

4350 Executive Drive, Ste. 325 San Diego, CA 92121 +1-888-854-3312 www.micropowerapp.com

Helios™ Solar Wireless IP Surveillance System

Installation Guide Version 5.0

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Contacting MicroPower Customer Support

MicroPower's customer support strategy is through best-in-class business partners including OEMs, distributors, systems integrators and systems vendors. If your MicroPower product was purchased directly from a MicroPower business partner, that partner is the first point of contact for technical support. If the business partner cannot resolve a problem, then the partner will contact MicroPower.

Web Support:	http://www.micropowerapp.com
Email Support:	help@micropowerapp.com
Phone Support Worldwide:	+1-888-854-3312
Fax Support – Worldwide:	+1-858-947-3907

General Safety Precautions

• Follow all cautions, instructions, and warnings as listed on the product and related documentation, including electro-static discharge (ESD) recommendations, physical handling advice and other recommendations or best practices.

• Use ESD precautions when unpacking and installing MicroPower camera and hub products. ESD mats and grounding straps are recommended.

• Ensure that the voltage and frequency of your power source match the voltage and frequency required by the equipment. Do not use an alternative power supply.

• Ensure that the battery size and voltage match the size and voltage required by the equipment. Failure to do so could result in damage to the equipment and nullification of the product warranty.

• Use only the included antennas and ancillary equipment provided with the product.

• Do not make mechanical or electrical modifications to equipment. MicroPower is not responsible for the safety or regulatory compliance of a modified product.

• Do not omit device components that would interfere with air flow and cooling as designed. Failure to follow these guidelines can cause overheating and affect the reliability of your MicroPower product.

• Protect your warranty. A product which has been damaged, misused, abused or misapplied may be determined to be out of warranty.

Package Contents

Helios Solar Wireless IP Surveillance System consists of two major devices; the MPT 2500 Rugged-I Solar Wireless IP Video Camera and the MPT 2700 Wireless Video Hub.

MPT 2500 Rugged-i[™] Solar Wireless IP Video Camera

- One Directional Antenna (Combination for Narrowband and Wideband)
- Rugged-i Camera
- Camera Mounting Arm
- Mounting Hardware (IP66 Enclosure) for Camera
 - o 3 Hex 10 mm Philips head screws
 - 2 attachment Philips screws
 - o 3 plastic sleeves
- Antenna Mounting Bracket
 - o U-Bracket
 - o 2 attachment screws and nuts

MPT2700 MiniHub[™] Wireless Video Hub System

- One Directional Antenna
- Antenna Mounting Bracket
 - o U-Bracket
 - o 2 attachment screws and nuts
- MiniHub
- Power Cord

System Overview

MicroPower Technologies has developed a unique power and wireless technology, TrustLinx, that is 90% lower power and 400% longer range than traditional wireless IP video camera technology. With this proprietary and patented technology, the MicroPower outdoor IP video cameras can be operational for five days without being recharged by the sun and maintain 24 hour operation at 5 frames per second (fps). In addition, TrustLinx, has a unique capability to cooperate with multiple wireless technologies that allow the transmission of video data at a potential distance of 1/2 mile with the highest possible video quality.

Because of this unique and proprietary technology, the MicroPower Technologies Helios System with the MPT2500 Rugged-i Solar Wireless IP Video Camera and the MPT2700 MiniHub Wireless Video Hub work in tandem to provide a wireless IP video system which allows for the placement of the outdoor wireless IP video camera system practically anywhere that is needed. Thus, the MicroPower system eliminates the need for digging trenches to connect power to outdoor IP video cameras, significantly reducing installation time and labor costs.

Up to six (6) Rugged-i IP video cameras can be associated to each MiniHub. The MiniHub is the data connection to a broadband Internet access point. The broadband Internet access point can be a wireless or wired router, or a broadband modem (cable model or ADSL modem).



Installation Recommendations

There are 5 major steps that are recommended for a successful installation. These are:

- 1. Site survey
- 2. System setup
- 3. Mounting MiniHub and Rugged-i camera
- 4. Adjust focus of the camera
- 5. Configure VMS

I. Site Survey

A well-thought out plan for the location of the hub and camera(s) are important steps to ensuring that the entire system can communicate and integrate with a new or existing video surveillance and management system. For complete guidance on performing a quality site survey, please refer to the MicroPower collateral titled "Site Survey Guidelines".

For best results, a line-of-sight design between the Helios system can provide a range of up to 1/2 mile. However, obstacles such as buildings, concrete, steel or stucco walls and ceilings will impact the wireless performance in terms of reach and data rate speeds. Hence, these items can affect performance and range so that the distance between the MiniHub and Rugged-i camera may need to be reduced. If the distance between the MiniHub and a Rugged-i camera is too far, then the video will either be non-operational since the MiniHub and Rugged-i camera did not pair correctly, or there will be noticeably slower frame rates. The distance between the MiniHub and a Rugged-i camera may need to be reduced to a Rugged-i camera will be noticeably slower frame rates. The distance between the MiniHub and a Rugged-i camera may need to perform the MiniHub and a Rugged-i camera did not pair correctly, or there will be noticeably slower frame rates. The distance between the MiniHub and a Rugged-i camera must be a minimum of 25 feet. For further education and guidelines on RF effects, refer to MicroPower document "A Guide to Optimizing Your RF Setup".

Since the Rugged-i camera is powered by solar, the impact of shadows and sun direction is an important consideration. The Rugged-i does not require direct alignment with the sun, but it is advisable to place the camera in a location which receives an adequate amount of sunlight throughout the day. The best time to perform a sun profile for all cameras is during the peak hours of sunlight from 11 a.m. to 3 p.m to determine shadow avoidance strategies.

If the Rugged-i camera is being installed in the Northern Hemisphere, ideally the panels and cameras should be placed on the **SOUTH** side of a pole or facing **SOUTH** to minimize

shadows created by the attached pole. East and west facing cameras are acceptable but not optimal. Avoid placing the camera on the **NORTH** end of a pole or facing **NORTH**. If the Rugged-i camera is installed in the Southern Hemisphere, ideally the panels and cameras should be placed on the North side of a pole or facing <u>NORTH</u> for minimal shadow impact.

For more information, see the following link. <u>http://www.ehow.com/how_6069191_install-panel-direction-aiming-degrees.html</u>

In addition, areas that are not recommended include:

- Indoors
- Under a roof eave
- Underneath a tree canopy or foliage which does not receive adequate sunlight
- Next to a building that will create shadows at a different part of the day

Additionally, please make sure there are minimal obstructions to the camera antennas and that they are able to be appropriately positioned to receive and transmit data and video to the hub.

II. System Setup

The following steps are required when performing system setup and installations.

- 1. Add antennae to MiniHub
- 2. Configure MiniHub for the final IP address desired.
- 3. Reboot the hub system.
- 4. Add camera through the web interface.
- 5. Add camera antennae
- 6. Connect the battery cables to the camera.
- 7. Adjust camera settings if necessary
- 8. Verify the pairing between the MiniHub and Rugged-I camera in a close proximity environment.
- 9. View the camera connection through the web interface and Live Connection.
- 10. Begin mounting process of the final locations for the MiniHub and cameras.

For most systems, the pairing between the MiniHub and the Rugged-I Camera have not been performed. If the pairing between the MiniHub and Rugged-I camera has been performed by the factory (steps 1-5 have been completed), the user only need to perform the VMS setup. Refer to the documents titled VMS setup for your specific VMS.

During the configuration and pairing exercise, the antennas for the MiniHub and Rugged-i Camera are required to be attached before the battery connection with the camera is connected.

A. Accessing the MiniHub

Accessing the MiniHub is similar to setting up a wireless router in the home. A display or network console is used to directly address the MiniHub. There are two basic topologies in which the MiniHub can be addressed. The common method for systems which already have a sophisticated network in place is addressing the MiniHub through a network switch. It is also possible to communicate to the MiniHub from a server directly to the MiniHub through a crossover cable. Below are illustrations of both topologies.

Network Switch Topology



Crossover Cable Topology



B. System Setup via the MiniHub

It is important to configure the MiniHub first, prior to pairing the MiniHub to the Rugged-i cameras. System setup is performed through a web Interface while addressing the MiniHub through a network console, similar to how a wireless router is configured in a home setting.

The MiniHub must be connected to a network switch prior to configuring the MiniHub or directly to a laptop/network server through a crossover cable. Communication to the administration console application of the MiniHub is performed through a standard browser via a network console. (Note: The MiniHub is a fully operational Linux server. Any application that is loaded on to the MiniHub will nullify the MicroPower Technologies warranty.)

To configure the MiniHub, you will need to:

- 1. Connect the AC power cable to the MiniHub and plug into a power source.
- 2. Connect MiniHub Antennae
- 3. Power on the MiniHub using the toggle button on the rear of the unit. Make sure the Rugged-i camera and MiniHub are at least 25 feet away from each other.



4. Configure the network console so that it can directly address the MiniHub. The default IP address of the MiniHub is 192.168.0.100. You may need to modify the IPv4 adapter settings of the network console to match the default MiniHub IP address, since it is required to be in the same domain to be addressable. To communicate to the MiniHub, the first three numbers of the IP address of the network console need to match that of the default MiniHub IP address. In this case, it is necessary to enter 192.168.0.XXX where XXX is any number not previously issued within connected network.

Below is an example screen of modifying the IPv4 properties in Windows to make this change.

eneral	
You can get IP settings assigne this capability. Otherwise, you for the appropriate IP settings.	d automatically if your network supports need to ask your network administrator
💮 Obtain an IP address auto	omatically
Output to the following IP address of the second	2551
IP address:	192.168.0.150
Subnet mask:	255.255.255.0
Default gateway:	
🕐 Obtain DNS server addres	s automatically
O Use the following DNS service	ver addresses:
Preferred DNS server:	(a) (x - x
Alternate DNS server:	
Validate settings upon ex	dt Advanced

Press OK.

5. To communicate to the MiniHub through the network console, type the default IP address of the MiniHub in a browser.

http://192.168.0.100

This is a temporary IP address which will eventually be modified through the system setup application.

At this point, a login screen will appear. This is the MicroPower Technologies setup application. This login screen will look like the following:

				logout home
• L	ogin			
Usemame:	admin			
Password:				
	Login			
Version 1.02				

Type in admin for the username. The password should be left blank.

At this point, the System Setup Web Interface will appear. Six tabs will be available; System Setup, Add/Remove Camera, Camera Settings, Hub Interface, Camera Info and Hub Status. All instructions and menu options to this Installation Guide pertain to Version 16.16 or greater. You will note Version 16.16 by looking up the Version number in the Hub Status Tab.

The firmware version is located in the Web Interface on tab, **Hub Statu**s, under the heading PKTVER. See below.



6. Begin configuration of the MiniHub by selecting the *System Setup* tab.



This is the menu used to specify the final IP address, hostname, WiFi channel, Wi-Fi bandwidth, narrow band channel number, narrow band channel power and time out period.

Typically, you will only need to change the IP address. To configure the IP address, single click the IP address. The user will then be directed to a Configure Hub IP address menu. See below.

Configure Hub	IP Address			
 Use Dynar Use Static 	nic IP Address			
Hub IP Address	192.108.0.100	1		
Subnet	255.255.265.0			
Gateway	192.168.0.1			
Gateway	192.188.0.1			

This menu allows a user to modify a static IP address, gateway address, subnet address or choose Dynamic otherwise known as DHCP (Dynamic Host Configuration Protocol).

Note: Caution should be used in using DHCP, since the IP address will be dynamic, making it difficult to determine the appropriate IP address to access the setup menu in the MiniHub. The only access to the MiniHub for setting modifications is by using the IP address as the URL in the web browser. Hence, using DHCP would require assistance from the IT administrator to perform discovery to determine the assigned IP address of the MiniHub at the moment in which modifications are desired.

The new Hub IP address should correspond to the IP address within the subnet of your network. For instance, should your devices be assigned an IP address of 192.168.100.1, 192.168.100.5 and 192.168.100.10, then a viable Hub IP address would be 192.168.100.150.

This allows other devices within your subnet network, including the NVR, to communicate with each other. Input the desired IP address and select Update.

After updating the "Configure Hub IP Address menu", you will be directed to the previous menu, System Setup.

When Apply is selected at the System Setup tab, a dialog box will be displayed informing the user that a system reboot is required, since the MiniHub will not be configured for the new IP address until a reboot is complete. A manual reboot is performed by toggling the power button in the back.

The other variables (WiFi Channel, Demod Level, Narrow Band Chan, Narrow Band Pwr) are selectable, but should not be necessary to change.

7. Address the hub through the network console and type in the new modified IP address.

http://xxx.xxx.xx.xx

The administration login screen will reappear. If there is a problem, then the IP address may need to be readjusted on the IPv4 properties page so that the network adapter is within the same domain as the new MiniHub IP Address.

C. Add/Remove Cameras

This is the menu used to add or remove cameras that are associated with the specific hub that is being configured.

- 1. Connect the antennas to the camera.
- 2. Select Tab labeled Add/Remove Camera.

System Setup	Add / Remove Camera	Camera Settings	Hub Interface	Camera Info	Hub Status
Enter Camera(s) NA	AC addresses to be linked to this	s hub:			
48:17:40:00:0	0:00				
48:17:4C:00:0	0:89				
Add new					

3. Select option to "Add New". A pop-up window for the MAC address of the camera is displayed.

System Setup	Add / Remove Camera	Camera Settings	Hub Interface	Camera Info	Hub Status
Enter Camera(s) M	AC addresses to be linked to thi	s hub:			
48:17:4C:00 (00:00 00:89 Enter (MAC address		×	
Add new	Entern	ew MAC address:			
	(i.e.: 48	17:4C:00:00:24)			
	Ok	Cancel			

Add the MAC Address that is printed on the sticker of the Rugged-i camera. The sticker is located inside the camera enclosure. You will need to open the safety latch on the camera in order to access the inside of the Rugged-i camera.

Press OK when the MAC address is entered.

1. Follow Step 3 again to add additional cameras (maximum of 6)

2. Inside the camera enclosure, connect the battery charger cable to the battery connector. The camera ships with a fully charged battery pack. However, when the Rugged-i camera is shipped from the factory, the battery charger is disconnected from the battery connection. While the camera enclosure is open, it is best to attach the battery charger connectors together. You should hear a beep that indicates power being supplied to the system, when you complete the connection.

The LED indicator light (on the left side while peering inside the camera) should glow red when the battery is connected.

3. Close the camera housing then lock the safety latch.

D. Camera Settings

The tab, Camera Settings, is used to customize each Rugged-i camera associated with the paired MiniHub.

1. Select tab labeled *Camera Settings.*

ystem Setup Add / Remove Camera				C	imer	a Setting	s	Hub Inter	ace	Camera Info	Hub Status
MAC	WB Pwr De	emod	Fr. Rate	Invert S	itaie I	Encrypt Sta	ate S	Stream			
48:17:4C:00:00:00	MED 💌 3	38 💌	5	OFF		OFF 💌	3	Appl	A	lign	
48:17:4C:00:00:89	MED 💌 3	38 🗸	5	OFF		OFF 💽	s	ream1 Appl	A	lign	

Vvariables for the *Camera Settings* beyond the MAC address are:

Variable	Description	Valid value for Bugged-i cameras
MAC	Camera MAC Address	Six Hex values
WB Power	Power settings for the Wideband signal	Hi, Med, Lo
Demod	Data bandwidth of the individual cameras	54, 48, 36, 24 Mbps
Fr. Rate	Frame rate desired.	5
Invert State	Specifies whether the video is an inverted image or not.	Off
Encrypt State	Determines whether data uses encryption between the Rugged-i and MiniHub. This is a future feature.	Off
Stream	Displays the stream ID of the camera	StreamX where X can be 0 to 5

Use the Apply button at the end to apply new settings for that specific camera

The Align button is used for aligning antennas. See below for further information.

E. Align Mode

The very last button, Align, is a special button for determining the best alignment of antennas between the MiniHub and Rugged-i cameras. The Web Interface allows the user to see the Narrow band and Wideband wireless performance for each individual camera.

System Setup	stem Setup Add / Remove Camera		C	Camera Settings		gs	Hub Interface		Camera Info		Hub	Status			
MAC	WB Pwr	Demod i	Fr. Rate	Invert S	State I	Encrypt St	tate 1	Stream		_					
48:17:4C:00:00:00	MED 💌	38 👻	5	OFF		OFF 💌	3	tream0	Apply	Alie	an				
48:17:4C:00:00.89	MED 💌	38 🗶	5 💌	OFF		OFF 💽	s	tream1	Apply	Ali	20				

This mode is especially useful while performing the installation, optimizing the camera, Minihub, and antenna location and placement for the best performance for each camera.

By selecting Align, the user will be directed into a new menu set that provide radio measurements on the signal power, quality and noise of the narrowband (NB Signal) and wideband (WB Signal) link.

The opening menu will look like below.



The meters are defined as you move left to right; top to bottom are:

- NB Signal (cam) = (915 MHz) signal strength received by the camera
- NB Signal (hub) = (915 MHz) signal strength received by the MiniHub
- NB Quality (cam) = (915 MHz) signal quality received by the camera
- NB Quality (hub) (915 MHz) signal quality received by the MiniHub
- WB Signal = (2.4 GHz) signal strength
- WB Noise = (2.4 GHz) noise level
- WB Quality = (2.4 GHz) signal quality

Note: The Narrow Band (NB) antennas have yellow bands on the bottom of the antenna on both the camera and the MiniHub. The Wideband (WB) Band antennas have red bands.

The steps for optimizing the alignment of the camera and MiniHub are:

- 1. Maximize the Narrow Band signal strength
- 2. Maximize the Narrow Band signal quality
- 3. Maximize the WiFi band signal strength
- 4. Maximize the WiFi band quality

IMPORTANT: YOU MUST SELECT **STOP** AFTER COMPLETING THE ALIGNMENT EXERCISE. IF STOP IS NOT PERFORMED, THE CAMERA AND MINIHUB WILL NOT OPERATE PROPERLY.



Detailed instructions

#1. Adjust the Narrow Band signal strength to be as high as possible. Acceptable ranges are -15 to -70. -15 is considered to be higher than -70. The values of the signal strength received by the camera and MiniHub are expected to be approximately the same value. If they are not within 5 units of each other, please call the factory for assistance.

#2. Adjust the Narrow Band quality value to be as high as possible. Acceptable ranges will vary based on the RF environment. However, in general, values above 35 should yield an acceptable operation.

#3. Adjust the WiFi Band signal strength to be as high (closer to zero) as possible. Acceptable ranges vary by environment. However, it will certainly work within the range of -40 to -60. -40 is considered to be higher than -60. If the Demod value is decreased to 36 Mbps, then acceptable values are -40 to -65. If the Demod value is decreased to 24 Mbps, then acceptable values are -40 to -70.

#4. Adjust the WiFi Band quality value to be as high as possible. Acceptable ranges will vary based on the RF environment. However, in general, values above 70 should yield an acceptable operation.

IMPORTANT: YOU MUST SELECT **STOP** AFTER COMPLETING THE ALIGNMENT EXERCISE. IF STOP IS NOT PERFORMED, THE CAMERA AND MINIHUB WILL NOT OPERATE PROPERLY.

F. Hub Interface

When the MiniHub is shipped from the factory, the standard default mode hub interface to the VMS system is set to the Native Mode. In the Native mode provides RTSP over UDP (unicast) or HTTP over TCP as the primary interface to a VMS generic driver. For some VMS systems, it is more appropriate to us the alternate mode, emulation mode. Please refer to the specific VMS setup guide for the desired VMS guide to be used.

Below are a set of instruction on how to change the Hub Interface from the Native Mode to the emulation mode.

Set Hub Interface to Emulation Mode

Note: Before adding cameras, the setup requires specifying a collection of IP addresses for each camera. Before proceeding, obtain IP addresses from your network administrator that are not assigned to other devices and which conform to the subnet of the network over which the cameras and MiniHub will be communicating.

- 1) Point your browser to the IP address you assigned to the MiniHub and use the updated IP address to log in to the web management interface of the MiniHub.
- 2) Select the **Hub Interface** tab in the web management interface. This will display the **Video Interface** options.
- 3) Video Interface can select either the Native or Emulation mode. Select the Emulation Mode via the pull-down menu.



4) Upon selection of the Emulation Mode, a table of camera MAC addresses and associated IP Addresses will appear. These are camera MAC addresses that have already been entered using the Add/Remove Camera menu. Complete the table by entering static IP address(es) for each camera associated with this specific MiniHub, as provided by your system administrator. There must be a unique IP address for every camera that is to be added.

System Setup	Add / Remov	e Camera	Camera Settings	Hub Interface	Camera Info	Hub Status
Video Interface	Emulation	Static 10 Ad	duare			
	48:17:4C:00:00:7A		uress			
0	48-17-40-00-00-78	1				

5) Once all the IP address(es) have been entered, select Apply.

6) Reboot the Hub by moving to the **Hub Status** Tab, and selecting the **Reboot Hub** button.



G. Demod

For longer distances, it is recommended that lower demodulation levels be used. For instance, 36 Mbps or 24 Mbps would be more appropriate for especiallly long distances between the camera and the MiniHub. Each individual camera can be have their own demodulation level.



G. Live View

The tab, Camera Info, is used as a diagnostic tab for MicroPower technical support and for connecting Live Video to test the connection. In particular, Live View can help determine whether a valid video stream is present, and whether non-operation is occurring because of the VMS interface or the camera operation. Below is the opening menu for Camera Info.

Selecting the camera of interest will diplay two additional tabs; Camera MAC Address and Live View. The tab, Live View, will initiate a video connection between the MiniHub and the Camera. Select connect.

This should display a live video screen of the camera. This display can be used to focus the camera when the camera is mounted in its final position.



H. Battery Status

Additional Status codes are available in the tab where the camera MAC address is displayed. The two primary status codes are:

- Battery Status
- Camera Status

Battery Status provides an indication whether the solar charging subsystem is charging or discharging. Below is an example screen of when the solar subsystem is discharging.

	Battery Status
	Discharging
. •	Camera Status
	Encryption key
	Firmware version
	FPGA version
	Resynchronize camera
	Factory settings

Camera Status provides an indication whether the camera state is active, lost or asleep. When the camera is asleep indicates the voltage on the battery is too low to maintain operation.

III. Mounting the MiniHub's External Antenna

For professional installations, the MiniHub is required to use an external antennae. MicroPower supplies an external antenna kit complete with a low loss RF cable, 2:1 splitter and a directional antennae. For optimal results, the height of the external antenna from the MiniHub should be located at a minimum above any pedestrian traffic that may occur in the line-of-sight between the MiniHub and Rugged-i camera(s).

Directional Antenna for the MiniHub

The directional antenna attached to the MiniHub is required to communicate to the various cameras. The directional antenna supplied by Micropower can transmit and receive both the 900 MHz and 2.4 GHz frequencies. However, the 900 MHz and 2.4 GHz channels from the MiniHub must be combined before being connected to the directional antenna. In order to connect the channels together, a 2:1 splitter must used.

The 2:1 splitter must be connected as shown below. The output of the 2:1 splitter is connected to the low loss RF cable.

Directional Antenna Specifications

The directional antenna should be mounted in a horizontal position. It is mounted straight to the cameras. The cameras must be within 60 degrees of each other to the MiniHub antenna. The directional antenna are mounted using a U-bolt to a tower or attached to the side.







IV. Mounting the Camera and the Directional Antenna

Attach the mounting arm to the final location for the Rugged-i camera housing. Below is the specification for the mounting arm.



The camera should be placed in an area which i receives an adequate amount of direct sunlight throughout the day. Ideally the camera should be placed on the south side. Other options are east and west locations, taking careful consideration to avoid mounting the camera on the North side location. The locking mounting bracket will allow the camera to remain in this position after it is installed.

The camera must use directional antennae and mounted using the included bracket.

IV. Adjusting the Camera Image



Camera Lens Close-up View

- 1. While viewing the camera image through the Video Management System (VMS) camera image window, adjustments can be made to the camera's focal length, iris or focus.
- 2. Open the camera housing using the safety latch at the rear of the unit. The camera imager is located just behind the housing window.
 - 2.1 To adjust focal length, turn the focal length locking knob counter-clockwise to unlock. Rotate the focal length adjustment ring at the rear of the lens to set. Turn the focal length locking knob clockwise to lock back into place.
 - 2.2 To adjust iris, turn the iris locking knob counter-clockwise to unlock. Slide the iris locking knob to the right or left to set. Turn the iris locking knob clockwise to lock back into place.
 - 2.3 To focus, turn the focus locking knob counter-clockwise to unlock. Rotate the focus adjustment ring at the front of the lens to set. Turn focus locking knob clockwise to lock in place.
 - 2.4 After the imager adjustments have been completed, close the camera housing and lock the latch into place.

After this step, setup is complete and the Rugged-i camera is ready for use.

V. Configure the Video Management Software (VMS)

MicroPower Technologies has tested the MiniHub and Rugged-i cameras with various VMS systems. MicroPower has developed interfaces to various VMS using either a RTSP over UDP (unicast), HTTP over TCP/IP interface or the Axis emulation interface. Please refer to our website for the latest list of tested VMS and NVRs that have been tested for interoperability with the MicroPower Technologies systems. Please refer to the document VMS Setup Guide for specific instructions for each supported VMS.

INFORMATION TO USER

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.

This equipment has been tested and found to comply with the limits for 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 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, the user is 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 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 Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

MicroPower Technologies END-USER LICENSE AGREEMENT for IP SECURITY SYSTEM SOFTWARE AND/OR FIRMWARE IMPORTANT - READ CAREFULLY

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