Warmup WSR Self-Regulating Cable

Snow & Ice Melting for Roof & Gutter Trace Applications

Self-Regulating Technology
Automatically adjusts heat output based on operating temperature, ensuring energy efficiency and preventing overheating.

Engineered for Outdoor Use
Designed specifically for exposed areas like roofs, gutters, and downspouts providing reliable drainage, protecting properties from leaks and roof damage.

Range of Approved Accessories
Simplifies installation, ensuring compliance and reducing installation time.

cCSAus Certified
Guarantees compliance with safety standards, making it suitable for a wide range of applications including hazardous areas.

Overview

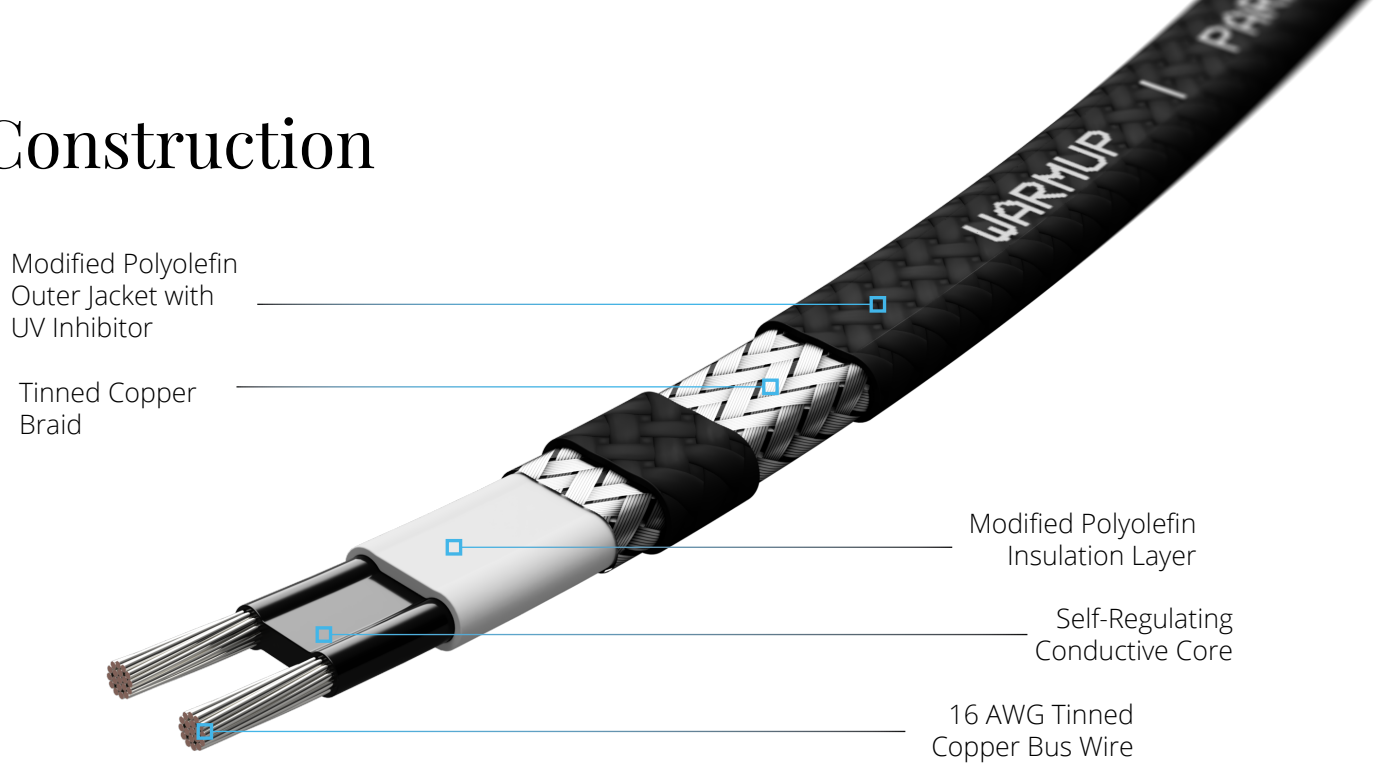
Warmup's WSR Self-Regulating Cable is specifically engineered for outdoor exposed areas for roof and gutter de-icing, providing drainage solutions for several applications. The WSR self-regulating cable helps ensure proper drainage and protection in cold weather conditions.

Its advanced positive temperature coefficient [PTC] self-regulating core is positioned between two 16 AWG multi-strand tinned copper bus wires. These are then insulated with a modified polyolefin layer which is wrapped in a tinned copper braid for grounding. The cable's outer jacket, made from modified polyolefin, ensures superior resistance to UV, abrasion, chemical, and mechanical wear, enhancing durability in harsh conditions.

The PTC self-regulating core automatically adjusts heat output in response to temperature changes, delivering more heat when snow and ice is present and reducing output as they melt ensuring energy efficient protection of roof and gutter systems.

The cable is cCSAus certified or use in Residential, Commercial & Industrial applications. Warmup provides a complete range of system accessories for the WSR cable to ensure fast and hassle-free installation. To maintain cCSAus compliance, only Warmup approved accessories may be used. Refer to the Part Numbers page for guidance.

Construction



WSR Approved Applications

	Installation Type / Usage		
	IEEE 515.1		CSA C22.2 No. 130:16
	US	Type examples	
Commercial and Industrial*	**A** Insulated Surfaces (including pipes)	Hot water lines, Freeze protection, Sprinkler systems, Grease lines, Fuel oil lines, Pre-insulated pipe, Below grade tracing	**G =** General use **S =** With weather resistance **W =** With wet rating**
	B Outdoor Exposed Areas†	Roof de-icing, Gutter and down spouts de-icing, Catch basins and drains	

Ordinary and Hazardous Locations ‡	**Per US (NEC 500) and CA (CE Code Annex J18)**		**CSA C22.2 No. 130:16**
	Class I, Division 2, Groups A, B, C and D, T5/T6††	Class II, Division 2, Groups F and G, T5/T6††	**Usage:** WS With wet test and weather resistance
	Per US (NEC 505)		
	Class I, Zone 1 AEx eb IIC T5/T6†† Gb	Class II, Zone 21 AEx tb IIIC T100°C/T85°C Db	
	Per IECEx/ATEX standards		
	Ex 60079-30-1 IIC T5/T6†† Gb	Ex 60079-30-1 IIIC T100°C/T85°C Db	

* Commercial includes residential

** Products carrying this designation are also suitable for freeze protection of fire suppression systems.

† 10W/ft cable is not CSA approved for outdoor exposed areas; Roof de-icing, gutter and down spouts de-icing, catch basins and drains

‡ For hazardous locations, WSR self-regulating cable may only be installed with Warmup accessories approved for hazardous locations [See WSR Approved Accessories]

†† T5 sets power output for WSR 12 W/ft cable; T6 sets power outputs for WSR 5, 8, and 10W/ft cable

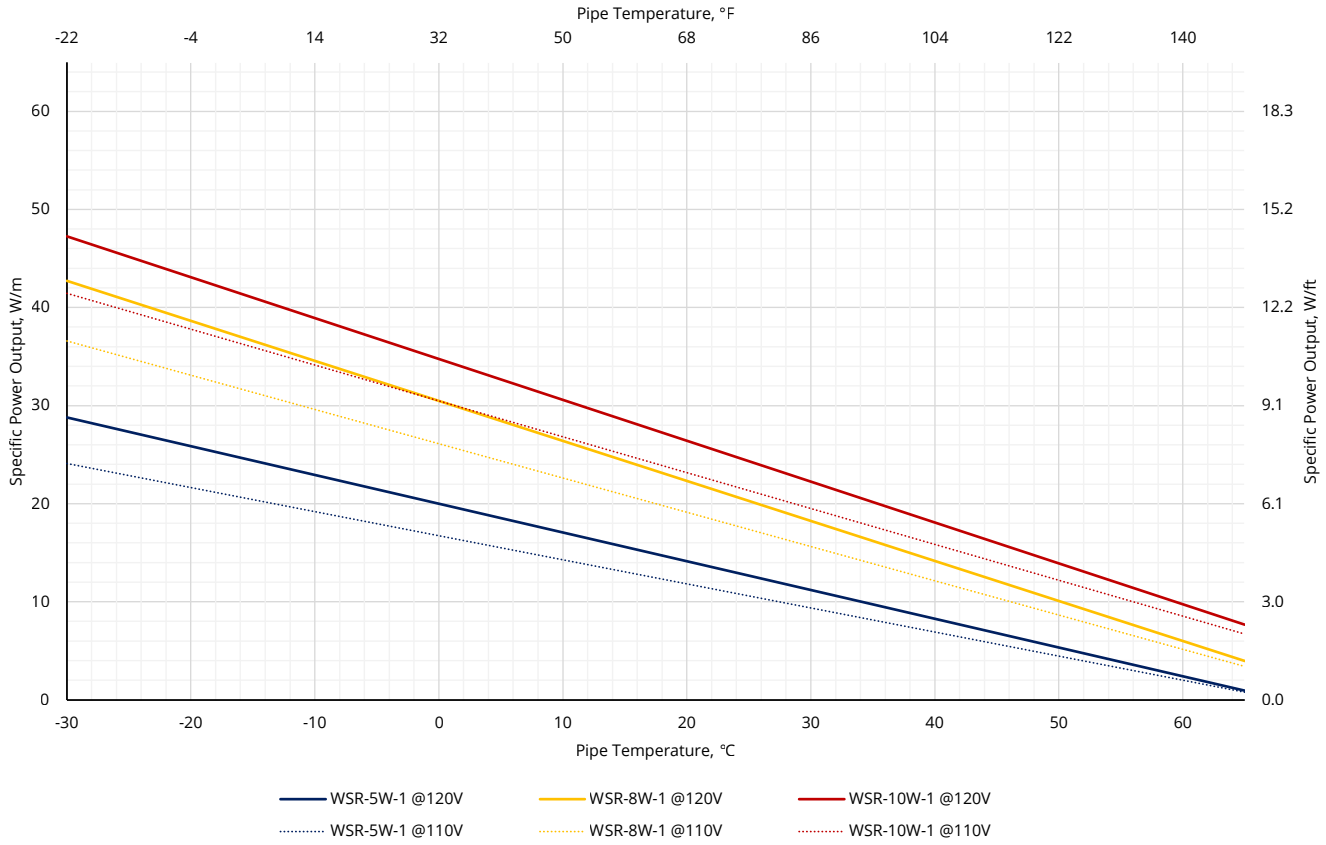
Technical Specifications

Model	WSR-**<a>**W-**<c>**-**<XXX>d**				
Code	WSR-**<a><b>**W-**<c>**-**<XXX>d**				
	<a> = 5, 8, 10 W/ft *W/ft insulated pipe @50°F (10°C)*	***<b> = 9, 12, 15 W/ft*** *W/ft in water @32°F (0°C)*	***<c> = 1 / 2*** *1 = 110-120 V AC* *2 = 208-277 V AC*	***<XXX> = 250, 500 or 1000ft*** *Cable length*	**<d> = CR** *Outer jacket material*
Power Output	WSR-5W	5 W/ft (16 W/m) @50°F (10°C Insulated Pipe) 6 W/ft (19 W/m) @32°F (0°C Air) 9 W/ft (29 W/m) @32°F (0°C Water)			
	WSR-8W	8 W/ft (26 W/m) @50°F (10°C Insulated Pipe) 9 W/ft (28 W/m) @32°F (0°C Air) 12 W/ft (42 W/m) @32°F (0°C Water)			
	WSR-10W *	10 W/ft (33 W/m) @50°F (10°C Insulated Pipe) 10 W/ft (34 W/m) @32°F (0°C Air) 15 W/ft (50 W/m) @32°F (0°C Water)			
Operating Voltage	110 - 120 V AC / 208 - 277 V AC				
Minimum Bend Radius	1¼" (30 mm)				
Minimum Installation Temperature	- 40 °F (- 40 °C)				
Maximum Continuous Operating Temperature	+ 150 °F (65 °C)				
Maximum Intermittent Exposure Temperature	+ 185 °F (85 °C)				
Maximum Operating Current	40A (Pipe tracing)				
	20A (Roof & gutter applications)				
Protective Braid Resistance	< 29 Ω/mi (18.2 Ω/km)				
Required Ground Fault Equipment Protection (GFEP)	30mA				
Dimensions	½" (12.6 mm) (W) x ¼" (6.0 mm) (T)				
Specific Weight	1.16 oz/ft (108 g/m)				

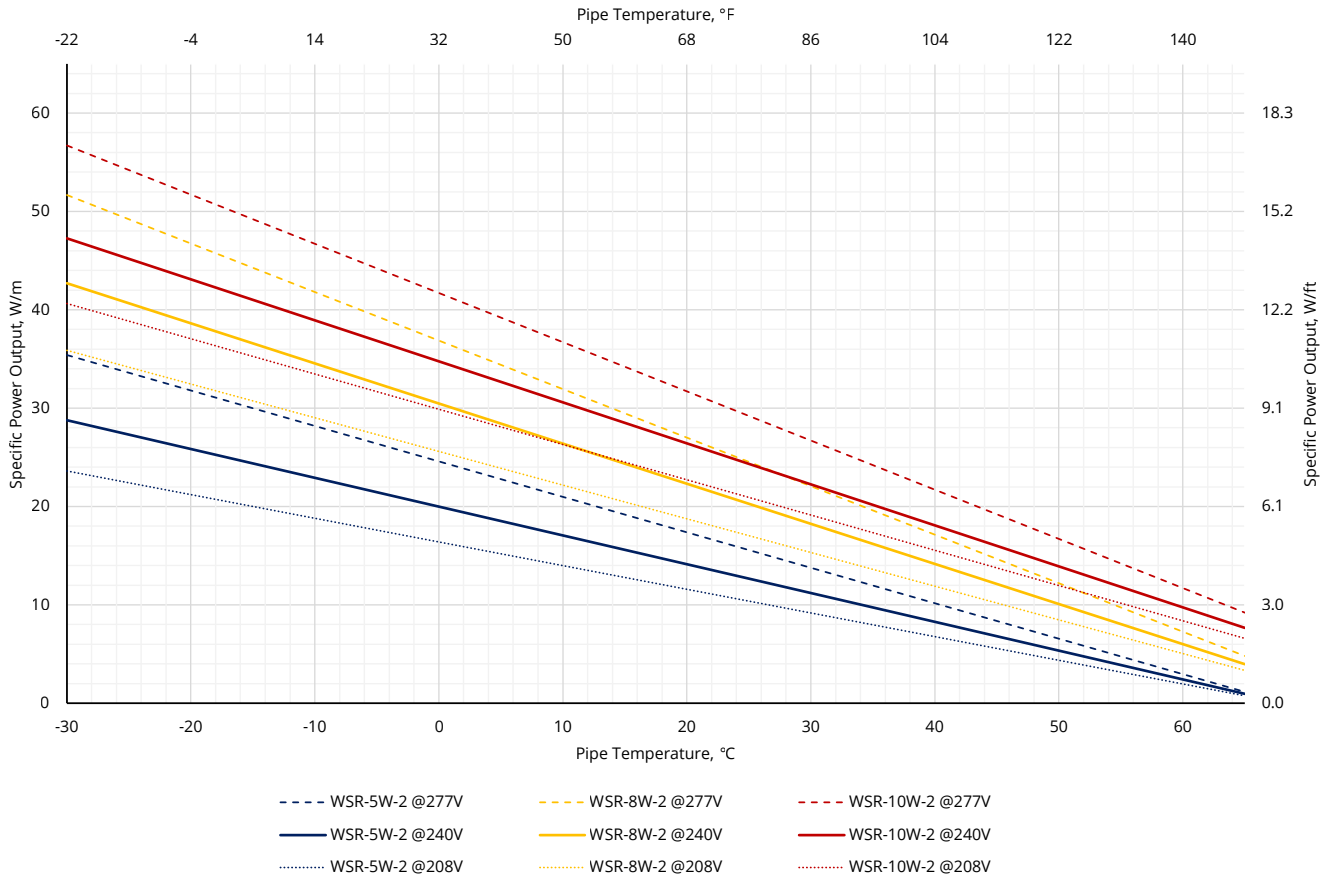
* 10W/ft cable is not CSA approved for outdoor exposed areas; Roof de-icing, gutter and down spouts de-icing, catch basins and drains

Power Output Curves

Specific Power Output on Pipe: WSR-xW-1

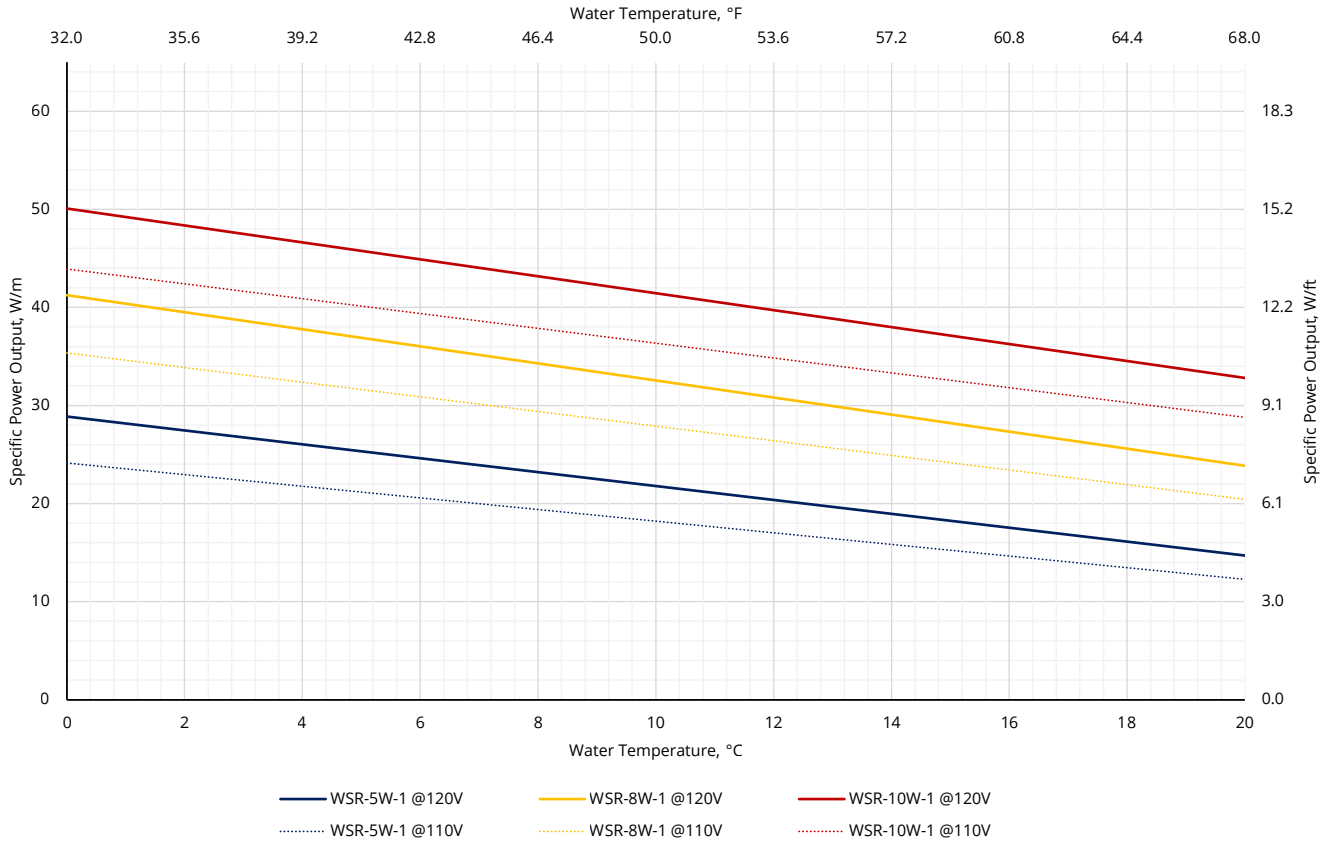


Specific Power Output on Pipe: WSR-xW-2

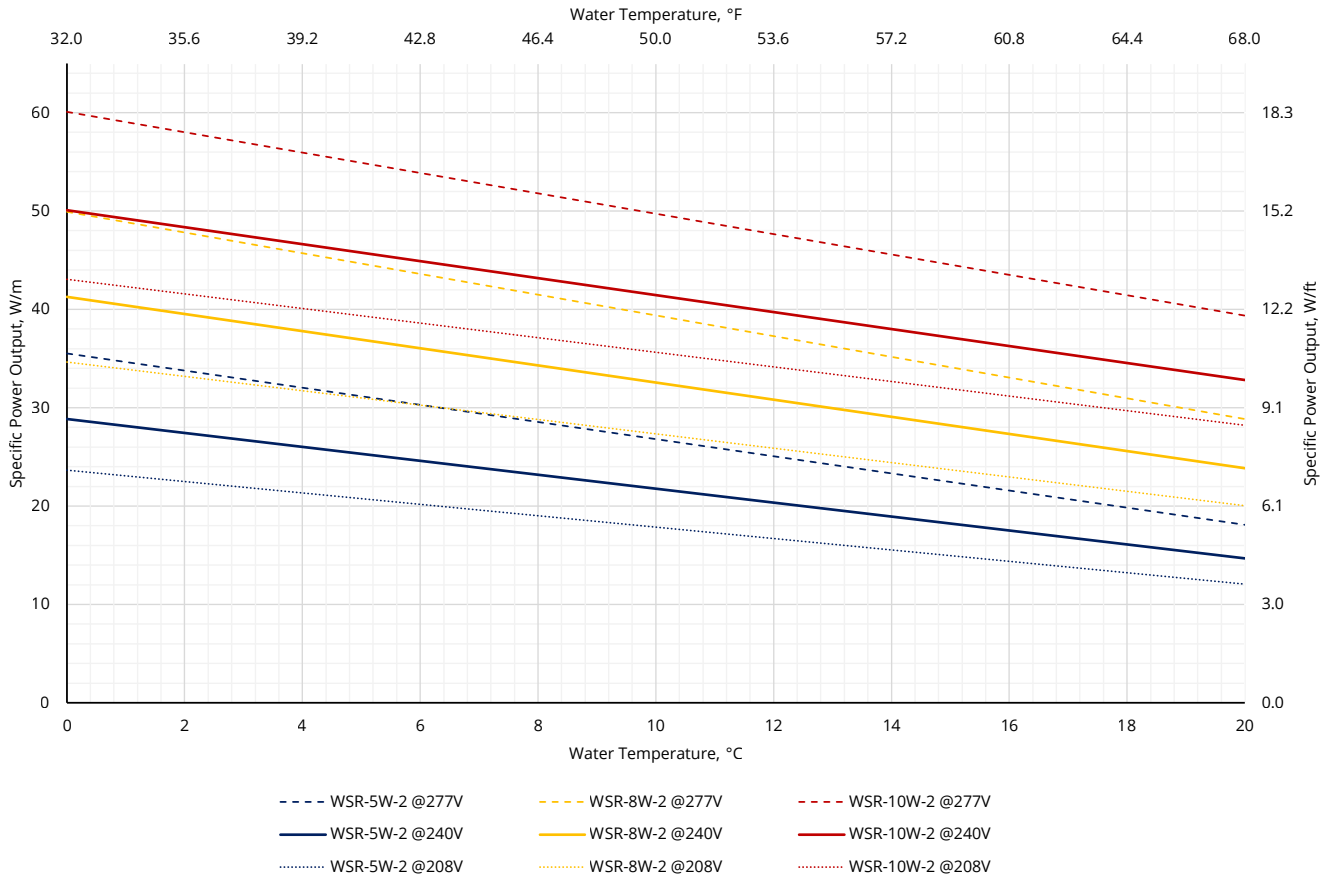


Power Output Curves

Specific Power Output in Water: WSR-xW-1

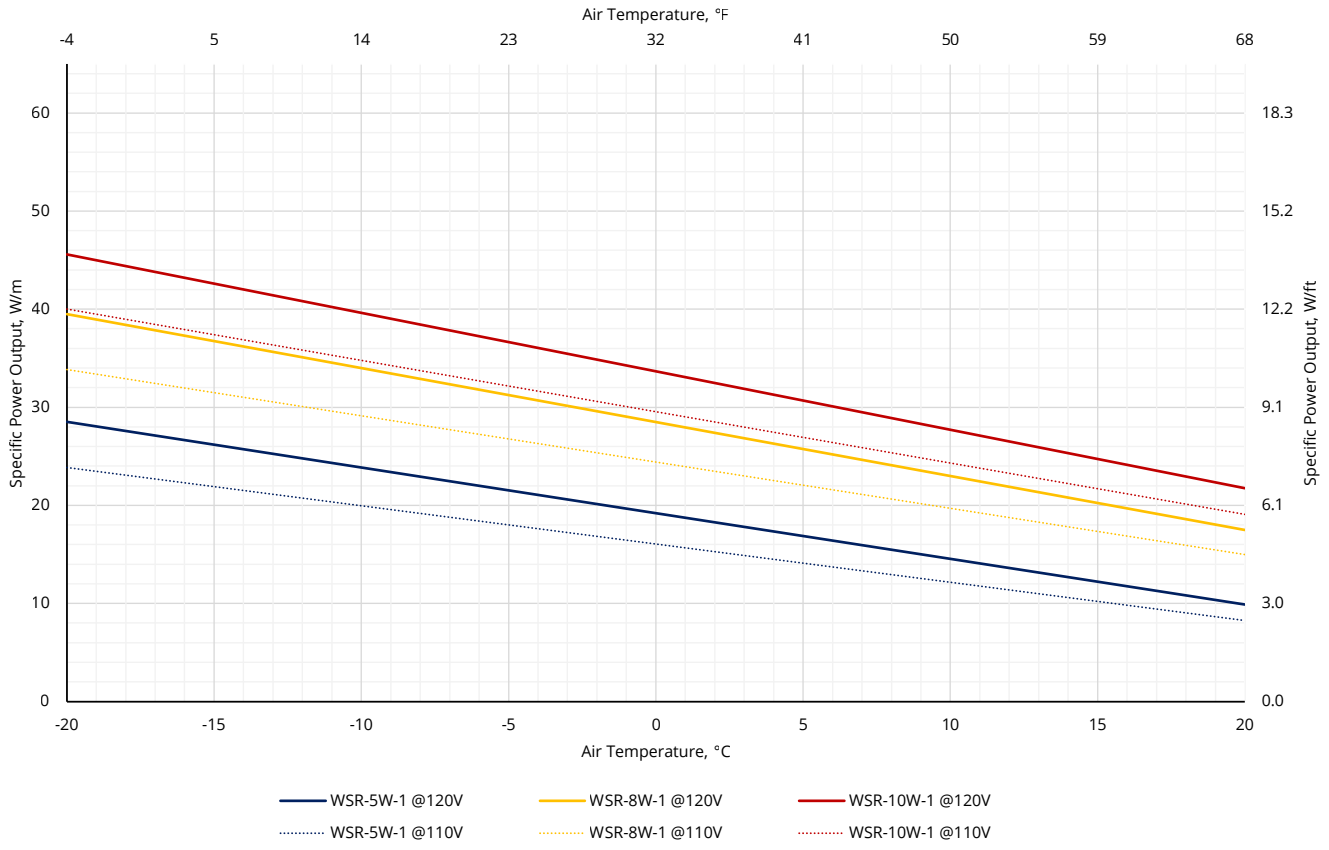


Specific Power Output in Water: WSR-xW-2

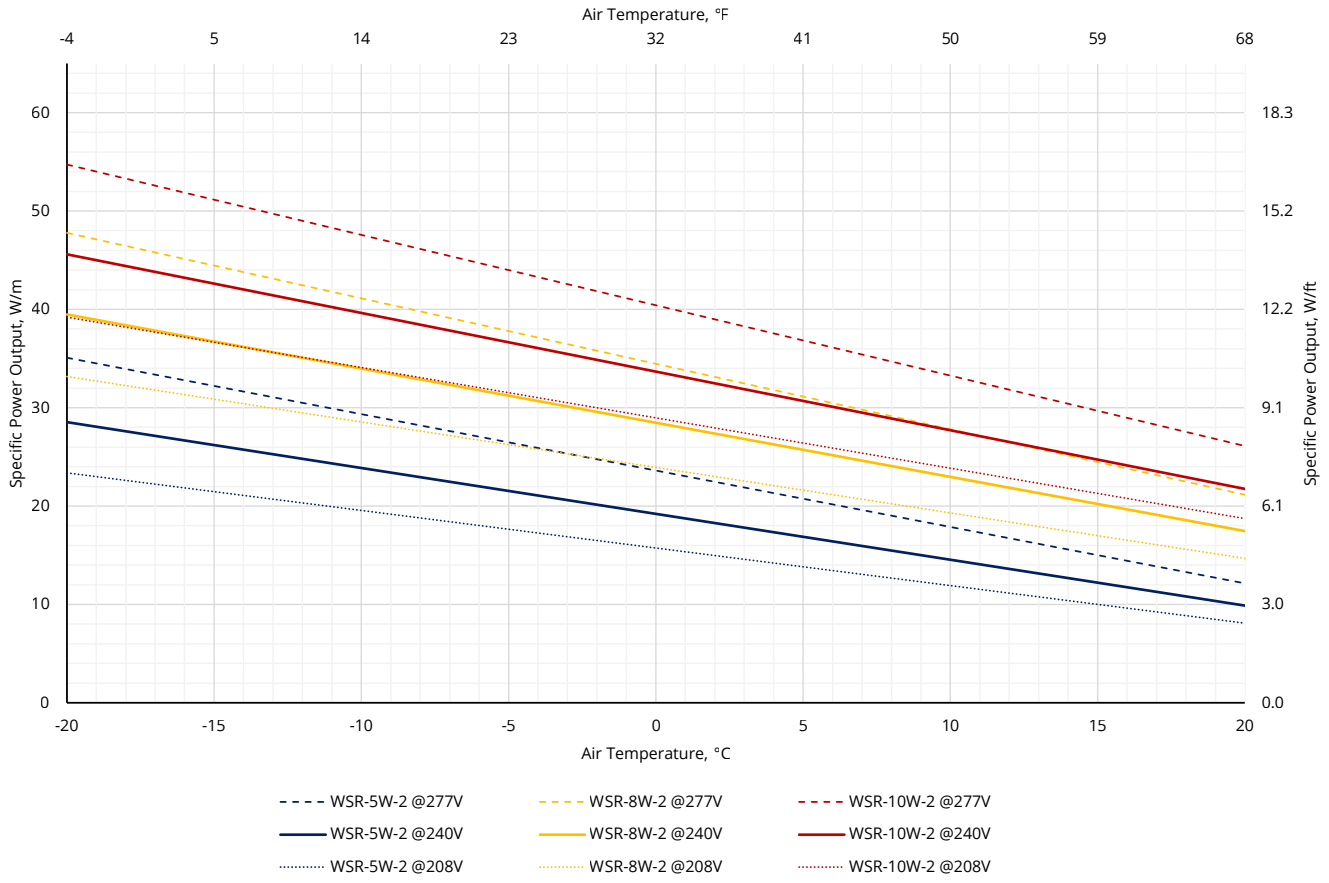


Power Output Curves

Specific Power Output in Air: WSR-xW-1



Specific Power Output in Air: WSR-xW-2



Circuit Breaker Sizing

		120 V					240 V				
Code	**Min. Start-up Temp.**	**15A**	**20A**	**30A**	**40A**	**50A**	**15A**	**20A**	**30A**	**40A**	**50A**
		Maximum Circuit Length, ft									
WSR-5W	50°F (10°C)	249	249	249	249	249	499	499	499	499	499
	32°F (0°C)	236	238	238	238	238	471	476	476	476	476
	14°F (-10°C)	218	228	228	228	228	436	456	456	456	456
	-4°F (-20°C)	201	220	220	220	220	402	440	440	440	440
	-40°F (-40°C)	174	203	203	203	203	347	407	407	407	407
WSR-8W	50°F (10°C)	165	198	198	198	198	330	397	397	397	397
	32°F (0°C)	150	190	190	190	190	301	380	380	380	380
	14°F (-10°C)	138	182	182	182	182	276	364	364	364	364
	-4°F (-20°C)	127	170	174	174	174	255	339	348	348	348
	-40°F (-40°C)	110	147	162	162	162	221	294	325	325	325
WSR-10W	50°F (10°C)	120	160	175	175	175	240	320	351	351	351
	32°F (0°C)	109	145	167	167	167	218	290	335	335	335
	14°F (-10°C)	100	133	161	161	161	199	266	321	321	321
	-4°F (-20°C)	92	122	154	154	154	184	245	308	308	308
	-40°F (-40°C)	80	106	143	143	143	160	213	285	285	285

NOTE: Maximum Circuit Length is limited by; circuit breaker size (80% Capacity), in-rush current and voltage drop.

Part Numbers

WSR Self-Regulating Cable				
Model	**Code**	**Voltage**	**Cable Length**	**Power Output W/ft @ 10°C; (0°C Water)**
WSR-5W-1-250-CR	WSR-5/9W-1-250-CR	110-120 VAC	250 ft	5 W/ft (9 W/ft)
WSR-5W-1-500-CR	WSR-5/9W-1-500-CR	110-120 VAC	500 ft	5 W/ft (9 W/ft)
WSR-5W-1-1000-CR	WSR-5/9W-1-1000-CR	110-120 VAC	1000 ft	5 W/ft (9 W/ft)
WSR-5W-2-250-CR	WSR-5/9W-2-250-CR	208-277 VAC	250 ft	5 W/ft (9 W/ft)
WSR-5W-2-500-CR	WSR-5/9W-2-500-CR	208-277 VAC	500 ft	5 W/ft (9 W/ft)
WSR-5W-2-1000-CR	WSR-5/9W-2-1000-CR	208-277 VAC	1000 ft	5 W/ft (9 W/ft)
WSR-8W-1-250-CR	WSR-8/12W-1-250-CR	110-120 VAC	250 ft	8 W/ft (12 W/ft)
WSR-8W-1-500-CR	WSR-8/12W-1-500-CR	110-120 VAC	500 ft	8 W/ft (12 W/ft)
WSR-8W-1-1000-CR	WSR-8/12W-1-1000-CR	110-120 VAC	1000 ft	8 W/ft (12 W/ft)
WSR-8W-2-250-CR	WSR-8/12W-2-250-CR	208-277 VAC	250 ft	8 W/ft (12 W/ft)
WSR-8W-2-500-CR	WSR-8/12W-2-500-CR	208-277 VAC	500 ft	8 W/ft (12 W/ft)
WSR-8W-2-1000-CR	WSR-8/12W-2-1000-CR	208-277 VAC	1000 ft	8 W/ft (12 W/ft)
WSR-10W-1-250-CR	WSR-10/15W-1-250-CR	110-120 VAC	250 ft	10 W/ft (15 W/ft)
WSR-10W-1-500-CR	WSR-10/15W-1-500-CR	110-120 VAC	500 ft	10 W/ft (15 W/ft)
WSR-10W-1-1000-CR	WSR-10/15W-1-1000-CR	110-120 VAC	1000 ft	10 W/ft (15 W/ft)
WSR-10W-2-250-CR	WSR-10/15W-2-250-CR	208-277 VAC	250 ft	10 W/ft (15 W/ft)
WSR-10W-2-500-CR	WSR-10/15W-2-500-CR	208-277 VAC	500 ft	10 W/ft (15 W/ft)
WSR-10W-2-1000-CR	WSR-10/15W-2-1000-CR	208-277 VAC	1000 ft	10 W/ft (15 W/ft)

WSR Approved Accessories			
Model	**Description**	**Classification**	**Application**
SR-SFIT-BOX-S	Power Connection Box for connecting WSR to supply	***Non-Hazardous & Hazardous Locations*** *Ex eb IIC T3 Gb,* *Ex tb IIIC T200°C Db* *Class I, Zone 1, AEx eb IIC T3 Gb* *Class II, Zone 21, AEx tb IIIC T200°C Db* *Class I, Division 2, Groups A, B, C and D T3* *Class II, Division 2, Groups F, G T3*	*Pipe Tracing* *Roof & Gutter*
SR-SFIT-SPL	Splice Connection kit for In-line Splice of WSR cable		
SR-SFIT-TEE	Tee Splice Connection kit for Tee Splice of WSR cable		
SR-END-KIT	End-Seal Termination kit for WSR cable termination		
SR-LENDCAP	Lighted End Kit for WSR cable termination, giving visual indicator when WSR cable is active. **Certified for use at 120 or 240V AC only.**	***Non-Hazardous & Hazardous Locations*** *Class I, Division 2, Groups A, B, C and D;* *Class II, Division 2, Groups F and G;* *Class III; T5 or T6*	*Pipe Tracing* *Roof & Gutter*
SR-POWER-KIT	Power Connection Kit for WSR cable, incl. components for 1 power connection, 1 termination. Incl. 1 pipe standoff bracket.	***Non-Hazardous Locations***	*Pipe Tracing* *Roof & Gutter*
CRDS-15-GFCI	Plug-in, ground-fault-circuit interrupter [GFCI] power connection kit with 5-15P type plug for Warmup's WSR **120V Self-Regulating Cable**	***Non-Hazardous Locations***	*Pipe Tracing* *Roof & Gutter*
SR-SPLICE-KIT	Splice/Tee Kit for WSR cable. Incl. components for 1 Splice and 1 End Seal, or 1 Tee Connection and 1 End Seal	***Non-Hazardous Locations***	*Pipe Tracing* *Roof & Gutter*
SR-ROOF-CLIP(50/BAG)	Metal single roof clips (50/BAG) to secure WSR cable	***Non-Hazardous Locations***	*Roof & Gutter*
SR-HANGER-KIT	Downspout Hanger for WSR cable	***Non-Hazardous Locations***	*Roof & Gutter*

Product Markings

Trade mark; Product type	WARMUP | PARALLEL SELF-REGULATING CABLE				
Model	WSR-**<a>**W-**<c>**-**<XXX>d**				
Code	WSR-**<a><b>**W-**<c>**-**<XXX>d**				
	<a> = 5, 8, 10 W/ft W/ft insulated pipe @50°F (10°C)	***<b> = 9, 12, 15 W/ft*** W/ft in water @32°F (0°C)	***<c> = 1 / 2*** 1 = 110-120 V AC 2 = 208-277 V AC	***<XXX> = 250, 500 or 1000ft*** Cable length	***<d> = CR*** Outer jacket material
Voltage Rating	VOLTAGE: **AAA** - **BBB** VAC				
	AAA = 110 / 208; ***BBB*** = 120 / 277				
Wattage Rating	**<#>**W/FT (**<#>**W/m) @50°F (10°C ON PIPE)				
	<#> = Specific power in air @50°F (10°C)				
	<##>W/FT (**<##>**W/m) @32°F (0°C WATER)				
	<#> = Specific power in water @32°F (0°C)				
	<###>W/FT (**<###>**W/m) @32°F (0°C AIR)				
	<###> = Specific power in air @32°F (0°C)				
Approval	C SP US CSA Approved Canda & USA	**268591** CSA File Number	**- WS** Usage marking; With wet test and weather resistance		
Hazardous Location Info.	**HAZ LOC CID2 GRPS ABCD T5/T6 | CIID2 GRPS FG T5/T6***				
	* See Guide on Hazardous Locations				
Max. Temperature Rating	MAX. MAINT. TEMP 149°F (65°C)				
Amperage Rating	MAX. AMPS 40**				
	** 40A rating is specific for pipe tracing applications only; ***Outdoor exposed areas;*** Roof de-icing, Gutter and down spouts de-icing, Catch basins and drains applications are rated at a maximum of 20A				
Batch Number	Specific code marked on cable for traceability purposes				
Feet Marking	250, 500 or 1000ft				

Contact

Warmup is available 24/7/365 at (888) 927-6333
For quotes, layouts and specific technical information contact us at:

Warmup Inc
www.warmup.com
us@warmup.com
T: +1 (888) 927-6333

25 Francis J Clarke Cir, Bethel,
CT 06801

Warmup Canada
www.warmup.com
ca@warmup.com
T: 1+ (888) 592-7687

Guide to Hazardous Locations*

A Class I, Division 2 location is a location:	
(i)	In which volatile flammable gases, flammable liquid–produced vapors, or combustible liquid–produced vapors are handled, processed, or used, but in which the liquids, vapors, or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems or in case of abnormal operation of equipment, or
(ii)	In which ignitible concentrations of flammable gases, flammable liquid–produced vapors, or combustible liquid–produced vapors are normally prevented by positive mechanical ventilation and which might become hazardous through failure or abnormal operation of the ventilating equipment, or
(iii)	That is adjacent to a Class I, Division 1 location, and to which ignitible concentrations of flammable gases, flammable liquid–produced vapors, or combustible liquid–produced vapors above their flash points might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clean air and effective safeguards against ventilation failure are provided.
Class I Group Classifications	
A	Acetylene
B	Flammable gas, flammable liquid–produced vapor, or combustible liquid–produced vapor mixed with air that may burn or explode, having either a maximum experimental safe gap (MESG) value less than or equal to 0.45 mm or a minimum igniting current ratio (MIC ratio) less than or equal to 0.40
C	Flammable gas, flammable liquid–produced vapor, or combustible liquid–produced vapor mixed with air that may burn or explode, having either a maximum experimental safe gap (MESG) value greater than 0.45 mm and less than or equal to 0.75 mm, or a minimum igniting current (MIC) ratio greater than 0.40 and less than or equal to 0.80.
D	Flammable gas, flammable liquid–produced vapor, or combustible liquid–produced vapor mixed with air that may burn or explode, having either a maximum experimental safe gap (MESG) value greater than 0.75 mm or a minimum igniting current (MIC) ratio greater than 0.80.
A Class II, Division 2 location is a location:	
(i)	In which combustible dust due to abnormal operations may be present in the air in quantities sufficient to produce explosive or ignitible mixtures; or
(ii)	Where combustible dust accumulations are present but are normally insufficient to interfere with the normal operation of electrical equipment or other apparatus, but could as a result of infrequent malfunctioning of handling or processing equipment become suspended in the air; or
(iii)	In which combustible dust accumulations on, in, or in the vicinity of the electrical equipment could be sufficient to interfere with the safe dissipation of heat from electrical equipment, or could be ignitible by abnormal operation or failure of electrical equipment.
Class II Combustible Dust Group Classifications	
F	Atmospheres containing combustible carbonaceous dusts that have more than 8 percent total entrapped volatiles (see ASTM D3175-2017, Standard Test Method for Volatile Matter in the Analysis Sample of Coal and Coke, for coal and coke dusts) or that have been sensitized by other materials so that they present an explosion hazard. [499:3.3.9.1.2] Although coal, carbon black, charcoal, and coke dusts are examples of carbonaceous dusts only those atmospheres containing combustible carbonaceous dust that have more than 8 percent total entrapped volatiles are Class II, Group F.
G	Atmospheres containing combustible dusts not included in Group E or Group F, including flour, grain, wood, plastic, and chemicals.
Equipment Temperature Class	
The temperature class or operating temperature at a 40°C ambient temperature, or at the higher ambient temperature if the equipment is rated and marked for an ambient temperature of greater than 40°C.	
T3 = ≤ 392°F (≤ 200°C); **T5 =** 212°F (≤ 100°C); **T6 =** ≤ 185°F (≤ 85°C)	
A Zone 1 location is a location	
(i)	In which ignitible concentrations of flammable gases or vapors are likely to exist under normal operating conditions; or
(ii)	In which ignitible concentrations of flammable gases or vapors may exist frequently because of repair or maintenance operations or because of leakage; or
(iii)	In which equipment is operated or processes are carried on, of such a nature that equipment breakdown or faulty operations could result in the release of ignitible concentrations of flammable gases or vapors and also cause simultaneous failure of electrical equipment in a mode to cause the electrical equipment to become a source of ignition; or
(iv)	That is adjacent to a Zone 0 location from which ignitible concentrations of vapors could be communicated, unless communication is prevented by adequate positive pressure ventilation from a source of clean air and effective safeguards against ventilation failure are provided.

Guide to Hazardous Locations*

A Zone 21 location is a location where one of the following apply:

(i) Ignitible concentrations of combustible dust, combustible fibers/flyings, or ignitible fibers/flyings are likely to exist occasionally under normal operating conditions.

(ii) Ignitible concentrations of combustible dust, combustible fibers/flyings, or ignitible fibers/flyings might exist frequently because of repair or maintenance operations or because of leakage.

(iii) Equipment is operated or processes are carried on of such a nature that equipment breakdown or faulty operations could result in the release of ignitible concentrations of combustible dust, combustible fibers/flyings, or ignitible fibers/flyings and also cause simultaneous failure of electrical equipment in a mode to cause the electrical equipment to become a source of ignition.

(iii) The location is adjacent to a Zone 20 location from which ignitible concentrations of combustible dust, combustible fibers/flyings, or ignitible fibers/flyings could be communicated.

Exception: When communication from an adjacent Zone 20 location is minimized by adequate positive pressure ventilation from a source of clean air, and effective safeguards against ventilation failure are provided.

(iv) Group IIIC combustible dusts are present in hazardous quantities occasionally, under normal or abnormal operating conditions, or frequently because of repair or maintenance operations or because of leakage.

Symbols explained

AEx The symbol AEx identifies the equipment as meeting American national standards. The symbol Ex is used in European Union countries. Only equipment marked AEx has been evaluated for use in electrical systems and hazardous locations covered by the NEC

Equipment Suitable for Hazardous (Classified) Locations

Mark	NEC Area Classification	Type (Level) of Protection
eb	Zone 1	Increased safety (Group II)
tb	Zone 21	Protection by enclosure (Group III)

Equipment Protection Level

The EPL indicates the level of protection provided by the equipment and is correlated to the zone in which the equipment will be installed and operated.

Mark	NEC Area Classification	Type (Level) of Protection
Gb	Zone 1	equipment for explosive gas atmospheres, having a “high” Level of Protection, which is not a source of ignition in normal operation or during expected malfunctions
Db	Zone 21	equipment for explosive dust atmospheres, having a “high” Level of Protection, which is not a source of ignition in normal operation or during expected malfunctions

Material Groups

IIC Group IIC: Atmospheres containing acetylene, hydrogen, or flammable gas, flammable liquid–produced vapor, or combustible liquid–produced vapor mixed with air that may burn or explode, having either a maximum experimental safe gap (MESG) value less than or equal to 0.50 mm or minimum igniting current (MIC) ratio less than or equal to 0.45.

IIIC Group IIIC: Combustible metal dust, including combustible metal fibers/flyings.

Equipment marked Group IIIC shall be permitted for applications requiring Group IIIA or Group IIIB equipment.

IECEx/ATEX standards

Ex The symbol Ex is used in European Union countries.

60079-30-1 STANDARD FOR SAFETY
Explosive Atmospheres – Part 30-1: Electrical Resistance Trace Heating – General and Testing Requirements

* This guide is provided for reference purposes only. It summarizes typical classifications and installation types based on information from the National Electrical Code (NEC), Canadian Electrical Code (CEC), and relevant international standards.

This guide does not replace or supersede any official code or standard. For the most accurate and up-to-date requirements, always consult the NEC, CEC, and applicable local regulations, as well as the latest versions of IECEx/ATEX standards. Installation in hazardous locations must comply with all certification conditions and use only Warmup approved accessories as specified in the product documentation.