



# MIG240 MICRO INVERTER INSTALLATION MANUAL

### **FCC Compliance**

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 in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.

### **Other Information**

Product information is subject to change without notice. All trademarks are recognized as the property of their respective owners.

## TABLE OF CONTENTS

IMPORTANT SAFETY INSTRUCTIONS .....	4
ABOUT DARFON MICRO INVERTERS .....	5
General Overview .....	5
Advantages of Darfon Micro Inverters .....	5
PRE-INSTALLATION .....	6
Layout PV System .....	6
Compatibility and Capacity .....	6
Parts and Tools .....	7
Lightning Surge Suppression .....	7
Mounting Options .....	8
AC Trunk Cable .....	8
INSTALLATION PROCEDURE .....	9
Installing onto a PV Racking System .....	9
Installing onto the back of a PV Module .....	12
POST-INSTALLATION .....	15
Commissioning and Operating .....	15
Troubleshooting .....	15
Disconnecting a Micro Inverter .....	16
TECHNICAL SPECIFICATIONS .....	17
INSTALLATION MAP .....	18
SAMPLE WIRING DIAGRAM (Small system < 25 MIs) .....	19
SAMPLE WIRING DIAGRAM (Suggestion for small systems) .....	20
SAMPLE WIRING DIAGRAM (Big system > 25 MIs) .....	21
LIMITED WARRANTY .....	22

## IMPORTANT SAFETY INSTRUCTIONS

### READ THIS FIRST & SAVE THESE INSTRUCTIONS.

This manual contains important instructions for the installation and maintenance of Darfon MIG240 micro inverters. Before installing, please read these safety instructions carefully. Take special care to follow the warnings indicated on the unit itself as well as the safety suggestion listed below.

### Safety Symbols

To reduce the risk of injury and to ensure the continued safe operation of this product, the following safety instructions and warnings are marked in this manual.



#### WARNING

This indicates the risk of electric shock. The presence of high voltage levels may constitute a risk of injury or death to users and/or installers.



#### CAUTION

This indicates important information where failure to comply may result in safety hazards or cause damage to this product.

### Safety Instructions

- Read all instructions and cautionary marks in the manual carefully before starting the installation.
- Do not attempt to repair this product; it does not contain user-serviceable parts. Repairs and internal servicing should only be performed by Darfon authorized service personnel.
- Do not tamper with or open this product. Opening this product may result in electric shock.
- Perform all electrical installations in accordance with all applicable local electrical codes and the National Electrical Code (NEC), ANSI/NFPA 70.
- Only qualified electrical personnel should perform the electrical installation and wiring of this product.
- Be aware that even without an external voltage source connected, the MIG240 micro inverter may contain high voltages and there is a risk of electrical shock.
- Connect the Darfon micro inverter to the utility grid only after receiving prior approval from the electrical utility company.
- The temperature of the heat sinks outside of the device can reach over 85°C in normal operation. To reduce risk of burns, use caution when working with micro inverters.
- Do not disconnect the DC power source from the Darfon micro inverter without first disconnecting the AC power source. Both AC and DC power sources must be disconnected before servicing. Be aware that DC power/voltage is generated when the photovoltaic array is exposed to light.
- Switch off the circuit breakers before installation and wirings.
- For the safety of installation, remove all conductive jewelry or equipment during the installation or service of the device parts, connector and/or wiring.
- Do not stand on a wet location while doing installation and wirings. Enclose the outer covering well before switch on the circuit breakers.
- MIG240 inverters should be installed as instructed in this manual. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the device. The manufacturer assumes no liability for the customer's failure to comply with these requirements.
- When a GFDI (Ground fault) fault occurs, the LED will show sparking and alternating in orange and red. Please refer to page 15 for more introductions.

## ABOUT DARFON MICRO INVERTERS

### General Overview

Thank you for choosing Darfon's MIG240 micro inverters as a key component to your solar power system. The MIG240 converts DC power (generated by the solar module) to AC power (powers your home appliances). The Darfon micro inverter is installed to the back of each solar module and connects to the electricity grid without the need for a string or central inverter. The AC output from MIG240 micro inverter is synchronized and in-phase with the electricity grid.

### Advantages of Darfon Micro Inverters

**Optimal Energy Harvest** – Darfon's micro inverters maximize the power produced from your Photovoltaic (PV) array. This is accomplished by Maximum Power Point Tracking (MPPT), which monitors performance and maximizes the power harvested from each solar module under varying environmental conditions. The performance of an individual PV module may be affected by module mismatch, shading cause by trees or chimneys, or obstruction from leaves or other debris. With MPPT, if the performance of an individual PV module is reduced, it does not impact the performance of other PV modules in the array. This typically results in improved power harvest of up to 20% from the solar PV system and represents a significant cost/performance advantage.

**Improved Safety** – Darfon micro inverters convert DC power to AC at each solar module; thus, eliminating the need for high voltage DC wiring and making the solar system intrinsically safer. By eliminating DC wiring, specialized DC practices and equipment are not required for installation.

**Increased Lifetime and Reliability** – Darfon micro inverters are more reliable and have a longer life cycle than the traditional string or central inverters. Typically, string/central inverters will need to be replaced at least once over the lifetime of the solar module adding significantly to the overall cost of the solar PV system. Darfon's solar micro inverters are designed to operate in real world conditions and achieve a peak efficiency of 95.7% for temperatures between -40°C (-40°F) and 65°C (150°F) without degradation of performance. The micro inverter housing is designed for outdoor installation and complies with the NEMA 6 environmental enclosure rating standard.

**Enhanced Monitoring System** – Darfon's enhanced monitoring system can view the performance of each module in the PV array, a capability not available with string inverters. This provides users/installers with detailed real-time information that can be used to pinpoint the location of performance issues and provide guidance for maintenance, ensuring the solar system's performance is optimized over the lifetime of the installation.

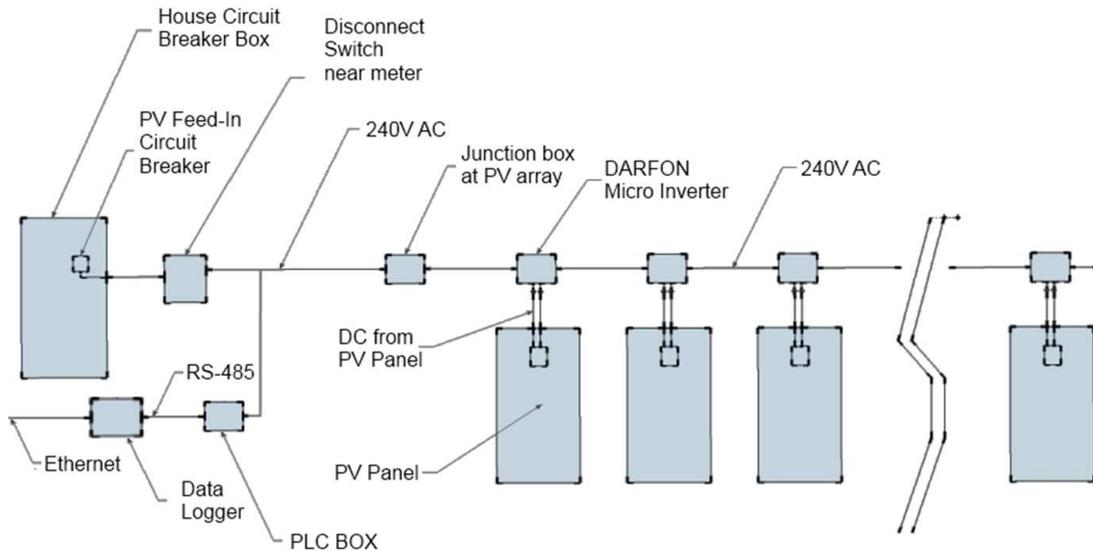
**Simplified PV Array Design and Installation** – With Darfon micro inverters, the PV array design and installation can be simplified because solar modules can be installed on any available space on rooftops. With conventional inverters, the PV array design and installation are generally more complicated due to the effects shading has on the overall performance of the PV array. When using Darfon micro inverters, installers do not need to match the performance levels of adjacent solar modules to optimize the performance, making solar installations easier, faster and cheaper to implement.

## PRE-INSTALLATION

Review and follow the instructions in this section before installing Darfon MIG240 micro inverters.

### Layout PV System

The PV system layout will need to be planned before installation. The layout/plan will affect the wiring and cabling schemes, and it will need to be adjusted accordingly. The layout will also need to account for the constraints of the distance between each PV module due to the cable length.



### Compatibility and Capacity

Darfon MIG240 micro inverters are electrically compatible with PV modules that have a voltage range of 24V~40V and a maximum wattage of 260W. For more information, refer to the Technical Specifications section on page 18.

For a list of electrically-compatible PV modules and racking systems, refer to the Darfon website at [www.darfonsolar.com](http://www.darfonsolar.com). Before ordering the PV module connector, make sure the connector type is compatible with both the micro inverter and PV module

#### Electrical Compatibility

Model	PV MPPT Voltage Range	PV Module Connector Type
MIG240	24V~40V	MC-4 Locking, Tyco Solarlock Locking, or Amphenol H4 Locking DC

#### Voltage and Capacity

Maximum number of MIG240s per AC Branch Circuit	Overcurrent Protection
240V with 10AWG AC Trunk Cable	25 30Amp Breaker
240V with 12AWG AC Trunk Cable	17 20Amp Breaker



#### WARNING

DO NOT exceed the maximum number of micro inverters in an AC branch circuit as listed above.



#### CAUTION

Each AC branch circuit must be protected by a dedicated circuit breaker of 30A or less if using 10 AWG trunk cable, or 20A or less if using 12 AWG trunk cable.

## Parts and Tools

This section provides a list of equipment and tools needed for installing and setting up the PV system.

### Darfon Equipment

- MIG240 micro inverter
- AC trunk cables (with T-branch connectors)
- Sealing caps (for any unused drops on the AC trunk cable)
- Terminators (one needed at the end of each AC branch circuit)

### Other Equipment/Tools

- PV module
- PV racking (with a DC junction box attached to one of its ends)
- Cable clips or tie wraps
- AC junction boxes
- Gland or strain relief fitting (one per AC junction box)
- Continuous grounding conductor, grounding washers
- Torque wrench, sockets, wrenches for mounting hardware
- Adjustable wrench or open-ended wrench (for terminators)

## Lightning Surge Suppression

Lightning does not actually need to strike the equipment or building where the PV system is installed to cause damage. Often, a strike nearby will induce voltage spikes in the electrical grid that can damage equipment. Darfon's micro inverters (MIG240) have built-in integral surge protection, much higher than most traditional inverters. However, if the surge has sufficient energy, the built-in protection in the device would exceed, and the device can be damaged.

As the Darfon Limited Warranty does not cover "extraordinary and unexpected manifestation of the forces of nature," such as lightning strikes, it is recommended to install surge protection as part of any solar installation. We recommend the following protection devices. These have been tested to ensure that they do not interfere with power line communications. Install per vendor instructions.

### Residential:

Vendor: Citel, Part Number DS72RS-120 or DS73RS-120

Application: DS72RS-120 is applied when N-G is bound together, or DS73RS-120 were N-G is unbound.

### Commercial:

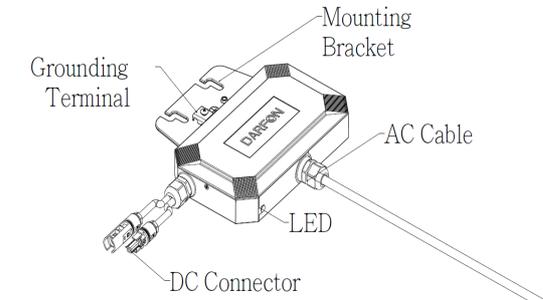
Vendor: Citel, Part Number SP-120

Application: Branch panel protection

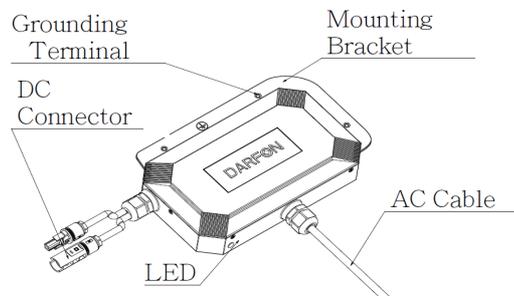
See the vendor datasheet for DS70R, (which includes the DS72RS-120) or for SP-120 at [www.citelprotection.com/english/citel\\_data\\_sheets/ac\\_protection/](http://www.citelprotection.com/english/citel_data_sheets/ac_protection/)

### Mounting Options

The micro inverter can be mounted and installed on the back of the PV module panel (screw-tightened to the frame of the panel) or on the standard PV racking. The micro inverter will vary based on the type of mounting option chosen. Be sure to have the correct micro inverters to support the installation type.



Option 1: Mounting onto the PV Racking



Option 2: Mounting onto the Back of the PV Module

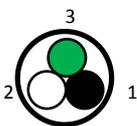
### AC Trunk Cable

There are different types and options for AC trunk cables. Depending on the orientation of the installation, the AC trunk cable can be in portrait or landscape format. Trunk cables can also consist of three pins (three wires) or four pins (four wires). Darfon currently uses the four-pin AC trunk cable.



Pin	Wire Color	Wire Usage
1	Black	L1
2	Red	L2
3	Green	Ground
4	White	Neutral

Note: Darfon previously used the three-pin AC trunk cable. For support, please contact an authorized Darfon representative.



Pin	Wire Color	Wire Usage
1	Black	L1
2	White	L2
3	Green	Ground

## INSTALLATION PROCEDURE

The following sections list steps on how to install the micro inverter onto a standard PV racking or onto the back of a PV module. Ensure the micro inverter matches the installation method (Refer to the Mounting Options section on page 6). Before installing, review and follow all important safety instructions listed at the beginning of this manual.

### Installing onto a PV Racking System

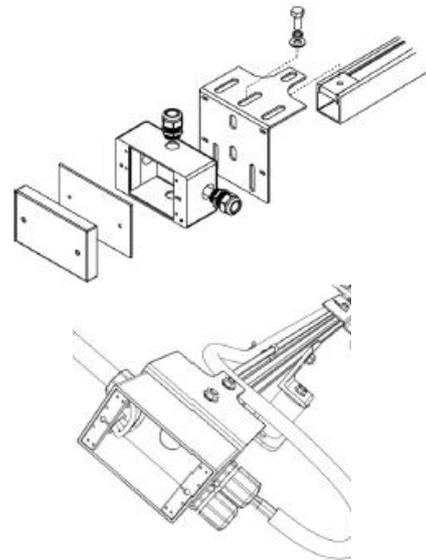
#### Step 1: Measure AC Service at the Site

Measure service entrance conductors to confirm AC service at the site. Verify that the AC voltages at the electrical utility connection and at the junction box for each AC branch circuit are within the ranges.

240 Volt AC Single Phase	
L1 to L2	211 to 264 VAC
L1, L2 to neutral	106 to 132 VAC

#### Step 2: Install the AC Branch Circuit Junction Box

- 2.1 Mount the adapter plate to a suitable location on the PV racking system (typically at the end of a row of modules). The adapter plate must be installed with an appropriate junction box.
- 2.2 Connect the open wire end of the AC interconnect cable into the junction box using an appropriate gland or strain relief fitting. The AC interconnect cable requires a strain relief connector with an opening of 3/8 inches in diameter.

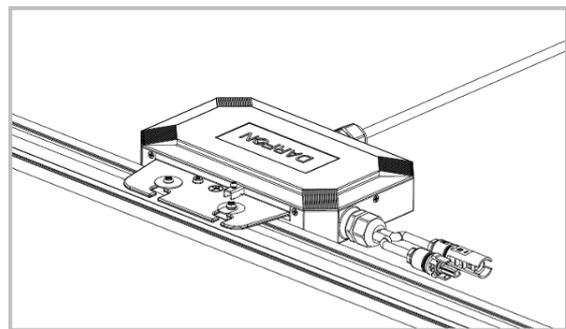


#### Step 3: Lay Out the AC Trunk Cable

Place the AC trunk cable at the required location. Align the T-branch connector to the position where the micro inverter will be installed. Then secure the cable on either side of the rack using cable clips or tie wraps.

#### Step 4: Attach the Micro Inverter to the PV Racking

- 4.1 Note the approximate centers of each PV module on the PV racking.
- 4.2 Evaluate the location of the micro inverter against potential collection of moisture or water.
- 4.3 Evaluate the location of the micro inverter with respect to the DC junction box and the PV module frame.
- 4.4 Align the MIG240 so that the holes on the mounting bracket are above the slot opening on the PV racking and secure the micro inverter to the PV racking with screws.

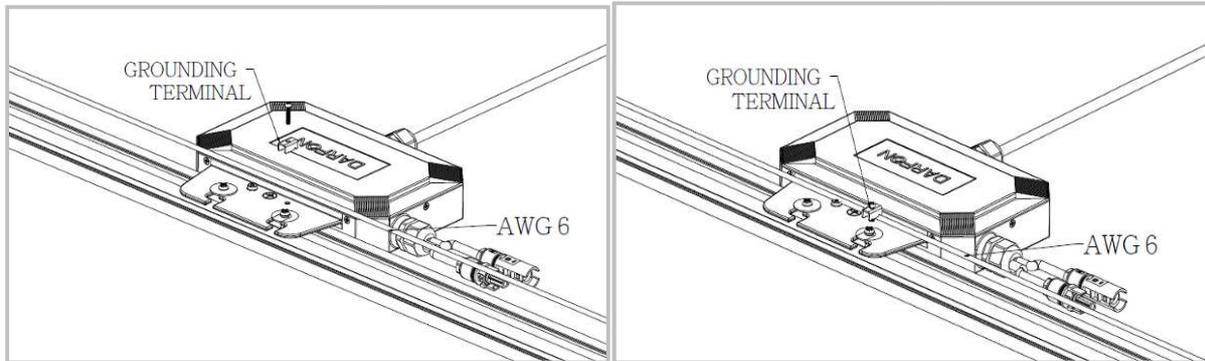


#### CAUTION

Ensure that the inverter does not obstruct the PV module frame or stiffen braces.  
Ensure the micro inverter's AC connector can easily reach the T-branch connector.

### Step 5: Ground the Micro Inverters

Unscrew the top of grounding clips on the micro inverters. Run the grounding electrode conductor to each grounding clip on the micro inverter and then to the junction box. After laying out the grounding conductor, secure the top of the grounding clips back onto the micro inverters.

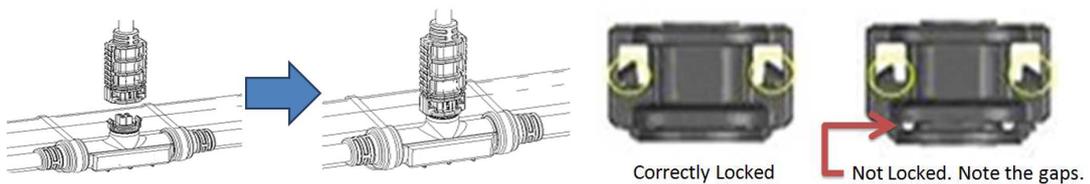


**WARNING**

Correct AC grounding and short circuit protection must be provided to ensure operational safety.

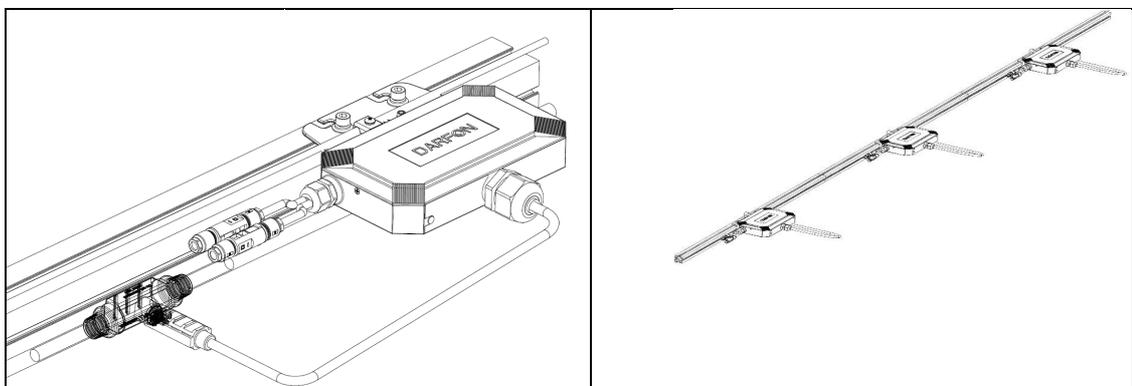
### Step 6: Connect the Micro Inverters

6.1 Remove the temporary shipping cap from the t-branch on the AC trunk cable and connect the micro inverter. Ensure the connection is secure and locked into place. (Depending on the trunk cable's manufacturer, the locking mechanism will vary.)



6.2 Repeat for all micro inverters in the AC branch circuit.

6.3 For any unused connectors on the AC trunk cable, replace the temporary shipping cap with a sealing cap. Listen for a click as the sealing cap is connected to ensure that it is securely locked into place.



**Step 7: Terminate the Unused End of the AC Trunk Cable**

- 7.1 Strip 10mm (about 0.5in) of the outer sheath from the end of the AC trunk cable.
- 7.2 Each terminator has four parts: the sealing nut, clamp ring, seal and cap. Slide the sealing nut, clamp ring and then the seal onto the AC trunk cable.
- 7.3 Insert the individual wires into the slots inside the cap of the terminator.
- 7.4 Screw the hex nut onto the cap. Use a wrench to ensure the hex nut is screwed in all the way to the base of the cap.

**WARNING**

Ensure the AC trunk cable and terminator do not touch the roof by using cable clips or tie wraps to attach the trunk cable to the PV racking. Ensure that all cabling is located underneath the PV module.

**Step 8: Connect the AC Junction Box**

Connect the AC trunk cable to the AC junction box using the appropriate gland or strain relief fitting. The AC trunk cable requires a strain relief connector with an opening of 1.6 cm (0.6 in) in diameter.

The wires in the AC trunk cable are identified by color: L1 is sheathed in Black, L2 is sheathed in Red, Neutral is sheathed in White and Ground is sheathed in Green.

**WARNING**

Although the AC trunk cable includes a grounding wire, the continuous grounding conductor or grounding washers is still required.

**Step 9: Connect the PV Modules**

Mount the PV modules above the micro inverters, and then connect each micro inverter to a PV module. (The micro inverter and PV module's DC cables have two connectors. Connect the micro inverter positive connector to the PV module negative connector, and vice versa.)

**CAUTION**

Micro inverters and PV modules are installed using a one to one ratio.

**Step 10: Connect Monitoring System (Optional)**

The monitoring system requires additional equipment (PLC box and data logger). For more information on the monitoring system, refer to the [PV Monitoring System user's manual](#).

### Installing onto the back of a PV Module

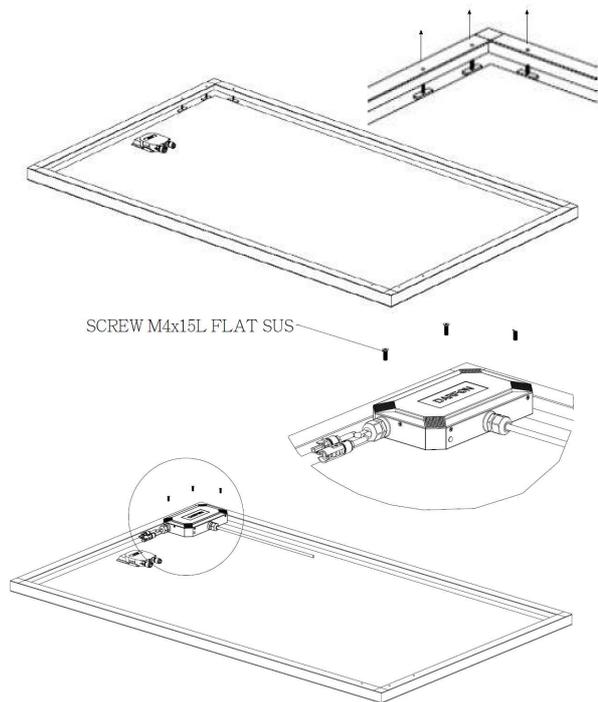
#### Step 1: Measure AC Service at the Site

Measure service entrance conductors to confirm AC service at the site. Verify that the AC voltages at the electrical utility connection and at the junction box for each AC branch circuit are within the ranges.

240 Volt AC Single Phase	
L1 to L2	211 to 264 VAC
L1, L2 to neutral	106 to 132 VAC

#### Step 2: Attach the micro inverter to the PV module.

- 2.1 Using the micro inverter as a reference, mark the location on PV module frame where it needs to be drilled.
- 2.2 Drill the holes into the PV module frame using M5.5 drill bit.
- 2.3 Insert the M4 support bolts (x3). Note: Each M4 support bolt has adhesive to secure it to the PV module frame. Be sure to remove the liner from the adhesive before inserting the bolts.



- 2.4 Place the micro inverter onto the PV module and secure it to the M4 bolts.

#### Step 3: Connect the PV modules.

Connect the micro inverter DC cable to the PV module's DC cable. (The micro inverter and PV module's DC cables have two connectors. Connect the micro inverter positive connector to the PV module negative connector, and vice versa.)

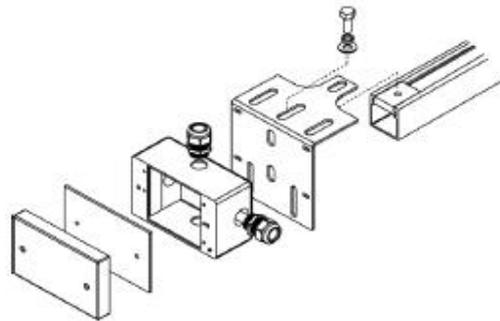


#### CAUTION

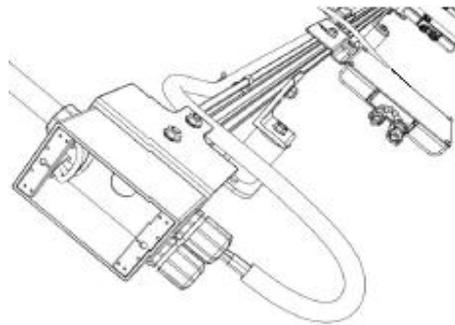
Micro inverters and PV modules are installed using a one to one ratio.

**Step 4: Install the AC Branch Circuit Junction Box**

- 4.1 Mount the adapter plate to a suitable location on the PV racking system (typically at the end of a row of modules). The adapter plate must be installed with an appropriate junction box.



- 4.1 Connect the open wire end of the AC interconnect cable into the junction box using an appropriate gland or strain relief fitting. The AC interconnect cable requires a strain relief connector with an opening of 3/8 inches in diameter.

**Step 5: Lay Out the AC Trunk Cable.**

Place the AC trunk cable at the required location. Align the T-branch connector to the position where the micro inverter will be installed. Then secure the cable on either side of the rack using cable clips or tie wraps.

**Step 6: Terminate the Unused End of the AC Trunk Cable**

- 6.1 Strip 10mm (about 0.5in) of the outer sheath from the end of the AC trunk cable.  
 6.2 Each terminator has four parts: the sealing nut, clamp ring, seal and cap. Slide the sealing nut, clamp ring and then the seal onto the AC trunk cable.  
 6.3 Insert the individual wires into the slots inside the cap of the terminator.  
 6.4 Screw the hex nut onto the cap. Use a wrench to ensure the hex nut is screwed in all the way to the base of the cap.

**WARNING**

Ensure the AC trunk cable and terminator do not touch the roof by using cable clips or tie wraps to attach the AC trunk cable to the PV racking. Ensure that all cabling is located underneath the PV module.

**Step 7: Place the PV Module on to the PV Racking.****Step 8: Ground the Micro Inverters**

Unscrew the top of grounding clips on the micro inverters. Run the grounding electrode conductor to each grounding clip on the micro inverter and then to the junction box. After laying out the grounding conductor, secure the top of the grounding clips back onto the micro inverters.

**WARNING**

Correct AC grounding and short circuit protection must be provided to ensure operational safety.

**Step 9: Connect the Micro Inverters to the AC Trunk.**

- 9.1 Remove the temporary shipping cap from the t-branch on the AC trunk cable and connect the micro inverter. Ensure the connection is secure and locked into place. (Depending on the trunk cable's manufacturer, the locking mechanism will vary.)
- 9.2 Repeat for all micro inverters in the AC branch circuit.
- 9.3 For any unused connectors on the AC trunk cable, replace the temporary shipping cap with a sealing cap. Listen for a click as the sealing cap is connected to ensure that it is securely locked into place.

**Step 10: Connect the AC Junction Box**

Connect the AC trunk cable to the AC junction box using the appropriate gland or strain relief fitting. The AC trunk cable requires a strain relief connector with an opening of 1.6 cm (0.6 in) in diameter.

The wires in the AC trunk cable are identified by color: L1 is sheathed in Black, L2 is sheathed in Red, Neutral is sheathed in White and Ground is sheathed in Green.

**WARNING**

Although the AC trunk cable includes a grounding wire, the continuous grounding conductor or grounding washers is still required.

**Step 11: Connect Monitoring System (Optional)**

The monitoring system requires additional equipment (PLC box and data logger). For more information on the monitoring system, refer to the [PV Monitoring System user's manual](#).

## POST-INSTALLATION



**WARNING**

Changes to your electrical system should be carried out only by qualified electricians.



**WARNING**

Do not attempt to repair this product; it does not contain user-serviceable parts. Repairs and internal servicing should only be performed by Darfon authorized service personnel.

### Commissioning and Operating

Step 1: Turn on the AC disconnect of the circuit breaker from each micro inverter AC branch circuit.

Step 2: Turn on the main utility-grid AC circuit breaker. Your system will start producing power after five minutes.

Step 3: (Optional Monitoring System) Depending on the strength of the signal, it can take up to 2 hours before the monitoring system detect all the micro inverters in the PV system. For more information on the monitoring system, refer to the PV Monitoring System user’s manual.

### GFDI fault

GFDI fault means there are current between panel and ground, and that may damage the panel or strike people who touch the panel or the solar system. When a GFDI (Ground fault) fault occurs, the LED will show sparking and alternating in orange and red, and MIG240 will disconnect the system to prevent people to get strike.

When GFDI occur, please contact with the installer and follow the *Operation Manual* to clear this condition. Or you can contact with Darfon customer support at [support@darfon.com](mailto:support@darfon.com).

### Troubleshooting

If the PV system is not operating correctly, use the steps in this section to troubleshoot the problem. If the issue cannot be corrected using the steps in this section, please contact a Darfon authorized service personnel.

#### LED Indicators

Depending on the position/location of the installed micro inverter, the use of handheld mirrors may be needed. If the micro inverter’s LED indicator is not showing a color or is flashing red, follow these steps.

Step 1: Verify that the AC voltage and frequency in the connection to the utility grid are in the appropriate ranges. Ranges are in the Technical Specifications section on page 18.

LED Status	Description
● Flashing Orange	Normal Start-up Operation
● Solid Orange	Minimum Start Voltage Met
● Solid Green	Operating - MPPT/Grid Mode On
● Flashing Green	Operating - Over Maximum Wattage
● Solid Red	Not Operating - Low Voltage
● Flashing Red (0.5 Hz)	Restarting - Minimum Voltage Met
● Flashing Red (2 Hz)	Halt Manually/Calibration or Flash Programming

Step 2: Verify that the AC voltages at the electrical utility connection and at the junction box for each AC branch circuit are within the ranges.

240 Volt AC Single Phase	
L1 to L2	211 to 264 VAC
L1, L2 to neutral	106 to 132 VAC

Step 3: Verify that there is AC voltage from the AC branch circuit to each micro inverter.

Step 4: Verify that any upstream AC disconnects, as well as the dedicated circuit breakers for each AC branch circuit, are functioning properly and are closed.

Step 5: Verify the PV module DC voltage is within the allowable voltage and wattage range shown in the Technical Specifications section on page 25.

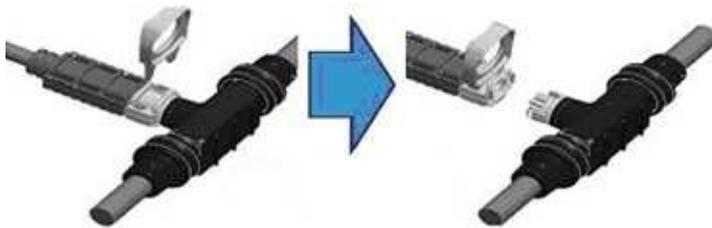
Step 6: Verify the DC is connected correctly between the micro inverter and the PV module.

**Step 7:** If the problem persists, contact Darfon Technical Support at [support@darfon.com](mailto:support@darfon.com).

**Disconnecting a Micro Inverter**

Ensure the micro inverter is not disconnected from the PV modules under load and switch off the circuit breakers.

Step 1: Disconnect the micro inverter from the AC trunk cable.



Step 2: Completely cover the PV module with an opaque cover.



**WARNING**

Be aware that DC power/voltage is generated when the PV module is exposed to light.

Step 3: Using a meter, verify that the DC wires between the PV module and the micro inverter does not have a current.

Step 4: Disconnect the PV module from the micro inverter. To disconnect the micro inverter’s positive connector, squeeze the locking mechanism and pull the connectors apart. The micro inverter’s negative connector is tool-removable only.



Positive Connector



Negative Connector

Step 5: Disconnect the grounding wire or washer from the micro inverter.

Step 6: Remove the micro inverter from the PV racking.



**WARNING**

Do not leave the T-branch connector on the AC trunk cable exposed for an extended period of time. If the removed micro inverter will not be replaced with another micro inverter immediately, connect a sealing cap to the T-branch connector.

## TECHNICAL SPECIFICATIONS

MIG240UL00	
<b>Input Data (DC)</b>	
Recommended Maximum Input Power (STC)	Up to 260W
Nominal Input Power	240W
Maximum Input DC Voltage	60V
Maximum Peak Power Tracking Voltage	24 ~ 40V
Minimum Start Voltage	24V
Maximum DC Short Circuit Current	12A
Maximum Input Current	10A
<b>Output Data (AC)</b>	
Maximum Continuous Output Power	220W
Maximum Peak Output Power	245W
Nominal Output Current	0.917A
Nominal Voltage / Range	240 / 211-264 V
Nominal Frequency / Range	60 / 59.3-60.5 Hz *
Power Factor	>0.95
Maximum Units per 30A Branch Circuit	25 (Single Phase)
<b>Efficiency</b>	
Peak Inverter Efficiency	95.7%
CEC Weighted Efficiency	95%
Nominal MPP Tracking	99%
Night Time Power Consumption	51mW
<b>Mechanical Data</b>	
Ambient Temperature Range	-40°C to 65°C
Operating Temperature Range (Internal)	-40°C to 85°C
Dimensions (WxHxD)	8.7 x 5.1 x 1.5 in (220 x 130 x 37mm)
Weight	5.5 lbs (2.5 kg)
Cooling	Natural Convention - No Fans
Enclosure Environmental Rating	Outdoor - NEMA 6
<b>Features</b>	
Communication	Powerline
Compliance	EN 61000-6-2, EN 61000-6-3, FCC Part15 Class B, UL 1741, IEEE 1547

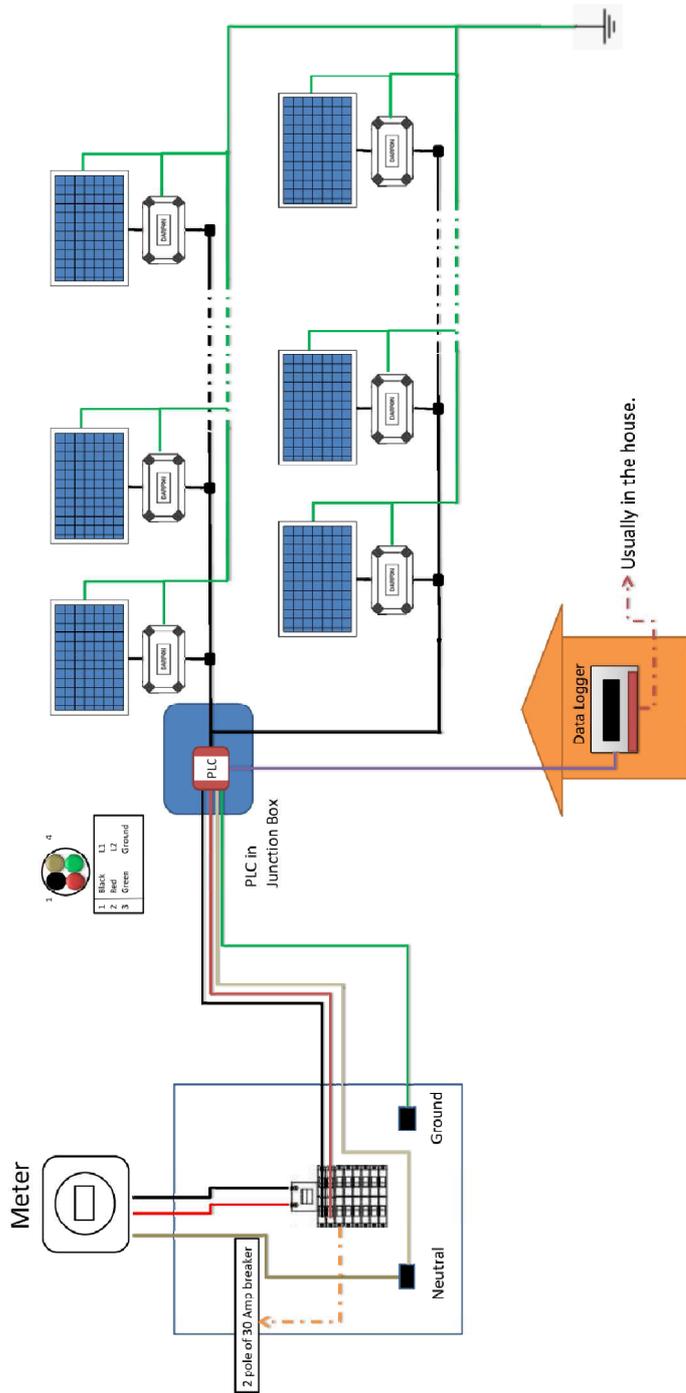
\* Extended frequency range available to serve local markets.

**DARFON MICRO INVERTER INSTALLATION MAP**

	Customer Information Installer Information		Site: Azimuth: _____ Date: _____			Sheet _____ of _____ Please print this page.		
	A	B	C	D	E	F	G	H
a								
b								
c								
d								
e								
f								
g								
h								
i								
j								
k								
l								
m								

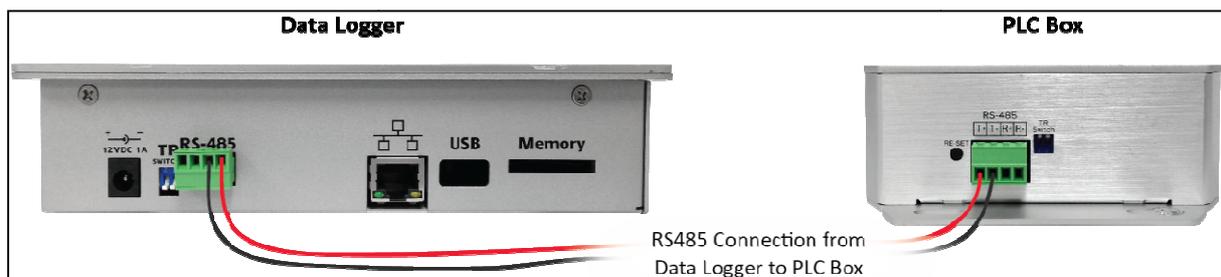
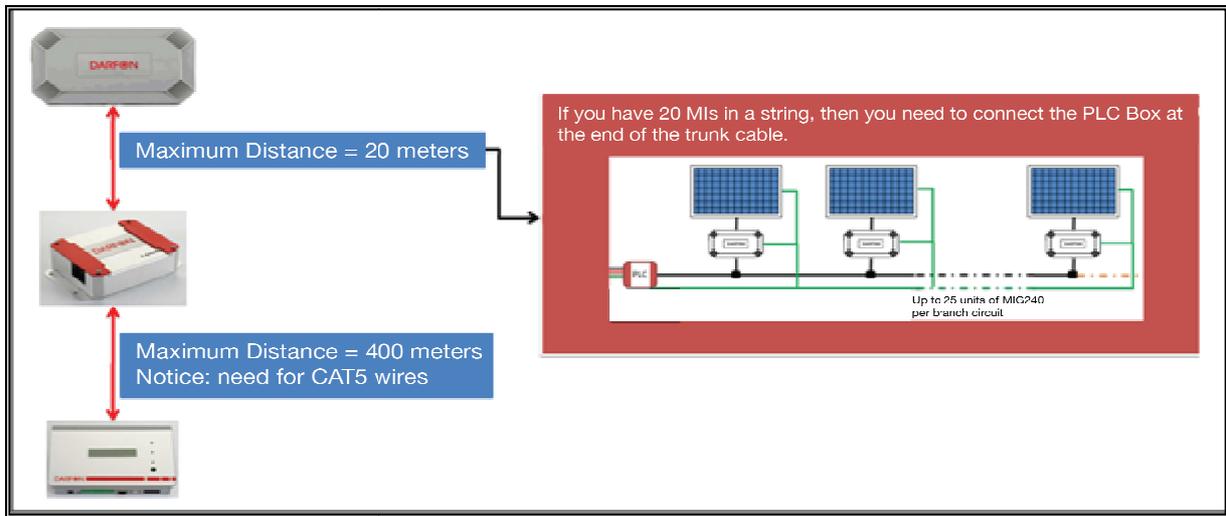
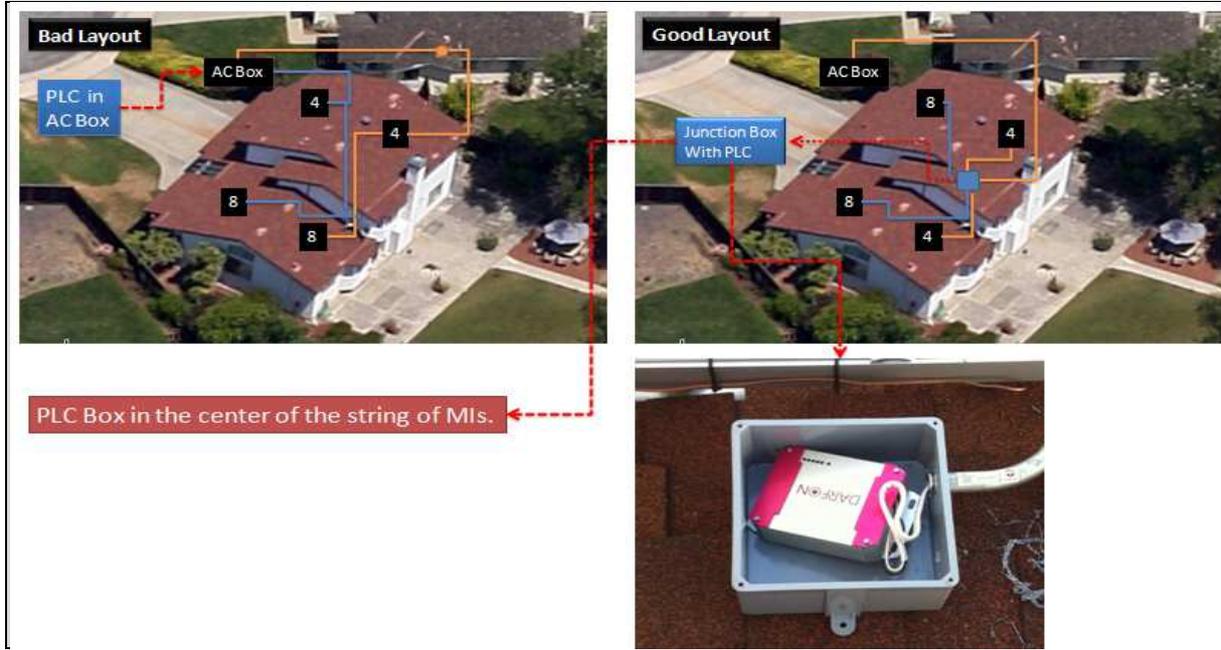
### SAMPLE WIRING DIAGRAM (Small system < 25 MIs)

240 VAC, single phase with monitoring system



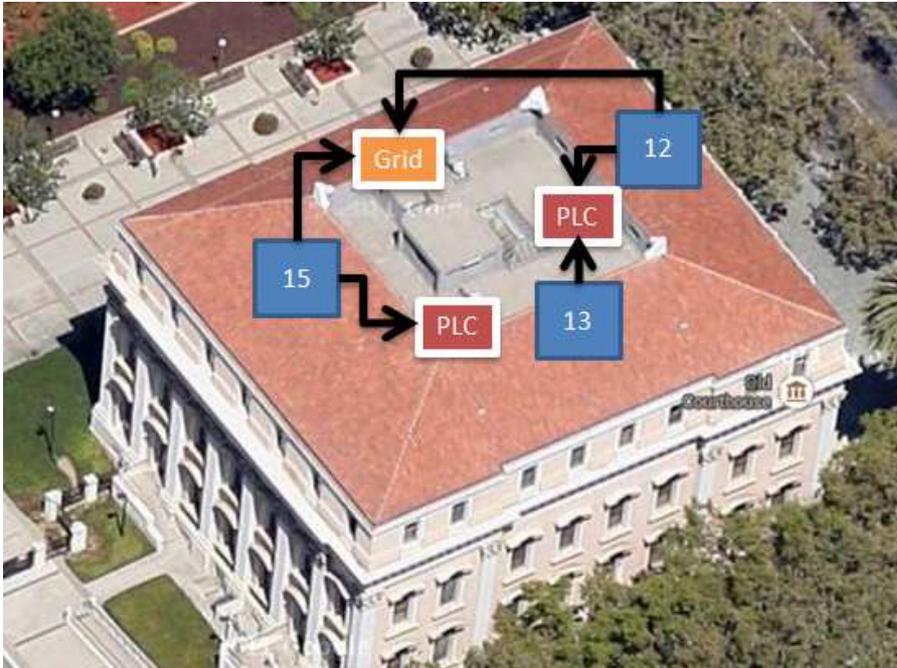
### SAMPLE WIRING DIAGRAM (communication system installation)

If the system is less than 25 MIs as below in the figure, Darfon suggests putting the PLC Box in the center of the strings to improve communication.

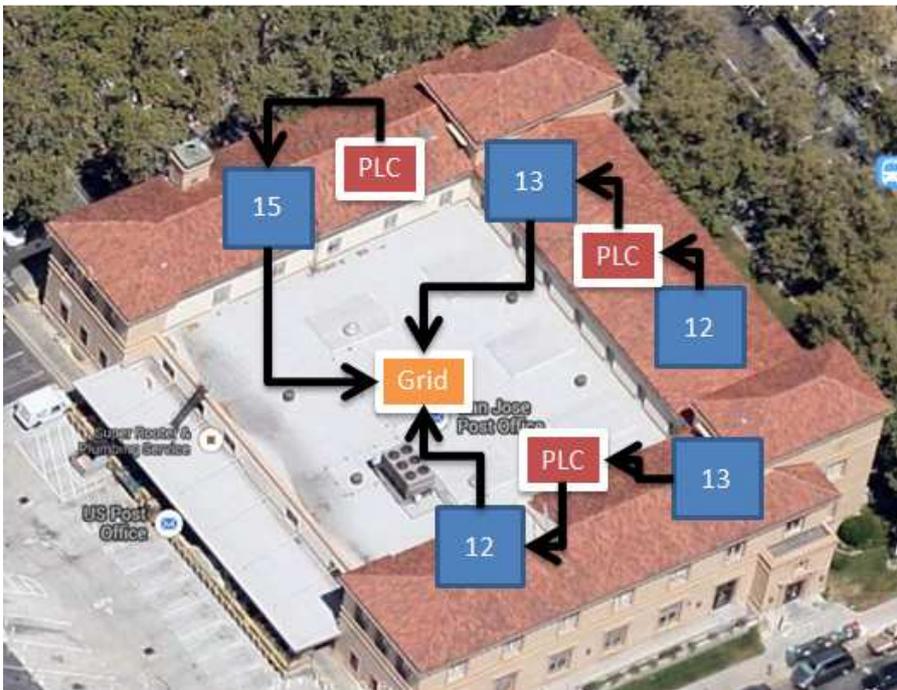


## References for the layout on the roof.

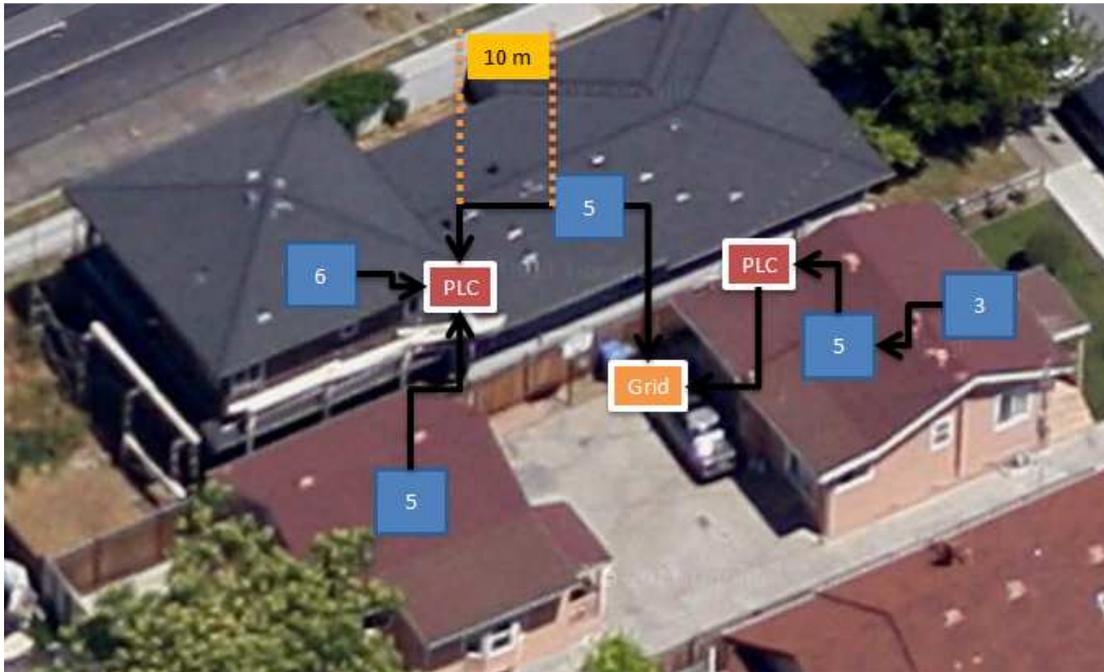
Rule 1: One PLC can support to 25 units of MIG240 maximum.(No more than 13 units each in each side.)



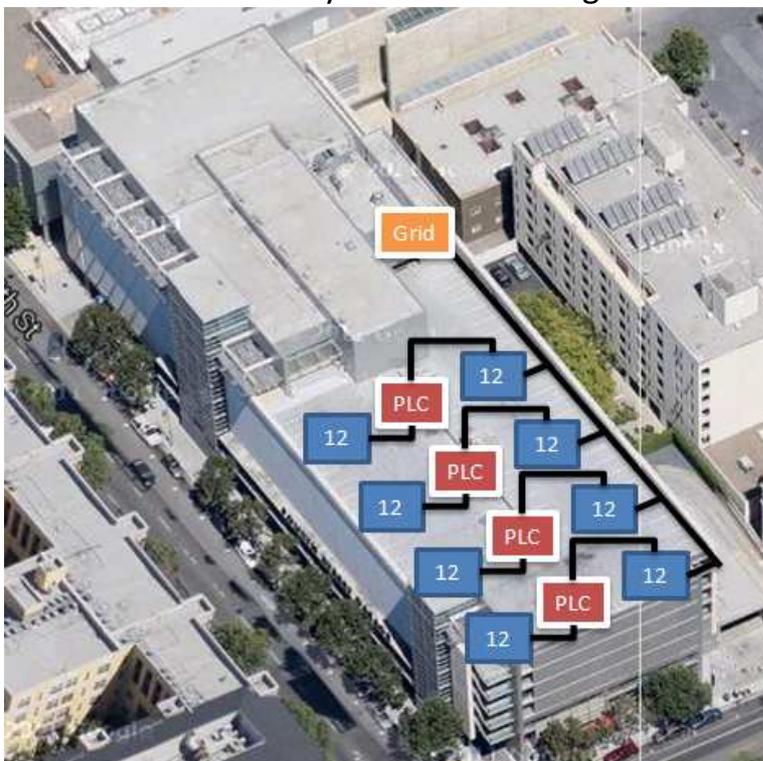
Rule 2: Don't put PLC Box closed to each other, that means users need to put PLC btw Mis strings.



Rule 3: Keep PLC closed to the microinverters. (No more than 10 m from the first unit)



Rule 4: Commercial layout should be regular and arranged.



## [Data logger] Internet setting (AT&T router as an example)

This is a real hard one to find anything out about. Even Motorola doesn't have anything on their site dealing with this specific model, and that could be because either AT&T has them specifically make this model for them, or because Motorola split into two companies and stuff isn't all updated/transferred yet.

As Darfon don't have one of these, and all equipment isn't the same, Darfon will give you what we have found. The previous Motorolas in AT&T/SBC areas was the 2210/2310, which evolved somehow into the Netopia lines or was based on them. There is a PDF manual for these models, and [this embedded link](http://www1.arrisi.com/staticfiles/Support/US-EN/Home-and-Office/DSL-Modems-and-Gateways/2210-02-10NA-ADSL2-Residential-Gateway/Documents/Static-Files/2210-02-10NA_AdminHandbook_v784.pdf) (opens in new tab/window ) will open it. Go to page 14, get into the router, then go to page43. (if the embedded link is not working, please refer to address as below, [http://www1.arrisi.com/staticfiles/Support/US-EN/Home-and-Office/DSL-Modems-and-Gateways/2210-02-10NA-ADSL2-Residential-Gateway/Documents/Static-Files/2210-02-10NA\\_AdminHandbook\\_v784.pdf](http://www1.arrisi.com/staticfiles/Support/US-EN/Home-and-Office/DSL-Modems-and-Gateways/2210-02-10NA-ADSL2-Residential-Gateway/Documents/Static-Files/2210-02-10NA_AdminHandbook_v784.pdf))

### Step 0:

Run a Web browser, such as Mozilla Firefox or Microsoft Internet Explorer.

Enter *http://192.168.1.254* in the URL Address text box.



The user name/password: should be admin/admin. Otherwise, you have to contact with the ISP.



**Step 1:**

Key-in the service name as “data logger”. Once you choose a software service or game, click Enable.

**NAT (Games and Other Services)**

This page allows you to host games and other services over an Internet Connection.

Service Name

\*\*\* denotes custom service

**Step 2:**

Key-in the IP address on display of data logger. Then Enable.

**Enable Service**

Service Name: Age of Empires, v.1.0

Select Host Device

**Step 3:**

Define customer service as “Port Forwarding”.

## NAT (Games and Other Services)

This page allows you to host games and other services over an Internet Connection.

Service Name

\*\*\* denotes custom service

### Custom Service

Port Forwarding Range of Ports Forward a range of WAN ports to an IP address on the LAN

Trigger Ports Forward a range of ports to an IP address on the LAN only after specific outbound traffic

Step 4:  
Set the port to be 21, and Click the Next button.

### Port Range

Set up a Port Forwarding range entry based on your specific ports

Service Name:    
*The above name will be saved as this service's description*

Global Port Range:  -

Base Host Port:

Protocol:  TCP  UDP

Step 5:

Repeat Step 1 ~ 4, you can make service name as xxxx.1, xxxx.2, and set the port as 23 and 80 as below.

**Port Range**

Set up a Port Forwarding range entry based on your specific ports

Service Name:   
*The above name will be saved as this service's description*

Global Port Range:  -

Base Host Port:

Protocol:  TCP  UDP

**Port Range**

Set up a Port Forwarding range entry based on your specific ports

Service Name:   
*The above name will be saved as this service's description*

Global Port Range:  -

Base Host Port:

Protocol:  TCP  UDP

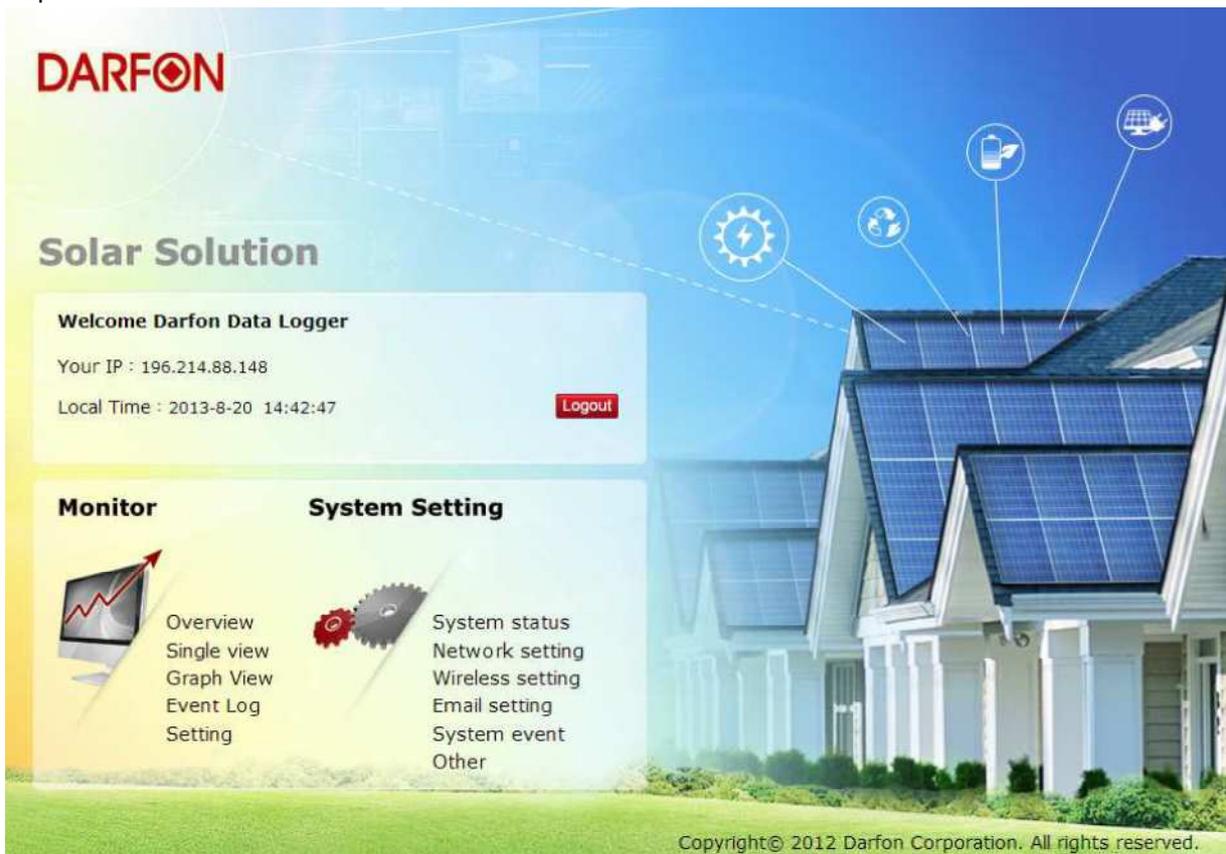
Use those instructions as a guide if it's somewhat similar.

# Time server Setting manual

Step 1 Login the system



The default ID is user, default Password is user  
Step 2 Select "Other"



## Step 3 Key in Time server

Monitor | **System Setting** | Logout

**DARFON**

System status Network setting Wireless setting Email setting System event **Other**

**Other**

- Time setting**  
Date Time : 2013 / 08 / 20 10 : 09 ex:2012/06/25 12:30
- Language**  
Language :  English  Chinese
- Buzzer**  
Setting :  On  Off
- Time**  
Time server : 220.130.158.71 GMT : Johannesburg  
Time update :  On  Off

Save Save

Default Time Server is 220.130.158.71

## Step 4 Key in GMT

Monitor | **System Setting** | Logout

**DARFON**

System status Network setting Wireless setting Email setting System event **Other**

**Other**

- Time setting**  
Date Time : 2013 / 08 / 20 10 : 09 ex:2012/06/25 12:30
- Language**  
Language :  English  Chinese
- Buzzer**  
Setting :  On  Off
- Time**  
Time server : 220.130.158.71 GMT : Johannesburg  
Time update :  On  Off

Save Save

Default GMT is Taipei

Refer Time zone reference city table input matches the time zone of the city name  
(Please note that the bottom line and lower case letters)

Time zone reference city table (UTC)

Area	City	Zone	Area	City	Zone
Africa	Luanda	+1	Asia	Bangkok	+7
Europe	Vienna	+1	Antarctica	Casey	+8
Europe	Sarajevo	+1	Australia	Perth Western	+8
Europe	Brussels	+1	Asia	Brunei	+8
Europe	Zurich	+1	Asia	Shanghai	+8
Europe	Prague	+1	Asia	Taipei	+8
Europe	Berlin	+1	Australia	Eucla Western	+8.75
Europe	Copenhagen	+1	Asia	Tokyo	+9
Europe	Madrid	+1	Asia	Seoul	+9
Europe	Paris	+1	Australia	Broken Hill	+9.5
Europe	Rome	+1	Australia	Adelaide	+9.5
Europe	Luxembourg	+1	Australia	Darwin	+9.5
Europe	Monaco	+1	Europe	London	0
Arctic	Longyearbyen	+1	Europe	Dublin	0
Europe	Vatican	+1	Europe	Lisbon	0
Australia	Hobart	+10	Pacific	Honolulu	-10
Australia	Currie	+10	Pacific	Pago_Pago	-11
Australia	Melbourne	+10	Argentina	Buenos_Aires	-3
Australia	Sydney	+10	Argentina	Cordoba	-3
Australia	Brisbane	+10	Argentina	Salta	-3
Australia	Lindeman	+10	Argentina	Jujuy	-3
Pacific	Guam	+10	Argentina	Tucuman	-3
Pacific	Saipan	+10	Argentina	Catamarca	-3
Australia	Lord_Howe	+10.5	Argentina	La_Rioja	-3
Antarctica	McMurdo	+12	Argentina	San_Juan	-3
Antarctica	South_Pole	+12	Argentina	Mendoza	-3
Antarctica	Palmer	+12	Argentina	Rio_Gallegos	-3
Pacific	Fiji	+12	Argentina	Ushuaia	-3
Europe	Andorra	+2	America	Antigua	-4
Europe	Tirane	+2	America	Anguilla	-4
Europe	Mariehamn	+2	America	Curacao	-4
Europe	Sofia	+2	America	San_Luis	-4
Africa	Cairo	+2	America	Aruba	-4
Europe	Athens	+2	America	Barbados	-4
Africa	Johannesburg	+2	America	Tortola	-4
Asia	Bahrain	+3	America	Panama	-5
Asia	Dubai	+4	America	New_York	-5
Asia	Yerevan	+4	America	Detroit	-5
Asia	Baku	+4	America	Chicago	-6
Europe	Moscow	+4	America	Center	-6
Asia	Kabul	+4.5	America	New_Salem	-6
Antarctica	Mawson	+5	America	Phoenix	-7
Indian	Maldives	+5	America	Vancouver	-8
Asia	Dhaka	+6	America	Los_Angeles	-8
Antarctica	Davis	+7			

MIG240 MICRO INVERTER INSTALLATION MANUAL



Manufactured by:



Darfon Electronics Corp.  
167 Shan-ying Road, Gueishan,  
Taoyuan 333, Taiwan, (R.O.C.)  
Tel: +886 3 2508800  
[www.darfon.com](http://www.darfon.com)

US Office:  
Darfon America Corp.  
3031 Tisch Way, Suite 610  
San Jose, CA 95128  
Tel: +1 408 260 3880