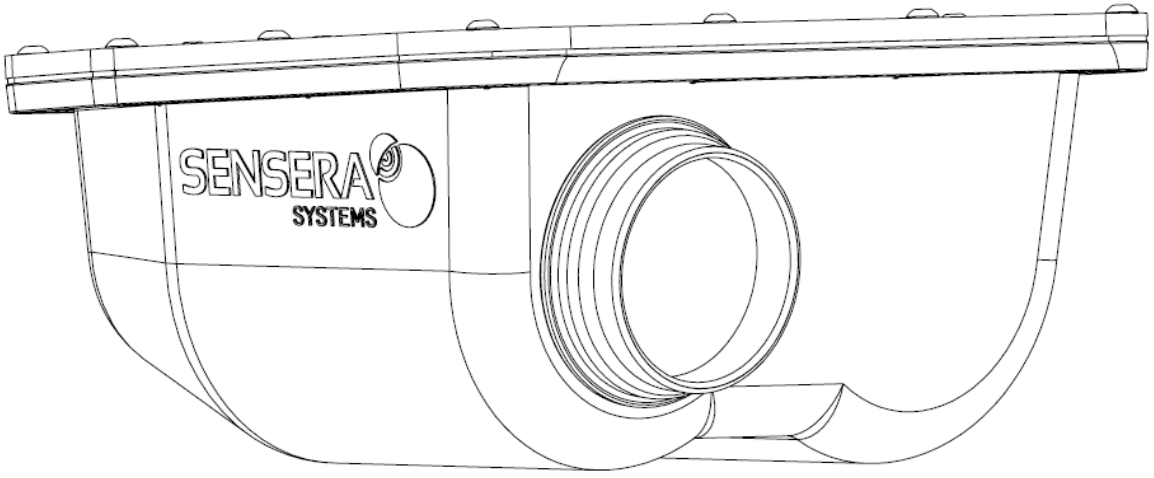
Installation
&
User Guide
with Quick Start

Models: MC-30/38, MC-60/68

Version 2.7

8/29/2015



Support

Should you require any technical assistance, please first contact your reseller. If they are unable to answer your questions promptly, or you purchased directly from Sensera Systems, you are directed to our technical support process as follows:

- Check available user documentation and software updates at www.senserasystems.com/support
- Contact Sensera Systems technical support team at www.senserasystems.com/support

  Or 800-657-0437

  Be sure to have available your product model # and serial number whenever contacting technical support

Contact Information

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Support Email: support@senserasystems.com

Website: www.senserasystems.com

Legal Considerations

Video surveillance may be prohibited by laws that vary from location to location. Check the laws in your local region before using this product for surveillance purposes. This product shall be used in compliance with local laws and regulations.

Equipment Modifications

This equipment must be used and installed in strict accordance with the instructions given in the user documentation. This equipment contains no user-serviceable parts or components. Unauthorized equipment changes or modifications will invalidate all applicable regulatory certifications and approvals and may void any warranty.

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1 SAFEGUARDS

- Avoid exposing the product to vibration, shocks, or heavy pressure or extreme temperature conditions.
- Do not install the product on unstable brackets, or unstable walls or surfaces, since this may cause damage to the product.
- Only use applicable and recommended tools when installing the product.
- Do not use chemicals, caustic agents, or aerosol cleaners.
- Do not attempt to repair the product yourself. Contact Sensera Systems or your authorized Sensera Systems reseller.
- Store the Sensera product in a dry and ventilated environment.
- Use the original packaging or equivalent when transporting the product to prevent damage.

2 QUICKSTART GUIDE

This document covers all camera models in the following series:

MC-30, MC-38, MC-60, MC-68 for all carrier options.

2.1 Package Contents

The MC-30/MC-38/MC-60/MC-68 Series Camera Kit includes the following hardware components:

- MC-30/MC-38/MC-60/MC-68 Series Camera (colors vary)
- Solar panel with cable
- USB cable – mini-A
- USB wall charger
- 2x Mounting arm with adapter plate kit
- Stainless steel strap kit for pole mount
- Quick Start Guide hard copy

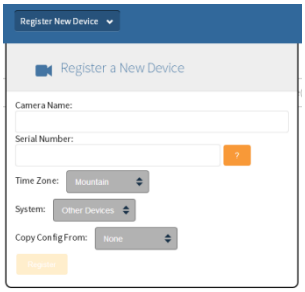
IMPORTANT: The MC-30/MC-38/MC-60/MC-68 Series camera system requires Sensera Cloud Service for operation. Cloud Service is purchased for a specific camera, referenced by the Device ID (Serial Number) on the outside of the MC-30/MC-38/MC-60/MC-68 Series camera. You can purchase of modify your cloud service by visiting www.senserasystems.com or calling **1-800-657-0437**. This quick start assumes you have purchased Cloud Service for your device.

2.2 Create Account and Test Access

It is recommended that you create your WebApp user account and register the camera to the system before installing at the remote site. You will need to have cellular service (or configure to WiFi) at the location you are doing this test. This Quick Start assumes you have MultiSense Cloud Service for Cellular or WiFi service activated with Sensera Systems as of the date you are installing.

Visit www.senserasystems.com and click "Cellular Coverage" at bottom of page to check cellular service at a particular address.

1. Point your web browser to: **webapp.senserasystems.com**
2. At the login screen, choose "**Create a new Sensera WebApp Account**". You will need to enter a unique username and a password.



3. Login with your newly created credentials.
4. This will take you to the "Systems" screen. Pull down the "**Register New Device**" menu and enter the Serial Number (from back of camera). Time-zone, name, and group can be set here or at any time later.

5. Click **Register**. Your Camera should now appear in the Sites and Groups list. It may show "offline" until you complete next steps.
6. Connect the included USB cable and wall charger to a wall outlet and to the MC-30 / MC-60 (unscrew the lower cap and plug in), FOR 2-3 MINUTES AND THEN UNPLUG. Or connect the solar panel, in direct sunlight. This "wakes up" the camera to be recognized by the WebApp.

   If the camera has been stored or unused for more than a few days you may need to charge the camera first. This is best done by plugging it into the solar panel and placing in the sun for 1-2 hours or more. The USB charger will charge the camera at a very slow rate (may take up to several days of USB charging).

7. Confirm you have cellular coverage at the location you are running this test. If you have purchased Cellular service, the device should now be online.

Click Register. After a few minutes, your Camera should now appear in the Sites and Groups list as "Online". If it does not display "Online" after several minutes, please see Troubleshooting section.

8. Visit http://www.senserasystems.com/products/MC-30-camera **OR** http://www.senserasystems.com/products/MC-60-camera "**Documents**" tab to download complete Installation & User Guide for complete instructions on the camera.

9. **WiFi Setup** – if you are connecting your camera via WiFi, you will need to configure the SSID/Password of your local WiFi network into the camera. You will need a WiFi enabled device with a web browser such as a smartphone, PC or tablet in order to connect to the camera to configure the camera's WiFi connectivity. See **Section 4.1.2 WiFi Network Connect** for details on how to configure the WiFi connection of the camera.

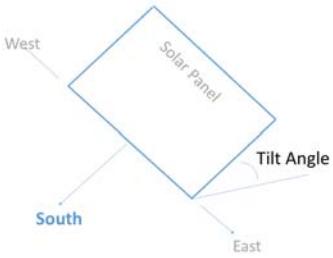
2.3 Installation and Mounting

Tools: Flathead screwdriver or 5/16 socket (preferred) for steel bands. Electric drill/nutsetter (optional). Ladder for accessing pole.

Mount the camera and solar panel at the site with the camera at the desired viewing angle, with the included bracket kit. If possible it is best to aim the camera so it is pointed in a Northern direction toward your site, to limit solar glare in the images. Alternatively, a higher mounting, with camera pointing more "down" will also help with glare.

1. Attach the camera bracket to the pole/fence/building using the included brackets and pipe banding. This should be oriented so that the bracket faces in general direction that camera will be aimed. If attaching to wooden post or pole use lag bolts. For smaller poles, pipe banding may be wrapped around twice. The bands can be tightened with a straight screwdriver or 5/16 socket (preferred).

2. Attach the second bracket for the Solar Panel to pole/fence/building using the included brackets and pipe banding. In summer it is desirable to reduce the heat/sun load on the camera. If possible mount this bracket directly above the camera so that the solar panel will provide shading to the camera (this is optional and not required if the solar panel needs to be mounted elsewhere).



In cold climate winters it is desirable to increase heat/sun so if possible mount this bracket so it does not shade the camera (again, this is optional). The panel should be oriented so that the bracket faces in general direction of the sun travel (i.e., Southern sky for North American locations). This may require adjustment from summer to winter in a northern climate as the angle of the sun changes.

3. Attach camera to the camera bracket using the included ¼-20 thumb screw. Aim the camera in the general desired direction and tighten.
4. Attach the solar panel to the solar panel bracket using the included ¼-20 thumb screw. Panel should be aimed South tilted to approximately 30 degrees from flat (1/3 of the way from flat to vertical).
5. Attach solar panel power cable to the camera's power connector. This will "wake up" the camera, allowing it to connect to the network. This may take a few minutes. Make sure connector is screwed in securely.
6. Do final aiming of camera, adjusting the pan and tilt thumb screw as necessary. A mobile smartphone or tablet (or laptop) connected to the internet is recommended. Login to your WebApp Account, and navigate to the View page for this camera. Click on the Aiming button ("cross-hair") icon to load the aiming page, which will update a low-resolution picture every 15-20 seconds for aiming purposes. You can also click the "Take picture now" icon to test a full-resolution picture. Adjust camera as necessary to achieve desired field of view, and then and tighten all thumb screws well.

2.4 Accessing the Camera From the WebApp User Interface

A complete description of the WebApp user interface functions and camera configuration options can be found in Section 6.

2.4.1 Configure Time-lapse & DVR

Navigate to the View page and click to bring up Configure Time-lapse screen. Here you can set the interval for your timelapse, start and stop date, and hours and days of week to capture time-lapse. For MC-6xSeries models, Navigate to the View page and click and Configure DVR. Enable the DVR, and select schedule and recording options desired.

2.4.2 Configure Contacts

Navigate to the View page and click  to bring up the Account Preferences screen. Enter one or more email addresses as Account Point of Contact. This is used to send notices regarding the camera account. Your camera is now configured and will collect time-lapse images as specified. For complete description of all the functions and configurations available see the following sections.

2.5 Additional Documentation

Complete user manuals, datasheets, drivers, and other data can be downloaded from:

http://www.senserasystems.com/product-support

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Contents

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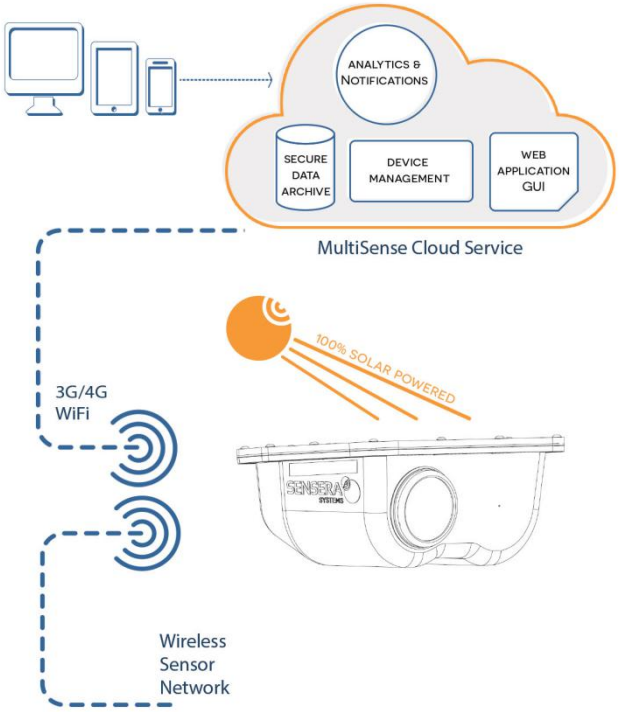
3 System Overview

The MC-30/MC-38/MC-60/MC-68 Series Camera is designed as an integrated system that works together with the MultiSense Cloud Service to provide a completely hosted application and network connectivity service.



The MC-30/MC-38/MC-60/MC-68 Series communicates via cellular or WiFi to the MultiSense Cloud Service.

All MC-30/MC-38/MC-60/MC-68 Series cameras are configured from the factory to know how to communicate with the Cloud Service greatly simplifying setup. As soon as the camera receives power, and a network connection is established, the MC-30/MC-38/MC-60/MC-68 Series will connect with the Cloud Service.

Once you login to your WebApp Account, and Register your device with your login account, it will be available to (only) your account and full network management will begin.

Because the MC-30/MC-38/MC-60/MC-68 Series is preconfigured to communicate with the MultiSense Cloud Service, no configuration of your network is required (i.e. no cell tower configuration, no LAN or router/firewall configuration).

3.1 Product Features

The MC-30/MC-38/MC-60/MC-68 Series and MultiSense Cloud Service provide the following features and capabilities:

Image Display and Manage

- Take live image OR video
- Search/View image by date/time
- Display streaming video (MC-6x)
- Browse all images/videos
- Share image (via email, text)
- Export images, time-lapse to desktop
- Annotate image (text, draw)
- Compare images
- Create time-lapse movie
- Delete images, videos
- Display weather (live, historical)
- Upload/View DVR images/videos

Camera Configuration

- Edit Camera Resolution
- Set Time Zone
- Configure time-lapse frequency
- Configure time-lapse schedule (days of week
- Configure DVR settings
- Configure LiveView Settings

Alerts & Alarms

- Configure system alarms (text/email address)
- View alarm status
- View alarm history

Camera Status

- Display network status
- Display battery status
- Display temperature
- Display power consumption
- Display charging status

System Management

- Register/Add device to system
- Edit System/Site Name
- Edit device names
- Display device type and configuration
- Display device location
- Show service status
- Set default email, text for alarms/alerts

Data logging and Alert

- Configure data logging (select models)
- Configure alert conditions (select models)
- Export data

3.2 Hardware Components

- MC-30 Series/MC-60 Series Camera
- Solar panel with attached cable
- USB cable – mini-A
- USB wall charger
- 1x Mounting arm kit (2 arms with adapter plates attached)
- 2x Stainless steel strap kit for pole mount
- Quick Start Guide
- Accessories (Tripod, cable lock) will be shipped separately

3.3 WebApp User Interface

The WebApp provides full web-based access to your camera from a browser on any internet enabled PC, tablet or smartphone. The WebApp User Interface is integrated with the MultiSense Cloud Service to provide complete camera management including alerting, online status, data archiving, and user access and configuration. Details of the WebApp User Interface are found in **Section 6: Web Application User Interface.**

3.4 Communications Architecture and Operation

The MC-30/MC-38/MC-60/MC-68 Series cameras are configured to automatically connect to the MultiSense Cloud Service. The MC-30/MC-38/MC-60/MC-68 Series camera has both cellular and WiFi interfaces, however the camera must be configured to use one or the other network. The factory default is cellular.

The MC-30/MC-38/MC-60/MC-68 Series ships from the factory in a "dormant" mode in order to preserve battery power during shipping and storage. In this dormant mode the camera will not attempt any communications. The dormant mode is exited automatically whenever either the USB cable is connected, or solar power (or auxiliary power via the solar power connector) is applied.

MC-30/MC-38/MC-60/MC-68 Series cameras are battery powered devices designed to run on very low power continuously with only intermittent solar power inputs. MC-30/MC-38/MC-60/MC-68 Series cameras periodically contact the WebApp to check for any waiting user commands, and to upload data. The length of time between contacts to the WebApp is dynamic and will vary depending on activity. The WebApp user interface under the View window will show you the time until the next expected contact by the camera.

Alerts will be processed immediately and communicated to the WebApp server (and on to the configured Notification addresses).

The MC-30/MC-38/MC-60/MC-68 Series has significant local storage capabilities, and so if communications are unavailable, data will be automatically stored locally, and uploaded the next time communications are available.

MC-60 Series cameras store "DVR" images/videos locally on the camera's flash memory. Images/videos can be uploaded by the user from the WebApp.

The MC-60 Series models support live video streaming. During live video streaming, a single H.264 video stream is sent from the camera to the WebApp server. The server then relays this stream to any users that are logged into the account and viewing the video streamsThe MC-60/MC-68 Series models also support LiveView. During LiveView lower resolution images are sent from the camera to the WebApp server at a user defined frequency. This allows for an up to date view of the site with significantly less data usage than that required by a video stream.

4 Pretest and Configuration

Before installing the MC-30/MC-38/MC-60/MC-68 Series camera at a remote field site, it is recommended that you first connect the camera to the Cloud Service, and create your user login. This will reduce the time required at the site.

There are three steps recommended for the initial test and configuration:

- Connect MC-30/MC-38/MC-60/MC-68 Series to the network (mobile or WiFi)
- Create a User Account on the WebApp (this step can be skipped if you already have an account)
- Register your device to your User Account

4.1 Connect MC-30/MC-38/MC-60/MC-68 Network

All MC-30/MC-38/MC-60/MC-68 Series cameras will operate on either cellular or WiFi. Both modes require an active MultiSense Cloud Service plan for the camera. Cameras ship pre-configured for cellular so will work "out of the box" on cellular with no additional configuration.

For use on WiFi, you will need to change the camera to WiFi mode and enter your SSID/Password of the WiFi network you want to connect the camera to. To configure to WiFi mode, connect the USB wall wart to the camera to initiate the camera's built in WiFi hotspot. Then use a Wifi enabled device (laptop, phone, tablet) to connect to the camera's hotspot, and configure the WiFi credentials you want the camera to operate on (see below).

4.1.1 Cellular Network Connect

MC-30/MC-38/MC-60/MC-68 Series cameras come from the factory pre-configured for cellular for a specific carrier (depending on model). They also come from the factory in a "dormant" mode in order to preserve battery levels during shipping and storage. The dormant mode will be exited whenever power is applied by either connecting the USB cable, or the solar panel (with sufficient direct sunlight).

If the camera has been stored or unused for more than a few days you may need to charge the camera first. This is best done by plugging into the solar panel and placing in the sun for an hour or more. The USB charger will charge the camera at a very slow rate (may take up to several days of USB charging).

As soon as the unit exits dormant mode, it will contact the WebApp. If you have already created a User Account and registered the camera, it will change from "offline" to "online" status shortly after the camera contacts the WebApp. If you have not yet created a User Account, the WebApp will keep track of the device, and once you do create a user account and register the camera to that account, it will appear in the account as "online".

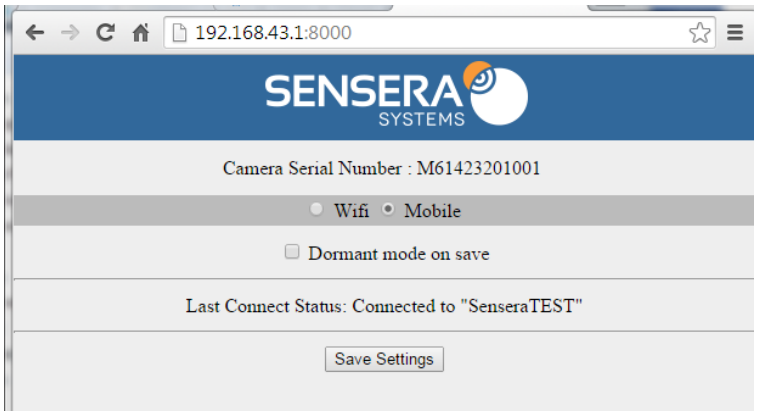
4.1.2 WiFi Network Connect

You must configure the MC-30/MC-38/MC-60/MC-68 Series camera from the default cellular configuration and provide the WiFi SSID/password for the network you want the camera to use to connect to the Internet.

To configure your device to WiFi:

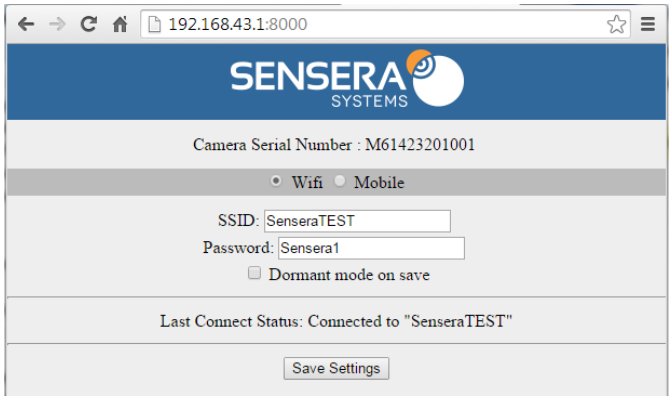
1. Connect USB cable to the camera, and to either a laptop or the USB wall wart. This will open the camera's WiFi hotspot with SSID **"SenseraMCXXXX"** on channel 1. Where "XXXX" is the last 4 digits of the serial number of that camera.

2. This hotspot will use WPA2 authentication and the password will be the "MC" plus the LAST 6 DIGITS OF THE camera's case-sensitive serial number (**found on the sticker on back of camera**). Example: Serial number is MC987654321, password is MC654321.



3. When your device is connected to the **SenseraMCxxxx** hotspot, open a web browser and enter this URL: **http://camera**

   (If this should not work for some reason, try http://192.168.43.1 include the "http://" in either case).



   NOTE: When opening the camera webpage a second or third time, be sure to "refresh" your browser. Also be sure to "Save Settings" when finished.

4. On success the browser will display the configuration web page. This page will display the camera serial number and buttons to select WiFi or Mobile. When WiFi is selected, there will also be fields to enter a (case sensitive) SSID and password for the WiFi network the camera is to use. If the page comes up blank (no serial number and neither Mobile or WiFi selected) then refresh the browser.

5. After desired settings have been entered, clicking "Save Settings" will save your settings to the camera.

6. There is also a check-box marked "Dormant mode on save". If the "Dormant mode" Check-box is selected, the camera will enter dormant mode immediately. Otherwise, the camera remains in configuration mode until the USB is disconnected, at which time it will attempt to begin connecting to WebApp server using the new settings. Allow up to one minute for server connection status to update.

7. **IMPORTANT**: The configuration page will also display the connection status the last time the camera attempted to connect to a network. If the camera does not appear "online" in the WebApp after changing to WiFi, reconnect to the HotSpot, open the browser, and check the status of the last connection attempt. Possible issues can include misspelled SSID or password, WiFi network not within range, internet not reachable from the specified WiFi network.

8. **ROUTERS AND FIREWALLS AND PROXIES**: The MC-30/MC-38/MC-60/MC-68 Series are designed to work with no modifications to routers or firewalls. The camera communicates outbound to the WebApp server. There are no inbound connections to camera initiated by the WebApp server. In the majority of configurations, no router or firewall changes are needed. However, if your firewall/router blocks OUTBOUND traffic, you need to ensure that OUTBOUND port 8080 and 55400 are open to the camera. The camera is not designed to go through a proxy for internet connectivity.

The MC-30/MC-38/MC-60/MC-68 Series camera should now be connected via WiFi, and will automatically connect with the WebApp server. This may take up to 5-10 minutes. If you have already created a User Account and registered the camera, it will change from "offline" to "online" status shortly after the camera contacts the WebApp. If you have not yet created a User Account, the WebApp will keep track of the device, and once you do create a user account and register the camera to that account, it will appear in the account as "online".

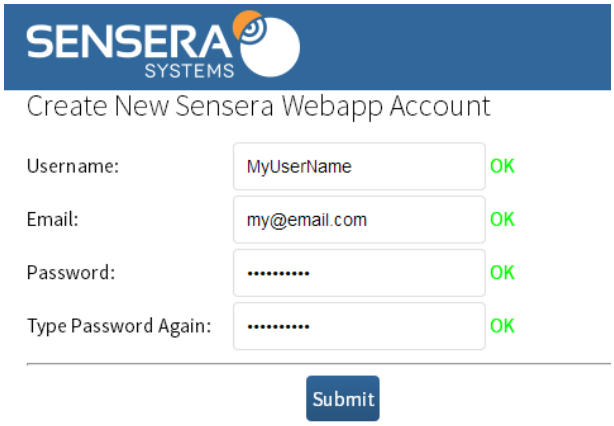
4.1.3 Older models and how to use USB configuration tool

Camera models with serial number starting "M31…" do NOT support WiFi Hotspot configuration, and must use the following method of using the Windows USBConfig.exe

This can be downloaded from http://www.senserasystems.com/product-support

To configure older camera models, or as an alternative way to configure newer models, use the USBConfig.exe Windows configuration tool, connecting over USB. To configure your device to WiFi:

1. Install USB driver. See "README-Sensera-MC30-MC60.pdf" on the orange USB thumb drive for instructions to install the USB driver. This step may require administrator privileges on your PC.
2. Remove the USB cable from the wall charger and connect to a Windows PC
3. On the orange USB thumb drive, navigate to the application file "USBConfig.exe application" and double click to launch.
4. A windows application will launch.



5. Click "WiFi" to select WiFi network interface
6. Enter SSID of the WiFi network you want to connect to.
7. Enter the password for the SSID you entered
8. NOTE: at this point you may enter additional WiFi/SSID pairs for additional networks. This will allow you to later run the USBConfig.exe application tool to quickly change between these networks without entering SSID/password information.
9. Confirm that the status shows "Connected". If not, please see **Troubleshooting section.**
10. Click "Finished"

4.2 Create User Account

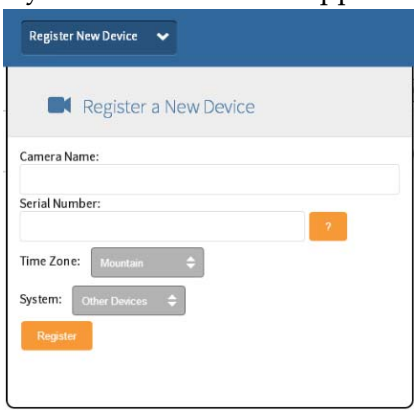
A User Account is required in order to access your cameras via the WebApp. The User Account ensures that only you can access your cameras or data.

To create a User Account:

- Navigate to the WebApp Login page
- Choose "Create a new Sensera WebApp Account" (bottom of panel)
- Fill in an email address (this is your username and is used for alerts about the account and to retrieve your password)
- Choose a Password
- Click "Create Account"

4.3 Register Device

The MC-30/MC-38/MC-60/MC-68 Series camera will automatically connect to the WebApp server as soon as a network connection is established. However, it will not show up in your specific User Account until you register the device under your particular User Account. This allows private access to your specific camera.



You can register your device at any time, whether the device is online or not.

To register your device:

- Login to your user account
- Go to the "Systems" page
- Pull down "Register New Device" menu
- Enter the Serial Number of the device. This can be found on the back of the MC-30/MC-38/MC-60/MC-68 Camera
- Select the time zone your camera will be installed at. This allows the time-lapse schedule to operate correctly.
- You may also enter a "Name" for the camera (of your choosing)
- You may also add this device to a "System or Site". This is a grouping of cameras.
- Click "Register".

Your device should now show up under "Sites and Groups" in the Group you added it to (or "Other Devices" group if you did not put it in a group). The "Status" will show whether the device is online or not (this may take a few minutes to update).

5 Installation

This section describes physical installation of the MC-30/MC-38/MC-60/MC-68 Series camera/solar panel system at the site. The MC-30/MC-38/MC-60/MC-68 Series has been design for extremely simple and quick installation in a variety of scenarios.

5.1 Tools Required

The following tools may be required depending on the mounting location:

- Ladder
- Large flat-head screwdriver or ***5/16"*** nut driver (recommended) for stainless pole straps
- No. 2 Philips screwdriver for pole/wall mount if screwing in mount plate
- Lag bolts if mounting to wooden pole/post
- Smartphone/tablet/laptop with internet connection (recommended only for final aiming of camera)

5.2 Determining Cellular Coverage

IMPORTANT: For cellular connected systems, it is important to confirm that you have cellular coverage at the intended camera location **for the carrier supported by your specific camera model**. This can be done by:

- Checking www.senserasystems.com and clicking "Cellular Coverage" at the bottom of the homepage to access cellular coverage maps and information.
- Checking network access from another device which uses the same cellular carrier as your camera (**T-Mobile, ATT, Verizon)**.

5.3 Choosing a Camera Location and Orientation

Choosing a camera location will depend on a number of considerations including:

- Desired angle of view of the building/location
- Available mounting locations
- Sun direction

It is recommended that your camera be aimed "away" from the sun for best results. For most locations in North America, this means that the camera should NOT face in a Southerly direction (however, if mounted at a higher location, looking more downward, southerly facing may be acceptable).

Higher mounting locations generally provide better image viewpoints.

5.4 Mounting the Camera and Solar Panel

Mount the camera and solar panel at the site at desired viewing angle, with the included bracket kit.

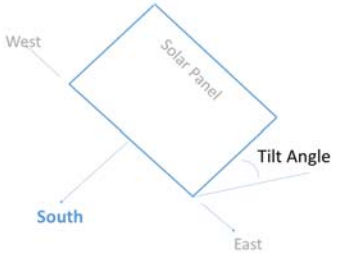
1. Attach the camera bracket to the pole/fence/building using the included brackets and pipe banding. This should be oriented so that the bracket faces in general direction that camera will be aimed. For smaller poles, pipe banding may be wrapped around twice.

2. Attach the second bracket for Solar Panel to the pole/fence/building using the included brackets and pipe banding. **IMPORTANT:** This should be oriented so that the bracket faces in general direction of the sun travel (i.e., South for North America locations).

3. Attach camera to the camera bracket using the included ¼-20 thumb screw. Aim in general desired direction and tighten.
4. Attached solar panel to solar panel bracket using the included ¼-20 thumb screw. Panel should be tilted to approx. 45 degrees and pointed South. See section below on Solar Panel Orientation.
5. Attach solar panel power cable to the MC-30/MC-38/MC-60/MC-68 power connector (lower bulkhead connector). This will "wake up" the camera, allowing it to connect to the network. This may take a few minutes. Make sure to screw power connector in securely to lower bulkhead connector.

5.5 Solar Panel Orientation

The solar panel will operate best if it is oriented in the direction of the sun. For North America the recommended orientation is as follows:



Azimuth: Due South

Tilt Angle: 2^0 in the Summer, 15^0 in the Spring/Fall and up to 47^0 in the Winter.

If the unit will be deployed year-round, and you are unable to readjust the tilt angle, we recommend a tilt angle of approximately **30^0** or 1/3 up from horizontal.

If the tilt is not adjusted between summer and winter, the system will still operate, however it may not collect the maximum amount of energy. The Solar logs available in the WebApp allow you to check solar performance of the system over time.

TIP: There are smartphone applications available that will provide compass heading to help with proper orientation of the solar panel.

5.6 Camera Aiming

Once the MC-30/MC-38/MC-60/MC-68 Series camera and solar panel are securely mounted and connected, the last step is to do a final aiming of the camera to achieve the desired field of view. Cameras should be pointed in a northerly direction if possible, to reduce solar glare in images.

If you do not have any smartphone or internet access available, you can have a colleague check the camera aiming from a remote computer, and communicate via phone whether the camera aim needs to be adjusted up/down or left/right.

From either a remote computer, or from a handheld smartphone/tablet, you can use the Camera Aiming icon on the WebApp to facilitate this process.

Login to your WebApp Account, and navigate to the View page for this camera. Click on the camera aiming icon ("cross-hairs"). This will request a low-resolution picture to be taken and uploaded to the View screen (updates may take seconds or minutes depending on speed of cellular or WiFi connection). Adjust camera as necessary, and click additional images to confirm, to achieve desired field of view, and tighten thumb screws well.

6 Web Application User Interface

This section describes the features and functions of the WebApp user interface. A summary of the features and functions of the WebApp interface can be found in Section **3.1 Product Features**.

6.1 Browser Requirements

The following are the minimal requirements for web browsers to support best operation of the WebApp:

- **HTML5 compliance**
  - Internet Explorer Version 9 or above
  - Firefox Version 30 or above
  - Chrome Version 27 or above
  - Safari Version 5.1 or above
  - Opera version 23 or above

6.1.1 Mobile Devices (phones, tablets – IOS, Android)

The WebApp interface should display and operate correctly in most mobile device browsers (Safari, Chrome).

i. Open WebApp.senserasystems.com in a web browser on your mobile device and login.

ii. Navigate to the View screen and click "Start Live Stream"

iii. Note that performance of the streaming to a mobile device will depend on the internet connection speeds of your mobile device.

6.2 Login Page

The login page allows you to login to the WebApp. There is a single login for a WebApp account, and an optional, associated "read only" login. Either login will access the same account (and devices), but the "read only" login will not be allowed to change camera configurations or delete or modify any data.

The login page also allows you to create a new account and retrieve your password.

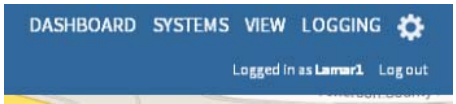
6.2.2 Multi User Access

Any number of computers can be logged into an account at any moment. The optional read-only account may also be used on multiple computers, and is useful if you do not want anyone else to edit your camera settings, but still have access to all the images and time-lapses taken. Read-only account is configured in Account Preferences.

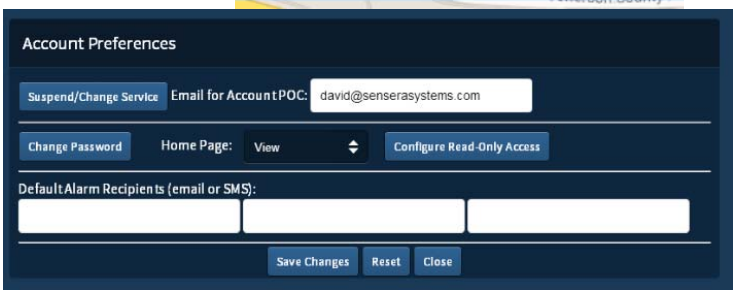
If you would like another person to view your camera feed, but do not wish to give them any sort of access, another option is to give out a public URL, which is covered in section **6.5.2**. The public URL will allow a viewer to only see the most current image taken and a video compiled from time-lapse images.

6.3 Account Preferences

The account preferences can be accessed from any page by clicking the "gear" in the upper right corner.



The account preferences dialog allows you to configure:



Email for Account POC: This is the email used for any notifications relating to your account, including service plans, billing, etc. It will default

to the email provided as "Email" when you created the account.

Account Status: This is a display-only of your account status.

Change Password: change password for this account

Default Page: this sets which page will be displayed initially when you login.

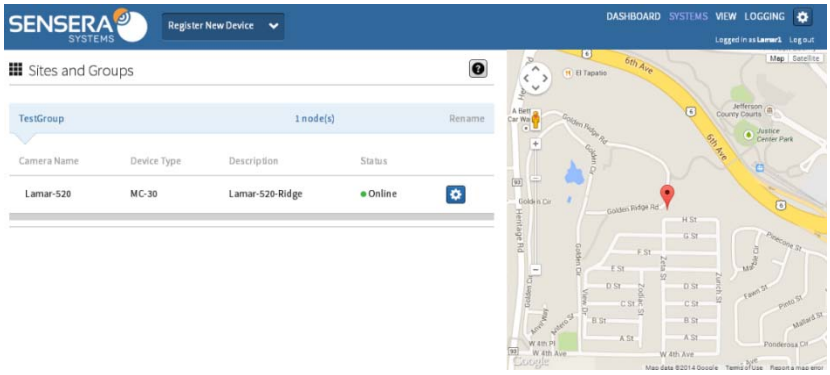
Read-Only Access: configure optional login/password for read-only access.

Default Alarm Recipients: Here up to three email OR text addresses to receive alarm notifications. Alarms include "communications failure" or "low battery". Each field will accept a text number or email address.

6.4 System Page

The Systems page provides an overview of the cameras registered to this account. The left side shows a table listing the cameras, grouped into Sites/Groups.

The map on the right shows the locations of the Cameras on the map. This location is taken from the camera's GPS and is updated periodically.

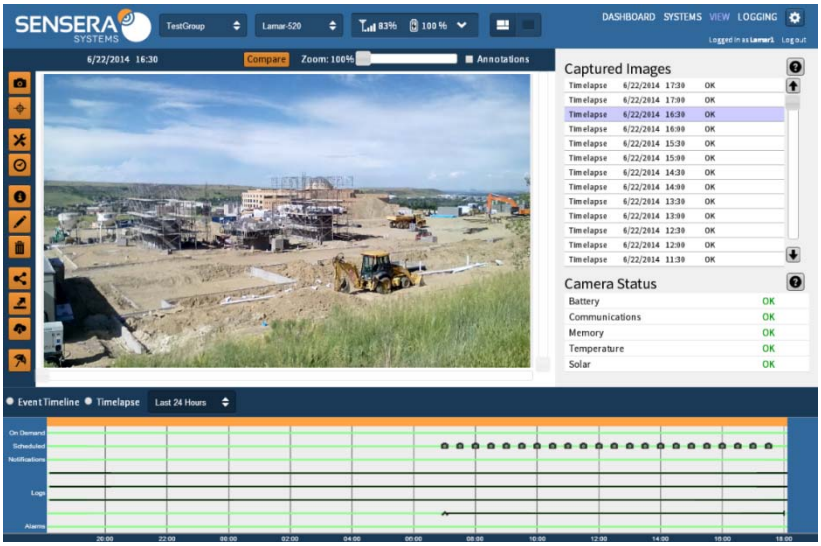


Clicking the "gear" on the row for that camera will bring up a menu that allows you to either go to the View Page for that camera, or to Update Location. Update Location will command the camera to take a new reading from the GPS and update camera's position on the map.

Clicking the header for a Site/Group will expand/collapse display of Cameras in that Site/Group.

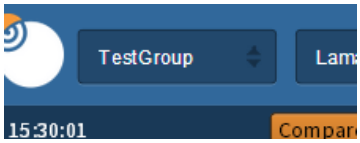
6.5 View Page

The View page provides the primary interface to a selected camera. From the view page you can configure the camera, view status, browse data from the camera, create time-lapse, annotate, and more. Details of the View page functions follow.

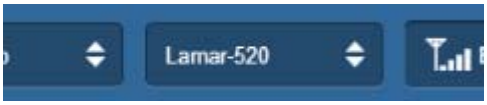


6.5.1 Navigation Area

Site/Group Chooser – this menu displays the Site/Group of the current Camera. Selecting a different Site/Group will change the camera being displayed to the first camera in the selected Site/Group.

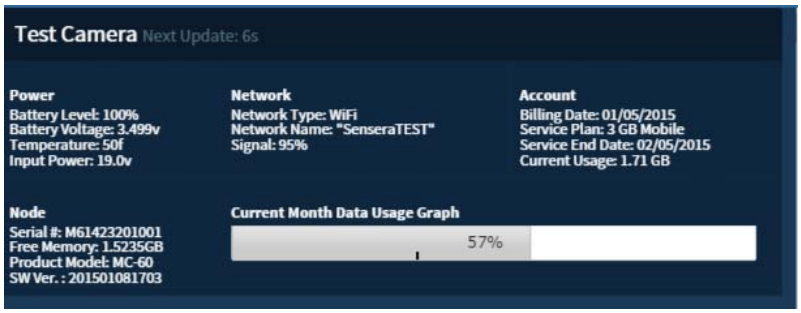


Camera Chooser – this displays the Name of the currently displayed camera. Selecting a different camera will display that camera in the View window.



Status Display – The status display shows the status and configuration details of the selected camera. The left shows the network status (signal strength), and the right shows the battery status (state of charge as a %).

Pulling down this menu shows additional detail about the camera status including:

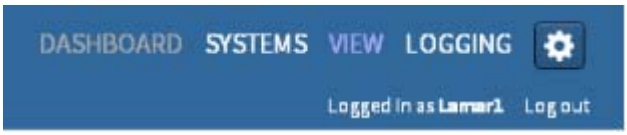


- Battery level (% State of charge)
- Battery voltage (V)
- Temperature (°F/°C)
- Network Type (Mobile, WiFi)
- Network Name (type of connection)
- Signal Strength (%)

- Account Status
- Free Memory (Gb)
- Product Model
- Software Version
- Data usage graph – data usage month to date vs. plan

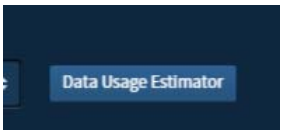
Page Layout – This controls layout of the View page tiling. Clicking the left option will show the camera view, with status, and Images list, and timeline. Clicking the right option will show a large camera view (removing Status, Images and Timeline).

Navigation Bar – The navigation bar allows you to click to other views – Dashboard, Systems, Logging. This bar also shows currently logged in user, and allows you to logout.



6.5.2 Data Usage Estimator

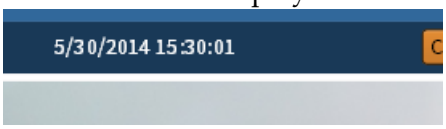
The Data Usage Estimator tool is accessible from the Configure Camera dialog. It is also accessible from individual estimator summary/buttons shown in Timelapse configuration and LiveView configuration.



The Data Usage Estimator shows a summary of predicted cellular data usage based on the current camera configurations and settings. Estimates of usage for non-scheduled functions such as On Demand, Video Streaming, and DVR Downloads can set in the Estimator dialogue to obtain a total expected usage. This is shown in relation to the current Service Plan in place for the camera.

6.5.3 Image Viewer Section

The primary display in the View screen is the "image viewer". This is used to display selected captured images, make annotations, and compare images.



Timestamp Display – The upper left of the Image Viewer area shows the timestamp of the currently displayed image.

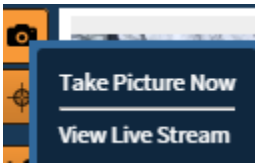
This is the date/time the image was captured.

Zoom bar – The zoom slider allows you to digitally zoom the currently displayed image. Once zoomed, you can use the mouse cursor to pan left/right and up/down to view image detail.

Take Picture Now – This button will command the camera to take a picture immediately. This picture is called an "on demand" picture and will be available to view in the Captured Images stream, but is not part of time-lapse images and will not interfere with ongoing time-lapse images.

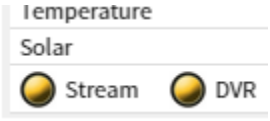
After clicking "Take Picture Now", the camera will be commanded to take the picture and upload automatically to the Captured Images stream. This may take several seconds or minutes depending on network connection, and if other images are in the process of being uploaded.

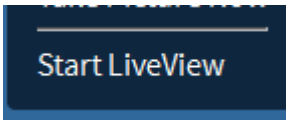
Once the on-demand picture appears in the Captured Images stream you can click on it to display in the View pane.

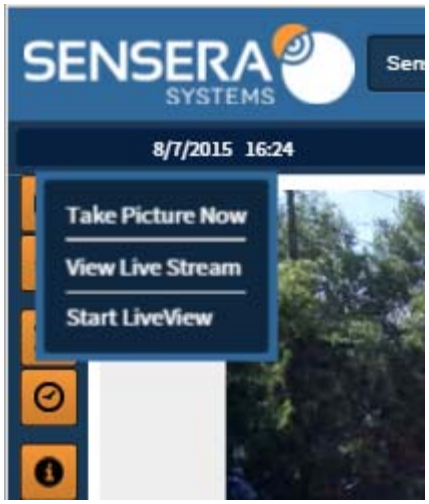


View Live Stream (MC-60 Series models)

For MC-60 Series models this menu offers Take Picture Now, as for other models, as well as View Live Stream. View Live Stream will initiate live video streaming displayed in the main view screen. If you have not been interacting with the camera recently, it may take up to 5 minutes for the stream to begin showing. If a stream is currently running this menu option will be "Stop Live Stream". The status buttons will show if Streaming is currently on or off.





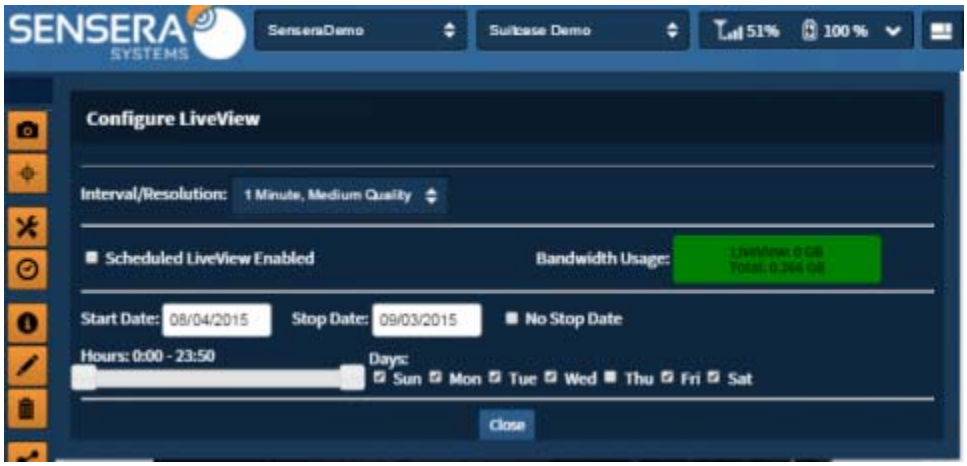


Start Live View (MC-60 Series models)

The MC-60/68 Series cameras offer on-demand still images, timelapse images, and video streaming. The LiveView feature adds to this by providing high-frequency still images

that are uploaded quickly, as they are taken. This allows you to have near real-time eyes on the project, without using the amount of cellular data required by continuous video streaming. It is great for keeping an eye on the project throughout the day, to see vehicles, people, and material movement, and detailed project progress.

LiveView operates independently of other functions such as timelapse, DVR, or streaming. Your timelapse will continue to operate and collect images at the schedule settings and image resolutions.



LiveView can be used in two modes. The "on-demand" mode works like video streaming. From the Take-picture button on the View screen, you choose "Start LiveView". Images will start being captured and uploaded. Frequency/resolution are configured in Configure Liveview. In the "on-demand" mode, LiveView will terminate whenever you logout, or change to a different screen (unless Scheduled LiveView is running – see below)

LiveView images are uploaded to the Captured Images list and marked "LiveView". These images will be kept for only 7 days – so you have up to 7 days of history of the LiveView images. LiveView images are not included in auto-timelapse creation (only Timelapse images).

LiveView can also be used in a "scheduled" mode. Here it works very much like Timelapse, in that you set the hours/days, and resolution/frequency that you want LiveView to run, and the camera will then follow that schedule.

LiveView images will be captured and uploaded as they are taken, even if you are not logged in or viewing the View screen. This allows you to use LiveView as a sort of "recorder" so that images are uploaded every couple minutes, and stored for 7 days. You can login anytime, and browse backward through LiveView images to get a minute-by-minute view of the project.

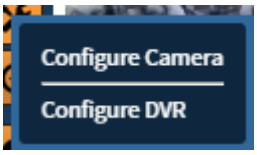
LiveView images can be exported out of the system like any other images.

LiveView can also be enabled for display on the Public Access URL. Go to "Configure Camera" and then to Configure Public Access and then enable "Display LiveView".

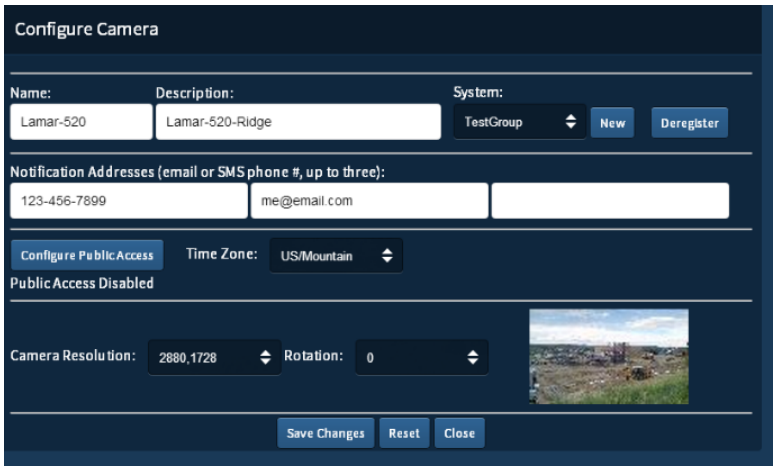
Camera Alignment Screen – This will open a page that will update automatically with

low-resolution images taken continuously. It is used for aiming your camera during installation. Images will update in 15-30 seconds depending on your connection.

Configure Camera –



This menu allows you to configure basic camera properties including:

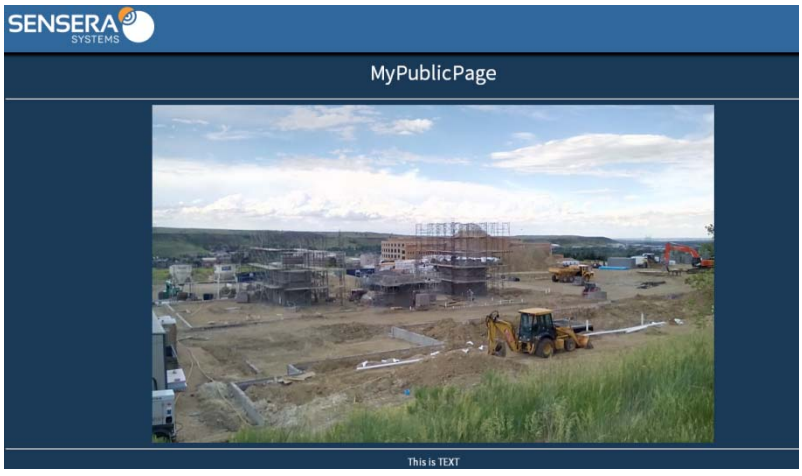


Name – name of camera used in displays and timestamps

Description – a longer description of the camera/site

System – this is the Group/Site the camera is part of. You can also assign the camera to a different system, and create a new system, from this menu.

New (System) – allows you to create a new system into which this Camera will be placed.



Deregister – This option allows you to deregister this camera from the account. The camera will then not be known to the account. This option is used if you wish to move the camera to a different account, or to otherwise remove a camera from this account (e.g., for long term storage). **IMPORTANT:** When a camera is deregistered, all associated data (images, time-lapse,

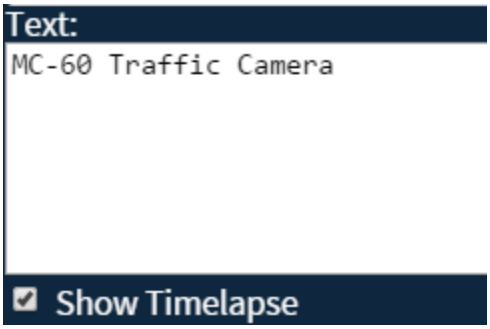
logs) will be deleted. Before deregistering, use **Export Pictures** function to download any images desired.

Notification Addresses – set text number and/or emails to be notified for any messages from this camera. Up to three text numbers or emails can be specified. These default to the addresses specified in the Account Preferences.

Configure Public Access – This button will bring up a dialogue that allows enabling a public access URL. Clicking "Enable Public Access" will allow you to enter a title for the public page and text to be displayed.

Closing this dialog will then display the Public Access URL on the Configure Camera

dialog. This URL can be distributed to other users to provide them the ability to view a single web page with the latest captured image. The public page will include the title and additional text specified here.



In the Configure Public Access menu, there is an option to "Show Timelapse". Checking this box allows the public to view a video time-lapse of all the time-lapsed images.

There are also options for including custom images on the page (logos, etc.).

Time Zone – zone of this camera, set when camera was registered.

Camera Resolution – resolution of camera. Higher is best quality, lower will reduce network bandwidth requirements.

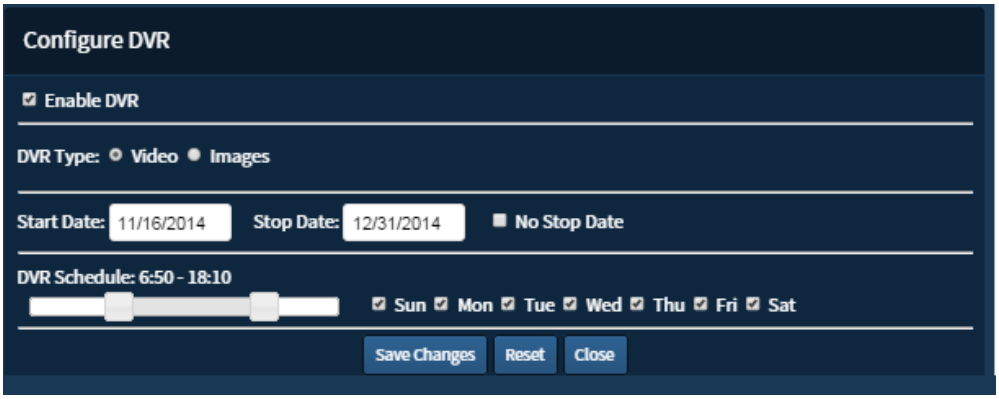
Rotation – system will rotate captured images before displaying. Specify "180" if you mount camera upside down, and "90 left" or "90 right" if you mount camera sideways.

After making changes in this dialog, choose "Save Changes" to save changes to the camera.

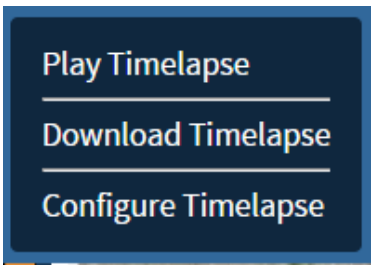
Configure DVR (MC-60 Series models)

On MC-60 Series models, this menu choice allows you to configure the Digital Video Recorder (DVR) options. The configure DVR dialog will allow you to Enable DVR. When enabled, the

camera will record video clips or images as specified in this configuration. Start date/stop date, and DVR schedule (hours/day and days/week) can be scheduled in this dialog. DVR functions work independently, and in parallel with any timelapse or video streaming functions.



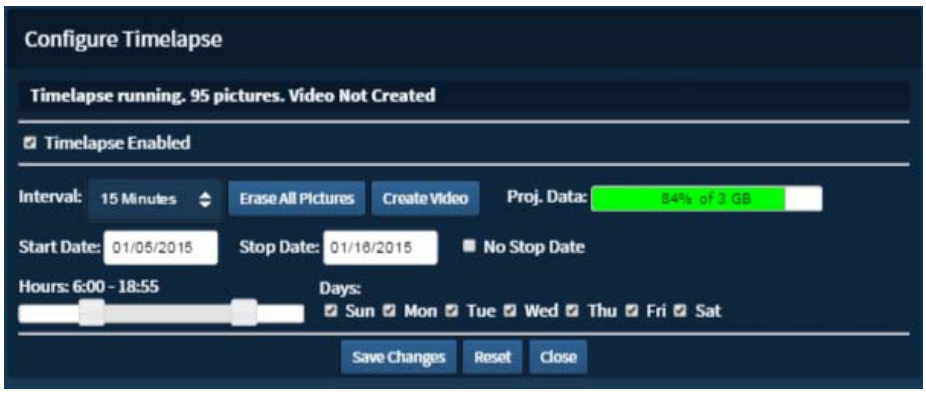
 **Time-lapse menu**



Play Timelapse – this plays back a time-lapse video that the camera automatically creates.

Download Timelapse – This downloads a .mp4 video of an automatic time-lapse that is created by the camera to your computer.

Configure Timelapse – Configure Time-lapse allows you to setup the camera to automatically capture images at a fixed interval. The "Configure Time-lapse" dialog allows configure the following:



Interval – this is how often an image is captured.

Start Date – is when to start collecting the images.

Stop Date – is when to stop collecting images. Check "No Stop Date" to

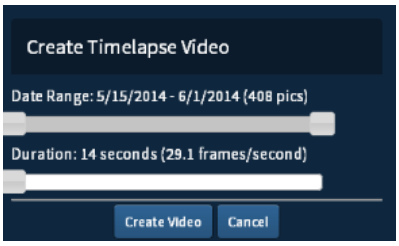
collect images indefinitely.

Hours – this slider allows you to set which hours of the day you want to collect time-lapse images. Typically this should be set to "daytime" hours.

Days – these checkboxes allow you to specify which days of the week the time-lapse will be collected. For example, to collect only on weekdays, check all the weekdays, and uncheck "Sat" and "Sun".

Estimated Data: This graph shows the estimated data usage of the selected time-lapse configuration. Data usage is affected by interval, hours, and days/week, and image resolution. This estimate does not take into account on-demand images, DVR uploads, or video streaming that may occur.

Erase All Pictures – This button will erase ALL time-lapse images collected to date from the WebApp database. This should be used with caution as the images are then not recoverable. This button will erase BOTH time-lapse and "on-demand" images.

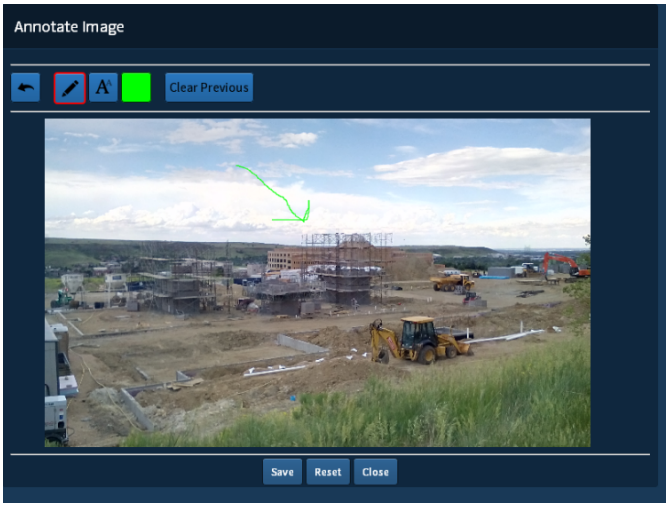


Create Video – this button allows automatically creating a time-lapse video from all time-lapse images collected to date.

The "Date Range" slider allows you to select the range of dates for images to be included in the video. The "Duration" slider determines the total length of the time-lapse video produced. It also displays, for a given duration selection, how many frames (images) per second will be included at that total duration.

Download Video – this will allow downloading/exporting a video file of the last created time-lapse.

Display Image Information– This will display a popup with information about the camera settings used for the currently displayed image.

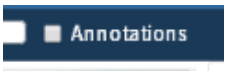


Annotate Picture – This function allows adding annotations to the selected image. Annotate operates on the image

currently displayed in the View pane. Annotations are saved with the image and can be displayed at any time, or shown (or hidden) upon image export.

Choose the  icon to draw freehand on the image (e.g., to make arrows or circles) in the selected color. Click the  icon to type text notes onto the image in the selected color.

Click the color icon  to change selected color. When finished choose "Save" to save the annotations, or "Close" to close the window without saving. The "Reset" button will clear the image of annotations (e.g, to start over).

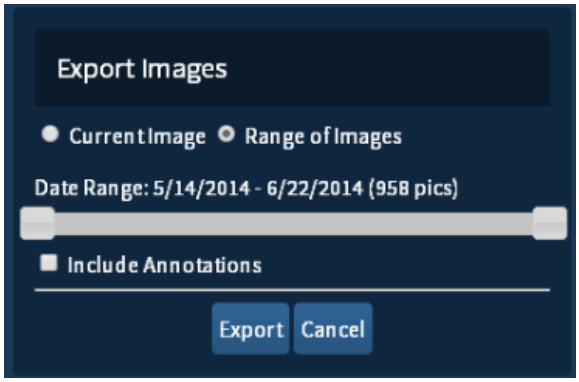
The "Annotations" checkbox 

at the top of the Image View Pane controls whether any annotations are displayed or not. Save and Export functions provide an option to export images with or without annotations.

 **Delete Picture –** Delete Picture will delete the currently displayed picture permanently from the system.

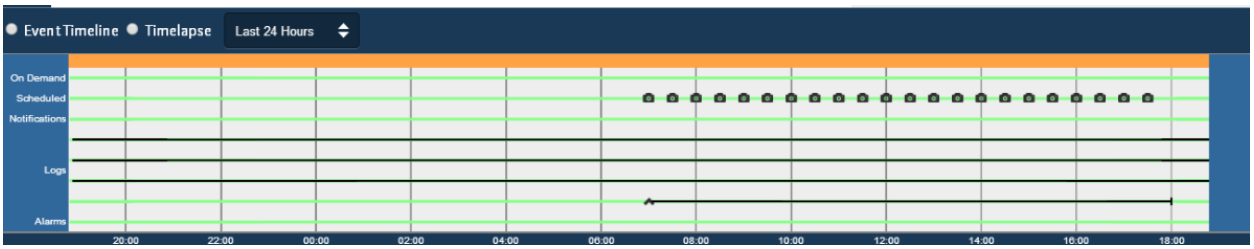
 **Share Picture –** Share Picture allows you to email or text the currently displayed image.

 **Export Picture(s) –** Export Picture allows you to save out pictures. The dialogue will allow you to export only the currently displayed image, or a range of images specified via a date range. The "Include Annotations" toggle specifies whether to include any annotations on the exported images.



6.5.4 Timeline Section

The Timeline section of the View page, displays a timeline of all camera activities.

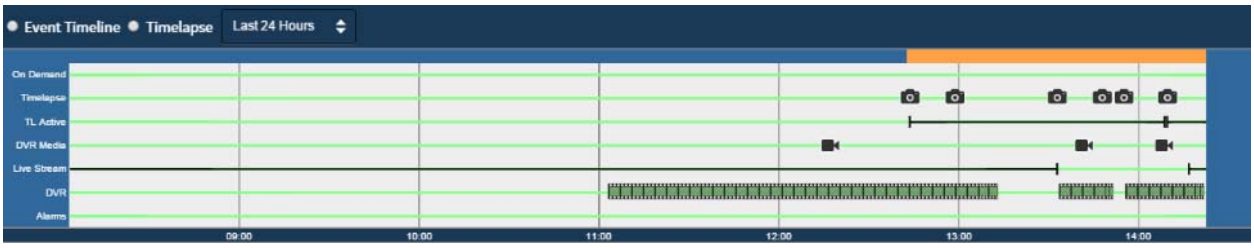


The "Event Timeline" and "Time-lapse" radio button will toggle the display between showing the complete event timeline above, and the time-lapse image timeline below.

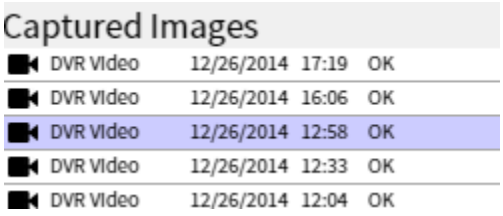
DVR and Live Stream Functions (MC-60 Series models)

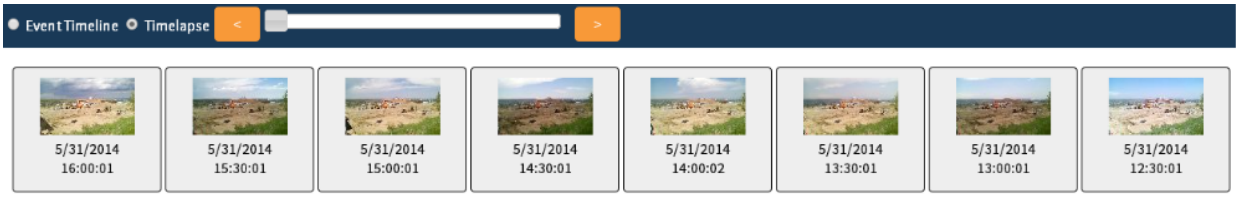
For MC-60 Series models, if you have enabled the DVR feature, the Event Timeline will display additional rows of information including:

- **DVR** – this line shows icons for any video/image clips that are currently stored by the DVR on the camera. Hovering the mouse over this icons will display the time-stamp for that video clip/image. Clicking on that clip/image will upload that clip/image to the WebApp server for viewing.
- **DVR Media** – This line displays any DVR video clips/images that have been uploaded to the server. Clicking on these icons will display that clip/image in the View screen.
- **Live Stream** – shows when Live Streaming was active.



- **Captured Images** – the captured images list will display "DVR Video" and "DVR Image" lines for any videos/images that have been captured AND uploaded from the camera. Clicking on these clips/images will display them in the View screen.





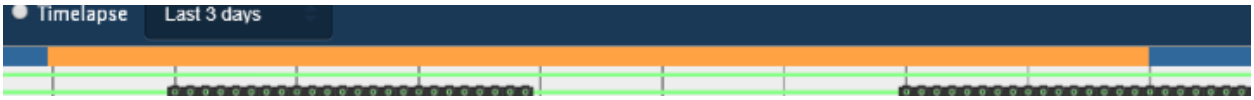
The slider allows browsing through captured time-lapse images. Each thumbnail shows the image and timestamp of when collected.

The "On Demand" and "Scheduled" lines, show when pictures were actually taken on demand, or prescheduled, respectively. Hovering the cursor over one of the camera icons will display a thumbnail of that image with a date/timestamp. Clicking on the icon will display that image in the View Pane.

The timespan chooser 

allows you to select the range of time displayed in the timeline.

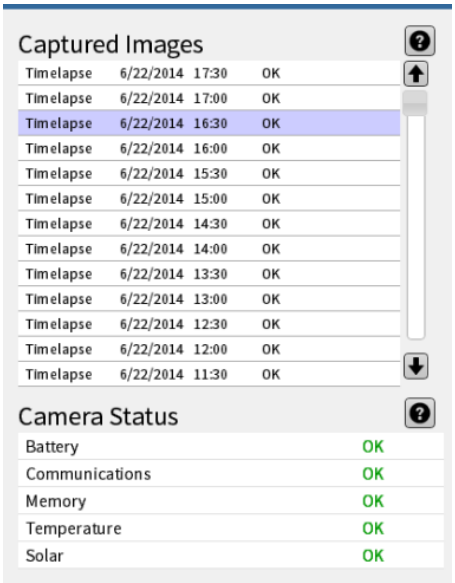
The orange slider also allows both scaling and panning the timeline. Dragging either end inward will "zoom in" the timeline. Grabbing the bar and moving left and right will pan the timeline within the range.



The "Notifications" line displays an icon at any point where the system generated a notification.

The "Logs" lines show datalogs that are active. A green line indicates it is not active. A solid blue that it is active.

The "Alarms" line display any alarms generated for the camera. For example, if there was a battery low alert, it would be displayed as a triangle here. Hovering on the alarm will display the time and date/time of the alarm.



6.5.5 Captured Images

The captured images area displays a text list of all images captured, whether "Timelapse" or "Ondemand". You can click on an entry in this list to display that image in the View Pane.

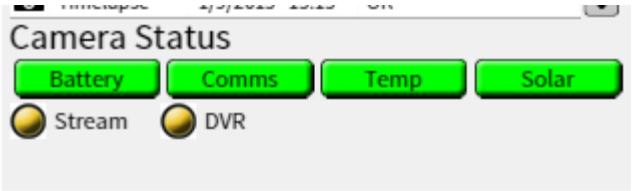
For MC-60 models, the Captured Images will also show "DVR Video" video clips that have been uploaded from the DVR, and "DVR Image" for images uploaded from DVR,

and "LiveView" for images captured via the LiveView feature.

6.5.6 Camera Status

This area displays the overall health status of the camera.

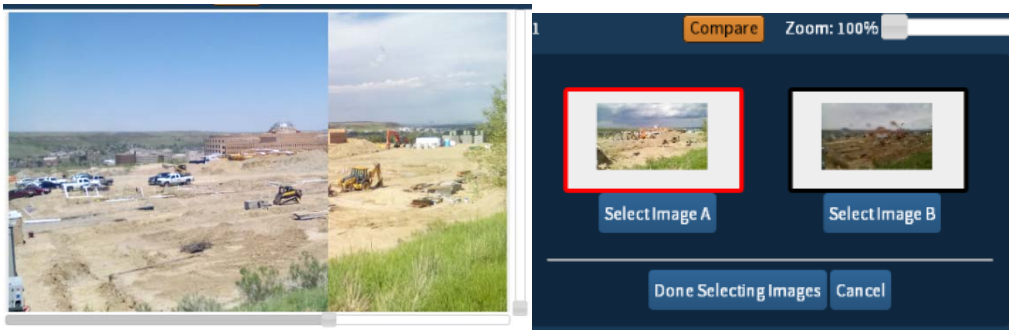
Battery, Comms, Temp, and Solar will show green for normal status, and turn yellow or red indicating warning or alert levels.



For MC-60 Series models, the "Stream" button and "DVR" button will display whether those functions are on or off.

6.5.7 Image Compare

The image compare feature lets you visually compare two captured images. The pop-down menu allows you to select Image A and Image B by choosing from the Captured Images List. Once you have selected the images, thumbnails are displayed, and you can choose Cancel or "Done Selecting Images".



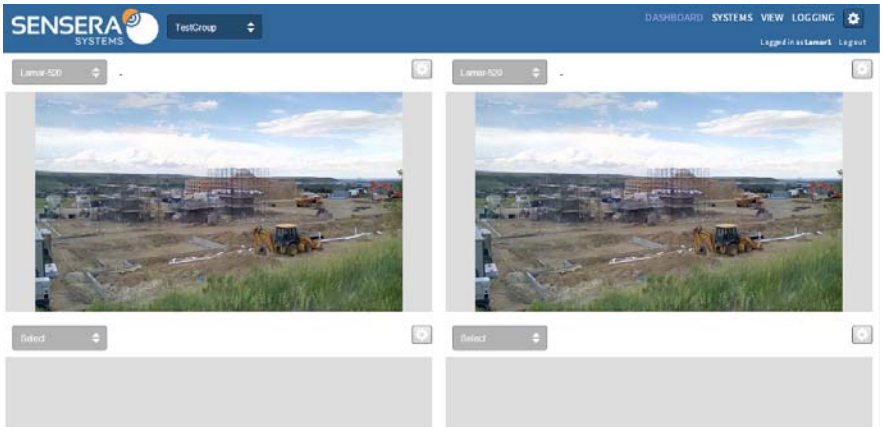
With two different images selected, the sliders on the bottom and right of the View Pane can now be used to compare visually the selected images.

The time/date stamps of the two images are displayed in the upper left corner of the View Pane.

6.6 Dashboard Page

The dashboard page provides an at-a-glance view of multiple cameras.

Up to 4 cameras, from any Site/Groups in the Account, can be selected to display simultaneously.



The image displayed is the last image captured from that camera.

The pull down at the upper left of each view pane can be used to select which camera is displayed in that view pane.

Clicking the gear icon  at the upper right corner of a view pane, will open the View page for that selected camera.

6.7 Logging Page

The Logging page displays a graph for each data value being logged by the system. Units are shown on the right hand axis. Timeline is shown on the bottom axis.

Clicking on the left side of a graph will toggle "hide" and "show" for that graph.

The MC-30 / MC-60 Series models have three built-in logs for Solar, Battery State of Charge, and Temperature.

The Event Timeline and Time-lapse timeline display is also shown on this page (this is identical to what is displayed in View page).

6.8 Accessing From Mobile Devices

The WebApp is designed as a responsive web application and will display on mobile tablets and smartphones. Simply point your mobile device browser at http://webapp.senserasystems.com

7 Storing and Moving the Unit

The MC-30/MC-38/MC-60/MC-68 Series cameras are battery powered systems designed for years of continuous service. Proper care of the system when moving or storing will ensure best long term performance.

7.1 Storing or Moving

IMPORTANT: The MC-30/MC-38/MC-60/MC-68 Series supports a "dormant" mode where the system is powered off, and battery drain is minimized. Any system that will not be powered (by solar or wall plug) for more than a few days should be placed into dormant mode.

To place an MC-30/MC-38/MC-60/MC-68 Series into dormant mode, bring up the configuration screen by following the instructions for WiFi configuration (Hotspot). Select "Place into dormant on exit" and hit "save". Disconnect the USB cable. The camera will now remain in dormant mode until power is applied via solar or USB.

7.2 Reconfiguring/Reinstalling Stored Unit

When reconfiguring or reinstalling a camera that has been in dormant mode, plug in the USB cable to the camera and to a PC or the wall-charger. Check that the camera is operating by opening the WiFi hotspot configuration interface. If this does not work, plug the camera into the solar panel, place in direct sun, and allow the camera to charge for 1-3 hours. You should then be able to connect with camera and configure the unit as needed.

8 Technical Specifications

Technical Specifications for the MC-30/MC-38/MC-60/MC-68 Series MultiSense Cameras:

Camera	Image Sensor	CMOS
	Image Resolution	5MP (MC-30/MC-60) 8MP (MC-38/MC-68) (configurable to lower resolutions)
	Field of View	55° (h) x 45° (v) (MC-30/MC-60) 65° (h) x 45° (v) (MC-38/MC-68)
	Video Streaming	H.264 / 720p (MC-60 Series models)
DVR	Recording	Stills at 30/60 secs, or 720p video (MC-60 Series models)
Storage	Local Storage	2GB (> 30 days local timelapse storage) (MC-30 Series) 32GB (up to 10 days DVR storage) (MC-60)

		64GB (up to 20 days DVR storage) (MC-68)
Interfaces	Cellular	3G/4G – carrier depends on camera model
	WiFi	802.11 b/g/n with HotSpot for configuration
	USB	Built-in for local configuration. Weatherproof USB mini-AB connector
Power	Solar Power Input	18VDC with MPPT (weatherproof connector)
	Aux. Power Input	18-24VDC @ 28W max
	Battery	Built-in Lithium Iron Phosphate (LiFePO4) battery pack.
	Performance	Battery provides up to 5 days continuous operation without solar input
Environmental	Operating Temperature	-10 ^{0}C to +45 ^{0}C (14^0 F to 113^0 F) (-20^{0}C/-4^{0}F for limited durations) (MC-30/60 models) -20 ^{0}C to +45 ^{0}C (-4^0 F to 122^0 F) (MC-38/68 models)
	Enclosure	Polycarbonate, hermetically sealed
	Encapsulation	Designed to IP67
Physical	Camera Dimensions	10.75″ (W) x 10.25″ (D) x 5.0″ (H)
	Camera Weight	7 lbs. (MC-30/38) 8 lbs (MC-60/68)
	Solar Panel Dimensions	11″ (W) x 20.75″ (D) x 1.0″ (H)
	Solar Panel Weight	5.0 lbs.
	Mounting	3 x ¼-20 threaded inserts for tripod or bracket mounting
	Locking	Integrated loop for optional cable lock

9 TROUBLESHOOTING

This section provides tips for troubleshooting the installation and operation of the MC-30/ MC-60 Series cameras.

9.1 Camera Shows Only "Offline"

9.1.1 Cellular Configuration

Connect a USB cable to the MC-30/MC-38/MC-60/MC-68 Series and a computer and connect via WiFi and open browser per WiFi Hotspot configuration instructions. Confirm the status on the screen shows that the SIM is "valid" and connecting. If the SIM is not showing as valid, please contact Sensera Technical Support.

9.1.2 WiFi Configuration

If a WiFi configured unit is not connecting at WebApp the most likely cause is a misconfigured WiFi credential.

- Make sure you have a valid SSID/password entered for the WiFi network you are trying to connect and that they are spelled correctly.
- Make sure that the camera is within range of that WiFi network

9.2 Camera Does not Appear in my WebApp Account

9.2.1 Check Registration

Make sure you have registered your device into your account.

9.2.2 Check Network Configuration

If you are using Cellular, ensure that you have coverage and that your device is configured to Cellular (using WiFi hotspot configuration feature).

If you are using WiFi, ensure that your device is configured to WiFi, and that you have valid SSID/password entered for the network. Also ensure that the device is in range to receive a good signal from that WiFi network. Open Webpage connected to WiFi hotspot and check status of last connection.

9.3 Streaming Video or DVR Video Clips will not Play or Display

Ensure you have a flash plugin installed according to your operating system instructions. See instructions for your web browser for installing a flash plugin.

9.4 USBConfig.exe Application Does not Connect to Camera

The MC-30/60 Series is shipped from the factory with battery levels at approximately ¾ full. The unit is in dormant mode and so battery should last without charge for a couple months. However, if the unit was turned on by earlier plugging in Solar it may have continued running, and run batteries down.

In this situation, plug in solar panel to the the camera and let it charge in direct sun for 1-3 hours. Then try configuring/connecting camera again.

9.5 Camera not connecting to WebApp server over WiFi

If you have configured the camera for WiFi connectivity, and it is not showing "online" in the WebApp server, you should repeat the WiFi configuration process.

The configuration page will display the connection status **the last time** the camera attempted to connect to a network. If the camera does not appear "online" in the WebApp after changing to WiFi, reconnect to the HotSpot, open the browser, and check the status of the last connection attempt. Check for possible issues including:

- Misspelled SSID or password
- WiFi network not within range
- Internet not reachable from the specified WiFi network

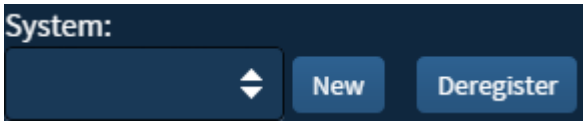
9.6 Reusing a camera that has been stored or is in unknown state

If the camera has been stored, and/or is in an unknown state, first connect the solar panel in direct sun and allow unit to charge for several hours.

Then follow instructions for restoring a dormant unit: 7.2 Reconfiguring/Reinstalling Stored Unit.

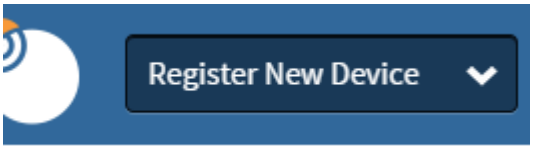
9.7 Moving a camera to a new project

When repurposing the camera for a new project, here's some steps that might help with the transition:



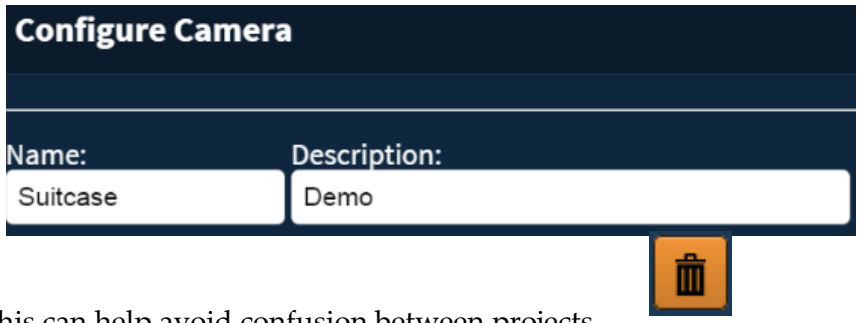
Automatic:

De-register and re-register your camera. To do this, go into Configure Camera, and click the de-register button. After this, go to the Systems tab in the top right corner of the screen, and click "Register New Device".



Manual:

1. Change the camera name and description under "Configure Camera". See **6.5.2** for more information.



2. Delete all old images. This can help avoid confusion between projects.

10 RESOURCES AND TECHNICAL SUPPORT

10.1 Documentation

This user manual and other technical documentation are available at http://www.senserasystems.com/product-support or at www.senserasystems.com under the "Support" section available from the bottom of any page.

10.2 Technical Support

Sensera Systems provides free technical support for our products via email and phone. To facilitate resolving your questions, please provide the following information when emailing or calling about your question:

- Serial number of device (important)
- Company name

- Description of problem or question - be as specific as possible.

Email questions to: support@senserasystems.com or call: 1-800-657-0437 and choose "Technical Support".

11 Tripod Mounting Kit

The optional Tripod Mounting Kit allows you mount the MC-30 camera and solar panel on any flat or nearly flat surface (ground, rooftops, etc.). The mounting legs adjust in length and so can accommodate some slope in the mounting surface.

11.1 Components

The Tripod Mounting Kit includes:

- Tripod
- Mounting plate
- Mounting plate bolt/nut
- Sandbags

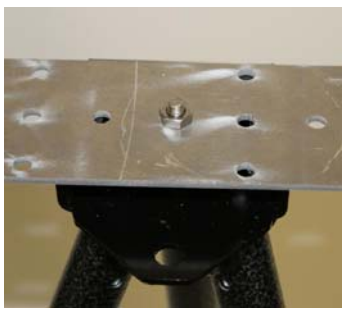
11.2 Tools

To setup tripod you will need an adjustable wrench and #2 Phillips screwdriver to tighten the bracket bolt.

It is convenient to have a web browser available (e.g, smartphone or laptop) in order to do final aiming of the camera.

11.3 Setup

1. Open tripod legs to full extent and place into position.
2. To increase the height of the tripod, or to compensate for uneven ground, you may extend one or more of the legs using the ratchet



mechanism.

3. Mount the mounting plate on top of tripod using the single bolt/nut running through the center hole.

4. Mount solar panel on one end of bracket. Generally you will want to mount on the outermost hole. But depending on planned orientation of tripod vs. sun and target camera direction, you can move the panel and camera closer together for more rigid mounting.

NOTE: For windy areas consider placing solar panel at BASE of tripod. You will need to secure it to a leg, titled at an appropriate angle – zip ties can work for this.

5. Mount camera on other end of bracket.

6. Fill sandbags and place "flat" across each leg, closer to outside (not center). The 4th bag can be added to center for additional holding strength.

12 Cable Lock Kit

The optional Cable Lock Kit can be used to secure the camera and solar panel to the mounting pole. Insert the cable lock through the hole on the rear of the camera lid. You may also route the cable through the mounting bracket on the back of the solar panel to secure the panel. Then route the cable around the pole and through the locking mechanism.

13 Data Plan and Camera Configurations

Some Cloud Service plans such as those on cellular access, have limits on the amount of data that can be uploaded from the camera to the WebApp per month. The amount of data required to be uploaded for the camera to operate will depend on some of the user-configurable camera settings. It is important to ensure your camera is configured properly in order for it to operate within the data limitations of your plan. This section explains the details relating to camera configuration and data usage. Note also, that the Cloud Service includes a notification feature that will let you know if you are nearing a data limit for your plan during the month. This allows you to modify the camera configuration to remain within the plan and avoid plan overage charges.

13.1 Camera Settings that Affect Data usage

The following settings affect the data usage of a camera per month:

- **Camera Resolution** – typically you will have this set at the highest setting (2880x1728) which provides a 5 MP image for the MC-30 / MC-60. Lower resolutions can be used to reduce data consumption. Resolutions are configurable for each function (time-lapse, on-demand, LiveView).
- **Timelapse Configuration** – The main impact on data usage is the number of images collected for time-lapse. The "Interval", the Hours / day, and the Days per week settings all affect the total number of pictures taken, and therefore the data usage.
- **On-demand pictures** – Clicking the  button to take an on-demand images, takes one picture which will be uploaded to the WebApp server. This uses data from your plan.
- **Video Streaming (MC**-60 Series models)
- **LiveView** (MC-60 Series models)
- **DVR Uploads** – video clips or images stored on DVR which are selected for upload.

13.2 Estimating Data Plan Usage

The Data Usage Estimator tool can be used to accurately estimate cellular data usage for your intended camera configuration.

13.3 Monitoring Your Data Plan Usage

In the WebApp, the "View" screen can be used to view your current data usage. In the View screen click on the "V" to pull down the system details dialogue.

The system details dialogue includes a section "Account" which provides details on the account for that camera. "Monthly Limit" shows the data limit available for the current Cloud Service plan, in this case 1 GB/month. The "Current Usage" field shows the amount of data that camera has used to date for the current month, in this case 1.71GB. The Current Month Data Usage Graph shows this information graphically. You can use this screen to check usage at any time.