



## INSTALLATION AND OPERATION MANUAL



### **NWKSP3**

#### COMNET SOLAR POWERED SYSTEM

Thank you for purchasing NetWave® from ComNet. This manual will cover how to install hardware on your enclosure, Configure batteries, cabling and mounting of the enclosure.

The NetWave® NWKSP3 Solar off the grid power system is designed for applications where a remote camera or wireless repeater is needed but power is not available or the cost to run power is too expensive. NetWave Solar is a complete system for providing remote power to edge communications equipment. The kit includes high quality photovoltaic solar panels, valve-regulated lead-acid batteries, outdoor enclosure, solar charge controller, PoE midspan injector and mounting hardware. The steel outdoor enclosure has a gasket hinged lid with two tamper proof locks operated by a special key for high security. The enclosure can be mounted on a two to four inch pole or wall mounted with the included mounting hardware. The Solar Panels include a top of pole mount requiring a 4" diameter pole. A side of pole mount is available as an optional accessory. The included 30A solar charge controller supports an LCD screen for local diagnostics and system health monitoring, Intelligent PWM charging mode and battery protection from overcharge and over discharge while the batteries provide outstanding deep cycle and cold weather performance.

## About This Guide

This guide is intended for different users such as engineers, integrators, developers, and technicians.

It assumes that users have knowledge of the following:

- » Installation of electronic equipment
- » Electrical regulations and guidelines

## Related Documentation

The following documentation is also available on the disc that was included with your shipment, as well as from <http://www.comnet.net>:

- » Solar Charge Controller User Manual
- » NetWave Wireless Unit User Manual
- » Solar Panel mounting instructions (included with the mounting hardware)

## Website

For information on ComNet's entire product line, please visit the ComNet website at <http://www.comnet.net>

## Support

For any questions or technical assistance, please contact your sales person ([sales@comnet.net](mailto:sales@comnet.net)) or the customer service support center ([techsupport@comnet.net](mailto:techsupport@comnet.net))

## Safety

- » Only ComNet service personnel can service the equipment. Please contact ComNet Technical Support.
- » The equipment should be installed in locations with controlled access, or other means of security, and controlled by persons of authority.
- » Do not install equipment on wet or windy days.
- » Make sure you have assistance mounting the hardware.
- » Complete as much of the setup as you can on the ground in a safe environment.

## Contents

<b>About This Guide</b>	<b>2</b>
Related Documentation	2
Website	2
Support	2
Safety	2
<b>Overview</b>	<b>4</b>
Legal Information	4
<b>Introduction</b>	<b>5</b>
<b>Typical Setup</b>	<b>6</b>
<b>Mounting Assembly</b>	<b>7</b>
<b>Preparing the Enclosure</b>	<b>10</b>
<b>Pole Mount</b>	<b>12</b>
<b>Solar Panel Electrical Wiring</b>	<b>13</b>
<b>Battery Installation</b>	<b>14</b>
<b>Agency Compliance</b>	<b>17</b>
<b>GPL (General Public License) Statement</b>	<b>19</b>

## Overview

### Legal Information

No part of this document may be reproduced or transmitted in any form or by any means, electronic and mechanical, for any purpose, without the express written permission of ComNet.

### Copyright

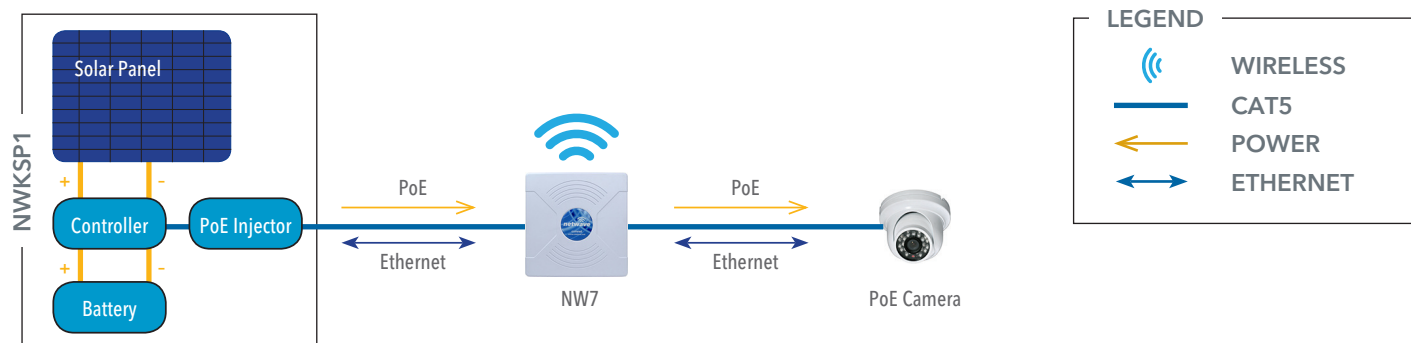
Copyright © 2014 ComNet. All rights reserved.

### Disclaimer

ComNet reserves the right to make changes in specifications at any time without notice. The information furnished by ComNet in this material is believed to be accurate and reliable. However, ComNet assumes no responsibility for its use.

## Introduction

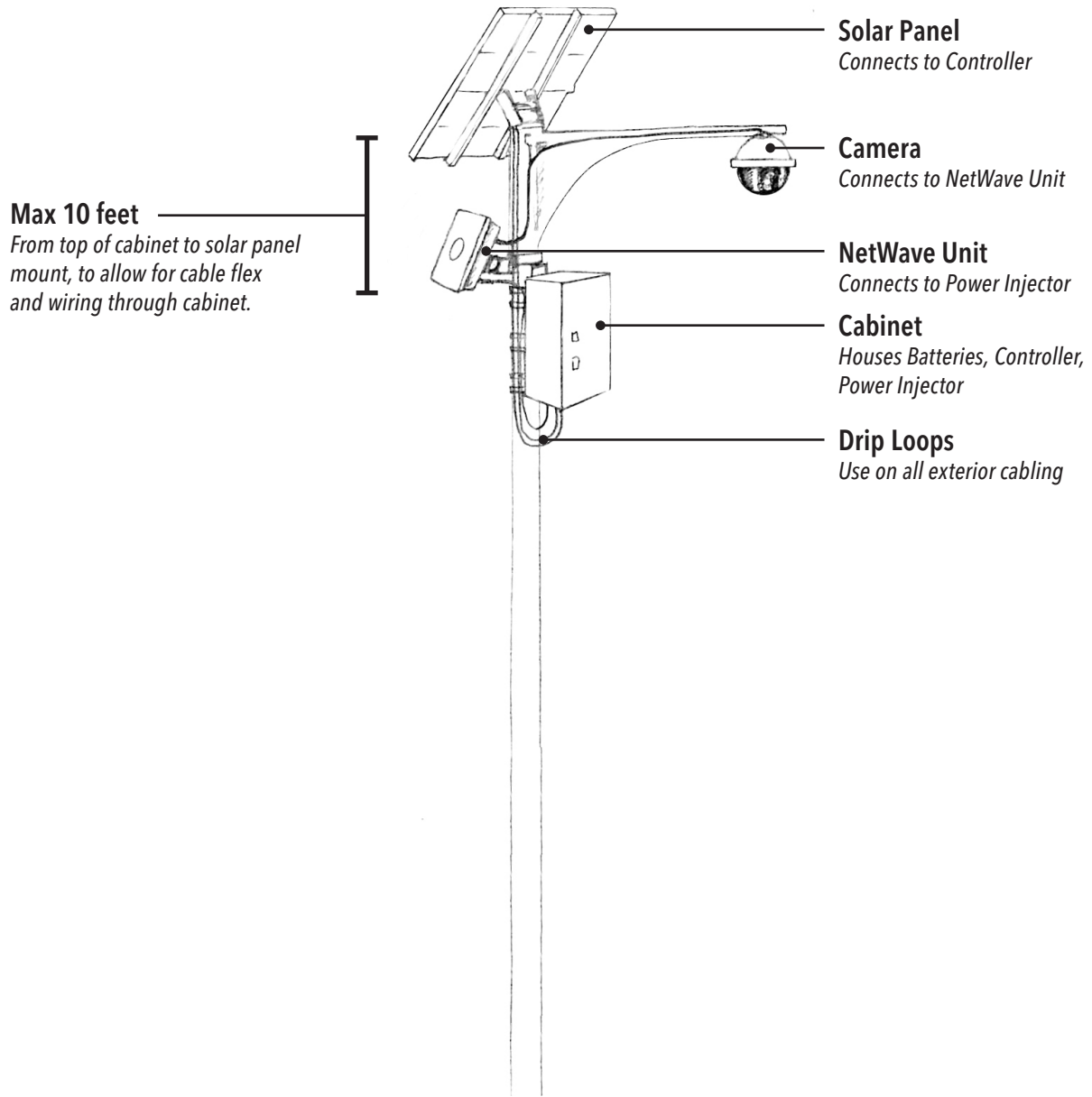
The NetWave® NWKSP3 Solar off the grid power system is designed for applications where a remote camera or wireless repeater is needed but power is not available or the cost to run power is too expensive. NetWave Solar is a complete system for providing remote power to edge communications equipment.



The kit includes high quality photovoltaic solar panels, valve-regulated lead-acid batteries, outdoor enclosure, solar charge controller, PoE midspan injector and mounting hardware. The steel outdoor enclosure has a gasket hinged lid with two tamper proof locks operated by a special key for high security. The enclosure can be mounted on a two to four inch pole or wall mounted with the included mounting hardware. The Solar Panels include a top of pole mount requiring a 4" diameter pole. A side of pole mount is available as an optional accessory. The included 30A solar charge controller supports an LCD screen for local diagnostics and system health monitoring, Intelligent PWM charging mode and battery protection from overcharge and over discharge while the batteries provide outstanding deep cycle and cold weather performance.

This manual contains detailed operational and configuration information.

# Typical Setup



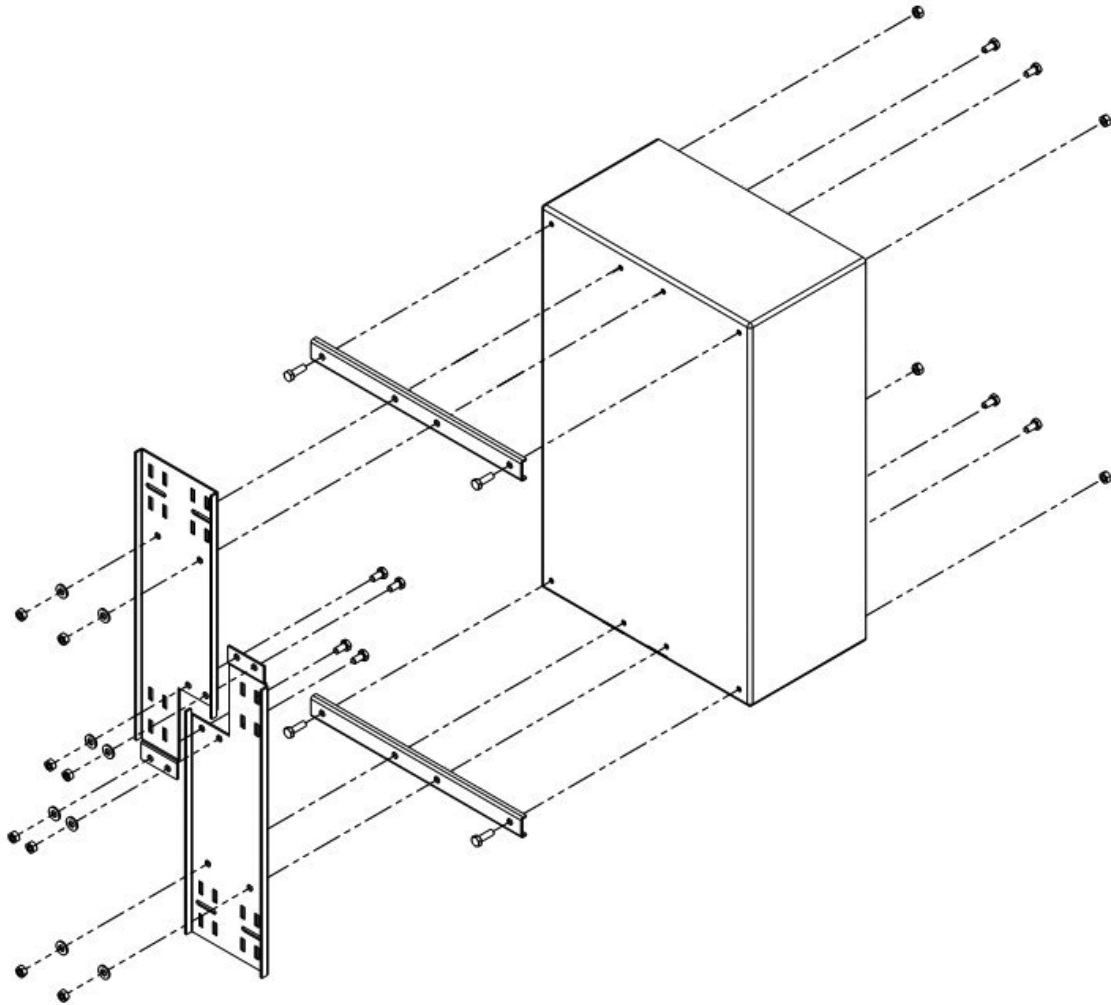
## Mounting Assembly

If mounting the enclosure to a pole, remove the orange panel mount from inside the cabinet.



*Orange Panel Mount Removed from Cabinet*

Attach the horizontal mounting braces to the cabinet at the top and bottom. Connect the two halves of the pole mount brace, then attach them to the center of the cabinet through the center holes, top and bottom. Please refer to the diagram on the next page.



*Mounting Hardware, Pole Mount*





*Pole Mount Hardware mounted on back of enclosure*

Reinstall the orange panel after the pole mounting hardware is installed.

If mounting the enclosure to a wall, you can skip this step and mount the enclosure directly to a wall by attaching the wall mount hardware via the 4 holes in the back of the enclosure.



*Wall Mount Hardware mounted on corners of enclosure*

## Preparing the Enclosure

Attach grounding wire to the door and enclosure.

Remove plastic covers on copper studs. Add grounding cable to the two studs and use the copper washers and nuts to secure.



*Grounding Cable Installed*

Mount the DIN Rail. The DIN Rail can be mounted to the door, backplate or sides of the enclosure.



*DIN Rail installed on door*

Attached the DIN Rail Adapters to the Controller and Power Injector then clip to the DIN Rail.



*Controller and Power Injector Mounted on DIN Rail*

Plug the external thermal sensor into the interface of the thermal-sensor on the left of the controller.



*Thermal Sensor Plugged into Controller*

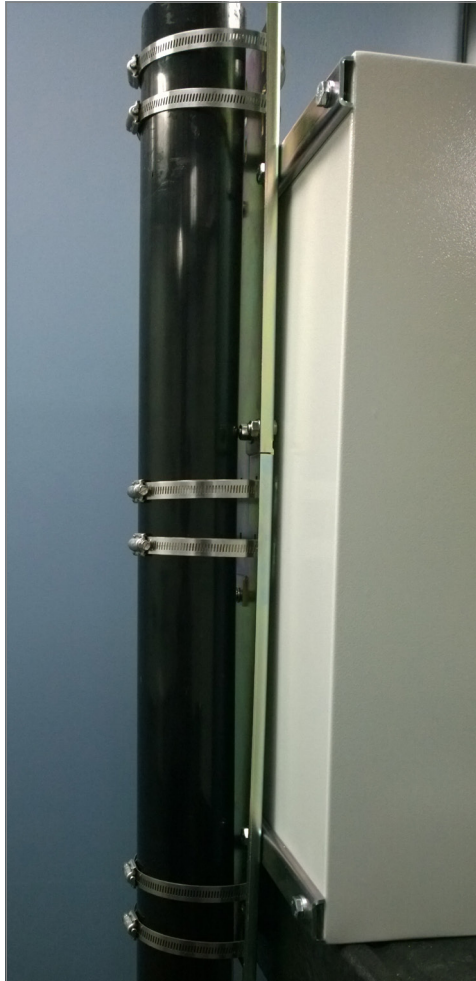
Insert battery platform in the enclosure. The cutouts in the platform are for routing cable under the batteries.



*Battery Platform on Floor of Enclosure.  
Be sure the front of the Platform is placed along the front edge of the Enclosure.*

## Pole Mount

If mounting to a pole, use the 6 included Stainless Hose clamps to secure the enclosure to a pole. For your safety, we highly recommend mounting the enclosure before installing the batteries.



*Enclosure Mounted to Pole with Clamps*

Add the cable glands and drain plug to the bottom of the enclosure after mounting.

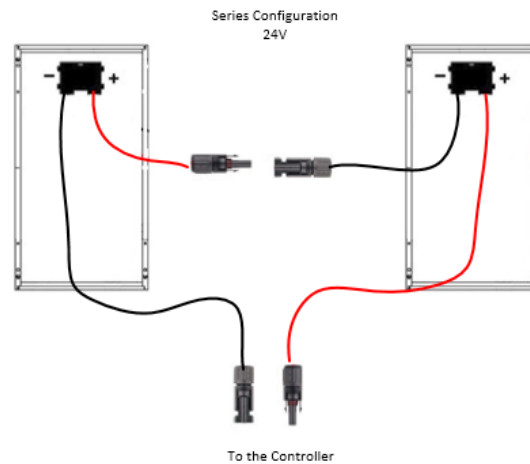


*Battery Platform on Floor of Enclosure*

## Solar Panel Electrical Wiring

Assemble The Solar Panels and run cable thru the cable glands on the bottom of the enclosure. The cabinet should be installed **ten feet or less** below the panels to ensure the cables have room to enter the bottom of the cabinet and make their connections to the other components.

Do not connect PV cables to the controller yet, it is recommended to connect the battery first.



*Enclosure Mounted to Pole with Clamps*

The NWKSP3 Kit will need to be configured in a 24V series.

Connect the MC4 Male (Positive) Connector to the MC4 Female (Negative) Connector on the other panel.

Connect the MC4 Male and Female connectors with the 15' 600V PV cables and route the cable thru the glands into the enclosure.

**Note: The cables may ship as one 30' cable. If this is the case, you will need to cut the cable in half creating two 15' cables.**

Please reapply the Twist Nut to the open end of the cables to prevent a short.



*15' MC4 Male and MC4 Female Cables*

## Battery Installation

Insert batteries into the enclosure on their side and stack them.



*Batteries Placed into the Enclosure*

Connect battery cables.

The NWKSP3 Kit will need to be configured in a series then connected to the controller.

First, connect the 18" PV Cable from the Negative terminal on one battery to the positive terminal on the other.



*PV Cable Connecting Battery Terminals*

**NOTE:** Please apply rubber insulator to the terminals to prevent contact with the door in case of earthquake or vibration.



*Rubber Insulator*

Connect the 24" 10AWG Red and Black cables to the positive and negative battery terminals that were not used in the previous step.



*PV Cable Connecting Battery Terminals*

Connect the Positive and Negative cables from the battery to the Controller battery terminals.



*Battery Cables Connected to Controller Battery Terminals*

Once batteries are connected to the controller, connect the PV cables from the solar panels to the Solar Load terminals on the controller.



*Solar Panel Cables Connected to Solar Load Terminals on Controller*

Connect the 12" Bonded Red and Black cable to the green terminal adaptor then connect the other end of the cable to the load terminals on the controller.



*Red and Black Cable Connected Green Terminal Connector, left, and to Load Terminals on Controller, right.*

Insert green terminal into the Power Injector.



*Green Terminal Connector attached to Power Injector*

See Solar Charge Controller User Manual for instructions on how to use the controller.

Solar Panel mounting instructions will be included with the mounting hardware.



## Agency Compliance

### FCC

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A 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 Industrial 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. Operations of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### Industry Canada

This Class A digital apparatus complies with Canadian ICES-003. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that permitted for successful communication. This device complies with Industry Canada license-exempt RSS standard(s).

Operation is subject to the following two conditions:

- This device may not cause interference, and
- This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 Canada. Pour réduire le risque d'interférence aux autres utilisateurs, le type d'antenne et son gain doivent être choisies de façon que la puissance isotrope rayonnée équivalente (PIRE) ne dépasse pas ce qui est nécessaire

pour une communication réussie. Cet appareil est conforme à la norme RSS Industrie Canada exempts de licence norme(s). Son fonctionnement est soumis aux deux conditions suivantes:

### 17 Compliance

- Cet appareil ne peut pas provoquer d'interférences et

- Cet appareil doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.

### **RF Exposure Warning**

The antennas used for this transmitter must be installed to provide a separation distance of at least 2.52m from all persons and must not be located or operating in conjunction with any other antenna or transmitter.

Les antennes utilisées pour ce transmetteur doivent être installées en considérant une distance de séparation de toute personnes d'au moins 2.52m et ne doivent pas être localisées ou utilisées en conflit avec tout autre antenne ou transmetteur.

### **CE Marking**

CE marking on this product represents the product is in compliance with all directives that are applicable to it.

This equipment may be operated in the following countries:

Great Britain and Northern Ireland, Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Romania, Switzerland, Sweden

### **Installer Compliance Responsibility**

Devices must be professionally installed and it is the professional installer's responsibility to make sure the device is operated within local country regulatory requirements.

### **RoHS/WEEE Compliance Statement**

European Directive 2002/96/EC requires that the equipment bearing this symbol on the product and/or its packaging must not be disposed of with unsorted municipal waste. The symbol indicates that this product should be disposed of separately from regular household waste streams. It is your responsibility to dispose of this and other electric and electronic equipment via designated collection facilities appointed by the government or local authorities. Correct disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about the disposal of your old equipment, please contact your local authorities, waste disposal service, or the shop where you purchased the product.

## GPL (General Public License) Statement

You may have received from ComNet products that contained - in part - free software (software licensed in a way that ensures your freedom to run, copy, distribute, study, change and improve the software). Such products include NetWave series of products.

As part of these products, ComNet may have distributed to you hardware and/or software that contained a version of free software programs developed by the Free Software Foundation, a separate not-for-profit organization without any affiliation to ComNet.

See <http://www.gnu.org/philosophy/free-sw.html> for more details. If ComNet distributed any portions of these free software programs to you, you were granted a license to that software under the terms of either the GNU General Public License or GNU Lesser General Public License "License", copies of which are available from <http://www.gnu.org/licenses/licenses.html>. The Licenses allow you to freely copy, modify and redistribute that software without any other statement or documentation from us.

ComNet will provide to anyone who contacts us at the contact provided below, for a charge of no more than our cost of physically performing source code distribution, a complete machine-readable copy of the complete corresponding source code for the free software programs used in the version of the programs that we distribute to you. The cost will be free if the delivery medium of the machine-readable copy is through the Internet.

Contact information:

Email: [techsupport@comnet.net](mailto:techsupport@comnet.net)

Tel: 203-796-5300

Address: 3 Corporate Drive, Danbury, CT 06810 USA

We will reply within 7 working days once the request has been made through email or telephone.

**ComNet Customer Service**

Customer Care is ComNet Technology’s global service center, where our professional staff is ready to answer your questions at any time.

Email ComNet Global Service Center: [customercare@comnet.net](mailto:customercare@comnet.net)

**Contact Information**

**ComNet - [www.comnet.net](http://www.comnet.net)**

		Tel: +1-203-796-5300
North America	ComNet Corporate Headquarters and Customer Support Center	Tel: +1-888-6789427
		Email: <a href="mailto:info@comnet.net">info@comnet.net</a>
		Tel: +44 (0)113 307 6400
EMEA, PACRIM, South America	ComNet Europe Ltd, Leeds	Tel: +44 (0)113 307 6409
		Email: <a href="mailto:info-europe@comnet.net">info-europe@comnet.net</a>



3 CORPORATE DRIVE | DANBURY, CT 06810 | USA  
 T: 203.796.5300 | F: 203.796.5303 | TECH SUPPORT: 1.888.678.9427 | [INFO@COMNET.NET](mailto:INFO@COMNET.NET)  
 8 TURNBERRY PARK ROAD | GILDERSOME | MORLEY | LEEDS, UK LS27 7LE  
 T: +44 (0)113 307 6400 | F: +44 (0)113 253 7462 | [INFO-EUROPE@COMNET.NET](mailto:INFO-EUROPE@COMNET.NET)