Communication Adapters

Laptop and personal computers generally include Universal Serial Bus (USB) ports that allow them to communicate with other devices such as printers and digital cameras and Ethernet ports that are typically connected to office networks. Industrial devices such as process and temperature controllers may have Ethernet interfaces or EIA-485 communication interfaces (also known as RS-485). Watlow® offers adapters that provide simple and reliable solutions to connecting these devices to computers.

These compact serial converters offer several features that make them ideal for use in applications in which Watlow controllers communicate with a computer via Modbus® or standard bus.

Features and Benefits

Adds communication ports to computer

- Supports using computer software with industrial products
- Eliminates the need to add a communication card to the computer

USB connection to computer (0847-0326-0000)

- Adds a communications port to a computer with USB
- Automatically configures on Windows® 10, 8, 8.1 and 7
- Eliminates need for external power supply
- Includes cable

Screw terminals

- Connects to standard 485 network wiring with no need for additional components

USB to Ethernet (0847-0400-0000)

- Provides additional local Ethernet network for communicating with controllers
- Eliminates need to connect controller to the office network or disconnect PC from the office network

0847-0326-0000
USB to 485,
Screw Terminals

0847-0400-0000
USB to Ethernet, RJ45

Communication Adapters

Specifications

Specification	0847-0326-0000	0847-0400-0000
Connection to computer	USB type A	USB type A
Computer interface	USB 1.0, 1.1 and 2.0	USB 1.0, 1.1 and 2.0
Connection to serial network	Removable terminal block	RJ-45 female
Serial network	Half duplex 485 (2-wire)	IEEE 802.3, 802.3u and 802.3ab (10BASE-T, 100BASE-TX and 1000BASE-T) compatible
Communication speed	300 to 921K baud	10/100/1000 Mbps (USB 3.0)
Echo jumper	No	Crossover detection and auto-correction (Auto MDIX)
Optical isolation: data-to-ground and computer-to-network	None	None
Port powered	Yes	Yes
Cable length	39 in. (1 m)	5.2 in. (132 mm)
Agency	CE, RoHS	CE, RoHS
Supported operating systems	Windows® 10, 8, 8.1 and 7	Windows® 10, 8, 8.1 and 7
Dimensions	2.53 x 1.25 x 0.64 in. (64 x 32 x 16 mm)	2.6 x 1.0 x 0.6 in. (67 x 26 x 15 mm)
Recommended applications	Computer with a USB port, communicating via Modbus® RTU or EZ-ZONE® standard bus	Computer with a USB port, communicating via Modbus® TCP or standard bus over Ethernet (F4T®)

Converters	Description
0847-0326-0000	USB to 485, screw terminals
0847-0400-0000	USB to Ethernet, RJ45 female

Combined Branch Protection and Semiconductor Fusing

To meet national and local electrical code requirements for branch circuit protection and to protect solid state power controllers, such as Watlow's DIN-A-MITE®, a DFJ fuse is recommended. Watlow offers fast-acting DFJ fuses and holders in amperage ratings covering the range of load currents appropriate for use with the entire DIN-A-MITE power controller and EZ-ZONE® ST integrated controller families.

DFJ fuses protect personnel from injury, protect equipment from damage and are required to minimize damage in the event of a short circuit and achieve short circuit current ratings for Watlow DIN-A-MITE power controllers and EZ-ZONE ST controllers.

Features and Benefits

Combination semiconductor and branch circuit protection

- Fulfills electrical code requirements for branch circuit protection
- Provides protection required for short circuit rating (SCCR) of Watlow products up to 200kA
- Protects valuable semiconductor-based power controllers from damage in the event of a shorted heater
- Simplifies cabinet design
- Reduces wiring time
- Reduces the number of components and cost

DIN-rail mount

- Ensures easy installation

Lockout/tagout

- Protects service personnel

Open fuse indicator

- Provides quick troubleshooting of blown fuses

Combined Branch Protection and Semiconductor Fusing

Fuse Selection Guide

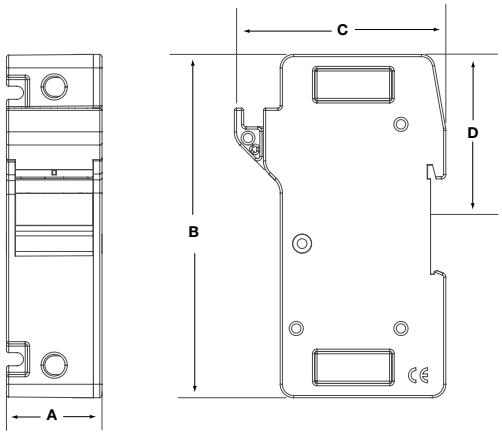
Use a DFJ fuse to protect both a branch circuit or power cable and the solid state power controller on the circuit with a single fuse.

1. Select a fuse with an amperage rating at least 125 percent of the connected load (or the next standard size above.)
2. Select a fuse with an I^2t rating not greater than the I^2t rating of the solid state power controller. See the specification sheet for the power controller to be protected for I^2t specification. See DFJ fuse I^2t below.
3. Use a Watlow recommended fuse. SCCR ratings for Watlow power controllers are only valid with Watlow recommended fuses and only up to 480VAC. For applications above 480VAC or products other than DIN-A-MITE or EZ-ZONE ST contact your Watlow representative.

Fuse Amp Rating	I^2T up to 480V (A^2 Sec)	Watlow Part Number	Bussman® Equivalent Fuse Part Number	Watlow Single Fuse Holder Part Number	Bussman® Holder Equivalent Part Number	Holder Dimensions (in.)			
						A	B	C	D
20	151	**0808-0325-0020**	DFJ-20	**0808-0326-1530**	CH30J1I	1.28	4.59	2.80	2.30
30	414	**0808-0325-0030**	DFJ-30	**0808-0326-1530**	CH30J1I	1.28	4.59	2.80	2.30
40	1080	**0808-0325-0040**	DFJ-40	**0808-0326-3560**	CH60J1I	1.58	4.88	2.80	2.50
50	2268	**0808-0325-0050**	DFJ-50	**0808-0326-3560**	CH60J1I	1.58	4.88	2.80	2.50
60	2909	**0808-0325-0060**	DFJ-60	**0808-0326-3560**	CH60J1I	1.58	4.88	2.80	2.50
80	3521	**0808-0325-0080**	DFJ-80	**0808-0326-7010**	JM60100-1CR	2.1	5.4	3.0	N/A
100	7920	**0808-0325-0100**	DFJ-100	**0808-0326-7010**	JM60100-1CR	2.1	5.4	3.0	N/A

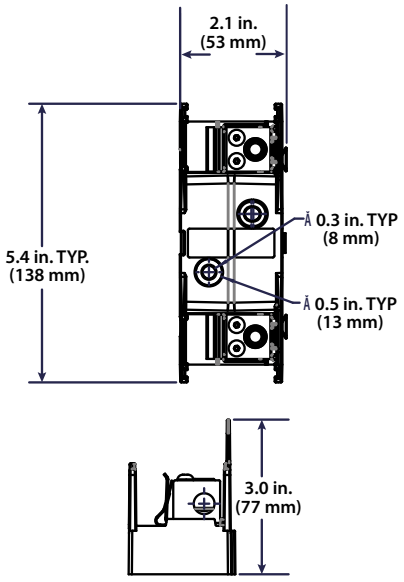
Dimensional Drawings

15 to 30 and 35 to 60 Amp Fuse Holders



Mounts on 35 mm DIN-rail (DIN EN 50022 35 x 7.5 mm)

80 to 100 Amp Fuse Holder Panel Mount Only



Mounting holes: 0.3 in. (8 mm) dia hole with 0.5 in. (13 mm) dia. countersink.

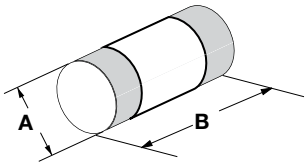
Semiconductor Fuses

For protection of solid state power controllers, such as Watlow's DIN-A-MITE®, a semiconductor fuse is recommended to protect the power controller and ensure long life. To safeguard power controllers, Watlow® offers DIN-rail mount fuse holders and semiconductor fuses in various sizes to accommodate the entire DIN-A-MITE SCR power controller family and solid state relay products. These fuse holders feature lockout/tagout and open fuse indication.

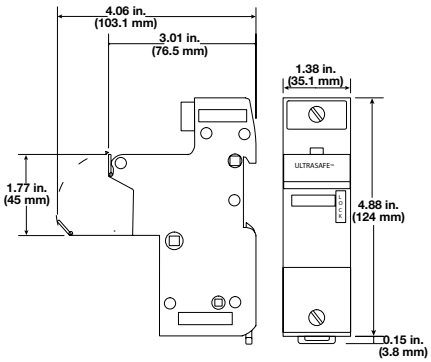
Fuse						Fuse Holder	
Amp Rating	I²T (A²Sec)	Part Number	Dim. A mm	Dim. B mm	Weight gm	Part Number	Weight gm
12	120	**17-8012**	10	38.1	9.2	**17-5110**	53.8
20	260	**17-8020**	10	38.1	9.2	**17-5110**	53.8
25	390	**17-8025**	10	38.1	9.2	**17-5110**	53.8
32	150	**17-8030**	14	50.8	21.0	**17-5114**	119.4
40	980	**17-8040**	14	50.8	21.0	**17-5114**	119.4
50	1800	**17-8050**	14	50.8	21.0	**17-5114**	119.4
63	2700	**17-8063**	22	58.0	53.1	**17-5122**	229.4
80	5100	**17-8080**	22	58.0	53.4	**17-5122**	229.4
100	10,000	**17-8100**	22	58.0	53.4	**17-5122**	229.4

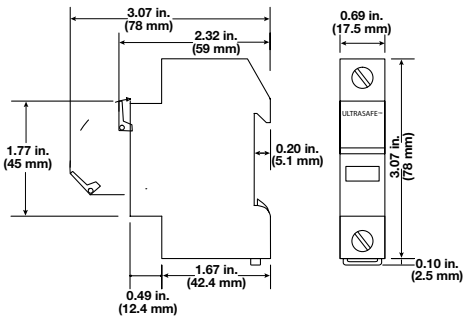
Note: All fuses should be rated at 125 percent of connected load or the next standard fuse size above 125 percent. Due to special cases such as cooler ambient or lower amperage loads, the connected load should be the determining factor. The semiconductor fuse I²t rating must not exceed the SCR I²t rating. These fuses are classified as supplemental protection for semiconductor devices. They are not approved for branch circuit protection.

Fuse and Fuse Holders

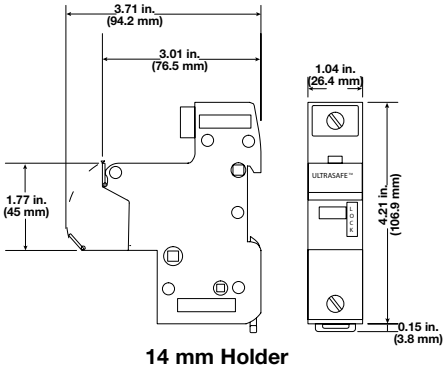


Fuse





10 mm Holder
17-5110



14 mm Holder
17-5114

Current Transformers

A current transformer (CT) provides a signal that is proportional to and isolated from the load that passes through it. The signal from the CT can be measured by a temperature or power controller. The value from that measurement may be used to trigger an alarm, detect an open heater or a shorted SSR, or to indicate the current. Choose the model that provides a measurable output for the planned load current.

To order, simply identify the desired part number. Contact your Watlow® representative for availability.

Part No.	Current Ratio
Current Transformer	
16-0246 ①	50 amp: 50mA
16-0008 ②	75 amp: 5 amp
16-0044	100 amp: 5 amp
16-0072	125 amp: 5 amp
16-0008	150 amp: 5 amp
16-0045	200 amp: 5 amp
16-0073	300 amp: 5 amp
0004-0286-0400	400 amp: 5 amp
0004-0286-0500	500 amp: 5 amp
0004-0286-0600	600 amp: 5 amp
0004-0286-0800	800 amp: 5 amp
0004-0286-1000	1000 amp: 5 amp
Interstage Transformer	
16-0176	5 amp: 20mA

Note: An interstage transformer (part no. 16-0176) is required with any current transformer rated 75 amps or above.

① Supercedes part numbers 16-0230,16-0231, 16-0232, 16-0233.
② Use 2-wire passes through the current transformer 16-0008 for 75 amp applications.

Panel Mount Adapter Plates

Panel mount adapter plates provide a convenient, cost saving solution to modify existing control panels. Available in a variety of DIN sizes, adapter plates make changing out old, larger size temperature controllers with more sophisticated, compact controllers easy. Simply complete the build-a-part with the specifications you require.

Ordering Information

Part Number

① ② ③ ④		⑤	⑥ ⑦ ⑧ Adapter Plate & Config.		⑨ ⑩ ⑪	⑫ Finish
0216	-	0		-	P00	

⑥ ⑦ ⑧	Adapter Plate Size and Configuration
920 =	1/2 DIN to 1/4 DIN
865 =	1/4 DIN to 1/8 DIN
866 =	1/4 DIN to 1/16 DIN
895 =	1/4 DIN to 1/32 DIN
867 =	1/8 DIN to 1/16 DIN
897* =	Vertical 1/8 DIN to horizontal 1/32 DIN
899* =	Horizontal 1/8 DIN to horizontal 1/32 DIN
900 =	1/16 DIN to 1/32 DIN
* Available in black anodized only	

⑫	Finish
2 =	Black anodize
3 =	Stainless steel

Arc Suppression and EMI Filters

Noise Suppression Devices

These devices protect controller outputs from damage that can be caused by voltage spikes from inductive loads.

Part No.	Description
0802-0273-0000	MOV, 150VAC, 20 joule
0802-0266-0000	MOV, 275VAC, 15 joule
0804-0147-0000	Quencharc® (250VAC max.)

CE Filters for DIN-A-MITE Products

These filters are required for DIN-A-MITE® power controllers to conform with CE conducted emissions standards.

Part No.	Description	Stocked
14-0019	Single-phase, parallel connected filter	Yes
14-0020	Three-phase, parallel connected filter	Yes

Power Supplies

Watlow's series of Class 2, low-profile DIN rail-mount power supplies, only 2.2 inches deep, are ideal for shallow enclosure installations commonly used in building automation and security applications.

The DSP series supplies are available with nominal outputs from 20 to 28 volts and power levels ranging from 31 to 91 watts in three package sizes. Load regulation is less than one percent from no load to full load, with ripple and noise below 50 millivolts. To compensate for cable voltage drops, output voltage can be adjusted from the front panel and colored LED indicators immediately confirm the output status.

Features and Benefits

Low 2.2 inch profile
- Fits into wall-mounted cabinets

Wide range AC
- Enables global use with no input selector switches

Convection cooled
- Eliminates the need for a system fan

Class II double insulation
- Offers impeccable protection

DIN-rail or chassis mount
- Adapts easily to different mounting configurations

Adjustable voltage output
- Fine tune output voltage from 24 to 28VDC

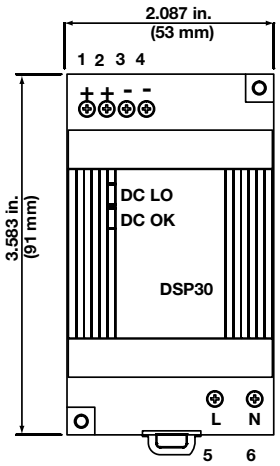
Power Supplies

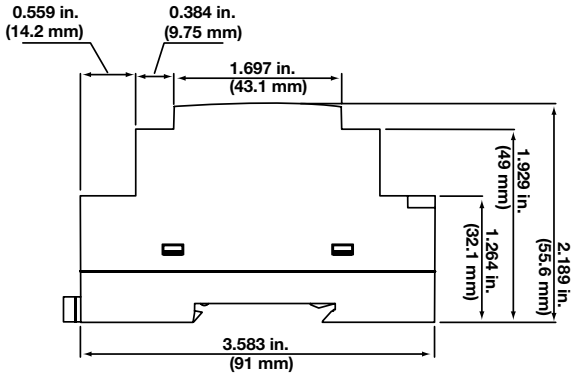
Items/Model Number	DSP30	DSP60	DSP100
Watlow® Part Number	**0847-0299-0000**	**0847-0300-0000**	**0847-0301-0000**
AC Input Voltage Range	90-264VAC, Class II double insulated (no ground connection required)	Same	Same
Input Frequency	47-63Hz	Same	Same
DC Input Voltage Range	120-370VDC	Same	Same
Inrush current (115/230VAC)	25/50A	30/60A	30/60A
Power Factor and Flicker	Meets EN 61000-3-2, EN 61000-3-3	Same	Same
Output Voltage	24V	Same	Same
Voltage Adjust	24-28V	Same	Same
Current	1.30A	2.50A	4.20A
Power	31.2 W	60.0 W	100.8 W
Typical Efficiency	83%	86%	85%
Hold Up Time (115VAC)	25ms	12ms	10ms
UL® 1310 Class 2	Yes	Yes	—
Output Voltage Accuracy	±1% of nominal	Same	Same
Line Regulation	1%	Same	Same
Load Regulation	1%	Same	Same
Ripple and Noise (20MHz BW) mV	50mV	Same	Same
Overcurrent	110-160%, fold	Same	Same
Protection (Type)	Forward under short circuit (DSP100-24/C2 102-108)	Same	Same
Overvoltage Protection (Volts)	120-145%	Same	Same
Hold Up Time (115VAC input)	See model selector	Same	Same
LED Indicators	Green LED = On, Red LED = DC output low	Same	Same
Operating Temperature	-25 to +71°C (derate linearly 2.5%/°C from 55 to 71°C)	Same	Same
Temperature Coefficient	±0.02%/°C	Same	Same
Operating Humidity	20 – 95% RH (non condensing)	Same	Same
Cooling	Convection	Same	Same
Withstand Voltage	Input to output 3kVAC for 1 min.	Same	Same
Isolation Resistance	>100M at 25°C & 70% RH, output to ground 500VDC	Same	Same
Vibration (Operating)	IEC 60068-2-6 (Mounting by rail: random wave, 10-500 Hz, 2G, ea. along X, Y, Z axes 10 min/cycle, 60 min.)	Same	Same
Shock (Operating)	IEC 60068-2-27 (Half sine wave, 4G, 22ms, 3 axes, 6 faces, 3 times for each face	Same	Same
Safety Agency Approvals	UL®1310 Class 2, UL®60950-1, EN 60950-1, CE	Same	Same
Immunity	EN 61000-4-2, -3, -4, -5, -6, -8 and -11	Same	Same
Conducted and Radiated EMI	DSP10: EN 55022 Class B; DSP30-100: EN 55022 Class A	Same	Same
Weight (Typ) g	200	250	320
Size (W x H x D) in.	2.09 x 3.58 x 2.19	2.8 x 3.58 x 2.19	3.54 x 3.58 x 2.19
Case Material	Plastic	Same	Same
Warranty Years	2	Same	Same

Power Supplies

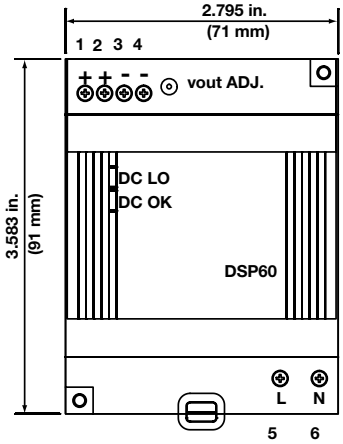
Dimensional Drawings

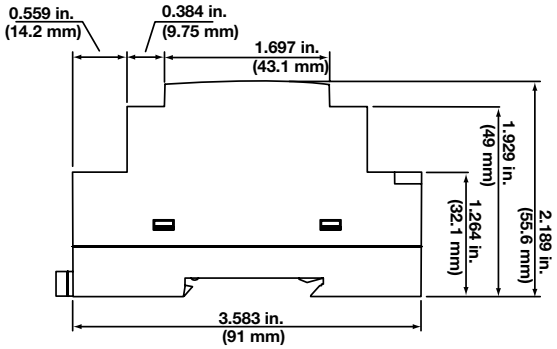
DSP30





DSP60





DSP100