

Power Puck® Energy Harvester

For CSI 9420 & Rosemount 848T Wireless Transmitters



Power Puck® energy harvesters reduce or eliminate the need for battery replacements in wireless transmitters. They are available for a wide range of Emerson wireless transmitters, including the CSI 9420 Wireless Vibration Transmitter and Rosemount 848T Wireless Temperature Transmitter which use the black power module. Attributes of the 9420 and 848T transmitters require the use of an external Power Management Unit (PMU), as opposed to the standard Intelligent Power Module (IPM) that fits inside the other transmitters.

Perpetua offers this Power Puck energy harvesting solution for use in Non-Hazardous locations (also referred to as "Safe Area" or "Ordinary Location") to meet the demanding power requirements of the CSI 9420 and 848T wireless transmitters.

The solution uses an external PMU that incorporates the same batteries as a black power module. Output power from the PMU mates to the CSI 9420 and 848T battery terminals with a transmitter Power Interface. The PMU accepts external power from the Power Puck to power the transmitter and uses the battery only to supplement external power when and if there is a short fall.

Benefits:

- Reduce or eliminate battery replacements
- Provide reliable operation where dust, moisture, debris, and extreme temperatures are common
- Integrated magnetic mount for the PMU simplifies installation
- Offer redundant power supply - automatically switching to backup battery power should the temperature delta become too small for energy harvesting

Specifications:

Power Puck Energy Harvester	
Diameter, contact	60mm (2.4 in.)
Diameter, fins projected	99mm (3.9 in.)
Height	101mm (4 in.)
Weight	374g (0.8 lb.)
Electrical connector	M12 - Eurofast
Ingress Protection	IP67
Maximum Service Temperature	105°C (220°F)
Minimum Service Temperature	-45°C (-50°F)

Power Management Unit	
Dimensions	120 x 90 x 60 mm 4.7 x 3.5 x 2.4 inches
Weight	560g (1.2 lb.)
Ingress Protection	IP66
Maximum Service Temperature	80°C (175°F)
Minimum Service Temperature	-45°C (-50°F)

Mounting Accessories:

The standard Power Puck mount is magnetic, intended for flat, metal surfaces <105°C. Other optional mounting adapters are available for 1-, 2-, 3-, 4-, 6-, 8-, 10-, 12-inch NPS pipe sizes or cylindrical surfaces up to 450°C. Surfaces >105°C require an extender to reduce the temperature applied to the Power Puck to 105°C.

The PMU comes standard with an integrated magnetic mount for attachment to ferromagnetic surfaces.

Performance:

The tables below summarize power source lifetimes for the Rosemount 848T Wireless Temperature Transmitter and the CSI 9420 Wireless Vibration Transmitter. Power Life >10 years means that the power generated by the energy harvester is fully powering the transmitter. The “Battery Life” is the shelf life of the battery and reflects how long it will be available for back-up duty in the event the harvester loses its heat source.

For example, the 848T table shows the transmitter operating at a 4-second update rate, with the power source life increasing from 0.7 years with a battery alone to >10 years with the Power Pucks at any temperature difference greater than 35°C.

848T Performance:

Power Life in Years for the 848T Wireless Transmitter with Energy Harvesting							
Temperature Difference	No EH	35°C	40°C	50°C	60°C	70°C	
		63°F	72°F	90°F	108°F	126°F	
Update Rate	1 sec.	NA	NA	NA	NA	NA	NA
	2 sec.	NA	NA	NA	NA	NA	NA
	4 sec.	0.70	>10	>10	>10	>10	>10
	8 sec.	1.40	>10	>10	>10	>10	>10
	16 sec.	2.40	>10	>10	>10	>10	>10
	32 sec.	4.10	>10	>10	>10	>10	>10
	60 sec.	6.30	>10	>10	>10	>10	>10

CSI 940 Performance:

Power Life in Years for the CSI 9420 With Energy Harvesting							
Configuration: 2 Accelerometers, LCD							
Temperature Difference	No EH	35C	40C	50C	60C	70C	
		63F	72F	90F	108F	158F	
Update Rate	1 min.	0.3	0.4	0.4	0.5	0.6	0.8
	3 min.	0.5	1.8	2.7	>10	>10	>10
	5 min.	0.6	7.4	>10	>10	>10	>10
	10 min.	1.2	>10	>10	>10	>10	>10
	20 min.	1.6	>10	>10	>10	>10	>10
	40 min.	2.4	>10	>10	>10	>10	>10
	60 min.	3	>10	>10	>10	>10	>10
	120 min.	3.6	>10	>10	>10	>10	>10

Description

The product ships with:

- (1) Power Puck
- (1) Power Management Unit (PMU)
- (1) 6m female M12 (Power Puck) to female M12 cable (input)
- (1) 6m male M12 to flying lead cable (output)
- (1) Transmitter Power Interface

Part Number: 00625-01

For More Information:

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