THPR EVOLUTION

Longer Range | Higher Data Rates | Lowest SWaP

The THPR1076 Triad High Power Radio (THPR), contains a DTC SOL8SDR-C-132043 radio at its core and combines with our high-power RF subsystems in a low SWaP package. This 2 channel, L-Band amplified radio integrates the necessary DTC radio with Triad's RF amplification, control circuitry, and interfaces to achieve higher RF output power, greater throughput, and longer link distances than the stand-alone radio.

Offering +16 to +32 VDC Input Voltage, this THPR contains BDAs, RF filtering, and innovative SoC-based monitoring and controls, with real-time power measurement and link diagnostics.

THPR1076

TABLE OF CONTENTS

THPR1085 SPECIFIC FEATURES

- 1140 - 1450 MHz L-Band Coverage
- 40W (20W per channel) amplified Tx power
- Integrated DTC SOL8SDR-C-132043 MIMO Radio
- Compatible with other DTC radios and networks
- Optional cooling fans

THPR SERIES FEATURES

- Fully Integrated High-Power RF Sub-System & Radio
- Extended Range/Data Rate over Stand-Alone Radio
- Easy installation into vehicles, aircraft, and unmanned systems
- Enhanced RF Link Control via USB
- Wide Vin, Single DC Supply

THPR SERIES APPLICATIONS

- Long Distance High Data Rate ISR Links
- UAS, UGV and USV Video/Data Links
- Military MANET
- Maritime High-Throughput LOS/NLOS Systems
- Point-To-Point and Mesh Networking

ADDITIONAL FEATURES

Internal Microcontroller

This THPR is equipped with SoC-based microcontroller, allowing for enhanced control and monitoring features accessible via USB, including:

- Independent RF power control per stream
- Transmit and Reflected Power Measurements and Alarms
- Temperature Monitoring and Protection
- LED Controls
- Power Circuit Monitoring and Alarms
- RF Power Calibration
- Cooling fan Controls and Alarms
- Automatic Power Output Settings

A complete list of features and commands can be provided upon request.

External Accessories

External accessories such as GPS active antennas, camera, and other products can be powered through the THRP's 5V/1A auxillary supply.

Contact Triad RF for more details.

LEDs

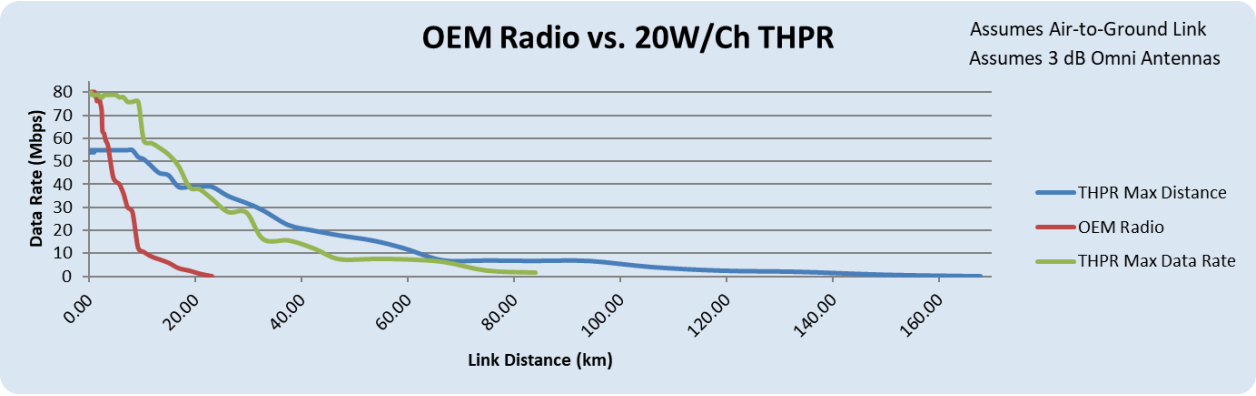
Tx/Rx status LEDs and error indicator LEDs included in unit.

RF Blanking

RF Blanking option for EMCON / No Emissions State.

LINK DISTANCE CAPABILITIES

The chart below provides estimates for our THPR series' achievable link distances, based on typical bandwidth needs and antenna configurations. Contact Triad for our expert ISR link team to assess your link requirements.



CHARACTERISTICS/SPECIFICATIONS

Electrical Characteristics

Parameter	Min.	Typ.	Max	Unit	Notes
Operating Frequency	1140	—	1450	MHz	
Power output Per MIMO Stream (5 Mbps)	20	—	—	W	Minimum RF Power for SQT values and bandwidths at this data rate.
Power output Per MIMO Stream (20+ Mbps)	5	—	—	W	Minimum RF Power for SQT values and bandwidths at this data rate.

Electrical Specifications

Parameter	Min.	Typ.	Max	Unit	Notes
Supply Voltage Range	+16	+28	+32	VDC	
Average Operating Current Draw (Idle)	—	—		A	+V supply voltage
Average Operating Current Draw (5 Mbps)	—			A	+28V supply voltage, RF power is set to minimum of 20W per Stream operating at a low data rate MCS.
Average Operating Current Draw (20+ Mbps)	—			A	+28V supply voltage, RF power is set to minimum of 5W per Stream operating at a high data rate MCS.

Environmental Specifications

Parameter	Min.	Typ.	Max	Unit	Notes
Ambient Operating Temperature	-45	—	70	°C	With fans installed
Cooling	Integral heatsinking with forced air cooling option			—	
Altitude	0	—	25000	ft.	For altitude testing above 25,000 ft. please contact Triad RF.
Shock / Vibration	Designed to MIL-STD-810			—	Designed to accommodate typical MIL-STD-810G vehicular shock/vibration test method
Ingress Protection Rating	IP67			—	

CHARACTERISTICS/SPECIFICATIONS

Mechanical Specifications

Parameter	Value	Unit	Notes
Dimensions	5.5 x 5.42 x 2.8 (139.7 x 137.7 x 71.1)	in (mm)	L x W x H, without fans installed
Antenna RF Connectors	TNC-F	Connector Type	
DC Connector	801-011-07M10-2PA	Part Number	Mating Connector PN: 801-007-16M10-2SA
Signal Connector	801-011-07M13-37PA	Part Number	Mating Connector PN: 801-007-16M13-37SA
Weight	52 (1474)	oz (g)	

DC/CONTROL CONNECTORS

J1 Connector - DC Connector
(Glenair PN: 801-011-07M10-2PA)

Pin	Description	Notes
1	+Vin	Power Supply In
2	-Vin	Isolated from GND, Can be connected if filter removed, Can be connected to GND if not using EMI filter

J2 Connector - Signal Connector
(Glenair PN: 801-011-07M13-37PA)

Pin	Description	Type	I/O	Notes
1	MIC 10V	Power	Input	10V bias for microphone
2	STATUS	Signal	Output	3.3V TTL Output HIGH = No Error LOW = Error
3	ETH0_DC+	Data	-	Ethernet Pin 4
4	ETH0_DC-	Data	-	Ethernet Pin 5
5	PRG/USB	Signal	Input	3.3V TTL Input Connect to Pin 23 for Programming Mode LOW/Floating = USB Communication HIGH = Programming of PSoC
6	MIC GND	Signal	-	GND refrence for microphone Isolated from chasis GND
7	MIC L	Data	Input	Microphone input left
8	ETH0_TX+	Data	Input / Output	Ethernet Pin 1
9	ETH0_TX-	Data	Input / Output	Ethernet Pin 2
10	Signal GND	Signal	-	General Purpose GND Reference Doubles as PSoC programmer GND
11	USB0 VBUS	Data	Input	V Bus for radio USB0
12	AUDIO R	Data	Output	Audio output
13	AUDIO GND	Signal	-	GND reference for AUDIO R Isolated from chasis GND
14	ETH0_RX+	Data	Input / Output	Ethernet Pin 3
15	ETH0_RX-	Data	Input / Output	Ethernet Pin 6
16	USB0-	Data	-	Data- for radio USB0
17	USB0+	Data	-	Data+ for radio USB0

Continues on next page

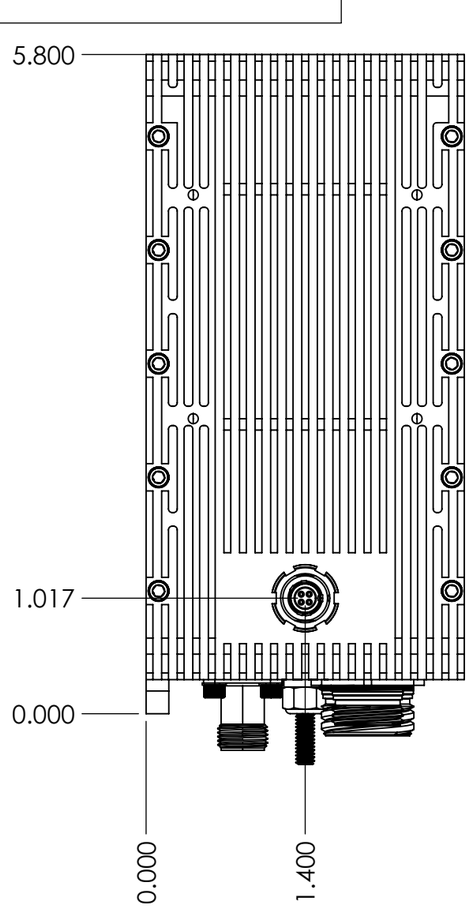
18	USBT GND/ +3.3V	Data	- / Input	GND for Internal Microntoller USB Connected to chasis GND +3.3V when in program mode
19	USB0 ID	Signal	Input	
20	ETH0_DD-	Data	Input / Output	Ethernet Pin 8
21	ETH0_DD+	Data	Input / Output	Ethernet Pin 7
22	RS232 GND	Data	-	GND for RS232 Connected to chassis GND
23	+5V1	Power	Output	1A Max- for +5V accessories
24	USB0 GND	Data	-	GND for radio USB0 Connected to chasis GND
25	USBT VBUS/ XRES	Data	Input / Input	Voltage Bus for Internal Microcontroller USB XRES when in program mode
26	RF BLANK	Signal	Input	3.3V TTL High/ Floating = RF Output Enabled Low/ GND = Disabled
27	Power Enable	Signal	Input	3.3V TTL High/ Floating = Enable Low/ GND = Shutdown
28	RS485 GND	Data	-	GND for RS485 Connected to chassis GND
29	+5V1 GND	Power	-	Connected to chasis GND
30	USBT D+/ CLK	Data	- / Input	Data+ for Internal Microcontroller USB CLK when in program mode
31	RS232 RX	Data	Input	RS232 into radio
32	RS485 TX-	Data	Output	
33	RS485 RX-	Data	Input	

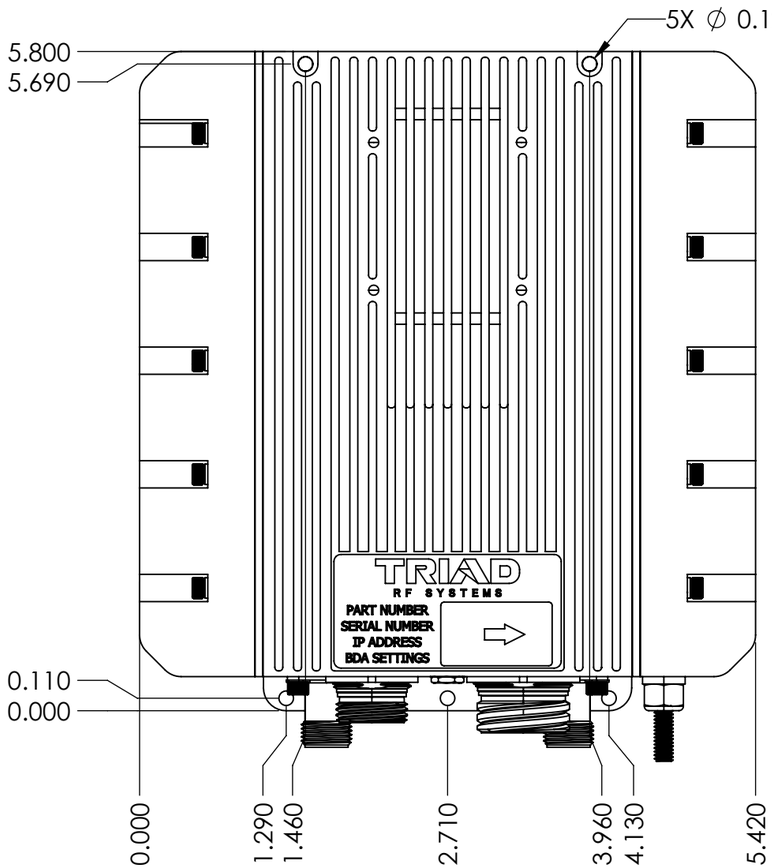
CABLE OPTIONS

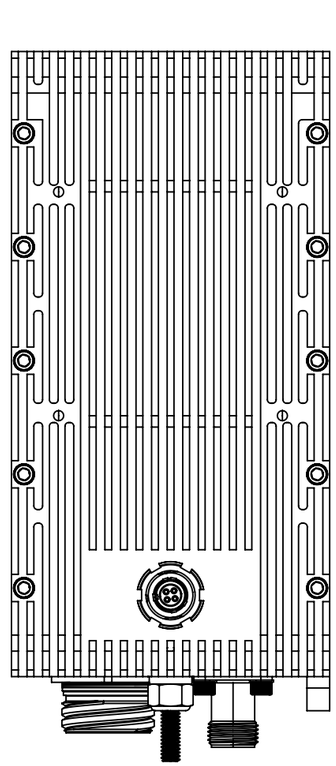
For available cable options, please contact us for inquiries and pricing.

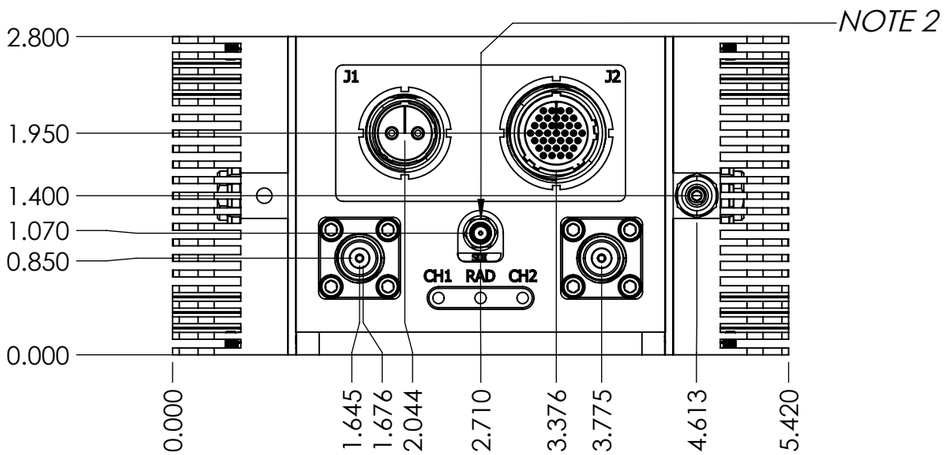
APPROVED FOR PUBLIC RELEASE

REVISIONS	
REV.	DESCRIPTION
0	ECN242540









NOTE:
1. ALL DIMENSION ARE NOMINAL UNLESS OTHERWISE SPECIFIED
2. SHOWN WITH OPTIONAL SDI CONNECTOR INSTALLED

TRIAD RF
A COMROD COMPANY

TITLE:

OUTLINE DRAWING

SIZE:	REVISION:	DWG NUMBER:
B	0	DWG_OL_291
SCALE: NONE	CAGE CODE: 67DZ3	SHEET: 1 OF 1