

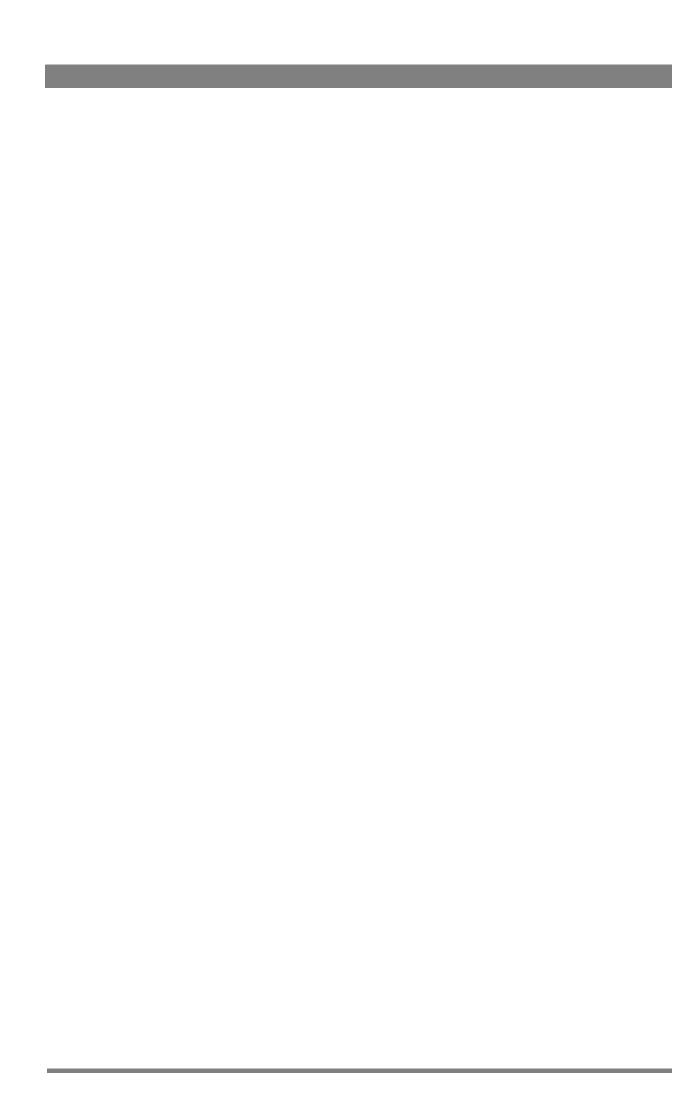
# Maintenance Manual

13-00057-000 February 2019 v1.0



HDX-Plus, Power Plus 2 & SHED

Power Solutions for Broadcast Cameras



#### **Declaration of Conformity**

We, Grass Valley Nederland B.V., Bergschot 69, 4817 PA Breda, The Netherlands, declare under our sole responsibility that these products are in compliance with the following standards:

- EN62368-1:2014 + AC:2015 Safety
- EN55032:2012 + C2:2013 EMC (Emission)
- EN55103-2:2009 EMC (Immunity)

following the provisions of:

- a. the Low Voltage directive 2014/35/EU
- b. the EMC directive 2014/30/EU
- c. the RoHS directive 2011/65/EU

#### FCC CLASS A Statement

This product generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause interference to radio communications.

It has been tested and found to comply with the limits for a CLASS A digital device pursuant to part 15 of the FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

Operation of this product in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

#### Copyright

Copyright Grass Valley Canada 2019. Copying of this document and giving it to others, and the use or communication of the contents thereof, are forbidden without express authority. Offenders are liable to the payment of damages. All rights are reserved in the event of the grant of a patent or the registration of a utility model or design. Liable to technical alterations in the course of further development.

#### **Trademarks**

Grass Valley, LDX Series and derivatives are trademarks or registered trademarks of Grass Valley Canada. Belden Inc., Grass Valley Canada and other parties may also have trademark rights in other terms used herein.

# Recycling

Visit www.grassvalley.com for recycling information.

## Packing for return

If a unit is being returned to Grass Valley for servicing, try to use the containers and materials of the original packaging. Attach a tag indicating the type of service required, return address, model number, full serial number and the return number which will be supplied by your Grass Valley service centre. If the original packing is not available or can no longer be used contact your regional Grass Valley service representative to have a return package provided.

# Important information

This information is intended as a guide for trained and qualified personnel who are aware of the dangers involved in handling potentially hazardous electrical / electronic equipment. It is not intended to contain a complete list of all safety precautions which should be observed by personnel in using this or other electronic equipment.

The installation, maintenance and service of this equipment involves risks both to personnel and equipment and must be preformed only by qualified personnel exercising due care.

Personnel engaged in the installation, operation, maintenance or servicing of this equipment are urged to become familiar with First Aid theory and practises.

During installation and operation of this equipment, local building safety and fire protection standards must be observed.

Whenever it is likely that safe operation is impaired, the apparatus must be made inoperative and secured against any unintended operation. The appropriate servicing authority must then be informed. For example, safety is likely to be impaired if the apparatus fails to perform intended function or shows visible damage.

#### Warnings and Cautions

When preforming service, be sure to read and comply with the warning and caution notices appearing in the manuals. Warnings indicate danger that requires correct procedures or practices to prevent death or injury to personnel. Cautions indicate procedures or practices that should be followed to prevent damage or destruction to equipment to property.

#### Warnings

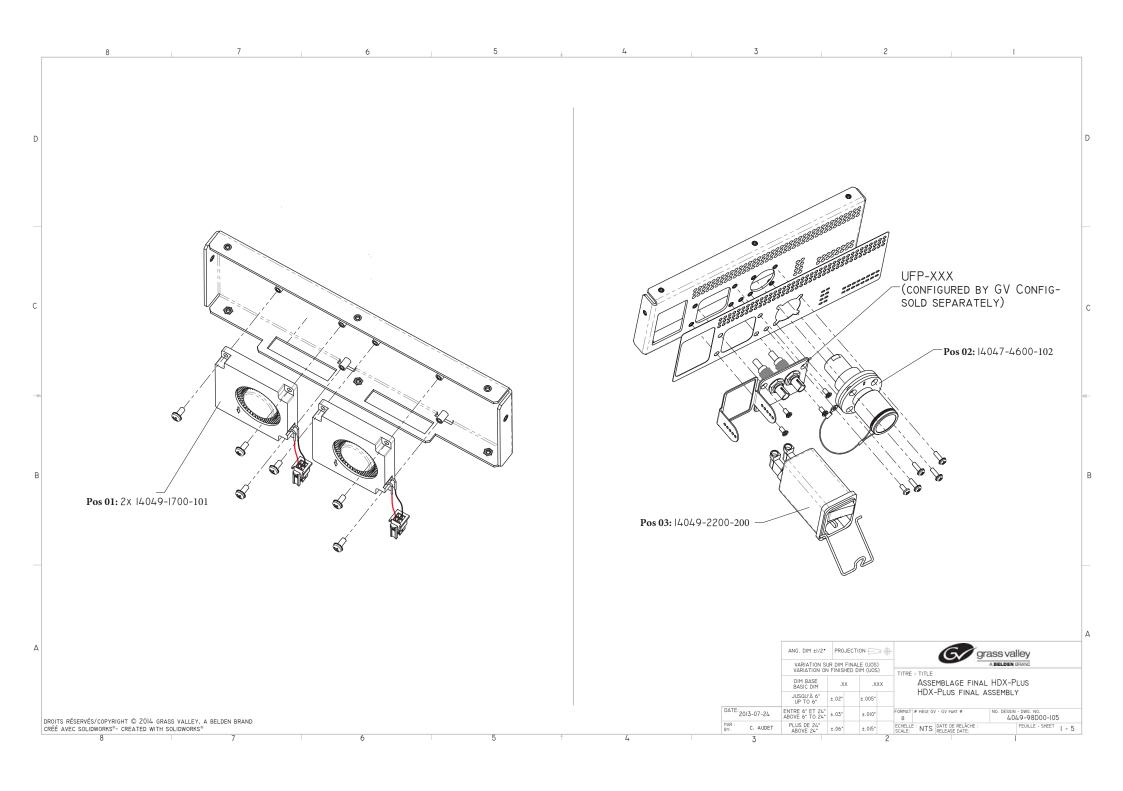
- THE CURRENTS AND VOLTAGES PRESENT IN THIS EQUIPMENT ARE DANGEROUS.
   ALL PERSONNEL MUST AT ALL TIMES FOLLOW THE SAFETY REGULATIONS.
- ALWAYS DISCONNECT POWER BEFORE REMOVING COVERS OR PANELS.
- ALWAYS DISCHARGE HIGH VOLTAGE POINTS BEFORE SERVICING.
- NEVER MAKE INTERNAL ADJUSTMENTS, PERFORM MAINTENANCE OR SERVICE WHEN ALONE OR WHEN FATIGUED.
- IN CASE OF AN EMERGENCY ENSURE THAT THE POWER IS DISCONNECTED.
- ANY INTERRUPTION OF THE PROTECTION CONDUCTOR INSIDE OR OUTSIDE THE APPARATUS, OR DISCONNECTION OF THE PROTECTIVE EARTH TERMINAL, IS LIKELY TO MAKE THE APPARATUS DANGEROUS. INTENTIONAL INTERRUPTION IS PROHIBITED.

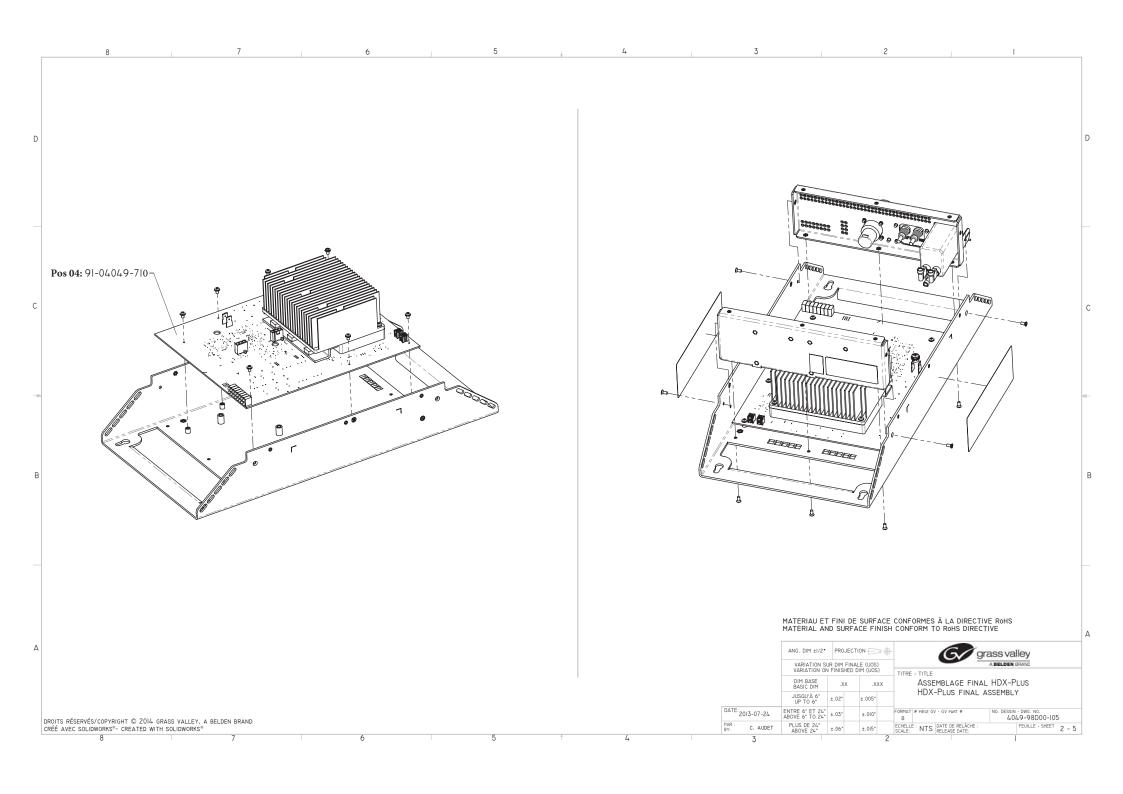
#### Cautions

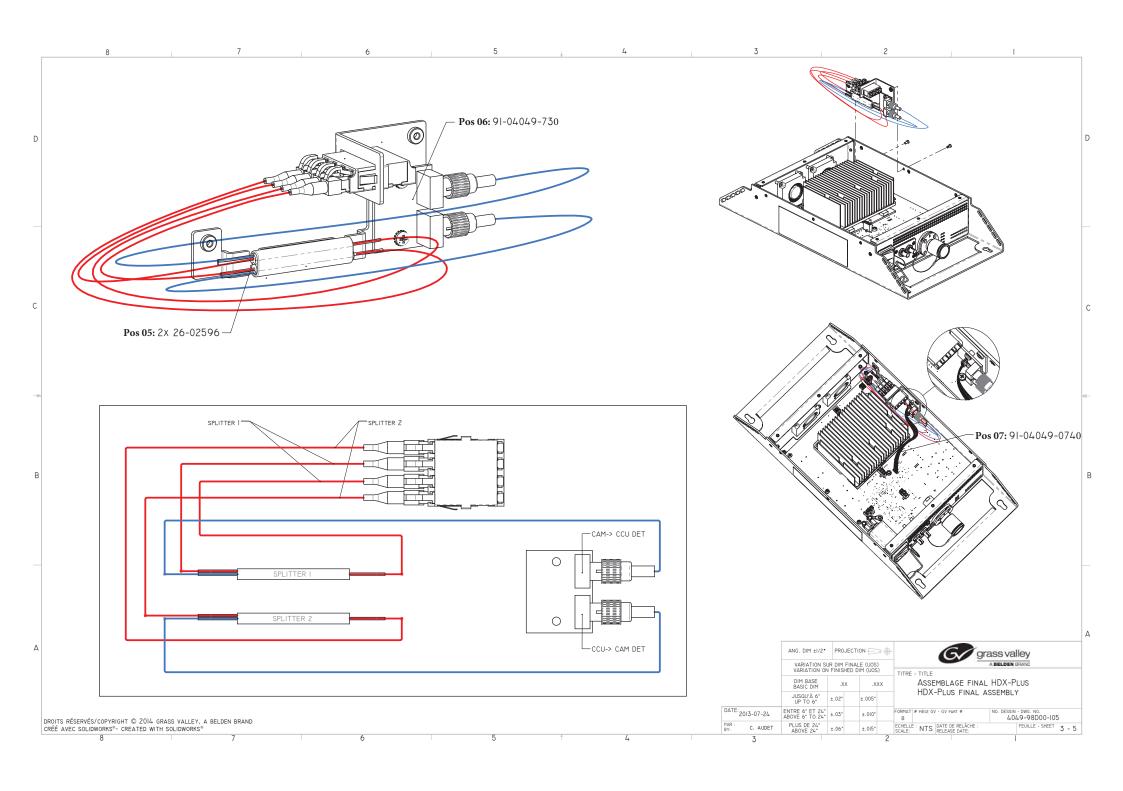
To prevent risk of overheating, ventilate the product correctly.

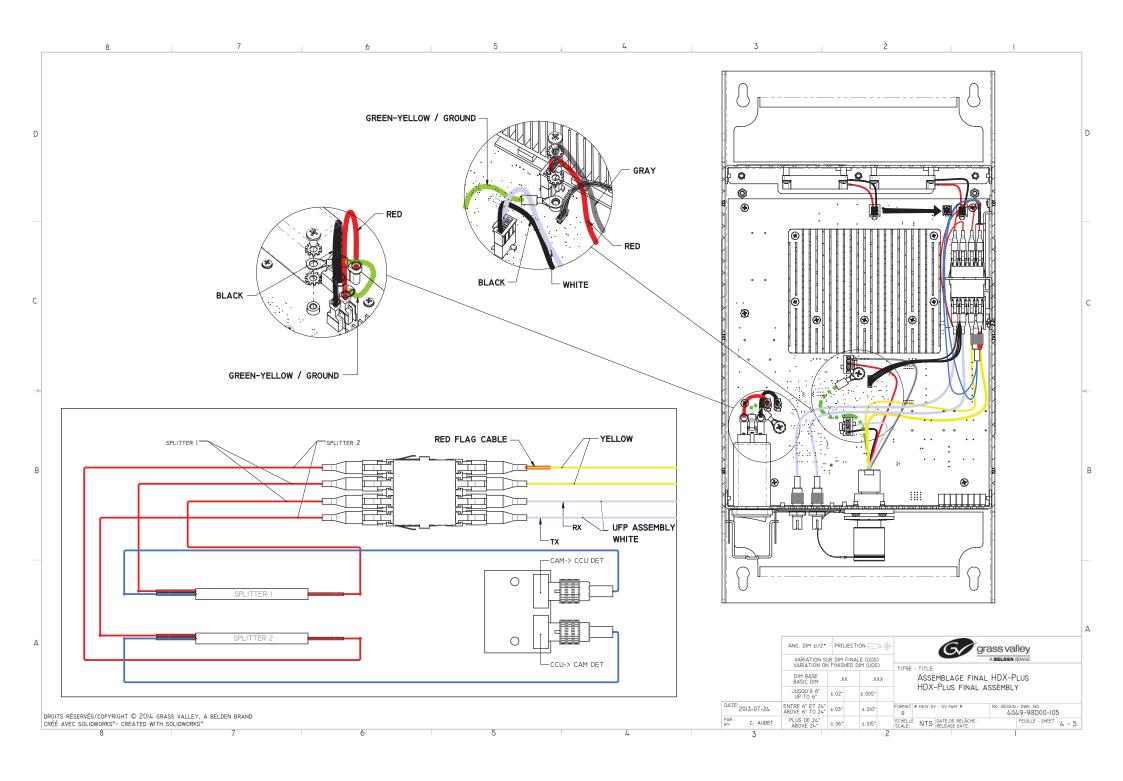
#### HDX,PLUS,with LEMO, for PP2, LDX, Focus and Sony Cameras

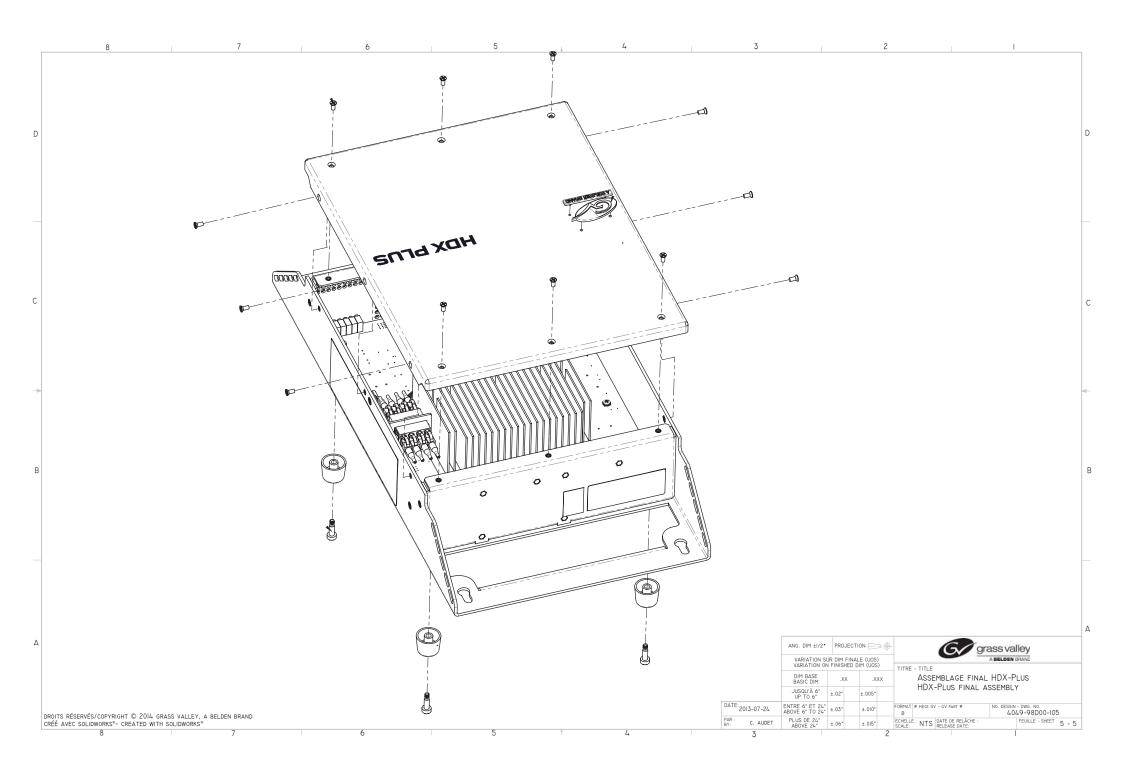
Pos	Part Number	Description
01	14049-1700-101	HDX Plus BLOWER Cable Assembly
02	14047-4600-102	CABLE ASSY LEMO RECEPTACLE TO 3 POS MOLEX
03	14049-2200-200	POWER MODULE WIRE ASSY
04	91-04049-710	PCBA, HDX Plus,
05	26-02596	Coupler, Dual Window, 1x2, 10/90, 900um, ST/UPC connector on 10%, LC/UPC on common and 90% ports.
06	91-04049-730	PCBA, HDX Plus, Photodiode interface
07	91-04049-740	ASSY EL/ME, HDX+ Photodiode Signal Cable, 6 pos





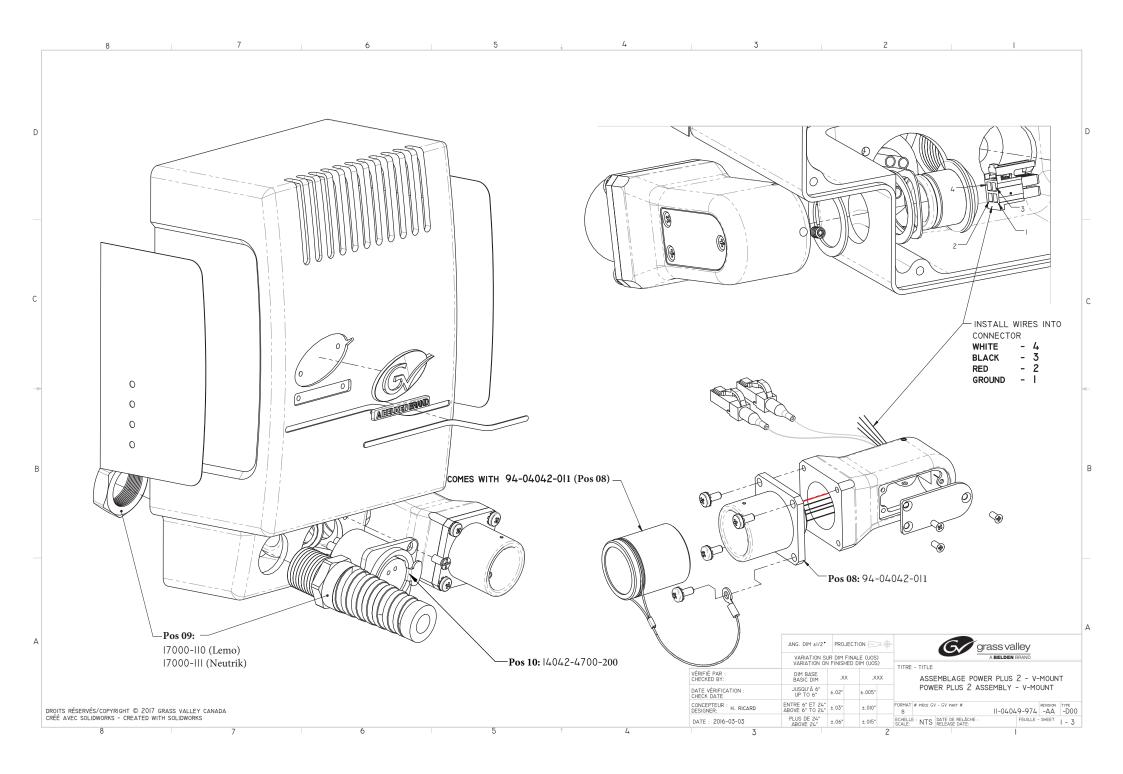


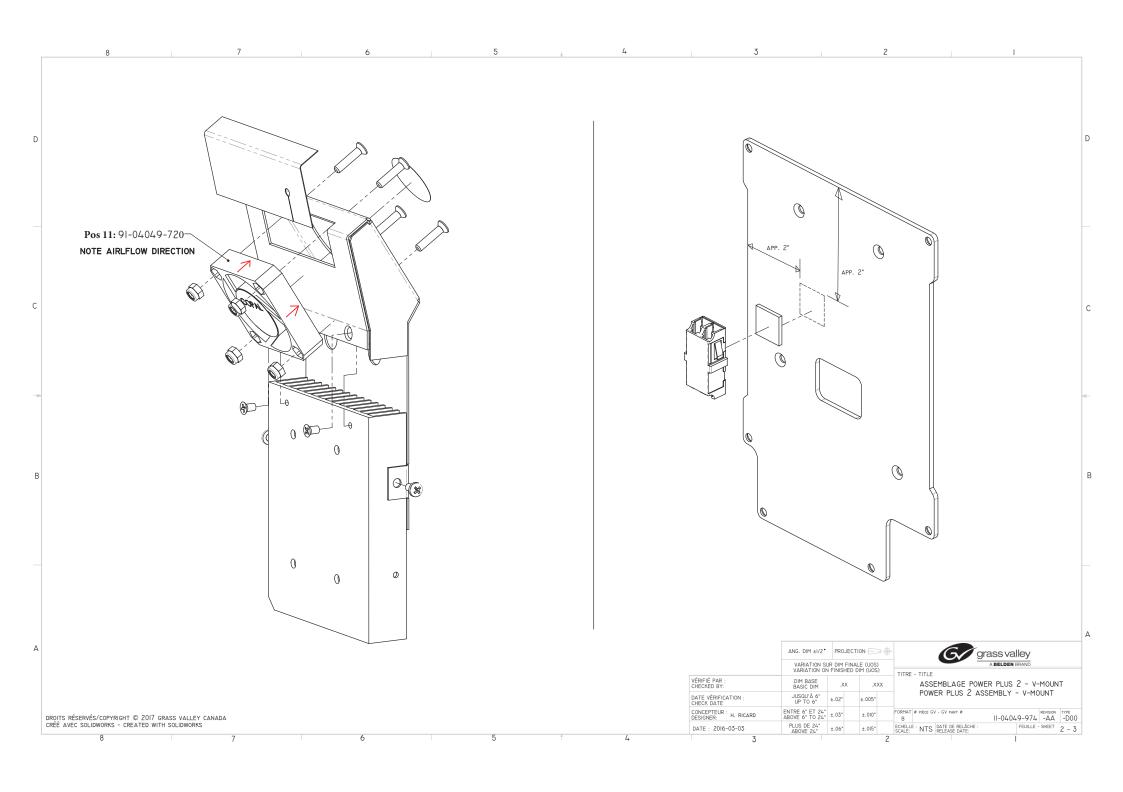


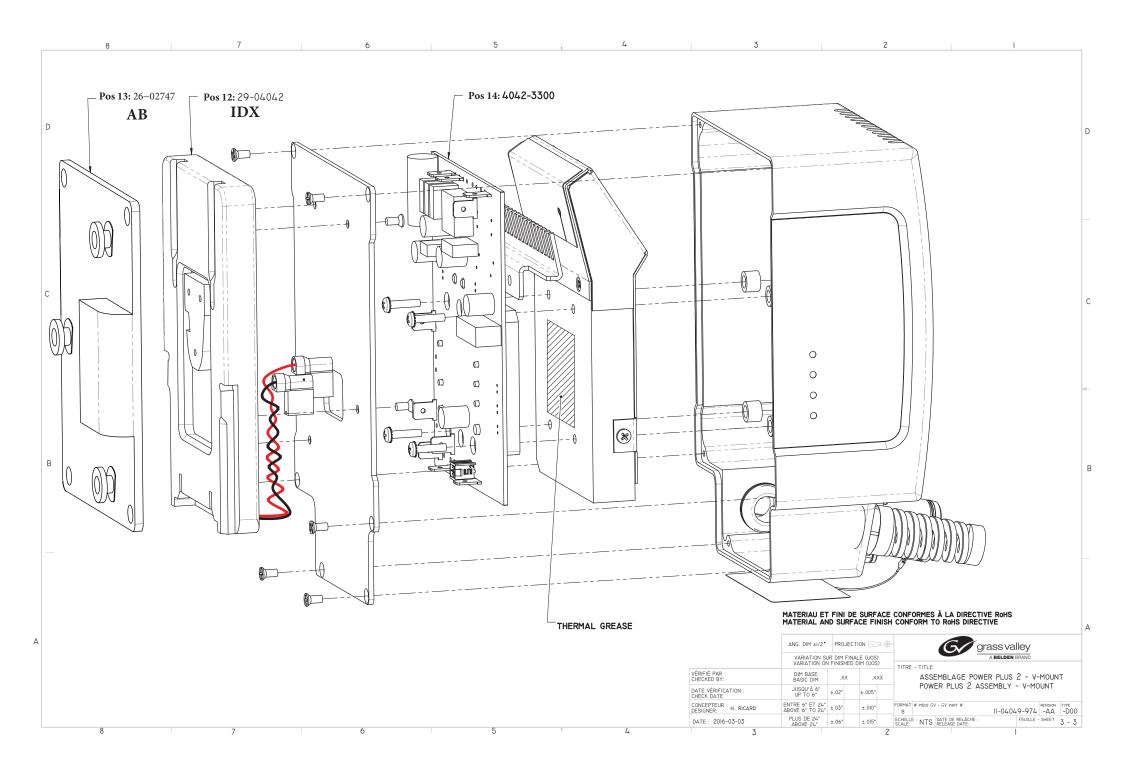


PWRPL2-304-V/AB Power Plus 2 camera power adapter: SMPTE 304M dongle & SMPTE 304M receptacle on swivel, 17VDC IDX V or Anton/Bauer mount.

Pos	Part Number	Description
08	94-04042-011	MECH, ASSY, LEMO, CONNECTOR, SMPTE, LC, CLIP
09	17000-110	CABLE,LEMO,MALE,CONNECTOR,304,
09	17000-111	CABLE, NEUTRIK, CONNECTOR, PLUG,
10	14042-4700-200	Cable Assy, PowerPlus2, XLR4 CABLE, Aux Output Power
11	91-04049-720	ASSY EL/ME, PowerPlus 2, Fan
12	29-04042	NBV,V-MOUNT PLATE,W/DIGITAL,PINS
13	26-02747	BATTERY,PACK,MILLED,A/B
14	04042-3300	POWER PLUS 2 BOARD



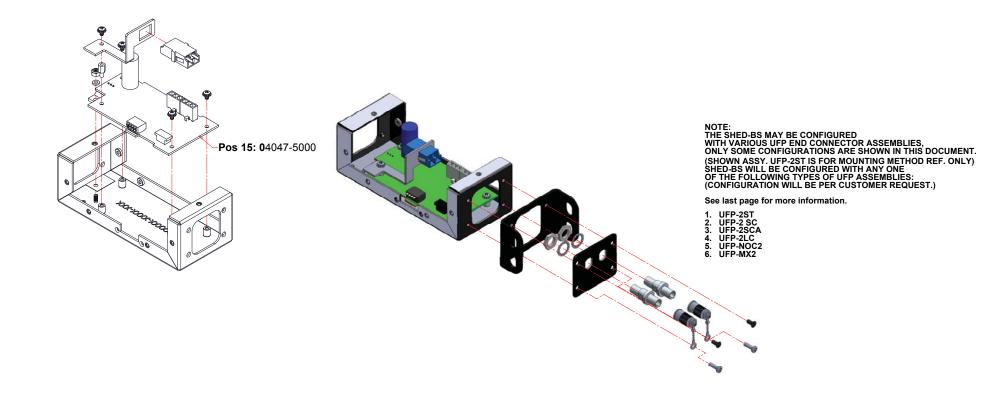




### SHED-BS - Universal SMPTE Hybrid Elimination Device CCU Side

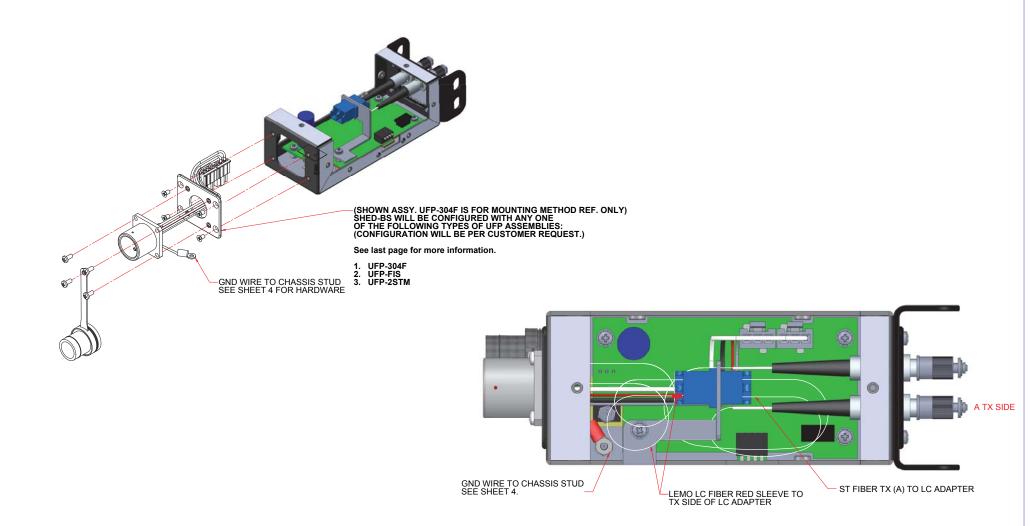
Pos	Part Number	Description
15	04047-5000	PCBA SHED-BS UNIVERSAL WITH DIP SWITCH

THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN MAY NOT BE COPIED, USED OR DISCLOSED IN WHOLE OR IN PART EXCEPT WITH THE PRIOR WRITTEN PERMISSION OF TES. OR, IF THIS BOOLIMENT HAS BEEN REPRODUCED UNDER A CONTRACT, IT SE SUPPLIED WITH ANOTHER PARTY AS EXPRESSLY AUTHORIZED UNDER THAT CONTRACT, IT SE SUPPLIED WITHOUT LIBBILITY OR BERRORS OR OMISSIONS.



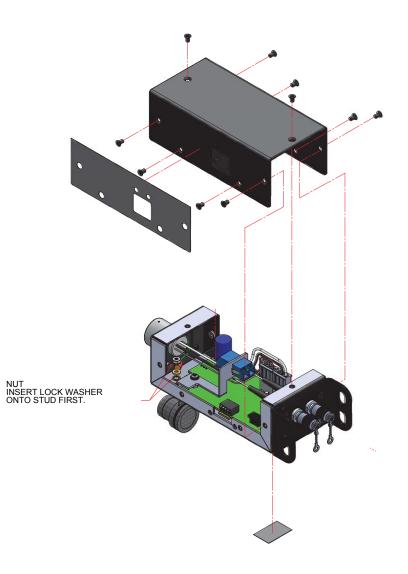
ALL MATERIALS, HARDWARE, FINISH.	UNLESS OTHERWISE SPECIFIED MACHINED HOLE TOLERANCES	CONTR. NO.	G grass valley		
PAINT ETC. MUST BÉ	.001 TO .040 ±.001	DRN			
ROHS COMPLIANT.	.041 TO .125 ±.0015 .126 TO .250 +.002	CHK	TITLE		
MATERIAL	.251 TO .500 ±.0025 .501 TO .750 ±.0035	ENGR	SHED -BS		
MATERIAL	MACH, FINSH 63 OR BETTER REMOVE ALL BURRS AND BREAK SHARP EDGES .003 MAX ALL THREADS (EXTERNAL & INTERNAL)	ENGR	1		
		MFG			
FINISH		QA	DOC. NO. 4047-97D00-201		
	SHALL BE CLASS II UNIFIED THREAD FORM AS DEFINED IN H28 SCREW	APPROVED	PART NO. SHED-BS		
DIMENSIONS ARE IN INCHES TOL.XX ±.015 .XXX ±.005	THREAD STANDARDS FOR FED. SERVICES			SIZE	
ANGLE ±1*	DO NOT SCALE DRAWING		SCALE: 1:1	SHEET 2 OF 4 D	

THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN MAY NOT BE COPIED, USED OR DISCLOSED IN WHOLE OR IN PART EXCEPT WITH THE PRIOR WRITTEN PREMISSION OF TES. OR, IF THIS BOOLIMENT HAS BEEN REPRODUCED LIMDER A CONTRACT, IT SE SUPPLIED WITHOUT JUBILITY FOR ERRORS OR OR MISSIONS.



ALL MATERIALS, HARDWARE, FINISH.	UNLESS OTHERWISE SPECIFIED MACHINED HOLE TOLERANCES	CONTR	l. NO.		6	grass valley	
PAINT ETC. MUST BÉ	JST BE 001 TO 040 + 001	DRN				A BELDEN (MAN)	
ROHS COMPLIANT.	.041 TO .125 ±.0015 .126 TO .250 +.002	CHK		TITLE			
MATERIAL	.251 TO .500 ±.0025				SHED-BS		
MATERIAL	.501 TO .750 ±.0035	ENGR					
	REMOVE ALL BURRS AND BREAK SHARP EDGES .003 MAX	MFG					
FINISH	SHARP EDGES .003 MAX  ALL THREADS (EXTERNAL & INTERNAL)	QA		DOC. NO.			
	SHALL BE CLASS II UNIFIED THREAD FORM AS DEFINED IN HOR SCREW	APPRO	VED	PART NO.	SHED-BS		
DIMENSIONS ARE IN INCHES TOL .XX ±.015 .XXX ±.005 ANGLE ±1*	XX ±.015 .XXX ±.005				ALE: 1:1	SHEET 3 OF 4	D

THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN MAY NOT BE COPIED, USED OR DISCLOSED IN WHOLE OR IN PART EXCEPT WITH THE PRIOR WRITTEN PERMISSION OF TF.S. OR, IF THIS DOCUMENT HAS BEEN REPROJUCED UNDER THAT CONTRACT WITH ANDTHER PARTY AS EXPRESSLY AUTHORIZED UNDER THAT CONTRACT, IT IS SUPPLIED WITHOUT LIBBILITY FOR ERRORS OR OMISSIONS.

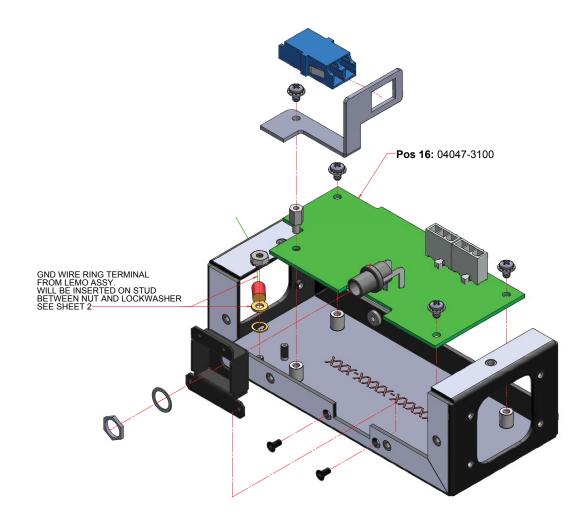


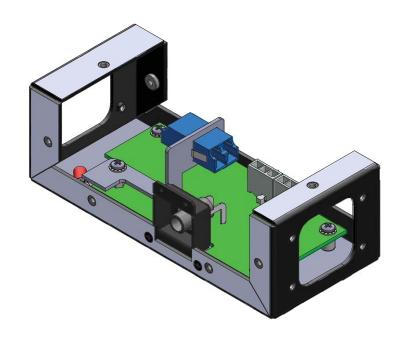
	I							
ALL MATERIALS, HARDWARE, FINISH.	UNLESS OTHERWISE SPECIFIED MACHINED HOLE TOLERANCES	CONTR. NO.			67		grass valley	
PAINT ETC. MUST BÉ	.001 TO .040 ±.001	DRN	JCURINI	10/09/14			V BETOEN SHAVE	
ROHS COMPLIANT.	.041 TO .125 ±.0015 .126 TO .250 +.002	CHK			TITLE			
MATERIAL	.251 TO .500 ±.0025 .501 TO .750 ±.0035	ENGR	JCURINI	10/09/14		SHED-BS		
MONI ENOVE	MACH, FINISH 63 OR BETTER	ENGR						
FINISH	REMOVE ALL BURRS AND BREAK SHARP EDGES .003 MAX	MFG						
FINISH	ALL THREADS (EXTERNAL & INTERNAL)	QA			DOC. NO.	4047-97D00-201		
DIMENSIONS ARE IN INCHES	SHALL BE CLASS II UNIFIED THREAD FORM AS DEFINED IN H28 SCREW	APPROVED		PART NO.	SHED-BS			
TOL .XX ±.015 .XXX ±.005	THREAD STANDARDS FOR FED. SERVICES DO NOT SCALE DRAWING				sc	ALE: 1:1	SHEET 4 OF 4	SIZE

## SHED-C - Universal SMPTE Hybrid Elimination Device Camera Side

Pos	Part Number	Description
15	04047-3100	PCBA SHED-C 10V REGULATOR BOARD

THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN MAY NOT BE COPIED, USED OR DISCLOSED IN WHOLE OR IN PART EXCEPT WITH THE PRIDR WIRTTEN PERMISSION OF T.F.S. OR, IF THIS DOCUMENT HAS BEEN REPRODUCED UNDER A CONTRACT WITH ANOTHER PARTY AS EXPRESSLY AUTHORIZED UNDER THAT CONTRACT SUTH ANOTHER PARTY AS EXPRESSLY AUTHORIZED UNDER THAT CONTRACT, IN SUPPLIED WINTOUT LIBBILITY OF REPRORS OR MISSIONS.





ALL MATERIALS, HARDWARE, FINISH.	UNLESS OTHERWISE SPECIFIED MACHINED HOLE TOLERANCES	CONTR	. NO.			<b>6</b> / gr	ass valley	
PAINT ETC. MUST BÉ	.001 TO .040 ±.001	DRN	JCURINI	10/09/14			A BELDEN FRANCI	
ROHS COMPLIANT.	.041 TO .125 ±.0015 .126 TO .250 +.002	CHK			TITLE			
MATERIAL	.251 TO .500 ±.0025 .501 TO .750 ±.0035	ENGR	JCURINI	10/09/14		SHED-C		
MATERIAL	MACH FINISHES OR RETTER	ENGR			1			
	REMOVE ALL BURRS AND BREAK SHARP EDGES .003 MAX	MFG						
FINISH	ALL THREADS (EXTERNAL & INTERNAL)	QA			DOC. NO.	4047-96D0	0-103	
	SHALL BE CLASS II UNIFIED THREAD ' FORM AS DEFINED IN H28 SCREW	APPRO	VED		PART NO.	SHED-C		
DIMENSIONS ARE IN INCHES TOL .XX ±.015 .XXX ±.005	THREAD STANDARDS FOR FED. SERVICES						SIZE	
ANGLE ±1*	DO NOT SCALE DRAWING				SC	ALE: 1:1	SHEET 1 OF 4	D

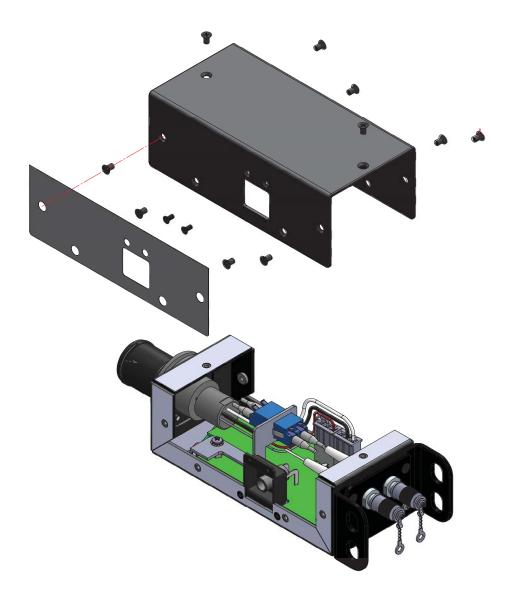
THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN MAY NOT BE COPIED USED OR DISCLOSED IN WHOLE OR IN PART EXCEPT WITH THE PRIOR WIGHTEN PREMISSION OF TE, S. OR, IF THIS DOCUMENT HAS BEEN REPRODUCED UNDER A CONTRACT, IT IS SUPPLIED WITHOUT JUBILITY OF REPRORS OR OMNESSIONS. UFP-XXX (SHOWN ASSY. UFP-304M IS FOR MOUNTING METHOD REF. ONLY)
SHED-C- MAY BE CONFIGURED WITH ANY ONE
OF THE FOLLOWING TYPES OF UFP ASSEMBLIES:
(CONFIGURATION WILL BE PER CUSTOMER REQUEST.) See last page for more information. 1. UFP-304M 2. UFP-FISM 3. UFP-2STM -FIBER WITH ST CONNECTORS IS NOT SHOWN IN THIS VIEW SEE SHEET 3 (2) 0 **(2) ②** 0 -TO CHASSIS GROUND STUD-ALL MATERIALS, HARDWARE, FINISH, PAINT ETC. MUST BE ROHS COMPLIANT. G grass valley UNLESS OTHERWISE SPECIFIED MACHINED HOLE TOLERANCES CONTR. NO. .001 TO .040 .041 TO .125 .126 TO .250 .251 TO .500 .501 TO .750 SHED-C DOC. NO. 4047-96D00-103 ALL THREADS (EXTERNAL & INTERNAL)
SHALL BE CLASS II UNIFIED THREAD
FORM AS DEFINED IN 128 SCREW
THREAD STANDARDS FOR FED. SERVICES
DO NOT SCALE DRAWING PART NO. SHED-C

SCALE: 1:1

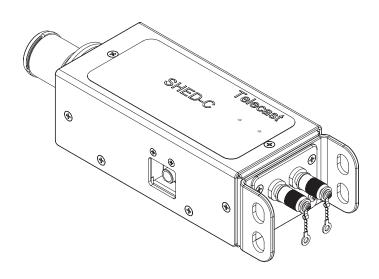
SHEET 2 OF 4 D

THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN MAY NOT BE COPIED USED OR DISCLOSED IN WHOLE OR IN PART EXCEPT WITH THE PRIOR WIGHTEN PRIMISSION OF TE, S. OR, IF THIS DOCUMENT HAS BEEN REPRODUCED UNDER A CONTRACT WITH MOTHER PARTY AS EXPRESSLY AUTHORIZED UNDER THAT CONTRACT, IT IS SUPPLIED WITHOUT LIBBILITY FOR REPRORS OR OMNEY. FIBER WITH LC CONNECTORS IS NOT SHOWN IN THIS VIEW. NOTE: UFP-XXX (SHOWN ASSY. UFP-2ST IS FOR MOUNTING METHOD REF. ONLY) SHED-C-XXX MAY BE CONFIGURED WITH ANY ONE OF THE FOLLOWING TYPES OF UFP ASSEMBLIES: (CONFIGURATION WILL BE PER CUSTOMER REQUEST.) See last page for more information. 1. UFP-2ST 2. UFP-2 SC 3. UFP-2SCA 4. UFP-2LC 5. UFP-NOC2 6. UFP-MX2 -UFP-2ST SEE NOTE NOTE: THE SHED-C MAY BE CONFIGURED WITH VARIOUS END CONNECTORS, ONLY SOME CONFIGURATIONS ARE SHOWN IN THIS DOCUMENT. LEMO FIBER TO RX -ST FIBER TO RX (B) **(4)** TX SIDE (A) **(** 4 ALL MATERIALS, HARDWARE, FINISH, PAINT ETC. MUST BE ROHS COMPLIANT. UNLESS OTHERWISE SPECIFIED MACHINED HOLE TOLERANCES CONTR NO G grass valley .001 TO .040 .041 TO .125 .126 TO .250 .251 TO .500 .501 TO .750 SHED-C LEMO FIBER RED SLEEVE TO TX DOC. NO. 4047-96D00-103 ST FIBER TO TX (A) PART NO. SHED-C SHEET 3 OF 4 D DO NOT SCALE DRAWING

THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN MAY NOT BE COPIED USED OR DISCLOSED IN MYOLE OR IN PART EXCEPT WITH THE PRIOR WORTEN PERMISSION OF T.F.S. OR, IF THIS DOCUMENT HAS SEEN REPRODUCED UNDER A CONTRACT WITH ANOTHER PARTY AS EXPRESS! Y AUTHORIZED UNDER THAT CONTRACT WITH ANOTHER PARTY AS EXPRESS! Y AUTHORIZED UNDER THAT CONTRACT, IS SUPPLIED WITHOUT LIMBUILTY FOR ERRORS OR OMNEY.







ALL MATERIALS, HARDWARE, FINISH.	UNLESS OTHERWISE SPECIFIED MACHINED HOLE TOLERANCES	CONTR. NO.			G grass valley			
PAINT ETC. MUST BÉ	.001 TO .040 ±.001	DRN	JCURINI	10/09/14			A BELDEN (PVND)	
ROHS COMPLIANT.	.041 TO .125 ±.0015 .126 TO .250 ±.002	CHK			TITLE			
	.251 TO .500 ±.0025 .501 TO .750 ±.0035	ENGR	JCURINI	10/09/14	SHED-C			
MATERIAL	MACH, FINISH 63 OR BETTER	ENGR			1			
	REMOVE ALL BURRS AND BREAK SHARP EDGES .003 MAX ALL THREADS (EXTERNAL & INTERNAL) SHALL BE CLASS ILLINGTED THREAD	MFG						
FINISH		QA			DOC. NO.	4047-96D0	0-103	
		APPROVED		PART NO.	SHED-C			
DIMENSIONS ARE IN INCHES TOL.XX ±.015 .XXX ±.005	THREAD STANDARDS FOR FED. SERVICES						SIZE	
INGLE ±1* DO NOT SCALE DRAWING					SCA	ALE: 1:1	SHEET 4 OF 4	D

## **UFP** Universal Fiber Plate

Pos	Part Number	Description
01	UFP-2STSM	Universal Fiber Plate with 2 STs both SingleMode
02	UFP-2SC	2 SC fiber, ultra polished
03	UFP-2SCA	2 SC fiber, angle polished
04	UFP-2LC	Dual LC connector
05	UFP-NOC2	Neutrik OpticalCon Duo 2 Fibers
06	UFP-MX2	MX dual fiber
07	UFP-304F	Universal fiber panel - SMPTE 304 FEMALE
08	UFP-304M	Universal fiber panel - SMPTE 304 MALE
09	UFP-2STM	Universal fiber panel - 2 ST with 5pin Molex connectors
10	UFP-FISM	Universal fiber panel - FISCHER MALE HYBRID
11	UFP-FIS	Universal fiber panel - FISHER FEMALE HYBRID

