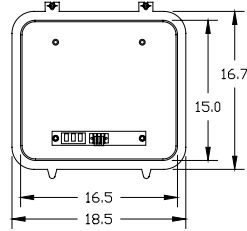
Pedestrian Signal Housing

12" housing

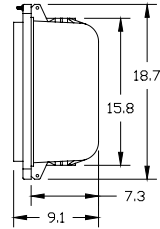
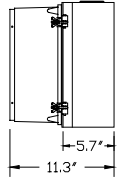
Front



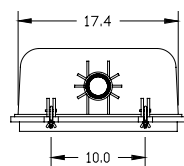
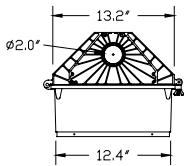
16" housing



Side



Top



Dimensions rounded to the nearest 0.1"

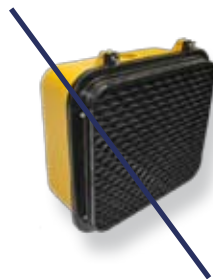


12" 2-section with tunnel visors



16" with Vantage Visor

Hand/Man modules
(sold separately)



16" Vantage Visor
(sold separately)

Standard Features

- Stainless steel hardware includes hinge pins (detent-type clevis or roll) and eye bolt/wing nuts (latch)
- Terminal block with quick-disconnect fittings on one side of each terminal position and screw clamps on the other side

General Specifications

Dimensions*:	12" Housing	16" Housing
Housing:	13.2" H x 13.2" W x 5.7" D	15.8" H x 17.4" W x 7.3" D
Door (incl. tabs):	13.5" H x 15.0" W x 5.6" D	18.7" H x 18.5" W x 1.8" D
Overall:	14.0" H x 15.0" W x 11.3" D	18.7" H x 18.5" W x 9.1" D
Material:	Polycarbonate: Ultraviolet and heat stabilized, flame retardant, permanently colored, 10% fiberglass reinforcement (12" standard, 16" optional) Aluminum: Type 360, reduced corrosion, increased powder coat adhesion	
Finish(es):	Polycarbonate: Colored resins integral to housing Aluminum: Powder coated	
Color(s):	Federal yellow, signal green, black or custom colors	
Access:	Front door (1), 16": hinged top or bottom 12": hinged left or right	
Latching System:	Eye bolt assemblies	
Mounting:	Standard signal hardware	
Environmental:	Operating temperature: -37°C to +74°C Humidity: 0 to 95% (non-condensing)	
Shipping Weight:	12": Poly 5 lbs, Al 9 lbs 16": Poly 9 lbs, Al 10 lbs	

Options

- Polycarbonate 10% fiberglass fill for added durability (optional on 16", standard on 12")
- Modules: LED or incandescent; international Hand/Man symbol, "WALK"/"DON'T WALK" words
- Visors: Vantage Visor (16" only), tunnel, or cap (12" only)
- Clamshell mount (16" only - housing available pre-drilled for mount)
- Custom terminal blocks
- Door hardware permanent (roll pins) or removable (clevis pins)

*Dimensions are approximate and vary based on material used



16" Tunnel visor
(sold separately)

16" Clamshell mount
(sold separately)

To learn more about McCain's Integrated Traffic Solutions, please contact info@mccain-inc.com or call (760) 727-8100



2365 OAK RIDGE WAY // VISTA, CALIFORNIA 92081 // USA // WWW.MCCAIN-INC.COM

© 2009 McCain Inc. Updated 02/12/09. McCain reserves the right to change product specifications without notice. For the most up-to-date information, please contact McCain.

Uniform Appearance Hand and Person Pedestrian Signals



- ▲ *Fully compliant to ITE PTCI Part 2 LED Pedestrian Traffic Signal Module Specification adopted 3/9/04
- ▲ Meets / exceeds ITE uniformity ratio of not more than 1 to 5 between the max and min luminance values as measured in (.5") dia spots
- ▲ Manufactured with anti-capillary wires
- ▲ Conformal coated power supply
- ▲ Fuse and transient suppressor incorporated for superior line and load protection
- ▲ Independent dedicated power supplies for added safety and reliability
- ▲ Intertek/ETL certified and listed on ETL certification program
- ▲ Transient suppression exceeds ITE and NEMA specifications (Up to 6KV ring wave)
- ▲ All units operate at 80-135VAC RMS, 60±3Hz

(Discuss with Staff)

Part Number	Size	Description	Typical Wattage @ 25°C		Min. Luminance (cd/m²)		*Meets ITE Spec	CSA Approved
			Hand	Person	Hand	Person		
430-6450-001X	16 x 18	Side-by-side Hand and Person	8	7	1,400	2,200	✓	✓
430-6472-001X	16 x 18	Overlay Hand and Person	8	6	1,400	2,200	✓	✓
430-5770-001X	12 x 12	Hand only	8	N/A	1,400	N/A	✓	✓
430-7771-001X	12 x 12	Person only	N/A	7	N/A	2,200	✓	✓
430-6772-001X	12 x 12	Overlay Hand and Person	8	6	1,400	2,200	✓	✓
430-5570-001X	9 x 9	Hand only	6	N/A	1,400	N/A	✓	
430-7570-001X	9 x 9	Person only	N/A	6	N/A	2,200	✓	

Uniform Appearance Countdown Pedestrian Signals



- ▲ *Fully compliant to ITE PTCI Part 2 LED Pedestrian Traffic Signal Module Specification adopted 8/04/2010
- ▲ MUTCD compliant for countdown applications
- ▲ Full preemption compatibility
- ▲ Up to 8 units can be connected in parallel without affecting of the monitoring of the Hand/Person
- ▲ Manufactured with anti-capillary wires
- ▲ Three (3) Independent dedicated power supplies for added safety and reliability
- ▲ Intertek/ETL certified and listed on ETL certification program
- ▲ Reduced off state icon visibility results in increased pedestrian safety by eliminating the potential to misinterpret the signal
- ▲ Conformal coated power supply
- ▲ New improved one piece housing design
- ▲ Improved optical design to provide superior uniform appearance of the icons
- ▲ Transient suppression exceeds ITE and NEMA specifications (Up to 6KV ring wave)
- ▲ All units operate at 80-135VAC RMS, 60±3Hz

Part Number	Housing Size	Symbol Color			Typical Wattage @ 25°C			Min. Luminance (cd/m²)			*Meets ITE Spec	CSA Approved
		Countdown	Hand	Person	Countdown	Hand	Person	Countdown	Hand	Person		
430-6479-001X	16 x 18	Portland Orange	Portland Orange	Lunar White	8	11	10	1,400	1,400	2,200	✓	✓
430-7773-001X	12 x 12	Portland Orange	N/A	N/A	5	N/A	N/A	1,400	N/A	N/A	✓	✓

Special Applications: Upon customer request, above units are available with option to countdown the clearance mode and the walk mode. Add suffix "W" to above part numbers.

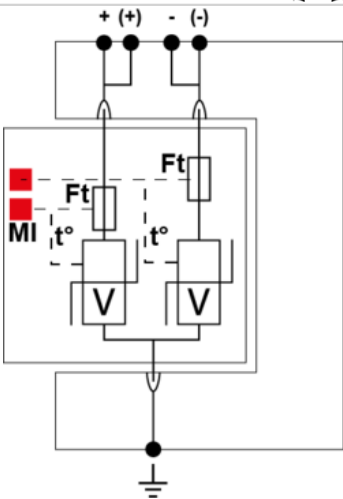
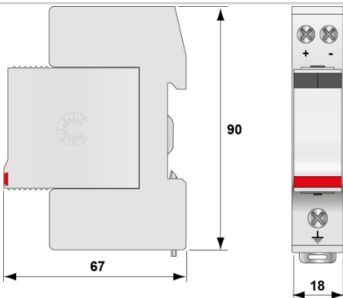
IMPORTANT NOTE: MUTCD DOES NOT recommend the use of a countdown timer in the "walk" mode

Dialight reserves the right to make changes at any time in order to supply the best product possible.

The most current version of this document will always be available at:
www.dialight.com/Assets/Brochures_And_Catalogs/Signaling/ITE_Spec_Brochure.pdf

ITE_Spec_Brochure_M

DS220-24DC



V: High-energy varistor
Ft: Thermal fuse
t°: Thermal disconnection system
MI: Disconnection indicator

Caractéristiques Électriques

SPD type (following IEC tests)		2
Protection level +/-PE (-/PE) [@ In (8/20µs)]	Up	250 V
Code article		
390501		

iNS2: "iNS" iNavigator 2-Wire Push Button Station

The "iNS" iNavigator 2-Wire Push Button Station (iNS2 PBS) is the pedestrian interface to the iNavigator Accessible Pedestrian System. A system consists of a Control Unit (PN iCCU-S2, iCCU-C2, iCCU-S, or iCCU-C) and a Push Button Station. The iNS2 PBS is an MUTCD compliant PBS and provides valuable information and cues via both a vibrating arrow button and audible sounds, making the intersection accessible for all pedestrians. All sounds emanate from the front and back of the unit. A sunlight-visible red LED latches "ON" along with a tactile feedback "bounce" to confirm the button has been pushed. The vandal-resistant design of the iNS2 PBS includes the body, which houses the ADA compliant push button (shown), a faceplate (5X7 sign shown), and mounting hardware.

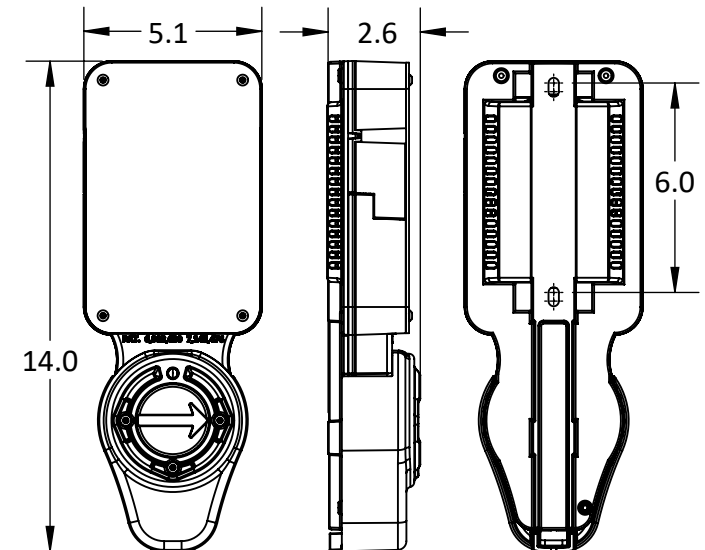
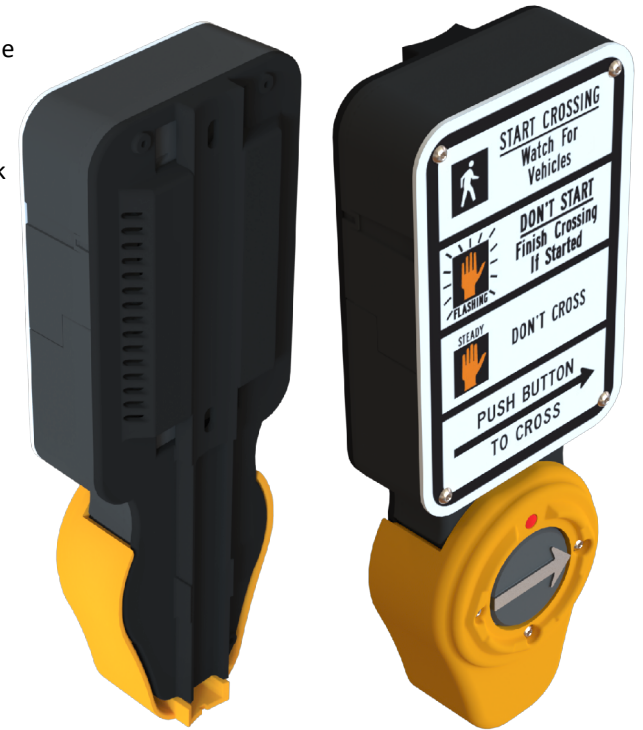
By interfacing with the Central Control Unit (CCU) that installs in the Traffic Cabinet, the iNS2 PBS can provide the following standard features:

- Operates over a single pair of wires
- All PBS wired in parallel, individually assignable to any phase
- 16 buttons can operate on a single iCCU (dependent on power requirements and wire runs)
- All sounds are synchronized
- 4 Locate Tone selectable options
- 13 Walk Sound selectable options, 3 of them custom options
- 7 Clearance Sound selectable options
- Walk, Clearance, and Don't Walk sounds automatically adjust to ambient
- Separate ambient response settings for Locate Tone (for quiet ambient conditions)
- Most sounds have independent Min/Max settable limits
- Button vibrates during Walk
- Button push confirmed by latching LED, tactile bounce, and audible "wait" sound
- Extended button push can boost volume for next Walk and Clearance
- Direction of travel message with extended button push, capable
- Extended Push Priority: mutes all but selected crosswalk, capable
- Extended Push activation settings: 0-6 second range, 0.5 second increments
- Beacons and Ping Pong features available
- Select audio messages, change settings, and perform firmware updates wirelessly using iOS (9.0+) or Android (5.0+) devices, or a Windows PC with Polara's Bluetooth Dongle (PN iN-DGL, purchased separately)
- Built in health/event logging feature, up to 1000 events
- False walk detection: four independent checks
- External speaker option at time of order
- External button input for bike lanes, horses, etc.
- Warranty: 3 year limited

An iNS2 PBS can operate as an iNS3 (Ped-Head Based System). It comes with a 3-position terminal block to connect to a Ped-Head Control Unit. See iNS3 Quick Start Guide for more information.

For optimum functionality, Polara recommends a dedicated pair of wires be routed to each PBS. Using IMSA 50-2 Cable is an ideal choice. The ground shield does not need to be connected.

Dimensions are in inches. iNS25BN0-Y unit shown.





Operating Specifications	
Parameter	Rating
Operating Temp. Range	-34°C to +74°C (-30°F to +165°F)
Storage Temp. Range	-45°C to +85°C (-50°F to +185°F)
Operating Force	3.0 lbs max, option of 3 adjustable programmed forces
Switch Operating Life	Greater than 20 million operations
Max. Volume	100 dB @ 1 meter

Design Compliance	
Functionality Test Type	Compliance
Temperature and Humidity	MUTCD 2009-4E
Transient Voltage Protection	NEMA TS2
Transient Suppression	NEMA TS2
Mechanical Shock and Vibration	NEMA TS2
iNS3 PBS Enclosure	NEMA 250 Type 4X
Electrical Reliability	NEMA TS2

Notes:

1. Lab tested to applicable sections of referenced standards
2. All specifications are subject to change without notice
3. All specifications are typical unless otherwise specified

Termination View: iNS2 Operating as iNS3 PBS



Ped Call Terminal on left. 3-position terminal block on right (for operating as iNS3)

Part # should be "iNS2 3 T N 0 B ES"

iNS2 5 A N 0 - B - BD-ES

Additional Options

Button Options

NA - No Arrow

BD - Bi-Directional Arrow

Other Options

WPC - With pole cap

ES - External Speaker option

Button Cover Color

Back plate is always black.

B - Black

G - Green

Y - Yellow

Audio Message Option

0 - Standard messages

1 - Custom Messages

Braille

N - No braille on faceplate

B - Braille on faceplate

Faceplate

MUTCD Compliant

V - 9x12 R10-3

U - 9x12 R10-3b

T - 9x15 R10-3e

Non-MUTCD Compliant

A - 5x7- International

B - 5x7- International

C - 9x12- Countdown

D - 5x7 or 9x12- International

O - No Faceplate

Size of Front Plate Adapter

5 - 5" x 7"

9 - 9" x 12"

3 - 9" x 15"

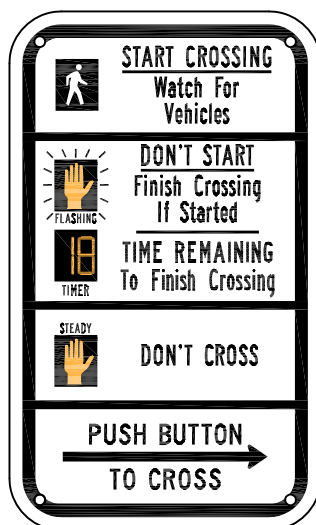
Navigator Family

iNS2 - iNavigator S 2-Wire Push Button

Dimensions are in inches.

OPTION T - MUTCD R10-3e SIGN - HI RETROREFLECTIVE (9" x 15")

OPTION C - COUNTDOWN SIGN - NON-MUTCD Compliant Low-Cost Alternative



800H-84

Option T - MUTCD R10-3e SIGN
9"x15" Right/Left Arrow
Hi-Intensity Retroreflective
Fully complies with MUTCD

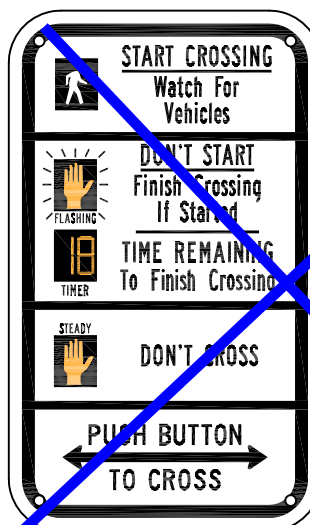
Also Available:

800-85

Option C - COUNTDOWN SIGN
9" x 12" Right/Left Arrow
Powder Coated Aluminum
Not MUTCD Compliant

800G-85

Option N - Custom for Nevada DOT
9" x 12" Right/Left Arrow
Hi-Intensity Retroreflective
Anti-Graffiti Coating
Cannot be used with BRAILLE



800H-99

Option T - MUTCD R10-3e SIGN
9"x15" Bi-Directional Arrow
Hi-Intensity Retroreflective
Fully complies with MUTCD

Also Available:

800-90

Option C - COUNTDOWN SIGN
9" x 12" Bi-Directional Arrow
Powder Coated Aluminum
Not MUTCD Compliant

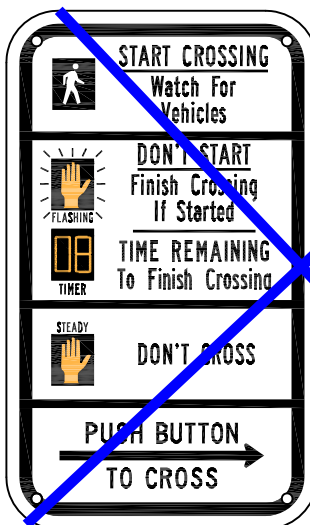
800G-90

Option N - Custom for Nevada DOT
9" x 12" Bi-Directional Arrow
Hi-Intensity Retroreflective
Anti-Graffiti Coating
Cannot be used with BRAILLE

Approved

By: Jeff Rice
Date: 11/14/2020

El Paso County Planning & Community Development



Custom Signs for
Minnesota DOT

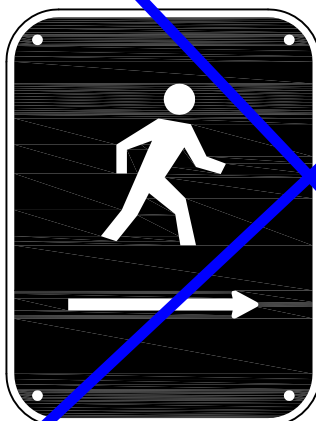
800D-107

Option M - MUTCD R10-3e SIGN
9"x15" Right/Left Arrow
Diamond-Grade Retroreflective
Clear Protective Cover
Fully complies with MUTCD

800D-108

Option M - MUTCD R10-3e SIGN
9"x15" Bi-Directional Arrow
Diamond-Grade Retroreflective
Clear Protective Cover
Fully complies with MUTCD

OPTION D - INTERNATIONAL SIGN

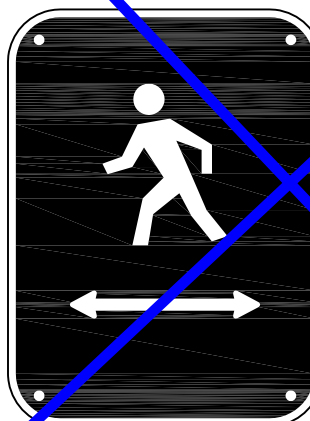


800-67

Option F - INTERNATIONAL SIGN
9"x12" Right/Left Arrow
Powder Coated Aluminum
Not MUTCD Compliant

800-58

Option D - INTERNATIONAL SIGN
5" x 7 3/4" Right/Left Arrow
Powder Coated Aluminum
Not MUTCD Compliant



800-70

Option D - INTERNATIONAL SIGN
9"x12" Bi-Directional Arrow
Powder Coated Aluminum
Not MUTCD Compliant

800-61

Option D - INTERNATIONAL SIGN
5" x 7 3/4" Bi-Directional Arrow
Powder Coated Aluminum
Not MUTCD Compliant

OPTION O - (LETTER O) DENOTES NO SIGN INSTALLED ON UNIT

332D

Controller Cabinet



with revision
to locks

*Shown with
optional drawers*

Approved

By: Jeff Rice

Date: 10/09/2020

El Paso County Planning & Community Development



Cabinets

Controllers

Signals

Signs

Software

Specialty

Overview

McCain's 332D Controller Cabinet is a double wide 332 type cabinet designed to meet the growing demands of modern traffic control by providing extra space in a second full 19" EIA (Electronics Industry Alliance) rack for additional equipment such as UPS, CCTV, and ITS applications. Two sets of double doors on the 332D cabinet make it a natural choice when a standard 170/2070 type cabinet is required with extra space to accommodate other equipment in the same cabinet in addition to standard assemblies and components.

Benefits

- Compatible with 170/2070 assemblies and components
- Standard assemblies assure interchangeability between manufacturers
- Large cabinet size and a second 19" EIA rack provides additional space for UPS, CCTV, and ITS applications
- Double doors (front and back) provide easy access to the cabinet's large interior

Product Description

The McCain 332D Controller Cabinet is a double wide cabinet designed to house the 170 or 2070 controllers in addition to a wide range of auxiliary equipment. This robust cabinet is constructed from marine-grade aluminum and is accessed via two front doors and two back doors making it durable and easily maintained. The cabinet comes equipped with industry standard features such as two 19-inch EIA racks, two 14-position input files, and a 12-position output file.

The standard cabinet offers an eight-phase, four-pedestrian operation with two right turn overlaps. Its 36 detector channel capability can be utilized with two-channel or four-channel detector modules.

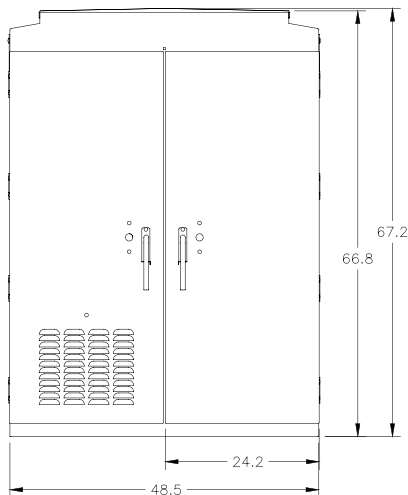
The cabinet is secured via three-point latching systems on all doors with your choice of locks providing secure installations and easy access for maintenance. The 332D also has the additional capability for accepting padlocks.

332D Controller Cabinet

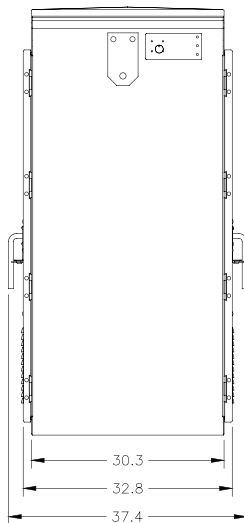
(Revised)



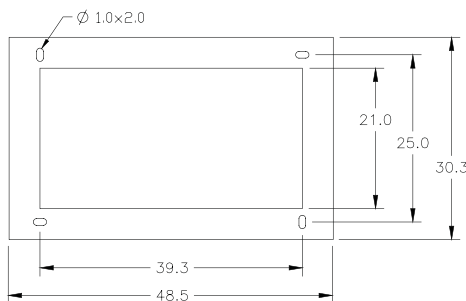
Front



Side



Base



Dimensions rounded to the nearest 0.1"

Standard Features

- 8-phase, 4-pedestrian operation (2 right turn overlaps available)
- 36 detector channel capability, (3 per turn, 6 per through movement)
- 2-channel or 4-channel industry standard detection modules
- Railroad preemption inputs (2)
- Emergency vehicle preemption inputs (4)
- DC isolation inputs for pedestrian push buttons and special functions
- Programmable "Yellow/Red" or "All Red" flashes through the use of flash plugs
- 210 Signal Monitor slot
- ~~Fluorescent~~ cabinet lights with door switches

LED Lights

Assemblies

- 14-position input files (2)
- 12-position output file
- Model PDA-2 combined power supply and Power Distribution Assembly
- Flash transfer relay sockets (4)
- Dual-circuit flasher positions (2)
- Input panel
- Service panel
- Police panel with signal "On/Off" and "Auto/Flash" switches

With Aux File

General Specifications

- Dimensions: 67" H x 49" W x 30" D (rounded to the nearest inch)
- Material: 5052-H32 aluminum, 0.125" thick
- Finishes: Natural, powder coat (standard, anti-graffiti, and custom colors), anodized
- Access: Front doors (2), back doors (2), all full size
- Latching System: 3-point, ~~choice of Cylinders~~ Best locks
- Handles: 3/4" round, stainless steel, with padlock feature
- Door Stops: 90° (±10°), each door, top
90° and 180° (±10°), each door, bottom
- Rack Assembly: Removable 19" EIA racks (2)
- Ventilation: Thermostatically controlled 100 CFM fans (4)
Louvered air intake in doors, pleated filters
- Mounting: Base mounted
- Shipping Weight: 435 lbs without plug-ins or controller(s)

Options

- 3/4" x 16" anchor bolts for mounting (4)
- Sunshields
- Drawer assembly(s)

Silver Wheel

To learn more about
McCain's Integrated Traffic
Solutions, please contact
info@mccain-inc.com or
call (760) 727-8100

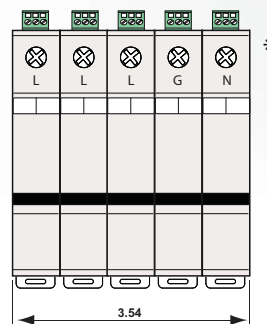
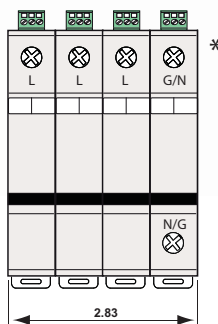
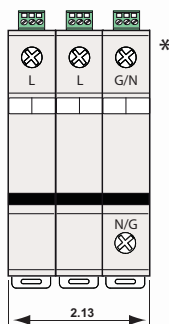
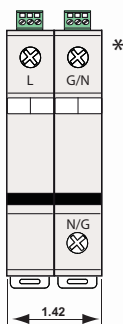
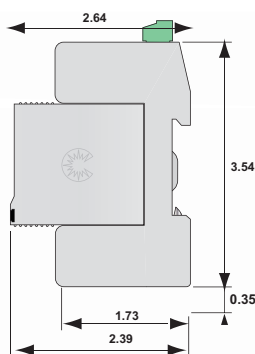


2365 OAK RIDGE WAY // VISTA, CALIFORNIA 92081 // USA // WWW.MCCAIN-INC.COM

© 2009 McCain Inc. Updated 07/28/09. McCain reserves the right to change product specifications without notice.
For the most up-to-date information, please contact McCain.

DS70U Range

**Imax
75 kA**



* 2 Wiring Options
See Install Sheet for
further info

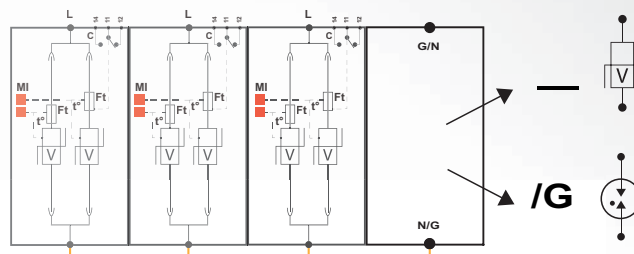
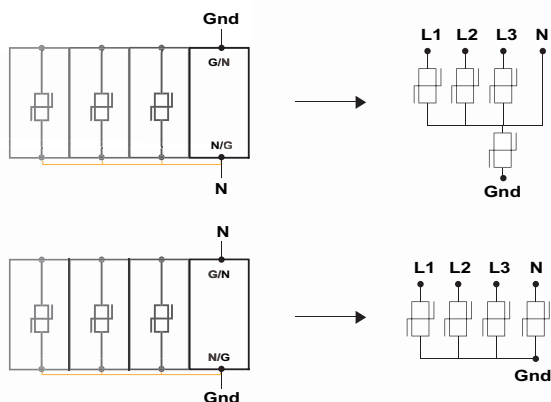
Description		DS72US-120S	DS73US-120T	DS74US-120Y	DS72US-230S	DS74US-230Y	DS74US-240Y	DS74US-240D	DS74US-277Y	DS74US-347Y	DS75US-400Y	DS74US-480D	DS74US-600D
Product Part Number		-	-	-	-	-	-	-	-	-	-	-	-
System voltage		120	120'-240	120'-208	230	230'-400	240'-415	240	277'-480	347'-600	400'-690	480	600
System		2W+G (single)	3W+G (Split Ph)	4W+G (Wye)	2W+G (single)	4W+G (Wye)	4W+G (Wye)	3W+G (Delta)	4W+G (Wye)	4W+G (Wye)	4W+G (Wye)	3W+G (Delta)	600D
Maximum Operating Voltage	L- PE	360	360	300	595	595	595	300	740	880	630	550	840
	L- N	210	210	150	320	320	320	-	420	460	570	-	-
	N- PE	150	150	150	275	275	275	-	320	420	360	-	-
	L- L	-	420	300	-	640	640	300	840	920	840	550	840
Operating Current	Ic	mA				None							
Follow current	If	A				None							
Short Circuit Current Rating	SCCR	kA	200	200	150	150	150	150	200	200	200	200	200
Maximum Leakage Current	Ipe	mA	1	1	1	1	1	1	1	1	None	1	None
Maximum Recommended fuse	Rating , Type					200A, Class J							
Frequency	F	Hz				50 - 60							
Nominal discharge current	In (8'-20)	kA	20	20	20	20	20	20	20	20	20	20	20
Maximum Discharge Current	L- PE	75	75	75	75	75	75	75	75	75	75	75	75
	N- PE	75	75	75	75	75	75	-	75	75	75	-	-
Impulse Discharge Current per phase	Iimp (10'-350)	kA	6	6	6	6	6	6	6	6	6	6	6
Total Maximal Discharge Current	Itotal (8'-20)	kA	140	210	280	140	280	280	280	280	350	280	280
Total Maximal Discharge Current	Itotal (10'-350)	kA	12	18	24	12	24	24	24	24	30	24	24
Let through Voltage	Ures (V) at 20kA	0.00	-	-	-	-	-	-	-	-	-	-	-
	L- PE	2000	2000	1800		2500	2500	1800	3000	3500	2800	2400	3400
	L- N	1100	1100	900	1300	1300	1300	-	1700	1800	2600	-	-
	N- PE	900	900	900	1200	1200	1200	-	1300	1700	2000	-	-
	L- L	-	2200	1800	-	2600	2600	1800	3400	3600	3400	2400	3400
Voltage Protection Level	L- PE	1200	1200	1000	1800	1800	1800	1000	2500	1700	2000	1500	2500
	L- N	800	800	700	1000	1000	1000	-	1500	1700	1800	-	-
	N- PE	700	700	700	900	900	900	-	1000	1400	1500	-	-
	L- L	-	1200	1000	-	1800	1800	1000	2500	2700	2500	1500	2500
Number of poles		2	3	4	2	4	4	4	4	4	5	4	4
Shipping Dimensions	Inches	4 x 2.8 x 1.61	4 x 2.8 x 2.25	4 x 2.8 x 3.05	4 x 2.8 x 1.61	4 x 2.8 x 3.05	4 x 2.8 x 3.05	4 x 2.8 x 3.05	4 x 2.8 x 3.05	4 x 2.8 x 3.05	4 x 2.8 x 3.75	4 x 2.8 x 3.05	4 x 2.8 x 3.05
Shipping Weight	Oz.	9.2	14.2	17.3	10	15.1	17.4	17.4	17.7	17.7	28	17.7	17.7
Standard's Compliance or recognition	UL1449 ed4 File: E326289	1CA	1CA	1CA	1CA	1CA	1CA	1CA	1CA	1CA	1CA	1CA	1CA
	IEC 61643-11 ed2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2
Visual disconnection indicator													
Remote signalization													
Wiring type													
Wire Minimum and maximum dimension	AWG #												
Operating Temperature	°F												
Housing - Enclosure material													
Mounting type													
Environmental rating	IP												
	Nema												
Location Installation													

DS70U Range

**I_{max}
75 kA**



- **UL 1449 ed. 4 1CA**
- **75kA I_{max} per mode**
- **In 20kA**
- **I_{imp} 6kA**
- **Easy to select in regards to power supply system**



Description		DS72US-120S/G	DS73US-120T/G	DS74US-120Y/G	DS72US-230S/G	DS74US-230Y/G	DS74US-240Y/G	DS74US-240D/G	DS74US-277Y/G
Product Part Number		120	-	-	-	-	-	-	-
System voltage		120	120'-240	120'-208	230	230'-400	240'-415	240	277'-480
System		2W+G (single)	3W+G (Split Ph)	4W+G (Wye)	2W+G (single)	4W+G (Wye)	4W+G (Wye)	3W+G (Delta)	4W+G (Wye)
Maximum Operating Voltage	L- PE	255	255	255	320	320	320	275	420
	L- N	210	210	150	320	320	320	-	420
	N-PE	255	255	255	255	255	255	-	320
	L-L	-	420	300	-	640	640	550	840
Operating Current	I _c	mA			None				
Follow current	I _f	A			None				
Short Circuit Current Rating	SCCR	kA	200	200	150	150	150	200	200
Maximum Leakage Current	I _{pe}	mA	None	None	None	None	None	None	None
Maximum Recommended fuse	Rating , Type				200A, Class J				
Frequency	F	Hz			50 - 60				
Nominal discharge current	I _n (8'-20)	kA	20	20	20	20	20	20	20
Maximum Discharge Current	L- PE	75	75	75	75	75	75	75	75
	N-PE	100	100	100	100	100	100	-	-
Impulse Discharge Current per phase	I _{imp} [10'-350]	kA	6	6	6	6	6	6	6
Total Maximal Discharge Current	I _{total} (8'-20)	kA							
Total Maximal Discharge Current	I _{total} (10'-350)	kA	15	15	15	15	15	15	15
Let through Voltage	U _{res} (V) at 20kA	0.00	-	-	-	-	-	-	-
	L- PE	1200	1200	1200	1300	1300	1300	1200	1700
	L- N	1100	1100	900	1300	1300	1300	-	1700
	N-PE	1200	1200	1200	1200	1200	1200	-	1200
	L-L	-	2000	1800	-	2600	2600	2400	3400
Voltage Protection Level	L- PE	1500	1500	1500	1100	1100	1100	1000	1500
	L- N	800	800	700	1000	1000	1000	-	1500
	N-PE	1200	1200	1200	1800	1100	1100	-	1200
	L-L	-	1200	1000	-	1800	1800	1500	2500
Number of poles		2	3	4	2	4	4	4	4
Shipping Dimension	Inches	4 x 2.8 x 1.61	4 x 2.8 x 2.25	4 x 2.8 x 3.05	4 x 2.8 x 1.61	4 x 2.8 x 3.05	4 x 2.8 x 3.05	4 x 2.8 x 3.05	4 x 2.8 x 3.05
Shipping Weight	Oz	9.6	14.4	17.3	9.6	17.5	17.5	17.5	17.7
Standard's Compliance or recognition	UL1449 ed4 IEC 61643-11 ed2	File: E326289 1CA	1CA	1CA	1CA	1CA	1CA	1CA	1CA
Visual disconnection indicator		Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2
Remote signalization									
Wiring type									
Wire Minimum and maximum dimension	AWG #								
Operating Temperature	°F								
Housing'-Enclosure material									
Mounting type									
Environmental rating	IP								
Location Installation	Nema								



SP 1250LX

Rear Mount Cables

Online UPS with integrated PIM and programmable display

Approved

By: Jeff Rice
Date: 10/09/2020

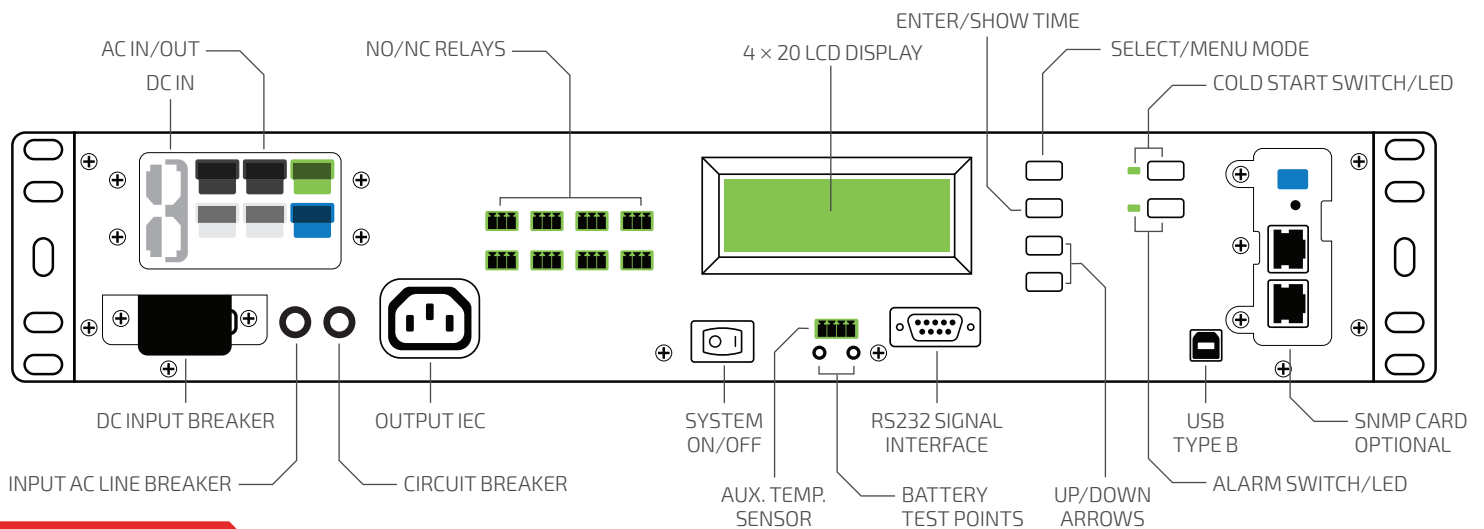
El Paso County Planning & Community Development



Overview

The SP 1250LX features an integrated Power Interface Module and programmable display. The LX Series are advanced UPS that provide clean, regulated dual conversion power for controllers and other sensitive equipment inside the traffic cabinet. Rated for 1250 VA/875 W, with operational temperature of -40°C to +74°C (-40°F to 165°F), the SP 1250LX has been independently tested and certified to comply with NEMA temperature standards as well as

NEMA standards for shock and vibration. Compatible with most existing traffic cabinets, the SP 1250LX can be rack or shelf mounted and can be configured with either front or rear power connectors. The SP 1250LX provides full operation in intersections with all LEDs. Advanced communication features allow monitoring, configuration and control of the system over RS232, modem or network connections. Available with battery bus voltages of 48 V or 72 V.



Features

- Space saving design: 2U vertical rack space
- On-line, conditioned, regenerated power for cabinet equipment protection
- Operates in extreme environments from -40°C to +74°C (-40°F to +165°F)
- Power quality analytical data recorded and exportable to Excel in CSV format
- USB connectivity with monitoring center or other equipment
- Power factor corrected for reliable and safe power

CLARY®



Specifications

Electrical Input

Voltage	75 VAC to 155 VAC (before going to batteries)
Frequency	45 Hz to 65 Hz

Electrical Output

Voltage	120 VAC \pm 3%
Frequency	50 Hz or 60 Hz
Current	10.4 A
Rating	1250 VA / 875 W
Crest Factor Ratio	<ul style="list-style-type: none">· 50% load up to 4.8:1· 75% load up to 3.2:1· 100% load up to 2.4:1
THD	4.00% maximum
Dynamic Response	\pm 4% for 100% step load change 0.5 ms recovery time
Overload	<ul style="list-style-type: none">· 110% for 10 sec· 200% for 50 ms
UPS Protection	<ul style="list-style-type: none">· Input and output short circuit· Input and output overload· Excessive battery discharge

Environmental

Temperature	-40°C to +74°C (-40°F to +165°F)
Humidity	0% to 95% non-condensing
Altitude	Sea level to 10,000 ft

Mechanical

Input	Hardwired to bypass box
Outputs	Hardwired to bypass box, with single 15 Amp receptacle
Dimensions (H x W x D)	3.5" x 19.0" x 10.0" (2U)
Weight	13 lb
Cooling	<ul style="list-style-type: none">· Low velocity· Forced air

Design

Standard Features	<ul style="list-style-type: none">· Power factor corrected input· Fully regenerative· True on-line continuous power· Low distortion sine wave output· Designed for non-linear loads· Extended brownout protection· EIA/RS232 data interface
Certifications	<ul style="list-style-type: none">· IEEE 587/ANSI C62.4· IEC 555 @ 120 VA· NEMA
Typical Recharge Time (to 85% capacity @ 100% load)	48-72 hrs (more time required with extended battery option)

Control and Indicators

Switches / Control Panel	<ul style="list-style-type: none">· System power· Cold start· Test· Alarm silence· Four line LCD display panel
Alarms	<ul style="list-style-type: none">· Utility interrupt· Inverter failure· Overload· Low battery· Self test
Intelligent Computer Interfaces	<ul style="list-style-type: none">· Serial interface for EIA 232· 1 each DB9-F (RS232 and signal interface pins) and 1 each USB· Full interactive remote computer monitoring and control of most features including load control (requires optional monitoring software)· NTCIP and TCP/IP ready
Contact Closures	<ul style="list-style-type: none">· "D" connector· Open collector (see user manual for additional interface information)

Options

SNMP Interface	Allows full control and monitoring interface over network connection. Compatible with HP Openview™, IBM Netview™, CA Unicenter TNG™, and other major software offerings.
Battery Bus Voltage	48 V or 72 V

UPS MANAGEMENT HARDWARE

SNMP Adapter

SNMP/HTTP Adapter

CT-09A1, DT-09A1, **SP-09A2**, SP-09G, SPD-09A2
or SPO-09A2 (Internal)
CT-09H, DT-09H or SP-09H (External)

Features:

SMART UPS SNMP HTTP ADAPTER
SNMP over UDP/IP HTTP over TCP/IP
ARP, RARP, TFTP and ICMP

The optional SNMP/HTTP card functions as an SNMP agent and includes an embedded HTTP server (web server). This means that one industry standard management tool can be used to monitor and control all your UPS systems from one central location, and power management can now be integrated into your existing network or building management strategy. Alarms ('traps') can be configured to ensure automatic notification of events such as low battery, power outage or overload. MIBs are included with the product for integration into your system management software.

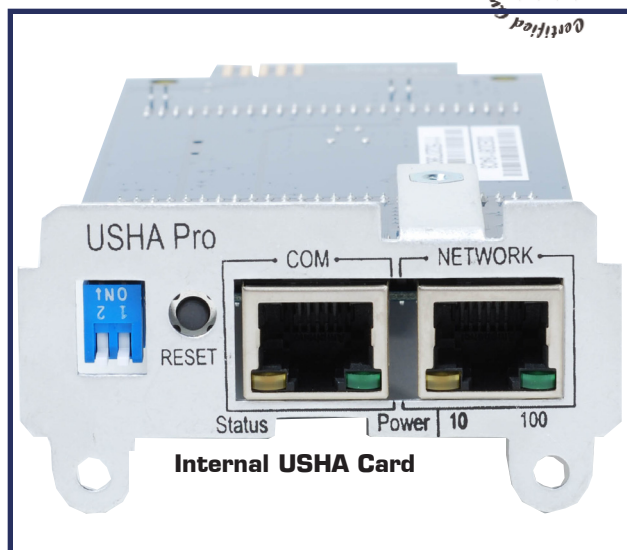
Control and management functions are also available through any standard web browser (e.g. Internet Explorer, Netscape or Opera). Simply point your browser to the network address assigned to the card, and the embedded web server returns web pages providing access to monitor or control all system parameters. The easy-to-use browser interface with online help means that minimum training is required to enable staff to effectively manage the UPS and protected devices. A sophisticated Java applet provides full system monitoring in real time, along with comprehensive event and history logs.

Approved

By: Jeff Rice

Date: 11/14/2020

El Paso County Planning & Community Development



FEATURES:

- ✓ Configurable from serial port or web browser
- ✓ Management from SNMP manager or web browser
- ✓ Supports standard UPS MIB
- ✓ Firmware upgrades by TFTP via serial port
- ✓ Full-featured GUI runs in web browser
- ✓ Accessible from any workstation on the network using SNMP/HTTP, regardless of OS via standard browser
- ✓ UPS Shutdown warning broadcast capability
- ✓ Realtime monitoring of all functions
- ✓ Full history logs
- ✓ Scheduling functions
- ✓ Supports: Linux, Novell, SCO Unix 5.x, SCO Unixware 7.x, Solaris (x86) and Windows 2000, Me, XP, HP-UX, IBM-AIX, FreeBSD and other Linux derived Operating Systems
- ✓ Supports Environmental Monitoring Device (EMD) that provides temperature and humidity sensing. Additional detection or sensing of motion, smoke, security devices, water sensor or vibration sensors is also supported.
- ✓ Certifications: CE, FCC Class B

Where Power is a way of life

Specifications subject to change without notice

UPS MANAGEMENT HARDWARE

CLARY

The Continuous Power Company™

industrial
commercial



SNMP Specifications

Power Input DC	8V USHA internal 15V USHA external, DC power Module
Power Consumption	3 watts
Operating Environment	Humidity: 10 to 80% Non-condensing Temperature: 0°C to 40°C
Regulatory Approval	FCC Class B, CE Class B
Warranty	2 Years



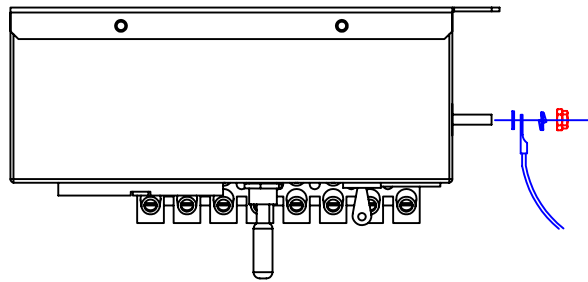
External USHA Pro II front/back views

SNMP Functional Information

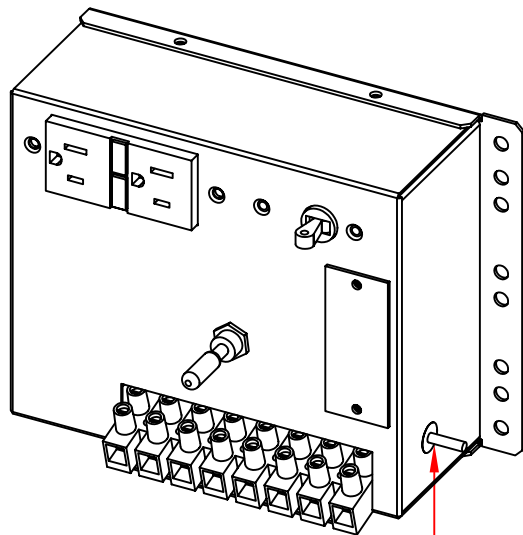
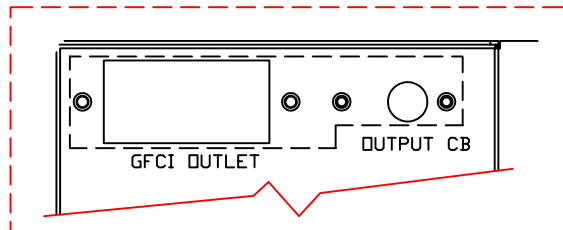
Network Interface	One RJ-45 connector for 10Mb BASE-T Ethernet connection.
HTTP/HTTPS	Supports HTTP Protocol. Remotely monitor or manage UPS through Windows Internet Explorer or Netscape browsers.
SNMP	Supports SNMP Protocol. Centralized monitoring and management of the UPS can be accomplished by a Network Management System such as HP Openview.
Java Applet	Provides "Real Time" UPS status and data graphical format. Can be activated through selected browser for Real-time UPS status monitoring with graphical data.
TELNET	Provides alternative method for configuration of the UPS including automatic log-out function for additional security.
E-mail Notification	E-mail can be sent to the administrator or to pre-defined designated users based on mail configuration parameters.
Mobile Phone	With WAP support, administrator can either browse the UPS information or receive the UPS event short message (SMS) notification on users Cellular Phone.
PDA	Users can also browse UPS status and receive event status.
Language	Supports both English and simplified traditional Chinese.
Firmware Upgrades	Under the Windows environment, utilizing proprietary utility software, users can upgrade SNMP adapters internal firmware.
UPS Status Information	SNMP: Notify multiple hosts and pre-define the recipients for any warning messages. Java applet: Notify the administrator when there is a power event via pop-up dialog box at specified user terminals. Shutdown Daemon: Notifies of power event to those servers or workstations (maximum of 72 stations) of the power event and starts the shutdown procedure to those systems that have the appropriate shutdown software installed.
Intelligent Shutdown Services	Schedule: Ups can be shutdown on a pre-defined weekly schedule. Special day Schedule: UPS can be shutdown on a pre-defined date and time. Manual: Ups can be set to "Sleep" Mode or to "Turn off" the UPS. Unattended: When there is a utility power event, warnings/shutdown messages can be immediately sent to pre-defined users.

Specifications subject to change without notice.

REVISIONS				
REV	E.O. NUMBER	DESCRIPTION	DATE	APPROVED
NR		NEW RELEASE		



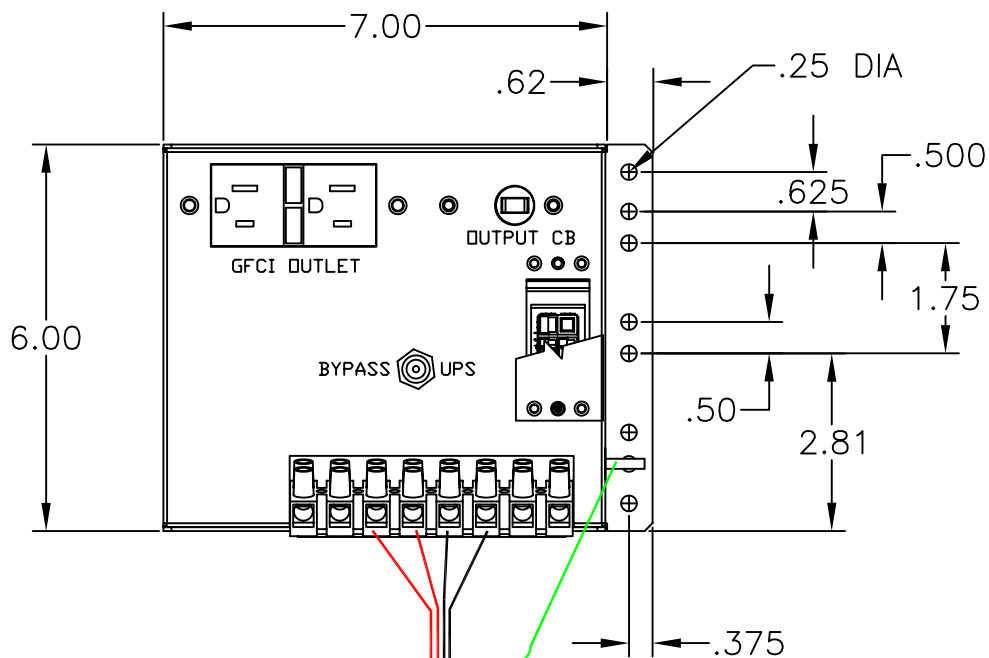
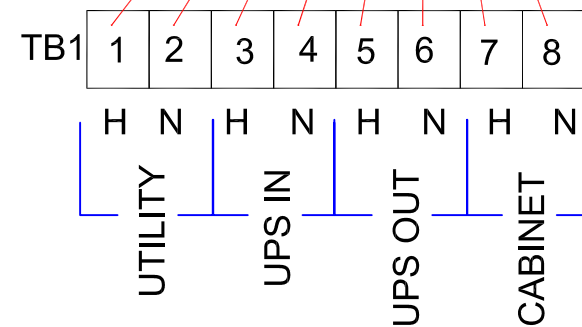
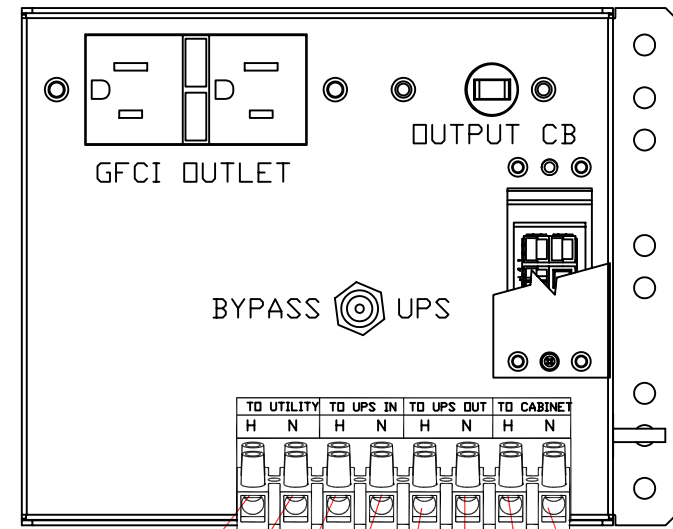
-1 & -2 VERSIONS



EXTERNAL GROUND

ASS'Y FRONT VIEW

-4 VERSION SHOWN

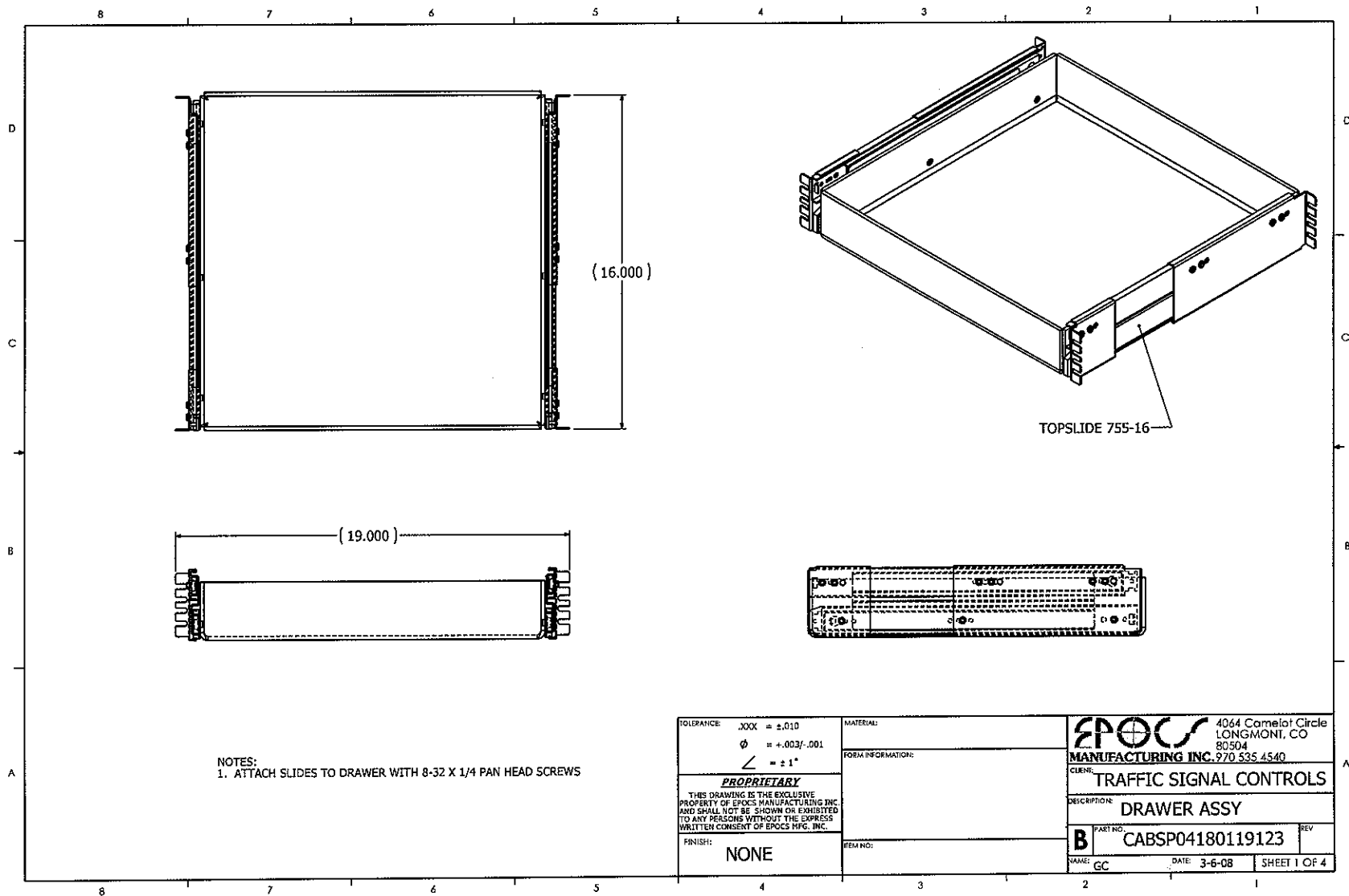


5' Dongle to Generator Outlet on Cabinet Police Panel

NOTES: UNLESS OTHERWISE SPECIFIED



UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:		APPROVALS	DATE	CLARY CORPORATION	
INCHES		DRAWN	10/2/07	150 E. HUNTINGTON DRIVE, MONROVIA CA. 91016	
DECIMALS		RRRUZ		INSTALLATION, SPD BYPASS	
.XX ± .02		REDRAWN		W/GEN INPUT & GFCI OPTIONS	
.XXX ± .010		CHECKED		SIZE D	
DO NOT SCALE DRAWING		APPROV.		FSCM NO. 71503	
FINISH		RRRUZ	10/2/07	DWG NO. 511-14400-X	
		SCALE		REV NR	
				SP SERIES\SPXXXXPD BYPASS BOX	
				SHEET 1 OF 3	



14463



Outpost™ Batteries

Designed for deep cycle, extreme temperature applications



Approved

By: Jeff Rice

Date: 11/14/2020

El Paso County Planning & Community Development



Quantity?

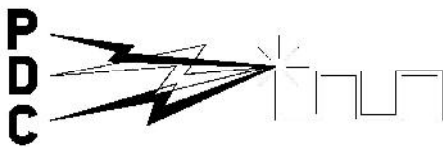
Overview

The Outpost™ batteries are designed for deep cycle, extreme temperature applications. They have been field tested and used for years in the traffic and ITS market as well as the US military. Operational from -40°C to +74°C (-40°F to +165°F). Available in 41, 51 & 105 Ampere-Hour (AH) ratings. Outpost batteries are sealed lead acid batteries built using an advanced absorbed glass mat (AGM) construction with microporous spun glass separators. The result is a highly

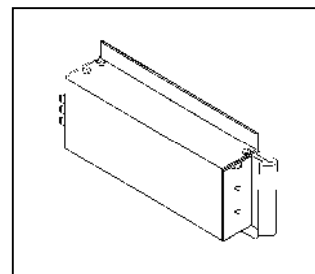
reliable, non-spillable, maintenance-free battery usable in the most demanding applications. The casing is a copolymer polypropylene technology originally developed for military jet fighter applications where wide temperature range performance is demanded. Positive plates—special lead calcium. Includes models: OP72C-41, OP96C-41, OP72D-51, OP96D-51, OPB-1241, OPB-1251, OPB-12105.

Configurations

Model	Voltage (nominal)	AH Capacity (20 hr rate)	System Voltage	Estimated Runtime (hrs) at 25°C (77°F) Full Charge							Weight per Battery lb (kg)	Overall Dimensions		
				300 W	500 W	700 W	875 W	1000 W	1200 W	1400 W		Length in (mm)	Width in (mm)	Height in (mm)
OP48C (4 batteries)			48 VDC	4.3	2.5	1.5	1.1							
OP72C (6 Batteries)	12 VDC	41 Ah	72 VDC	6.4	3.5	2.4	1.7				29 (13.2)	7.71 (195.9)	4.96 (126)	8.05 (204.4)
OP96C (8 batteries)			96 VDC	8.8	5.2	3.5	2.8	2.5	1.9	1.6				
OP48D (4 batteries)			48 VDC	5	3.2	1.9	1.4							
OP72D (6 batteries)	12 VDC	51 Ah	72 VDC	8.3	4.4	3	2.2				35 (15.9)	8.81 (224)	5.25 (133)	8.82 (224)
OP96D (8 batteries)			96 VDC	11	6.5	4.4	3.5	3.2	2.4	2				
OP48E (4 batteries)			48 VDC	12	7.3	4.6	3.5							
OP72E (6 batteries)	12 VDC	105 Ah	72 VDC	20.2	10.4	7.2	5.9				64 (29)	12.86 (326.8)	6.58 (167.2)	8.79 (223.1)
OP96E (8 batteries)			96 VDC	26	17	10.8	8.5	7.6	5.9	5.4				



DATA SHEET: **SSF-87 / 170 TYPE 204**



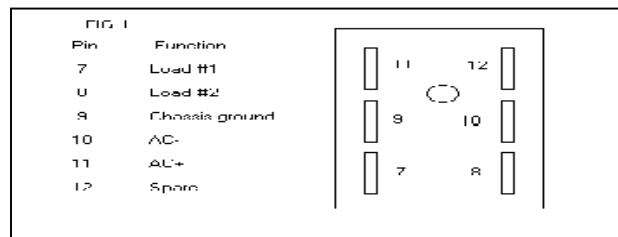
Solid State Flasher With Replaceable Modules:

General Description:

The PDC model SSF-87 is a dual pack, modular, solid state flasher designed specifically to meet NEMA specifications as well as New York "Model 204" specifications. Each flasher contains two individually replaceable modules that are enclosed in a dust resistant, metal enclosure, providing mechanical protection, and excellent heatsinking for the modules. The modules are easily accessible with the use of a crew driver.

Installation:

The flasher intermates with the model 332 cabinet as well as with any NEMA loadbay. It is easily installed or removed by grasping the extruded handle. Connector pinouts are shown in FIG 1. The connector mates with a Beau S-5406-LAB or equivalent.



General Characteristics:

Load

Voltage.....120 VAC
Current (max).....25.0 Amps
(Tungsten filament load)

Off State

dv/dt.....100V per microsecond
Line to load resistance...15k Ohms min.
Leakage current.....less than 20 mA

Surge Current

One cycle.....175 Amps RMS min.
One second..... 40 Amps RMS min..

Life

Operations.....30 million min.

Flash Rate

50-60 cycles (flashes) per minute.

Mechanical

Length..... 8.40 inches
Width..... 1.70 inches
Height..... 4.185 inches
Weight..... 1.50 Lbs.

Operating Temperature -35 to +74 degrees C

Adjustments: The model SSF-87 flasher has no adjustment controls.

Guaranteed : The flasher is fully guaranteed against all failures due to manufacturing defects for two years.

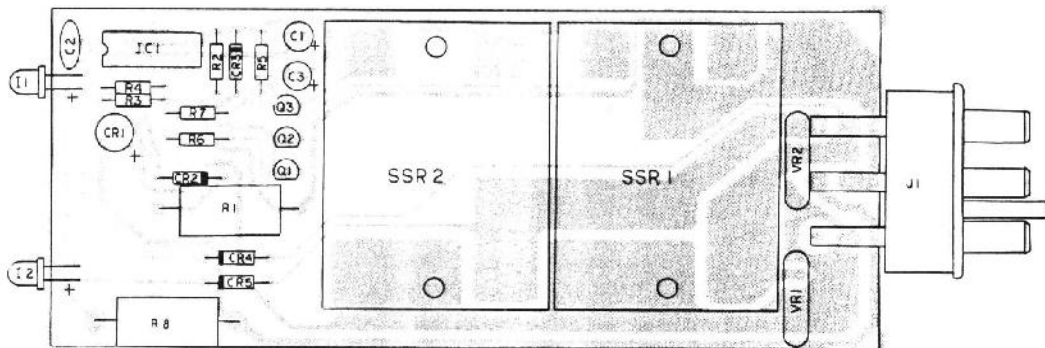


FIG. 2



DATA SHEET :DCI-82-242



Model 242 DC Isolator:

Description:

The PDC Model DCI-82 dual channel DC isolator is designed specifically to meet the California Department of Transportation , Model 242 specifications. Each channel of the DC isolator shall present a true signal (ground closure) at the output of its optical coupling device when a contact closure causes an input voltage of less than 8 VDC, for longer than 5 milliseconds. A transition from a true to a false signal at the output shall occur when the respective contact closure causes an input voltage of greater than 12 VDC.

All electronics are provided on a single sided P.C. board with an aluminum front panel. The P.C. board is provided with a solder mask, silk screen identifying all component locations and is conformally coated to resist adverse environmental conditions.

Installation:

The DC Isolator intermates with the model 332 cabinet input file. Connector pinouts are as shown in Fig. 1. The connector mates with a Cinch #250-22-30-xxx or equivalent.

Pin	Function	Pin	Function
A	DC ground	N	AC+
B	+24 VDC	P	NA
C	NA	R	NA
D	Input #1	S	NA
E	Input #1 common	T	NA
F	Output #1 (C)	U	NA
H	Output #1 (E)	V	NA
J	Input #2	W	Output #2 (C)
K	Input #2 common	X	Output #2 (E)
L	Chassis ground	Y	NA
M	AC-	Z	NA

FIG 1.

General Characteristics:

Model DCI-82-242

Input:

True State.....<8 VDC,>5 msec.

False State.....>12 VDC

Output:

Voltage.....30 VDC max.(open collector)

Current.....50 mamp sink(true state)

Power:

Voltage.....115 VAC

Current.....20 mamp AC max.

Isolation:

Voltage.....2500 VAC

Resistance.....1000 megohm.

Transient suppression:

Energy.....50 Joules

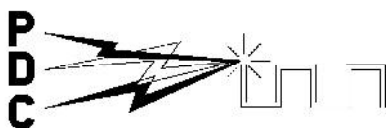
Mechanical Characteristics:

Length 7.00 IN.

Width..... 1.12 IN.

Height..... 4.50 IN

Weight..... 0.70 LBS.



DATA SHEET SSS-87IO/HD



Solid State Loadswitch:

Description:

The PDC SSS-87I/O Loadswitch series is a tri-pack, modular, solid state relay designed specifically to meet NEMA specifications, as well as California and New York "Model 200" specifications. Each loadswitch contains 3 individually replaceable modules that are enclosed in a dust resistant, metal enclosure providing mechanical protection and excellent heat sinking for the modules. The modules are easily accessible with the use of a screwdriver. Each loadswitch also features a L.E.D. indicator on each output circuit.

Installation:

The switchpac inter mates with any standard NEMA loadbay or with the model 332 cabinet output file as well as with any NEMA loadbay. It is easily installed or removed by grasping the handle. Connector P1 pin outs are shown in FIG 1. The connector mates with a PDC BCS-12 or equal.

PIN	FUNCTION	P1
1	+115VAC, 60 Hz	(P1 as viewed from the outside of the product looking directly at the connector)
2	Chassis Ground	
3	A Output (Red, Don't Walk)	
4	Not Assigned	
5	B Output (Yellow)	
6	A Input (Red, Don't Walk)	
7	C Output (Green, Walk)	
8	B Input (Yellow)	
9	+24 VDC	
10	C Input (Green, Walk)	
11	AC-	
12	Not Assigned	

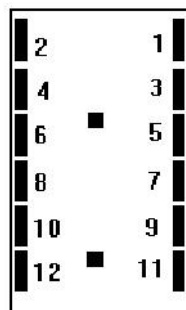


FIG 1.

General Characteristics:

Model	SSS-87I/O Series
Uses Module #	SSR-83-525HD & SSR-87HD
Meets Specs for	Nema, Caltrans, NY (model 200)
Load	voltage.....120 VAC current (max)..... 25.0 Amps
(Tungsten Filament Load)	
Control Signal	voltage..... +24VDC current 20.0 MA (max)
Switching	1st alternation after..... ± 10 Degrees of line voltage at the zero signal is applied. crossover point. Succeeding alterations..... ± 5 Degrees of line voltage at the zero crossover point.
Off State	dv/dt.....100 V per microsecond line to load resistance.....15 K Ohms Min leakage current.....less than 20 MA
Isolation	voltage.....2500 VDC Min resistance.....10 Meg Ohms Min
Surge Current	one cycle.....175 Amps RMS Min one second.....40 Amps RMS Min
Life	operations.....30 million Min
Mechanical	length.....8.40 inches width.....1.74 inches height.....4.185 inches weight.....1.135 LBS

Guarantee: The SSS-87I/O series is fully guaranteed against all failures due to manufacturing defects for two years.

21/136 Series - Transfer Relays

DPDT, 30 Amps

The 21 and 136 series flash transfer relays have a proven industry record of reliability. Their rugged design has allowed the products to be plugged in and left, for years of service. Recent changes in lighting techniques from incandescent to LED have prompted us to respond with an optional contact design (Code 33) better suited for the low currents of LED lighting, but equally usable with tungsten lamps.

GENERAL SPECIFICATIONS (@ 25° C)

Contacts:	21 Series	136 Series
Contact Configuration	DPDT	DPDT
Contact Material	Silver Alloy	Silver Alloy
Contact Rating		
120 / 240VAC Resistive	30 Amp	30 Amp
28VDC Resistive	20 Amp	20 Amp
Motor 120VAC 1 Phase	1 1/2Hp	1/4Hp
Motor 240VAC 3 Phase	2Hp	-
120VAC Tungsten	20 Amp	20 Amp
Contact Resistance, Initial	100 milliohms max @ 6VDC	100 milliohms max @ 6VDC
Coil:		
Coils Available	AC and DC	AC
Nominal Coil Power	2.4VA	6VA
Input Voltage Tolerance - AC	75% to 110% of nominal	85% to 110% of nominal
Input Voltage Tolerance - DC	70% to 110% of nominal	75% to 110% of nominal
Drop-out voltage	10% of nominal	10% of nominal
Duty	Continuous	Continuous
Timing:		
Operate Time (max)	20 mS	20 mS
Release Time (max)	20 mS	20 mS
Dielectric Strength:		
Across Open Contacts	500Vrms	500Vrms
Between mutually insulated point	1500Vrms	1500Vrms
Insulation resistance	1,000 Mohms min @ 500VDC	1,000 Mohms min @ 500VDC
Temperature:		
Operating	-34 to 74°C (-30 to 165°F)	-34 to 74°C (-30 to 165°F)
Storage	-40 to 105°C (-40 to 221°F)	-40 to 105°C (-40 to 221°F)
Life Expectancy:		
Electrical (full load)	200,000	100,000
Mechanical (no load)	5,000,000	5,000,000
Miscellaneous:		
Mounting Position	Any	Any
Enclosure	Clear Polycarbonate	Clear Polycarbonate
Weight	7.2oz (205 grams)	8.1oz (230 grams)
Mating Socket	SK-TRF8-BFW-1	SK-TRF8-BFW-1

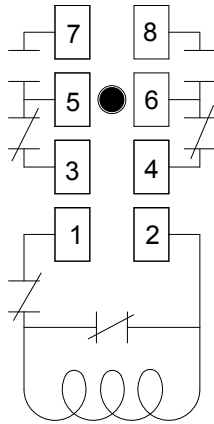


The 21 series coil is rectified which provides chatter free operation in brownout conditions down to 85VAC and will not overheat up to 130VAC. Rectified coils also provide less power consumption and less heating.

The 136 Series is a straight AC operated coil with a copper shading ring instead of a rectified coil.

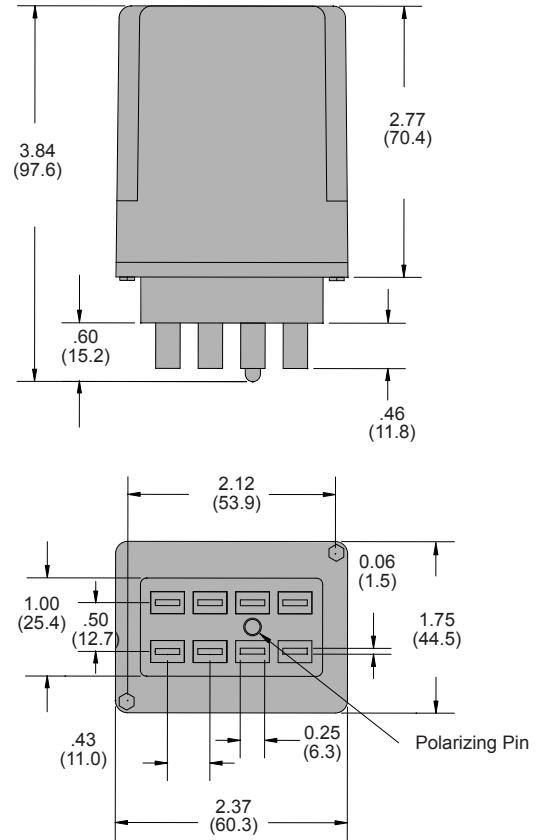
General Purpose Relays

Wire Diagram



Outline Dimensions

Dimensions Shown in inches & (millimeters)



Newly Available

Ordering Code **21** **XBX** **P** **120VAC**

Series
21

Contact Arrangement
XBX - (2 form C - DPDT)

Optional Features
Polycarbonate cover - CODE P
Light Pipe for coil voltage indicator - CODE L
*Gold diffused, serrated contacts - CODE 33

Coil Voltage
AC: 120, 240 (Add VAC)
DC: 12, 24 (Add VDC)
Coil voltages and frequencies must be specified

*Ideal for LED lamp applications

**21 Legacy
Part Number Chart**

UL Approved Part numbers	Alternate Part Number & Voltage
21ACPX-2	21XBXP-120VAC
21ACPX-8	21XBXP-240VAC

May also order

Part numbers/Midtex Type	Voltage
136-62T3A1	120VAC

Coils Available	AC and DC
Nominal Coil Power	2.4vA
Input Voltage Tolerance AC	75% to 110% of nominal
Input Voltage Tolerance DC	70% to 110% of nominal
Drop Out Voltage	10% of nominal
Duty	Continuous



2018ECL

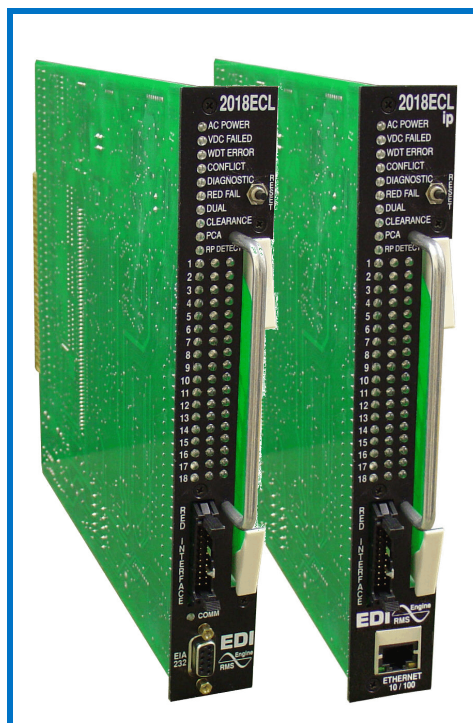
Type 170 / 179 / 2070 Signal Monitor

INTRODUCING A NEW STANDARD OF SAFETY AND DIAGNOSTIC CAPABILITIES IN TYPE 170 / 2070 ENHANCED SIGNAL MONITORS

The EDI model 2018ECL Signal Monitor is designed to upgrade the capabilities of the basic 210 monitor used in Type 170 / 179 Output Files. The unit is fully compatible with the requirements of the 170, 179, and 2070 Controller Units and offers eighteen channels of monitoring. The 2018ECL Signal Monitor utilizes enhanced monitoring functions to increase cabinet fault coverage, providing additional assurance that cabinet equipment malfunctions will be detected and diagnosed properly.

Model Options:

2018ECL	18 channel capability with EIA-232 Port
2018ECLip	18 channel capability with Ethernet Port
2018KCL	Datakey Programming with EIA-232 Port
2018KCLip	Datakey Programming with Ethernet Port



2018ECL FEATURES

Enhanced 210 Monitoring Functions:

The 2018ECL meets all requirements of the Caltrans "TSCE Specifications 1/89". Basic fault coverage includes Conflict, 24Vdc, and CU Watchdog monitoring. Red Monitoring senses the absence of signals on a channel. Dual Indication Monitoring detects simultaneous active signals on a channel. Clearance Monitoring ensures sequencing of signals with a proper minimum yellow clearance interval. AC Line Monitoring detects and responds to low AC Line voltages as well as interruptions with a minimum flash interval.

Event Logging:

The 2018ECL monitor maintains a 100 record nonvolatile event log which contains records of fault events showing the complete intersection status as well as AC Line events, configuration changes, monitor resets, cabinet temperature and true RMS voltages. A real time clock time stamps each log event with time and date.

RYG Full Intersection Display:

The Full Intersection display uses Red, Yellow, and Green LEDs to show active colors of all channel inputs simultaneously for real-time intersection status.

EDI RMS-Engine™:

A DSP coprocessor converts ac input measurements to True RMS voltages, virtually eliminating false sensing due to changes in frequency, phase, or sine wave distortion.

Recurrent Pulse Detection:

Recurrent Pulse Detection works in conjunction with the RMS-Engine to detect faults that are pulsing or intermittent in nature.

LEDguard™:

This EDI innovative signal thresholding technique is used to increase the level of monitoring protection when using LED based signal heads.

Communications to Laptop PC or Remote Traffic Management Center:

An EIA-232 or optional Ethernet port provides access by a local PC or remote TMC running ECom™ Windows based software for status, event log review, and archival.

Signal Sequence History Display:

Five Signal Sequence History logs stored in nonvolatile memory each graphically display 30 seconds of signal status prior to each fault event. The resulting display eases diagnosing of intermittent and transient faults by viewing the exact signal states that the monitor sensed.

Configuration Monitor:

Detects unintended and potentially unsafe programming changes and Red cable problems.

Flashing Yellow Arrow PPLT:

Two operational modes are built-in for support of the MUTCD Flashing Yellow Arrow PPLT operation depending on the number of load switches in the cabinet.

ECom, LEDguard, and RMS-Engine are trademarks of Eberle Design Inc.

EBERLE DESIGN INC.

3510 East Atlanta Avenue
Phoenix, AZ 85040 USA
www.EDIttraffic.com

Tel (480) 968-6407
Fax (602) 437-1996



FLeX[®] ATC Controller

Approved

By: Jeff Rice
Date: 10/09/2020

El Paso County Planning & Community Development



Cabinets

Controllers

Signals

Signs

Software

Specialty



Overview

McCain's FLeX[®] Controller represents the latest design in the company's ATC eX series of advanced transportation controllers. Leveraging a Linux engine board, the controller has a real-time, open source operating system that supports the latest ITS applications including high-resolution data collection and V2X/connected vehicle applications. Measuring just 5.5" tall, the compact design is available in both shelf and rack mount versions, offering speed and performance for any ATC or Caltrans cabinet configuration.

Benefits

- Meets or exceeds latest ATC/ITE industry standards
- Oversized display with split-screen option for users operating Omni eX[®] Intersection Control Software
- Open architecture Linux platform
- Supports high-resolution data collection
- Connects in any environment through a wide variety of communication options
- Enables remote access and control through web-based user interface (for users with wifi option, proper network, and software)

Product Description

The McCain *FLeX* Controller is a revolutionary transportation controller designed in full compliance with the latest published and proposed ATC standards. By embodying the intent and flexibility of these industry standards, the *FLeX* Controller offers users unprecedented speed and performance to meet the needs of today and tomorrow.

The controller features an oversized 16-line display and front panel access to a variety of communication options - USB, SD card, Ethernet, and Datakey - that make it easy to connect, program, and update. Optional wifi integration allows users to access local software through a web interface.

Each controller is built to McCain's stringent manufacturing standards, ensuring long-lasting performance in all environments.



Standard Features

Operating system

- Linux
- Freescale PowerQUICC II Pro microprocessor

Memory

- SD card slot
- 16MB Flash memory NOR
- 256MB Flash memory NAND
- 256MB DRAM
- 2MB Non-volatile SRAM

Backup Real-Time Clock (RTC)

Applicable standards

- Proposed ATC 6.24 standards
- NTCIP base standards (where applicable)

Interfaces

Communication interfaces

- SDLC (2)
- Serial (asynchronous) (3)
- ENET 1: 100 Base-T Ethernet ports (2)
- ENET 2: 100 Base-T Ethernet ports (2) dedicated for local communications (i.e. laptop or similar)
- USB ports (2)
- Wifi enabled (optional)

Front panel interface

- Display: 16 lines x 40 characters
- Keyboard: 7 x 4 keypad (28 key)
- Datakey

Cabinet interfaces

- Caltrans cabinets - C1S, C11S (optional)
- ITS/ATC cabinets - SP3, SP5

Software

Compatible with McCain's **Omni eX**® Intersection Control Software (see separate data sheet for details).

General Specifications

Dimensions:	Shelf mount: 5.25" H x 12.5" W x 7" D Rack mount: 5.25" H x 19" W x 7" D (rounded to the nearest inch)
Form Factor:	EIA rack mount compatible
Power:	89 VAC to 135 VAC, 60 Hz (± 3 Hz)
Environment:	Operating Temperature: -37°C to +74°C Humidity: 0 to 95% (non-condensing)
Weight:	Shelf mount: 7.1 lbs Rack mount: 8.1 lbs

To learn more about
McCain's Integrated Traffic
Solutions, please contact
info@mccain-inc.com or
call (760) 727-8100





» Layer 2, Rack Mount, Military Grade, Managed, Industrial Ethernet Traffic Switch

KY-3170EMx with Device Binding



**Supports the New
KY-1-Button
Easy Backup /Restore**



10 Port, Gigabit, Managed MRP, Auto DOS /DDoS Protection High Security, Traffic Switch

- 8 X 10/100/1000Base-T(X) RJ-45 ports & 2 X 100/1000Base(X) SFP Slots - Layer 2 Switch
- Supports Cyber Secure Video, Device Binding, IP Source Guard & Clean Code Technology, ACL's
- SNMPv3, HTTPS, SSH security features, TACACS+, IEEE1588v2 Timing, 802.1x, Cyber-Locking & DDMI
- EMC performance: Industrial level 4 / JUMBO FRAME
- Supports: 9 ~ 36 Volts DC power input
- High Security Cyber-Lock Device - Qualified for
- Military ICS Applications.



» Overview

The KY-3170EMx is a managed, redundant ring, high security Gigabit Ethernet Switch with 8 X 10/100/1000Base(T)X RJ and 2 X 100/1000Base(X) SFP slots. Built in DoS / DDoS Enhanced silicon Protection. Automatically protects the network before damage occurs. Built-in Auto-notification of events such as: (email / Text). High Security features such as Device Binding, IP Source Guard, MAC & IP Lock. Locking and Hybrid locking. Supports Black List, Cyber-Lock, Cyber-Secure Video, Clean Code Technology, IP Flow Checking, Keep Alive Checking as well as 15 Levels of Authorization & Access. The switch is very power efficient using a fraction of the power that competitor switches use. Power savings alone pays for this switch. The security insure your network is NOT compromised. SAVINGS, SAFETY, and SECURITY!

» Features & Benefits

1. Redundancy Technology: supports Ring / Switching Protocols, MRP (recovery time < 25ms) and MSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
6. Network Management and Monitoring: supports CLI, Telnet, WEB management methods, SNMPv1/v2/v3, RMON, LLDP, SNMP, DHCP, SSH, SFTP, editable Html / Ascii Files
7. Network Security: supports: SSH, SSL, ACL
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
11. MVR - MultiCast VLAN Registration, IEEE 802.1Q with GVRP

» Technical Specifications

Standards:

IEEE 802.3, IEEE 802.3i, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z, IEEE 802.3ad
IEEE 802.1D, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s, IEEE 802.1w,
IEEE 802.3x, IEEE 802.1AB, IEEE 802.z
NEMA TS-2

Protocols:

IEEE 1588v2 Timing, Device Binding, TACACS+, MultiCast, PIM, SIM, Black List, IPv6, TACACS+, & Cyber-Lock

Ring, Ring+, VLAN, PVLAN, MSTP, IGMP Snooping, GMRP;

IEC 62439-2 MRP (Media Redundancy Protocol);

Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNMP, DHCP server;

Sec, SSH, SSL, ACL, IP Source Guard, Authorization (15 Levels);

FTP; Cyber-Secure Routing (CSR), LLDP, Jumbo Frame

ARP, QoS, MVR, SysLog, Clean Code Technology (CCT),

Cyber-Secure Video

Router Properties:

Priority Queues: 8

Number of VLANs: 512

VLAN ID: 1-4094

Security Queues: 16 Per VLAN

Number of Multicast Groups: 256

MAC Table: 8K

Packet Buffer: 16 Mb

Packet Forwarding Rate: 42.2 Gbps Fabric, Wire Speed -All Ports

Switching Delay: < 5µs

Interface :

Gigabit SFP Ethernet Ports: max: 2 X 100/1000Base(X) SFP Slots

Gigabit Ethernet RJ45 Ports: 8 X 10/100/1000Base-TX RJ45 ports

Console Port: RS232 (RJ45 connector)

Filtered Ground with ESP

Layer 2, Managed, High Security, Industrial Ethernet Traffic Switch

10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	8
100/1000Base-X - SFP port	2
Technology	
Ethernet Standards	IEEE 802 3i for 10Base-T IEEE 802 3u for 100Base-TX and 100Base-FX IEEE 802 3ab for 1000Base-T IEEE 802 z for 1000Base-X IEEE 802 3x for Flow Control IEEE 802 3ad for LACP (Link Aggregation Control Protocol) IEEE 802 1p for COs (Class of Service) IEEE 802 1Q for VLAN Tagging IEEE 802 1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802 1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802 1x for Authentication IEEE 802 1AB for LLDP (Link Layer Discovery Protocol) RFC1887 - IPv6 Architecture RFC2460 - IPv6 Protocol Specification RFC2464 - IPv6 Transmission RFC2246 - SSH FTP RFC4250 - SSH PAN SFTPv4 SFTPv6 (soon to be released) RFC4253 - SSH Transport IEEE 802 1AE-2013 (MACsec) MAC Security IEEE 802 1AEbn (GCM-AES-256 Cipher Suite) IEEE 802 1AEbw-2013
MAC Table	8K Entries
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching Latency: 5us Switching Bandwidth: 26 Gbps Maximum # of Available VLANs: 512 IGMP Multicast Groups: 128 for each VLAN Port Rate Limiting: User Defined Security Queues: 16 Per VLAN
Jumbo Frame	Up to 9 K Bytes
Security Features	Device Binding Security Feature with Silicon Enhancements Enable / Disable Ports, MAC Based Port Security Port Based Network Access Control (802 1x) Single 802 1x and Multiple 802 1x MAC Based Authentication IP Address Based Authentication QOS Assignment Flow-Check Guest VLAN MAC Address Limit TACACS+ Keep-Alive Check VLAN (802 1Q) Segregate and Secure Network Traffic Radius Centralized Password Management SNMPv3 Encrypted Authentication and Access Security WEB and CLI Authentication and Authorization Security (Access) 15 Security Levels of Authorization IP Source Guard HTTPS / SSH Enhanced Network Security SSH FTP / Advanced Encryption Selectable Backup Security Defaults
Software Features	DoS / DDoS Auto-Prevention: Port & Flow Security IEEE 1588v2 Clock Synchronization IEEE 802 1D Bridge, Auto MAC Address learning / aging and MAC Address (Static) Multiple Registration Protocol: (MRP) RSTP / MSTP (IEEE 802 1w/s) Per Port Power Saving Feature Redundant Ring (RING) // with a recovery time of less than 20ms over 300 units TOS / DiffServ Supported QOS Quality of Service (IEEE 802 1p) for real time traffic VLAN (IEEE 802 1Q) with VLAN Tagging Voice VLAN Guest VLAN IGMP v2 / v3 Snooping IP-Based Bandwidth Management Application Based QOS Management Port Configuration , Status Statistics, Monitoring & Security DHCP Server / Client / Snooping DHCP Relay ModBUS TCP DNS Client Proxy ARP Inspection SMTP Client IP Policing / Protocol 41 (IPv6 & IPv6 Secure) Clean Code Technology (CCT) Cyber-Secure Video (CSV) Media Redundancy Protocol (MRP: IEC 62439-2 Media Redundancy Protocol) Ultra-fast Ring Broadcast Storm Control SSH / FTP / AES / SHA2 Encryption
Network Redundancy	Ring and Ring+, Open Ring VRRP, Chain MRP MSTP (RSTP/STP compatible)

Layer 2, Managed, High Security, Industrial Ethernet, Traffic Switch

RS-232 Serial Console	RS-232 Serial with RJ45 Connector (Console Cable / 115,200bps, 8, N, 1) Supports KY-1-Button
LED Indicator Lights	
Power LED (PWR)	Green Lower LED x 2
Ring Master LED (RM)	Green Indicates the system is operating in Ring Master mode
Ring LED (Ring)	Green Indicates that the system is operating Green Blinking Indicates the Ring is Broken
Fault LED (Fault)	Amber Indicates an Unexpected Event has Occurred
10/100/1000Base-T(X) RJ45 LED	Dual Color LED Green for 1000 Mbps Link / Activity & Amber for 10/100 Mbps Link / Activity
100/1000Base-X SFP Port LED	Green For Port Link / Activity
10/100/1000Base-T(X) PoE+ LED	Blue LED Green for 100/1000 PoE Link
Fault Contact	
Relay	Not Applicable to KY-3170EMx
Power Specifications	
Redundant Input Power	DC Input / Backplane Supports 9 ~36 Volts DC for NEMA and non-NEMA Cabinets
Power Consumption (Typical)	<10 Watts
Overload Current Protection	Yes
Reverse Polarity Protection	Yes
Physical Characteristics	
Enclosure	IP-30
Dimensions (W x D x H)	58.0 (W) X 114.0 (D) X 205.0 (H) // Millimeters (mm)
Weight (g)	1450g
Environmental Specifications	
Storage Temperature	-40 C ~ +85 C (-40 ~ +185 F)
Operating Temperature	-40 C ~ +85 C (-40 ~ +185 F)
Operating Humidity	5% ~ 97% Non-Condensing
Regulatory Approvals	
EMI	FCC Part 15, CISPR (EN55022) Class A
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS) EN61000-4-4 (EFT) EN61000-4-5 (Surge) EN61000-4-6 (CS) EN61000-4-8 EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration / Safety	IEC60068-2-6 / EN60950-1
Backplane Contacts	Pin A = DC Logic Ground // Pin B = + DC Voltage // Pin L = Chassis Ground ///
Warranty	5 Years



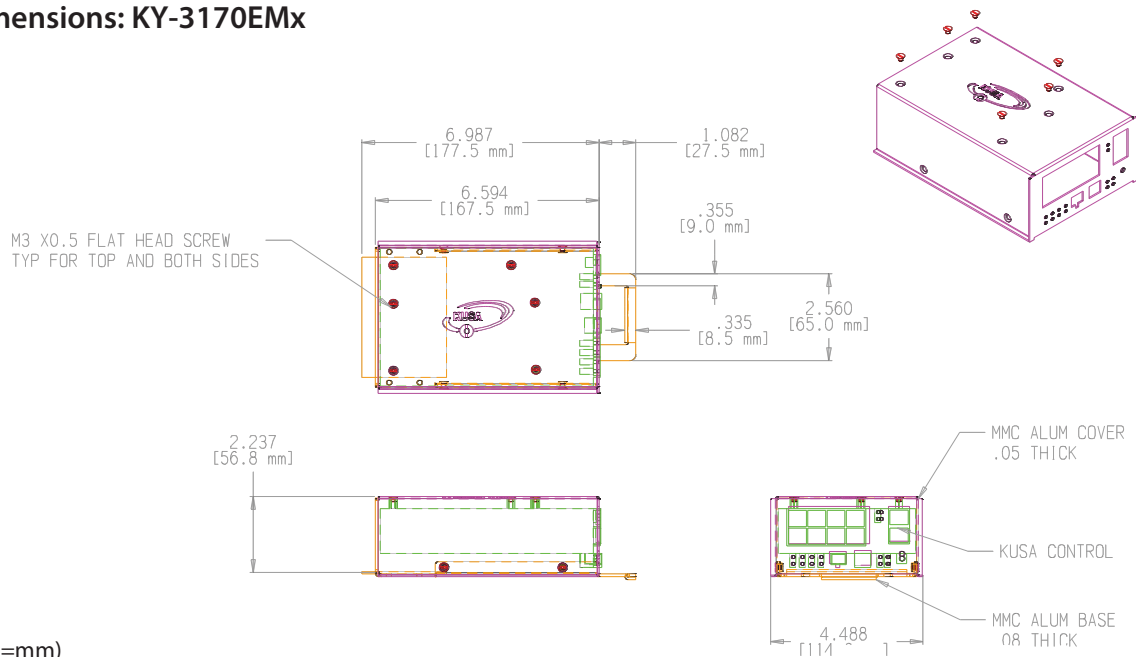
Supports: KY-1-Button
Easy Maintenance
Lowest Cost
Full Backup / Restore
(Optional)
No PC Required !



EMAIL: Sales@DYMEC.com
Telephone: (816) 988-7861
DYMEC.com

Layer 2, Rack Mount, High Security, Industrial Ethernet Traffic Switch

Dimensions: KY-3170EMx



(Unit=mm)

Network Security For The 21st Century

MTBF

(Mean Time Between Failure)

>57,315 Hours

Warranty: 5 Years

Approvals & Certifications

NEMA TS 1 and TS 2 Certified Device
IEC61000-4-2(ESD): ±8KV contact discharge, ±15KV air discharge
IEC61000-4-3(RS): 10V/M (80-1000MHz)
IEC61000-4-4(EFT): ±4KV power line, ±2KV data line
IEC61000-4-5(Surge): power line ±4KV CM/ ±2KV DM, data line ±2KV IEC61000-4-6(CS): 3V(10KHz-150KHz), 10V(150KHz-80MHz)
IEC61000-4-8(Power frequency magnetic field): 100A/m cont. 1000A/m, 1s to 3s
IEC61000-4-12/18(Damped oscillatory wave): 2.5KV CM, 1KV DM
IEC61000-4-10(Damped oscillatory): 30A/m
IEC61000-4-16(Common mode conduct): 30V cont. 300V, 1s
FCC CFR47 Part 15/EN55022: Class A&B
IEC61000-6-2(Industrial Standards), IEC61850-3(Substations), IEEE1613(Electric Power Substations), EN50121-4(Railway Applications)
Multi-Cast Certified for High Definition Video, Electro-Magnetic Pulse (EMP) Non-Nuclear Electro-Magnetic Pulse (NNEMP)



Ordering Information & Description

Model	Description	Power
KY-3170EMx	(2) 100/1000Base(X) SFP Ports (1) Console Management Port (8) 10/100/1000Base(T)X Ports	Powered by plugging into a standard detector rack/input file (12VDC, 24VDC)

Optional Gigabit SFP Modules

Model	Description
KY-SGSFP-LX550M	SFP module, 1 x 1000M Multi Mode, LC Connector, 1310nm, 550m
KY-SGSFP-LX10K	SFP module 1 x 1000M Single Mode, LC Connector, 1310nm, 10km
KY-SGSFP-LX20K	SFP module, 1 x 1000M Single Mode, LC Connector, 1310nm, 20km
KY-SGSFP-LX40K	SFP module, 1 x 1000M Single Mode, LC Connector, 1550nm, 40km
KY-SGSFP-ZX80K	SFP module, 1 x 1000M Single Mode, LC Connector, 1550nm, 80km

DYMEC Authorized Distributor



EMAIL: Sales@DYMEC.com
Telephone: (816) 988-7861
DYMEC.com



Bullet-LTE - 4G/LTE Ethernet/Serial/USB Gateway

The Bullet-LTE-NA provides a feature packed, compact industrial strength wireless solution using the ultra fast 4G LTE technology for critical data communications. Supporting commonly used North America Bands the Bullet-LTE-NA provides up to 150 Mbps for today's data intensive applications. The Bullet-LTE-NA provides features such as Ethernet, RS232 Serial Data, 2x Programmable I/O and Standalone GPS.

4G/LTE

Firewall / ACL / VPN

Standalone GPS

10/100 Ethernet

Programmable I/O

RS232 Serial Port



Features

- Ultra Fast 4G/LTE Operation
- Up to 150 Mbps Downlink / 50 Mbps Uplink Over Air
- IP Pass-through Mode
- Data Usage Alerts (Email, SMS)
- Firewall with ACL Security, DMZ & Port Forwarding
- 2x Programmable Analog/Digital Inputs or 2 Digital Outputs
- IPSec, GRE / VPN Tunneling
- RS232 Serial Data Port
- 10/100 Ethernet (PoE)
- USB OTG Port (Host, Console, NDIS, Serial Data)
- Standalone GPS (TCP Server, UDP Reporting, SMTP)
- SMS Support: Ethernet (Telnet), Alerts
- Wide Operating Temperature (-40°C to +85°C)
- User interface via telnet or web browser
- Microhard NMS Support



With 4G Antenna Kit

Bullet-LTE-NA

Specifications

Supported Bands	E-UTRA FDD (Bands 2,4,5,12/17,13) UMTS HSPA+ (Bands 2,5) 3GPP Protocol Stack Release 9	Firewall	NAT, NAT-T VPN tunneling, Port forwarding, VPN/GRE pass-through; Access control lists (IP/MAC filtering), Data origin / integrity Authentication, DMZ
Cellular Data Features* <small>*Module Standalone Laboratory Performance</small>	LTE: DL 150 Mbps, UL 50 Mbps DC-HSPA+: DL 42 Mbps, UL 5.7 Mbps	Management	Telnet, WebUI, SNMP V1/2/3, Wireless Upgrade (HTTP/FTP), RADIUS authentication, AT Command Interface (Serial/Telnet), Microhard NMS Support, Data Usage Alerts, SSH
Serial Interface	RS232 Serial Data Port	Diagnostics	RSSI, Ec/No, Voltage, Temperature, Remote diagnostics, Watchdog, UDP Event Reporting, SMS Alerts, Netflow
Serial Baud Rate	300bps to 921kbps	Input Voltage	7 - 30VDC or Passive PoE on LAN Reverse polarity protection
Serial Port Server	Extensive Serial Port Support: TCP Server/Client / UDP Server/Client / Modbus / SMTP	Connectors:	Antenna 3x SMA Female (Cell, Cell Div, GPS) Data RJ-45 (Ethernet) 4 PIN Interlock (Vin, I/O) DB9 RS232 USB Micro-AB SIM 1.8 / 3.0V
Ethernet	10/100 BaseT, Auto - MDI/X IEEE 802.3	Environmental	Operating Temperature -40°C to +85°C -40°F to +185°F Humidity 5-95%, non-condensing
I/O	2x Programmable Analog/Digital Inputs or 2x Digital Outputs	Weight	Approx. 150 grams
USB (OTG)	USB 2.0 USB Console Port USB to Serial Data Routing USB to Ethernet Data Routing (NDIS) USB OTG (Host)	Dimensions	Approx. 1.75" x 3.25" x 1.0" (45mm x 85mm x 25mm)
GPS	TCP Server, UDP/Email Reporting, GpsGate	Approvals	FCC IC PTCRB Carrier Specific Approvals
Navigation Update Rate	Up to 5 Hz	Order Options	
Accuracy	Position: 2.5 m CEP SBAS: 2.0 m CEP		
Acquisition	Cold Starts: 27 seconds Aided Started: 4 seconds Hot Starts: 1 seconds		
Sensitivity (Active/Passive Antenna)	Tracking : -159 dBm Cold Starts: -147 dBm Hot Starts: -156 dBm		
SMS	SMS to/from Ethernet via Telnet SMS Alerts SMS Remote Reboots	Model	Bullet-LTE-NA
Carrier Connection	Dial on Demand, PAP, CHAP, Idle Time, ICMP Keep Alive, DDNS IP pass-through, Wireless Connection Time-out.		
Network Protocols	TCP, UDP, TCP/IP, ARP, ICMP, DHCP, HTTP, SNMP, FTP, DNS, Serial over IP, Modbus Slave (TCP/Serial)		
Security	VPN, IPSec with IKE/ISAKMP; Multiple tunnel support (16); 3DES and up to 256-bit AES Encryption, Site to Site Tunneling L2TP, GRE, HTTPS, RADIUS		

Contact Information

Microhard Systems Inc.
150 Country Hills Landing N.W.
Calgary, AB, Canada T3K 5P3

Email: info@microhardcorp.com
Tel: (403) 248-0028
Fax: (403) 248-2762

Copyright 2017 Microhard Systems Inc.
Specifications subject to change without notice.



TC-CK1-SBE

INTERSECTOR™

Motion and Presence Sensor

Approved

By: Jeff Rice

Date: 10/09/2020

El Paso County Planning & Community Development



ENGINEERED FOR MOTION



DESCRIPTION

The TC-CK1-SBE **INTERSECTOR™** is a microwave-based radar motion and presence sensor used for intersection control. The unit interfaces with a traffic-control cabinet, and outputs signals when vehicles are present in user-defined zones. Zones are created using an X-Y coordinate system, and operation is verified and optimized using a laptop with Internet Explorer 6.0 or greater as part of the installation process.

The TC-CK1-SBE allows users to create up to 8 detection zones and assign vehicle presence in these zones to up to 8 outputs to the control cabinet (e.g. left turn, straight through, right turn). Detection zones can be created to a maximum distance of 600 feet from the sensor itself. Unlike previous microwave radar sensors, the **INTERSECTOR™** will track the presence of a vehicle in a detection zone for a predetermined time.

Interface boards are available for the **INTERSECTOR™** which are compatible with both NEMA, 170, 179, and 2070 cabinets. For each sensor, one interface board is required in order to communicate with the control cabinet. Three interface boards are available. The TCIB-2.1 provides 2 outputs and uses a single slot in the cabinet. The TCIB-4.1 provides 4 outputs and uses a single slot, and TCIB-4.2 provides 4 outputs and utilizes two slots in the cabinet.

BENEFITS

The **INTERSECTOR™** brings the advantages of microwave radar detection together with presence-tracking capabilities in an easy-to-understand visual image. The **INTERSECTOR™** offers these advantages when compared to cameras or loops:

- ☑ Detection not affected by weather
- ☑ Immune to sunrise/sunset or post-rain glare
- ☑ Not susceptible to in-road breakage
- ☑ Multiple lanes covered by a single unit
- ☑ Advanced and stop bar detection in a single unit
- ☑ Easily installs to corner pole
- ☑ Surge protection provided in detector
- ☑ Successfully detects bicycles/motorcycles
- ☑ Significant cost savings when compared to camera mounting requirements or multiple loops
- ☑ No privacy concerns
- ☑ Classifies bicycles as they approach a red light, allowing users to establish bicycle-only detection zones.

The **INTERSECTOR™** allows users to:

- ☑ Graphically track vehicles as they approach the intersection
- ☑ Easily set up detection zones to provide programmable inputs to a control cabinet
- ☑ Verify that the system is functioning correctly and troubleshoot

TC-CK1-SBEV022015

SENSOR SPECIFICATIONS**PHYSICAL:**

- ☑ Size: 11x8.5x7 (LxWxH)
- ☑ Weight: 5 pounds
- ☑ Color: Blue body with gray endcaps
- ☑ Universal Mounting Bracket included

OPERATING:

- ☑ Temperature range: -40°C to +85°C
- ☑ Power requirements: Powered from TCIB over Ethernet cable

RADAR:

- ☑ Seven selectable frequency channels at 24 GHz
- ☑ Beam angle: Azimuth 30 degrees to 100' and then reduces to 20 degrees out to 600'
- ☑ Elevation: 12 degrees
- ☑ Operates with FSK-4 mode

PERFORMANCE:

- ☑ Track multiple moving and stationary vehicles
- ☑ Tracking of X and Y location of each vehicle
- ☑ Updates 20 times per second
- ☑ Speed of each vehicle is shown for reference
- ☑ Motion detection—60 feet minimum to 600 feet maximum
- ☑ Stop bar presence detection—60 feet to 160 feet (20M~50M)
- ☑ Mounting height 14 to 20 feet—Mounting outside this range may reduce performance (See Installation Table)
- ☑ Mounting location—typically corner signal pole—Maximum 20 degrees offset from traffic direction—Mounting outside this range may reduce performance
- ☑ Ethernet interface with power supplied over the Ethernet (POE)—Maximum distance 300'—For longer distances, consult factory
- ☑ Eight programmable independent zones
- ☑ Eight Opto-isolated outputs
- ☑ Grid tracking with live interactive zones
- ☑ Simulated mode for diagnostics and demonstration

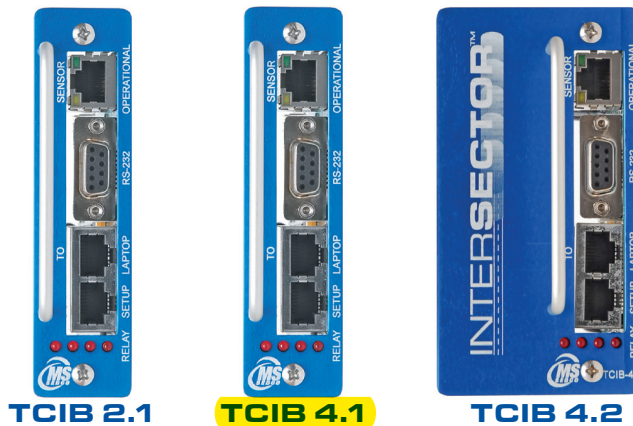
- ☑ Adjustable Delay Before Max time on stationary objects from 0 to 960 seconds
- ☑ Adjustable OZP/Max time on stationary objects from 0 to 960 seconds
- ☑ Provides histograms to verify setup of zones
- ☑ Selectable standard (English) or metric units
- ☑ User-defined delay and extension time for each zone
- ☑ Operational from cold start in 20 seconds—Full performance in 2 minutes
- ☑ Automatically recovers from power failure
- ☑ FCC approved
- ☑ IP addressable for remote set-up and monitoring
- ☑ Optional bicycle-only setting for detection zones
- ☑ Surge protection provided in detector

WARRANTY

A 3 year warranty is available from the manufacturer covering defects in materials and workmanship. Contact MS SEDCO for details.

INSTALLATION TABLE**RECOMMENDED SETTINGS**

Distance to Stop Bar	Max.# Lanes	Angle (°)	Mounting Height (Ft.)
80'-90'	3	-4°	16'
90'-100'	3	-3°	16'
100'-120'	4	-2°	18'
120'-140'	4	0°	18'

**DESCRIPTION**

The TCIB INTERFACE BOARDS are special circuit boards designed to allow the INTERSECTOR™ Motion and Presence sensor to communicate with the control cabinet.

Interface boards are available for the INTERSECTOR™ which are compatible with both NEMA, 170, 179, and 2070 cabinets.

For each sensor, one interface board is required in order to communicate with the control cabinet. Three interface boards are available. The TCIB-2.1 provides 2 outputs and uses a single slot in the cabinet. The TCIB-4.1 provides 4 outputs and uses a single slot, and TCIB-4.2 provides 4 outputs and utilizes two slots in the cabinet.

TCIB CARD SPECIFICATIONS**PHYSICAL:**

- ☑ Dimensions per TS2 standard
- ☑ Color: Anodized bright blue
- Edge pins gold plated

OPERATING:

- ☑ Temperature range: -40°C to +85°C
- ☑ Power requirements: 800 mA at 12 VDC, 400 mA at 24 VDC

NOTE: MS Sedco recommends 1 amp be available for each TCIB card.

PERFORMANCE:

- ☑ Two output or four output
- ☑ Four LEDs to indicate each zone active
- ☑ Four Opto-isolated outputs each with LED indicator and Status Indicator

- ☑ Fault mode (no Ethernet connection) all LEDs and Opto-isolators on (constant call to control cabinet)
- ☑ Ethernet setup port (bridge from PC to Intersector) and operational port
- ☑ RS232 port for diagnostics and data
- ☑ Supplies power for Intersector, short circuit protected
- ☑ Operational from cold start in 20 seconds
- ☑ Automatically recovers from power failure

Construction & Material :

Item		Unit	Specification
Product			CAT.5e STP 4P CMX Rated
Conductor	Size	AWG	24
	Number	pairs	4
	Material		Solid Bare Copper
	Construction	pcs/mm	1/0.52
	Diameter	mm	0.52
Insulation	Material		HDPE
	Identification		With Strip Colour Marking On White Cores
	Min.thickness	mm	0.230
	Avg.thickness	mm	0.255
	Diameter	mm	1.035
	Color		Blue-White/Blue Orange-White/Orange Green-White/Green Brown-White/Brown
Taping	Material		Polyester Tape
	Lay Length	%	Overlap 25
Drain Wire	Material		Stranded Tinned Copper
	Construction	pcs/mm	1/0.40
Shielding	Material		AL-Foil
	Lay Length	%	Overlap 25
Jacket	Material		PE(CMX Rated)
	Min.thickness	mm	0.47
	Avg.thickness	mm	0.52
	Overall Diameter	mm	6.30±0.30
	Color		Black
	Cable Marking	CAT5E 4PR 24AWG FTP TYPE CMX UV DIRECT BURIAL OUTDOOR PE EIA/TIA-568-C ROHS xxxxFt	

REV.	DESCRIPTION	DATE
A		11-2014
B		05-2016

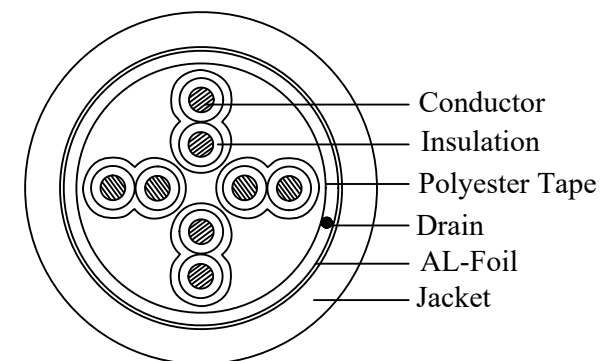
Approved

By: Jeff Rice
Date: 10/09/2020

El Paso County Planning & Community Development



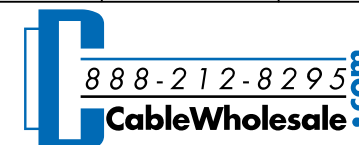
RoHS



Cross Section

DRAWER	JL
CHECKED	
APPROVED	

PART NUMBER	TITLE	ID(NO.)
10X6-722NH	Direct Burial/Outdoor rated Cat 5e Black Ethernet Cable, Solid, CMX, STP ,Foil+Waterproof Tape, 24 AWG, Spool, 1000 foot	245





REV.	DESCRIPTION	DATE
A		11-2014
B		05-2016

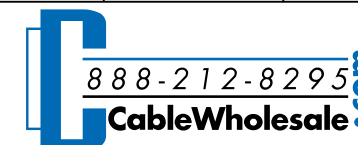
Electrical Property :

Item			Unit			Standard		
Conductor D-C Resistance @20°C			Ohm/100 Meters			≤ 9.5		
D-C Resistance Unbalance @20°C			%			≤ 2.5		
Max. Delay Skew			nF/100 Meters			≤ 5.6		
Mutual Capacitance			nS/100 Meters			≤ 45.0		
Capacitance Unbalance			pF/100 Meters			≤ 330		
Characteristic Impedance (1-100MHz)			Ω/100 Meters			100 ± 15 ohm		
Temperature Rating			Installation & Operating			-40°C to +70°C		
Frequency	Attenuation	Return Loss	NEXT	PS-NEXT	ELFEXT	PS-ELFEXT	Delay	ACR
MHz	dB(100m)	dB	dB	dB	dB(100m)	dB(100m)	ns(100m)	dB
	Maximum	Minimum	Minimum	Minimum	Minimum	Minimum	Maximum	
1	2.04	20.00	65.30	62.3	64.00	61.00	570.00	63.26
4	4.05	23.01	56.27	53.3	51.96	48.96	552.00	52.22
10	6.47	25.00	50.30	47.3	44.00	41.00	545.38	43.83
16	8.25	25.00	47.24	44.3	39.92	36.92	543.00	38.99
20	9.27	25.00	45.78	42.8	37.98	34.98	542.05	36.52
25	10.42	24.32	44.33	41.3	36.04	33.04	541.20	33.91
31.25	11.72	23.64	42.88	39.9	34.10	31.10	540.44	31.16
62.5	16.69	21.54	38.36	35.4	28.08	25.08	538.55	21.37
100	21.98	20.11	35.30	32.3	24.00	21.00	537.60	13.33

RoHS

DRAWER	JL
CHECKED	
APPROVED	
	

PART NUMBER	TITLE	ID(NO.)
10X6-722NH	Direct Burial/Outdoor rated Cat 5e Black Ethernet Cable, Solid, CMX, STP ,Foil+Waterproof Tape, 24 AWG, Spool, 1000 foot	245





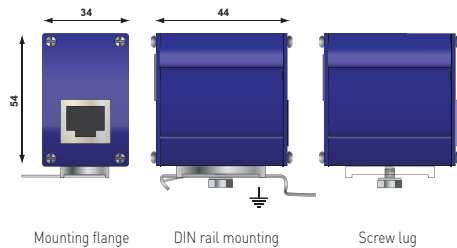
Dataline Surge Protectors MJ8-POE Series



- **Power Over Ethernet Surge Protector**
- **Hybrid GDT and Diode Technology**
- **10/100/1000 Mbps Compatible**
- **Bi-Directional Protection**
- **Shielded Enclosure and Connectors**
- **DIN Rail Screw Lug and Flange Mounting**
- **UL497B Listed**

Dimensions and Electrical Diagram

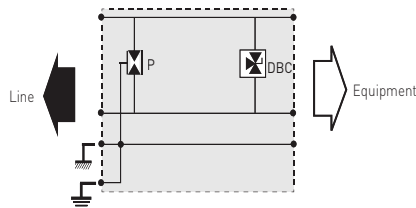
(in mm)



Mounting flange

DIN rail mounting

Screw lug



P : 3-Electrode gas discharge tube
DBC : 3-Pole low capacitance diode

Characteristics

CITEL Part Number	MJ8-POE-A	MJ8-POE-B
Description	RJ45 connection for PoE-A	RJ45 connection for PoE-B
Application	POE-A and Gigabit Ethernet, High PoE	POE-B and Gigabit Ethernet, High PoE
Max. Data Rate	1000Mbps	1000Mbps
Configuration	8 Wires + Shielding	8 Wires + Shielding
Pinout by pair	(1-2) (3-6) (4-5) (7-8)	(1-2) (3-6) (4-5) (7-8)
Line Voltage	Un 48Vdc	5Vdc/48Vdc
Max. DC Power Supply	Uc 60Vdc	7.5Vdc (1,2,3,6) 60Vdc (4,5,7,8)
Max. DC Current	IL 1200mA	1200mA
Frequency	f > 100Mhz	> 100Mhz
Insertion Loss	< 1dB	< 1dB
Lines-Grd Surge Current (8/20)	In 2000A	2000A
Line-Line Surge Current (8/20)	In 500A	500A
Lines-Grd Surge Current (8/20)	Itotal 16,000A	16,000A
Max. Discharge Current (10/350)	Iimp 500A	500A
L-L Clamping Voltage	20V	20V
L-G Spark Overvoltage	90V	90V
End of Life	Short-circuit	Short-circuit
Operating Temperature	-40-degrees C to +85-degrees C	
Relative Humidity	95% Non-Condensing	

Mechanical Characteristics

Dimensions

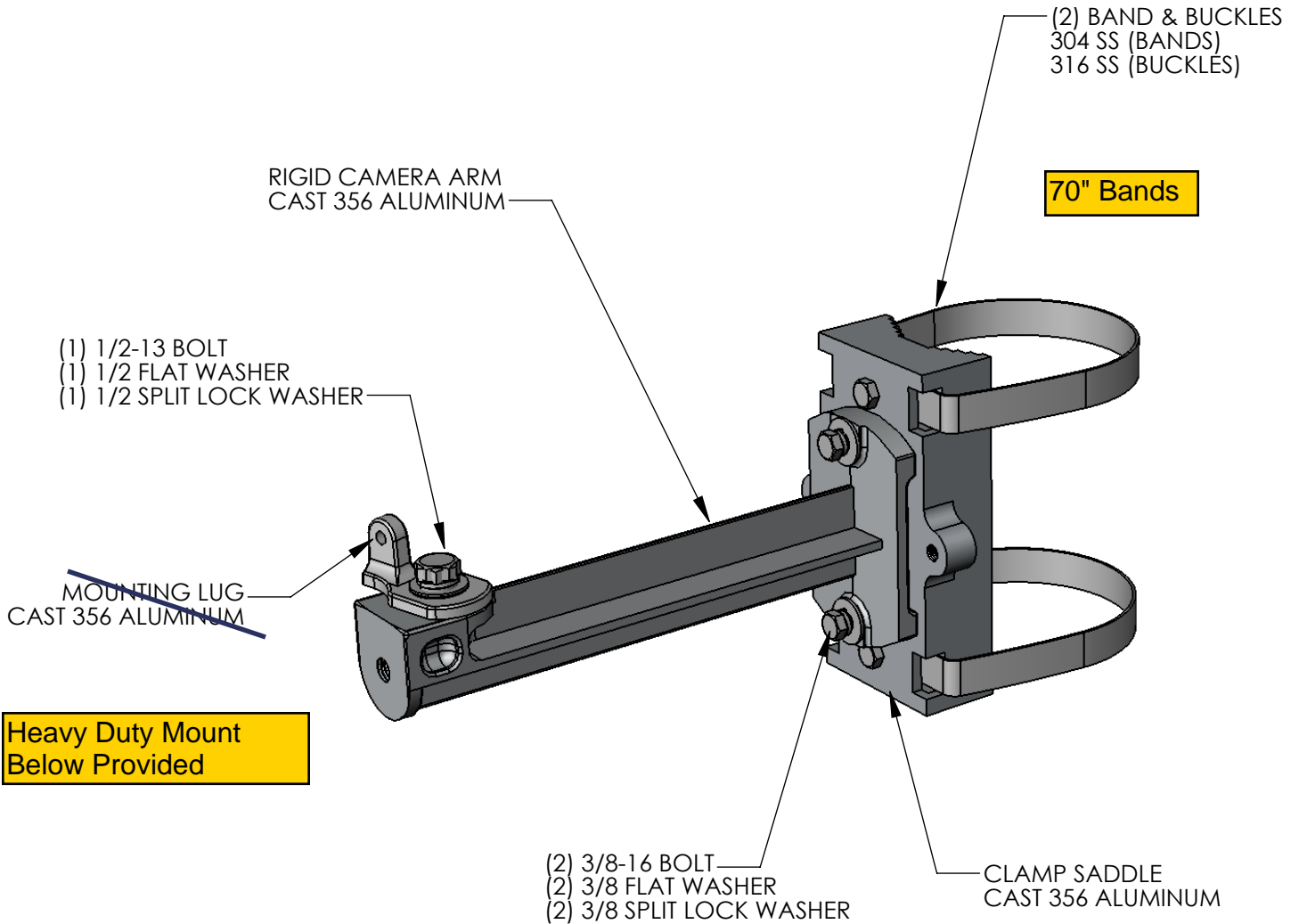
See Diagram

Approved

By: Jeff Rice

Date: 10/09/2020

El Paso County Planning & Community Development



Heavy Duty Mount
Below Provided

PART NUMBER

SB29-SEDco

BAND LENGTH

BAND LENGTH	MAST ARM DIA.
29"	2" - 7"
42"	8" - 11"
59"	12" - 17"

NOTES:

1. PLATED STEEL HARDWARE.
2. AVAILABLE WITH CABLE STYLE CLAMP.

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SKYBRACKET. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF SKYBRACKET IS PROHIBITED.

APPROVALS	BY	DATE
DRAWN	TRC	8/25/14
SALES		
ENGINEERING		

SKYBRACKET
MAST ARM MOUNTING HARDWARE

TITLE
MS SEDCO
(BAND CLAMP)

SIZE A	DWG. NO. SB29-SEDco	REV. A
DO NOT SCALE DRAWING		SCALE: NTS CAD FILE: SB29-SEDco SHEET 1 OF 1

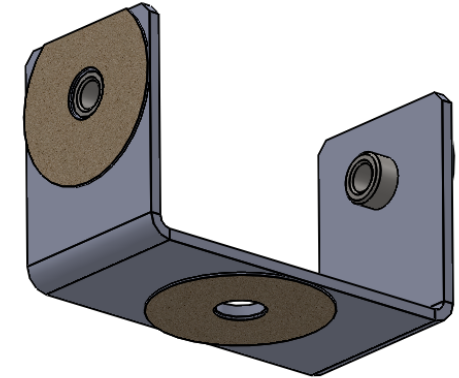
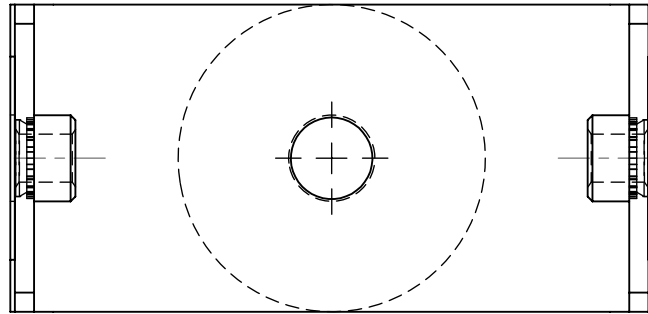
Approved

By: Jeff Rice
Date: 10/09/2020

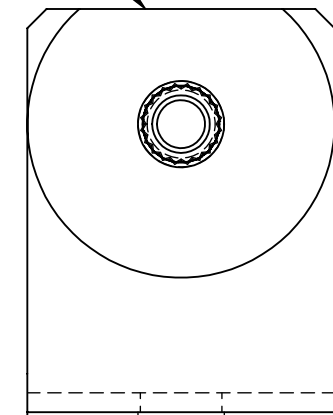
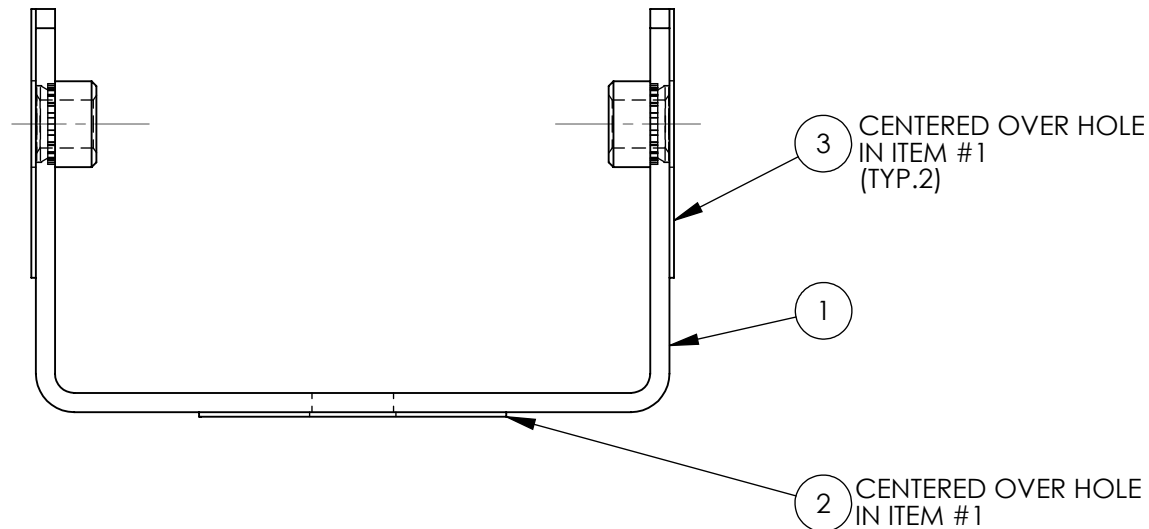
El Paso County Planning & Community Development



ITEM NO.	PART NUMBER	QTY.
1	1011-1	1
2	0212-4	1
3	0212-3	2



TRIM ITEM #3 FLUSH
WITH EDGE OF ITEM #1
(TYP.2)



NOTES:

1. MOUNTING SURFACES OF ITEM #1 MUST CLEANED
WITH ALCOHOL PRIOR TO INSTALLING ITEMS #2 & 3.

THE INFORMATION CONTAINED IN
THIS DRAWING IS THE SOLE
PROPERTY OF SKYBRACKET. ANY
REPRODUCTION IN PART OR WHOLE
WITHOUT THE WRITTEN PERMISSION
OF SKYBRACKET IS PROHIBITED.

APPROVALS	BY	DATE
DRAWN	TRC	3/20/12
RESP ENG		

DO NOT SCALE DRAWING

SKYBRACKET
MAST ARM MOUNTING HARDWARE

TITLE
ASSEMBLY, BRACKET

SIZE	DWG. NO.	REV.
A	0212-2	A

SCALE: NTS CAD FILE: 0212-2 SHEET OF

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	1011-4	SEDCO BRACKET FORMING	1
2	1011-3	SEDCO RETAINING BAR	1

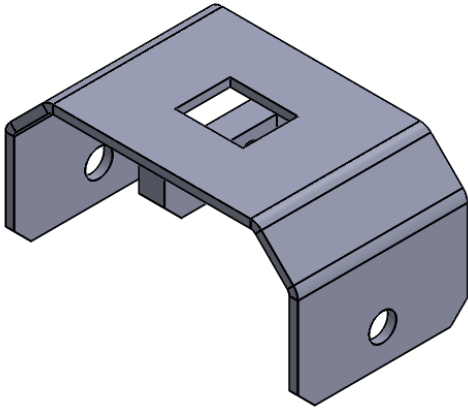
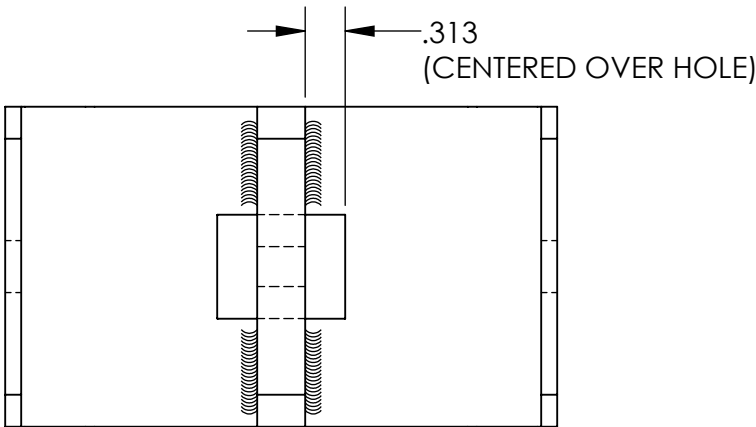
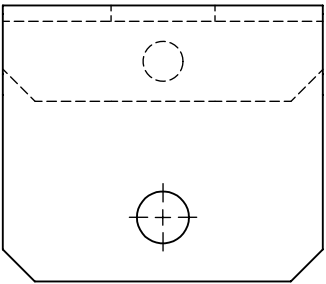
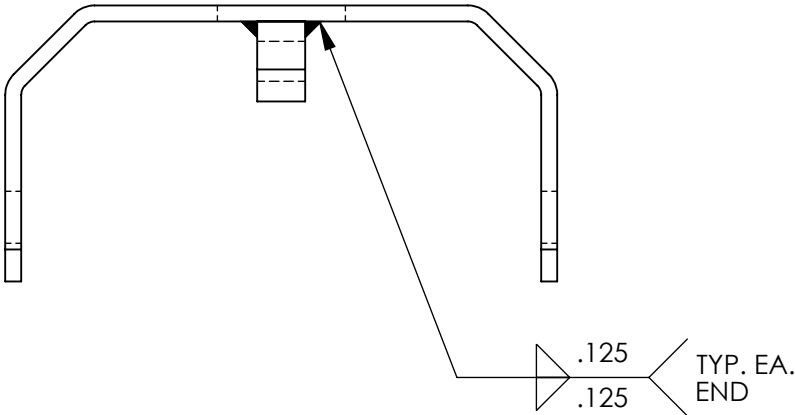
Approved

By:Jeff Rice

Date:10/09/2020

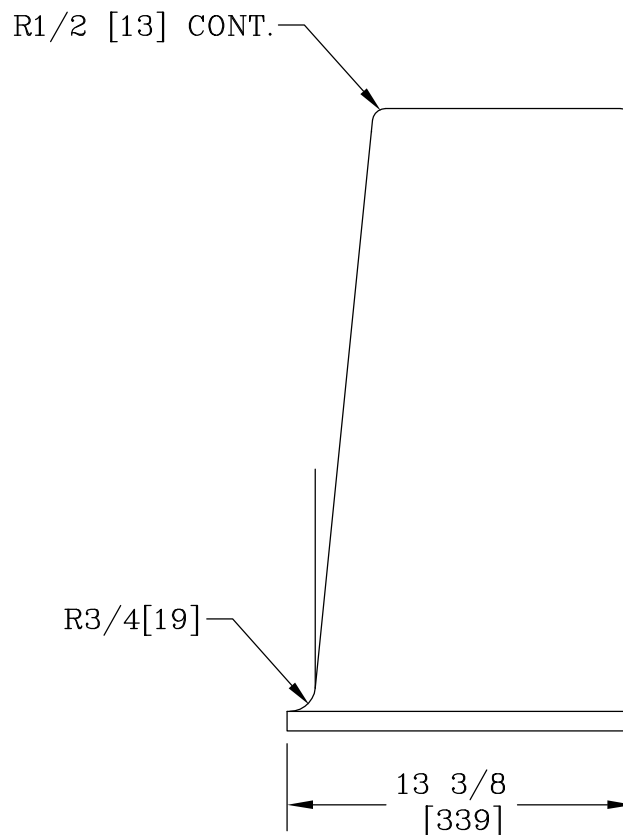
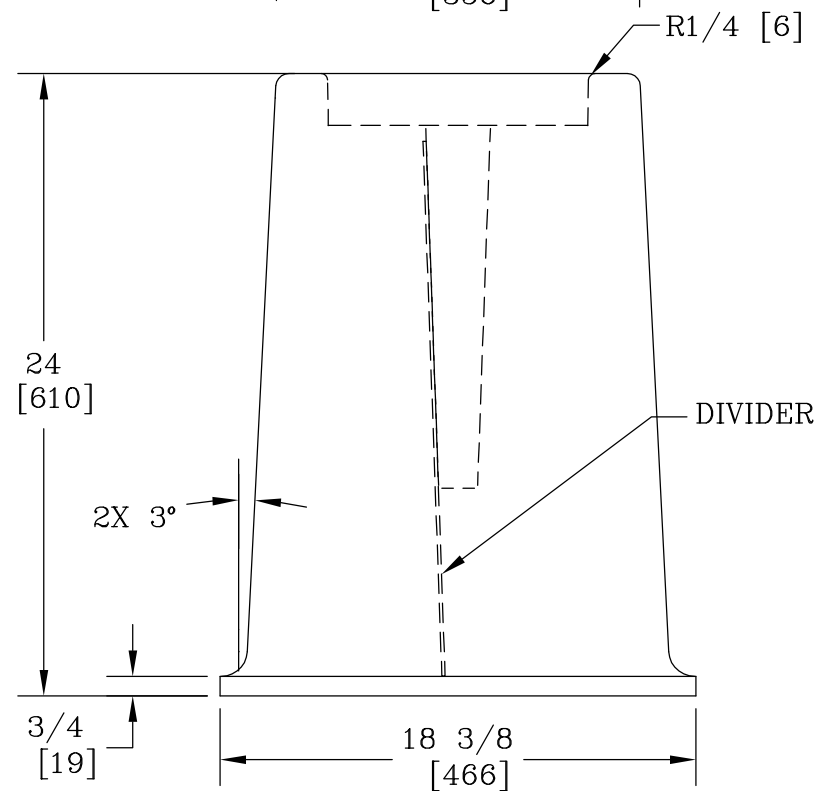
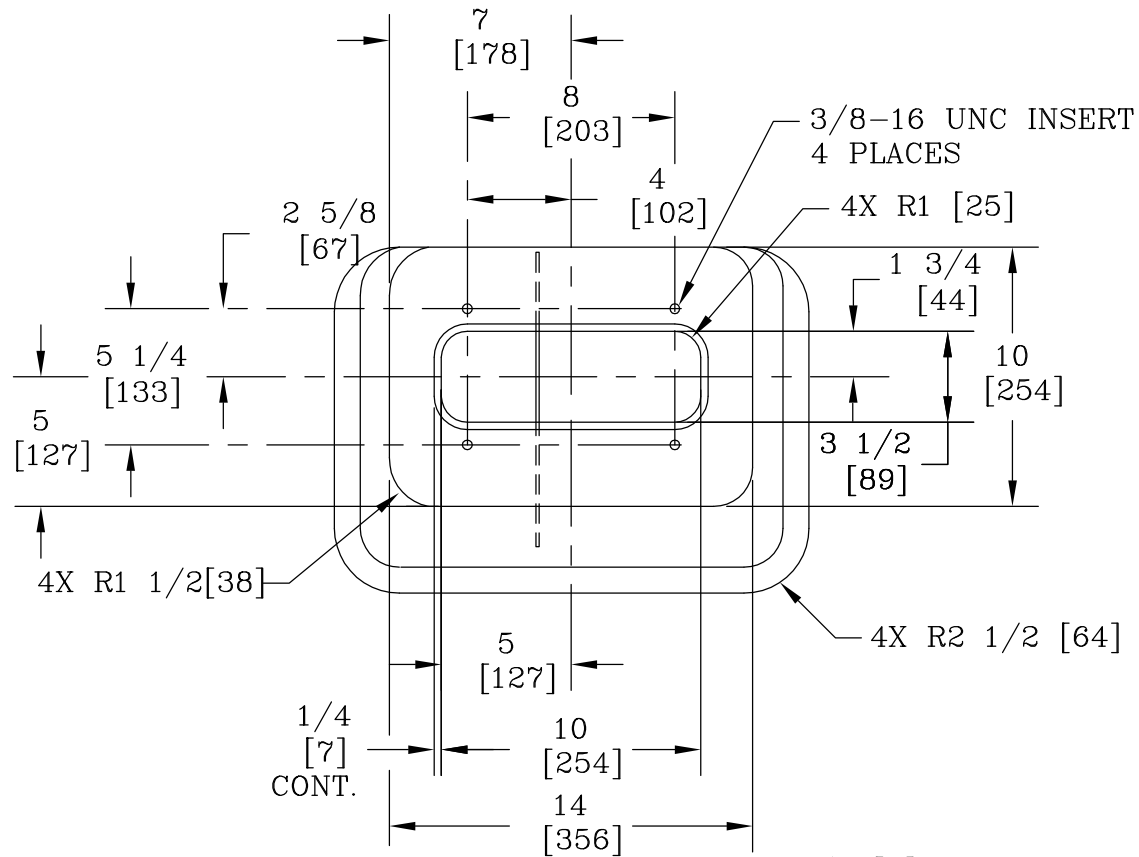
El Paso County Planning & Community Development



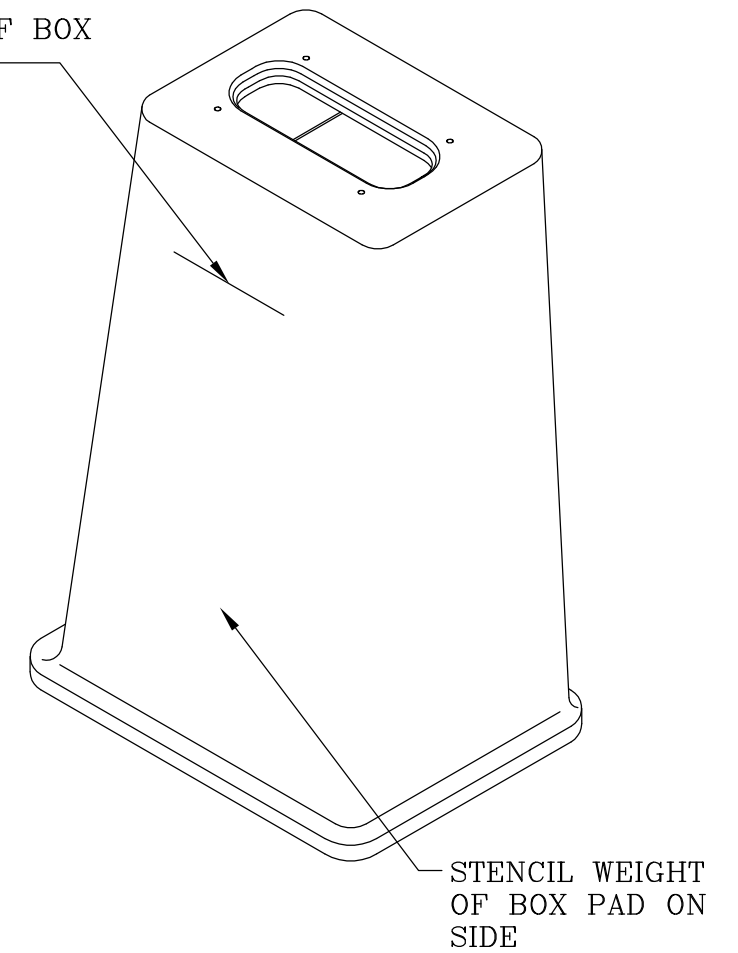


THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SKYBRACKET. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF SKYBRACKET IS PROHIBITED.			<div> <div> <div>SKYBRACKET</div> <div>MAST ARM MOUNTING HARDWARE</div> </div> <div> <div>TITLE</div> <div>SEDCO BRACKET WELDMENT</div> </div> </div>		
APPROVALS	BY	DATE	SIZE	DWG. NO.	REV.
DRAWN	TRC	10/11/11	A	1011-2	A
RESP ENG					
DO NOT SCALE DRAWING			SCALE: NTS CAD FILE: 1011-2 SHEET OF		

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL $\pm 1/64$
 ANGULAR: MACH $\pm 15^\circ$ BEND $\pm 30^\circ$
 TWO PLACE DECIMAL $\pm .030$
 THREE PLACE DECIMAL $\pm .030$




4" BELOW TOP SURFACE OF BOX
PAD STENCIL GRADE LINE



NOTE:

- FURNISHED W/ (4) 3/8-16 UNC X 1 [25] LONG S.S. HEX HEAD BOLT & (4) ø3/8 [10] S.S. WASHERS.

DIMENSIONS ARE IN INCHES OR MILLIMETERS IN BRACKETS UNLESS OTHERWISE NOTED.					
	BY	DATE	WEIGHT 76.5 34.7kg	 3621 INDUSTRIAL PARK DR LENOIR CITY, TN 37771 800-346-3062 www.quazite.com	LOC
DRN	<i>BJV</i>	8/7/13			LC
CHK	<i>RT</i>	8/8/13	SCALE	DRAWING DESCRIPTION HUBBELL® 10X14 BOX PAD W/3 X 10 THROAT & DIVIDER	REV
ENG			1 1/2"=1'		E
APR			SIZE		
APR			B		9/14
PROJECT NUMBER 108601			SHEET 1 OF 1		DRAWING NUMBER PB10140310501

El Paso County Planning & Community Development

