

TEN-TEC Hercules II /Power Supply (Model 420 and 9420) Powerpole Modification

Prepared by Rick Williams, VE7TK

(Note: Those undertaking this modification do so at their own risk. The procedure outlined changes the 12-pin Molex connector to an 8-pin Powerpole connector and 4-pin microphone connector. This procedure has not been approved by TEN-TEC, Inc. or any of its staff.)

Under no circumstances will the author be liable for any damage to your amateur radio equipment resulting from the installation of this modification.

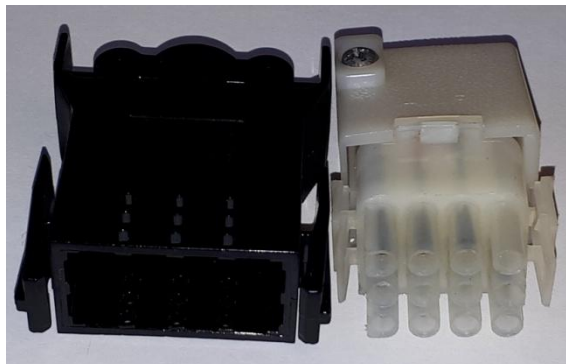
Purpose

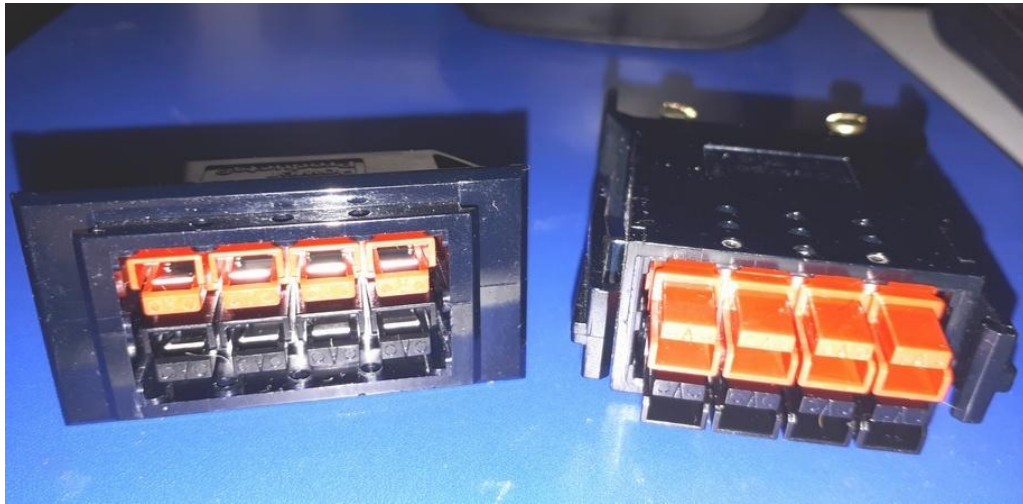
I recently had a failure of my TEN-TEC Hercules II amplifier and 9420 power supply combination. After some trouble shooting I determined that both the amplifier AND power supply were working perfectly. The problem was the interconnection between them.

The “factory” power plug is a 12-conductor Molex connector. It is arranged in 4 columns by 3 rows. The top 2 rows handle the 14 VDC to the 4 amplifiers in the Hercules II. The bottom row use only 3 of the 4 positions and handles the amplifier ON/OFF function. The individual Molex connectors are *optimistically* rated at 17 amps each.

Modification

As a replacement I chose the Powerpole Pak 1460G3 in-line plug and 1470G3 receptacle (see pages 5 and 6). These are a 2 row by 4 column housings. I used Powerpole 30 amp contacts. Below is a picture of the 8-pin Powerpole housing and the 12-pin Molex in-line housings.





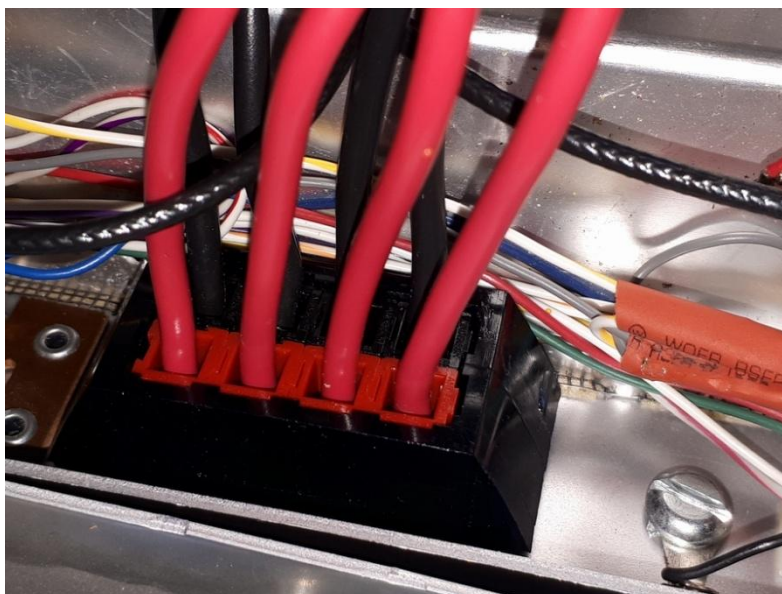
To handle the 3 additional, low current, connections required I used a 4-pin microphone connector.

Fitting the Powerpole panel mounted receptacle required some careful use of a nibbling tool. The vertical dimension was already close. Horizontally required some widening of the opening and I chose to extend the opening towards the keying loop RCA connector strip.

I moved the ground lug connection to the other side of the Powerpole connector, adjacent to the existing Remote Control connector. I enlarged the vacated GND connection to locate 4-pin mic jack. This location was less “cluttered” internally and provided easier access to the microphone connector wiring.



Since I was already replacing the wiring from the DC power connector to the 4 amplifiers, I decided to also replace the high current jumpers from the power distribution board to the amplifiers. (In all cases I used #12 stranded wire for the high-current interconnections.)



This is a view of the internal side of the Powerpole panel mount with the base of the amplifier removed. The wires on the right with red heat shrink are the splices needed to extend 2 of the 3 low voltage control lines to the 4-pin mic connector.

Final Result

Externally the interconnection was quite clean and functional.





The pins on the 2 connectors are numbered using the same convention as the original TEN-TEC cable/connector interface.

Summary

The Powerpole connectors were all crimped and soldered before inserting them into their housings. The 30 amp contacts, I feel, are substantially more robust than the Molex pins. Also, the panel to cable connection locks in place easily AND positively. This is a relatively simple modification BUT, in my shack, one that I think was long overdue!

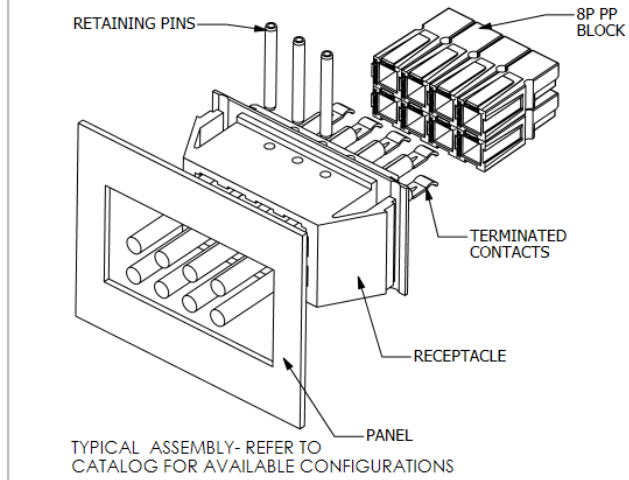
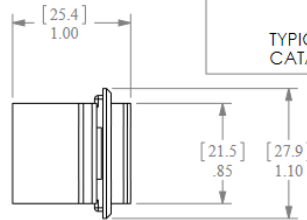
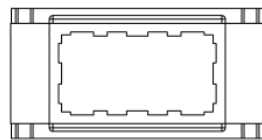
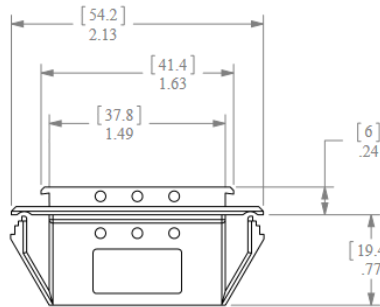
Full specifications of the Powerpole chassis mount receptacle and in-line plug are attached below.

73, Rick
VE7TK

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

Copyright 1999

ANDERSON POWER PRODUCTS RESERVES THE RIGHT TO ALTER PRODUCT TYPES, THEIR TECHNICAL DATA, DIMENSION, STYLE AND ACCESSORIES WITHOUT PRIOR NOTIFICATION.



NOTES:

- DESIGNED FOR PANELS .003-.134" (.76-3.4mm) THICK
- KNOCKOUT SIZE 1.00 X 1.88 (25.4 X 47.8)

DIMENSIONS ARE IN: INCH [MM]		APPROVALS		ANDERSON POWER PRODUCTS
UNLESS OTHERWISE STATED		DRAWN	CMS 8/20/1999	
TOLERANCES:		CHECKED	DJD 8/20/1999	TITLE
DECIMALS (INCH)	DECIMALS (MM)	ANGLES	MFG APPRV	CATALOG NUMBER 1470G3 2X4 POWERPOLE PAK SNAP-IN RECEPTACLE
.XX ± .015	.X ± .38	± .5°	CHB 8/23/1999	
.XXX ± .005	.XX ± .13		RO 8/23/1999	
SURFACE FINISH:		ENG APPRV	UFN 8/21/1999	SIZE
MACHINED	128µin (3.2µ)			A
MOLDED	64µin (1.6µ)			DWG NO.
MATERIAL: POLYCARBONATE				114167S3
FINISH: NONE				REV.
				1
				SCALE
				1:1
				CADFILE
				01096
				SHEET
				1 OF 1

1	ECRN-15527	TWE	12/5/2013
REV.	DESCRIPTION	APPRV	DATE
REVISIONS			

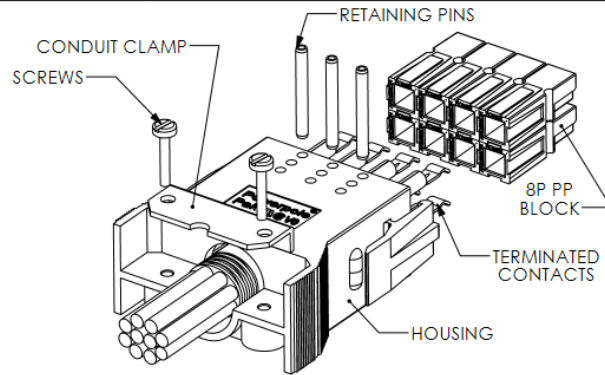
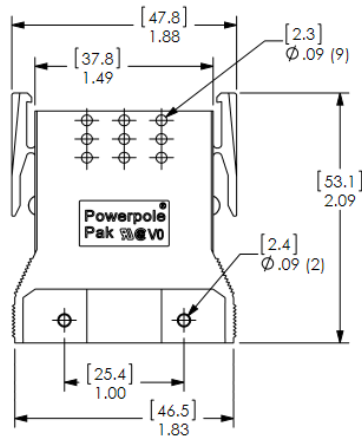
8 7 6 5 4 3 2 1

<https://www.andersonpower.com/content/dam/app/e-commerce/product-pdfs/PP-Pak/114167s3.pdf>

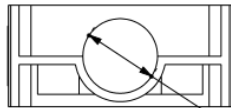
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ANDERSON POWER PRODUCTS. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF ANDERSON POWER PRODUCTS IS PROHIBITED.

Copyright 1999

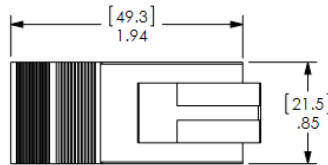
ANDERSON POWER PRODUCTS RESERVES THE RIGHT TO ALTER PRODUCT TYPES, THEIR TECHNICAL DATA, DIMENSION, STYLE AND ACCESSORIES WITHOUT PRIOR NOTIFICATION.



TYPICAL ASSEMBLY- REFER TO CATALOG FOR AVAILABLE CONFIGURATIONS



[15.9]
Ø.63



DIMENSIONS ARE IN:		INCH [MM]		APPROVALS		ANDERSON POWER PRODUCTS	
UNLESS OTHERWISE STATED				DRAWN	CMS	8/2/1999	TITLE CATALOG NUMBER 1460G3 2X4 POWERPOLE PAK HOUSING PLUG WITH LATCH
TOLERANCES:				CHECKED	DJD	8/3/1999	
DECIMALS (INCH)	DECIMALS (MM)	ANGLES		MFG APPRV	CHB	8/3/1999	
.XX ± .02	.X ± .5	± 2°		QC APPRV	RO	9/9/1999	
SURFACE FINISH:				ENG APPRV	UFN	8/3/1999	SIZE A
MACHINED 128µin (3.2µ)							DWG NO. 114165S3
MOLDED 64µin (1.6µ)							REV. 2
MATERIAL: POLYCARBONATE				-CAD GENERATED DRAWING- DO NOT MANUALLY UPDATE DO NOT SCALE		SCALE NONE	CADFILE 01090
FINISH: NONE							SHEET 1 OF 1

REV.	DESCRIPTION	APPRV	DATE
2	ECRN-15720 UPDATE DRAWING	TWE	9/23/2014
1	ECRN-13769 Ø.09 WAS Ø.08	DJD	12/16/04
REVISIONS			

<https://www.andersonpower.com/content/dam/app/ecommerce/product-pdfs/PP-Pak/114165s3.pdf>