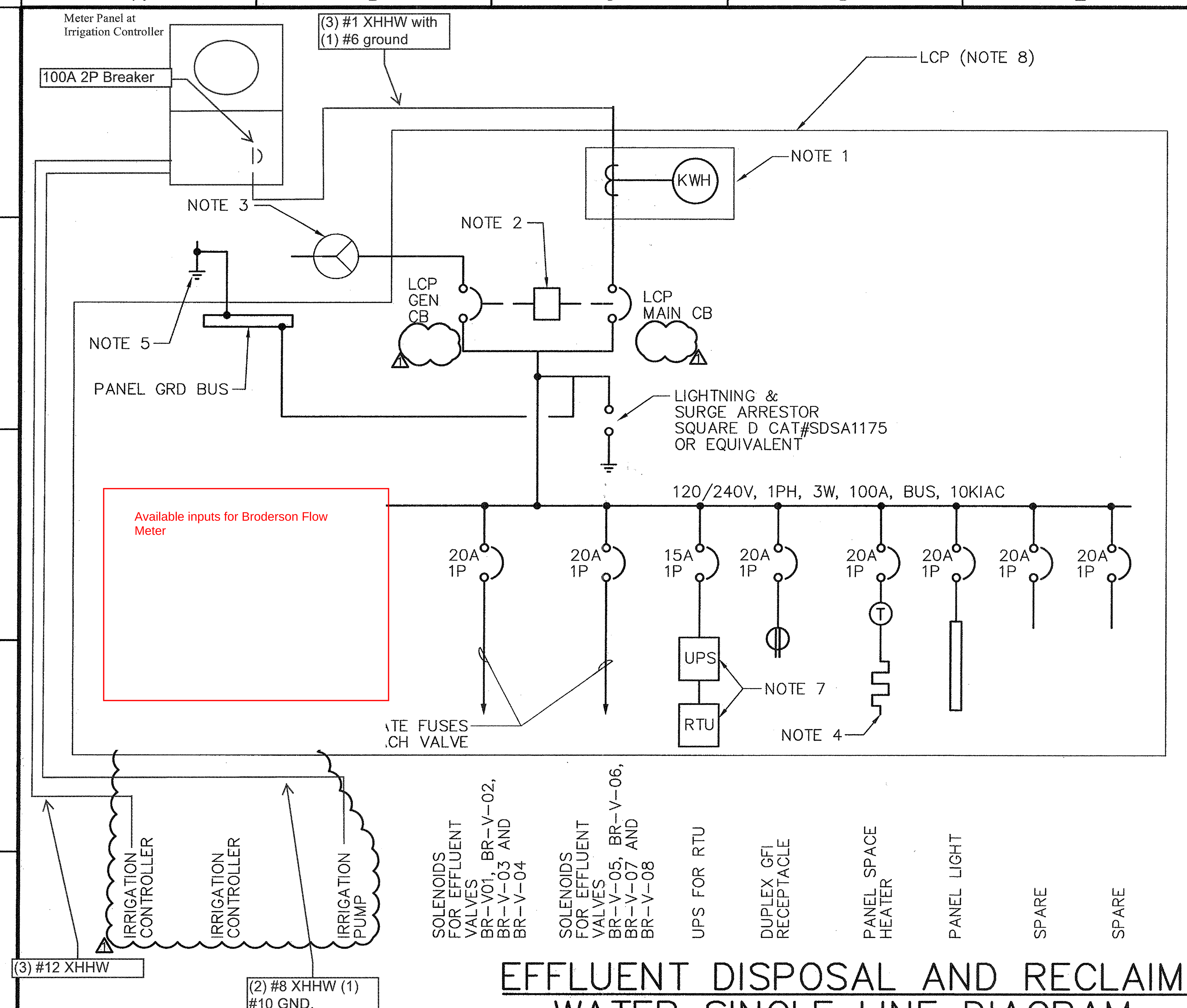


EFFLUENT DISPOSAL AND RECLAIM WATER SINGLE LINE DIAGRAM (TYP)(NOTE 9)

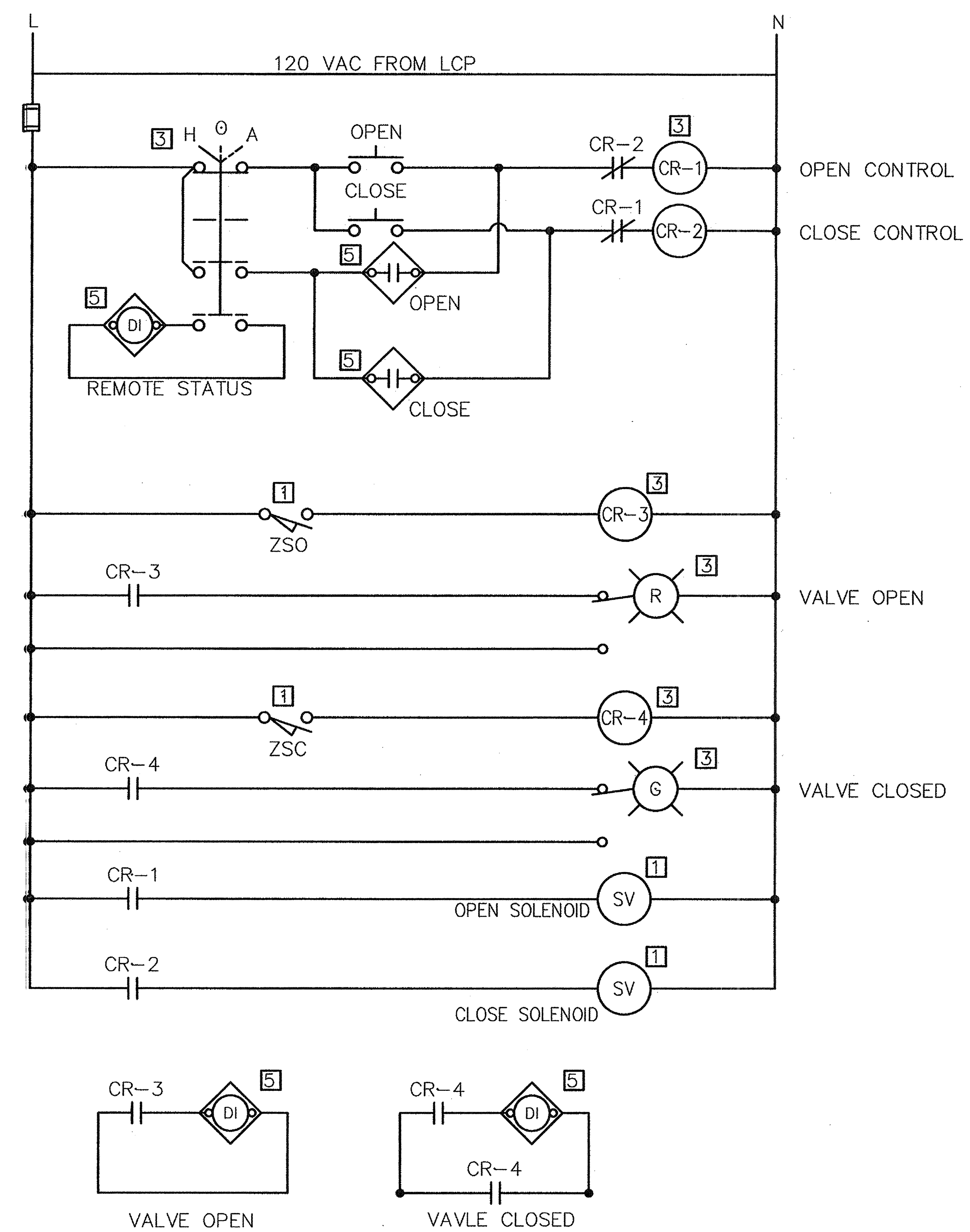
EFFLUENT DISPOSAL	ENCLOSURE	RTU	AREA	LCP MAIN/GEN CB
BAYRIDGE ESTATES	BE-LCP	RTU-BE	C	100AF/60AT
BRODERSON	BR-LCP	RTU-BR	C	100AF/100AT

NOTES:

1. METERING DEVICE MOUNTED IN ENCLOSURE, COMPLETE WITH METER, METER SOCKET, AND TEST BY-PASS SWITCHES SHALL BE IN COMPLIANCE WITH PG&E.
2. MECHANICAL OR KEY INTERLOCK TO ALLOW ONLY ONE BREAKER TO BE CLOSED AT ONCE.
3. 100A, 4 POLE, 600V, HEAVY DUTY WEATHERPROOF RECEPTACLE SHALL BE PROVIDED AND INSTALLED ON THE EXTERIOR OF THE LCP ENCLOSURE. RECEPTACLE SHALL BE APPLETON STYLE 2 REVERSE SERVICE CAT. NO. ADJA1034-200-RS WITH BACK BOX, ANGLE ADAPTER, SPRING COVER, AND MATCHING PLUGS.
4. ANTICONDENSATION SPACE HEATER, RATED FOR 500 WATTS 240V AND OPERATED AT 125 WATTS 120V. THERMOSTAT SHALL BE SET TO OPEN AT 60 DEGREES FAHRENHEIT.
5. ACCESSIBLE GROUND ROD FOR GENERATOR
6. INTRUSION ALARM SHALL BE INSTALLED AT EACH VAULT & AT LCP. CONNECT ALL YS SWITCHES IN PARALLEL FOR ONE PLC INPUT.
7. RTU & UPS PROVIDED BY INSTRUMENTATION SYSTEM SUPPLIER. REFER TO INSTRUMENTATION SPECIFICATIONS (13421) AND DRAWINGS FOR DETAILS.
8. REFER TO SPEC 13422 FOR ADDITIONAL LCP FABRICATION REQUIREMENTS.
9. BRODERSON LCP SHOWN. (BAYRIDGE ESTATES SIMILAR.)
10. BAYRIDGE ESTATES DOES NOT INCLUDE BREAKERS FOR THE FOLLOWING LOADS:
    A. IRRIGATION PUMP
    B. IRRIGATION CONTROLLER
    C. IRRIGATION CONTROLLER

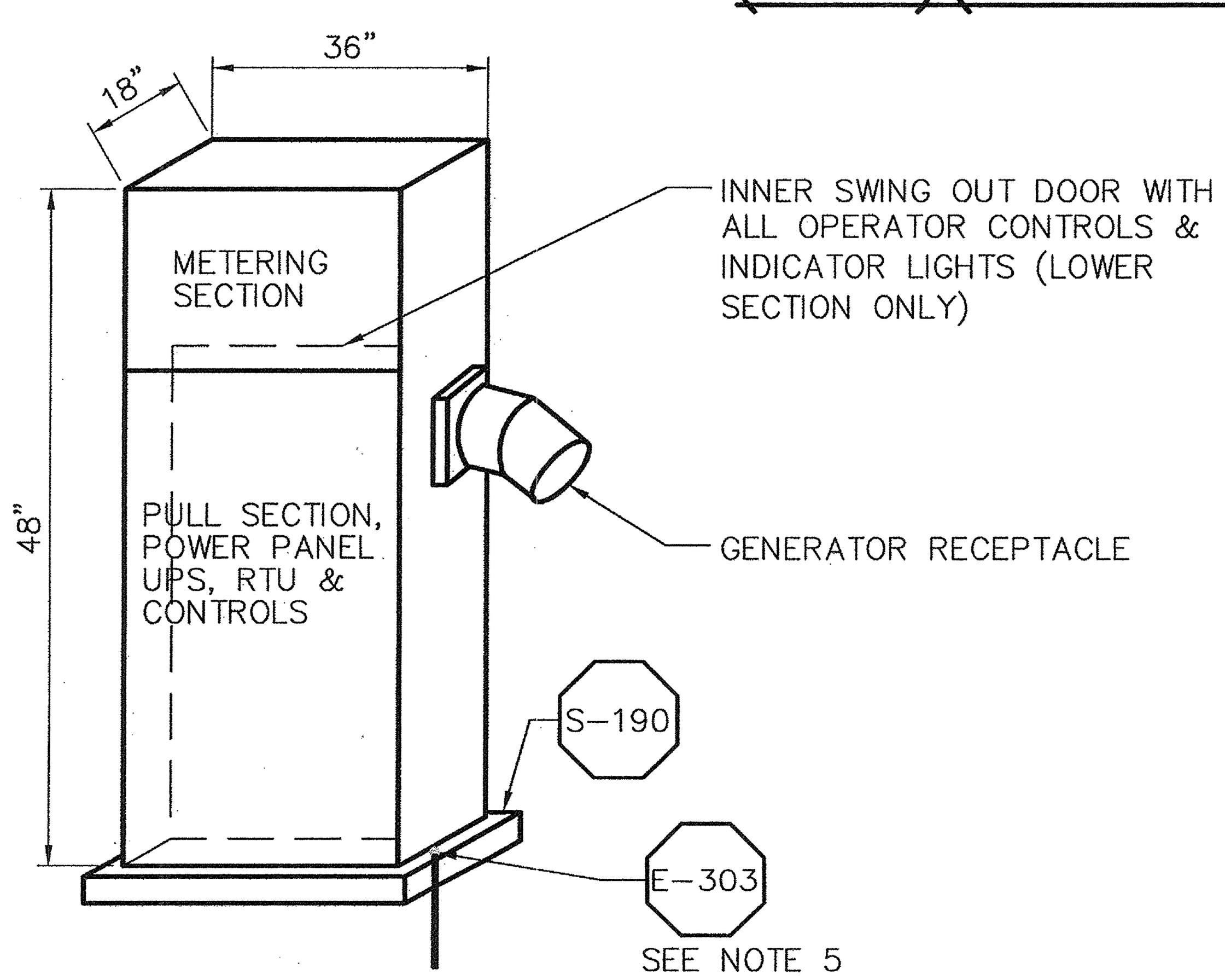
LOCATION LEGEND:

- 1 FIELD
- 2 LCS
- 3 LCP
- 4 MCC
- 5 PLC

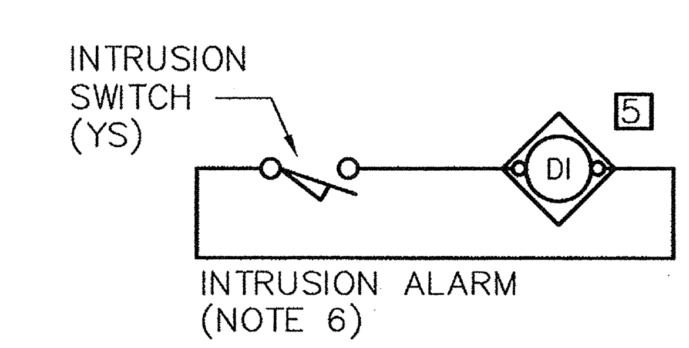


TYPICAL EFFLUENT DISPOSAL VALVE

(TYP FOR EACH VALVE)



EFFLUENT DISPOSAL VAULT LCP ELEVATION (TYP)(NOTE 9)



EFFLUENT DISPOSAL VAULT & LCP INTRUSION ALARM SYSTEM

(TYP FOR EACH WET WELL)

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	8/04/13	LLB	GNM	NOC 3 – IRRIGATION BREAKERS

DESIGNED BY: CAL
DRAWN BY: WKT
CHECKED BY: GNM
DATE: APRIL 2012

CDM Smith
2295 Gateway Oaks Drive, Suite 240
Sacramento, CA 95833
Tel: (916) 567-9900

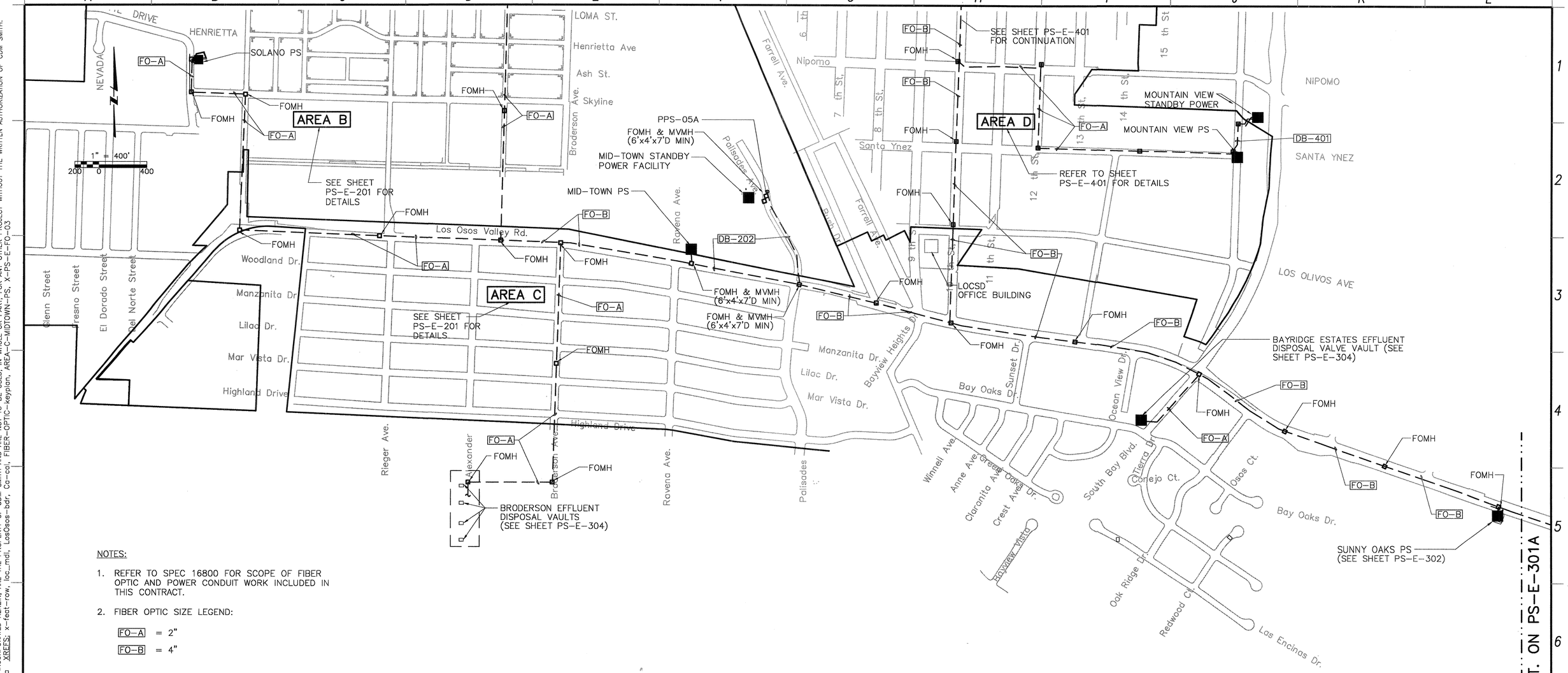
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN ADJUST SCALE ACCORDINGLY

DIGALERT DIAL TOLL FREE 1-800-642-2444 AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA

LOS OSOS WASTEWATER COLLECTION SYSTEM
ELECTRICAL
EFFLUENT DISPOSAL VAULTS
TYPICAL SINGLE LINE

PROJECT NO. 42502-83120
FILE NAME: PS-E-305
SHEET NO.
PS-E-305.1

N:\ACAD2008\los osos\01-sheets\PS\08-ELE\ PS-E-301 04/18/12 16:06 rushima XREFS: x-feet-row, loc_mdl, LosOsos-bdr, Ca-cal, FIBER-OPTIC-keyplan, AREA-C-MIDTOWN-PS, X-PS-E-FO-03



NOTES:

1. REFER TO SPEC 16800 FOR SCOPE OF FIBER OPTIC AND POWER CONDUIT WORK INCLUDED IN THIS CONTRACT.
2. FIBER OPTIC SIZE LEGEND:

   FO-A = 2"

   FO-B = 4"

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: CAL
DRAWN BY: WKT
CHECKED BY: GNM
DATE: APRIL 2012

CDM Smith
2295 Gateway Oaks Drive, Suite 240
Sacramento, CA 95833
Tel: (916) 567-9900

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN ADJUST SCALE ACCORDINGLY

REGISTERED PROFESSIONAL ENGINEER CHARLES M. WILKINSON II No. E 8641 Exp. 3/31/2014 ELECTRICAL STATE OF CALIFORNIA

DIGALERT
DIAL TOLL FREE 1-800-642-2444
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA

LOS OSOS WASTEWATER COLLECTION SYSTEM
ELECTRICAL GENERAL AREA PLAN AREA C – SHEET 1 OF 2

PROJECT NO.42502-83120
FILE NAME: PS-E-301
SHEET NO.
PS-E-301

APPENDIX A: THE FASTEST ROUTE TO FIBER ACCURACY

Berk-Tek's Fiber Optic Cable part numbers are composed of two basic units, the Cable Prefix and the Fiber Suffix. Throughout this catalog fiber part number prefixes for each cable type are listed in the second column of the Technical Data tables. Fiber part number suffixes are located in column two of the fiber specification table. **To accurately build your fiber part number, simply select the correct prefix and suffix.** Below, you will find a more detailed explanation of our descriptive part numbering system.

Cable Prefixes are made up of the following three basic components: **Cable Type, Product Enhancements** and **Fiber Count.** Fiber Suffixes are selected from the Fiber Specification Data Table at the end of this document.

The four steps below illustrate the process of building an accurate fiber part number, using the following example:

- *Indoor/Outdoor plenum-rated cable with 48 fibers, laser optimized 50/125 µm for 10 Gb Ethernet at 300 meters*

STEP 1: SELECT THE CORRECT PART NUMBER CODE FOR THE DESIRED CABLE TYPE FROM TABLE 1

EXAMPLE: Indoor/Outdoor cable: Select "LT" product family - LTxxxxxxxxxxxxxx

TABLE 1 – BERK-TEK OPTICAL CABLE PRODUCT FAMILIES

HD	Heavy Duty (Break-Out Type), Indoor, 2 – 48F, Tight Buffer	RD	Ribbon Distribution Cable, 12F
PD	Premises Distribution, Indoor, 6 – 144F, Tight Buffer	LT	Adventum® Indoor/Outdoor, All-Dry, 6 – 432F, Loose Tube
IC	Interconnect, Indoor, 1 – 4F, Tight Buffer	AT	Adventum Tight-Buffered, 1 – 2F, Loose Tube
MC	Microconnect Cable, 1 – 2F, Tight Buffer	MD	Micro Data Center, 4 – 288F, Loose Tube
TF	Tactical Fiber Cable, Outdoor, 2 – 24F, Tight Buffer	OP	Outside Plant, Outdoor, 6 – 216F, Loose Tube gel-filled tubes
		AC	High Density Distribution, Indoor, 6-432F, Loose Tube

STEP 2: SELECT THE CODE LETTERS FOR CABLE ENHANCEMENTS FROM TABLE 2

Enhancements include flame rating and armoring preferences, displayed in the available combinations.

EXAMPLE: Plenum-rated cable: Select "P" enhancement code - LTPxxxxxxxxxxxxxx

NOTE: If there is no "X" mark for a particular cable and enhancement combination, then the product you are interested in is a non-standard item, please contact Berk-Tek Inside Sales.

TABLE 2 – AVAILABLE OPTICAL CABLE ENHANCEMENTS

ENHANCEMENT DESCRIPTION	PRODUCT ENHANCEMENT	OPTICAL FIBER CABLE TYPE												EXAMPLES
		AC	AT	DAR	HD	IC	LT	MC	MD	OP	PD	RD	TF	
Dry Core, Single Loose Tube	D									X				OPD
Dry Core, Stranded Loose Tube	DD									X				OPDD
Limited Combustible Flame Rated	LC						X							LTLC
Military Tactical Cable	C												X	TFC
Military Tactical Cable, Breakout, 2.0 mm Individual Subunits	HD												X	TFHD
Plenum Flame Rated	P	X	X		X	X	X	X	X		X	X		HDP, ICP, LTP, MCP, PDP, MDP
Plenum Flame Rated, Harsh Environment (Fluoropolymer Jacket)	P HE						X				X			LTP HE
Plenum Flame Rating, Interlocking Aluminum Armor	PK		X			X	X		X		X			MDPK
Plenum Flame Rating, Interlocking Aluminum Armor w/o external sheath	PQ										X			PDPQ
Riser Flame Rated	R		X	X	X	X	X	X		X	X			HDR, ICR, LTR, MCR, OPR, PDR
Riser Flame Rating, Composite Optical Power Cable	RC				X		X			X				HDRC
Riser Flame Rating, Drop Cable	RF									X				OPRF
Riser Flame Rating, Drop Cable w/Tracer Wire	RFT									X				OPRFT
Riser Flame Rating, Interlocking Aluminum Armor	RK		X		X		X			X	X			HDRK, LTRK, OPRK, PDRK
Riser Flame Rating, Interlocking Aluminum Armor w/o external sheath	RQ										X			PDRQ
Riser Flame Rating, Steel Tape Armor	RA						X			X				LTRA, OPRA
Riser Flame Rating, Zero-Halogen	RZ		X		X	X	X	X		X	X			ICRZ, MCRZ, OPRZ
Riser Flame Rating, Zero-Halogen, Steel Tape Armor	RZA									X				OPRZA
Steel Tape Armor, Dry Core, Single Loose Tube	A									X				OPA
Steel Tape Armor, Dry Core, Stranded Loose Tube	AD									X				OPAD
Zero-Halogen (Non-Flame Rated)	Z				X		X			X		X		OPZ
Zero-Halogen (Non-Flame Rated), Steel Tape Armor	ZA									X				OPZA

STEP 3: ADD THE TOTAL FIBER COUNT TO THE CABLE PART NUMBER, USING THREE DIGIT NUMERALS

For example, 6 fibers is coded as 006, 12 fibers is coded as 012, etc. A duplex design cable receives the denotation of 0X0. If you are specifying a high count fiber cable, select the subunit code from TABLE 3 and include in front of the total fiber count.

EXAMPLE: 48 fibers - LTP12B048xxxxxxxxx

NOTE: Available fiber counts vary by particular product. Refer to product pages within this catalog for specific fiber count availability. Fiber counts must be listed on product pages or included on product data sheets at www.berktek.com to be valid.

TABLE 3 – CABLE SUBUNIT DESIGNATIONS

Fiber Count	Subunit Code	Total Fiber Count
1 – 12F	Not Required	List as 3 digit value (example 6 Fiber = 006)
≥ 12F	12B (12 Fibers per buffer tube/subunit)	List as 3 digit value (example 48 Fiber = 048)*

006

*6F Subunits available upon request

STEP 4: ADD FIBER SUFFIX FROM TABLE 4 BASED UPON FIBER TYPE AND TRANSMISSION DISTANCE REQUIREMENTS

NOTE: Please note, that for single-mode fiber, fiber suffixes vary based upon cable type.

EXAMPLE: Laser optimized 50/125 µm for 10 Gigabit Ethernet at 300 meters - LTP12B048EB3010/25

TABLE 4 – ATTENUATION, BANDWIDTH & APPLICATION DISTANCE SPECIFICATIONS

	FIBER TYPE	62.5/125µm – STANDARD (CB)	62.5/125µm – GIGAlite™ (GB)	50/125µm – GIGAlite (LB)	50/125µm – GIGAlite-10 (EB)	50/125µm – GIGAlite-10FB (FB)	50/125µm – GIGAlite-10XB (XB)
	ISO/IEC	OM1	OM1	Exceeds OM2	OM3	OM4	Exceeds OM4
	Wavelength (nm)	850/1300	850/1300	850/1300	850/1300	850/1300	850/1300
	Maximum Attenuation (db/km)	3.5/1.0	3.5/1.0	3.0/1.0	3.0/1.0	3.0/1.0	3.0/1.0
	Bandwidth (MHz·km)	200/500*	200/500*	950**/500*	2000**/500*	4700**/500*	4900**/500*
	DISTANCE GUARANTEES BY APPLICATION (METERS)						
Ethernet (LAN)	100 Gb/s (100GBASE-SR10)	–	–	–	100	125	125
Ethernet (LAN)	40Gb/s (40GBASE-SR4)	–	–	–	100	125	125
Ethernet (LAN)	10Gb/s (10GBASE-SR)	36	66	150	300	550†	600†
Ethernet (LAN)	1Gb/s (1000BASE-SX)	300	500	750	1000	1040	1210
Fiber Channel (SAN)	10Gb/s (1200-SN)	33	33	150	300	550†	600†
Fiber Channel (SAN)	8Gb/s (800-SA)	40	40	100	300	TBD	TBD
Fiber Channel (SAN)	8Gb/s (800-SN)	21	21	50	150	TBD	TBD
Fiber Channel (SAN)	4Gb/s (400-SN)	70	70	150	380	TBD	TBD
Fiber Channel (SAN)	2Gb/s (200-SN)	150	150	390	500	550	600

*Overfilled Bandwidth Measurement per EIA FOTP 204—Paragraph 3.2.1. **Differential Mode Delay per EIA FOTP-220 DMD Test Measurement. Also available with single-mode fiber.
†600 m for 10GBASE-SR: 3.0 dB/km cable attenuation and 0.65 dB connection loss utilizing two mated LC connector pairs. Additional optical fiber options available. For the most current optical fiber specifications, contact Customer Service at 1-800-BERK-TEK or visit us online at www.berktek.com. Berk-Tek reserves the right to modify optical performance specifications without prior notice.

For fiber details, refer to pages 56 to 57.

HYBRID & COMPOSITE OPTICAL CABLES

- Berk-Tek offers a broad selection of hybrid multimode/single-mode and composite copper/fiber cabling solutions
- **Hybrid cables** include two or more optical fiber types having different core diameters or dissimilar performance characteristics
- Berk-Tek standard process is to place larger core diameter fibers first in the standard color sequence:

  EXAMPLE: A loose tube cable with 24 multimode fibers and 24 single-mode fibers will have the first multimode fibers in the blue and orange buffer tubes (12 fibers in each tube). The single-mode fibers will be within the green and brown buffer tubes.

- **Composite cables** incorporate optical fibers along with copper conductive wires used for data or electrical power transmission

Additional optical cable products and configurations are available
Contact Inside Sales at 1-800-BERK-TEK (1-800-237-5835) for additional information or visit our web site at www.berktek.com.

APPENDIX A: SELECTING THE BEST FIBER OPTIC CABLE FOR YOUR NEEDS

FIBER CABLE CONSTRUCTION GUIDE

When determining what type of fiber optic cable is best suited to your particular installation needs, you must consider the limitations and requirements of the physical environment. The tables below present the Berk-Tek recommended cable types for various environmental and installation conditions.

RECOMMENDED ALL-DIELECTRIC DESIGNS	CABLE APPLICATIONS					
FLAME RATING	**OUTDOOR (fibers)**	**INDOOR/OUTDOOR (fibers)**	**INDOOR BACKBONE (fibers)**	**HORIZONTAL (fibers)**	**INTERCONNECT (fibers)**	**SPECIALTY**
Outdoor Only	OPD, OPDD (2 - 216)	—	—	—	—	TFC, TFHD, OPTF, OPFD
Riser (OFNR)	OPR (2 - 216) DAR (2 - 12)	ATR (1 - 2), LTR (4 - 216), PDR I/O(BLA) (6 - 144)	PDR (6 - 144)	ICR (1 - 2), PDR (6 - 144), HDR (2 - 48)	ICR (1 - 4) MCR (1 - 2)	OPRF, OPRFT
Plenum (OFNP)	—	ATP (1 - 2), LTP (4 - 216), PDP HE(BLA) (4 - 144)	MDP (4 - 72) PDP (6 - 144)	ICP (1 - 2), PDP (6 - 144), RDP (12), HDP (2 - 48)	ICP (1 - 4) MCP (1 - 2), RDP (12)	LTP HE
Zero-Halogen Riser (OFNR-LS)	OPRZ (2 - 216)	LTRZ (4 - 216), PDRZ (6 - 48), OPRZ (2 - 216)	PDRZ (6 - 48)	ICRZ (1 - 2) PDRZ (6 - 48)	ICRZ (1 - 4) MCRZ (1 - 2)	—
Zero-Halogen (not rated)	OPZ (2 - 216)	PDZ (6 - 144)	—	—	—	—

RECOMMENDED ARMORED FIBER CABLE	CABLE APPLICATIONS		
	DIRECT BURIAL RODENT RESISTANT	**INDOOR/OUTDOOR**	**INDOOR IN PLACE OF CONDUIT OR INNERDUCT**
Interlock Aluminum, Riser Rated	OPRK	ATRK, LTRK	PDRK, OPRK, HDRK
Interlock Aluminum, Plenum Rated	—	ATPK, LTPK	MDPK, PDPK
Interlock Aluminum, Riser Rated, Low-Smoke Zero-Halogen	OPRZK	LTRZK	—
Corrugated Steel Tape	OPA	—	—
Corrugated Steel Tape, Riser Rated, Low-Smoke Zero-Halogen	OPRZA	OPRZA	—

Steel Interlock Armor also available

Cable Series Key for above tables: AT—Adventum® Indoor/Outdoor Tight Buffer Loose Tube; LT—Adventum Indoor/Outdoor; OP—Outside Plant; PD—Premises Distribution; IC—Interconnect; RD—12-Fiber Ribbon; MC—Microconnect (for SFF); MD Series—Micro Data Center Plenum

FIBER TYPE GUIDE

Selecting the correct fiber type for your application needs is simple. Just consult the table below to see the recommended fiber type based upon application requirements, distance limitations and transmission options. All varieties of Berk-Tek fiber optic cable can be made with any type of fiber, ensuring that you get exactly the fiber optic cable that you need.

RECOMMENDED FIBER TYPE (850 nm SERIAL TRANSMISSION)		APPLICATIONS		
		10 GIGABIT ETHERNET	**1 GIGABIT ETHERNET**	**FAST ETHERNET (100 Mbps)**
DISTANCE	Up to 300 m (984 ft)	50 µm GIGAlite™-10	62.5 µm Standard	62.5 µm Standard
	Up to 600 m (1968 ft)	50 µm GIGAlite-10XB	50 µm GIGAlite (750 m)	62.5 µm Standard
	Up to 1000 m (3280 ft)	Single-mode	50 µm GIGAlite-10	62.5 µm Standard
	> 1000 meters (>3280 ft)	Single-mode	Single-mode	62.5 µm Standard

RECOMMENDED FIBER TYPE (1300/1310 nm SERIAL TRANSMISSION)		APPLICATIONS		
		10 GIGABIT ETHERNET	**1 GIGABIT ETHERNET**	**FAST ETHERNET (100 Mbps)**
DISTANCE	Up to 300 m (984 ft)	50 µm GIGAlite-10	62.5 µm Standard	62.5 µm Standard
	Up to 600 m (1968 ft)	Single-mode	62.5 µm Standard	62.5 µm Standard
	Up to 2000 m (6560 ft)	Single-mode	50 µm GIGAlite	62.5 µm Standard
	> 2000 meters (> 6560 ft)	Single-mode	Single-mode	Single-mode

FIBER AND SUBUNIT COLOR CODES*

FIBER/ SUBUNIT NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
FIBER COLORS												
FIBER COLOR ABBREVIATION	BLU	ORA	GRE	BRO	SLA	WHI	RED	BLA	YEL	VIO	ROS	AQU

*Tight buffer cable color codes are labeled on both fibers and subunits according to TIA/EIA-598.

FIBER TECHNICAL DATA

FIBER TYPE	FIBER SUFFIX	WAVELENGTH (nm)	MAXIMUM ATTENUATION (dB/km)	BANDWIDTH (MHz • km)	DISTANCE (meters)	
ENHANCED[1] SINGLE-MODE					1 GbE	10 GbE
Standard for Loose Tube	AB0403	1310/1550	0.4/0.3[2]	N/A	≥ 5000 @ 1310 nm	≥ 10,000
Standard for Tight Buffer	AB0707	1310/1550	0.7/0.7	N/A	≥ 5000 @ 1310 nm	≥ 10,000
MULTIMODE					1 GbE	10 GbE
62.5/125 µm – Standard*	CB3510/25	850/1300	3.5/1.0	$200_3/500_3$	300/600	$36/300_5$
50/125 µm – GIGAlite™*	LB3010/75	850/1300	3.0/1.0	$950_4/500_3$	750/600	$150/300_5$
50/125 µm – GIGAlite-10*	EB3010/25	850/1300	3.0/1.0	$2000_4/500_3$	1000/600	$300/300_5$
50/125 µm – GIGAlite-10XB*	XB3010/X5	850/1300	3.0/1.0	$4900_4/500_3$	1210/600	$600/300_5$

1. Enhanced SMF-improved performance across 1260 nm to 1625 nm wavelength spectrum. Low dispersion @ 1310 nm and low attenuation in 1383 nm water-peak region allows use of extended band (1360 nm to 1460 nm). Complies with ITU-T G.652D and IEC 60793.2.BI.3. 2. Optional Maximum Attenuation values 0.3/0.2 dB/km @ 1310/1550 nm are available for certain Loose Tube cables. Contact Berk-Tek for further information. 3. Overfilled launch per EIA/TIA-455-204. 4. Effective Modal Bandwidth as characterized by Differential Mode Delay (DMD) measurement per EIA/TIA-455-204. 5. 10 GbE transmission distance @ 1300 nm applies to 10GBASE-LX4 (CWDM) only. *No Mode Conditioning Patch Cord required. All 10 GbE transmission distances (except GIGAlite-10XB) @ 850 nm assume a maximum cable attenuation of 3.0 dB/km and a connection and splice loss of 0.8 dB. For GIGAlite-10XB, a maximum cable attenuation of 3.0 dB/km and a connection and/or splice loss of 0.65 dB is assumed.

Support for legacy system designs and specialty fiber types are available. Contact Customer Service for special glass code designations and for more information at 1-800-BERK-TEK. For the most current optical fiber specifications, please visit our website at www.berktek.com. Berk-Tek reserves the right to modify optical performance specifications without prior notice.

OUTER CABLE SHEATH COLOR BASED UPON CABLE AND FIBER TYPE

FIBER TYPE	ACP, LTP, LTP HE LTPK MDP, MDPK	DAR, LTR, LTRA, LTRC, LTRK OPA, OPAD, OPD, OPDD, OPFD, OPTF OPR, OPRA, OPRC, OPRF, OPRFT OPRK, OPRZ, OPRZA OPZ, OPZA	HDP, HDPK, HDR, HDRK, HDRZ ICP, ICR, ICRZ MCP, MCR, MCRZ PDP, PDPK, PDR, PDRK, RDP	ATP, ATPK, ATR, ATRK, HDRC, PDR-1/O(BLA), PDP-HE(BLA), TFC/TFHD, TFHC
GIGAlite-10XB (50/125 µm) (XB)	XB3010/X5	XB3010/X5	XB3010/X5	XB3010/X5
GIGAlite-10 (50/125 µm) (EB)	EB3010/25	EB3010/25	EB3010/25	EB3010/25
GIGAlite (50/125 µm) (LB)	LB3010/75	LB3010/75	LB3010/75	LB3010/75
Multimode (62.5/125 µm) (CB)	CB3510/25	CB3510/25	CB3510/25	CB3510/25
Enhanced Single-mode (AB)	AB0403	AB0403	AB0707	AB0707

Aqua External Cable Sheath

Orange External Cable Sheath

Black External Cable Sheath

Yellow External Cable Sheath

RoHS COMPLIANT

Berk-Tek® A NEXANS COMPANY

Berk-Tek Optical Fiber Cable Specification

16801-2.02

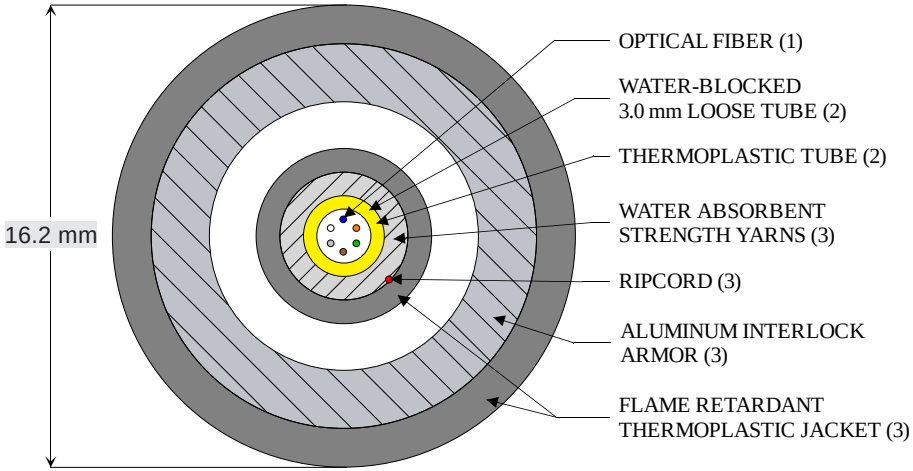
1. FIBER
- A. Type: Step index single-mode optical fiber with protective UV cured acrylate coating. See chart for fiber details.
- B. Proof Test: Entire length of fiber is subjected to a 0.7 GPa (100 kpsi) minimum proof stress as per TIA/EIA FOTP-31.
- C. Coating Diameter: 245 ± 10 µm.
- D. **Reference PS 0309 for fiber specifications.**

2. LOOSE TUBE
- A. Buffer Jacket Material: Thermoplastic
- B. Buffer Jacket OD: 3.0 mm (0.118 in)
- C. Buffer Tube Color Code: Yellow
- D. Dry Tube: Water-blocking filler to prevent water ingress.
- E. Fiber Color Coating: UV cured colorant
- F. Fiber Colors: Blue, Orange, Green, Brown, Slate, White as per TIA/EIA-598.

3. CABLE
- A. Configuration: Water absorbent strength members are applied between loose tube and outer jacket. Aramid ripcord inserted under outer jacket. Armor & second jacket applied.
- B. Water absorbent members prevent water penetration and provide tensile strength.
- C. Jacket Material, Inner and Outer: UV Resistant Riser rated thermoplastic
- D. Jacket Colors: Black
- E. Cable Weight: 205 kg/km (138 lb/1000 ft) nominal
- F. Cable Outer Diameter: 16.2 mm (0.636 in) nominal

4. CABLE MARKINGS
- A. Print: "BERK-TEK OPTICAL CABLE – SINGLEMODE – RISER – LTRK006 ARMOR-TEK (TM) ADVENTUM® U.S. PATENT NO. 6,178,278 INDOOR/OUTDOOR TYPE OFCR *(aaa)* SUNLIGHT RESISTANT (UL) – OFCR FT4 c*(aaa)* 75C *[LEAD ORDER-RN] MM/YY"* where *aaa* is flame listing certifier (see 5. A.), and *MM/YY* is manufacture month/year.
- B. Print has consecutive foot markings every two (2) feet along length of cable.

5. CABLE RATINGS
- A. Flame Listing: Engineering Test Laboratories (ETL) or Underwriters Laboratories (UL) as Type OFCR (Conductive Optical Fiber Riser Cable) and c(ETL or UL) OFC-FT4 75C.
- B. Operating Temperature: -40°C to +75°C
- C. Installation Temperature: -20°C to +60°C
- D. Storage Temperature: -60°C to +85°C
- E. Maximum Loading: Installation 1335 N (300 lb) & Long Term 400 N (90 lb)
- F. Min. Bend Radius: Installation 24.2 cm (9.5 in) & Long Term 16.2 cm (6.4 in)
- G. Qualified to ICEA S-104-696, and Telcordia GR-409
- H. Compression (crush) Strength: 650 N/cm per TIA/EIA FOTP-41
- I. Impact: 2 impacts at 8.83 N-m per TIA/EIA FOTP-25
- J. Cable Flex: 100 cycles per TIA/EIA FOTP-104
- K. Compliant to TIA/EIA 568.C.3



Fiber Size/Grade	*Part Number*
Single-mode	LTRK006AB0403
DOC#: PS 2151.A	**Date:** 1/7/13

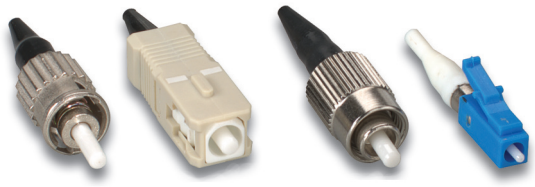
Berk-Tek® A NEXANS COMPANY
100 Technology Park Lane, Fuquay-Varina, NC, USA 27526
TEL: (919) 552-2061
FAX: (919) 552-4451

THE MAXIMUM REEL LENGTH FOR THIS FIBER IS 11,000'. SOME RUNS EXCEED THIS DISTANCE AND WILL REQUIRE SPLICING.

Fast-Cure® Anaerobic Adhesive-Style Connectors

APPLICATION

Leviton's Fast-Cure anaerobic adhesive-style connectors are designed for quick and easy termination in the field. Fast-Cure connectors are available in single-mode and multimode versions in ST®, SC, FC, and LC styles. Fast-Cure connectors are designed for indoor and outdoor applications where reliability, durability, and ease of installation are an important consideration. Typical installations are in premise LAN environments, or anywhere adhesive-style connectors are specified.



Pictured (left to right): ST Connector, SC Connector, FC Connector, and LC Connector.

SPECIFICATION

The Fast-Cure anaerobic adhesive-style fiber optic connector shall meet or exceed the requirements described in TIA-568-C.3 and 604 standards. Connector shall be field-polished, field-installable, and does not require a curing oven or proprietary tool to facilitate the termination of the fiber. Connector shall be available in LC, SC, FC or ST, single-mode or multimode configurations terminated on 900 µm buffered fiber or 3 mm jacketed fiber. Typical connector Insertion Loss shall be 0.2dB. Typical connector Return Loss shall be greater than 25dB (multimode) and 55dB (single-mode).

FEATURES

- Typical termination in less than two minutes
- Low insertion loss connection
- Higher fiber retention than mechanical connectors
- No curing oven or proprietary tool required
- Compatible with MOS, QuickPort®, Opt-X®, and LightSpace® adapter plates
- Accessory for duplex clip sold separately

DESIGN CONSIDERATIONS

- Single-mode and multimode versions
- Precision pre-radiused zirconia ferrules
- Supports 900 µm buffered fiber or 3 mm jacketed fiber
- High cable retention crimp for jacketed fiber
- Recommended for indoor and outdoor usage
- Body of ST and FC connectors are metal

PERFORMANCE SPECIFICATIONS	
Parameter	Value
Insertion Loss (Single-mode or Multimode)	Typical: 0.2dB Max: <0.3dB
Return Loss (Single-mode)	Typical: >55dB
Return Loss (Multimode)	Typical: >25dB
Operating Temperature	-40 ºC to +85 ºC

STANDARDS COMPLIANCE

- Meets TIA-568-C.3 performance requirements
- Meets TIA-604-2 (ST), -3 (SC), -4 (FC), -10A (LC) Connector Intermateability Standards
- Meets GR-326; General Requirement for Single-mode Connectors

WARRANTY INFORMATION

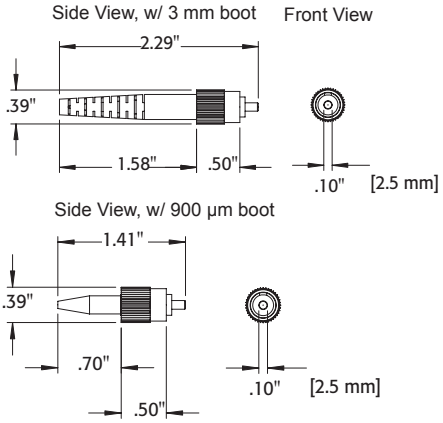
For a copy of Leviton product warranties, visit www.leviton.com.

Leviton Network Solutions, a division of Leviton Mfg. Co., Inc.
2222 - 222nd St. SE Bothell, WA 98021 Tech Support: 1.800.722.2082 or +1.425.486.2222 Fax: 1.425.485.9170 www.leviton.com

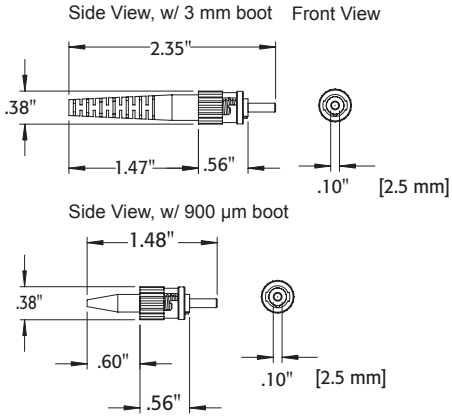
ELECTRONIC FILES

For CAD files, typical specs, or dimensional line art (.DXF, .DWG, Visio), visit www.leviton.com.

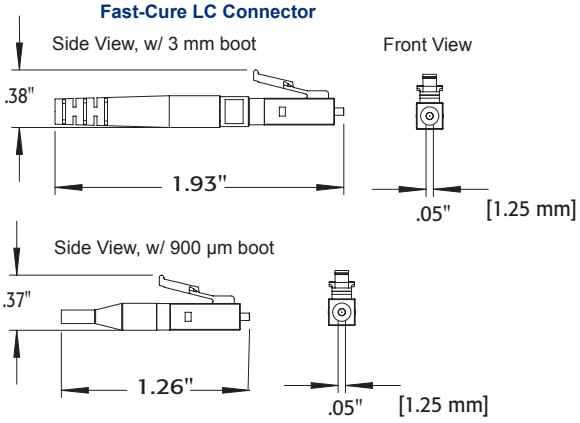
Fast-Cure FC Connector



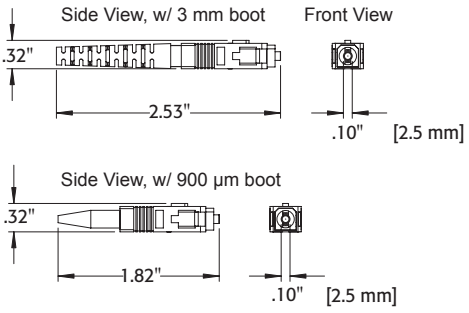
Fast-Cure ST® Connector



Fast-Cure LC Connector



Fast-Cure SC Connector



LEVITON TOOLKITS & ACCESSORIES

Description	Part No.
Light Tool Kit	49800-MTK
Fast-Cure Tool Kit	49800-FTK
Consumable Kit	49800-CON
SC Duplex Clip, black (bag of 25)	49886-DSC
LC Duplex Clip, beige, MM (bag of 25)	49886-DLM
LC Duplex Clip, blue, SM (bag of 25)	49886-DLS

LEVITON FAST-CURE CONNECTORS

Description	Part No.
Fast-Cure ST® Multimode	49990-MST
Fast-Cure ST Single-mode	49990-SST
Fast-Cure SC Multimode, beige	49990-MSC
Fast-Cure SC LOMM, aqua	49990-LSC
Fast-Cure SC Single-mode, blue	49990-SSC
Fast-Cure LC Multimode, beige w/ 3 mm boot	49990-ML2
Fast-Cure LC LOMM, aqua w/ 3 mm boot	49990-LL2
Fast-Cure LC Multimode, beige w/ 900 um boot	49990-MDL
Fast-Cure LC LOMM, aqua w/ 900 mm boot	49990-LDL
Fast-Cure LC Single-mode, blue w/ 3 mm boot	49990-SL2
Fast-Cure LC Single-mode, blue w/ 900 um boot	49990-SDL
Fast-Cure FC Multimode	49990-MFC
Fast-Cure FC Single-mode	49990-SFC

NOTE: Both single-mode and multimode SC, ST, and FC connectors come with a 3 mm and 900 µm boot.

ST is a registered trademark of AT&T Inc.

ISO 9001 REGISTERED Quality Manufacturer

H/10 #3471

Leviton Network Solutions, a division of Leviton Mfg. Co., Inc.
2222 - 222nd St. SE Bothell, WA 98021 Tech Support: 1.800.722.2082 or +1.425.486.2222 Fax: 1.425.485.9170 www.leviton.com

Component Specifications

Part Numbers
49887-06S 49887-06L
49887-12S 49887-12L

Fiber Optic Fanout Kit

16801-2.04

APPLICATION

Protect your bare fiber and prepare loose-tube cable for direct termination with Leviton's Fiber Optic Fanout Kits. These simple 6- or 12-fiber kits separate 250 µm fibers and route them into color-coded 900 µm buffer tubes. Kits can be used with any manufacturer's loose-tube cabling, and any industry-standard connectors. No proprietary tools are required.

FEATURES

- Six or twelve fiber capacity.
- Available in lengths of 24" or 36".
- Tubing colors are blue, orange, green, brown, slate, white, red, black, yellow, violet, rose, and aqua.
- Fiber Assembly Unit protects fibers.
- Separates and routes fibers into the Fiber Assembly Unit's buffer tubes, allowing for easy termination.

STANDARDS COMPLIANCE

TIA/EIA-568-B

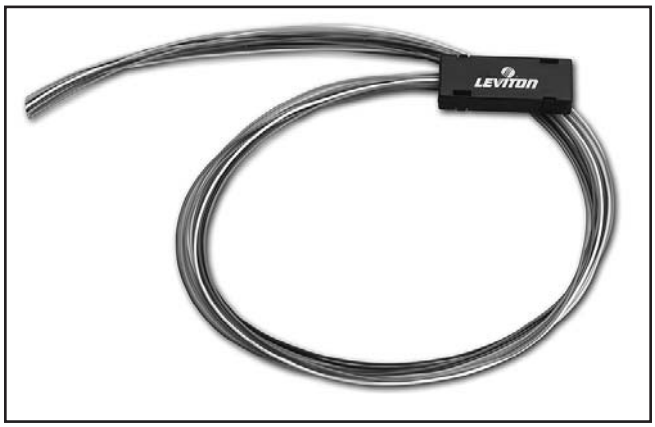
PHYSICAL SPECIFICATIONS

Dimensions:	See second page
Materials:	Top Cover and Base: ABS plastic
	Tubing: "Hytrel Furcation Tubing"
Temperature:	Operating -10˚ C to 65˚ C
	Non-operating -40˚ C to 65˚ C

DESIGN CONSIDERATIONS

- Snap-together Top Cover and Base allow customer to disassemble.
- Fiber Assembly Unit seats securely into a cavity in the body and top cover when cables are routed.
- Fiber Assembly Unit utilizes 900 µm O.D. furcation tubing and is available in both six and twelve fiber capacities.
- Furcation tubing available in 24" and 36" lengths.
- Available Fiber Fan-Out Consumables Kit speeds installation.

See ELECTRONIC FILES for CAD files (.DXF, .DWG, MS-DOS.EPS) on the web.



WARRANTY INFORMATION

For a copy of Leviton product warranties, log on to www.levitonvoicedata.com/warranty.

For ELECTRONIC Typical Specs see (.TXT) file on disk

TYPICAL SPECIFICATION

Fiber Optic Fanout Kit shall separate 250 micron fibers and route them into color-coded 900 micron buffer tubes, via a protective housing, allowing cable to be easily terminated. Kit shall use "Hytrel Furcation Tubing" and be available in either six or twelve fiber capacity in 24" or 36" lengths. Kit shall require no proprietary tools and can be used with any manufacturer's loose-tube cabling and any industry-standard connectors.

2222 – 222nd St. SE • Bothell, WA 98021 USA
Tel: 1-800-722-2082 / 1-425-485-4288 • Fax: 1-425-483-5270 • Int'l Fax: 1-425-485-9170 • GSA Schedule Available.

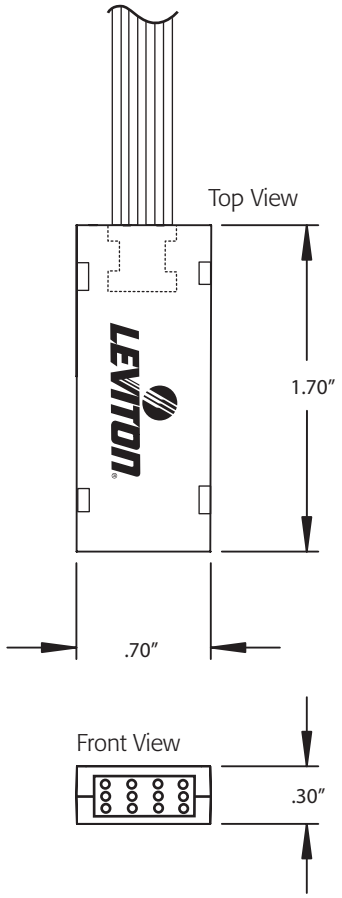
LEVITON® VOICE & DATA DIVISION

Fiber Optic Fanout Kit

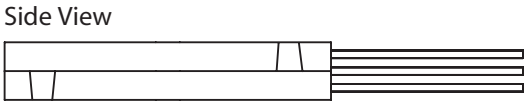
Part Numbers
49887-06S 49887-06L
49887-12S 49887-12L

DIMENSIONAL LINE ART

See ELECTRONIC FILES for CAD images
(.DXF, .DWG, MS-DOS.EPS)



Fiber Optic Fanout Kits are available in six or twelve fiber capacity and in lengths of 24" or 36".



PART NUMBERS

Description	*Part No.*
6 Position Fan-Out Kit with 24 Inch Fan-Out Tubing	49887-06S
6 Position Fan-Out Kit with 36 Inch Fan-Out Tubing	49887-06L
12 Position Fan-Out Kit with 24 Inch Fan-Out Tubing	49887-12S
12 Position Fan-Out Kit with 36 Inch Fan-Out Tubing	49887-12L
Fiber Fan-Out Consumable Kit	49800-FAN

For Technical Support Call 1-425-485-4288; in USA call 1-800-824-3005.
Spec sheets and updates are also available at www.levitonvoicedata.com.

ISO 9001 REGISTERED Quality Manufacturer

LEVITON® VOICE & DATA DIVISION

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TO BE MOUNTED IN DATA RACKS
AT MIDTOWN AND WP/BW
STANDBY POWER BUILDINGS

Opt-X® 1000i Rack-Mount Enclosures

1RU, 2RU, 3RU & 4RU

APPLICATION

The Opt-X 1000i Rack-Mount Enclosure allows for inter-connect or cross-connect between backbone cable and active equipment while using minimum rack space in a frame or cabinet setting. The enclosure's features and design allows for easy field termination of connectors, splicing, or pre-terminated plug-n-play solutions. The enclosure is primarily used in fiber applications such as data centers, equipment rooms, telecommunication rooms, etc.

SPECIFICATION

Fiber enclosure shall be available in 1RU, 2RU, 3RU, and 4RU versions to accommodate termination and splicing of fiber. A removable sliding tray shall also be available in 1RU and 2RU enclosures. Adapter bulkhead shall accept SC, LC, ST, and MTP® adapters, and plug-n-play MTP modules/cassettes. 4RU enclosures shall accommodate up to 15 adapter plates for 360 fiber connections. Fiber cable management for routing, storage, and protection shall accept patch cords, tight-buffer fiber, and backbone cables. Rear fiber cable management rings shall be stackable and configurable in ¼, ½, or full ring arrangements. Enclosure shall be constructed of 16-gauge steel with a powder-coated black finish and be mountable in either a 19" or 23" rack or cabinet frame. An optional locking door feature shall be available. Country of origin for product shall be United States of America.

FEATURES

- Sliding tray (in 1RU & 2RU) removes completely from enclosure for ease of field terminations and splicing
- Sliding tray glides (with stop) forward and backward, providing accessibility to front and rear bulkhead after installation
- 15" depth for high density fiber termination and/or splicing
- Stackable and adjustable fiber rings simplify cable organization
- Front saddles pivot for improved patch cord routing
- Removable front and rear covers for better access to interior of enclosure
- Removable rubber grommet allows for pre-terminated fiber trunk install, protects cable, and minimizes dust build-up
- Constructed of 16-gauge steel, powder-coated black
- Retrofit Sliding Tray, sold separately, allows for higher density applications using Opt-X Evolve MTP Cassettes or adapter plates (sliding tray does not accommodate splice trays)

DESIGN CONSIDERATIONS

- Enclosures are sold empty (unloaded)
- Accepts Opt-X adapter plates and/or modules/cassettes
- Optional cable strain relief mounting kit (for installation on side of enclosure or on rack post)
- 19" or 23" enclosure rack mount option (23" 1RU mounting bracket sold separately)
- Protrudes 4.5" from mounting ears to align with Leviton Versi-Duct® Cable Management System
- Capable of storing up to 3 meters of 900 µm tight buffered fiber per adapter
- Adapter plate on 3RU/4RU orients horizontally or vertically for optimal density
- Door lock option available on front, rear, or both
- Enclosure can be preconfigured to customer specifications (see page two)
- Enclosure includes an accessory kit consisting of cable ties, mounting screws, ID label, and spiral wrap (for cable protection on units with a sliding tray)

STANDARDS COMPLIANCE

Meets or exceeds all TIA-568-C.3 requirements

PHYSICAL SPECIFICATIONS

Capacity and dimensions: See page two.

Materials: Constructed of 16-gauge steel, powder-coated black. Plastic parts made using self-extinguishing ABS and polycarbonate materials rated UL 94V-2. Grommet material made of Santoprene®, a thermoplastic rubber elastomer.

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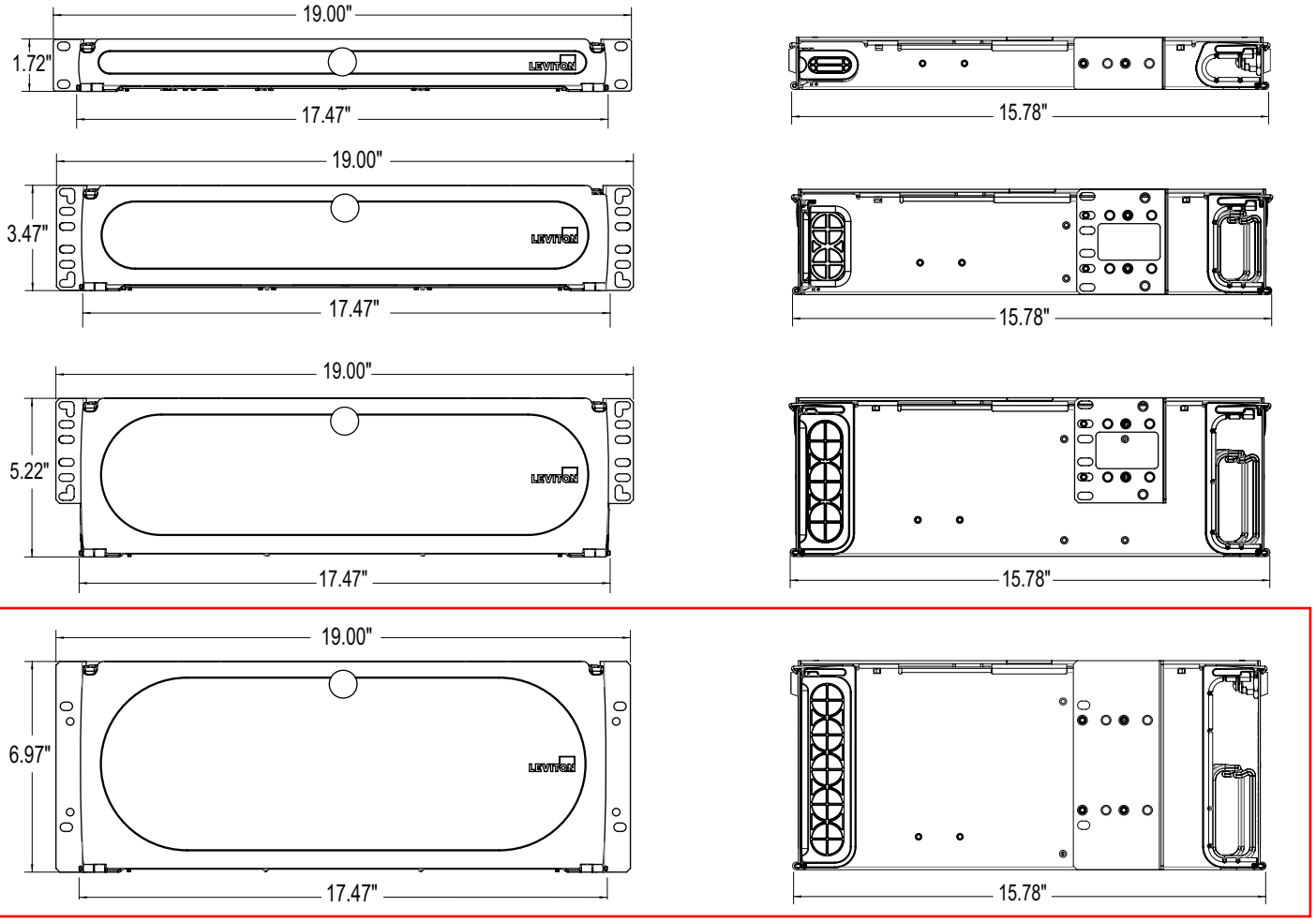
WARRANTY INFORMATION

For warranty information, go to leviton.com or call 800.722.2072.

ELECTRONIC FILES

For CAD files, typical specs, or technical drawings (.DXF, .DWG, Visio), visit www.leviton.com.



DENSITY

Rack Unit	Fibers	Adapter Plate or MTP Cassette	Splice trays
1RU	72	Up to 3	Up to 3
2RU	144	Up to 6	Up to 6
3RU	216	Up to 9 (horizontal adapter plate/module orientation)	Up to 12
3RU (non-standard)	288	Up to 12 (vertical adapter plate/module orientation)	Up to 12
4RU	288	Up to 12 (vertical adapter plate/module orientation)	Up to 12
4RU (non-standard)	360	Up to 15 (horizontal adapter plate/module orientation)	Up to 12

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DENSITY USING RETRO-FIT SLIDING TRAY

Rack Unit	Fibers	Adapter Plate or MTP Cassette (Opt-X Evolve)
1RU	96	Up to 8
2RU	192	Up to 16

Make-to-Order! Opt-X 1000i Rack-Mount Enclosure Options

ENCLOSURE STYLE	ADAPTER PLATES OR MTP® CASSETTE SELECTION	NUMBER OF ADAPTER PLATES	FIBER TYPE	ADAPTER TYPE & PIGTAIL SELECTION	SPLICE TRAY STYLE	NO. OF SPLICE TRAYS	SECURITY OPTIONS	MOUNTING EAR POSITION
• 1RU Opt-X • 2RU Opt-X • 1RU or 2RU Opt-X w/ tray • 3RU or 4RU Opt-X w/ horizontal adapter plates • 3RU or 4RU Opt-X w/ vertical adapter plates	• 6 fibers (SC, ST) • 8 fibers (SC, ST) • 12 fibers (LC, SC, ST only) • 16 fibers (LC only) • 24 fibers (LC only) • MTP - 12 fibers (LC, SC, ST) • MTP - 24 fibers (LC only)	• 1 -15	• OM1 • OM2 • OM3 • OM4 • OS2	• LC • LC + pigtail • SC • SC/APC • SC + pigtail • SC/APC + pigtail • ST • ST + pigtail	• Heatshrink, foam holders, up to 12 fibers (molded tray) • Heatshrink, plastic holders, up to 12 fibers (molded tray) • Bare fusion, plastic holders, up to 12 fibers (metal tray) • Heatshrink, plastic holders, up to 24 fibers (molded tray)	• 1-12 • None	• Locking front door • Locking rear door • Both doors • None	• 19" or 23"

For assistance customizing your enclosures, please visit leviton.com/configurator or call Tech Support at 800.824.3005.

OPT-X® 1000i RACK-MOUNT ENCLOSURES

DESCRIPTION	PART NO.
Opt-X 1000i, 1RU Enclosure, Empty	5R1UM-F03
Opt-X 1000i, 1RU Enclosure, Empty, with sliding tray	5R1UM-S03
Opt-X 1000i, 2RU Enclosure, Empty	5R2UM-F06
Opt-X 1000i, 2RU Enclosure, Empty, with sliding tray	5R2UM-S06
Opt-X 1000i, 3RU Enclosure, Empty	5R3UM-F09
Opt-X 1000i, 3RU Enclosure, Empty	5R3UM-F12
Opt-X 1000i, 4RU Enclosure, Empty	5R4UM-F12
Opt-X 1000i, 4RU Enclosure, Empty	5R4UM-F15

Enclosure includes an accessory kit which consists of cable ties, mounting screws, ID label, and spiral wrap (for cable protection on units with sliding tray)

ACCESSORIES

DESCRIPTION	PART NO.
Retrofit Sliding Tray, 2U (for use with Opt-X Evolve Cassettes)	5R2UR-TRY
Retrofit Sliding Tray, 1U (for use with Opt-X Evolve Cassettes)	5R1UR-TRY
Universal Opt-X Clamp Kit (for enclosure mounting)	5RCMP-KIT
Universal Opt-X Clamp Kit (for rack post mounting)	5RCMR-KIT
Fiber Cable Management ¼ Ring Kit (Bag of four ¼ rings)	5R100-14R*
1RU Enclosure 23" Rack and Cabinet Mounting Bracket	5R1RU-023
Lock and Key	5L000-KAL

* Not for use in Retrofit Sliding Tray

C13 4120J

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March 2013

Opt-X® Fiber Adapter Plates — Precision Molded

APPLICATION

Leviton Opt-X fiber adapter plates are used in conjunction with Opt-X panels or enclosures (rack- or wall-mount) to provide a means to connect backbone to backbone or backbone to horizontal fiber cabling. The Opt-X fiber adapter plates are offered in LC, SC, and ST versions.


5F100-2IC


5F100-2IL


5F100-2EC


5F100-2EL


5F100-2QC


5F100-2QL


5F100-2LC


5F100-2LL


5F100-2VC

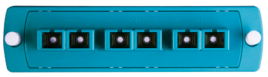

5F100-2VL


5F100-6IC


5F100-4IL


5F100-6EC

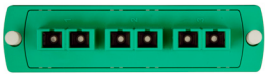

5F100-4EL


5F100-6QC


5F100-4QL


5F100-6LC


5F100-4LL


5F100-6VC


5F100-6MT

5F100-PLT


5F100-8MT

SPECIFICATION

The Opt-X adapter plate shall be modular and functional for use in an Opt-X panel or enclosure (rack- or wall-mount). The adapter plate shall be offered in LC, SC, and ST styles in 6, 12, or 24 fiber configurations. The adapter plate shall be compliant to ANSI/TIA-568-C.3 (for performance) and respective ANSI/TIA-604-X (for intermateability) standards. Adapter plates shall use zirconia ceramic sleeves and be offered in standard fiber type colors pursuant to ANSI/TIA-568-C.3 standards. The adapter and plate shall be integrated to eliminate “rattle” and loose fit. Adapter plates shall be made in the United States of America.

FEATURES

- Integrated LC and SC plates (two pieces) eliminates rattling and loose fit
- Adapter plates use zirconia ceramic sleeves for optimal performance in 1 Gbps and higher transmission speeds
- LC and SC plates offered in standard fiber type colors
- Adapter plates offered in LC, SC, ST, and blank styles
- Captive push-lock pins allow for quick tool-less installation
- Compatible with all Opt-X panels and enclosures (rack- or wall-mount)

DESIGN CONSIDERATIONS

- Arrange adapter plates within panel or enclosure to allow for future growth
- Colored plate or fiber adapters will identify fiber type used
- Visible sequential numbering to identify ports (for Tx & Rv)
- 4RU rack-mount enclosure accommodates up to 15 adapter plates for highest density per RU
- Zirconia ceramic sleeve typically used on laser optimized multimode and single-mode applications (OM3, OM4, OS2)

STANDARDS COMPLIANCE

- Meets ANSI/TIA-568-C.3 for performance requirements
- Meets ANSI/TIA-604-2B (ST), -3B (SC), -10B (LC) for connector intermateability

PHYSICAL SPECIFICATIONS

Materials: Adapter plate: constructed of engineered polymer, various pantone colors

COUNTRY OF ORIGIN

USA

WARRANTY INFORMATION

For a copy of Leviton product warranties, visit www.leviton.com/warranty.

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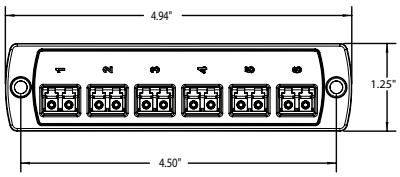
Revised April 2013

ELECTRONIC FILES

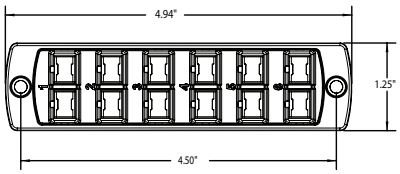
For CAD files, typical specs, or dimensional line art (.DXF, .DWG, Visio), visit www.leviton.com.

PART NUMBERS

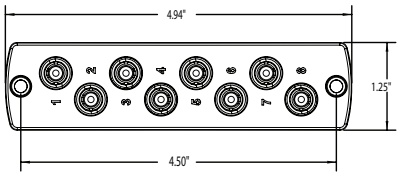
Description	Part No.
Plate (beige), 62.5 µm MM (OM1), Duplex LC, 12-fiber, zirconia ceramic sleeve	5F100-2IL
Plate (black), 50 µm MM (OM2), Duplex LC, 12-fiber, zirconia ceramic sleeve	5F100-2EL
Plate (aqua), 50 µm LOMM (OM3 & OM4), Duplex LC, 12-fiber, zirconia ceramic sleeve	5F100-2QL
Plate (blue), SM (OS1 & OS2), Duplex LC, 12-fiber, zirconia ceramic sleeve	5F100-2LL
Plate (green), SM/APC (OS1 & OS2), Duplex LC, 12-fiber, zirconia ceramic sleeve	5F100-2VL
Plate (beige), 62.5 µm MM (OM1), Quad LC, 24-fiber, zirconia ceramic sleeve	5F100-4IL
Plate (black), 50 µm MM (OM2), Quad LC, 24-fiber, zirconia ceramic sleeve	5F100-4EL
Plate (aqua), 50 µm LOMM (OM3 & OM4), Quad LC, 24-fiber, zirconia ceramic sleeve	5F100-4QL
Plate (blue), SM (OS1 & OS2), Quad LC, 24-fiber, zirconia ceramic sleeve	5F100-4LL
Plates (beige), 62.5 µm MM (OM1), Duplex SC, 6-fiber, zirconia ceramic sleeve	5F100-6IC
Plates (black), 50 µm MM (OM2), Duplex SC, 6-fiber, zirconia ceramic sleeve	5F100-6EC
Plates (aqua), 50 µm MM (OM3 & OM4), Duplex SC, 6-fiber, zirconia ceramic sleeve	5F100-6QC
Plates (blue), SM (OS1 & OS2), Duplex SC, 6-fiber, zirconia ceramic sleeve	5F100-6LC
Plates (green), SM/APC (OS1 & OS2), Duplex SC, 6-fiber, zirconia ceramic sleeve	5F100-6VC
Plate (beige), 62.5 µm MM (OM1), Duplex SC, 12-fiber, zirconia ceramic sleeve	5F100-2IC
Plate (black), 50 µm MM (OM2), Duplex SC, 12-fiber, zirconia ceramic sleeve	5F100-2EC
Plate (aqua), 50 µm LOMM (OM3 & OM4), Duplex SC, 12-fiber, zirconia ceramic sleeve	5F100-2QC
Plate (blue), SM (OS1 & OS2), Duplex SC, 12-fiber, zirconia ceramic sleeve	5F100-2LC
Plate (green), SM/APC (OS1 & OS2), Duplex SC, 12-fiber, zirconia ceramic sleeve	5F100-2VC
Plate (black), ST MM/SM, 6-fiber, zirconia ceramic sleeve	5F100-6MT
Plate (black), ST MM/SM, 8-fiber, zirconia ceramic sleeve	5F100-8MT
Plate (black), Blank	5F100-PLT



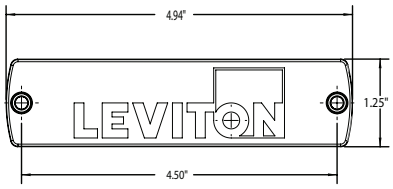
LC style



SC style



ST style



blank style

5F100-xxx (precision molded)

PART #5F100-2ZT IS A SPECIAL ORDER ITEM AND IS NOT LISTED ON THE CUT SHEET. IT IS A 12 FIBER ST ADAPTER.

Similar to this except it accommodates 12 fibers instead of 6.

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ARMOR-TEK™ Cable Installation Guidelines

Tools Required:

- Box Cutter with Hook Blades
- Roto-Split Tool (Model RF-120B), **www.seatekco.com**, or similar product
- Kellem's Grip, see Table 1 for grip selection
- Kevlar shears and a Coaxial Stripper
- Diagonal Cutter and Narrow Nose Pliers
- Friction Tape and Vinyl Electrical Tape
- Permanent Marker

1. Select the appropriate pulling grip, according to the cables outer diameter using Table 1 as a reference. Slide the grip over and past the end of the cable leaving 48 inches of cable beyond the grip.

Table 1., Outer Cable Diameter - Kellems Grip Selection

Cable Diameter		Kellems P/N
inches	mm	
0.10 - 0.22	2.5 - 5.6	033291193
0.22 - 0.35	5.3 - 9.0	033291194
0.36 - 0.48	9.1 - 12.2	033291195
0.49 - 0.61	12.3 - 15.5	033291196
0.62 - 0.73	15.6 - 18.5	033291197
0.74 - 0.87	18.6 - 22.1	033291198
0.88 - 1.00	22.2 - 25.4	033291199

2. Using the box cutter, cut away the outer sheath of the cable by the amount suggested in Table 2 (Column 1). This length is based upon the length of the mesh of the pulling grip. Place a mark around the exposed armor at a distance specified under Column 2 (measured from the uncut outer cable sheath).

Table 2., Sheath Removal, Exposed Armor, Exposed Cable

Mesh Length		Column 1		Column 2		Column 3	
in.	cm	in.	cm	in.	cm	in.	cm
10	25	12	31	6	15	6	15
14	36	16	41	7	18	9	23
19	48	21	53	8	20	13	33
21	53	23	59	10	25	13	33
28	71	30	76	12	30	18	46

3. Insert the cable so that the mark applied to the exposed armor aligns with the holding pin of the Roto-Split tool. Cut the interlocking armor per the tool instructions and remove. See Figure 1.

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FAX: (919) 552-4451

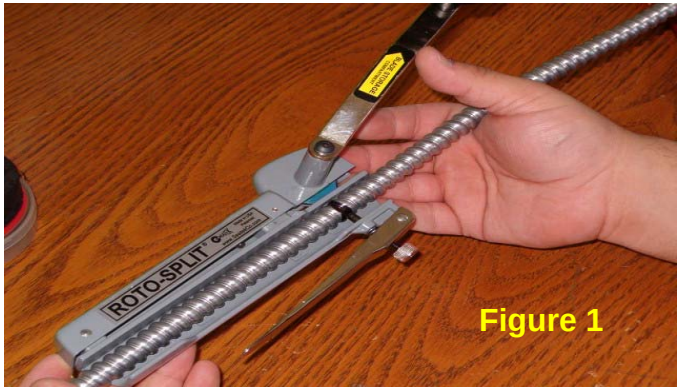

Figure 1

4. If a rip cord is provided with the cable, use the box cutter to carefully ring cut the optical cable sheath one inch from the cable end. Remove the sheath. Locate the rip cord and carefully nick the cable sheath next to the rip cord. Using the narrow neck pliers, wrap the rip cord and cut the sheath until reaching ½ inch from the armor. Using the shears, remove the sheath to this point. Secure the strength yarns of the cable at the tip using the friction tape. If a rip cord is not present, use the coaxial stripper to ring cut the cable sheath every six inches until reaching within ½" of the exposed armor. Remove these cable sheath segments. See Figure 2.

5. Starting at the beginning of the exposed armor, wrap overlapping layers of the friction tape tightly as you proceed towards the tip of the cable. ENSURE THE EXPOSED ARMOR AND THE CABLE STRENGTH YARNS ARE TIGHTLY COUPLED TO THE FRICTION TAPE. See Figure 3.

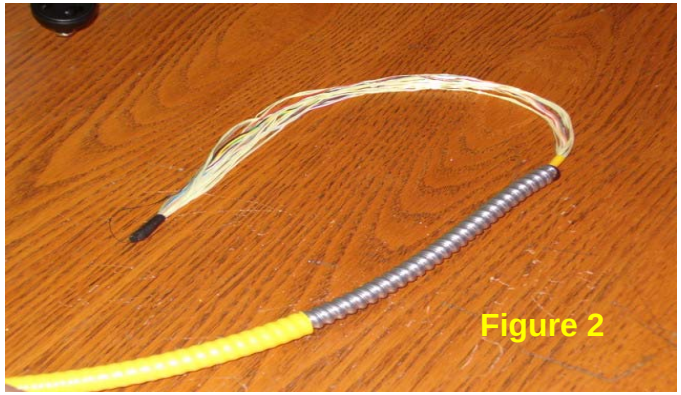
Figure 2

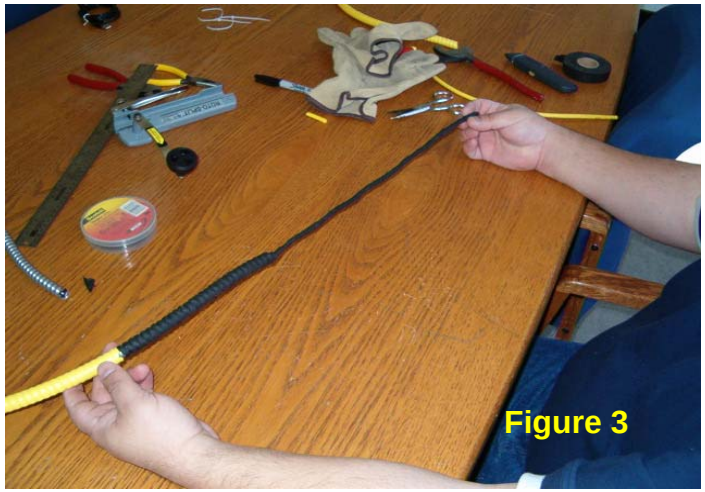
Figure 3

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6. Slide the Kellems grip towards the tip of the cable until the tip of the cable lies centered within the wire mesh basket. Holding the cable/grip from this point, smooth the grip mesh down tightly over the cable towards the body of the cable. See Figure 4.

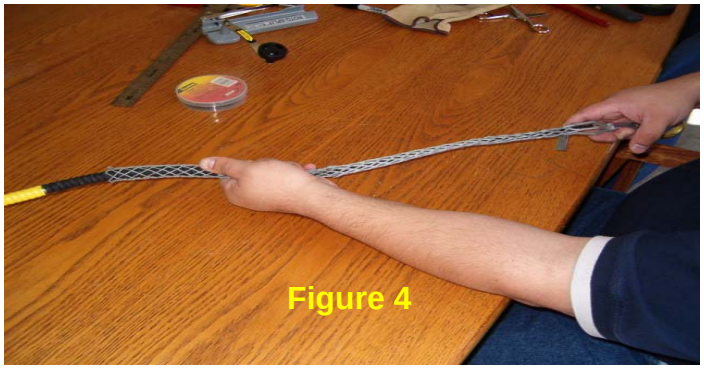
Figure 4

7. Beginning two inches from the exposed armor (over the outer cable sheath), wrap the vinyl electrical tape TIGHTLY over the cable sheath/pulling grip, moving towards the grip pulling eye (see Figure 5). Properly applied vinyl tape should show the imprint of the wire mesh ribs, which ensures tight coupling of the grip to the cable strength elements. The cable is now ready for installation. See Figure 6

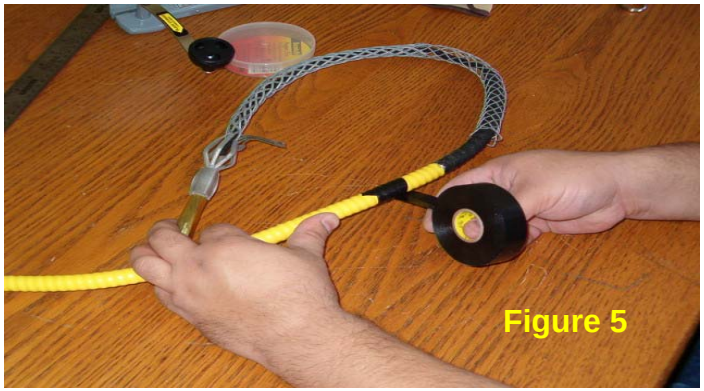
Figure 5

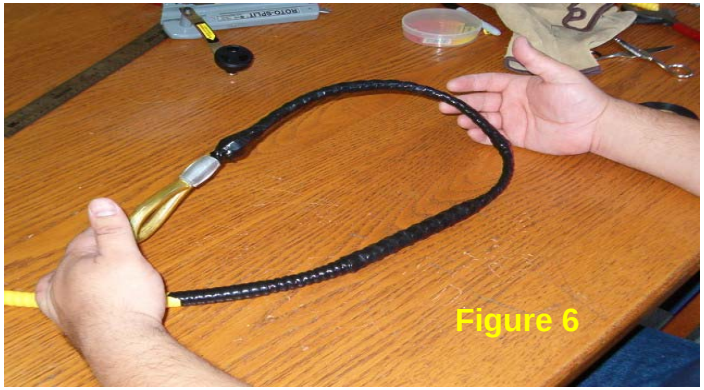
Figure 6

8. Ensure that the tensile load applied to the cable is within the manufacturers recommendations for that product. Ensure the correct size pulling grip is used. Failure to do so may lead to improper coupling of the grip to the cable strength elements and may create the potential for cable damage.

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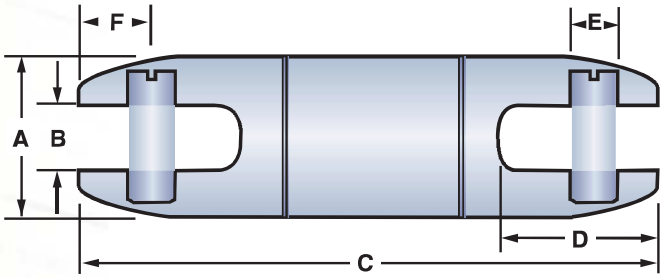
U. S. Patent No. 4,687,365.

Break-Away Swivel

Essential for fiber optic and coaxial cable pulling, these swivels have a break load ranging from 150–1,800 pounds (667–8,006 N) and are designed to separate at ±10% of their rated break load. If the load rating is exceeded, the interior break pin fractures, the swivel separates, and the cable remains undamaged. Break pin is easily replaceable (see ordering information, next page).



Break-Away Swivel Dimensions

A		B		C		D		E		F	
(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)
5/8	16	.28	7	3.56	90	.79	20	.25	6	.37	9
7/8	22	.38	10	4.51	115	1.06	27	.31	8	.53	13

5/8" Swivel (16 mm)

Part Number	Break Load (lbs)	(N)
08017300	200	890
08017400	250	1,112
08017800	300	1,334
08016900	450	2,002
08017200	600	2,669
08017500	650	2,891
08017900	750	3,336

7/8" Swivel (22 mm)

Part Number	Break Load (lbs)	(N)
08018100	150	667
08018300	200	890
08018000	250	1,112
08017600	300	1,334
08018400	350	1,557
08075300	400	1,779
08015800	450	2,002
08076500	500	2,224
08018500	550	2,446
08015000	600	2,669
08018600	650	2,891
08076000	700	3,114
08075500	750	3,336
08018700	800	3,558
08018800	850	3,781
08076600	900	4,003
08015700	1,000	4,448
08018900	1,100	4,893
08015200	1,200	5,338
08019100	1,300	5,782
08074600	1,400	6,227
08076900	1,500	6,672
08019200	1,600	7,117
08019300	1,700	7,562
08017700	1,800	8,006

NOTE: Swivels are not designed to run around bullwheels.

Replacement Pins

Break pins for Condux Break-Away Swivels are easy to order and ready to ship.

Externally Threaded Head

Internally Threaded Head

Replacement Pins for 5/8" (16 mm) Swivel

Part Number	Break Load		
08017305	200	890	Green/Black
08017405	250	1,112	Blue/White
08017805	300	1,334	Blue/Violet
08016905	450	2,002	Blue/Yellow
08017205	600	2,669	Orange/Black
08017505	650	2,891	Brown/White
08017905	750	3,336	Orange/Violet

Replacement Pins for 7/8" (22 mm) Swivel

Part Number	Break Load (lbs)	(N)	Color
08018105	150	667	Slate/Violet
08018305	200	890	Green/Orange
08018005	250	1,112	Blue/White
08017605	300	1,334	Brown/Red
08018405	350	1,557	Black/Green
08075305	400	1,779	Blue/Black
08015805	450	2,002	Blue/Yellow
08076505	500	2,224	Orange/Red
08018505	550	2,446	Blue/Green
08015005	600	2,669	Orange/Black
08018605	650	2,891	Slate/Green
08076005	700	3,114	Orange/White
08075505	750	3,336	Orange/Violet
08018705	800	3,781	Red/Yellow
08018805	850	3,781	Black/Yellow
08076605	900	4,003	Orange/Yellow
08015705	1,000	4,448	Green/White
08018905	1,100	4,893	White/Yellow
08015205	1,200	5,338	Brown/White
08019105	1,300	5,782	Brown/Yellow
08074605	1,400	6,227	Green/Red
08076905	1,500	6,672	Green/Yellow
08019205	1,600	7,117	Black/White
08019305	1,700	7,562	Red/White
08017705	1,800	8,006	Brown/Black

Interlock Armor Cable Bonding Guide

Interlock Armor Optical Cables are inherently robust and have exceptional crush and impact resistance, making them suitable for harsh or hazardous environments. Before installing an armored fiber optic cable it is necessary to understand the construction of the product.

The cable is in fact a composite of two main elements:

1. A thermoplastic jacketed fiber optic cable
2. A flexible metal conduit (i.e. aluminum or galvanized steel interlocked armor) surrounded by a thermoplastic jacket.

It is important to note that no bonding exists between the cable and the armor. Thus, both elements require connection to a pulling medium to prevent separation. It is strongly recommended that a cable pulling grip be used to accomplish the installation. Please review the "Armor-Tek™ Pulling Grip Installation Guide", available at www.berktek.com, for instructions on proper pulling grip application procedures.

CAUTION: Failure to utilize a suitable pulling grip, properly installed, may result in elongation or unraveling of the interlock armor and retraction of the optical cable core into the interlock armor.

Most Armor-Tek installations occur in structured cabling environments, in the building backbone or horizontal with vertical penetrations commonplace. In such cases, hand pulls are the normal. Complying with the following recommended procedures will enable a safe and successful cable installation.

1. It is essential that a properly attached pulling grip be used. Doing so will couple the interlock armor and the optical cable core to the strength members of the cable. Procedures for selecting and installing a suitable pulling grip are detailed in "Armor-Tek™ Pulling Grip Installation Guide", available at www.berktek.com.
2. Visually identify and trace the proposed pull route. Reference the correct cable specification sheet to determine the maximum loading limits and the minimum bend limits of the cable during installation. Ensure the proposed route will not violate the bend limitations or exceed the allowed tensile load.
3. Secure an appropriate pulling tape to the pulling grip eye. Monitor the tension as the pull progresses. If the tensile load approaches the limit, stop pulling. Retrace the pull route and identify the snag point or obstruction.
4. If possible, remove the obstruction and inspect the cable for damage. If no damage is evident, record the footmark on the cable legend nearest the snag point. Reference this location during final testing to ensure no damage occurred.
5. When the pull is completed remove the pulling grip.
6. Reference the patch panel's installation procedures to determine the length of optical cable required. Additionally, measure the length of interlock armor that will be sufficient to reach the metal knock out of the patch panel. When the cable is run directly from one metal fiber distribution unit to another, use any NEC approved MC connector as the equipment bond for the armored cable. These MC connectors may fit a variety of sizes of knockouts on the metal FDU*. Some of these connectors may include an insulated bushing, which helps protect the cable when it exits the armor into the FDU or patch panel, See Figure 1 and Figure 2

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Figure 1
Typical MC Connector with Insulation Bushing

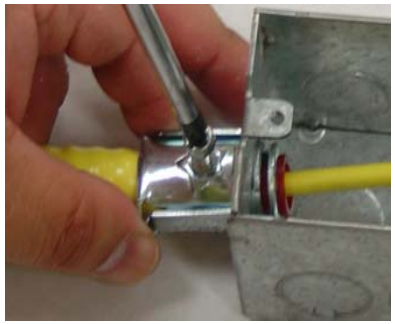


Figure 2
Interlock Armor Bonded. Optical Cable Core Continues

7. Ensure the core optical cable is correctly secured to the FDU/patch panel. All connector or splice housings, whether rack mount or wall-mount, specify the correct procedures for securing the optical cable strength elements. Ensure these procedures are followed.
8. Retrace the pull route. If any segment of a horizontal pull exceeds five feet of unsupported span, install an approved flexible conduit support.
9. FOR VERTICAL SEGMENTS: If the cable diameter is > 0.5 inches, secure the cable to the vertical shaft using approved flexible conduit supports every 3 feet. If the cable diameter is ≤ 0.5 inches, secure the cable to the vertical shaft using approved flexible conduit supports every 5 feet.

   NOTE: Comply with Local Building Code Requirements or National Electrical Code Specifications for the installation and support of interlocking armor cables.

*These types of connectors are available from most major suppliers of electrical components and are typically listed under flexible metal conduit connectors for armored cables.

Please contact Berk-Tek for additional details. 1-800-237-5835 www.berktek.com

SADDLEGRIP® Connectors

For aluminum and steel Flex • AC • MC cable. Zinc die-cast.

CATALOG NUMBER	UPC/DCI/NAED MFG #01 8997	TRADE SIZE	KO SIZE	UNIT PKG	STD PKG	DIM A	DIM B	DIM C	CABLE RANGE	END STOP DIAMETER
SG38‡	18065	3/8	1/2	50	500	1.000	.400	1.077	.405-.612	.400
SG38A*‡	80138	3/8	1/2	50	500	1.090	.490	1.077	.405-.612	.400
SG380‡	18060	3/8	1/2	50	500	1.000	.400	1.077	.405-.612	.400 x .580
SG380A*‡	80140	3/8	1/2	50	500	1.090	.490	1.077	.405-.612	.400 x .580
SG40‡	01740	7/16	1/2	50	500	1.480	.480	1.125	.530-.790	.620
SG50‡	07500	1/2	1/2	50	500	1.480	.480	1.277	.710-.910	.620
SG50A*‡	37501	1/2	1/2	50	500	1.511	.511	1.277	.710-.910	.620
SG75	18075	3/4	3/4	20	200	1.435	.450	1.470	.840-11.10	.820
SG75A*	17751	3/4	3/4	20	200	1.466	.481	1.470	.840-1.110	.820

*Provided with insulated throat.

‡Also for MCI-A cable.

Refer to page E-27 for cable ranges.

Refer to chart on page E-25 for a list of cable types.

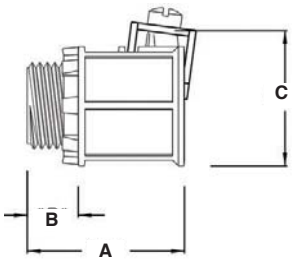
Concrete tight when taped.

For cables smaller than .405" see L16 and L16ST on page E-5.

E60812 LR49636

SG380

SG38

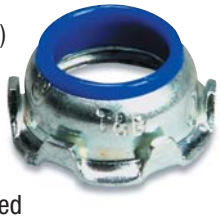


THIS WILL BE USED IN PLACE OF THE LOCKNUT THAT COMES WITH THE MC CONNECTOR

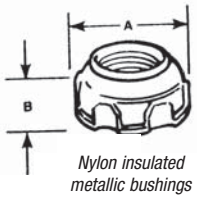
Rigid and Intermediate Metal Conduit Fittings

Meets and surpasses NEC® requirements!

Insulated Throat Fittings



- Steel or malleable iron (steel through 1½")
- Exceeds NEC 373-6C requirements for protection of ungrounded connectors at entrance to raceways, pull boxes and junctions
- Recognizable by distinctive trademarked blue insulating liner in throat
- Reduces wire pulling effort by as much as 50%
- Temperature rating of 105° C
- Look for the unique T&B blue color, ensuring the highest quality fitting



Nylon insulated metallic bushings

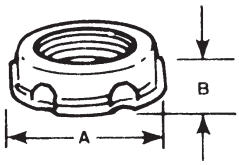
CAT. NO. STL. OR M.I.	CAT. NO. ALUM.	SIZE	DIMENSIONS (IN.) A	DIMENSIONS (IN.) B
1222	1222AL	½"	1 1/32	29/64
1223	1223AL	¾"	1 9/32	31/64
1224	1224AL	1"	1 19/32	11/32
1225	1225AL	1¼"	1 15/16	21/32
1226	1226AL	1½"	2 3/16	23/32
1227	1227AL	2"	2 11/16	⅞
1228	1228AL	2½"	3 3/16	1 1/32
1229	1229AL	3"	3 27/32	5/16
1230	1230AL	3½"	4 7/16	1 1/16
1231	1231AL	4"	4 7/8	1 3/32
1232†	1232AL†	4½"	—	—
586	586AL	5"	5 31/32	1 9/32
587	587AL	6"	7 3/16	1 11/32

† *Not CSA Certified*

Catalog series 1222 thru 1232, 586 and 587 are available in aluminum. Add suffix AL to Cat. No. The aluminum series fittings are not CSA certified.

Locknut-type base improves bonding and resists loosening under vibration.

Metallic Bushings



- Aluminum, steel or malleable iron (steel through 1½")
- Smoothly rounded shoulder covers end of conduit
- Broad flange covers knockout hole
- High ribs for easy tightening with fingers or with wrench
- ½" to 1½" sizes, formed in steel, feature extra-smooth shoulders

CAT. NO. STL. OR M.I.	CAT. NO. ALUM.	SIZE	DIMENSIONS (IN.) A	DIMENSIONS (IN.) B
122	122AL	½"	1 1/32	13/32
123	123AL*	¾"	1 1/4	7/16
124	124AL**	1"	1 5/16	½
125-TB	125AL	1¼"	1 29/32	9/16
126	126AL	1½"	2 5/32	19/32
127	127AL	2"	2 21/32	⅝
128	128AL	2½"	3 5/16	¾
129	129AL	3"	3 27/32	13/16
130-TB	130AL	3½"	4 3/8	15/16
131-TB	131AL	4"	4 15/16	1
132-TB	—	4½"	5 7/16	1 5/64
133-TB	133AL	5"	6	1 3/16
134-TB	134AL	6"	7 1/4	1 1/4

* *Not UL Listed or CSA Certified*

** *Not CSA Certified*

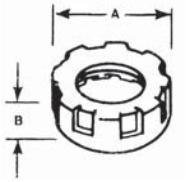
Available with DURA-PLATE® Finish.

UL File No. E-23018

CSA File No. 2884

Perfect threads for easy thread-on!

Plastic Insulating Bushings



All Plastic Insulating Bushings

- Impact-resistant plastic insulation
- Ribbed for easy, secure gripping
- UL Listed 105° C

CAT. NO.	SIZE	DIMENSIONS (IN.) A	DIMENSIONS (IN.) B
222-TB	½"	1 1/16	⅜
223-TB	¾"	1 5/32	13/32
224	1"	1 5/16	9/16
225-TB	1¼"	1 23/32	9/16
226	1½"	2 1/32	9/16
227	2"	2 25/32	⅝
228-TB	2½"	3⅜	¾
229-TB	3"	4 1/16	¾
230-TB	3½"	4⅝	⅞
231	4"	5⅛	⅞
232	4½"	5 11/16	1
233	5"	6 5/16	1
234	6"	7 1/16	1

UL Rated flame retardant 94V-1

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