

# Banner Industrial Wireless Accessories

## Instruction Manual

Original Instructions  
b\_3147091 Rev. J  
18 December 2020  
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# 1 Accessories

The accessories list includes FCC approved antennas, antenna cabling, surge suppressors, power supplies, replacement batteries, enclosures, cables, and other hardware.

## 1.1 Selecting an Enclosure

Select the enclosure size based on what you intend to mount inside it. Always select the largest enclosure you can to allow for future expansion.



6 × 6 inch: Fits a single DX80.

10 × 8 inch: Fits a power supply, surge suppressor, a single DX80, and a few relays.

12 × 10 inch (recommended): Provides ample room for multiple radios and accessories.

### 1.1.1 Polycarbonate Enclosures

Polycarbonate Enclosures with Opaque Covers		Polycarbonate Enclosures with Clear Covers	
Models	Description	Models	Description
<a href="#">BWA-AH664</a>	Enclosure, Polycarbonate, with Opaque Cover, 6 × 6 × 4	<a href="#">BWA-AH664C</a>	Enclosure, Polycarbonate, with Clear Cover, 6 × 6 × 4
<a href="#">BWA-AH864</a>	Enclosure, Polycarbonate, with Opaque Cover, 8 × 6 × 4	<a href="#">BWA-AH864C</a>	Enclosure, Polycarbonate, with Clear Cover, 8 × 6 × 4
<a href="#">BWA-AH1084</a>	Enclosure, Polycarbonate, with Opaque Cover, 10 × 8 × 4	<a href="#">BWA-AH1084C</a>	Enclosure, Polycarbonate, with Clear Cover, 10 × 8 × 4
<a href="#">BWA-AH12106</a>	Enclosure, Polycarbonate, with Opaque Cover, 12 × 10 × 6	<a href="#">BWA-AH12106C</a>	Enclosure, Polycarbonate, with Clear Cover, 12 × 10 × 6
<a href="#">BWA-AH14126</a>	Enclosure, Polycarbonate, with Opaque Cover, 14 × 12 × 6	<a href="#">BWA-AH14126C</a>	Enclosure, Polycarbonate, with Clear Cover, 14 × 12 × 6
<a href="#">BWA-AH16148</a>	Enclosure, Polycarbonate, with Opaque Cover, 16 × 14 × 8	<a href="#">BWA-AH16148C</a>	Enclosure, Polycarbonate, with Clear Cover, 16 × 14 × 8
<a href="#">BWA-AH181610</a>	Enclosure, Polycarbonate, with Opaque Cover, 18 × 16 × 10	<a href="#">BWA-AH181610C</a>	Enclosure, Polycarbonate, with Clear Cover, 18 × 16 × 10


Swing Panel Kits	
Models	Description
<b>BWA-AH66SPK</b>	Swing Panel Kit, 6 × 6, includes mounts and screws
<b>BWA-AH86SPK</b>	Swing Panel Kit, 8 × 6, includes mounts and screws
<b>BWA-AH108SPK</b>	Swing Panel Kit, 8 × 10, includes mounts and screws
<b>BWA-AH1210SPK</b>	Swing Panel Kit, 12 × 10, includes mounts and screws
<b>BWA-AH1412SPK</b>	Swing Panel Kit, 14 × 12, includes mounts and screws
<b>BWA-AH1614SPK</b>	Swing Panel Kit, 16 × 14, includes mounts and screws
<b>BWA-AH1816SPK</b>	Swing Panel Kit, 18 × 16, includes mounts and screws

Back Panel Kits	
Models	Description
<b>BWA-BP66A</b>	Back Panel, Aluminum, 6 × 6
<b>BWA-BP86A</b>	Back Panel, Aluminum, 8 × 6
<b>BWA-BP108A</b>	Back Panel, Aluminum, 10 × 8
<b>BWA-BP1210A</b>	Back Panel, Aluminum, 12 × 10
<b>BWA-BP1412A</b>	Back Panel, Aluminum, 14 × 12
<b>BWA-BP1614A</b>	Back Panel, Aluminum, 16 × 14
<b>BWA-BP1816A</b>	Back Panel, Aluminum, 18 × 16

DIN Rail Kits (with Self-Threading Screws)	
Models	Description
<b>BWA-AH6DR</b>	DIN Rail Kit, 6", 2 trilobular/self-threading screws
<b>BWA-AH8DR</b>	DIN Rail Kit, 8", 2 trilobular/self-threading screws
<b>BWA-AH10DR</b>	DIN Rail Kit, 10", 2 trilobular/self-threading screws
<b>BWA-AH12DR</b>	DIN Rail Kit, 12", 2 trilobular/self-threading screws
<b>BWA-AH14DR</b>	DIN Rail Kit, 14", 2 trilobular/self-threading screws
<b>BWA-AH16DR</b>	DIN Rail Kit, 16", 2 trilobular/self-threading screws
<b>BWA-AH18DR</b>	DIN Rail Kit, 18", 2 trilobular/self-threading screws
<b>BWA-AHTBS</b>	Trilobular/self-threading screws, #10-32 × 0.375 PHL PH ZINC, 10 pack

Enclosure Accessories	
Models	Description
<b>BWA-AHAK</b>	Accessory Kit, includes all screws, inserts, and mounting feet, for replacement only

## 1.1.2 Fiberglass Enclosures

Models	Description	
<b>BWA-EF1086</b>	Hinged fiberglass enclosure, 10" × 8" × 6"	
<b>BWA-EF866</b>	Hinged fiberglass enclosure, 8" × 6" × 6"	
<b>BWA-PANEL-108</b>	Panel, 10 × 8	
<b>BWA-PANEL-86</b>	Panel, 8 × 6	




## 1.2 Selecting an Antenna

Select your antenna based on your specific application needs. There are three basic antenna solutions:


- **Use the supplied rubber duck antenna inside the enclosure.** DX80 products come with a 2 dBi rubber duck antenna. Often simply attaching the supplied antenna to the radio provides enough radio range to meet your needs.
- **Mount a dome antenna to the enclosure.** The -D antennas can be mounted directly on the enclosure.
- **Use an N-type pole-mounted antenna, with surge suppressor.** The -A and -AS antennas can be mounted remotely from the enclosure and require the BWC-LFNBMN-DC surge suppressor.

## 1.2.1 Antennas: Rubber RP-SMA

The following rubber, or rubber duck, antennas have an RP-SMA male connection.

Omni-Directional Antennas with RP-SMA Male Connections	
<p><b>BWA-902-C</b></p> <ul style="list-style-type: none"> <li>• 2 dBi, Rubber swivel, 900 MHz (ships with 900 MHz radios)</li> <li>• Datasheet: <a href="#">b_3145120</a></li> </ul>	
<p><b>BWA-905-C</b></p> <ul style="list-style-type: none"> <li>• 5 dBi, Rubber swivel, 900 MHz</li> <li>• Datasheet: <a href="#">b_3145123</a></li> </ul>	
<p><b>BWA-202-C</b></p> <ul style="list-style-type: none"> <li>• 2 dBi, Rubber swivel, 3 1/4 inches, 2.4 GHz (ships with 2.4 GHz radios)</li> <li>• Datasheet: <a href="#">b_3145114</a></li> </ul>	
<p><b>BWA-205-C</b></p> <ul style="list-style-type: none"> <li>• 5 dBi, Rubber swivel, 6 1/2 inches, 2.4 GHz</li> <li>• Datasheet: <a href="#">b_3145116</a></li> </ul>	
<p><b>BWA-207-C</b></p> <ul style="list-style-type: none"> <li>• 7 dBi, Rubber swivel, 9 1/4 inches, 2.4 GHz</li> <li>• Datasheet: <a href="#">b_3145118</a></li> </ul>	
<p><b>BWA-902-RA</b></p> <ul style="list-style-type: none"> <li>• 2 dBi, Rubber fixed right angle</li> <li>• 900 MHz</li> <li>• Datasheet: <a href="#">b_4162828</a></li> </ul>	
<p><b>BWA-902-RA2</b></p> <ul style="list-style-type: none"> <li>• 2 dBi 1/2-wave, Rubber fixed right angle</li> <li>• 900 MHz</li> <li>• 160 mm tall</li> </ul>	
<p><b>BWA-201-001</b></p> <ul style="list-style-type: none"> <li>• 1 dBi, Rubber, 1 inch tall</li> <li>• 2.4 GHz</li> </ul>	
	


## 1.2.2 Antennas: Dome

Omni-Directional Dome Antenna with RP-SMA Male Connection	
<p><b>BWA-902-D</b></p> <ul style="list-style-type: none"> <li>• Dome antenna, 2 dBi, 18-inch cable, 900 MHz</li> <li>• RP-SMA Box Mount</li> <li>• Datasheet: <a href="#">b_3145121</a></li> </ul>	
<p><b>BWA-202-D</b></p> <ul style="list-style-type: none"> <li>• Dome antenna, 2 dBi, 18-inch cable, 2.4 GHz</li> <li>• RP-SMA Box Mount</li> <li>• Datasheet: <a href="#">b_3145115</a></li> </ul>	


For remote mounting options, use bracket SMBAMS18RA listed in the [Brackets and Mounting Options](#) on p. 11 section.

### 1.2.3 Antennas: Fiberglass N-Type


The following fiberglass antennas are typically used outdoors.

Omni-Directional Fiberglass Antennas with N-Type Female Connections	
<b>BWA-906-A</b> <ul style="list-style-type: none"> <li>6 dBd, Fiberglass, Full wave, 71.5 inches, 900 MHz</li> <li>Datasheet: <a href="#">b_3145124</a></li> </ul>	
<b>BWA-208-A</b> <ul style="list-style-type: none"> <li>8.5 dBi, Fiberglass, 24 inches, 2.4 GHz</li> <li>Datasheet: <a href="#">b_3145131</a></li> </ul>	
<b>BWA-206-A</b> <ul style="list-style-type: none"> <li>6 dBi, Fiberglass, 16 inches (shown), 2.4 GHz</li> <li>Datasheet: <a href="#">b_3145117</a></li> </ul>	
<b>BWA-906-AS</b> <ul style="list-style-type: none"> <li>6 dBi, Fiberglass, 1/4 Wave, 23.6 inches (1.3 inch dia.), 900 MHz</li> <li>Datasheet: <a href="#">b_3145125</a></li> </ul>	
<b>BWA-908-AS</b> <ul style="list-style-type: none"> <li>8 dBi, Fiberglass, 3/4 Wave, 63 inches (1.5 inch dia.), 900 MHz</li> <li>Datasheet: <a href="#">b_3145126</a></li> </ul>	

### 1.2.4 Antennas: Yagi N-Type


Directional (Yagi) Antennas with an N-Type Female Connection	
<b>BWA-9Y6-A</b> <ul style="list-style-type: none"> <li>6.5 dBd, 6.8 x 13 inches Outdoor, 900 MHz</li> <li>Datasheet: <a href="#">b_3145127</a></li> </ul>	
<b>BWA-9Y10-A</b> <ul style="list-style-type: none"> <li>10 dBd, 6.8 x 24 inches Outdoor, 900 MHz</li> <li>Datasheet: <a href="#">b_3145130</a></li> </ul>	


### 1.2.5 Antennas: Cellular

Cellular Antenna	
<b>BWA-CELLA-002</b> <ul style="list-style-type: none"> <li>Cellular multiband</li> <li>2 dBi</li> <li>RP-SMA male connection</li> <li>6.3 inch blade style</li> <li>Datasheet: <a href="#">b_4475176</a></li> </ul>	

### 1.2.6 Antenna Cables: RP-SMA to RP-SMA


Use these cables to connect a radio to a bulkhead surge suppressor or a bulkhead surge suppressor to an RP-SMA antenna. These cables may be used inside an enclosure or without an enclosure.

RP-SMA to RP-SMA Antenna Cables—RG58 Type			
Model	Length (m)	Description	
BWC-1MRSFRSB0.2	0.2	RG58, RP-SMA Male to RP-SMA Female Bulkhead	
BWC-1MRSFRSB1	1		
BWC-1MRSFRSB2	2		
BWC-1MRSFRSB4	4		

RP-SMA to RP-SMA Antenna Cables—LMR200 Type			
Model	Length (m)	Description	
BWC-2MRSFRS3	3	LMR200, RP-SMA Male to RP-SMA Female Bulkhead <ul style="list-style-type: none"> <li>High performance, lightweight design</li> <li>Outdoor rated; UV jacket</li> </ul>	
BWC-2MRSFRS6	6		
BWC-2MRSFRS9	9		
BWC-2MRSFRS12	12		


### 1.2.7 Antenna Cables: RP-SMA to N-Type

Use these cables to connect a radio to an N-type antenna, N-type antenna extension cable, or N-type surge suppressor. These cables may be used inside or outside the enclosure or without an enclosure.

RP-SMA to N-Type Cables—LMR200 Type			
Model	Length (m)	Description	
BWC-1MRSMN05	0.5	LMR200 RP-SMA to N-Type Male	
BWC-1MRSMN2	2		

### 1.2.8 Antenna Cables: N-Type

These LMR400 cables are antenna extension cables, connecting an N-type antenna to another N-type antenna cable. These cables are usually used outside the enclosure.



N-Type to N-Type Cables—LMR400 Type			
Model	Length (m)	Description	
BWC-4MNFN3	3	LMR400 N-Type Male to N-Type Female	
BWC-4MNFN6	6		
BWC-4MNFN15	15		
BWC-4MNFN30	30		

### 1.2.9 Surge Suppressors

Always install and properly ground a qualified surge suppressor when installing a remote antenna system (antenna not directly connected to the Sure Cross radio).

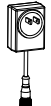




**Important:** Remote antenna configurations installed without a surge suppressor invalidate the manufacturer's warranty.




Surge Suppressors			
<b>BWC-LMRSFRPB</b> <ul style="list-style-type: none"> <li>Surge Suppressor, Bulkhead, RP-SMA Type</li> <li>RP-SMA to RP-SMA</li> </ul>		<b>BWC-LFNBMN-DC</b> <ul style="list-style-type: none"> <li>Surge Suppressor, bulkhead, N-Type, DC Blocking</li> <li>N-Type Female, N-Type Male</li> </ul>	

## 1.3 Power Supplies

### 1.3.1 DC Power Supplies

Models	Description	
<b>PSW-24-1</b>	DC power supply with wall plug, 100-240 V AC 50/60 Hz input, 24 V DC 1 A output, UL Listed Class 2	
<b>PSD-24-4</b>	DC power supply with wall plug, 90-264 V AC 50/60 Hz input, 24 V DC output, US-style wall plug input, 4-pin M12/Euro-style output; 2 m (6 ft) cable, UL Listed Class 2	
<b>PSDINP-24-06</b>	DC power supply, 0.63 Amps, 24 V DC, with DIN Rail Mount, Class I Division 2 (Groups A, B, C, D) Rated	
<b>PSDINP-24-13</b>	DC power supply, 1.3 Amps, 24 V DC, with DIN Rail Mount, Class I Division 2 (Groups A, B, C, D) Rated	
<b>PSDINP-24-25</b>	DC power supply, 2.5 Amps, 24 V DC, with DIN Rail Mount, Class I Division 2 (Groups A, B, C, D) Rated	

### 1.3.2 FlexPower Supplies and Replacement Batteries

Power Supplies		
Models	Description	
<b>DX81-LITH</b>	Battery Supply Module with mounting hardware	
<b>DX81H</b>	Battery Supply Module with mounting hardware, for DX99 polycarbonate housing devices	
<b>DX81P6</b>	Battery Supply Module, six "D" cells, with mounting hardware	
<b>BWA-SOLAR PANEL 3W</b>	Solar Panel, 12 V, 3 W, Multicrystalline, 188 × 195 × 15, Wall/Pole clamp style mounting bracket included (does not include controller)	
<b>BWA-SOLAR PANEL 5W</b>	Solar Panel, 12 V, 5 W, Multicrystalline, 270 × 222 × 17, Wall/Pole clamp style mounting bracket included (does not include controller)	
<b>BWA-SOLAR PANEL 20W</b>	Solar Panel, 12 V, 20 W, Multicrystalline, 573 × 357 × 30, "L" style mounting bracket included (does not include controller)	
<b>BWA-SOLAR CNTRL-12V</b>	Solar Controller, 6 A Load Current, 12 V System Voltage, recommended for 20 W or less solar panel and a Sealed Lead Acid Battery (sold separately)	

#### Replacement Batteries

**BWA-BATT-001**

- 3.6 V Lithium D cell for hazardous or non-hazardous locations
- One battery



**BWA-BATT-006**

- 3.6 V Lithium AA cell
- Two batteries





## Replacement Batteries

### BWA-BATT-011

- 3.6 V Lithium D cell for non-hazardous locations only
- One battery



### BWA-BATT-013

- 3.6 V Lithium C cell
- One battery

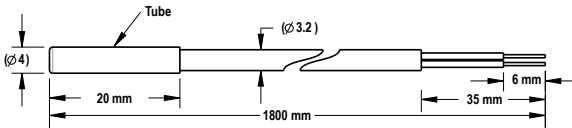
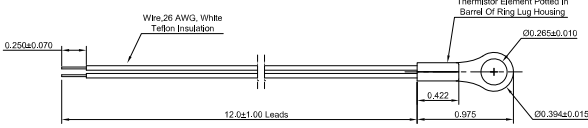


## 1.4 Relays

Models	Description	
<a href="#">IB6RP</a>	Interface Relay Box, 18 to 26 V DC inputs, isolated relay outputs (not shown)	
<a href="#">BWA-RELAY-12V</a>	Relay, Blade Style with Base, 12 V	
<a href="#">BWA-RELAY-24V</a>	Relay, Blade Style with Base, 24 V	
<a href="#">BWA-RH1B-UDC12V</a>	Relay, Blade Style, No Base, 12 V (replacement part)	
<a href="#">BWA-RH1B-UDC24V</a>	Relay, Blade Style, No Base, 24 V (replacement part)	
<a href="#">BWA-SH1B-05</a>	Relay Base Only (replacement part)	

## 1.5 Sensors

Temperature Sensors - Thermistors	
<b>BWA-THERMISTOR-001</b> <ul style="list-style-type: none"> <li>• NTC Thermistor, 2.2 KOhms, +/-0.2%C, blue bead</li> <li>• For models: DX80N9X2S2N2T/C, DX99N9X2S2N0T4X0A0, and DX99N9X1S2N0T4X0D0</li> </ul>	<b>BWA-THERMISTOR-002</b> <ul style="list-style-type: none"> <li>• NTC Thermistor, 10 KOhms, +/-0.2%C, black bead</li> <li>• For Performance models -P1/C/E, and MultiHop models M-H1/C/E</li> <li>• 2 pack</li> </ul>

Temperature Sensors - Thermistors	
<p><b>BWA-THERMISTOR-PROBE-001</b></p> <ul style="list-style-type: none"> <li>• Temperature sensor with thermistor PS103G2</li> <li>• Beta Value(K) 0-50°C: 3575</li> <li>• Base thermistor accuracy of 0.2%</li> <li>• Operating Temperature Range: -20 °C to +105 °C (-4 °F to +221 °F)</li> <li>• Maximum Power Rating: 30 mW at 25 °C; derated to 1 mW at 125 °C</li> <li>• Dissipation Constant: 1 mW/°C</li> <li>• Plated nickel finish; PVC insulation</li> </ul> 	<p><b>BWA-THERMISTOR-RING-LUG</b></p> <ul style="list-style-type: none"> <li>• Temperature sensor with thermistor PS103G2</li> <li>• Beta Value (K) 0-50°C: 3575</li> <li>• Base thermistor accuracy of 0.2%</li> <li>• Operating Temperature Range: 0 °C to +75 °C (+32 °F to +167 °F)</li> <li>• Maximum Power Rating: 30 mW at 25 °C; derated to 1 mW at 125 °C</li> <li>• Dissipation Constant: 1 mW/°C</li> </ul> 

Pressure Sensors	
<p><b>BWA-S612-15-100</b></p> <ul style="list-style-type: none"> <li>• NoShok Series 612 Submersible Level Transmitter, model 612-15-1-1-N-100, 0 to 15 psig</li> <li>• 100 ft cable</li> </ul>	<p><b>BWA-625-5000-1-1-8-25</b></p> <ul style="list-style-type: none"> <li>• NoShok Series 625 Intrinsically Safe Pressure Transmitter, model 625-5000-1-1-8-25, 0 to 5000 psig, 4-20 mA</li> <li>• 1/2" NPT, M12 QD</li> </ul>
<p><b>BWA-625-10000-1-1-8-25</b></p> <ul style="list-style-type: none"> <li>• NoShok Series 625 Intrinsically Safe Pressure Transmitter, model 625-10000-1-1-8-25, 0 to 10000 psig, 4-20 mA</li> <li>• 1/2" NPT, M12 QD</li> <li>• FM and CSA approved</li> </ul>	
<p><b>BWA-PRESSURE-SENSOR-50</b></p> <ul style="list-style-type: none"> <li>• 0-50 PSIG</li> <li>• 1 meter flying leads</li> <li>• 1/4"-18 NPT port</li> </ul>	<p><b>BWA-PRESSURE-SENSOR-150</b></p> <ul style="list-style-type: none"> <li>• 0-150 PSIG</li> <li>• 1 meter flying leads</li> </ul>
<p><b>BWA-PRESSURE-SENSOR-500</b></p> <ul style="list-style-type: none"> <li>• 0-500 PSIS</li> <li>• 1 meter flying leads</li> </ul>	<p><b>BWA-PRESSURE-SENSOR-3000</b></p> <ul style="list-style-type: none"> <li>• 0-3000 PSIS</li> <li>• 1 meter flying leads</li> </ul>

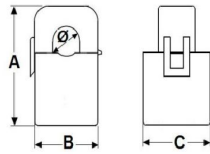
Moisture Sensors	
<p><b>BWA-ACC-SEN-SDI</b></p> <ul style="list-style-type: none"> <li>• Acclima SDI-12 Soil Moisture Transducer</li> </ul>	

## Current Transformers (CT)

### BWA-CURRENT-TRANSFORMER-20A

- Split-Core Current Transformer
- 5–20 A Input
- 0.333 V Output
- Datasheet p/n [212463](#)

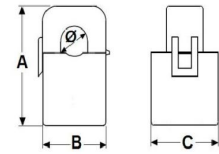
A = 41 mm; B = 24 mm; C = 26.5 mm



### BWA-CURRENT-TRANSFORMER-150A

- Split-Core Current Transformer
- 5–150 A Input
- 0.333 V Output
- Datasheet p/n [212463](#)

A = 45.5 mm; B = 29 mm; C = 31.5 mm



## 1.6 Brackets and Mounting Options

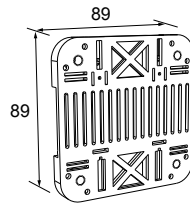
### BWA-HW-001 Mounting Hardware Kit

- Four screws, M5-0.8 x 25 mm, SS
- Four screws, M5-0.8 x 16 mm, SS
- Four hex nuts, M5-0.8 mm, SS
- Four bolts, #8-32 x 3/4", SS

## Brackets

### SMBDX80DIN

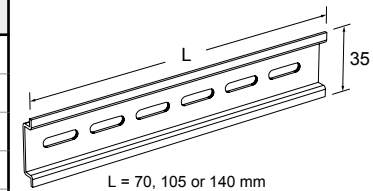
- Black reinforced thermoplastic
- Bracket for mounting on a 35 mm DIN rail



### DIN-35-..

35 mm DIN Rail

Model	Length
DIN-35-70	70
DIN-35-105	105
DIN-35-140	140
DIN-35-180	180
DIN-35-220	220



Hole center spacing: 35.1

Hole size: 25.4 x 5.3

Use to mount DX80 board-level devices, such as DX80Nx-PBx or DX80DRx-HBx models.

### BWA-HW-034

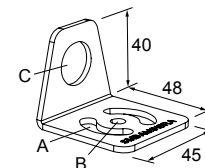
- DIN rail clip, black plastic



This standard Banner bracket can also be used to remotely mount dome antennas.

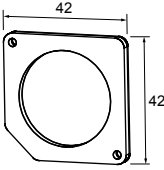
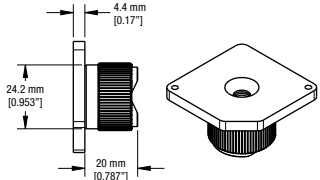
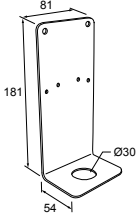
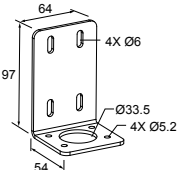
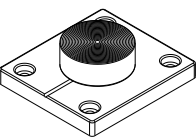
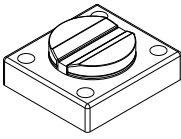
### SMBAMS18RA

- Right-angle SMBAMS series bracket with 18 mm hole
- Articulation slots for 90+° rotation
- 12-ga. (2.6 mm) cold-rolled steel

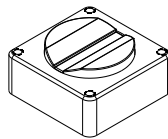
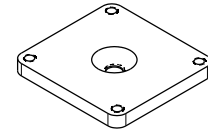
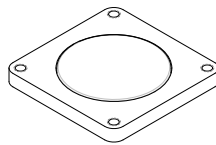
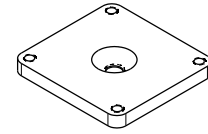
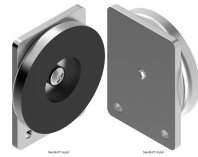


**Hole center spacing:** A = 26.0, A to B = 13.0

**Hole size:** A = 26.8 x 7.0, B =  $\varnothing$  6.5, C =  $\varnothing$  19.0

Brackets	
<p>Use to mount vibration sensor models QM42VT1 and VT2 sensor</p> <p><b>BWA-BK-001</b></p> <ul style="list-style-type: none"> <li>Includes magnetic mounting bracket <b>SMB42FLM12</b> and 2 mounting screws</li> </ul> 	<p>Used to mount vibration sensor models QM42VT1 and VT2</p> <p><b>BWA-BK-008</b></p> <ul style="list-style-type: none"> <li>Magnetic coaxial mount for round objects</li> <li>Includes <b>SMB42FLAT</b> stainless steel bracket, 1/4"-28 screw mount, and 1 piece of 3M™ thermally conductive adhesive transfer tape</li> <li>42 mm × 42 mm</li> </ul> 
<p><b>BWA-BK-004</b></p> <ul style="list-style-type: none"> <li>Mounts both the K50U Ultrasonic sensor and a Wireless Q45U Node or DX80 Node</li> </ul> 	<p><b>BWA-BK-006</b></p> <ul style="list-style-type: none"> <li>Mounts both the K50U Ultrasonic sensor and a Wireless Q45U Node</li> </ul> 
<p>Used to mount the Q45VA sensor</p> <p><b>BWA-BK-009</b></p> <ul style="list-style-type: none"> <li>Mounts the device to a surface using two-part epoxy</li> <li>Alignment mark indicates the front of device</li> <li>Includes a base plate, two screw retainers, four mounting screws, a set screw, and a mounting disc</li> <li>44.5 mm × 49.5 mm</li> <li><b>For installation instructions, see Q45VA Bracket Assembly Quick Start Guide (p/n 208986)</b></li> </ul> 	<p>Used to mount the Q45 sensor</p> <p><b>BWA-BK-010</b></p> <ul style="list-style-type: none"> <li>Includes a magnetic mounting bracket and four mounting screws</li> <li>44.5 mm × 49.5 mm</li> <li>SmCo magnet with a 40 lb pull strength</li> <li>For use on flat or curved surfaces</li> </ul> 

Brackets	
<p><b>BWA-BK-011</b></p> <ul style="list-style-type: none"> <li>• Backside magnetic mount for the Q45 Sensors</li> <li>• Includes one bracket, three screws, and a magnetic cup</li> <li>• 60 mm × 40 mm</li> <li>• For use on a flat surface</li> </ul>	<p><b>BWA-BK-012</b></p> <ul style="list-style-type: none"> <li>• Use when measuring high frequency vibrations or when mounting the sensor to curved surfaces</li> <li>• Includes <b>SMBQM30</b> stainless steel bracket, four mounting screws, one M4 × 0.7 screw mount, and one piece of 3M™ thermally conductive adhesive transfer tape</li> <li>• 30 mm × 30 mm</li> <li>• <b>Refer to the Bracket Assembly Quick Start Guide for installation instructions (p/n 213323)</b></li> </ul>
<p><b>BWA-BK-013</b></p> <ul style="list-style-type: none"> <li>• Includes magnetic mounting bracket <b>SMBQM30</b> and four mounting screws (two sets of mounting screws for both the aluminum and stainless steel models)</li> <li>• 30 mm × 30 mm</li> <li>• <b>Refer to the Bracket Assembly Quick Start Guide for installation instructions (p/n 213323)</b></li> </ul>	<p><b>BWA-BK-014</b></p> <ul style="list-style-type: none"> <li>• Use when measuring high frequency vibrations or when mounting the sensor to curved surfaces</li> <li>• Includes <b>SMBQM30</b> aluminum bracket, four mounting screws, one M4 × 0.7 screw mount, and one piece of 3M™ thermally conductive adhesive transfer tape</li> <li>• 30 mm × 30 mm</li> <li>• <b>Refer to the Bracket Assembly Quick Start Guide for installation instructions (p/n 213323)</b></li> </ul>
<p><b>BWA-BK-019</b></p> <ul style="list-style-type: none"> <li>• Magnet mount for curved surfaces</li> <li>• 30 mm × 30 mm, 14.4 mm thick</li> <li>• Includes four M2.5 × 16 mm socket head cap screws</li> <li>• <b>Refer to the Bracket Assembly Quick Start Guide for installation instructions (p/n 213323)</b></li> </ul>	


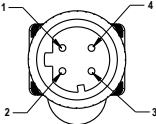


Adhesive Mounts	
<p><b>BWA-HW-057</b></p> <ul style="list-style-type: none"> <li>• 3M™ Thermally Conductive Adhesive Transfer Tape 8820</li> <li>• Provides a heat-transfer path between heat-generating components and heat sinks or other cooling devices</li> <li>• 3 pieces per pack</li> <li>• Tape is 20 mils (0.50 mm) thick; liner is 1.5-2 mil (37.5-50 μm) thick</li> <li>• Thermally conductive ceramic filler</li> <li>• Dual liner using silicone-treated polyester: easy-release PET liner is clear, tight side PET liner is blue</li> </ul>	

## 1.7 Cables

### 1.7.1 Ethernet Cables



Use a crossover cable to connect the GatewayPro or DX83 Ethernet Bridge to a host system without using an Ethernet switchbox or hub. When using a switchbox or hub, use a straight cable.

RSCD RJ45 Ethernet to 4-Pin M12/Euro-Style Cordsets			
Model	Length	Style	Pinout
<b>BWA-E2M</b>	2 m (6.6 ft)	Straight RSCD RJ45 440	
<b>BWA-E8M</b>	8 m (26.2 ft)		
<b>BWA-EX2M</b>	2 m (6.6 ft)	Crossover RSCD RJ45CR 440	 <p>1 = White/orange (+Tx) 2 = Orange (-Tx) 3 = White/blue (+Rx) 6 = Blue (-Rx) 4, 5, 7, 8 = N/C</p> <p>1 = White/Orange (+Tx) 2 = White/Blue (+Rx) 3 = Orange (-Tx) 4 = Blue (-Rx)</p>


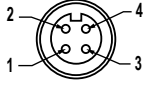
### 1.7.2 Adapter Cables

Use the following adapter cables to connect your device to your computer during configuration.


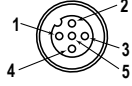
**RS-485 to USB Adapter with Wall Plug**—Use with the User Configuration Software; works with all radios, including 1 Watt; datasheet: [140377](#)

4-Pin Threaded M12/Euro-Style RS-485 to USB Adapter Cordset, with Wall Plug				
Model	Length	Style	Dimensions	Pinout (Female)
<b>BWA-UCT-900</b>	1 m (3.28 ft)	Straight		 <p>1 = Brown 2 = White 3 = Blue 4 = Black</p>

**RS-485 to USB Adapter**—Use with the User Configuration Software; requires BWA-HW-026 to work with 1 Watt Radios; datasheet: [140377](#)

4-Pin Threaded M12/Euro-Style RS-485 to USB Adapter Cordset				
Model	Length	Style	Dimensions	Pinout (Female)
BWA-HW-006	1 m (3.28 ft)	Straight		 1 = Brown 2 = White 3 = Blue 4 = Black

**USB to 1-Wire Serial Interface Adapter**—Use with the Sensor Configuration Software to communicate directly with 1-wire serial interface sensors; datasheet: [170020](#)

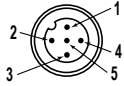
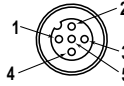
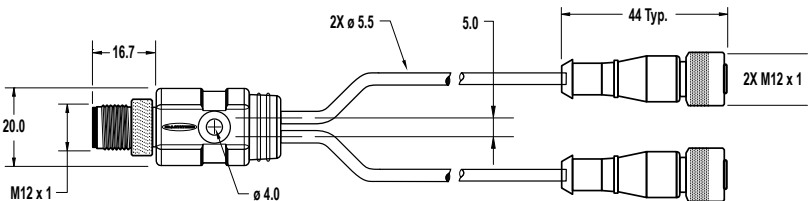
5-Pin Threaded M12/Euro-Style 1-Wire Serial to USB Adapter Cordset				
Model	Length	Style	Dimensions	Pinout (Female)
BWA-USB1WIRE-001	1 m (39 in)	Straight		 1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray

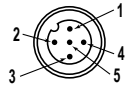
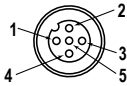
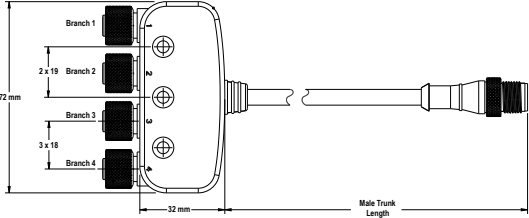
### 1.7.3 Splitter Cables

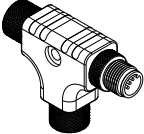
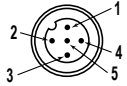
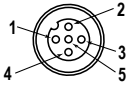
The 4-pin, 5-pin, and DB9 splitter cables all have specific functions. Using the incorrect cable for your application can damage the radios.

**5-pin Splitter Cables**—Use splitter cable **CSRB-M1250M125.47M125.73** to split from one power source to two *FlexPower* or solar powered devices. DO NOT use this cable to connect a *FlexPower* device to a 10 to 30 V DC powered device. (Refer to the wiring diagrams for each radio to avoid damaging the radios.)



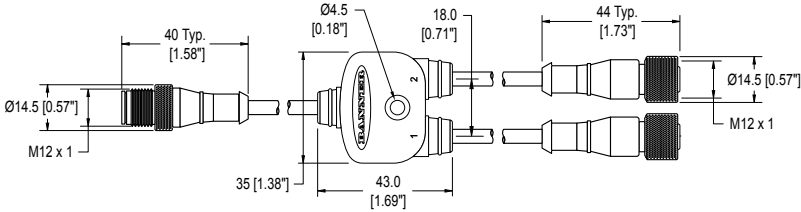
Use splitter cable **CSRB-M1253.28M1253.28M1253.28** to connect one *FlexPower* device (data radio, *FlexPower* Gateway, etc) to two power sources, such as the *FlexPower* Solar Supply and DX81P6 Battery Pack.

5-Pin Threaded M12/Euro-Style Splitter Cordsets with Rounded Junction—Double Ended				
Model	Length	Style	Pinout (Male)	Pinout (Female)
CSRB-M1250M125.47M125.73	Trunk (male): 0 m Branches (female): 0.14 m (0.46 ft) and 0.22 m (0.72 ft)	Straight		
CSRB-M1253.28M1253.28M1253.28	Trunk (female): 1 m (3.28 ft) Branches (male): 1 m (3.28 ft)			
			1 = Brown 2 = White 3 = Blue	4 = Black 5 = Gray

5-Pin Threaded M12/Euro-Style Splitter Cordset with Flat Junction—Double Ended				
Model	Trunk (Male)	Branches (Female)	Pinout (Male)	Pinout (Female)
CSB4-M1251M1250	0.3 m (0.98 ft)	Four (no cable)		
			1 = Brown 2 = White 3 = Blue	4 = Black 5 = Gray

5-Pin Threaded M12/Euro-Style Splitter Tee				
Model	Description		Pinout (Male)	Pinout (Female)
CSB-M1250M1250-T	Female trunk, 1 female branch, 1 male branch		 1 = Brown 2 = White 3 = Blue	 4 = Black 5 = Green/Yellow

**4-pin Splitter Cables**—Use the following 4-pin splitter cables to split power between two 10 to 30 V DC powered devices, such as a data radio and Gateway, or between a DX85 and Gateway.

4-Pin Threaded M12/Euro-Style Splitter Cordsets—Flat Junction			
Model	Branches (Female)	Trunk (Male)	Pinout
CSB-M1240M1240	No branch	No trunk	 Female   Male  1 = Brown 2 = White 3 = Blue 4 = Black
CSB-M1240M1241	2 x 0.3 m (1 ft)	No trunk	
CSB-M1241M1241		0.30 m (1 ft)	
CSB-M1248M1241		2.44 m (8 ft)	
CSB-M12415M1241		4.57 m (15 ft)	
CSB-M12425M1241		7.60 m (25 ft)	
CSB-UNT425M1241		7.60 m (25.0 ft) Unterminated	
			

**DB9 Splitter Cable**—Use this cable to connect a Sure Cross device to power and to a 9-pin serial port on a computer or other industrial device.



**BWA-DRSPLITTER**

- Splitter cable, DB9 Female (RS232) trunk to 5-pin M12/Euro-style male and female
- The trunk and each branch is 0.3 meters long
- Datasheet: [155284](#)



## 1.7.4 Euro-Style Cordsets - Single Ended

When facing the Node or Gateway toward you and the quick disconnect connection is facing down, the right-angle cables exit to the right.

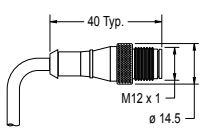
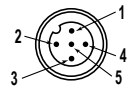
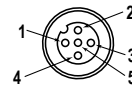
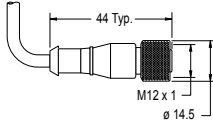
Right-angle cordsets are not compatible with the DX70 devices. When using the FlexPower Node with integrated battery, use a double ended cordset. For a FlexPower Node with external power supply, use a single ended cordset. **If using the communication lines, the cable length cannot exceed 3 meters, or 10 feet.**

5-Pin Threaded M12/Euro-Style Cordsets—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC1-501.5	0.5 m (1.5 ft)	Straight		<p>1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray</p>
MQDC1-506	2 m (6.5 ft)			
MQDC1-515	5 m (16.4 ft)			
MQDC1-530	9 m (29.5 ft)			
MQDC1-506RA	2 m (6.5 ft)	Right-Angle		
MQDC1-515RA	5 m (16.4 ft)			
MQDC1-530RA	9 m (29.5 ft)			


Models	Description
BWA-QD5.5	Prewired 5-pin M12/Euro-style quick disconnect (QD), 1/2-14 NBSM
BWA-QD8.5	Prewired, 8-pin M12/Euro-style quick disconnect (QD), 1/2-14 NBSM
BWA-QD12.5	Prewired 12-pin M12/Euro-style quick disconnect (QD), 1/2-14 NBSM
FIC-M12F4	4-pin M12/Euro-style straight female field-wireable connector
MQDMC-401	300 mm (12 in) cordset with a 4-pin M12/Euro-style straight male quick disconnect (QD), single ended, longer for DX80...C models

## 1.7.5 Euro-Style Cordsets - Double Ended


When using the FlexPower Node with integrated battery, use a double ended cordset. When using a FlexPower Node with external power supply, use a single ended cordset. **If using the communication lines, the cable length cannot exceed 3 meters (10 ft).**

5-Pin Threaded M12/Euro-Style Cordsets Less Than 3 m Long—Double Ended					
Model	Length	Style	Dimensions	Pinout (Male)	Pinout (Female)
DEE2R-51D	0.3 m (1 ft)	Female Straight/ Male Straight			
DEE2R-53D	0.91 m (3 ft)				
DEE2R-58D	2.44 m (8 ft)				
				<p>1 = Brown 2 = White 3 = Blue</p>	<p>4 = Black 5 = Green/Yellow</p>

### 1.7.6 Other Cables

<p><b>BWA-HW-026</b></p> <ul style="list-style-type: none"> <li>• Splitter cable with a wall plug to supply external power to a MultiHop Radio operating at 1 Watt while it is connected to a computer</li> <li>• The wall plug splits to 5-pin Euro-style male and 5-pin Euro-style female ends</li> <li>• The male end plugs into the USB to RS-485 adapter cable (model number BWA-HW-006) and the female end plugs into the MultiHop radio</li> </ul>	
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<p><b>BWA-RIBBON-001</b></p> <ul style="list-style-type: none"> <li>• Ribbon cable, 20-pin DBL socket</li> </ul>	
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<p><b>BWA-HW-010</b></p> <ul style="list-style-type: none"> <li>• Cable, FlexPower Current Monitoring</li> <li>• Connects a battery supply and FlexPower radio device to an averaging fluke meter to determine the current draw of the Node/sensor combination</li> <li>• Based on the current draw, battery life estimates can be made</li> </ul>	 <p>Averaging Fluke Meter</p> <p>DX81 Battery Supply Module</p> <p>FlexPower Node with MINI-BEAM</p> <p>BWA-HW-010 Cable FlexPower Current Monitoring</p>
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### 1.8 Other Accessories

## 1.8.1 DX85 Modbus RTU Remote I/O Devices

These remote I/O devices have a Modbus interface and are used to expand the I/O of the Gateway or the Modbus host. Add a "C" to the end of any DX85 model to order that I/O mix with an IP20 housing. The IP20 models are Class I, Division 2 certified when installed in a suitable enclosure.

Model	Description	IP67 Housing	IP20 Housing
<a href="#">DX85M4P4M2M2</a>	DX85 Modbus RTU Remote I/O, 4 Discrete IN, 4 Discrete OUT, 2 Analog IN, 2 Analog OUT (0 to 20 mA)		
<a href="#">DX85M0P0M4M4</a>	DX85 Modbus RTU Remote I/O, 4 Analog IN, 4 Analog OUT (0 to 20 mA)		
<a href="#">DX85M-P7</a>	DX85 Modbus RTU Remote I/O, Up to 12 sinking inputs or up to 12 NMOS sinking outputs (for a total of 12 I/O)		
<a href="#">DX85M-P8</a>	DX85 Modbus RTU Remote I/O, Up to 12 sourcing inputs or up to 12 sourcing outputs (for a total of 12 I/O)		

## 1.8.2 Cable Glands and Plugs





Models	Description	
<a href="#">BWA-HP.5-10</a>	Dummy Hole Plug Pack: 1/2-inch NPT, 10 pack	
<a href="#">BWA-HW-031</a>	Vent Plug, 1/2-inch NPT, IP67	
<a href="#">BWA-HW-059</a>	Vent Plug Pack (Plastic): Includes one 1/2-inch NPT vent plug and one strain-relief fitting and o-ring for 0.2 to 0.35 dia cable	
<a href="#">BWA-HW-053</a>	Vent Plug Pack (Plastic): Includes one 1/2-inch NPT vent plug and one cordgrip for 1.2 to 2.5 mm dia cable	
<a href="#">BWA-HW-052</a>	Cable Gland and Vent Plug Pack: includes 1/2-inch NPT gland, 1/2-inch NPT multi-cable gland, and 1/2-inch NPT vent plug, one each	
<a href="#">BWA-CG.5-10</a>	Cable Gland Pack: 1/2-inch NPT, Cordgrip for cable diameters 0.17 to 0.45 inch, 10 pack	
<a href="#">BWA-CG.5-3X5.6-10</a>	Cable Gland Pack: 1/2-inch NPT, Cordgrip for 3 holes of 2.8 to 5.6 mm diam, 10 pack	
<a href="#">BWA-CG.5-2X2.5-10</a>	Cable Gland Pack: 1/2-inch NPT, Cordgrip for 2 holes of 1.2 to 2.5 mm diam, 10 pack	
<a href="#">BWA-CG.5-6X4.0-10</a>	Cable Gland Pack: 1/2-inch NPT, Cordgrip for 6 holes of 2 to 4 mm diam, 10 pack	
<a href="#">BWA-CG.5-6X3.0-10</a>	Cable Gland Pack: 1/2-inch NPT, Cordgrip for 6 holes of 1.5 to 3 mm diam, 10 pack	

## 1.8.3 Hardware and Replacement Parts

Model	Description
<a href="#">BWA-HW-002</a>	DX80 Access Hardware Kit Plastic threaded plugs, PG-7 (4) Nylon gland fittings, PG-7 (4) Hex nuts, PG-7 (4) Plug, 1/2-inch NPT Nylon gland fitting, 1/2-inch NPT
<a href="#">BWA-HW-003</a>	PTFE Tape, 1/4 inches wide, 600 inches long
<a href="#">BWA-HW-004</a>	Replacement Seals O-ring, rotary access cover, PG21 (2) O-ring, body gasket (2) Access cover, rotary dials, clear plastic (2)
<a href="#">BWA-HW-009</a>	Solar assembly hardware pack, includes brackets, bolts, and set screws
<a href="#">BWA-HW-007</a>	Housing Kit, DX80, top and bottom, 10 pieces
<a href="#">BWA-HW-008</a>	Housing Kit, DX81, top and bottom, 10 pieces
<a href="#">BWA-HW-044</a>	Terminal header for the MultiHop Ethernet Data Radio

Model	Description
<b>BWA-HW-011</b>	Terminal Block Headers, IP20, 2 pack
<b>BWA-HW-012</b>	DX99 Antenna Extension Pack Screw, M4-0.7 x 20, pan head, black steel Flexible Antenna Cable, 12 inches, SMA male to SMA female
<b>BWA-HW-027</b>	8-pin quick disconnect, female, 1/2-inch NPT (FK8-0.5/14.5/NPT)
<b>BWA-HW-032</b>	Access hardware for the E housing, one 1/2-inch plug, one 1/2-inch gland
<b>BWA-HW-037</b>	Clear plastic retaining ring for DX99 metal housings, 10 pack

## 1.8.4 Metal Housing Accessories

<p><b>BWA-902-001</b></p> <ul style="list-style-type: none"> <li>• Dome antenna</li> <li>• 2 dBi, 18-inch cable, 1/2" SS NPT Port, 900 MHz</li> <li>• Datasheet: <a href="https://www.bannerengineering.com/datasheet/b_4475175">b_4475175</a></li> </ul>  <p><b>BWA-902-002</b></p> <ul style="list-style-type: none"> <li>• Dome antenna</li> <li>• 2 dBi, 18-inch cable, 3/4" SS NPT Port, 900 MHz</li> <li>• Datasheet: <a href="https://www.bannerengineering.com/datasheet/b_4475175">b_4475175</a></li> </ul>	<p><b>BWA-202-001</b></p> <ul style="list-style-type: none"> <li>• Dome antenna</li> <li>• 2 dBi, 18-inch cable, 1/2" SS NPT Port, 2.4 GHz</li> <li>• Datasheet: <a href="https://www.bannerengineering.com/datasheet/b_4475174">b_4475174</a></li> </ul>  <p><b>BWA-202-002</b></p> <ul style="list-style-type: none"> <li>• Dome antenna</li> <li>• 2 dBi, 18-inch cable, 3/4" SS NPT Port, 2.4 GHz</li> <li>• Datasheet: <a href="https://www.bannerengineering.com/datasheet/b_4475174">b_4475174</a></li> </ul>
<p><b>BWA-HW-016</b></p> <ul style="list-style-type: none"> <li>• Antenna Feedthrough, Stainless Steel</li> <li>• 1/2" NPT</li> </ul>  <p><b>BWA-HW-017</b></p> <ul style="list-style-type: none"> <li>• Antenna Feedthrough, Stainless Steel</li> <li>• 3/4" NPT</li> </ul>	<p><b>BWA-AXFS0130</b></p> <ul style="list-style-type: none"> <li>• AXF™ Explosion-Proof Antenna Coupler</li> </ul> 
<p><b>BWA-HW-012</b></p> <ul style="list-style-type: none"> <li>• DX99 Antenna Extension Pack</li> <li>• M4-0.7 x 20 black steel pan head screw</li> <li>• Flexible antenna cable 12" SMA male to SMA female</li> </ul>	<p><b>BWA-HW-037</b></p> <ul style="list-style-type: none"> <li>• Clear plastic retaining ring for DX99 metal housings</li> <li>• Qty: 10</li> </ul>