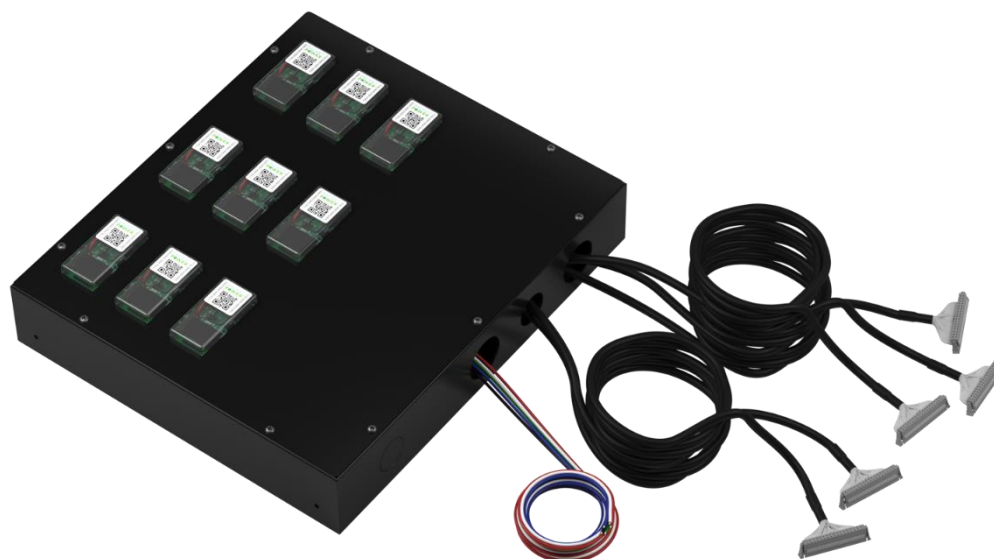




BGS72 Multi-Circuit Monitoring System

Installation, Operations and Maintenance Manual Version 2.0



Packet Power

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SECTION 1: GENERAL

HAZARDS

CAUTION

- ☐ Read all instructions carefully prior to installation.
- ☐ Always ensure power has been disconnected prior to doing any work.
- ☐ The BGS72 should be installed only by qualified technicians. Familiarity with and understanding of all terms used in this manual is assumed.
- ☐ BGS72 should be deployed in conjunction with proper branch circuit protectors.
- ☐ The user is responsible for ensuring that all work is performed in accordance with local electrical codes and regulations and using appropriate tools and materials.
-  BGS72 should only be connected to the type of power source indicated on the label.
- ☐ The current transformer(s) used with the BGS72 must be appropriate to the amperage of the circuit(s) on which they will be used.
- ☐ Only current transformers approved by Packet Power should be connected to the BGS72. Using unapproved current transformers could result in inaccurate readings and damage to the BGS72 device.
- ☐ Current transformers shall provide two means of isolation from hazardous voltages. When selecting a current transformer, the voltage and measurement category of the circuit to be measured must be considered to ensure that the current transformer is adequately insulated and rated. For 480V circuits, insulation shall be at least 600V rated. For 240V circuits, insulation shall be at least 300V rated.
- ☐ Prior to installation, check to make sure the BGS72 has not been damaged.
- ☐ Following installation in the final product, the connectors on the BGS72 must be fully enclosed and insulated from the external product enclosure in compliance with all relevant local electrical codes and regulations.
- ☐ A safety connection to electrical ground / earth must be used.
- ☐ Once installed on a conductor, current transformers must be connected to the BGS72. Failure to do so creates an unsafe condition and will result in damage to the CT.
- ☐ Follow basic safety precautions to reduce the risk of electrical shock and damage to equipment.
- ☐ Store in a clean, dry location. Clean with a dry cloth.
- ☐ Intended for indoor use only, do not install in a wet location.
-  Failure to use the product in the specified manner may lead to injury or death and damage to equipment.

Packet Power LLC assumes no liability for user's failure to comply with these safety guidelines. Please read this entire manual carefully before proceeding.



This symbol is used throughout this manual to indicate critical safety information. Failure to observe the information following this symbol may result in injury or death.

CAUTION: This system and the area it is installed in may contain life threatening voltages. Qualified personnel must disconnect all high voltage wiring before using or servicing the BGS72.



The BGS72 will be pre-configured to support single-phase, split-phase or three-phase power as indicated on the product's label. Only use the device with the indicated voltage service type.



Do not apply or remove the current clamps from hazardous live conductors.

Regulatory Information



Monitoring Units

This product has been tested to the following requirements:

- CONFORMS TO UL/IEC STD 61010-01, 3rd ed. IEC 61010-2-030 ed. 1.0, EN 61010-1:2010, CSA C22.2 NO. 61010-1
- IEC 61010-2-032 - Edition 2 - Issue Date 2002/09/01, EN 61010-1:2001, IEC 61010-1, 3rd Edition
- Council Directive 1999/05/EC - European Union (EU) Radio & Telecommunications Terminal Equipment Directive (R&TTE) ETSI EN 300 220-2 v2.4.1, ETSI EN 300 328 V1.7.1 and ETSI EN 301 489-1 and 301 489-3, Issued:2002/08/01 V1.4.1, EN61326-1, EN6100-3-2, EN6100-3-3, EN301 489-17, AS/NZS CISPR 11
- IC RSS-210 Issue 8 Annex 8, RSS-GEN Issue 3
- FCC CFR 47.15(c), 15.247(a)

BGS72 Assembly

This product has been tested to the following requirements: UL508A Industrial Control Panel

Class B Device Statement:

Section 15.105(a) of the FCC Rules: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Section 15.19 of the FCC Rules: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Using this Manual

This manual contains information about the Packet Power™ BGS72 Multi-circuit Monitoring System (“BGS72”) and associated devices. It is a supplement to information provided in the support section of Packet Power’s web site www.packetpower.com/support.

The BGS72 must be used in conjunction with a Packet Power Ethernet Gateway. Detailed information about the Ethernet Gateway can be found on the web site above, including information needed to access data from the BGS72 for use in a third-party monitoring application.

All information provided is relevant to every BGS72 model.

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SECTION 2: OVERVIEW

The BGS72 is a power monitoring system designed for installation on select panelboard circuits or input feeds, high energy loads such as generators, HVAC equipment and switchgear. The system transmits the monitoring information via a wireless mesh network to one or more Packet Power Ethernet Gateway (“Gateway”) devices.

Service Voltage Service Types

The BGS72 comes pre-wired for use with one of the following service types:

- 120V and 230-240V single-phase (L + N + ground)
- 208V single-phase (L + L + ground)
- 277V single-phase (L + N + ground)
- 208/120V three-phase wye (3-wire + N + ground)
- 208V three-phase delta (3-wire + ground)
- 240/120V split-phase (2-wire + N + ground)
- 415/240V three-phase wye (3-wire + N + ground)
- 480/277V three-phase wye (3-wire + N + ground)

Ensure that the type of voltage service that is present in the equipment you are monitoring matches the type indicated on the label of the BGS72. The BGS72 cannot be used on 480V equipment if access to N is not present nor on 600/347V circuits. The BGS72 is powered from the voltage source it is monitoring.

Current Transformers

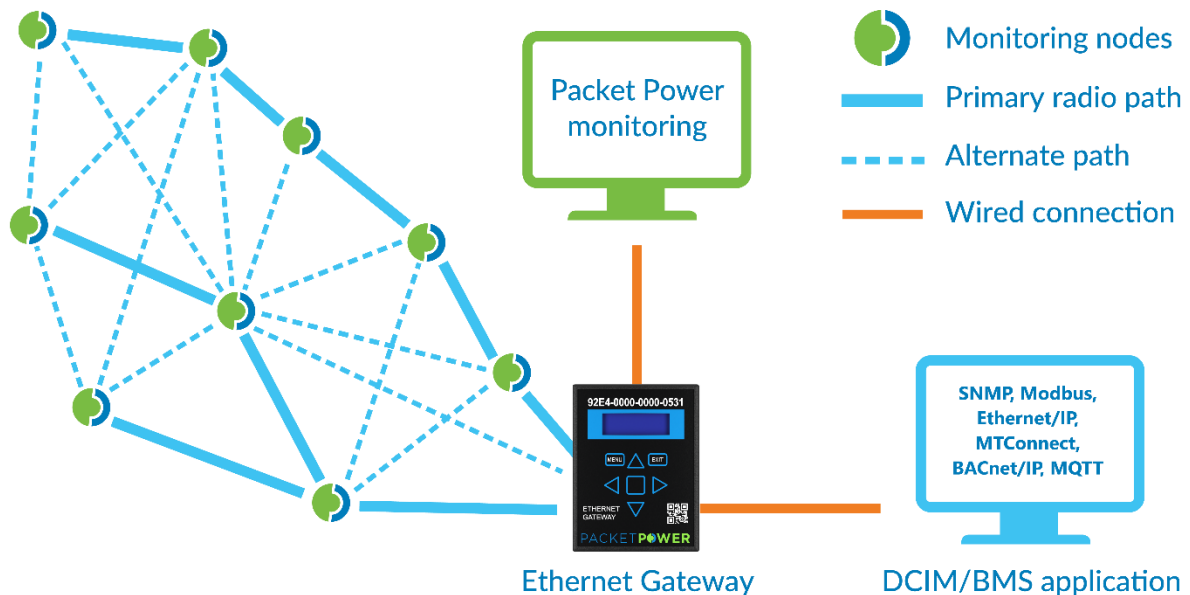
The BGS72 is preconfigured for use with split core CTs with rated amperage of 15A to 4000A and 333mV output or Rogowski coil sensors supporting 100A to 4000A. Split core CTs can be safely used on circuits up to 120% of their nominal rating (for example a 100A CT can be used on circuits up to 120A).

Use of the CTs on circuits with greater than maximum load will result in degraded accuracy and damage to the CTs. CTs should not be removed from conductors while under load. Once installed on a conductor that has load present, the CT must be connected to the BGS72. Failure to do so will create a safety hazard and result in damage to the CT.

Split core CTs include 24 AWG 600V twisted pair leads that terminate in the CT Interconnect Boards. The CT Interconnect Boards are connected to the BGS72 using the provided CT Interconnect Cables (shielded ribbon cable).

Communication

The BGS72 utilizes Packet Power's advanced zero-configuration wireless mesh networking technology which automatically connects the BGS72 to an Ethernet Gateway when energized. Each Gateway can support up to eleven BGS72s; additional Gateways can be added for capacity or redundancy.



The BGS72 must be able to establish a wireless connection either directly to a Gateway or to another Packet Power wireless device.

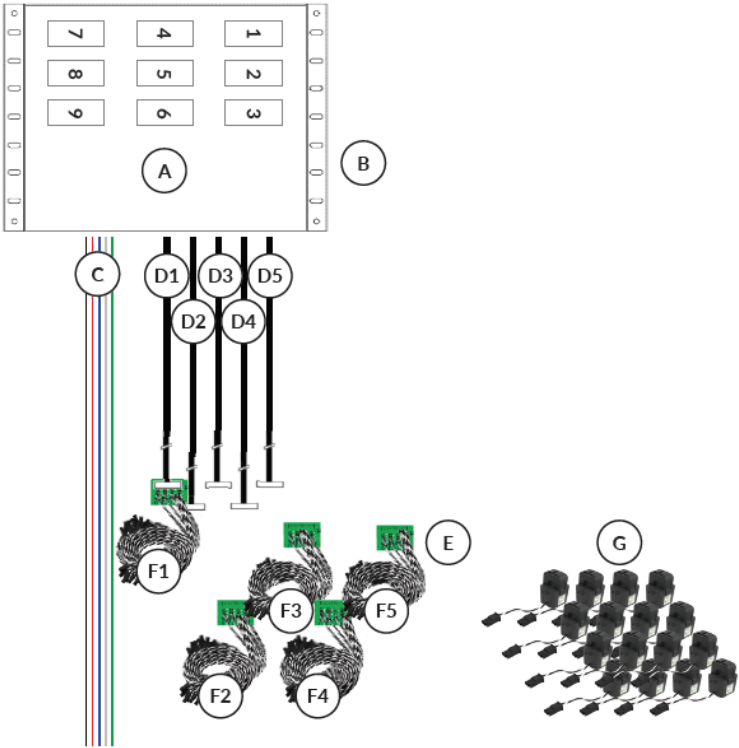
Data can be accessed from the Gateway in one of two ways:

Third Party Device Data Acquisition - Third party monitoring systems can access data from a Gateway via SNMP, Modbus TCP/IP, Ethernet/IP, MTConnect, BACnet/IP and MQTT protocols.

Cloud Based Data Acquisition - Data can be simultaneously exported to the Packet Power EMX monitoring portal (local or cloud based).

Components

The BGS72 consists of an 18 GA steel enclosure, up to five CT interconnect boards with loose CT leads or wire harnesses for attaching CTs, and the CTs themselves.



BGS72 COMPONENTS

- (A) Device: Up to 9 wireless power monitors in an 18 GA steel enclosure
356 x 305 x 64 mm (14 x 12 x 2.5 in)
- (B) Mounting Brackets: Two optional 18 GA steel brackets
305 x 25 mm (12 x 1 in)
for mounting on a wall or on device
- (C) Voltage Lead(s): 18 AWG 600V colored wire connected to a 6-position terminal block, 3m or 7m length;
5x20 mm 5A inline fuses on L1, L2, L3
Optional additional voltage leads
- (D) CT Interconnect Cable: Up to five shielded 300V cords;
1m, 2m, 3m, 5m or 10m length; terminates in a 34-pin connector that fastens to the CT Interconnect Board
- (E) CT Interconnect Boards: Up to five 72 x 53 x 6.3 mm (2.8 x 2.1 x 0.2 in) acrylic boards with VHB adhesive tape for mounting
- (F) CT Leads: 24 AWG 600V twisted pair with quick disconnects; 0.5-10m length
Optional CT wire harness available (see page 5 for wire harness options)
- (G) Current Sensors
- Split Core: Rated amperage 15A to 4000A;
Dimensions vary by amperage
- Rogowski Coil: (Not shown) Rated amperage 100A to 10,000A;
Available in 4 different lengths

SECTION 3: INSTALLATION



IMPORTANT

1. Installation should be conducted by a qualified professional according to local electrical codes.
2. Protective equipment should be used when handling a current transducer (CT) on a live conductor.
3. Do not make adjustments to the BGS72's internal wiring.
4. If you believe the BGS72, CTs, interconnect boards or leads have been damaged, do not attempt to repair or use them. All components are built to spec by Packet Power and are not intended for alteration in the field.

Please review the complete list of safety instructions in the Hazards sections of this document.

Installation Overview

The BGS72 does not need to be configured prior to use.

1. Mount the BGS72 to wall or device using mounting brackets provided.
2. Run the voltage lead(s) to the voltage source and connect them to L1, L2, L3, N and earth.
3. Mount the CT Interconnect Boards near the circuits being monitored.
4. Attach the connector at the end of the CT Interconnect Cable to the applicable CT Interconnect Board header.
5. Run CT leads from the CT Interconnect Board to the respective circuits.
6. Connect each CT to the appropriate conductor.
7. Connect CT tails to the CT leads.

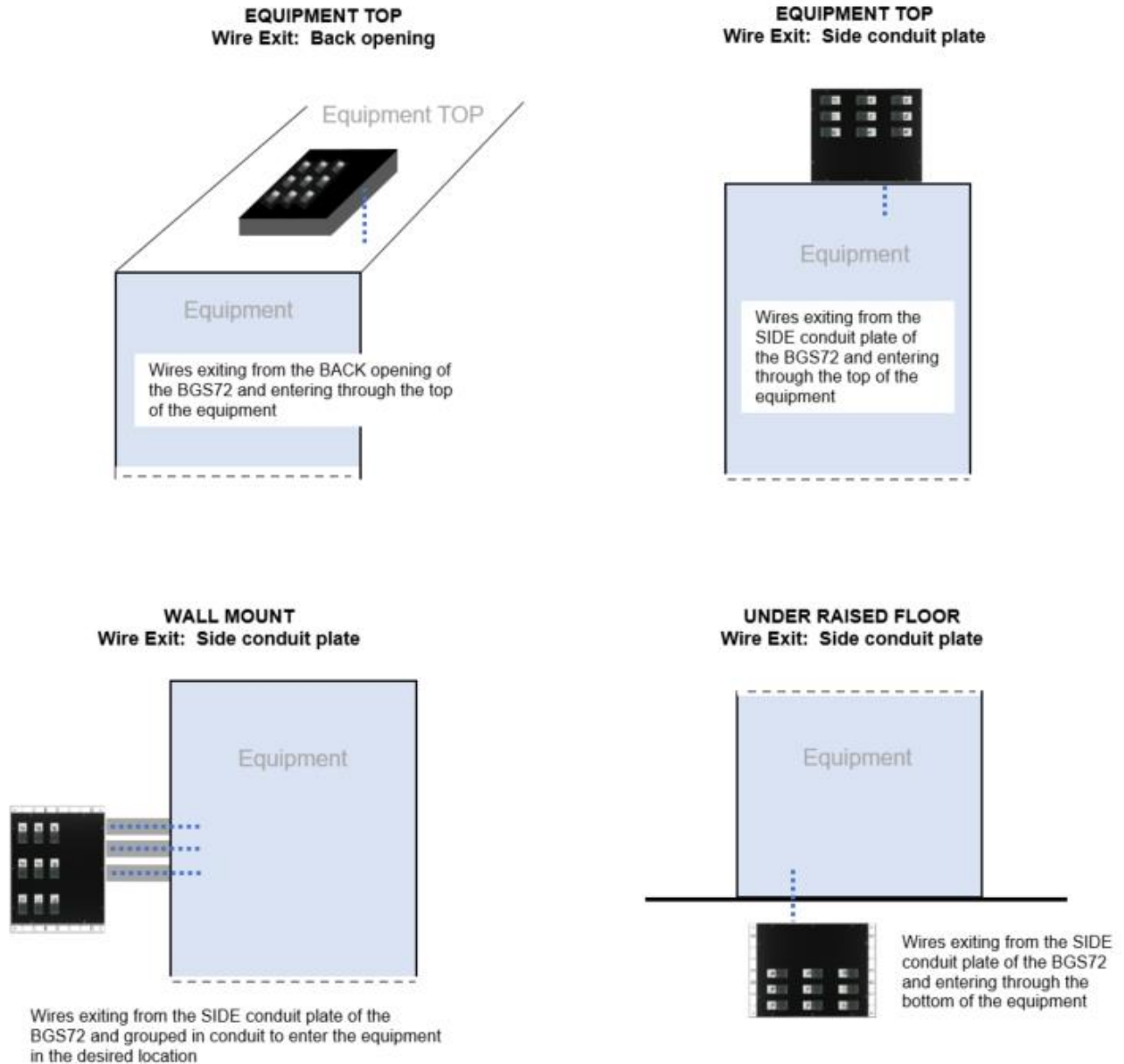
Once power is supplied, the BGS72 will automatically begin to transmit data.

Thoroughly review the details for each step prior to installation. Contact Packet Power support with questions.

Mounting

The BGS72 should be mounted as close as possible to the equipment being monitored.

Mounting locations



Voltage Connection



A three-pole breaker should be used to provide over-current protection and a means of disconnecting power from the BGS72. If a three-pole breaker is not used, you must ensure suitable over-current protection is provided.

The BGS72 comes pre-wired. It is configured to work with one of the supported voltage types. Unless otherwise specified, the unit has inline fuses on each voltage phase. The wire count and color mix will vary based on the voltage service type (see diagrams on the following pages).

Voltage leads

- 18 AWG 600V wires which are connected to a 6-position terminal block inside the enclosure are provided for use in routing power to the device.
- Voltage lead lengths are sized to specification. They may include a voltage disconnect near the BGS72 that is used to avoid placing strain on the connection to the terminal block during shipping and installation.
- 5x20 mm 5A inline fuses are included on L1, L2 and L3 unless otherwise specified.
- An optional second voltage source can be included. If a second voltage lead is included, the voltage leads will be labeled accordingly.

Wire connections

The BGS72 uses different wire colors depending on service type and region. Run the voltage leads to the voltage source and connect them to L1, L2, L3, N and earth. Reference wire connections by service type on the following pages.

Verify that the wires are connected to the proper phases for your type of voltage service.

No changes should need to be made to any wiring within the BGS72 device itself.

Grounding

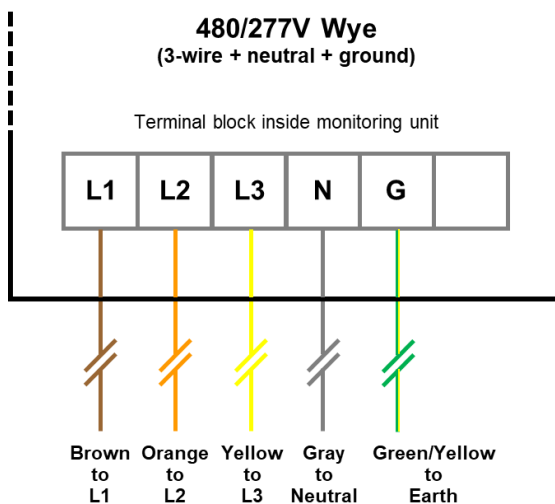
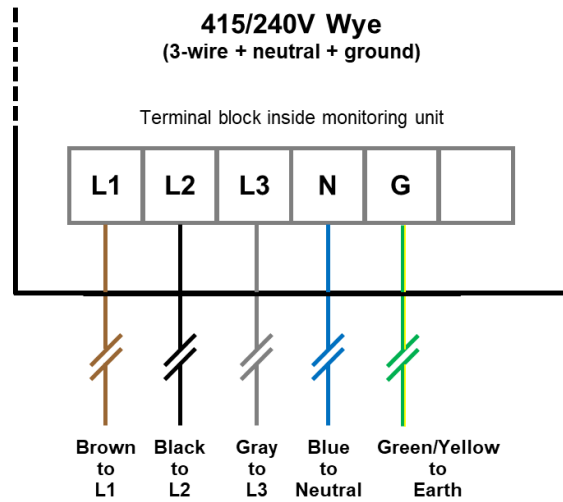
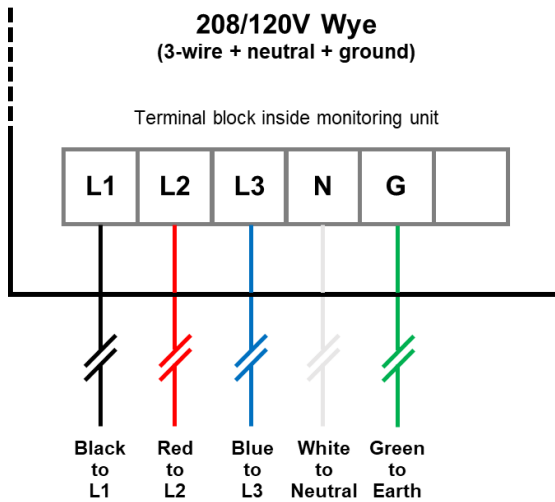
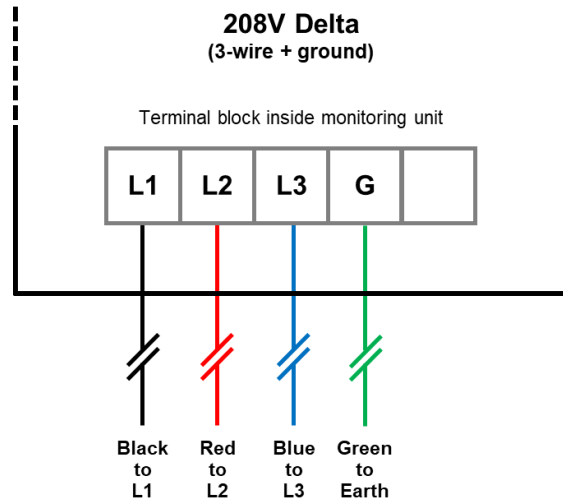
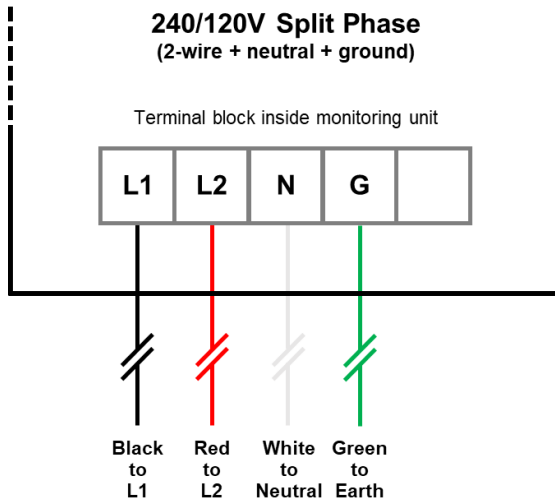
The BGS72 enclosure must be properly connected to earth. A ground wire is provided for this purpose.

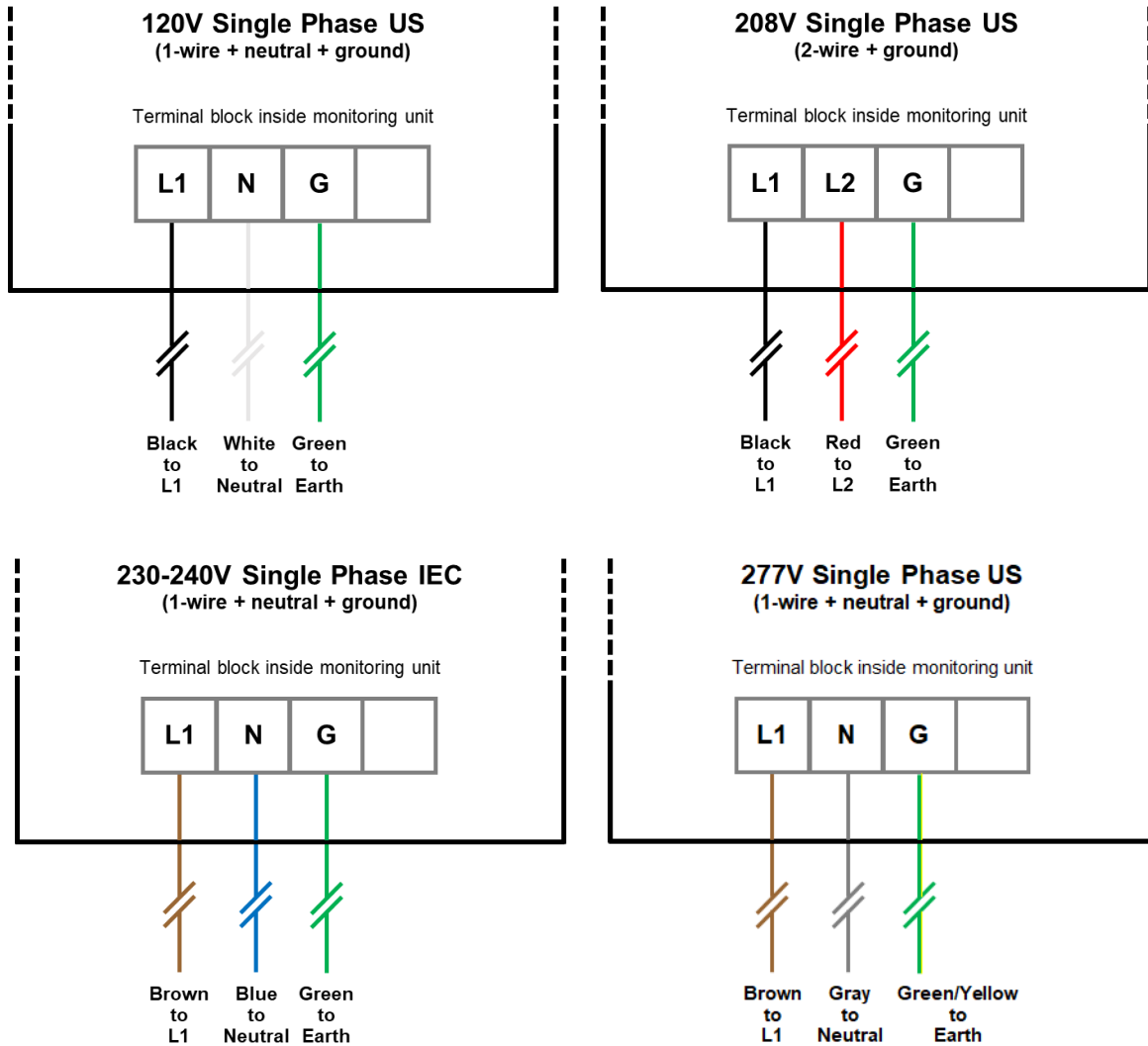


Failure to properly ground the unit could result in a dangerous or fatal electrocution.

Once power is supplied the BGS72 will automatically begin to transmit data.

Voltage wire connections by service type





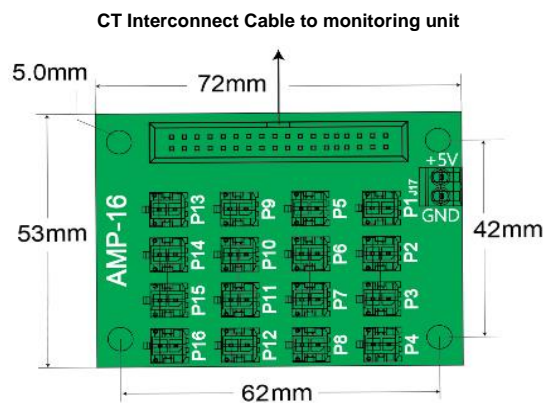
CT Interconnect Cables and Boards

The CT Interconnect Boards are connected to the BGS72 via the CT Interconnect Cables. The interconnect cables and boards are labeled to ensure proper connection.

Mount CT Interconnect Boards

The green CT Interconnect Board is fastened to a 72 x 53 x 6.3 mm acrylic base and includes VHB adhesive tape on the back of the base.

Always orient the CT Interconnect board's header **away** from the circuits



Clean the area thoroughly, then mount the CT Interconnect Boards inside the panel or near equipment being monitored using the VHB adhesive tape (or mount using 5/32" screws). Be sure to orient the CT Interconnect Board so the black connector header faces away from the circuits or panel.

Attach Interconnect Cables to Interconnect Boards

Attach the connector at the end of the CT Interconnect Cable to the corresponding CT Interconnect Board header. The interconnect cables and boards are labeled to ensure proper connection.

CT Leads

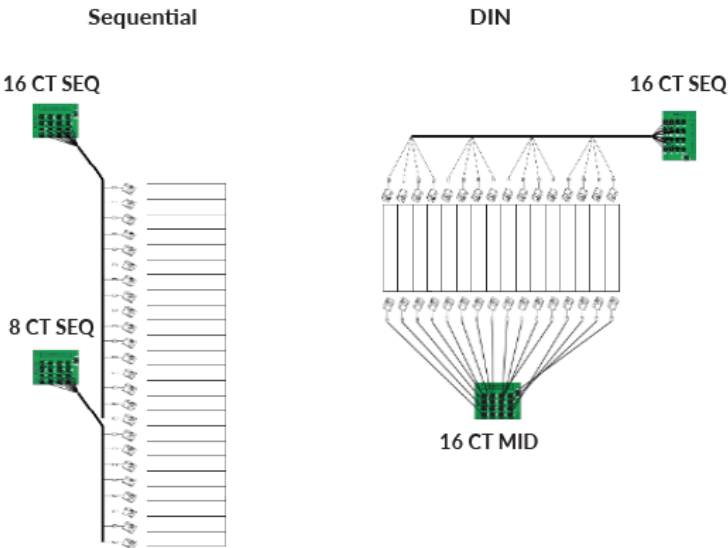
Split core CTs are connected to the CT Interconnect Board via loose twisted pair leads. Flexible CT wire harnesses consisting of 16 leads per harness in multiple configurations are available.

Loose leads are best suited to equipment such as switchgear that has widely- or unevenly-spaced circuits. Wire harnesses are best installed with evenly-spaced circuits.

Loose Leads



Wire Harnesses



Run CT leads to the circuits

Run the CT leads (or wire harness) to the circuits being monitored and secure as desired. The leads (or wire harness) will be attached to the CT Interconnect Board. Each CT lead will have a label (standard labels are CT1, CT2, CT3, etc.).

CTs

The BGS72 supports 27 to 72 split core or Rogowski coil CTs of varied amperage and size.

SPLIT CORE CTs

Split core CT Specifications	
CT quantity	27 to 72
CT type	Split core
Accuracy	+/- 1.0%
Inside diameter	Varies by model
Outside dimensions (H x W x D)	Varies by amperage
Rated amperage	15A to 4000A
CT tail length	100 mm or 500 mm to quick disconnect
CT lead length	0.5 to 5 m
CT tail and lead wire	24 AWG, 600V twisted pair

Connect CTs to conductors

1. Disconnect power to the BGS72 if possible.

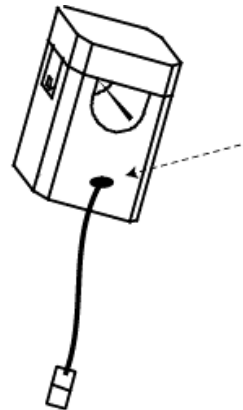


If it is not possible to disconnect power, always treat CT leads as though they carry line voltages. Work on live panels must only be performed by qualified personnel.

2. Open the split core CT by opening the latch on the side of the CT (Figure 1).
3. Position the CT on the conductor such that the **CT lead faces toward the load and away from the source** (Figure 2).



Figure 1



The side of the CT with the leads faces the load and away from the source.

Figure 2

4. Close the CT and ensure the latch has clicked into place.

Connect CT tails to CT leads

CT leads coming from the CT Interconnect Board will typically be labeled CT1, CT2, CT3, etc. unless otherwise specified. Connect the CT tail to the corresponding CT lead using the quick connectors. The power monitor automatically detects the correct phase once load is present. Current-only meters are not phase-specific.

Split core CTs produce an output of 333mV.

ROGOWSKI COIL SENSORS

Rogowski Coil Specifications	
CT quantity	27 to 72
CT type	Coil sensor
Accuracy	+/- 1.0%
Maximum conductor diameter	68 mm, 147 mm, 211 mm, 306 mm
Coil length	250 mm, 500 mm, 700 mm, 1000 mm
Rated amperage	100A to 4000A
Cable length	2 m
Cable wire	26 AWG, 1000V wires

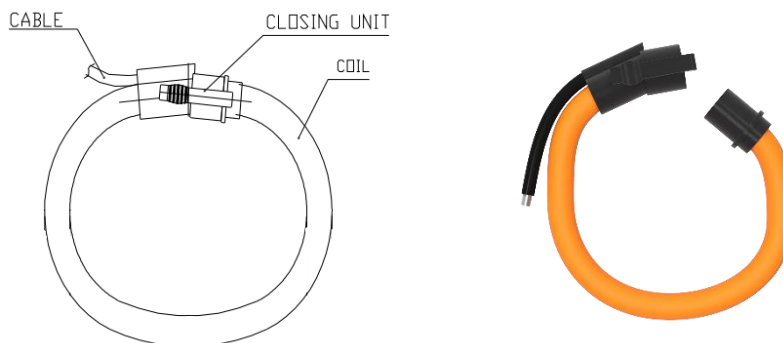
Connect Rogowski coils to conductors

1. Disconnect power to the BGS72 if possible.



If it is not possible to disconnect power, always treat the coil leads as though they carry line voltages. Work on live panels must only be performed by qualified personnel.

2. Open the Rogowski coil by pinching the closing unit on the side of the connector.



3. Position the coil on the conductor such that the **arrow on the connector faces toward the load and away from the source.**



The arrow on the coil connector faces toward the load and away from the source.

4. Close the Rogowski coil and ensure the closing unit has clicked into place.

Connect Rogowski coil cables to CT leads

CT leads coming from the CT Interconnect Board will typically be labeled CT1, CT2, CT3, etc. unless otherwise specified. Connect the Rogowski coil cable to the corresponding CT lead using the quick connectors. The power monitor automatically detects the correct phase once load is present. Current-only meters are not phase-specific.

SECTION 4: OPERATIONS

Start Up

The BGS72 ships fully preconfigured. Once power is supplied, the system will automatically connect to any Gateway that is within range and set to the same radio zone.

To prevent damage to the BGS72, ensure power is disconnected whenever abnormal or extreme power conditions may exist such as during infrastructure commissioning.

Each BGS72 contains up to 9 component meters. Each meter has LEDs that glow when powered on. The cover of the BGS72 allows viewing the meters making it possible to verify that all component meters are powered up and that the lights on the units are flashing in a consistent manner.

Each BGS72 has a unique 16-digit ID number that can be found on a label located on the outside of the unit in the top left corner. Each component meter also has a unique 16-digit ID number on the meter's front label. Once the meter makes a wireless connection to a Gateway, the readings from that meter can be accessed via the Gateway's console.

Instructions for accessing the Gateway console can be found on the Packet Power web site:

<https://dox.packetpower.com/Ethernet---Gateway---Version---4---Web---Console.html>

Packet Power provides documentation that is unique to each BGS72 and associates each CT to its component meter. See Appendix for sample. This documentation is required in order to access readings using protocols such as SNMP or Modbus. Customers using Packet Power's EMX application will be provided with panel maps to load into EMX.

At initial start-up, it is highly recommended to validate correct operations by placing a known load on each circuit and verifying that the load is correctly reflected by the system, first at the Gateway console to validate the physical connection, and then in the monitoring application to validate the mapping logic.

Operation

Normal operation is characterized by the regular flow of monitoring data. This is typically verified on a continual basis via the site's monitoring application. Please consult the monitoring application's documentation for how to achieve this using your application.

Shutdown

No special preparation is required prior to shutdown. Using a customer-provided disconnect such as a 3-pole breaker, simply shut off power to the BGS72. Note that this disables power to the monitoring unit only.



The conductors on which the CTs are installed will still have live load and must be treated accordingly, and the panel itself will still have live voltage and present a risk of electrocution.

Troubleshooting

If the BGS72 does not light up once power is supplied:

- **Ensure access to power.** Check that the customer-supplied breaker protecting the circuit providing power to the BGS72 is closed and that the supplied voltage source leads have been connected to the proper phases (see “Voltage Connection” section of this document).
- **Check the quick disconnect.** A quick disconnect may be present on the voltage leads near the supply side of the terminal block in the BGS72 unit. Separate it and reconnect it, ensuring there is a clean connection.
- **Check the inline fuses.** Remove the BGS72 cover and locate the terminal block that connects to the voltage source wires. Follow the wire harness on the side of the terminal block that feeds into the BGS72 to locate the inline fuse holders. Open each fuse holder and inspect for blown fuses. Replace with 5x20mm glass 5A/250V fuses. Replace the cover and reconnect power.
- **Verify voltage presence.** If no power is flowing, use a multimeter to verify that voltage is present for each phase at these locations and contact Packet Power support with the results:
 - Where the BGS72’s voltage leads connect to the customer-supplied protective breaker.
 - On the supply side of the voltage terminal block inside the BGS72.
 - On the meter side of the voltage terminal block inside the BGS72.
 - On each phase of the green terminal block connectors in the wire harness that distribute power within the BGS72.

If a subset of the monitoring readings are missing:

- Verify that all monitoring modules are active by looking at the BGS72 face to see that all meters are lit up and blinking in a similar pattern. If not, contact Packet Power support.
- If all units are lit up, check to see that all units are reporting via the wireless mesh to a Gateway. Note that the LEDs on a meter that cannot join a mesh will flash using a different pattern than those that are communicating. If this is occurring, note the location of the missing meter (ideally, take a short video of the unit) and contact Packet Power support.

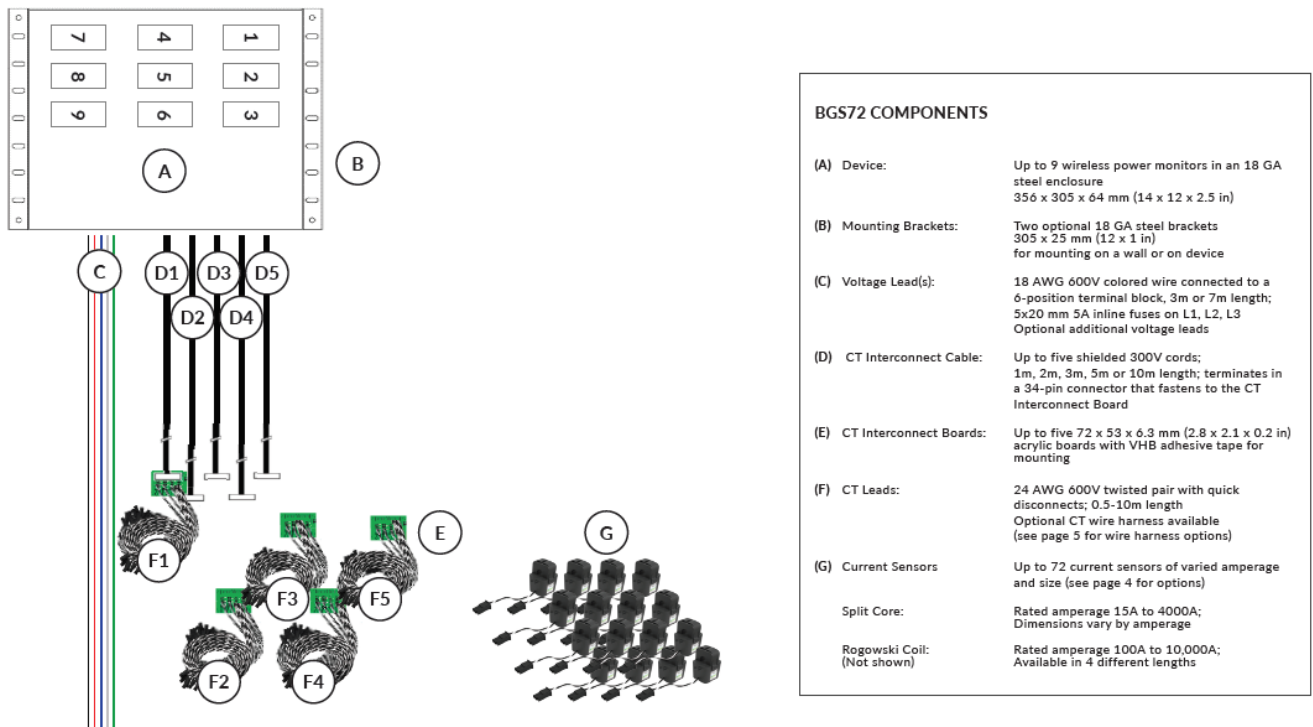
- If you are using a panel map to translate pole-level readings into circuit-level readings and not all readings are present, ensure that:
 - The panel map is loaded and active on your master gateway.
 - Peering is enabled on the master gateway.
 - The IP address for all peer gateways has been entered on the master gateway.
- If V readings are present but A and W are missing:
 - If only one reading is missing, follow the process listed in the Maintenance section of this document to remove the associated CT and re-install it on the conductor. Disconnect the CT from the lead and reconnect it, ensuring a clean connection.
 - If a number of readings are missing, ensure the CT Interconnect Cable is securely connected to the associated CT Interconnect Board.

If the BGS72 powers on but no meters are able to establish communications with a Gateway, contact Packet Power support.

SECTION 5: MAINTENANCE

Equipment Parts List

Contact Packet Power support if you encounter issues related to any parts or before attempting any repairs.



Of these items, the following can be replaced in the field by qualified personnel:

- Enclosure cover
- Fused voltage harness
- CT interconnect board
- Split core CTs or Rogowski coils

Scheduled Maintenance

The BGS72 requires no periodic maintenance or calibration and there are no scheduled maintenance events. Customers are encouraged to keep firmware current by applying updates once a year or whenever a critical firmware release is issued.

Firmware updates can be arranged via Packet Power support and are available for all devices under warranty. This includes the original manufacturer's warranty or the optional extended service warranty purchased after the manufacturer's warranty ends.

Add or Replace a CT

SPLIT CORE CT

1. Disconnect power to the BGS72 if possible.

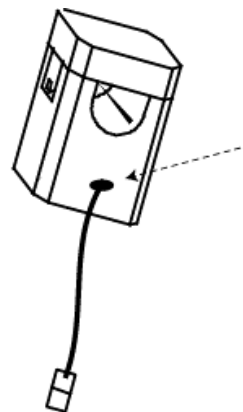


If it is not possible to disconnect power, always treat CT leads as though they carry line voltages. Work on live panels must only be performed by qualified personnel.

2. Disconnect the CT to be replaced using the quick disconnect attached to the CT tail.
3. Open the CT by opening the latch on the side of the CT (Figure 1) and remove from the conductor.
4. Position the new CT on the conductor such that the **CT lead faces toward the load and away from the source** (Figure 2).



Figure 1



The side of the CT with the leads faces the load and away from the source.

Figure 2

5. Close the CT and ensure the latch has clicked into place.
6. Connect the CT tail to the corresponding CT lead using the quick connectors.
7. Update any panel maps or third-party software interfaces as appropriate.

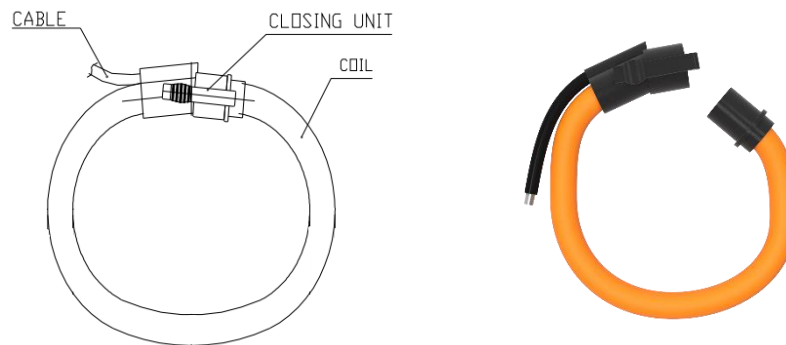
ROGOWSKI COIL SENSOR

1. Disconnect power to the BGS72 if possible.



If it is not possible to disconnect power, always treat the coil leads as though they carry line voltages. Work on live panels must only be performed by qualified personnel.

2. Disconnect the Rogowski coil to be replaced using the quick disconnect attached to the cable.
3. Open the Rogowski coil by pinching the closing unit on the side of the connector and remove from the conductor.



4. Position the new coil on the conductor such that the **arrow on the connector faces toward the load and away from the source.**



The arrow on the coil connector faces toward the load and away from the source.

5. Close the Rogowski coil and ensure the closing unit has clicked into place.
6. Connect the coil cable to the corresponding CT lead using the quick connectors.
7. Update any panel maps or third-party software interfaces as appropriate.

Dismantling

The BGS72 contains components that may fall under local electronics disposal guidelines. Please adhere to local requirements. No lead is used in the BGS72.

Emergency Measures

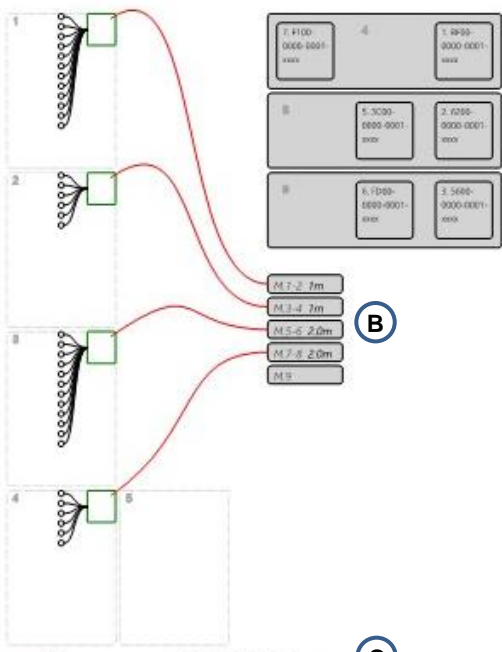
Contact Packet Power support at 1-877-560-8770 or support@packetpower.com.

APPENDIX: SAMPLE PANEL DETAIL

Packet Power’s “Monitoring Made to Measure” approach allows for each BGS72 unit to be customized to your needs. The panel detail provides important information on how your BGS72 was produced.

Reference the sample panel detail on the following page. Note, the details of your panel will vary from this example.

A	The ID numbers of the component meters used when building the BGS72
B	The length of the shielded ribbon cable (CT interconnect cable) running from the BGS72 enclosure to the CT interface board
C	The “SuperGUID” is used to identify this particular BGS72 unit
D	Label based on customer-provided information (e.g. panel name, etc.)
E	The radio zone that the meters in the BGS72 are set to
F	The location at which the wires will exit the BGS72 enclosure
G	The type of voltage service the unit is configured for and whether the voltage wires have in-line fuses
H	Each row provides details on one CT connection, including (from left to right):
Module #	The associated component meter number
GUID	The associated component meter ID number
AMP Pos	The position on the CT interface board that this CT lead is connected to
RCC	The label on the CT interface cable that connects to this CT interface board
Harness	The type of CT harness
Length	The length of the CT harness wire leading to this CT
Label	The label on this CT harness wire
CT	The type of CT to be connected to this CT harness wire
I	A blank row signifies that no CT is connected this port on the CT interface board.



Superguid: 7CA1-0000-000x-xxxx **(C)**

Label Sample Panel Detail **(D)**

Radio Zone US.U **(E)**

Wire Exit: **(F)** Back

	V1	208/120 Wye	<input checked="" type="checkbox"/> Fused (G)
V2	--none--		<input type="checkbox"/> Fused
V3	--none--		<input type="checkbox"/> Fused
V4	--none--		<input type="checkbox"/> Fused

Module #	GUID	AMP Pos	RCC	Harness	Length	Label	CT
Module 1	BF00-0000-0001-xxxx	P1	M.1-2	Custom	1.5m	10B-L1	CT-XH24-200-S-500M (200 amps) (H)
Module 1	BF00-0000-0001-xxxx	P2	M.1-2	Custom	1.5m	10B-L2	CT-XH24-200-S-500M (200 amps)
Module 1	BF00-0000-0001-xxxx	P3	M.1-2	Custom	1.5m	10B-L3	CT-XH24-200-S-500M (200 amps)
Module 1	BF00-0000-0001-xxxx	P4	M.1-2	Custom	1.5m	9B-L1	CT-XH24-200-S-500M (200 amps)
Module 1	BF00-0000-0001-xxxx	P5	M.1-2	Custom	1.5m	9B-L2	CT-XH24-200-S-500M (200 amps)
Module 1	BF00-0000-0001-xxxx	P6	M.1-2	Custom	1.5m	9B-L3	CT-XH24-200-S-500M (200 amps)
Module 1	BF00-0000-0001-xxxx	P7	M.1-2	Custom			(I)

Module #	GUID	AMP Pos	RCC	Harness	Length	Label	CT
Module 1	BF00-0000-0001-xxxx	P8	M.1-2	Custom			
Module 2	6200-0000-0001-xxxx	P9	M.1-2	Custom	1.5m	8B-L1	CT-XH24-200-S-500M (200 amps)
Module 2	6200-0000-0001-xxxx	P10	M.1-2	Custom	1.5m	8B-L2	CT-XH24-200-S-500M (200 amps)
Module 2	6200-0000-0001-xxxx	P11	M.1-2	Custom	1.5m	8B-L3	CT-XH24-200-S-500M (200 amps)
Module 2	6200-0000-0001-xxxx	P12	M.1-2	Custom	1.5m	7B-L1	CT-XH24-200-S-500M (200 amps)
Module 2	6200-0000-0001-xxxx	P13	M.1-2	Custom	1.5m	7B-L2	CT-XH24-200-S-500M (200 amps)
Module 2	6200-0000-0001-xxxx	P14	M.1-2	Custom	1.5m	7B-L3	CT-XH24-200-S-500M (200 amps)
Module 2	6200-0000-0001-xxxx	P15	M.1-2	Custom			
Module 2	6200-0000-0001-xxxx	P16	M.1-2	Custom			
Module 3	5600-0000-0001-xxxx	P1	M.3-4	Custom	1.5m	6B-L1	CT-XH24-200-S-500M (200 amps)
Module 3	5600-0000-0001-xxxx	P2	M.3-4	Custom	1.5m	6B-L2	CT-XH24-200-S-500M (200 amps)
Module 3	5600-0000-0001-xxxx	P3	M.3-4	Custom	1.5m	6B-L3	CT-XH24-200-S-500M (200 amps)
Module 3	5600-0000-0001-xxxx	P4	M.3-4	Custom	1.5m	5B-L1	CT-XH24-200-S-500M (200 amps)
Module 3	5600-0000-0001-xxxx	P5	M.3-4	Custom	1.5m	5B-L2	CT-XH24-200-S-500M (200 amps)
Module 3	5600-0000-0001-xxxx	P6	M.3-4	Custom	1.5m	5B-L3	CT-XH24-200-S-500M (200 amps)
Module 3	5600-0000-0001-xxxx	P7	M.3-4	Custom			
Module 3	5600-0000-0001-xxxx	P8	M.3-4	Custom			
Module 5	3C00-0000-0001-xxxx	P1	M.5-6	Custom	1.5m	11B-L1	CT-XH24-200-S-500M (200 amps)
Module 5	3C00-0000-0001-xxxx	P2	M.5-6	Custom	1.5m	11B-L2	CT-XH24-200-S-500M (200 amps)
Module 5	3C00-0000-0001-xxxx	P3	M.5-6	Custom	1.5m	11B-L3	CT-XH24-200-S-500M (200 amps)
Module 5	3C00-0000-0001-xxxx	P4	M.5-6	Custom	1.5m	12B-L1	CT-XH24-200-S-500M (200 amps)
Module 5	3C00-0000-0001-xxxx	P5	M.5-6	Custom	1.5m	12B-L2	CT-XH24-200-S-500M (200 amps)
Module 5	3C00-0000-0001-xxxx	P6	M.5-6	Custom	1.5m	12B-L3	CT-XH24-200-S-500M (200 amps)
Module 5	3C00-0000-0001-xxxx	P7	M.5-6	Custom			
Module 5	3C00-0000-0001-xxxx	P8	M.5-6	Custom			
Module 6	FD00-0000-0001-xxxx	P9	M.5-6	Custom		4B-L1	CT-XH24-200-S-500M (200 amps)
Module 6	FD00-0000-0001-xxxx	P10	M.5-6	Custom	1.5m	4B-L2	CT-XH24-200-S-500M (200 amps)
Module 6	FD00-0000-0001-xxxx	P11	M.5-6	Custom	1.5m	4B-L3	CT-XH24-200-S-500M (200 amps)
Module 6	FD00-0000-0001-xxxx	P12	M.5-6	Custom	1.5m	3B-L1	CT-XH24-200-S-500M (200 amps)
Module 6	FD00-0000-0001-xxxx	P13	M.5-6	Custom	1.5m	3B-L2	CT-XH24-200-S-500M (200 amps)
Module 6	FD00-0000-0001-xxxx	P14	M.5-6	Custom	1.5m	3B-L3	CT-XH24-200-S-500M (200 amps)
Module 6	FD00-0000-0001-xxxx	P15	M.5-6	Custom			

Module #	GUID	AMP Pos	RCC	Harness	Length	Label	CT
Module 6	FD00-0000-0001-xxxx	P16	M.5-6	Custom			
Module 7	F100-0000-0001-xxxx	P1	M.7-8	Custom	1.5m	2B-L1	CT-XH24-200-S-500M (200 amps)
Module 7	F100-0000-0001-xxxx	P2	M.7-8	Custom	1.5m	2B-L2	CT-XH24-200-S-500M (200 amps)
Module 7	F100-0000-0001-xxxx	P3	M.7-8	Custom	1.5m	2B-L3	CT-XH24-200-S-500M (200 amps)
Module 7	F100-0000-0001-xxxx	P4	M.7-8	Custom	1.5m	1B-L1	CT-XH24-200-S-500M (200 amps)
Module 7	F100-0000-0001-xxxx	P5	M.7-8	Custom	1.5m	1B-L2	CT-XH24-200-S-500M (200 amps)
Module 7	F100-0000-0001-xxxx	P6	M.7-8	Custom	1.5m	1B-L3	CT-XH24-200-S-500M (200 amps)
Module 7	F100-0000-0001-xxxx	P7	M.7-8	Custom			
Module 7	F100-0000-0001-xxxx	P8	M.7-8	Custom			