SOSAYA & SONS CONSTRUCTION, INC.
9560 Lexington Ave. PO Box 469 De Soto, KS. 66018 Phone 913.745.8800 / Fax 913.745.8801

JOB:

COLBERN RD. & RICE PKWY. TRAFFIC SIGNAL INSTALL

OWNER:

CITY OF LEE SUMMIT, MO.
JACKSON COUNTY, MO.

TRAFFIC SIGNAL SUBMITTALS

1 OF 2

JUNE 2025

GENERAL CONTRACTOR / DEVELOPER: **Colbern Rice Investors LLC**

SOSAYA AND SONS CONTACT: BARRY FELKNER ~ (o) 913-745-8800 ~ (c) 913-226-9997
EMAIL: bfelkner@sosayaandsons.com

ALL MATERIAL BELOW (SHEETS 1-13) PROVIDED BY:

Gades Sales Co. Inc.
TRAFFIC CONTROL SPECIALISTS
www.gadestraffic.com

SOSAYA & SONS
CITY OF LEE'S SUMMIT
COLBERN & RICE
JOB #: 2529-01

DESCRIPTION	MANUFACTURER	PART #
Controller	Yunex (Siemens)	EPAC M60 ATC Lite
Power Supply	Myers (Pacific Utility)	USPAR-M2100-108C-LSMO
Anchor Bolts	JH Botts	2-1/4" & 1-3/4"
Mast Arm Poles	Valmont	Drawing DB00947 Rev A

P.O. BOX 9003 - WICHITA, KANSAS 67277 - (316) 943-1219 - FAX (316) 943-8829

M60 Series

Advanced Traffic Controllers for NEMA and ATC Cabinets

Providing M60 ATC Lite

YUNEX TRAFFIC
A Siemens Business

The mobility revolution is ongoing, and cities need to react

It is time for smart mobility infrastructure, more CO_2 reduction, and safer, more livable cities. We are meeting our responsibility with the most comprehensive end-to-end portfolio of traffic management solutions on the market.

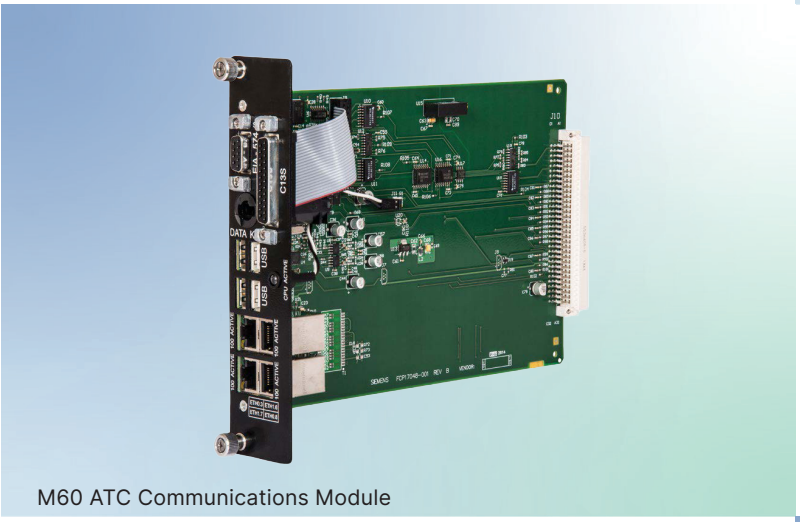
The Yunex Traffic M60 ATC Traffic Controller gives better control of traffic signals, cost of ownership and a signal system‘s future. Yunex Traffic has made the M60 ATC a feature-rich traffic signal controller along with the robust performance required to meet ever-changing traffic demands. Because the advanced functionality of the M60 series is designed to meet NEMA, ATC 5201 v06, and NTCIP 1202 v2 standards and specifications, upgrading controllers and software to M60 ATC with SEPAC will keep a city ahead of the traffic curve.

Providing robust hardware and innovative software for traffic management needs

Putting the best features on display

The Yunex Traffic MultiView Display will change the way users navigate the operations of signalized intersections. Split viewing allows changes to the configuration of the M60 ATC, while viewing any one of five active status windows. The 5 1/8-inch active Thin Film Transistor (TFT) back-lit LCD display facilitates low-light configuration changes and multiple background and text colors. With Yunex Traffic's unparalleled backward compatibility, a quick software upgrade to existing M50 controllers will bring new life and functionality to a trusted controller.

M60 MultiView Display



M60 ATC Communications Module

New applications powered by standard interfaces

The M60's modular hub brings all of the communication ports required to keep a signalized intersection connected to the traffic management center. The product includes a network switch for communication with multiple traffic control cabinet devices. Four USB ports are also included for expansion over years to come. A datakey port also adds backward compatibility with legacy systems which facilitates the migration to the new Yunex Traffic platform.

More flexibility with the Cabinet-Ready Controllers

The Yunex Traffic m60 Series ATC Cabinet-Ready and the M60 ATC LITE Cabinet-Ready controllers are the newest additions to the M60 series. These controllers are equipped with an ATC Cabinet Compatible Backplane which allows an ATC Cabinet Module to be inserted into the controller. With this module, the controller can be used in an ATC shelf-mount cabinet.

ATC Cabinet Module

Expanding possibilities with the new M60 Series ATC Cabinet-Ready Controllers

The solution to the yellow go/no go zone dilemma

Yunex Traffic exceeds the safety features stipulated by the NEMA TS 2 with additional enhancements to benefit users. The advanced vehicle density setting helps identify safe gaps between vehicles approaching a signalized intersection to reduce the effects of the dilemma zone. Using state-of-the-art features of collision avoidance routines, the Yunex Traffic M60 ATC can extend the all-red clearance interval to reduce the risk of side-impact collisions

Open Linux architecture with Super Long-term Support

The M60 ATC Traffic Controller uses a robust, scalable, secure, and open architecture Linux Operating System. The Yunex Traffic M60 controller runs a Civil Infrastructure Platform (CIP) Super Long-term Support Linux Kernel version 4.4. The CIP supported version provides software building blocks that meet safety, security, and reliability requirements which are critical to industrial and civil infrastructure projects. Super Long-term Support assures that the critical functional and security updates are available for a minimum of 10 years.

Bigger and better traffic management

The M60 series traffic controller is part of a network of Yunex Traffic innovations for better traffic management that includes the TACTICS™ Central Advanced Traffic Management System (ATMS). Working together or independently, these capabilities deliver the most advanced technologies into traffic management configurations across North America.

M60 ATC Cabinet-Ready Controller

Advanced, priority routines

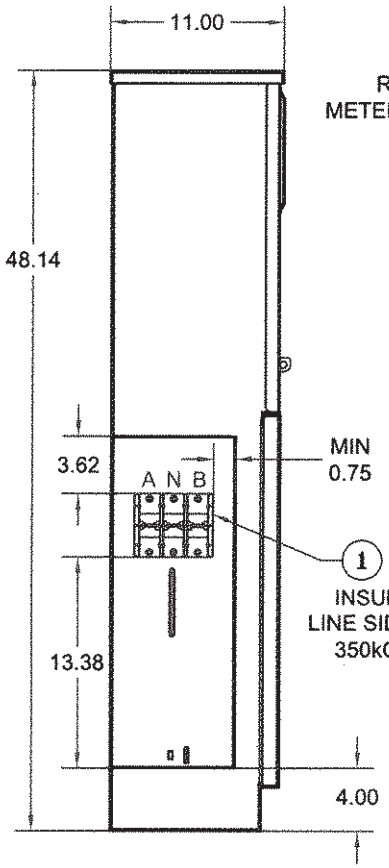
Yunex Traffic is the industry leader in priority routines. The M60 with SEPAC can receive signals from an approaching bus or light rail train and prioritize them with minimal impact on the flow of other vehicles approaching the intersection. With full priority, the M60 ATC traffic controller will actively prioritize the approaching transit vehicle by skipping directly to the appropriate transit phase to minimize delays seen by the transit agency. Partial priority is a more balanced approach where phases have a pre-programmed amount of time reduction and extension. With a balanced approach, users can prioritize the transit vehicle while minimizing delays on all approaches, even during coordination

Uniting what's next in traffic.

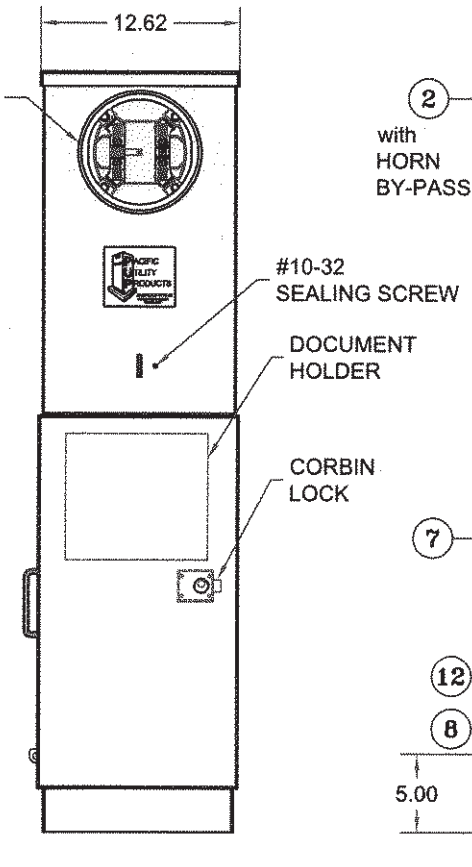
Let's shape the future of mobility together!

Yunex, LLC
9225 Bee Cave Rd.
Building B Suite 201
Austin, TX 78733
www.yunextraffic.com

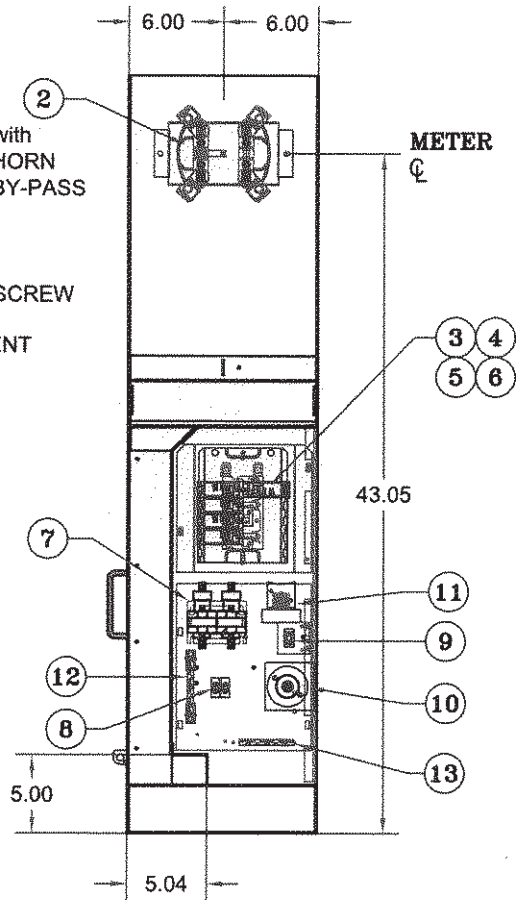
Yunex Traffic is a separately managed company of Siemens Mobility. It is a global leader in the field of intelligent traffic systems, offering the widest end-to-end portfolio of solutions for adaptive traffic control and management, highway and tunnel automation, as well as smart solutions for V2X and road user charging tolling. Yunex Traffic has 3100 employees from 58 nations and is active in over 40 countries worldwide. Its intelligent mobility solutions are currently being used in major cities across the world, including Dubai, London, Berlin, Bogota, and Miami. Yunex Traffic has successfully concentrated its efforts on mastering technologies in the three segments of hardware, software, and service, and is subsequently the only supplier who is capable of meeting all major regional standards in Europe, UK, Asia and America. Further information is available at www.yunextraffic.com



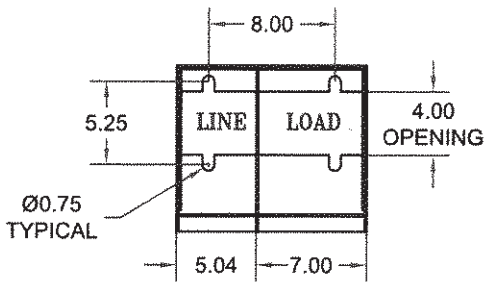
SIDE VIEW



FRONT VIEW



FRONT VIEW
SHOWN LESS COVERS



SOLD TO: GADES SALES CO PO# 65309
CONTRACTOR: SOSAYA & SONS CONST

SPECIFICATIONS

* NEMA 3R CONSTRUCTION
* FABRICATED FROM CORROSION-RESISTANT 0.125THK ALUMINUM
* FACTORY WIRING 600 VOLT RATED COPPER
* NATURAL ALUMINUM UNLESS OTHERWISE SPECIFIED
* ALL EXTERIOR HINGES CONTINUOUS PIANO TYPE ALUMINUM
* ALL COMPONENTS ARE U.L. LISTED.

COMPONENT DIRECTORY

CAT. NO. USPAR-M2100-108C-LSMO
120/240 VAC 1-PHASE 3-WIRE

No.	
1	LANDING LUGS 350kCMIL - 6 PER PHASE
2	MTR SKT 200A 5J W/ HORN BY-PASS
3	MAIN CB 100A 2P 120/240VAC 10kAIC
4	LOAD CENTER 125A 8CKT 1-PHASE CU
5	(1) CB 30A 2P 120/240VAC 10k BR230
6	(1) CB 15A 1P 120/240VAC 10k BR115
7	(1) MERCURY RELAY 30A MDI 120V COIL
8	(1) TERM BLK 2P 85A #4 - #18 AWG
9	SWITCH TOGGLE SPST 20A 240VAC
10	PE RECEPTACLE TWIST LK COOPER
11	SURGE ARRESTER 2P 650VAC
12	INSULATED NEUTRAL
13	GROUND

SERVICE PEDESTAL	
S.O. No.	QTY. 1
DATE	22 JULY, 2011
JOB NAME	COLBERN RD & RICE PKWY
DISTRIBUTOR	POWER EQUIPMENT SALES

USP NON-RESIDENTIAL
SERVICE PEDESTAL
0 - 200 AMPERES
0 - 600 VOLTS

PACIFIC
UTILITY
PRODUCTS
2430 RAILROAD ST.
CORONA CALIFORNIA 92880

PACIFIC UTILITY PRODUCTS
2430 RAILROAD ST. CORONA, CA. 92880

FAL127421

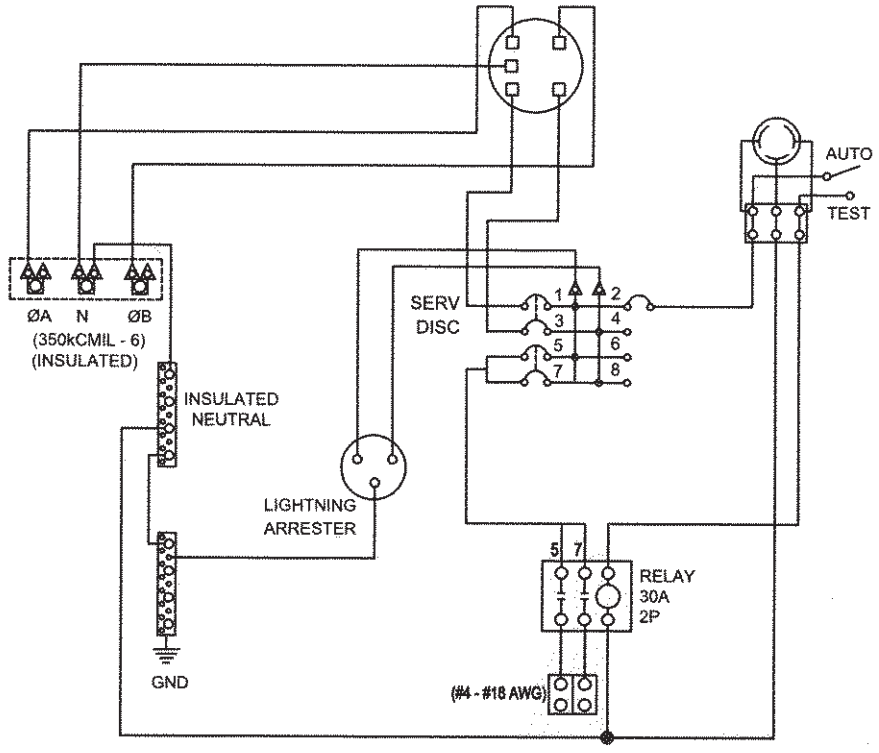
INDUSTRIAL CONTROL-
SUITABLE ONLY FOR USE AS SERVICE EQUIPMENT

BONDED NEUTRAL REMOVE BONDING MEANS FOR TEST PURPOSES ONLY

CAT.NO. USPAR-M2100-108C-LSMO 120/240VAC 1PH 60HZ 3 WIRE 100 AMPS

SHORT CIRCUIT RATING: 5,000 RMS SYMMETRICAL AMPS @ 240 VAC MAX.
HOWEVER, THIS SHORT CIRCUIT RATING IS LIMITED TO THE LOWEST INTERRUPTING CAPACITY ON ANY DEVICE INSTALLED.

*MAIN SERVICE DISCONNECT: 100 AMPS CUTLER-HAMMER TYPE BR
*CIRCUIT BREAKERS 90 AMPS OR LESS: CUTLER-HAMMER TYPE BR, BQ, GFCB.
*REPLACEMENT BREAKER(S) MUST BE SAME TYPE AND RATING.
*AUTOMATIC TRIP IS INDICATED BY HANDLE POSITION MIDWAY BETWEEN (ON) AND (OFF). TO RESTORE POWER MOVE HANDLE TO (OFF), THEN (ON).
*METER SOCKET: DURHAM 200 AMPS CONTINUOUS.
WATT HOUR METER NOT INCLUDED IN SHORT CIRCUIT RATING
*LOAD CENTER IS SUITABLE FOR USE WITH 60/75 DEGREE C COPPER OR ALUMINUM WIRE.
*LOAD CENTER IS LIMITED TO A MAXIMUM OF 12 INSTALLED CIRCUITS THAT UTILIZE A NEUTRAL CONNECTION, EITHER SINGLE POLE, MULTI-POLE, OR A COMBINATION OF EACH.
*SHIPPING TENDS TO LOOSEN ELECTRICAL CONNECTIONS - TIGHTEN ALL CONNECTIONS BEFORE ENERGIZING UNIT.



WIRING DIAGRAM

NO.	AMP.	POLE	DESCRIPTION
1-3	100	2	SERVICE DISCONNECT
5-7	30	2	LIGHTING
2	15	1	PEC

*** TORQUE INFORMATION

□ 350MCM - 6	CU/AL		275 IN.LB.
△ #14-1/0	CU/AL		50 IN.LB.

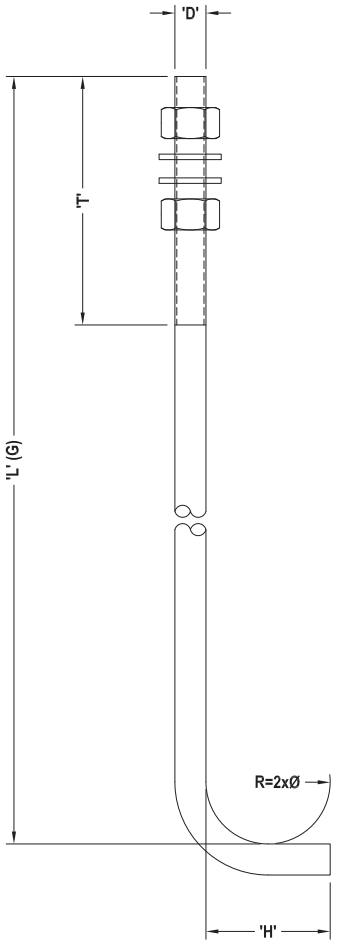
*** NEUTRAL & EQUIPMENT GROUND-SINGLE CONDUCTOR

○ #14-1/0	CU/AL	#3-1/0	50 IN.LB.
		#6-4	45 IN.LB.
		#8	40 IN.LB.
		#14-10	25 IN.LB.
◦ #14-6	CU/AL	#6	35 IN.LB.
		#8	25 IN.LB.
		#14-10	20 IN.LB.

*** EQUIPMENT GROUND-MULTIPLE CONDUCTOR

○ (2 OR 3)	#10,12,14	CU/AL	45 IN.LB.
◦ (2)	#12,14	CU/AL	20 IN.LB.

*** FIELD INSTALLED DEVICES-TORQUE TO VALUES INDICATED ON OR WITH DEVICE



ANCHOR BOLT DETAIL

FULL GALVANIZED F1554 GR55 ANCHOR BOLTS

QTY	DESCRIPTION	(D) DIAMETER	(L) LENGTH	(H) HOOK	(T) THREAD	(G) GALV.	NUT GALV.	WASHER GALV.
4	2-1/4"(4.5) x 115" + 6" ANCHOR 12" THD FG	2 1/4	115	8	12	FULL	2	2
	2"(4.5) x 115" + 6" ANCHOR 10" THD. FG	2	115	6	10	FULL	2	2
8	1-3/4"(5) x 88" + 6" ANCHOR 10" THD. FG	1 3/4	88	6	10	FULL	2	2
	1-1/2"(6) x 73" + 6" ANCHOR 10" THD. FG	1 1/2	73	6	10	FULL	2	2
	SPECIAL ORDER							

GENERAL NOTES:
1. THRERADS ARE TO BE FORMED PER ASME B1.1 UNFIED COARSE THREAD SERIES, CLASS2A.
2. ALL DIMENSIONAL TOLERANCE ARE TO BE ± 1/8" . (U.N.O.)
3. FULL LENGTH OF BOLT IS TO BE HOT DIP GALVANIZED PER ASTM A153 (AASHTO M232).
4. BOLT HARDWARE IS TO BE HOT DIP GALVNIZED PER ASTM A153, F2329 (AASHTO M232).
5. ALL MATERIAL IS TO BE 100% MELTED & MFG. IN THE U.S.A.

SPECIFICATION NOTES:
ASTM F1554-07 Gr55 &/or
AASHTO M314-90(2000) Gr55
(LOW ALLOY) WITH S1 SUPPLEMENT

ROUND BAR NOTES:
CARBON EQUIVALENT - 0.45% MAX
YIELD STRENGTH - 55 KSI MIN (0.2% OFFSET)
TENSILE STRENGTH - 75 TO 95 KSI

ELONGATION -8"-18% MIN. OR
ELONGATION -2"-21% MIN.

REDUCTION AREA -30% MIN. (1/2" TO 2")
REDUCTION AREA -22% MIN. (>2" TO 2-1/2")
REDUCTION AREA -20% MIN. (>2-1/2" TO 3")

HARDWARE
NUTS - ASTM A563-DH (THREADS PER ASME B18.2.2, CLASS 2B)
WASHERS - ASTM F436-1

LEE'S SUMMIT COLBERN RD & RICE PKWY
SOLD TO: GADES SALES CO PO# 65308
CONTRACTOR: SOSAYA & SONS CONST

GENERAL NOTES:
1. HOLES TO BE MADE AS NOTED.
2. WELDING SHALL BE DONE IN ACCORDANCE WITH D1.1/D1.1M AWS WELDING CODE.
3. ALL WELDED JOINTS SHALL BE PREPPED IN ACCORDANCE WITH THE WPS.
4. MATERIALS TO BE COATED SHALL BE PREPPED IN ACCORDANCE WITH THE PRODUCT DESIGNATED ASTM SPECIFICATION.
5. FABRICATED PRODUCTS ARE TO BE HOT DIP GALVANIZED PER ASTM A123.
6. THREADED PARTS AND HARDWARE IS TO BE HOT DIP GALVANIZED PER ASTM A153.
7. DIMENSIONAL TOLERANCES ARE TO BE ± 1/8" OF NOTED DIMENSION.
8. AXIAL TOLERANCES ARE TO BE ± 1°.
9. HOLE TOLERANCES TO BE +1/16", -0" OF NOTED DIMENSION.
10. ALL MATERIALS SHALL BE 100% MELTED AND MANUFACTURED IN THE U.S.A.

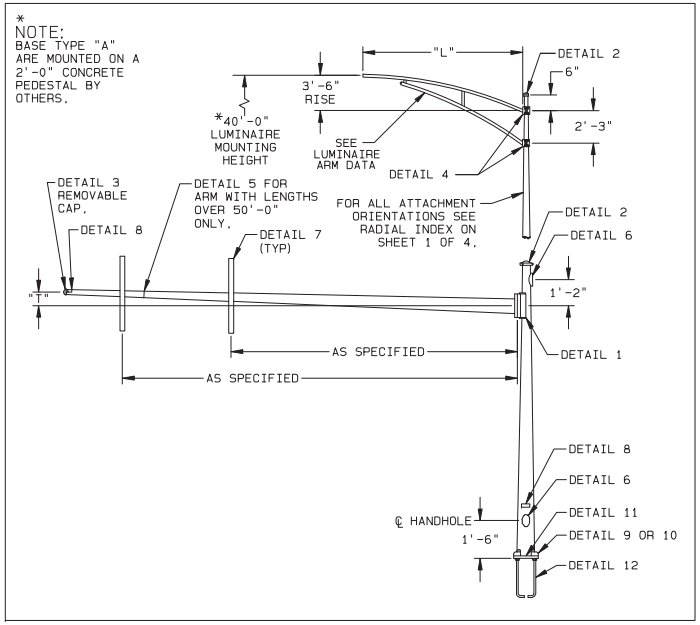
REV.	DESCRIPTION	AUTHOR	DATE
A	FOR APPROVAL	JLNBS	01/05/24

LEMAC
STANDARD BOLT DETAIL FULL GALV.

DATE	01/05/24
DETAILED BY	JLNBS
CHECKED BY	NLH/MEBS
REVISION LEVEL	A
P.O. COMPANY	LEMAC
CONTRACTOR	N/A
PROJECT OWNER	N/A
QUOTE NO.	N/A
P.O. NO.	N/A
ORDER NO.	N/A
SHEET NO.	1 OF 1

J.H. BOTTS, LLC
BRIDGE & HWY. METAL PRODUCTS
253 E. BRUCE ST.
AISC CERTIFIED FABRICATOR
JOLIET, IL

**THIS VALMONT DRAWING REQUIRES ITS OWN APPROVAL STAMP



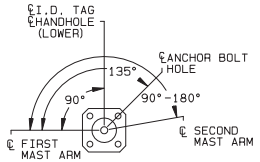
FOR THIS INFORMATION	SEE PAGE	TABLE
SINGLE MAST ARM TRAFFIC POLE STRUCTURE DATA	4	1
SINGLE MAST ARM WITH LUMINAIRE ARM TRAFFIC POLE STRUCTURE DATA	4	2
DOUBLE MAST ARM WITH LUMINAIRE ARM TRAFFIC POLE STRUCTURE DATA	4	3
DOUBLE MAST ARM TRAFFIC POLE STRUCTURE DATA	4	4
MATERIAL DATA	4	5
SIGNAL MAST ARM DATA	4	6
ELEVATIONS	4	7
LUMINAIRE ARM DATA	4	8
DESIGN DETAILS	2 & 3	—

GENERAL NOTES:

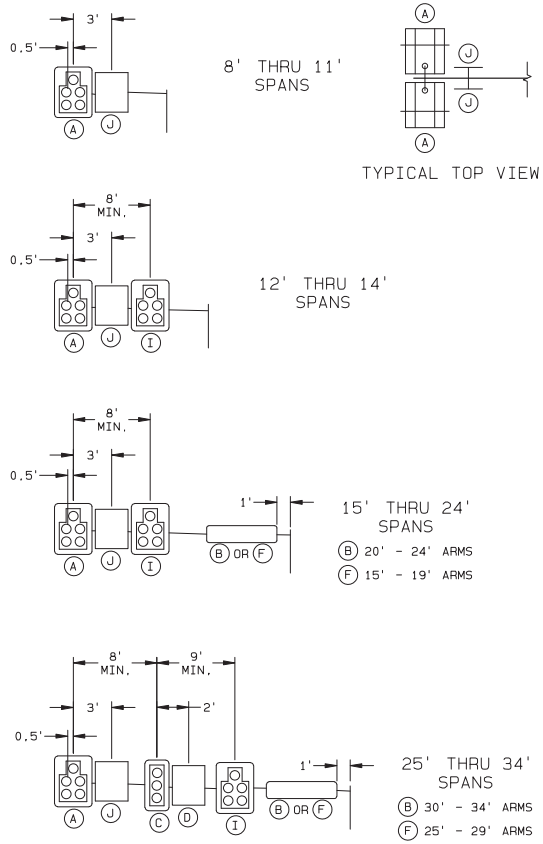
1. ALL WELDS SHALL BE MECHANICALLY CLEANED BEFORE GALVANIZING.
2. GALVANIZED MATERIAL SHALL BE HANDLED ON A MANNER TO AVOID DAMAGE TO THE SURFACES. ANY GALVANIZED MATERIAL ON WHICH THE SPELTER COATING HAS BEEN BRUISED OR BROKEN WILL BE REJECTED OR MAY WITH APPROVAL OF THE ENGINEER BE REPAIRED IN ACCORDANCE WITH SECT. 712.14 OF MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
3. SEE DOCUMENTS OF APPROVED WELDING PRODEDURES FOR MISSOURI TRAFFIC STANDARDS.

FOR COMBINATION POLES UPPER HANDHOLE WILL BE 180° FROM FIRST MAST ARM

ALL ANGLES MEASURED CLOCKWISE FROM FIRST MAST ARM AS VIEWED FROM SMALL END OF POLE



RADIAL INDEX



DESIGN CRITERIA:
1994 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, WITH THE EXCEPTION OF WIND VELOCITY OF 90 MPH ISOTACH, AND 1.33 OF ALLOWABLE STRESS FACTOR FOR GROUP II AND III LOADS.

DEVICE	DESCRIPTION	PROJ AREA (FT^2)	WEIGHT (LBS)
(A) SIGNAL	DUAL-12"-5 SEC W/BACKPLATE (BACK TO BACK)	12.00	200
(B) SIGN	STREET NAME 120" X 18"	15.00	25
(C) SIGNAL	12"-3 SEC W/BACKPLATE	8.00	60
(D) SIGN	REGULATORY 24" X 30"	5.00	27
(E) SIGNAL	DUAL-12"-5 SEC W/BACKPLATE	24.00	200
(F) SIGN	STREET NAME 96" X 16"	10.7	18
	STREET NAME 96" X 18"	12.0	20
	STREET NAME 96" X 28"	18.7	31
(G) SIGNAL	DUAL-2 SEC-PEDESTRIAN	12.00	80
(H) SIGN	REGULATORY 9" X 18"	2.20	4
(I) SIGNAL	12"-5 SEC W/BACKPLATE	12.00	100
(J) SIGN	DUAL-REGULATORY 24" X 30" (BACK TO BACK)	5.00	54
(K) LUMINAIRE	150 WATT LUMINAIRE	1.00	30

LOADING INFORMATION

REV	DRAWN BY-DATE	CHECK BY-DATE	DESCRIPTION
A	RBC2 10/18/10	MAW2 10/19/10	TABLE 7: POLE LENGTHS WERE 37' & 39', ARE NOW 35' & 37'.
—	GGL 09/20/10	GGL 09/20/10	— — — — — — — — — — — — — — — — — — — —

TITLE CITY OF LEE'S SUMMIT, MO.

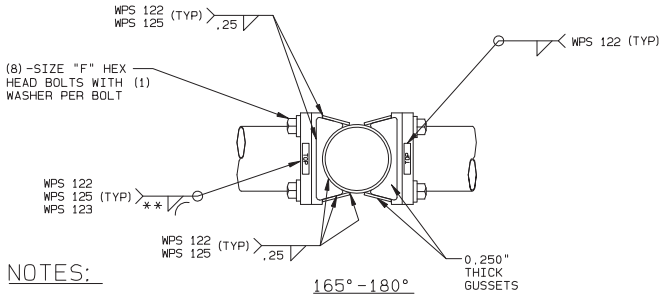
TRAFFIC SIGNAL STRUCTURES

COLBERN RD & RICE PKWY
SOLD TO: GADES SALES CO PO# 65307
SHIP TO: SOSAYA & SONS CONST

valmont
Valley,NE 68064
(402) 359-2201

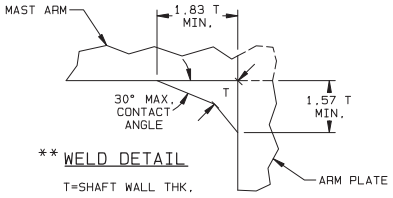
PAGE NUMBER: 1 OF 4
DRAWING NUMBER DB00947
REV A

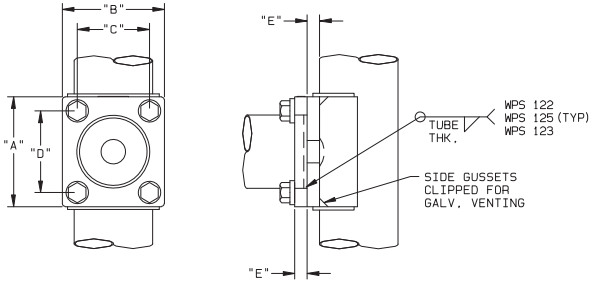
**THIS VALMONT DRAWING REQUIRES ITS OWN APPROVAL STAMP

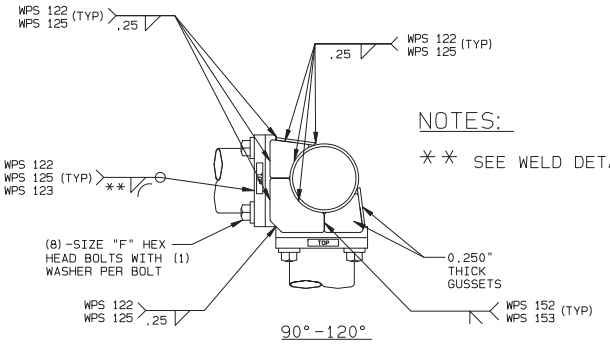


NOTES:

** SEE WELD DETAIL.

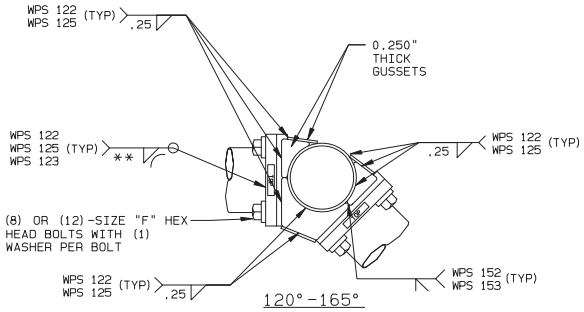






NOTES:

** SEE WELD DETAIL.

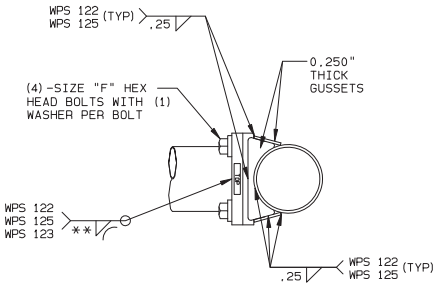


NOTES:

** SEE WELD DETAIL.

NOTE:
ARMS SHALL BE PROVIDED WITH A PERMANENT MARKING INDICATING PROPER ORIENTATION FOR INSTALLATION. (SEE DETAIL 13 ON SHEET 3 OF 4)

SIGNAL ARM ATTACHMENT DATA 15'-54' ARMS							
POLE BASE DIA.	GAUGE OR THK.	"A"	"B"	"C"	"D"	"E"	"F"
10.00"	7	11.75"	9.25"	5.75"	8.25"	1.00"	1.00" X 2.25"
11.00"	7	12.50"	10.00"	6.25"	8.75"	1.25"	1.25" X 2.75"
12.00"	7	12.75"	11.00"	7.25"	9.00"	1.25"	1.25" X 2.75"
12.50"	5	13.00"	11.50"	7.75"	9.25"	1.25"	1.25" X 2.75"
12.50"	3	14.00"	12.50"	8.75"	10.25"	1.50"	1.25" X 3.25"
13.00"	5	15.50"	14.00"	10.25"	11.75"	1.50"	1.25" X 3.25"
13.00"	3	15.75"	14.25"	9.75"	11.25"	1.50"	1.50" X 3.50"
14.00"	0.25"	16.75"	15.25"	10.75"	12.25"	1.75"	1.50" X 4.00"
14.50"	0.25"	17.00"	15.50"	11.00"	12.50"	1.75"	1.50" X 4.00"
15.00"	0.25"	17.25"	15.75"	11.25"	12.75"	1.75"	1.50" X 4.00"
16.00"	0.25"	17.50"	16.00"	11.50"	13.00"	2.00"	1.50" X 4.25"
17.00"	0.25"	17.75"	16.25"	11.75"	13.25"	2.00"	1.50" X 4.25"
18.00"	0.25"	18.50"	17.00"	12.50"	14.00"	2.00"	1.50" X 4.25"
DETAIL 1		SIGNAL ARM ATTACHMENT					



NOTES:

** SEE WELD DETAIL.

TITLE CITY OF LEE'S SUMMIT, MO.

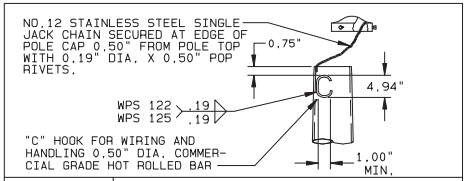
TRAFFIC SIGNAL STRUCTURES

valmont
Valley,NE 68064
(402) 359-2201

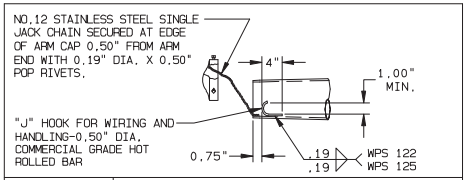
DRAWING NUMBER DB00947

REV A

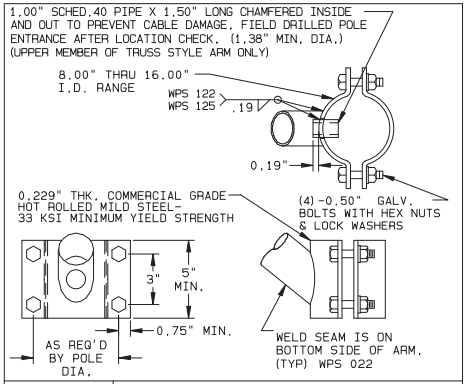
**THIS VALMONT DRAWING REQUIRES ITS OWN APPROVAL STAMP



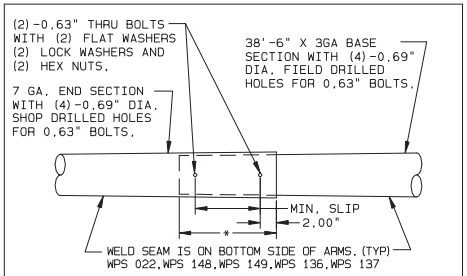
DETAIL 2 | POLE TOP



DETAIL 3 | ARM CAP



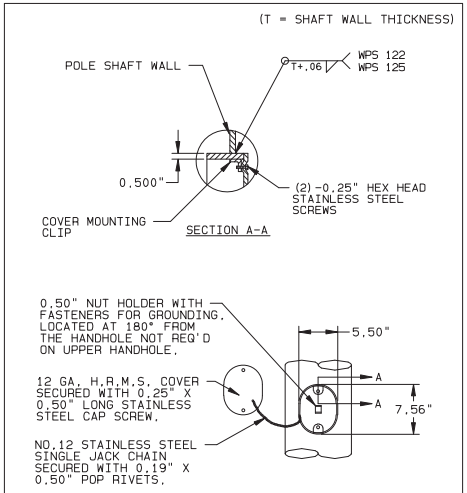
DETAIL 4 | LUMINAIRE ARM CLAMP



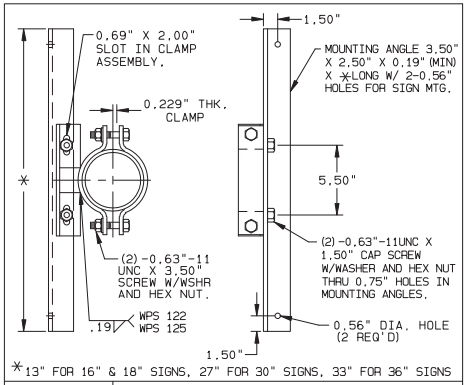
* FIELD ASSEMBLED SLIP JOINT TO ACHIEVE A SNUG TIGHT JOINT. MINIMUM SLIP IS ONE AND A HALF TIMES THE INSIDE DIAMETER OF THE TOP SECTION.

ARM SPAN	MINIMUM SLIP	DESIGN SLIP	MAXIMUM SLIP
54.00'	11.85"	25.22"	31.22"

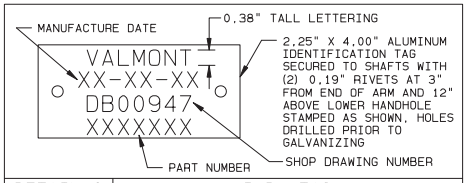
DETAIL 5 | SIGNAL ARM SLIP JOINT



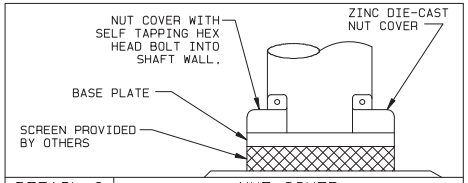
DETAIL 6 | HANDHOLE



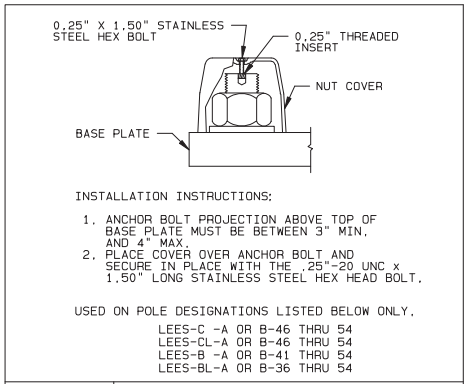
DETAIL 7 | SIGN BRACKET DETAIL



DETAIL 8 | I.D. TAG



DETAIL 9 | NUT COVER



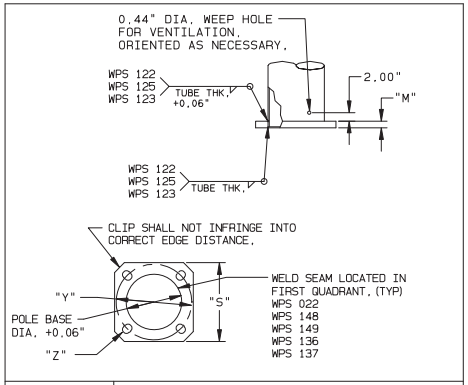
INSTALLATION INSTRUCTIONS:

1. ANCHOR BOLT PROJECTION ABOVE TOP OF BASE PLATE MUST BE BETWEEN 3" MIN. AND 4" MAX.
2. PLACE COVER OVER ANCHOR BOLT AND SECURE IN PLACE WITH THE .25"-20 UNC x 1.50" LONG STAINLESS STEEL HEX HEAD BOLT.

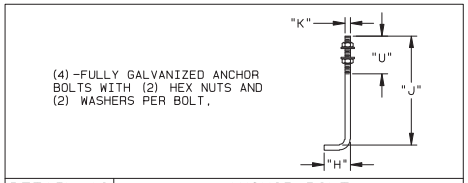
USED ON POLE DESIGNATIONS LISTED BELOW ONLY.

LEES-C -A OR B-46 THRU 54
LEES-CL-A OR B-46 THRU 54
LEES-B -A OR B-41 THRU 54
LEES-BL-A OR B-36 THRU 54

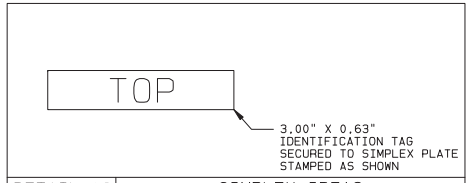
DETAIL 10 | NUT COVER



DETAIL 11 | POLE BASE



DETAIL 12 | ANCHOR BOLT



DETAIL 13 | SIMPLEX IDTAG

TITLE: CITY OF LEE'S SUMMIT, MO.

TRAFFIC SIGNAL STRUCTURES

VALMONT INDUSTRIES, INC. RESERVES THE RIGHT TO INSTALL VARIOUS, ENGINEER APPROVED, MATERIAL HANGING ACCOMMODATIONS TO FACILITATE THE MANUFACTURING PROCESS.

valmont
Valley,NE 68064
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DRAWING NUMBER: DB00947 | REV: A

**THIS VALMONT DRAWING REQUIRES ITS OWN APPROVAL STAMP

TABLE 1: SINGLE MAST ARM TRAFFIC STRUCTURE DATA

DESIGNATION KEY				POLE TUBE			POLE BASE					ANCHOR BOLT			
POLE SERIES	POLE TYPE	BASE TYPE	SIGNAL ARM SPAN	BASE DIA. (IN)	LENGTH (FT)	GAUGE OR THICK (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "U" (IN)
LEES	C	A OR B	8 THRU 14	10.00	SEE TABLE 7	7	14.00	13.50	1.50	1.75	1.50	73.00	6.00	7.50
LEES	C	A OR B	15 THRU 19	12.00		7	17.00	16.00	1.25	1.75	1.50	73.00	6.00	7.50
LEES	C	A OR B	20 THRU 24	12.00		7	17.00	16.00	1.25	1.75	1.50	73.00	6.00	7.50
LEES	C	A OR B	25 THRU 29	13.00		5	18.00	17.00	1.50	2.00	1.75	88.00	6.00	8.00
LEES	C	A OR B	30 THRU 32	13.00		5	18.00	17.00	1.50	2.00	1.75	88.00	6.00	8.00
LEES	C	A OR B	33 THRU 34	13.00		5	18.00	17.00	1.50	2.00	1.75	88.00	6.00	8.00
LEES	C	A OR B	35 THRU 36	13.00		3	18.50	17.50	1.50	2.00	1.75	88.00	6.00	8.00
LEES	C	A OR B	37 THRU 39	14.00		0.250	19.00	19.00	1.50	2.00	1.75	88.00	6.00	8.00
LEES	C	A OR B	40 THRU 41	14.00		0.250	19.00	19.00	1.50	2.00	1.75	88.00	6.00	8.00
LEES	C	A OR B	42 THRU 45	14.50		0.250	20.00	20.00	1.75	2.00	1.75	88.00	6.00	8.00
LEES	C	A OR B	46 THRU 50	16.00		0.250	22.00	22.00	1.75	2.25	2.00	115.00	6.00	8.50
LEES	C	A OR B	51 THRU 54	16.00		0.250	22.00	22.00	1.75	2.25	2.00	115.00	6.00	8.50

TABLE 2: SINGLE MAST ARM WITH LUMINAIRE ARM TRAFFIC STRUCTURE DATA

DESIGNATION KEY					POLE TUBE			POLE BASE					ANCHOR BOLT			
POLE SERIES	POLE TYPE	BASE TYPE	SIGNAL ARM SPAN	LUMINAIRE ARM SPAN	BASE DIA. (IN)	LENGTH (FT)	GAUGE OR THICK (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "U" (IN)
LEES	CL	A OR B	8 THRU 14	6 THRU 15	11.00	SEE TABLE 7	7	16.00	15.00	1.25	1.75	1.50	73.00	6.00	7.50
LEES	CL	A OR B	15 THRU 19	6 THRU 15	12.50		5	17.50	16.50	1.25	1.75	1.50	73.00	6.00	7.50
LEES	CL	A OR B	20 THRU 24	6 THRU 15	13.00		5	18.00	17.00	1.50	1.75	1.50	73.00	6.00	7.50
LEES	CL	A OR B	25 THRU 29	6 THRU 15	13.00		3	18.50	17.50	1.50	2.00	1.75	88.00	6.00	8.00
LEES	CL	A OR B	30 THRU 32	6 THRU 15	13.00		3	18.50	17.50	1.50	2.00	1.75	88.00	6.00	8.00
LEES	CL	A OR B	33 THRU 34	6 THRU 15	13.00		3	18.50	17.50	1.50	2.00	1.75	88.00	6.00	8.00
LEES	CL	A OR B	35 THRU 36	6 THRU 15	14.00		0.250	19.00	19.00	1.50	2.00	1.75	88.00	6.00	8.00
LEES	CL	A OR B	37 THRU 39	6 THRU 15	14.00		0.250	19.00	19.00	1.50	2.00	1.75	88.00	6.00	8.00
LEES	CL	A OR B	40 THRU 41	6 THRU 15	14.50		0.250	20.00	20.00	1.50	2.00	1.75	88.00	6.00	8.00
LEES	CL	A OR B	42 THRU 45	6 THRU 15	15.00		0.250	20.50	20.50	1.75	2.25	2.00	115.00	6.00	8.50
LEES	CL	A OR B	46 THRU 50	6 THRU 15	16.00		0.250	22.00	22.00	1.75	2.25	2.00	115.00	6.00	8.50
LEES	CL	A OR B	51 THRU 54	6 THRU 15	17.00		0.250	23.00	23.00	1.75	2.25	2.00	115.00	6.00	8.50

TABLE 3: DOUBLE MAST ARM WITH LUMINAIRE ARM TRAFFIC STRUCTURE DATA

DESIGNATION KEY							POLE TUBE			POLE BASE					ANCHOR BOLT			
POLE SERIES	POLE TYPE	BASE TYPE	FIRST SIGNAL ARM SPAN (FT)	SECOND SIGNAL ARM SPAN (FT)	ORIENTATION ANGLE	LUMINAIRE ARM SPAN (FT)	BASE DIA. (IN)	LENGTH (FT)	GAUGE OR THICK (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "U" (IN)
LEES	BL	A OR B	14 MAX.	14 MAX.	90 THRU 180	6 THRU 15	12.50	SEE TABLE 7	5	17.50	16.50	1.50	2.00	1.75	88.00	6.00	8.00
LEES	BL	A OR B	19 MAX.	19 MAX.	90 THRU 180	6 THRU 15	12.50		3	18.00	17.00	1.75	2.25	2.00	115.00	6.00	8.50
LEES	BL	A OR B	24 MAX.	24 MAX.	90 THRU 180	6 THRU 15	13.00		3	19.00	18.50	1.75	2.25	2.00	115.00	6.00	8.50
LEES	BL	A OR B	29 MAX.	29 MAX.	90 THRU 180	6 THRU 15	14.00		0.250	19.00	19.00	1.75	2.25	2.00	115.00	6.00	8.50
LEES	BL	A OR B	32 MAX.	32 MAX.	90 THRU 180	6 THRU 15	14.50		0.250	19.50	19.50	1.75	2.25	2.00	115.00	6.00	8.50
LEES	BL	A OR B	34 MAX.	34 MAX.	90 THRU 180	6 THRU 15	15.00		0.250	20.50	20.50	1.75	2.25	2.00	115.00	6.00	8.50
LEES	BL	A OR B	36 MAX.	36 MAX.	90 THRU 180	6 THRU 15	16.00		0.250	22.00	22.00	2.00	2.25	2.00	115.00	6.00	8.50
LEES	BL	A OR B	39 MAX.	39 MAX.	90 THRU 180	6 THRU 15	16.00		0.250	22.00	22.00	2.00	2.25	2.00	115.00	6.00	8.50
LEES	BL	A OR B	41 MAX.	41 MAX.	90 THRU 180	6 THRU 15	16.00		0.250	22.00	22.00	2.00	2.25	2.00	115.00	6.00	8.50
LEES	BL	A OR B	45 MAX.	45 MAX.	90 THRU 180	6 THRU 15	17.00		0.250	23.00	23.00	2.00	2.25	2.00	115.00	6.00	8.50
LEES	BL	A OR B	50 MAX.	50 MAX.	90 THRU 180	6 THRU 15	18.00		0.250	24.00	24.00	2.00	2.50	2.25	114.00	6.00	9.00
LEES	BL	A OR B	54 MAX.	54 MAX.	90 THRU 180	6 THRU 15	18.00		0.250	24.00	24.00	2.00	2.50	2.25	114.00	6.00	9.00

TABLE 4: DOUBLE MAST ARM TRAFFIC STRUCTURE DATA

DESIGNATION KEY						POLE TUBE			POLE BASE					ANCHOR BOLT			
POLE SERIES	POLE TYPE	BASE TYPE	FIRST SIGNAL ARM SPAN (FT)	SECOND SIGNAL ARM SPAN (FT)	ORIENTATION ANGLE	BASE DIA. (IN)	LENGTH (FT)	GAUGE OR THICK (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "U" (IN)
LEES	B	A OR B	14 MAX.	14 MAX.	90 THRU 180	12.00	SEE TABLE 7	7	17.00	16.00	1.50	1.75	1.50	73.00	6.00	7.50
LEES	B	A OR B	19 MAX.	19 MAX.	90 THRU 180	12.50		5	17.50	16.50	1.50	2.00	1.75	88.00	6.00	8.00
LEES	B	A OR B	24 MAX.	24 MAX.	90 THRU 180	13.00		5	18.00	17.00	1.50	2.00	1.75	88.00	6.00	8.00
LEES	B	A OR B	29 MAX.	29 MAX.	90 THRU 180	14.00		0.250	19.00	19.00	1.75	2.25	2.00	115.00	6.00	8.50
LEES	B	A OR B	32 MAX.	32 MAX.	90 THRU 180	14.00		0.250	19.00	19.00	1.75	2.25	2.00	115.00	6.00	8.50
LEES	B	A OR B	34 MAX.	34 MAX.	90 THRU 180	14.00		0.250	19.00	19.00	1.75	2.25	2.00	115.00	6.00	8.50
LEES	B	A OR B	36 MAX.	36 MAX.	90 THRU 180	14.50		0.250	19.50	19.50	1.75	2.25	2.00	115.00	6.00	8.50
LEES	B	A OR B	39 MAX.	39 MAX.	90 THRU 180	15.00		0.250	20.50	20.50	1.75	2.25	2.00	115.00	6.00	8.50
LEES	B	A OR B	41 MAX.	41 MAX.	90 THRU 180	16.00		0.250	22.00	22.00	1.75	2.25	2.00	115.00	6.00	8.50
LEES	B	A OR B	45 MAX.	45 MAX.	90 THRU 180	16.00		0.250	22.00	22.00	1.75	2.25	2.00	115.00	6.00	8.50
LEES	B	A OR B	50 MAX.	50 MAX.	90 THRU 180	17.00		0.250	23.00	23.00	1.75	2.25	2.00	115.00	6.00	8.50
LEES	B	A OR B	54 MAX.	54 MAX.	90 THRU 180	18.00		0.250	24.00	24.00	2.00	2.50	2.25	114.00	6.00	9.00

TABLE 5: MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
SHAFT - 7, 5 & 3GA.	A595 GR.A	55
SHAFT - 0.25" WALL	A572 GR.55	55
BASE PLATE	A572 GR.50	50
SIGNAL ARM ATTACHMENT PLATES	A572 GR.50	50
SIGNAL ARM ATTACHMENT BOLTS	A325	
LUMINAIRE ARM TUBE (2"SCHD.40 PIPE)	A513 OR EQUIVALENT	
LUMINAIRE STRUTS- (2"x0.38")	A36	36
LUMINAIRE CONNECTION BOLTS	A307	36
LUMINAIRE AND SIGN CLAMP	A36	36
ANCHOR BOLTS	F1554 GR.55	55
ANCHOR BOLT HEAVY HEX NUTS	A194 GR.2H	
ANCHOR BOLT FLAT WASHERS	F436	
GALVANIZING STRUCTURE	A123	
GALVANIZING HARDWARE	A153	
STAINLESS STEEL HARDWARE	A593 ALLOY GR.1	

TABLE 6: SIGNAL ARM

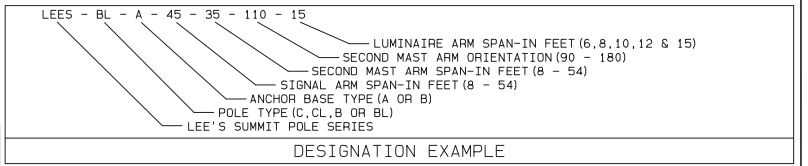
SPAN (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	GAUGE	ARM RISE "T" (DEG)
8 - 14	6.00	4.88 - 4.04	7	0.50 - 1.00
15 - 19	7.00	4.90 - 4.34	7	1.00 - 2.00
20 - 24	8.00	5.20 - 4.64	7	1.00 - 2.00
25 - 29	10.00	6.50 - 5.94	7	1.50 - 2.00
30 - 32	10.00	5.80 - 5.52	7	2.00 - 2.00
33 - 34	11.00	6.38 - 6.24	7	2.00 - 2.00
35 - 36	11.00	6.10 - 5.96	7	2.00 - 2.00
37 - 39	12.00	6.82 - 6.54	7	2.00 - 2.50
40 - 41	12.00	6.40 - 6.26	7	2.50 - 2.50
42 - 45	12.50	6.62 - 6.20	5	2.50 - 2.50
46 - 50	12.50	6.06 - 5.50	3	2.50 - 3.50
51 - 54	13.00	6.22 - 5.80	3 & 7	3.00 - 3.50

TABLE 7: ELEVATIONS

BASE TYPE	MAST ARM MOUNTING HEIGHT	POLE LENGTH WITH OUT LUMINAIRE ARM	POLE LENGTH WITH LUMINAIRE ARM
A	15'-6"	16'-6"	35'-0"
B	17'-6"	18'-6"	37'-0"

TABLE 8: LUMINAIRE ARM DATA

ARM SPAN (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	GAUGE OR THICK
6	2.38	2.38	0.154"
8	2.38	2.38	0.154"
10	2.38	2.38	0.154"
12	2.38	2.38	0.154"
15	2.38	2.38	0.154"



DESIGNATION EXAMPLE

STRUCTURE DESIGNATION:

QTY-1 LEES-C-B-38-GV-HH-LAB

QTY-1 LEES-CL-B-38-15-GV-HH-LAB

QTY-1 LEES-B-B-54-30-90°-GV-HH-LAB

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valmont

Valley, NE 68064
(402) 359-2201

PAGE NUMBER: 4 OF 4

DRAWING NUMBER: DB00947

REV: A

ALL MATERIAL (SHEETS 14-23) BELOW PROVIDED BY:

MID-AMERICAN SIGNAL, INC.

2429 South Mill Street,
Kansas City, Kansas 66103
913- 432 5002
www.midamsignal.com

Submittals for Lee's Summit
Colbern and Rice
Barry Felkner – Sosaya and Sons

MAS POLICY IS TO EXCLUSIVELY SEND SUBMITTALS ELECTRONICALLY VIA PDF DOCUMENT, IN THE INTEREST OF REDUCING PAPERWORK AND PROJECT COSTS

SALESPERSON CONTACT
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PROJECT MATERIALS-ORDER CONTROL AND SCHEDULING
Sherry Bradley
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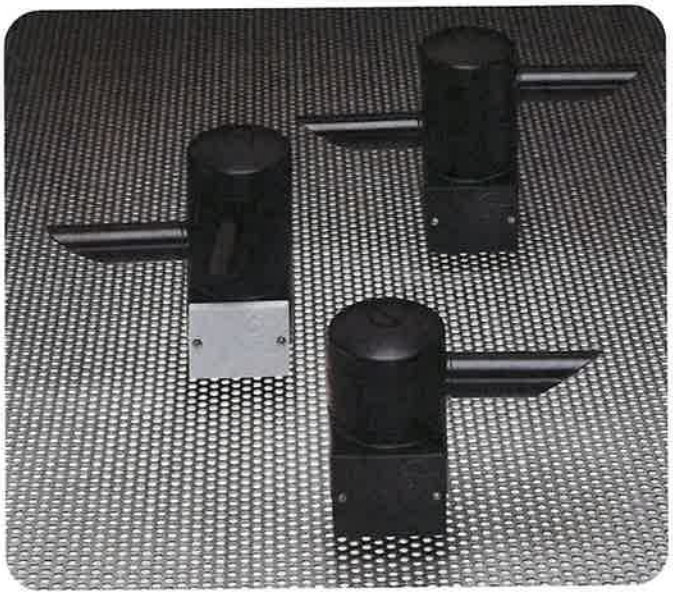
sherry.bradley@midamsignal.com

- Project Orders are on hold pending approval of submittals
- Mid American Signal shall be provided with copy of approved submittals or written/electronic acceptance of materials as submitted prior to orders being released
- Electronic Documents are accepted and encouraged

SR

Shawn Batalia, Mid American Signal, Inc

Miovision Opticom® 711/721/722 Detectors



The Opticom 700 Series Detectors transform the optical energy detected from an approaching, vehicle-mounted Opticom Emitter to an electrical signal. The electrical signal is transmitted along a cable to the Opticom Phase Selector or Opticom Discriminator for processing.

Opticom 700 series detectors are mounted at or near the intersection that permits a direct, unobstructed line-of-sight to vehicle approaches. Opticom detectors may be mounted on span wire, mast arm or other appropriate structures.

Opticom 711, 721 and 722 Detectors offer significant advances and flexibility for specific intersection applications.

The Opticom detectors are designed for common applications in three configurations: one direction—the single channel Opticom 711; the single channel, dual detection Opticom 721; and two direction, two output detection—the dual channel Opticom 722.

All Opticom 700 series detectors greatly reduce installation and life cycle costs through their modular design, adjustable tubes, and compatibility with existing Opticom Infrared System intersection and vehicle equipment.

Features

- Advanced electrical transient immunity
- Modular design
- Adjustable turret configuration: accommodates skewed approaches
- Lightweight, durable, high-impact polycarbonate enclosure
- Simplified installation: span wire or mast arm
- Gray door identification of Opticom 722 detector

Accessories

- Opticom Span Wire Clamp
- Opticom 138 Detector Cable

Operating Parameters

- Reception Range: 200 ft. (60 m) adjustable up to 2,500 ft. (760 m)
- Electrical: 24 to 28 VDC, 50 MA minimum
- Temperature Range: -30° F (-34° C) to 165° F (74° C)
- Humidity: 5% to 95% relative

Physical Dimensions

Opticom 711 Detector

Length: 12.0 in. (30.5 cm)
Width: 4.75 in. (12.1 cm)
Height: 5.63 in. (14.3 cm)
Weight: 0.88 lbs. (400 g)

Opticom 721 and 722 Detectors

Length: 12.0 in. (30.5 cm)
Width: 4.75 in. (12.1 cm)
Height: 7.13 in. (18.1 cm)
Weight: 1.12 lbs. (508 g)

opticom by miovision

For more information, visit **help.miovision.com**,
email us at **support@miovision.com**,
or call us NA Toll-free at **1-855-360-7752**

MIOVISION

Miovision Opticom® 764 Phase Selector

The Opticom 764 Multimode Phase Selector is a plug-in, four-channel, dual-priority, multimode encoded signal device designed for use with both Opticom infrared system (IR) emitters and detectors and Opticom GPS radio/GPS intersection units and vehicle equipment. It can be installed directly into the input files of Type 170 traffic controllers equipped with priority phase selection software and in virtually any other traffic controller equipped with priority phase selection inputs and related software. Phase selectors are powered from AC mains or 24 VDC and contain their own internal power supply to support Opticom IR detectors and Opticom GPS radio/GPS units.

The Opticom 764 Multimode Phase Selector may be used in IR only applications, GPS only applications, or IR and GPS applications simultaneously.

The Opticom 760 Card Rack is required when input file space is not available. When used in GPS only mode, the Opticom 1040 Card Rack may also be used.

Opticom 764 Multimode Phase Selector recognizes and discriminates among three distinct Opticom IR emitter frequency rates via Opticom detectors: high priority, low priority and probe priority. Within each of these three frequency rates, the phase selectors further discriminate among 10 classes of vehicle identification codes, with 1,000 individual vehicle codes per class — 10,000 total per frequency rate. The Opticom 764 Multimode Phase Selector also recognizes three different priority levels transmitted by Opticom GPS vehicle equipment: high priority, low priority and probe priority. Within each of these three priority levels, the phase selectors further discriminate among 254 agency IDs, 15 classes of vehicle identification codes, with 10,000 individual vehicle codes per class — for more than 38 million total per priority level.

Opticom 764 Multimode Phase Selector internally records each system activation. Each entry contains:

- Intersection name
- Date and time of the activity
- Vehicle class code of the activating vehicle
- Activating vehicle's ID number
- Agency ID (GPS only)
- Channel called
- Priority of the activity•Final green signal indications displayed at theend of the call
- Time spent in the final greens
- Duration of the activation
- If preempt has been requested and reason if not
- Turn signal status at the end of the call (GPSonly)
- Entry, exit and average speed (GPS only)
- Relative priority level
- Conditional priority level

Features

IR only operation, GPS only operation, or simultaneous IR and GPS operation

- Four channels of detection
- Two auxiliary detectors per channel (IR)
- Records green signal displayed at end of preemption
- Compatible with encoded signal and non-encoded signal Opticom IR Emitters
- High and low priority as well as probe frequency discrimination
- Conditional priority for Transit Signal Priority (TSP) (when used with compatible AVL and/or passenger counter)
- "First-come, first-served" priority within each priority level
- Priority-by-class setting via the interface software
- Priority-by-direction setting via the interface software
- Direct installation into CA/NY Type 170 input files
- Automatic range setting using an encoded emitter (IR)
- Call bridging for both IR and GPS calls including mixed mode
- Low-priority output may be configured for first-come, first-served or all-channel active
- User-adjustable range setting up to 2,500 feet of operation
- Compatible with most traffic controllers

- 10/100Mb Ethernet communication on the front panel
- USB 2.0 communication on the front panel
- RS232 communications front port, and rear backplane and Auxiliary Interface Panel
- User-selected communications baud rate of 1,200 to 230,400 bits per second
- Customizable ID code validation
- Flexible programming options for priority control parameters
- Detailed current Opticom System parameter information
- History log of most recent Opticom infrared and GPS system activities (10,000 entries)
- 30,000 frequency/class/vehicle code ID combinations (IR)
- More than 38 million agency/class/vehicle code combinations (GPS)
- Front panel switches and diagnostic indicators for testing
- Accurate infrared signal recognition circuitry
- Precise output pulse
- Definitive call verification
- Regulated detector power supply (IR)
- Optically isolated outputs
- Two character display and keypad to enable diagnostics and test calls to each channel
- Display LED Indicators
- – High- and low-priority test calls
- – Reset to default parameters
- – Range setting
- User-settable range setting by ETA and/or distance (GPS only)
- Varied outputs depending on turn signal status of requesting vehicle (GPS only)
- IR detector inputs may be mapped to any channel
- Diagnostic test
- Advanced built-in diagnostics and testing
- Tested to NEMA environmental and electrical test specifications

Accessories

Opticom On-site Interface software package

- Opticom 768 Auxiliary Interface Panel
- Opticom 755 Four-Channel Adapter Card (optional)
- Opticom 760 Card Rack

Operating Parameters

Four dual-priority and probe frequency channels

- "First-come, first-served" for vehicles with the same priority level (high or low)
- Priority override: always higher over lower
- Opticom GPS Radio/GPS Unit input
- Opticom Infrared System Detector input(s): one per channel on the card edge connector and two auxiliary per channel through the Opticom 768 Auxiliary Interface Panel
- Optional interface software for flexible programming options and call history
- LED indicators
  - Status
  - Radio (GPS mode)
  - Link (GPS mode)
  - High signal/call per channel
  - Low signal/call per channel
  - Two-digit status display
- Two character display and keypad to enable diagnostics and test calls to each channel
- Voltage: 89 to 135 VAC, 60 Hz at up to 500mA or 24 VDC at up to 1 Amp
- Temperature: -37°C to +74°C (-34.6°F to +165.2°F)
- Humidity: 5% to 95% relative
- CE certified
- NEMA TS-2 compliance
- FCC compliance

Physical Dimensions

Length: 7.0 in. (17.8 cm) x 8.2 in. (20.8 cm) including handle

Width: 2.3 in. (5.8 cm)

Height: 4.5 in. (11.4 cm)

Weight: 0.60 lbs. (272 g)

opticom by miovision

For more information, visit **help.miovision.com**,
email us at **support@miovision.com**,
or call us NA Toll-free at **1-855-360-7752**

MIOVISION

OPTICOM™ 138 IR Detector Cable

DESCRIPTION

Opticom 138 Detector Cable is designed and manufactured explicitly for use with Opticom Detectors. Opticom 138 cable has three color-coded conductors, a conductive shield and drain, and a black PVC jacket.

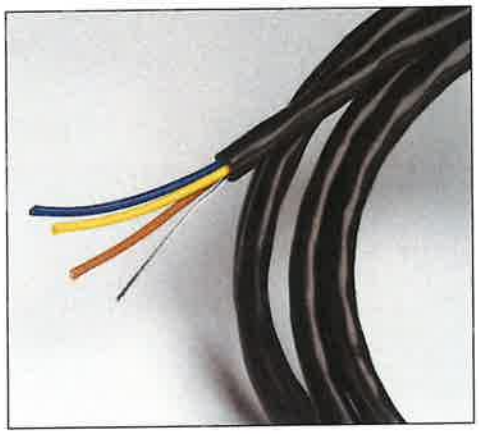
This durable, high-quality cable carries the appropriate power to the detector from the Opticom Phase Selector and delivers the necessary quality signal to the phase selector discriminator circuitry up to 1,000 feet (305 m).

FEATURES AND BENEFITS

- Optimized to interface Opticom detectors to Opticom phase selectors or Opticom Discriminators
- Ensures effective range of 2,500 feet (760 m) with Opticom Infrared System components
- Durable construction
  - Suitable for direct burial
  - Suitable for conduit and mast arm pull
  - Suitable for exposed overhead installation*

OPERATING PARAMETERS

- 600 volt rating
- 75° C (167° F) temperature range
- Three-conductor AWG #20 (7x28) stranded, individually tinned copper: yellow, blue and orange
- Aluminized polyester shield with 20% overlap
- Drain AWG #20 (7x28) stranded, individually tinned copper
- Controlled electrical characteristics



PHYSICAL DIMENSIONS

- Outside diameter: 0.3 in. (7.62 mm)
- Weight: 0.04 lbs./ft. (65.5 g/m)
- Available in: 500 ft., 1,000 ft., 2,500 ft. and 5,000 ft. (152 m, 305 m, 760 m and 15,200 m) spools

*Separate messenger wire required

Global Traffic Technologies, LLC
7800 Third Street North
St. Paul, Minnesota 55128-5441
1-800-258-4610
651-789-7333
www.gtt.com

Global Traffic Technologies Canada, Inc.
157 Adelaide Street West, Suite 448
Toronto, ON M5H 4E7 Canada
1-800-258-4610

Global Traffic Technologies, LLC
1210 Parkview
Reading RG7 4TY
United Kingdom
+44 (0) 7799 908916

GTT™ GLOBAL TRAFFIC TECHNOLOGIES

Mini-Brac Clamp Kits

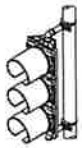
This unique mount is a smaller version of the Astro-Brac and gives the same kind of universal application. The Astro Mini-Brac is ideal for side-of-pole or mast arm mountings for vehicle or pedestrian signals and emergency traffic signal sensors. Available in stainless cable or band mount.

AB-0513
Cable Kit

Mini-Brac Clamp Kit, 1-1/2" NPS Stainless Cable Mount

AB-0160 - [Cable Length: See Table] - [Coating: PNC=Process No Color, P__=Paint]

Cable Length:	45"	62"	84"
Maximum Pole Dia:	11.1"	16.6"	22.0"



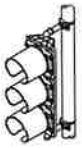
Side-of-Pole Mounting
Vehicular or Pedestrian Signals

AB-0303
Clamp Screw Kit

Mini-Brac Clamp Kit, 1-1/2" NPS Stainless Band Mount

AB-0121 - [Band Length: See Table] - [Coating: PNC=Process No Color, P__=Paint]

Band Length:	29"	42"	56"	72"
Maximum Pole Dia:	7.3"	11.5"	15.9"	21.0"



Side-of-Pole Mounting
Vehicular or Pedestrian Signals

AB-0513
Cable Kit

Mini-Brac Clamp Kit, 3/4"-14 NPT Stainless Cable Mount

AB-0163 - [Cable Length: 62 See Table] - [Coating: PNC PNC=Process No Color, P__=Paint]

Cable Length:	45"	62"	84"
Maximum Pole Dia:	11.1"	16.6"	22.0"

Mast Arm Mounting
Emergency Traffic Signal Sensor

AB-0303
Clamp Screw Kit

Mini-Brac Clamp Kit, 3/4"-14 NPT Band Mount

AB-0155 - [Band Length: See Table] - [Coating: PNC=Process No Color, P__=Paint]

Band Length:	29"	42"	56"	72"
Maximum Pole Dia:	7.3"	11.5"	15.9"	21.0"

Mast Arm Mounting
Emergency Traffic Signal Sensor

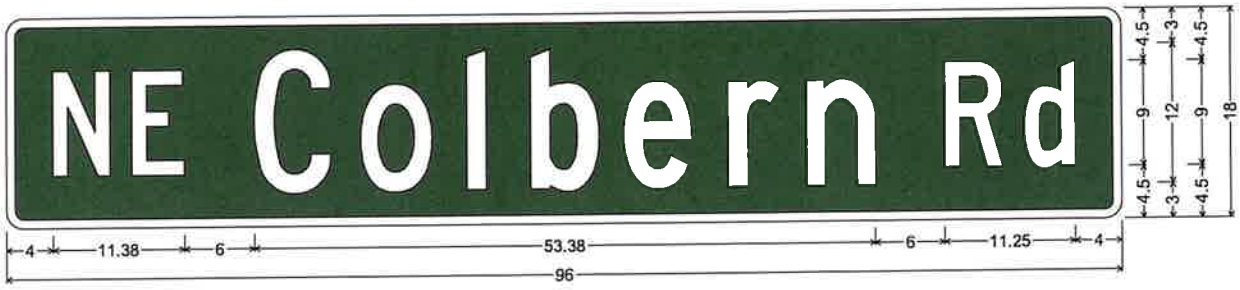
Note: 1. All assemblies are supplied standard with stainless steel cable, clamp screw, and fasteners.
2. See Reference Section for clamp kit pole diameter.
3. See Reference Section for available paint colors.

Manufactured By
The Work Zone, Inc.
1248 Taney St
North Kansas City, Mo. 64116

Distributed By
Mid American Signal
2429 S Mill Street
Kansas City, KS. 66103

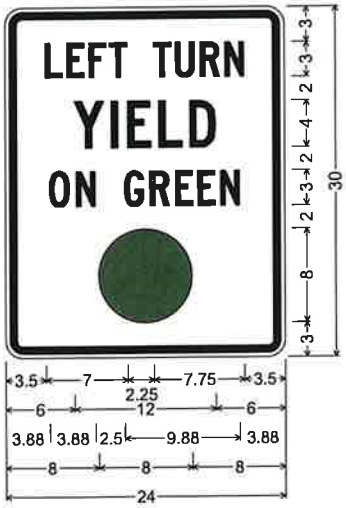
Aluminum:
Allowy 5052H38

3M Sheeting:
3930 High Intensity White
3M EC Film 1177 Green
3M EC Film 1178 Black

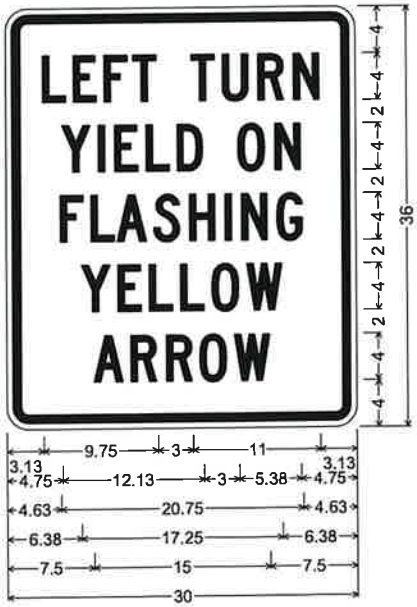


1.50" Radius, 0.75" Border, White on Green;
"NE Colbern Rd", C;

1.50" Radius, 0.75" Border, White on Green;
"NE Rice Pkwy", C;



R10-12_24x30;
1.50" Radius, 0.63" Border, 0.38" Indent, Black on White;
"LEFT TURN", C specified length;
"YIELD", C specified length;
"ON GREEN", C specified length;



R10-27_30x36;
1.88" Radius, 0.75" Border, 0.50" Indent, Black on White;
"LEFT TURN", C; "YIELD ON", C;
"FLASHING", C; "YELLOW", C;
"ARROW", C;

It Straps On, Inc.

74525 Oil Row
Covington, LA 70435
Office: (985) 875-0080 Fax: (985) 875- 0088
www.itstrapson.com

Specification Sheet for SB021

It Straps On, Inc. tests all of our stainless steel bracket material to warrant that it meets ASTM-A240 standards including, but not limited to, chemical composition requirements of carbon, manganese, phosphorus, sulfur, silicon, chromium, nickel and tensile strength.

Our stainless steel brackets are produced and manufactured in the ***U.S.A.***

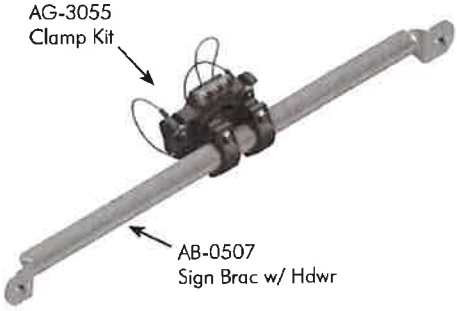
Our SB021 Bull's Eye™ stainless steel flared leg brackets are fully annealed and come with a stainless steel bolt (5/16", 18 thread, hex head) and washer.

SB021 can be further described as:

Finish: Stainless bright or matte
Thickness: .070"
Pieces per box: 50
Tensile Strength: 55,000 PSI Minimum

Astro Sign-Brac Formed Tubes Cable Mount

Pelco manufactures a variety of sign brackets in rigid and free-swinging mounts for both flat and internally illuminated signs. Most sign-bracs are available with a cable, band, or tenon mount clamp kit.

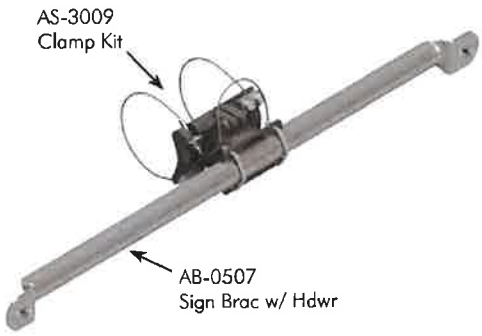


Galaxy Sign-Brac, Stainless Cable Mount, Formed Tube

Left Turn On Green Sign

	CTC		Cable Length		Coating
AG-0142	- 24	-	120	-	PNC
	See Sign CTC Table		See Table		PNC=Process No Color P__=Paint

Cable Length:	62"	84"	96"	120"	144"	220"	280"
Maximum Pole Dia:	7.0"	10.5"	12.4"	16.2"	20.1"	32.2"	35.0"
Pole Dia w/ Ty-back:	4.5"	7.6"	9.6"	13.4"	17.2"	29.3"	35.0"

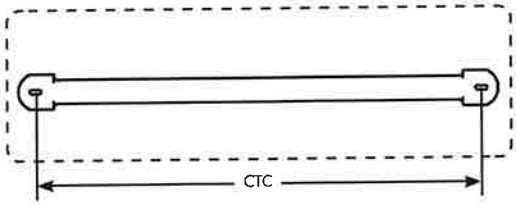


Stellar Sign-Brac, Stainless Cable Mount, Formed Tube

	CTC		Cable Length		Coating
AS-0142	-	-		-	
	See Sign CTC Table		See Table		PNC=Process No Color P__=Paint

Cable Length:	62"	84"	96"	120"	144"	220"	280"
Maximum Pole Dia:	7.0"	10.5"	12.4"	16.2"	20.1"	32.2"	35.0"
Pole Dia w/ Ty-back:	4.5"	7.6"	9.6"	13.4"	17.2"	29.3"	35.0"

Sign CTC										
Max CTC:	9"	12"	15"	18"	24"	30"	36"	42"	48"	60"
Sign Length:	15"	18"	21"	24"	30"	36"	42"	48"	54"	66"



Notes:

90 mph wind zone maximum: 16 sq-ft

1. Capacity listed is only for applications with the clamp kit mounted in the center of the sign.
2. Signs must be properly engineered for specific application.
3. For higher wind zones and multiple brackets use assemblies shown on T6-1 & T6-2.

Note: 1. All assemblies are supplied standard with stainless steel cable, clamp screw, and fasteners.
2. See Reference Section page v for available paint colors.

Astro Sign-Brac Formed Tubes Cable Mount

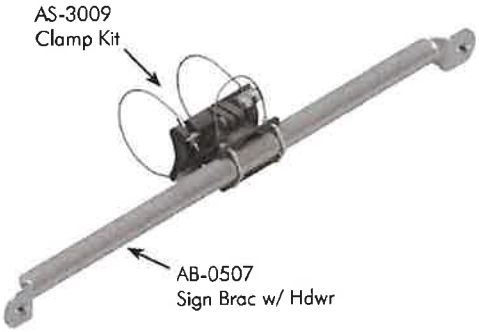
Pelco manufactures a variety of sign brackets in rigid and free-swinging mounts for both flat and internally illuminated signs. Most sign-bracs are available with a cable, band, or tenon mount clamp kit.

Galaxy Sign-Brac, Stainless Cable Mount, Formed Tube

FYA Sign

	CTC		Cable Length		Coating
AG-0142 -	30	-	120	-	PNC
	See Sign CTC Table		See Table		PNC=Process No Color P__=Paint

Cable Length:	62"	84"	96"	120"	144"	220"	280"
Maximum Pole Dia:	7.0"	10.5"	12.4"	16.2"	20.1"	32.2"	35.0"
Pole Dia w/ Ty-back:	4.5"	7.6"	9.6"	13.4"	17.2"	29.3"	35.0"

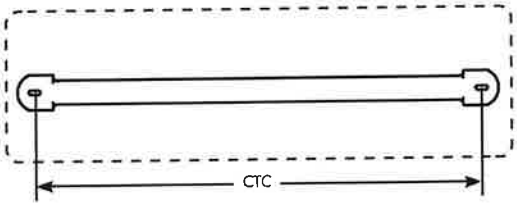


Stellar Sign-Brac, Stainless Cable Mount, Formed Tube

	CTC		Cable Length		Coating
AS-0142 -		-		-	
	See Sign CTC Table		See Table		PNC=Process No Color P__=Paint

Cable Length:	62"	84"	96"	120"	144"	220"	280"
Maximum Pole Dia:	7.0"	10.5"	12.4"	16.2"	20.1"	32.2"	35.0"
Pole Dia w/ Ty-back:	4.5"	7.6"	9.6"	13.4"	17.2"	29.3"	35.0"

Sign CTC										
Max CTC:	9"	12"	15"	18"	24"	30"	36"	42"	48"	60"
Sign Length:	15"	18"	21"	24"	30"	36"	42"	48"	54"	66"



Notes:

90 mph wind zone maximum: 16 sq-ft

1. Capacity listed is only for applications with the clamp kit mounted in the center of the sign.
2. Signs must be properly engineered for specific application.
3. For higher wind zones and multiple brackets use assemblies shown on T6-1 & T6-2.

Note: 1. All assemblies are supplied standard with stainless steel cable, clamp screw, and fasteners.
2. See Reference Section page v for available paint colors.

ALL MATERIAL BELOW (SHEETS 24-53)PROVIDED BY:

TRAFFIC CONTROL CORPORATION

Shop Drawing Submittal

SO 744316

DATE: 19 June 2025

Soysaya
Attn – Barry Felkner

ITEM	QTY	DESCRIPTION	BOX
1	1	Shop Submittal –Colbern & Rice	
		PO 2529-02	
		ORDER ON HOLD PENDING RELEASE	

Lisa Seymour
Territory Manager
Kansas City
Cell 913.284.9291
www.trafficcontrolcorp.com

Prepared By: _L. Seymour_____

Received by:_____Date:_____

ECONOLITE

Traffic Signals

Poly B/B

(8" & 12") Vehicle Signal Faces

Aluminum & Polycarbonate Housings

Saving lives through improved mobility isn't just a phrase at Econolite—it's a mindset—a culture and way of doing business, embedded across the entire organization.

Since the very beginning, Econolite has been committed to leveraging intelligent technology—from the first lighted stop sign, intended to reduce injuries and fatalities at intersections in 1933, all the way through our more advanced solutions for transportation management.

Traffic signals provide an opportunity for pedestrians or vehicles to safely cross an intersection from different directions. Traffic signals can also alleviate traffic capacity of an intersection or a given route which leads to lowering emissions from vehicles that are waiting in traffic.

Each traffic signal consists of a number of identical signal sections rigidly fastened together to present a continuous appearance. Each section has a separate and complete housing that meets or exceeds the latest version of the Equipment Standard from the Institute of Transportation Engineers (ITE).

Key Features

- *Vertical, horizontal, doghouse and HAWK configurations (1 to 5 sections)*
- *Signal assemblies provided with or without LED inserts installed*
- *ISO 9001: 2015 Certified*
- *Tested to ITE required wind loading on single-point attachment*

Durable Housing and Corrosion Resistant Finishes

Aluminum Housing/Door

The housing and door of each section is a one-piece corrosion-resistant aluminum alloy die-casting conforming to ASTM B85 Standard SG100B.

- Painting of Aluminum Housing/Door/Visor/Backplate
  - All interior and exterior surfaces are pre-treated for painting
  - Degreased, rinsed, and etched with an iron phosphate solution
  - Rinsed with a final deionized water rinse, then dried for 10 minutes at 400°F.
  - Painted with a single coat of environmentally safe, ultraviolet-resistant, polyester powder coating that is applied electrostatically at 90 kV and baked for 20 minutes at 400°F.
  - Meets ASTM D-3359, ASTM D-3363 and ASTM D-522.

Polycarbonate Housing/Door

- The housing and door of each section is a one-piece molded ultraviolet and heat-stabilized unit made from virgin polycarbonate resin.

Shurlock Boss

Radial angular grooves cast into the top and bottom of the signal head housing (along with Econolite Shurlock fittings) permit alignment adjustments in five-degree increments and hold the head firmly in place. They also permit any section to be rotated independently about the vertical axis and hold each section securely in place to prevent misalignment.

Terminal Block

A terminal block with "Fast-on" tabs on one side and screw clamps on the other side is provided in a standard signal assembly. Mounting points for a second block are also present. Raised letters cast into the housing identify each position on the terminal block. Econolite offers multiple sizes and types of terminal blocks to meet agency requirements.

Standard Specifications

Size	Dimensions / Weight per section (less visor)
8" Aluminum	10 in. H x 10 in. W x 6 in. D / 5.6 lb
8" Polycarbonate	10 in. H x 10.5 in. W x 6 in. D / 1.7 lb
12" Aluminum	14 in. H x 14 in. W x 6.6 in. D / 7.5 lb
12" Polycarbonate	14 in. H x 14 in. W x 6.6 in. D / 3.5 lb
Material	• Polycarbonate Housing Thickness 0.12" • Polycarbonate Door Thickness 0.13" • Aluminum Housing Thickness 0.095" • Aluminum Door Thickness 0.10"
Standard Color(s)	Dark Olive Green - *Matches Federal Standard 595b-14056* Yellow - *Matches Federal Standard 595b-13538* Flat Black - *Matches Federal Standard 595b-37038* Gloss Black (Aluminum only) - *Cardinal T009-BK12*

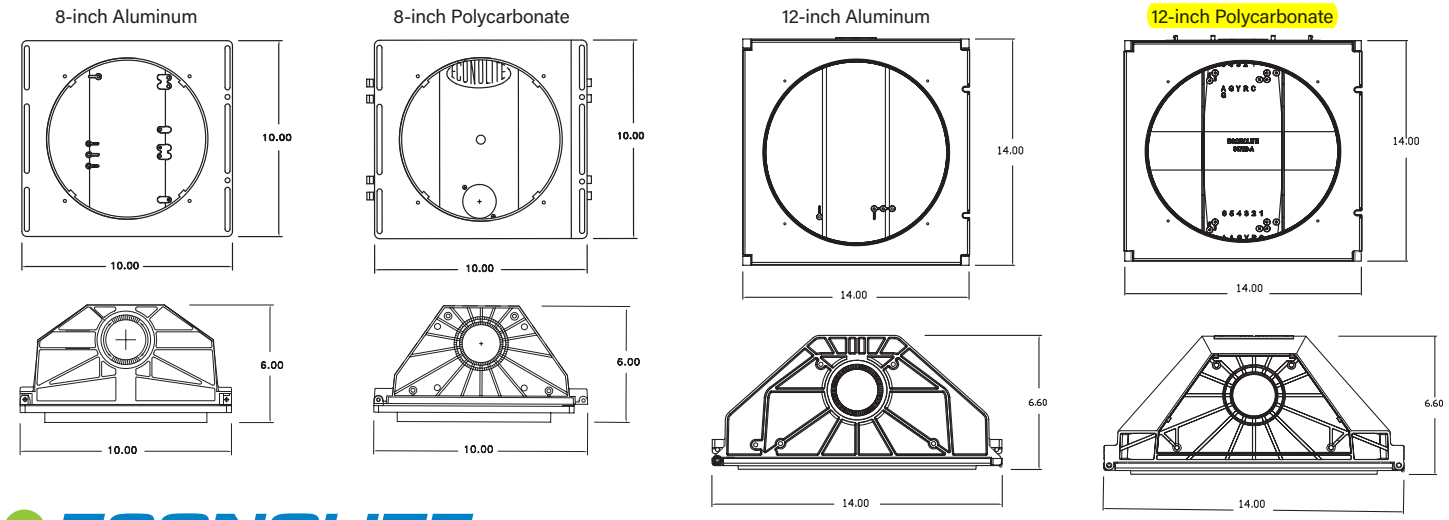
Reversible Door Mounting

The door may be mounted on either side, permitting easy access to closely mounted signals. Two integrally-cast hinge lugs and latch screw slots are located on each side of the housing. Built upon a symmetrical concept, each housing is capable of providing either a right or left-hand door opening. While the left hinge is standard, the right hinge is optional and must be specified.

Options

- Location, quantity, and type of terminal blocks
- Visors (Tunnel, Full Circle, Cap, Angular)
- Backplates (Standard or Louvered). Reflective Tape (optional)
- Mounting (Vertical or Horizontal)
- Accepts all manufacturers' LED inserts
- Internal attaching hardware per agency specification
- Elevator Plumbizer – installed when requested
- Reinforcement Plates for Polycarbonate Signals

Vehicle Signal Face Housings



ECONOLITE

Dimensions and weights are approximate and may vary.

GTX®

VLA Model
LED Signal Modules

8 and 12 inch
Incandescent look (120V)

Project Name _____
Date _____ Type _____
Notes _____

ROBUST FEATURES

- Optimal thermal management for longer life.
- Provides performance under extreme field temperature conditions.

INNOVATIVE DESIGN

- Low profile module permits efficient installation into existing traffic housings.
- Power consumption levels allow compatibility with most controllers.
- Mask compatible to fit your unique signaling needs.*

OUTSTANDING PERFORMANCE

- High-brightness central light source and custom optical lensing distribute light uniformly and efficiently.
- Rigorously tested for long life design and low maintenance costs.
- Excellent color uniformity.

MEETS RIGOROUS CERTIFICATION & TESTING STANDARDS

- Intertek ETL Verified compliant.
- Compliant with ITE VTCSH LED Circular Signal Supplement dated June 27th 2005.
- CSA approved version available.

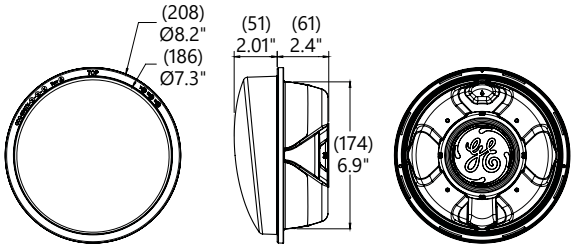
* Sold separately. Refer to masks datasheet TRAF208.

The Greatest Signals Stand the Test of Time.™

GTX® City
LED Signal Modules
8 and 12 inch

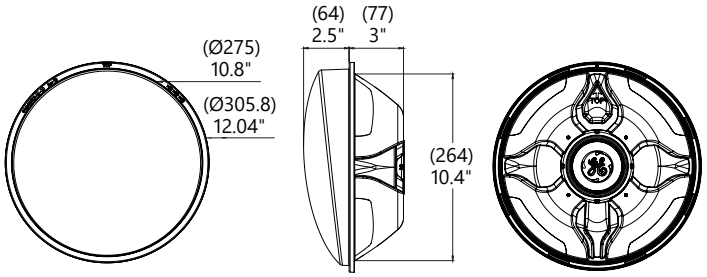
Project Name _____
Date _____ Type _____
Notes _____

Mechanical Outline
Dimensions in inches (mm)



Front View | Side View | Back View

8 inch



Front View | Side View | Back View

12 inch

Design Compliance

Test type	Compliance
Luminous Intensity	ITE VTCSH- LED Circular Signal Supplment-June 2005
Chromaticity	ITE VTCSH- LEDCircular-June 2005
Moisture Resistance	Blown Wind Rain MIL-STD-810F method 506.4
Mechanical Vibration	MIL-STD-883 Method 2007
Electronic Noise	FCC Title 47 Sub. B Sec 15[1]
Transient Voltage Protection	Sec. 2.1.6 NEMA TS2-2003, 300V, 2500W Sec. 2 .1.6 NEMA TS2-2003, 600V, 10µF Sec. 2.1.8 NEMA TS2-2003, 1kV, 2Ω
Controller Compatibility	ITE VTCSH- LED Circular Signal Supplement-June 2005
Wiring	NFPA 70, National Electric Code
Transient Suppression	Sec. 8.2 IEC 61000-4-5 & Sec. 6.1.2 ANSI/IEEE C62.41.2 - 2002, 3KV, 2 Ω Sec. 8.0 IEC 61000-4-12 & Sec. 6.1.1 ANSI/IEEE C62.41.2 - 2002, 6KV, 30 Ω
Immunity	Radiated electromagnetic field immunity - radio frequencies IEC 6100-4-3:2020 10 V/m (80 MHz-1 GHz) – Class A

Operating Specifications

Parameter	Rating
Operating Temperature Range*	-40 to +74°C (-40 to +165°F)
Operating Voltage Range	80 to 135 V (60Hz AC)
Power Factor (PF)	> 90%
Total Harmonic Distortion (THD)	< 20%
Minimum Voltage Turn-Off (VTO)	35 V
Turn-On/Turn-Off Time	< 75 ms
Lens & Shell Material	UV Stabilized Polycarbonate
Wiring	8 in lamp: 40 in, 20 AWG, Color Coded with Strain Relief ** 12 in lamp: 40 in, 20 AWG, Color Coded with Strain Relief **

* Operating Temperature Range per ITE 2005, Section 3.3.2
** For CSA approved version: 40in, 18AWG, Color Coded with Strain Relief

Product Information

Model Number	Front Shell	Size (in)	AC Voltage Nominal	Power (W) Nominal	Wavelength (nm) Nominal	Maintained Inensity (Cd) Minimum[2]
DR4-RTFB-VLA	Tinted	8	120V - 60Hz	6.7	628	165
DR4-RCFB-VLA	Clear					
DR4-YTFB-VLA	Tinted	8	120V - 60Hz	7.9	589	410
DR4-YCFB-VLA	Clear					
DR4-GTFB-VLA	Tinted	8	120V - 60Hz	7.3	499	215
DR4-GCFB-VLA	Clear					
DR6-RTFB-VLA	Tinted	12	120V - 60Hz	6.7	625	365
DR6-RCFB-VLA	Clear					
DR6-YZFB-VLA	Tinted	12	120V - 60Hz	10.9	588	910
DR6-YTFB-VLA	Tinted	12	120V - 60Hz	9.9	589	910
DR6-YCFB-VLA	Clear					
DR6-GTFB-VLA	Tinted	12	120V - 60Hz	8.4	501	475
DR6-GCFB-VLA	Clear					

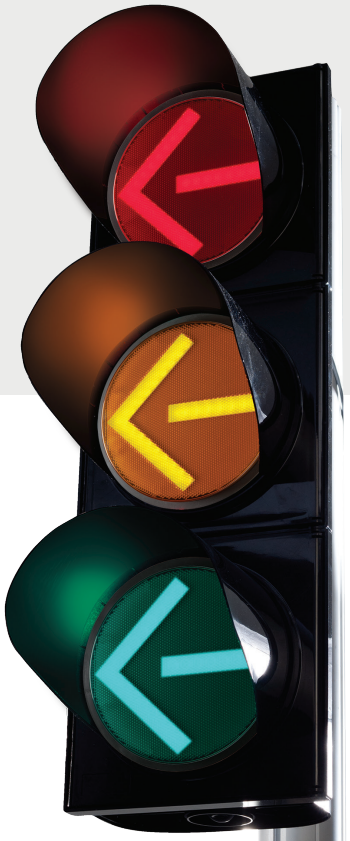
Distributed by:

Standard product equipped with universal connectors (insulated spade-quick disconnect).
All colors available in tinted or clear lens.
[1] Class A
[2] Measured at vertical angle of -2.5° and at horizontal angle of 0°.

GTX™ City VLA Model LED Arrow Signals

12 inch
Incandescent look (120V)
VLA -027 Series

Project Name _____
Date _____ Type _____
Notes _____



EXCELLENT APPEARANCE & VISIBILITY

- Efficient optical design allows omnidirectional arrow placement with maximum light output
- Excellent color uniformity creates an incandescent look for easy readability
- New or retrofit use

OUTSTANDING RELIABILITY & ROBUST OPERATION

- High efficiency and high-brightness LED light source
- Failed state impedance protection detects the loss of LED load
- Optimized thermal management for longer life
- Provides performance under extreme field temperature conditions

MEETS RIGOROUS CERTIFICATION & TESTING STANDARDS

- Intertek ETL Verified compliant
- DOE compliant
- CSA approved model available
- Using MIL-STD-810F and MIL-STD-883 for environmental robustness, passed reliability and qualification testing, including high temperature, high humidity cycling
- Compliant with ITE VTCSH LED Vehicle Arrow Traffic Signal Supplement dated July 1, 2007

The Greatest Signals Stand the Test of Time.™

GE current
a Daintree company

GTX™ City LED Arrow Signal Modules

12 inch module

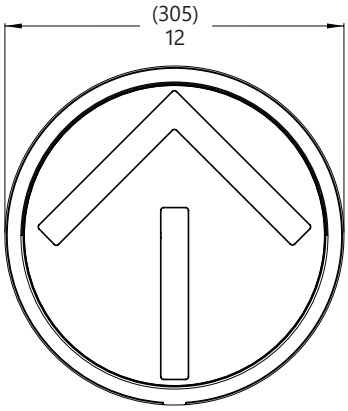
Project Name _____

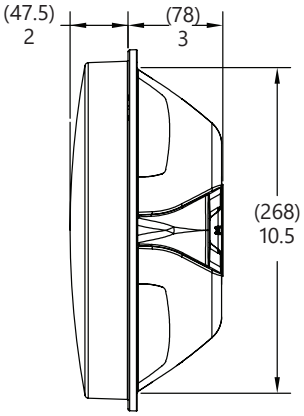
Date _____ Type _____

Notes _____

Mechanical Outline

Dimensions in inches (mm)





Operating Specifications

Parameter	Rating
Operating Temperature Range*	-40 à +74°C (-40 to +165°F)
Operating Voltage Range	80 à 135 V (60Hz AC)
Power Factor (PF)	> 90 %
Total Harmonic Distortion (THD)	< 20 %
Voltage Turn-Off (VTO)	35 V
Turn-On/Turn-Off Time	< 75msec
Lens & Shell Material	UV Stabilized Polycarbonate
Wiring	40in, 20 AWG, Color Coded with Strain Relief

* Operating Temperature Range per ITE 2005 section 3.3.2

Design Compliance

Test type	Compliance
Luminous Intensity	ITE VTCSH-LED Vehicle Arrow Traffic Signal Supplement, July 2007
Chromaticity	ITE VTCSH-LED Vehicle Arrow Traffic Signal Supplement, July 2007
Moisture Resistance	NEMA STD 250 Type 4 – 1991 Blown Wind Rain MIL-STD-810F method 506.4
Mechanical Vibration	MIL-STD-883 Method 2007
Electronic Noise	CC Title 47 Sub. B Sec.15[1]
Transient Voltage Protection	Sec. 2.1.6 NEMA TS2-2003, 300V, 2500W Sec. 2.1.6 NEMA TS2-2003, 600V, 10µF Sec. 2.1.8 NEMA TS2-2003
Controller Compatibility	ITE VTCSH-LED Vehicle Arrow Traffic Signal Supplement, July 2007
Wiring	NFPA 70, National Electric Code
Transient Suppression	Sec. 8.2 IEC 1000-4-5 & Sec. 6.1.2 ANSI/IEEE C62.41.2 - 2002, 3KV, 2Ω Sec. 8.0 IEC 1000-4-12 & Sec. 6.1.1 ANSI/IEEE C62.41.2 - 2002, 6KV, 30Ω

Product Information

Model Number	Size (in)	AC Voltage Nominal	Power (W) Nominal	Wavelength (nm) Dominant	Maintained Intensity (cd) Minimum
DR6-RTAAN-VLA-027	12	120V – 60Hz	6.5	625	59
DR6-RCAAN-VLA-027	12	120V – 60Hz	6.5	625	59
DR6-YTAAN-VLA-027	12	120V – 60Hz	6.5	589	146
DR6-YCAAN-VLA-027	12	120V – 60Hz	6.5	589	146
DR6-GTAAN-VLA-027	12	120V – 60Hz	6.5	500	76
DR6-GCAAN-VLA-027	12	120V – 60Hz	6.5	500	76

Distributed by:

All lamps available in tinted or clear lens.

[1] Class A

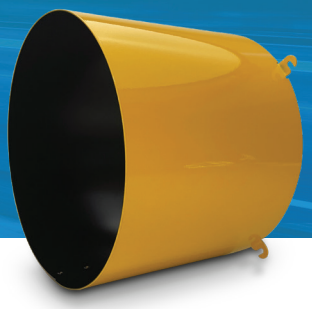
GE current
a Daintree company

www.gecurrent.com

TRAF332 (Rev 08/27/21)

ECONOLITE

Signals



Full Circle

Poly
Black

8” & 12” Traffic Signal Visors

Aluminum & Polycarbonate

Cap

Saving lives through improved mobility isn’t just a phrase at Econolite—it’s a mindset—a culture and way of doing business, embedded across the entire organization.

Since the very beginning, Econolite has been committed to leveraging intelligent technology—from the first lighted stop sign, intended to reduce injuries and fatalities at intersections in 1933, all the way through our more advanced solutions for transportation management.

Traffic signal visors serve an important purpose for drivers approaching a signalized intersection. Visors limit glare from reflected sunlight, but at the same time, vehicles in multiple lanes and pedestrians get an unobstructed view of the signal faces. Visors also help reduce washout from other light sources and shield the view of drivers on adjacent or side streets. Visors are designed with a minimum three-degree downward tilt which allows equal shading from low-angle sunlight.

Tunnel

Key Features

- *Available for 8-inch and 12-inch signal configurations*
- *Polycarbonate and aluminum options*
- *Twist-on mounting tabs for easy installation*
- *ISO 9001: 2015-certified*

45° Angle

Corrosion Resistant Finishes

Aluminum Visor

The traffic signal visor is constructed from 5052-H32 ASTM-B209 sheet aluminum.

Painting of aluminum visor:

- All interior and exterior surfaces are pre-treated for painting
- Degreased, rinsed, and etched with an iron phosphate solution
- Rinsed with a final deionized water rinse, then dried for ten minutes at 400°F
- Painted with a single coat of environmentally-safe, ultraviolet-resistant, polyester powder coating that is applied electrostatically at 90 kV and baked for 20 minutes at 400°F
- Meets ASTM D-3359, ASTM D-3363, and ASTM D-522

Polycarbonate Visor

The polycarbonate visor is a one or two-piece molded ultraviolet and heat-stabilized unit made from virgin polycarbonate resin.

Standard Specifications

Material	▪ Polycarbonate visor thickness 0.10" ▪ Aluminum visor thickness 0.05"
Standard Color(s)	Dark Olive Green - *Matches federal standard 595b-14056* Yellow - *Matches federal standard 595b-13538* Flat Black - *Matches federal standard 595b-37038* Gloss Black (Aluminum only) - *Cardinal T009-BK12* Unpainted
Additional Information	All visors are painted flat black on the inside unless requested otherwise

8" & 12" Traffic Signal Visor Options

Aluminum Tunnel

Part Number	Diameter	Length
E8260P1-XX	8"	7" (ITE)
E8260P2-XX	8"	8"
E8260P4-XX	8"	12"
E8265P1-XX	12"	9-1/2" (ITE)
E8265P3-XX	12"	11"
E8265P4-XX	12"	12"

Aluminum Right Angle

Part Number	Diameter	Length
E8282P1-XX	8"	8" x 18"
E8282P2-XX	8"	12" x 27"
E8282P3-XX	8"	7" x 16"
E8287P1-XX	12"	8" x 18"
E8287P2-XX	12"	12" x 27"
E8287P3-XX	12"	7" x 16"

Aluminum Left Angle

Part Number	Diameter	Length
E8281P1-XX	8"	8" x 18"
E8281P2-XX	8"	12" x 27"
E8281P3-XX	8"	7" x 16"
E8286P1-XX	12"	8" x 18"
E8286P2-XX	12"	12" x 27"
E8286P3-XX	12"	7" x 16"

Aluminum Full Circle

Part Number	Diameter	Length
E8280P1-XX	8"	7" (ITE)
E8285P1-XX	12"	9-1/2" (ITE)
E8285P4-XX	12"	12"

Aluminum Cap

Part Number	Diameter	Length
E8270P1-XX	8"	7" (ITE)
E8275P1-XX	12"	9-1/2" (ITE)

Polycarbonate

Part Number	Diameter	Length
EP1529-XX	8"	8" Tunnel
EP1530-XX	8"	8" Cap
106-1001-0XX	12"	10" Tunnel
EP1540-XX	12"	10" Cap

ECONOLITE

XX Denotes paint color. Dimensions are approximate and may vary.

1250 N. Tustin Avenue, Anaheim, CA 92807 | 714-630-3700 | sales@econolite.com | www.econolite.com

Vehicle & Pedestrian Signals

Vehicle Backplates

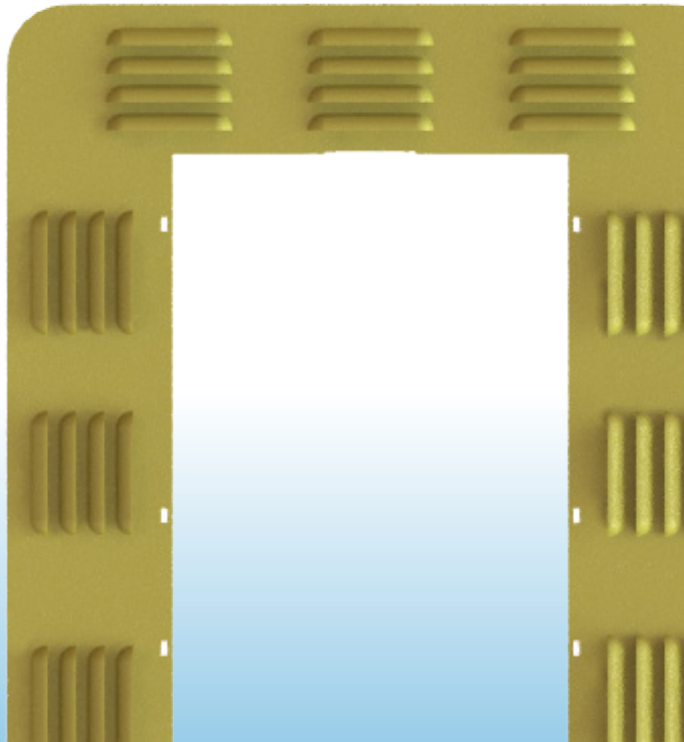
Econolite's traffic and pedestrian signals meet and exceed industry specifications. Econolite offers traffic and pedestrian signal solutions for virtually every application, helping transportation agencies cost-effectively meet evolving traffic management programs.

Econolite's traffic and pedestrian line of signals feature ultra-bright LED (Light Emitting Diode) that are more visible than traditional incandescent bulbs. Econolite's traffic signals increase overall safety for all roadway users, helping to reduce traffic collisions and provide more efficient intersection operations.

Backplates provide improved visibility of the illuminated face of the signal by introducing a controlled-contrast background. Improved signal indication visibility will lead to increased safety performance at the intersection. Adding backplates have been shown to be a cost effective method to reducing right angle crashes associated with red-light running.

Key Features

- Aluminum or ABS material
- Available for both 8-inch and 12-inch signals
- 5-inch or 8-inch borders
- Louvers available on aluminum backplates
- Aluminum backplates painted with environmentally-safe, ultraviolet-resistant, polyester powder coating
- ABS backplates are molded flat black



Specifications

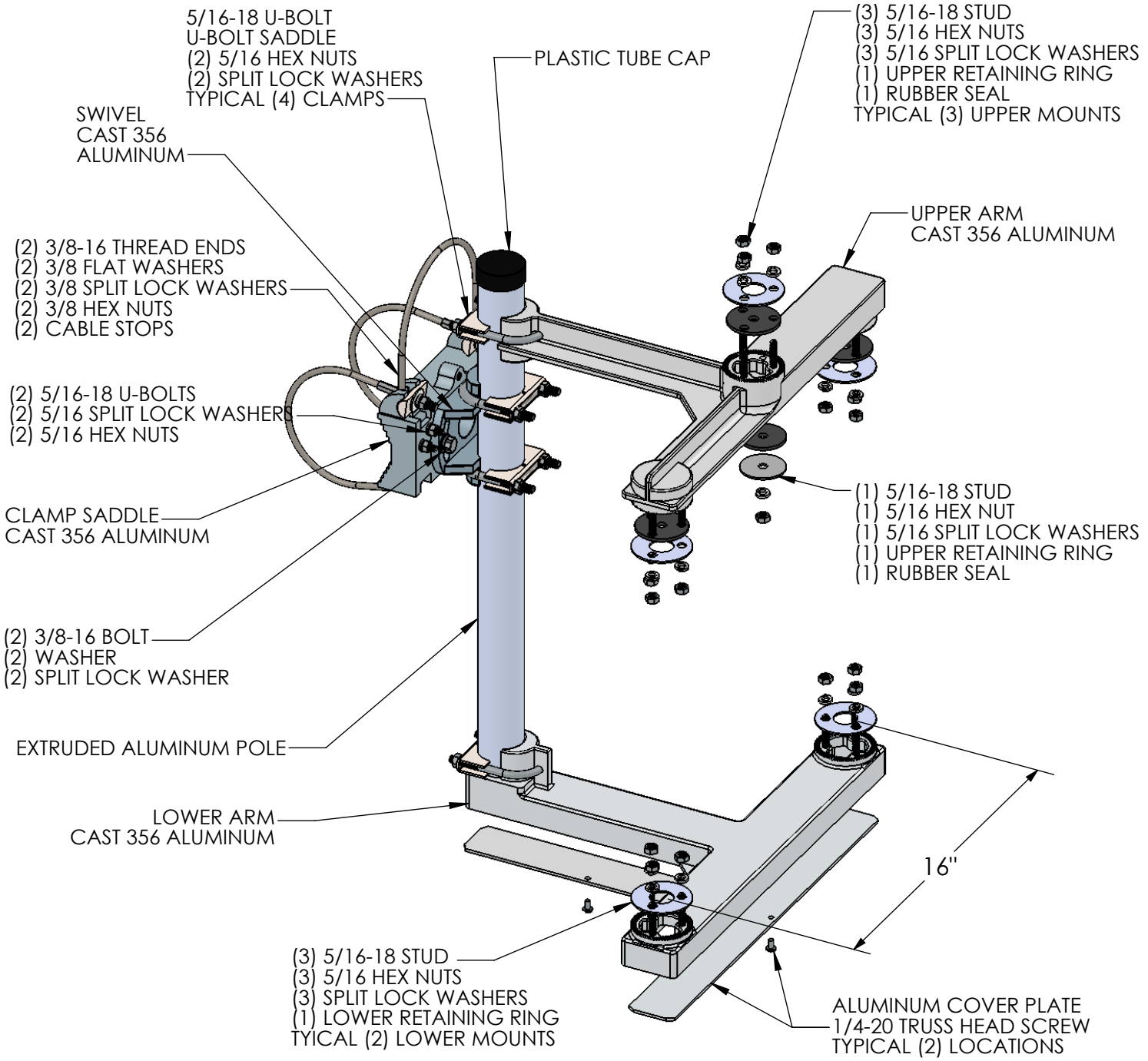
- Materials:
  - *Aluminum – 0.050" thick*
  - *ABS - .125 thick*
- Signal Mounting:
  - *Standard Mounting Framework*
  - *Elevator Plumbizer Framework*
- Construction Designs:
  - *8-inch traffic signals – standard or louvered with 5" or 8" borders*
  - *12-inch traffic signals – standard or louvered with 5" borders*
  - *12-inch cluster traffic signals – standard or louvered*
  - *12-inch HAWK traffic signals – standard or louvered Square or "T" Shaped*
  - *Combination 8" & 12" signals – standard or louvered*
- Standard Paint Options:
  - *Dark Olive Green (matches Federal Standard 595-14056)*
  - *Yellow (matches Federal Standard 595-13538)*
  - *Flat Black (matches Federal Standard 595-37038)*
  - *Gloss Black (matches Federal Standard 595-17038)*
- Optional reflective tape border available in 1-inch, 2-inch, 3-inch widths:
  - *3M 3931 Yellow Prismatic (Type III, IV)*
  - *3M 4091 Yellow Diamond Grade (Type XI)*
  - *3M 4081 Fluorescent Yellow Diamond Grade (Type XI)*
  - *3M 3980 Fluorescent Yellow – VIP Diamond Grade (Type IX)*
  - *3M 983-21 Fluorescent Yellow Diamond Grade Conspicuity*
  - *3M 3991 Yellow VIP Diamond Grade (Type IX)*

NOTE: Econolite backplates are not interchangeable with other manufacturer's traffic signals

Backplates 12" Signal with 5" Border	One-Piece		Two-Piece	
Number of Signals Sections	Length (in)	Width (in)	Length (in)	Width (in)
1	24.22	24.00	24.22	24.00
2	38.26	24.00	38.26	24.00
3	52.30	24.00	52.30	24.00
4	66.34	24.00	66.34	24.00
5	80.38	24.00	80.38	24.00

Cluster Backplates 12" Signal with 5" Border	Two-Piece	
Number of Signals Sections	Length (in)	Width (in)
5 (w/2.5 in filler plate)	50.98	37.00
5 (w/4.0 in filler plate)	52.48	37.00

1250 N. Tustin Avenue, Anaheim, CA 92807 | 714-630-3700 | sales@econolite.com | www.econolite.com



POLE LENGTHS AVAILABLE
18", 24", 37", 46", 60", 74", 96", 120"

CABLE LENGTH	MAST ARM DIA.
66"	3" - 7"
90"	7" - 11"
120"	12" - 15"
165"	15" - 22"

NOTES:
1. STAINLESS STEEL HARDWARE.
2. AVAILABLE WITH BAND STYLE CLAMP.

PART NUMBER
SS-SBC66-SCB-46

CABLE LENGTH
TUBE LENGTH

APPROVALS	BY	DATE
DRAWN	TRC	6/27/11
SALES		
ENGINEERING		

DO NOT SCALE DRAWING

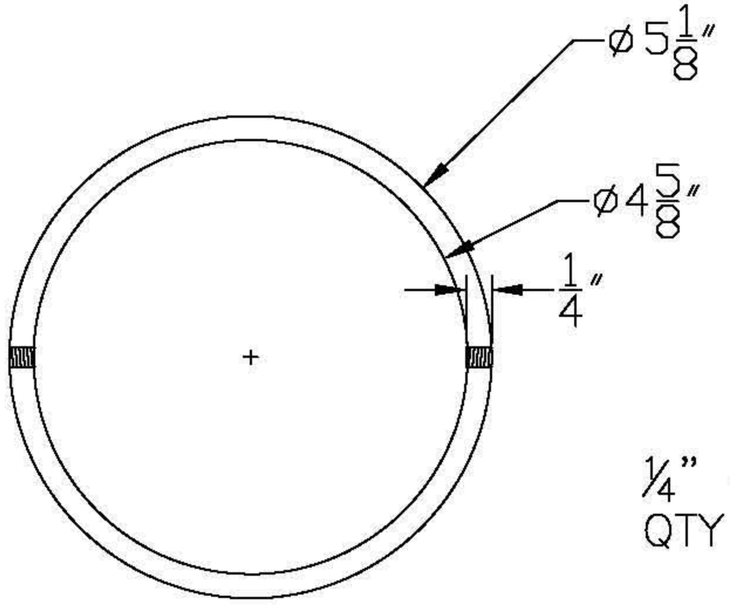
SKYBRACKET
MAST ARM MOUNTING HARDWARE

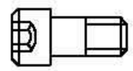
TITLE: STANDARD CLUSTER (CABLE CLAMP)

SIZE	DWG. NO.	REV.
A	SS-SBC66-SCB-46	A

SCALE: NTS | CAD FILE: SS-SBC66-SCB-46 | SHEET 1 OF 1

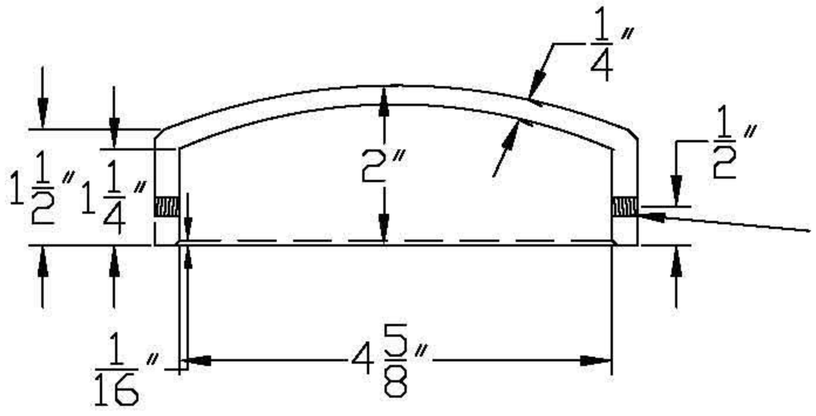
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	Original Drawing	19 DEC 08	RRM
	B	319 Cast Aluminum	22 JUL 10	JJG





¼" – 20 UNC X ¾" Hex Screw
QTY = 3

TOP VIEW



Drill & Tap 1/4-20
3 @ 120° Apart

SIDE VIEW

Tolerance
Unless otherwise specified:
1–place decimal=±.030
2–place decimal=±.015
3–place decimal=±.005
Fractional = ±1/64"

Component Products, Inc.
521 Morse Avenue
Schaumburg, IL 60193
Tel (847) 301-1000
Fax (847) 301-0100

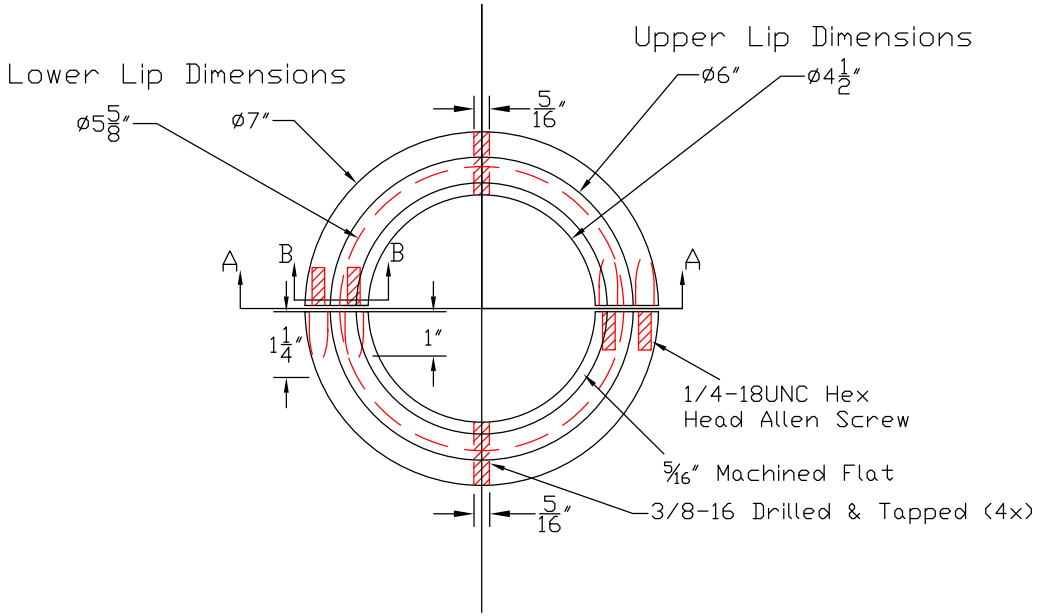
CPI-APC-1

4" Aluminum Pole Cap

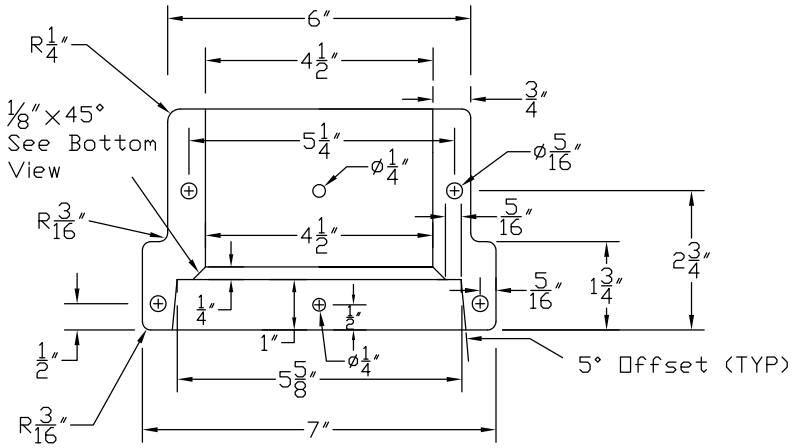
Material
319 Cast Aluminum

SIZE	Drawn By:	DWG NO.	REV
A	RRM	CPI-APC-1	B
SCALE		SHEET	

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL DRAWING	12 DEC 08	RRM



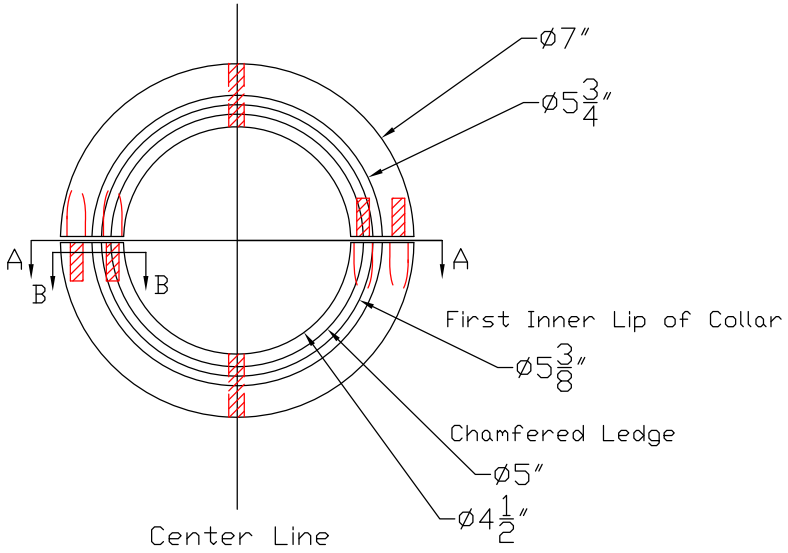
TOP VIEW



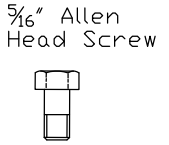
Section A-A

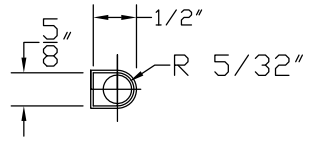
SIDE VIEW

Lower Lip Dimensions



BOTTOM VIEW





Section B-B 2:1

Hardware:
4 pcs 1/4-20 x 3/4" SS Socket head cap screws
4 pcs 3/8-16 x 5/8" SS Set screws

Component Products, Inc.
521 Morse Avenue
Schaumburg, IL 60193
Tel (847) 301-1000
Fax (847) 301-0100

CPI-RBC-1

Reinforcing Collar

CAST ALUMINUM

SIZE	Drawn By:	DWG NO.	REV
D	RRM	CPI-RBC-1_12 DEC 08	D

SCALE | SHEET

CPI-AP-8-80	8’ ALUMINUM POLE SCH 80
CPI-AP-15-80	15’ ALUMINUM POLE SCH 80

Traffic Signal Poles

Steel Traffic Signal Poles

Aluminum Traffic Signal Poles

ALUMINUM TRAFFIC SIGNAL POLES

Alloys:	6061-T6, 6063-T6
Schedules:	40 & 80
Finishes:	Natural Spun Anodize Anodize - Specify Color Painted Powder Coated
Threads:	American National Standard Pipe Threads ANSI B2.1
Lengths:	2' - 28'

ECONOLITE

Signals

BLack Clamshell

16” Pedestrian Signal
Aluminum & Polycarbonate

Traffic signals and pedestrian signals represent the foundation of safety at any signalized intersection. They also represent the first, and arguably the most important, interaction motorists, bicyclists and pedestrians have with Intelligent Transportation Systems (ITS).

When it comes to ensuring that pedestrians are able to safely cross an intersection from different directions, Econolite provides transportation agencies with many options. Our 16” pedestrian signal housings are made from durable, corrosion- resistant aluminum and polycarbonate material.

We utilize the latest industrial design techniques to develop and manufacture the industry’s most durable signal products that meet or exceed industry specifications.

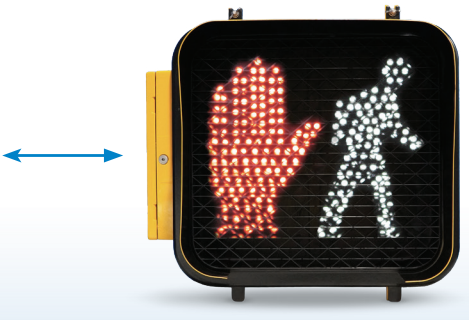
Key Features

- *Door can be mounted with the hinge on the top or bottom*
- *Two latch screws with wing nuts allow easy opening without the use of hand tools*
- *Signal assemblies provided with or without LED inserts installed*
- *ISO 9001: 2015-certified*
- *Tested to ITE required wind loading on single-point attachment*

Tunnel Visor

Solar Screen

Terminal Mount



16” Pedestrian Housing

Durable Housing and Corrosion Resistant Finishes

Aluminum Housing/Door

The housing and door of each pedestrian signal is a one-piece corrosion-resistant aluminum alloy die-casting conforming to ASTM B85 Standard SG100B.

Painting of Aluminum Housing/Door/Visor:

- All interior and exterior surfaces are pre-treated for painting
- Degreased, rinsed, and etched with an iron phosphate solution
- Rinsed with a final deionized water rinse, then dried for 10 minutes at 400°F
- Painted with a single coat of environmentally safe, ultraviolet-resistant, polyester powder coating that is applied electrostatically at 90 kV and baked for 20 minutes at 400°F
- Meets ASTM D-3359, ASTM D-3363, and ASTM D-522

Polycarbonate Housing/Door

The housing and door of each pedestrian signal is a one-piece molded, ultraviolet, and heat-stabilized unit made from virgin polycarbonate resin.

Shurlock Boss

Radial angular grooves cast into the top and bottom of the pedestrian signal housing (along with Econolite Shurlock fittings) permit alignment adjustments in five-degree increments and hold the head firmly in place. They also permit any section to be rotated independently about the vertical axis and hold each section securely in place to prevent misalignment.

Terminal Block

A terminal block with "Fast-on" tabs on one side and screw clamps on the other side is provided in a standard signal assembly. Mounting points for a second block are also present. Raised letters cast into the housing identify each position on the terminal block.

Standard Specifications

Size	Dimensions / Weight per section
16" Aluminum	16.37 in. H x 17.94 in. W x 4.91 in. D
16" Polycarbonate	16.33 in. H x 17.89 in. W x 7.05 in. D
Weight	• 16" Polycarbonate: 7.0 lb • 16" Aluminum: 12.5 lb • Terminal Mount: 4.2 lb **Includes housing, door, and screen*
Material	• Polycarbonate Housing Thickness 0.12" • Polycarbonate Door Thickness 0.13" • Aluminum Housing Thickness 0.095" • Aluminum Door Thickness 0.10"
Standard Color(s)	Dark Olive Green - *Matches Federal Standard 595b-14056* Yellow - *Matches Federal Standard 595b-13538* Flat Black - *Matches Federal Standard 595b-37038* Gloss Black (Aluminum only) - *Cardinal T009-BK12*

Field Terminal Mounting Bracket

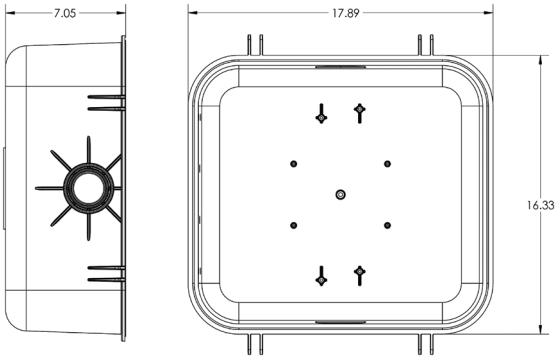
An optional field terminal mounting bracket is available for both the aluminum and polycarbonate signals. This bracket includes an aluminum base that mounts to the side of the signal housing and a hinged plate that mounts to the side of the signal pole. Pedestrian signals can be ordered with the bracket mounted on the right or left side of the housing, with the knockouts intact. The terminal block(s) can be specified to be mounted in the bracket, the housing or both.

Options

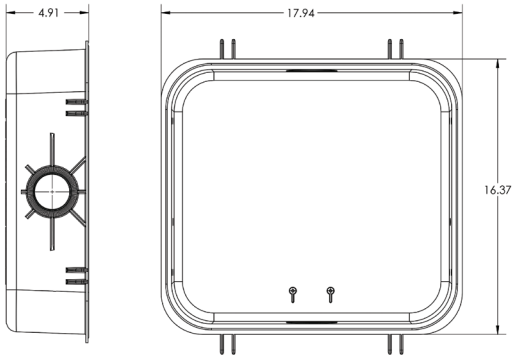
- Tunnel visor
- Solar screen
- Terminal compartment mounting – left or right
- LED holding clips – polycarbonate only
- Location, quantity, and type of terminal blocks
- Accepts all manufacturers' LED inserts

16" Pedestrian Signal Housing

16" Polycarbonate



16" Aluminum



ECONOLITE

Dimensions and weights are approximate and may vary.

1250 N. Tustin Avenue, Anaheim, CA 92807 | 714-630-3700 | sales@econolite.com | www.econolite.com

GTX®

LED Countdown Pedestrian Signals

16 x 18 inch

Project Name _____

Date _____ Type _____

Notes _____

EXCELLENT APPEARANCE & VISIBILITY

- Robust LED system design enables high luminous intensity over product life cycle
- Efficient optical system minimizes power consumption while providing excellent uniformity and viewing angles
- Single piece transparent front window with internal masking to prevent:
  - countdown and icons display from being readily visible when not in operation
  - scratches and abrasions compared with external silk screen technology
- Bright and clear icons
- Fully uniform look
- Lower profile*
- Improved luminous intensity uniformity

OUTSTANDING RELIABILITY & ROBUST OPERATION

- Internal conflict monitor preventing walk and don't walk indications to light up at the same time
- Individual power supply drives each display to ensure proper indication
- Reduced overall power consumption*

MEETS RIGOROUS CERTIFICATION & TESTING STANDARDS

- Intertek ETL Verified compliant
- DOE compliant
- Using MIL-STD-810F and NEMA 250-1991 Type 4 for environmental robustness, passed reliability and qualification testing including high temperature, high humidity cycling (HTHH for 1,000 hours)
- Compliant (for Full Hand/Full Person) with the ITE PTCSI LED Signal Modules - version dated August 2010

* Compared to PS7-CFF1-27A

The Greatest Signals Stand the Test of Time.™

GTX® City LED Countdown Pedestrian Signals

16 x 18 inch module

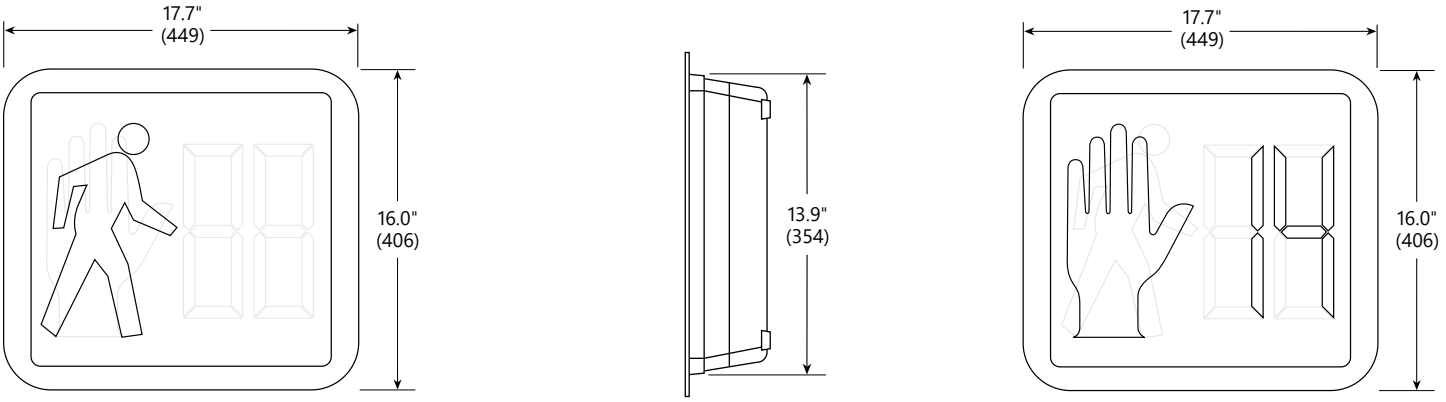
Project Name _____

Date _____ Type _____

Notes _____

Mechanical Outline

Dimensions in inches (mm)



Test type	Compliance
Luminous Intensity, Uniformity & Viewing Angles	ITE PTCSI LED Signal Modules version of August 2010
Chromaticity	ITE PTCSI LED Signal Modules version of August 2010
Moisture Resistance	MIL-STD-810F Procedure 1, Rain & Blowing Rain
Mechanical Vibration	MIL-STD-883 Test Method 2007
Electronic Noise	FCC Title 47 Sec 15 Sub. B[1]
Transient Voltage Protection	Sec. 2.1.6 NEMA TS 2-2003 Sec. 2.1.8 NEMA TS 2-2003
Controller Compatibility	NEMA TS-2-2003
Transient Suppression	Sec. 8.2 IEC 1000-4-5 & Sec. 6.1.2 ANSI/IEEE C62.41.2 - 2002, 3KV, 2 Ω Sec. 8.0 IEC 1000-4-12 & Sec. 6.1.1 ANSI/IEEE C62.41.2 - 2002, 6KV, 30 Ω
Wiring	NFPA 70, National Electric Code
Digits	MUTCD 2014, Section 4E.07, Countdown Numbers Minimum 9" Height & 7" Width
Symbols	ITE PTCSI LED Signal Modules version as of August 2010, 11" Height & 7" Width

[1] Class A

Parameter	Rating
Operating Temperature Range*	-40 to +74°C (-40 to +165°F)
Operating Voltage Range	80 to 135 V (60Hz AC)
Power Factor (PF)	> 90%
Total Harmonic Distortion (THD)	< 20%
Voltage Turn-Off (VTO)	35 V
Start-up Time	< 75msec
Lens & Shell Material	UV Stabilized Polycarbonate
Wiring	16 AWG, Color Coded with Strain Relief
LED Color	Hand: Portland Orange Person: Lunar White Countdown: Portland Orange
Conflict Default Condition	Hand only

* Performed in compliance with ITE test method described in the technical notes

Product Information

	Dimensions		Symbol		AC Voltage	Power (W)			Minimum Luminous Intensity Cd/m²	
Model Number	Dimensions	Layout	Hand	Person	Nominal	Hand	Person	Countdown	Hand/Digit	Person
PS7-CFF1-VLA	16 x 18 in	Overlay Countdown	Full	Full	120V - 60Hz	6	6	8	1400	2200

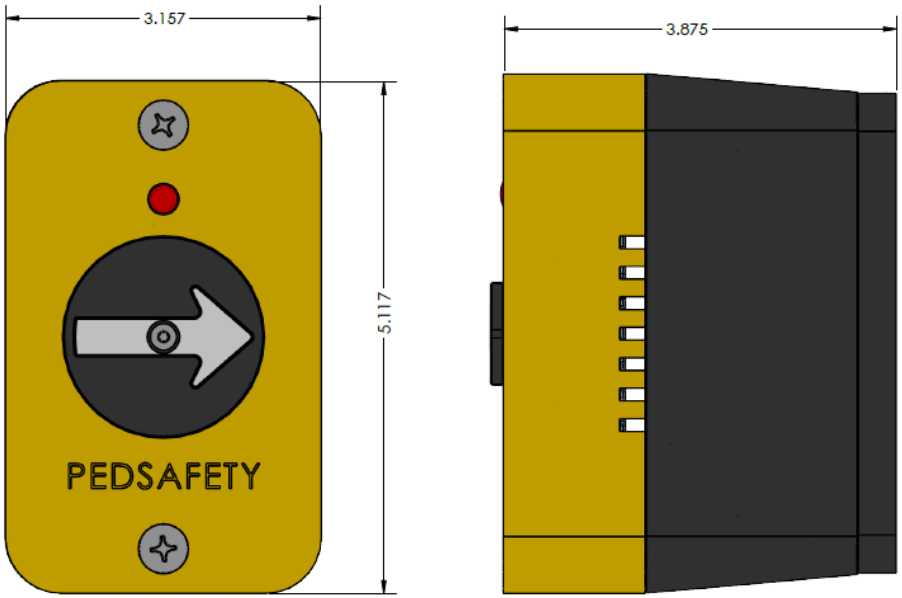
[1] Class A.
Test Condition : Ta = 25˚C. All values are design or typical values when measured under laboratory conditions.

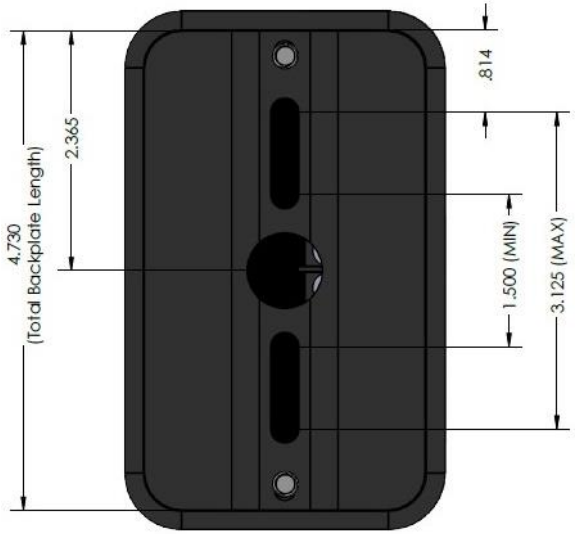
White Button

PedSafety

450 W. McGregor Dr. • Boise, ID 83705 • www.pedsafety.com

Guardian Mini 5.0 Bluetooth® 4-Wire APS





The **Guardian Mini** 4-Wire Accessible Pedestrian Station (APS) comes ready to install out of the box. A four-conductor cable connects the Signal Power Interface (SPI) in the pedestrian signal head, now 48VDC compatible, to the pedestrian station while your standard field wires run from the button to the cabinet. The housing, crafted from solid 6061 T6 AL, injection-molded thermoplastic, and stainless-steel materials, is virtually vandal-proof.

The Guardian Mini is designed to upgrade the existing standard 2-inch pedestrian push-button intersections to advanced APS intersections without the need for additional drilling. This innovative design streamlines the process of bringing intersections up to date with the latest PROWAG Guidelines (effective as of September 7, 2023), by offering a straightforward and budget-friendly solution.

The Guardian Mini not only meets ADA compliance standards but is also engineered to endure significant impacts. It provides essential information and audible indications required by the MUTCD, ADA, and TAC, making the intersection accessible for all pedestrians. Moreover, the inclusion of Bluetooth® technology enables seamless wireless configuration updates through the user-friendly PedConnex™ utility, which is compatible with both Android and iOS platforms.

Key Features:

- PedConnex™ USB and PedConnex™ mobile are downloadable software for Windows, Android, and iOS interfaces, allowing for station configuration and customization
- Secure USB-C Android connection with PedConnex™ mobile app for non-Bluetooth® applications
- PedConnex™ utilities are password protected
- No firmware to download at the time of installation
- Mounts to existing 2-inch ADA pedestrian push buttons for easy retrofits
- Pre-programmed and customized for true plug-and-play installation
- Configuration profiles can be saved and downloaded for future use or knockdowns
- Audible Gain Control (AGC) for ambient sound and active AGC in the walk cycle features
- Quite Signal Technology (QST™) includes firmware settings for the time of day, day of the week, and daylight savings time functionality
- Low power consumption makes it ideal for all RRFBs

Operating Specifications

Parameter	Rating
Operating Temperature Range	-34°C to +74°C -30 °F to +165°F
Operating Force	3.0 lb. maximum
MTBF	1,200,000 hrs. (136 years)
Switch Operating Life	Greater than 100 million operations
Maximum Volume	100 dB @ 1 m.

Design Compliance

Test Type	Compliance
Functionality	MUTCD 2009 - 4 E
Temperature and Humidity	NEMA TS2
Transient Voltage Protection	NEMA TS2
Transient Suppression	IEC 610000-4-4, IEC 61000-4-5
Electronic Noise	FCC Title 47, Part 15 Class B
Mechanical Shock and Vibration	NEMA TS2
Guardian Mini PBS enclosure	NEMA 250 – Type 4X
Electrical Reliability	NEMA TS4

All certifications performed by Certified Independent Testing Laboratories.

Please specify part number:

Description	Part Number
Guardian Mini	501-0711C

Signal Power Interface (SPI) 120 AC	501-0300
Signal Power Interface (SPI) 48 VDC	501-0303

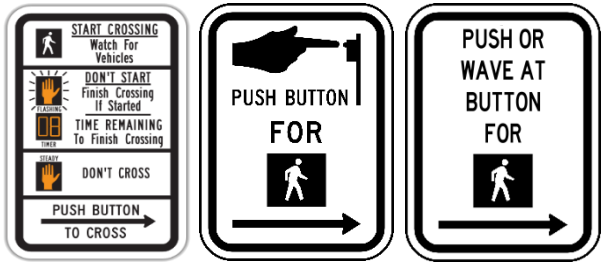
Bluetooth® Add-on	501-0652

Please specify the following five attributes:

1. Color[1]	2. Screw Type	3. Arrow type
Textured Black	Standard Phillips	Field Selectable (FS)
Federal Yellow	Pinned Torx (T)	Double Arrow (DA)
Gloss Black	Allen Head (Allen)	No Arrow (NA)
Unpainted/Natural		
Caltrans Yellow		
Other (specify)		

[1]Color applies to faceplate only; thermoplastic back and aluminum backplate are black

4. Sign Legend[2]



5. Sign Film
Engineering Grade
Diamond Grade
Decals EG & DG
Braille 2

[2]Specify MUTCD sign at time of purchase

Notes:
1. Applicable sections only of referenced standards
2. All specifications are subject to change without notice
3. All Specification are Typical unless otherwise specified

Complies With The New NEMA MMU2 Standard and MUTCD Requirements

SmartMonitor

MMU2-16LE SERIES

NEMA LCD MALFUNCTION MANAGEMENT UNIT

- **MMU2-16LEip** with Ethernet Port
- **MMU2-16LE** with EIA-232 Port

Whether you're a NOVICE or EXPERT Signal Technician, wouldn't it be great if you could:

- ❑ Use a built-in SETUP WIZARD to ***quickly and accurately configure*** the Signal Monitor to the exact requirements of the cabinet and intersection?
- ❑ Use a MENU DRIVEN LCD interface to ***view*** vital cabinet operational details such as field signal voltages, historical event logs, and monitor configuration data?
- ❑ Use a built-in DIAGNOSTIC WIZARD to ***automatically diagnose*** cabinet malfunctions and ***pinpoint*** faulty signals?

If your answer is Yes, the MMU2-16LE *SmartMonitor*® is for YOU!

NEW MMU2-16LE *SmartMonitor*® ENHANCED FEATURES

NEMA TS2-2016 Standard: The MMU2-16LE *SmartMonitor*® meets all specifications of the NEMA Standard TS2-2016 for the MMU2 configuration while maintaining compatibility with NEMA TS1-1989 Assemblies.

NEMA Standard Flashing Yellow Arrow PPLT: The MMU2-16LE *SmartMonitor*® supports MUTCD Flashing Yellow Arrow PPLT operation and meets / exceeds the NEMA Standard MMU2 requirements of TS2-2016 FYA, providing modes for both TS-2 or TS-1 cabinet configurations.

Standardized Communications: Real-time SDLC communications with the Controller Unit exchanges field input status, Controller Unit output status, fault status, MMU programming, and time and date.

Full Intersection & Status Display: Two high contrast, large area Liquid Crystal Displays (LCD) continuously show full RYG(W) intersection status. A separate graphic LCD provides a menu driven user interface to status, signal voltages, configuration, event logs, and the Help system.

Event Logging: A time-stamped nonvolatile event log records the complete intersection status as well as AC Line events, configuration changes, monitor resets, temperature and true RMS voltages.

Setup Wizard: Use the built-in Setup Wizard to configure the Nema Enhanced settings of the *SmartMonitor*® by answering a short series of questions regarding intersection design and operation.

Diagnostic Wizard: and Help System The Diagnostic Wizard *automatically pinpoints* faulty signals and offers trouble-shooting guidance. The integrated Help System provides context sensitive operational assistance.

TS-1 Type 12 with SDLC Mode: The MMU2-16LE *SmartMonitor*® can be configured to operate with the Port 1 SDLC function and Diagnostic Wizard enabled in a TS-1 twelve channel cabinet with no cabinet wiring changes.

Program Card Memory: Enhanced settings of the MMU2-16LE *SmartMonitor*® are stored in nonvolatile memory on the EDI Program Card. Moving the Program Card to another MMU2-16LE automatically transfers all settings.

Signal Sequence History Log: The five Signal Sequence History logs stored in nonvolatile memory graphically display up to 30 seconds of signal status prior to each fault event.

LEDguard®: This EDI innovative signal threshold technique can be used to increase the level of monitoring protection when using LED based signal heads.

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.

ECcom PC Software: Access to the MMU2-16LE data is provided by the industry standard EDI ECcom Windows based software for status, event log retrieval, configuration, and data archival.

EBERLE DESIGN INC.
3510 East Atlanta Avenue
Phoenix, AZ 85040 USA
www.EDItraffic.com
Tel (480) 968-6407
Fax (602) 437-1996

LS-200

LOAD SWITCH UNIT
FOR NEMA & CALTRANS CABINETS

The Model LS-200 Load Switch exceeds industry standards by featuring two LED indicators per individual circuit.

NEMA CABINET COMPATIBLE **CALTRANS** CABINET COMPATIBLE

FEATURES

- Two LED indicators per circuit provide independent confirmation of input and output states
- Output LED is illuminated when the current flowing in the load exceeds 50 mA
- Maximum rated continious load current is 10 Amps RMS over the entire operational temperature and voltage ranges
- Triacs are rated for 25 Amps RMS

HIGHLIGHTS

- Maximum one cycle surge current is 175 Amps RMS at 120 VAC, 60 Hz
- Off state leakage current less than 10 mA peak at 135 VAC RMS
- Three electrically independent circuits
- Isolation greater than 2000 volts RMS
- Maximum input current: less than 20 mA per input

Specification

The model LS-200 Load Switch is designed to meet or exceed NEMA Standards TS 1-1994 and TS 2-2003 and is compatable with Type 170 installations.

Design

Model LS-200 Load Switches are three cicuit solid state devices that are constructed with extruded aluminum exterior components which promote rapid heat dissipation to ensure lower operating temperatures and dependable, long term operation. All internal components are readily accessible to facilitate replacement.

Exceeds Industry Standards

The Model LS-200 Load Switch exceeds industry standards by featuring two LED indicators per individual circuit (one for the input, one for the output). This feature provides a means of quickly and accurately conveying information regarding the input and output states of each circuit to assist technicians trouble shooting potential cabinet problems.

Dimensions

8" (20.32 cm) Long x 4.17" (10.59 cm) High x 1.55" (3.94 cm) Wide.

MEETS MUTCD STANDARDS

BUILD AMERICA, BUY AMERICA COMPLIANT

ISO 9001 CERTIFIED

2 YEAR LIMITED WARRANTY

FL-200

FLASHER UNIT
FOR NEMA & CALTRANS CABINETS

Dual circuit, solid state devices constructed with extruded aluminum exterior components which promote rapid heat dissipation.

NEMA CABINET COMPATIBLE **CALTRANS CABINET COMPATIBLE**

FEATURES

- Maximum rated continious load current is 15 Amps RMS over the entire operational temperature and voltage ranges - Triacs are rated for 25 Amps RMS
- Maximum one cycle surge current is 175 Amps RMS at 120 VAC, 60 Hz
- Maximum one second surge current: 40 Amps RMS at 120VAC, 60 Hz
- Flash Rate: 57 ± 3 flashes per minute with an On period of 50 ± 5%

HIGHLIGHTS

- Off state leakage current less than 10 mA peak at 135 VAC RMS
- dV/dt : Greater than 200/usec
- Operating Voltage Range: 89 to 135 VAC RMS at 60 ± 3 Hz
- Operating Temperature Range: -40° to 165° F (-40° to 74° C) to 135 VAC

Specification

The model FL-200 Flasher is designed to meet or exceed NEMA Standards TS 1-1994 and TS 2-2003 and is compatable with Type 170 installations.

Design

Model FL-200 Flashers are a dual circuit, solid state devices that are constructed with extruded aluminum exterior components which promote rapid heat dissipation to ensure lower operating temperatures and dependable, long term operation. All internal components are readily accessible to facilitate replacement.

Dimensions

8" (20.32 cm) Long x 4.17" (10.59 cm) High x 1.55" (3.94 cm) Wide.

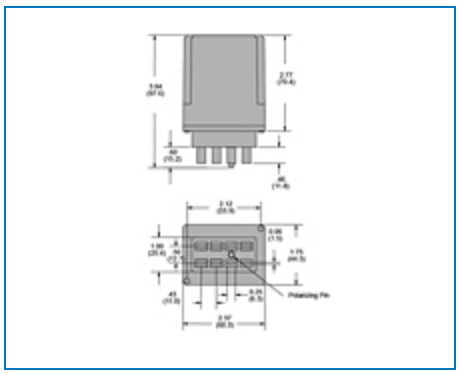
MEETS MUTCD STANDARDS · BUILD AMERICA, BUY AMERICA COMPLIANT · ISO 9001 CERTIFIED · 2 YEAR LIMITED WARRANTY

Struthers-Dunn
407 East Smith Street, Suite B
Timmonsville, SC 29161
Telephone: (843)346-4427
Fax: (843)346-4465
Email: info@struthers-dunn.com
Website: www.struthers-dunn.com

Item # 21XBXPL-120VAC, 21/136 Series - Transfer General Purpose Relays

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 a redesigned relay better suited for the low currents of LED lighting, but equally usable with tungsten lamps.

Additional contact configurations and coil options are available – please use the RFQ/RFI tab above to submit your request.



Specifications | Contacts | Coil | Timing | Dielectric Strength | Temperature | Life Expectancy | Miscellaneous

Specifications

Series	21
Contact Arrangement	XBX - (2 form C - DPDT)

Features	Polycarbonate cover Light Pipe for coil voltage indicator
Coil Voltage	120 VAC

Contacts

Contact Configuration	DPDT
Contact Material	Silver Alloy
Contact Rating	30 A
Contact Rating 120 / 240VAC Resistive	30 A
Contact Rating 28VDC Resistive	20 A
Motor 120VAC 1 Phase	1 1/2 hp
Motor 240VAC 3 Phase	2 hp
120VAC Tungsten	20 A
Contact Resistance, Initial	100 milliohms max at 6VDC

Coil

Coils Available	AC and DC
Nominal Coil Power	2.4 VA
Input Voltage Tolerance - AC	75% to 110% of nominal
Input Voltage Tolerance - DC	70% to 110% of nominal
Drop-out voltge	10% of nominal
Duty	Continuous

Timing

Operate Time (max)	20 ms
Release Time (max)	20 ms

Dielectric Strength

Across Open Contacts	500 Vrms
Between Mutually Insulated Point	1500 Vrms
Insulation Resistance	10,000 Mohms min at 500VDC

Temperature

Operating	-34 to 74 °C -30 to 165 °F
Storage	-40 TO 105 °C -40 to 221 °F

Life Expectancy

Electrical (full load)	200,000
Mechanical (no load)	5,000,000

Miscellaneous

Mounting Position	any
Mating Socket	SK-TRF8-BFW-1
Enclosure	Clear Polycarbonate

NEMA Traffic Cabinets

NEMA Cabinet Comparison

What, exactly, are cabinets?

Traffic control cabinets house the brains and intelligence of the signalized intersection. Traffic cabinets also provide the standardized component communications, configuration, and safeguards that ensure safer and more efficient intersections. It is also the critical and fundamental infrastructure component for Connected and Automated Vehicles and Smart Cities.

Why do agencies use them?

Traffic cabinets are smarter, providing new options for communications, reduced and alternative power sources, and support big data and analytics that will help cities, municipalities, and DOTs meet the traffic management needs well into the future.

How do they benefit the driving public?

Our traffic cabinets are designed with the agency in mind to meet their traffic management and ITS program needs now and the connected vehicle and smart city objectives of the future.

NEMA Cabinet Comparison

Econolite Traffic Cabinets

								
Cabinet	**Super P44**	**36 in. G**	**49 in. M**	**60 in. M**	**55 in. P44**	**55 in. P38**	**77 in. R**	**67 in. O**
Dimensions	57.25 in. H x 61 in. W x 28.65 in. D	40 in. H x 24.50 in. W x 17.25 in. D (OD)	49.00 in. H x 30.25 in. W x 16.88 in. D (OD)	60.00 in. H x 30.25 in. W x 16.88 in. D (OD)	55.00 in. H x 44.25 in. W x 26.00 in. D (OD)	55.00 in. H x 38.25 in. W x 26.00 in. D (OD)	76.75 in. H x 44.25 in. W x 26.00 in. D (OD)	67.00 in. H x 30.25 in. W x 24.75 in. D (OD)
Material	Aluminum 0.125 in.							
Finish	Natural, Powder Coat Paint, West Spray Paint, Custom Wrap							
Access	1-full size door or 2-full size doors (front and back of cabinet)							
Ventilation	Pleated media fiber filter in door 100 Cubic Feet per Minute (CFM) with thermostatic control							
Locking System	Three-point locking system with choice of locks							
Handles	Stainless steel with padlock feature							
Door Stops	Three-position locking stops on bottom of each door							
Detector Rack Assembly	Shelf-mount detector rack assembly							
Configuration	Four to eight vehicle phases, four pedestrian phases, and four overlaps (optional)							
Police Door	Signal on/off and flash/auto switches and auto/manuals with with police cord (optional)							
Lighting	Incandescent, Fluorescent or LED							
Shelf Drawer	Slide-out shelf/drawer storage unit (optional)							
Flasher	One slot for two-circuit flasher (optional second slot and flasher)							
Flash Transfer Relay	Receptacles for up to 6 flash transfer relays (optional 8 FTR's)							

ECONOLITE

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