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I. Introduction

This is a user guide for installing the PCU-220 controller graphical user interface (GUI) and the required driver for the application. It also contains operating instructions for the GUI, antenna file, and firmware download, and for clearing COM ports.

II. GUI and driver installation

- 1. JMA tech support
 - Toll Free: +1-888-201-6073
 - techsupport@jmawireless.com
- 2. For system requirements, see Table 1, below.

| Software specifications | |
|-------------------------------------|---|
| Windows operating system supported: | Windows XP thru Windows 8 |
| USB-485 window-based VCP driver: | FDTI Window x64 2.08.28 WHQL certified |
| | http://www.ftdichip.com/Drivers/VCP.htm |

Table 1 – Software specifications

- 3. Uninstall any previous version of the **JMA_AISG_RET** control.
- 4. Install the GUI first, then the driver. To install the GUI, run the setup file. Figure 1 is just an example; the rev could be different.
- 5. Follow the setup wizard and click **Next**, then **Install**. Allow the installation, and click **Finish** to complete the installation. Figures 1-4 are the same for setup23 or higher.

| JMA_AISG_RETcontrol_23 - 1 | InstallShield Wizard | JMA_AISG_RETcontrol_23 - InstallShield Wizard |
|----------------------------|--|---|
| 2 | Welcome to the InstallShield Wizard for JMA_AISG_RETcontrol_23 | Ready to Install the Program The wizard is ready to begin installation. |
| | The InstallShield(R) Wizard will install JMA_AISG_RETcontrol_23 on your computer. To continue, click Next. WARNING: This program is protected by copyright law and international treaties. | If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard. Current Settings: Setup Type: Typical Destination Folder: C:\JMA Wireless\JMA_AISG_RETcontrol_23\ User Information: Name: vith Company: HP |
| | < Back Next > Cancel | InstallShield |

Fig. 1 – Welcome screen for installation

Fig. 2 – Beginning the installation

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Fig. 3 – Installing the JMA software

- Fig. 4 The installation completed
- 7. The remote electrical tilt (RET) controller GUI icon will be automatically installed on your desktop. Do not launch the RET controller GUI yet.



- 8. Install the driver for the GUI.
 - If the driver was already installed from a previous version of the GUI, no need to install the driver again.
- 9. Run the CDM exe file per below.
 - Right-click on the driver file name and select "Run as Admin" if you have admin rights.
 - Extract, if the wizard indicates. You may need to repeat before the wizard starts.



10. Follow the installation wizard shown in Figures 5 and 6. Click **Next** for each window.

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Fig. 5 - Device driver installation wizard

Fig. 6 - Device driver installation wizard completed

- 11. If any problems occur, please go to <u>http://www.ftdichip.com/Drivers/VCP.htm</u> to select the proper driver file for your operating system.
- 12. Restart your PC.

III. GUI display and functions

- First connect the USB cable from the PCU-220 controller to the computer's USB port.
 - If the USB device (PCU-220 controller) is being plugged in for the first time, the computer may need time to install the driver to recognize the USB cable. Allow time for this to process.



- If all COM ports are used, go to "Clearing COM ports," Section VII, page 11, of this user guide.
- 2. Launch the GUI from the shortcut on your desktop.





3. When launching the GUI, the screen or window display will first look like Figure 7.



Fig. 7- Blank Commands and Properties windows

4. When you eventually enter RET commands, the window will begin to populate, as represented in Figure 8.

| AisgController - ALD #1 | | | AND LOT OF AN ADDRESS | | |
|-----------------------------|-------------------|--------------|-----------------------|----------|------------|
| File View Help | | | | | |
| 🖬 🖀 🗐 🖉 🤌 😡 📮 R 🕨 🔶 A V C I | D P CL | | | | |
| ALD #1 | | | | | Properties |
| Commands | Туре | | Subunits | | A |
| RESET DOWNLOAD SELF TEST | GET TILT | SET TILT | GET | | |
| GET INFO GET ALL CLEAR ALL | CALIBRATE | | N: | | |
| Product Number | CONFIG DWN | | C-Ttt- | | Descrition |
| Serial Number | | | Selected: | Commands | Properties |
| Software Version | | | | Window | Window |
| Hardware Version | Device Data Field | s | | VIIIGOV | VIIIGOW |
| | ANTENNA | OPERATOR TMA | | | = |
| Alarms | | | | | |
| GET CLEAR SUBSCRIBE | Model Number | GET SET | | | |
| | Serial Number | GET SET | | | |
| | Frequency Band | GET SET | • | | |
| | Beamwidth | GET SET | | | |
| Last Result / Error | Gain | GET SET | | | |
| | Max Tilt | GET SET | | | |
| ^ · | Min Tilt | GET SET | | | |
| (I | | | | | × |

Fig. 8 - Commands and Properties windows before antenna information

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5. If you accidentally close the Commands or Properties windows, or change it to where it no longer displays like Figure 8, you can go back to the default view by clicking on the See Figure 9. and selecting Restore Default

| Application Options | 4.0 | X |
|-------------------------|--------------------------|---------------------------|
| Serial Port | COM4 - | Detect Port |
| Baudrate: | 9600 | Restore Default |
| Scan Max Iterations: | 9999 | Com Port Auto Detect |
| Scan Auto Connect | | Auto Refresh Selected ALD |
| Scan Repeat Mode | | Scan ALD previously found |
| Auto Connect After D | ownload | Enable Polling |
| ALD List Field Selector | | |
| 0, 1, 2, 3, 4, 5, 6, 7, | 8, 9, 10, 11, 12, 13, 14 | - |
| Trace Configuration: | | |
| Trace Main | | ✓ Trace Aisg |
| Trace Comm | | ✓ Trace Poll |
| Trace Hdlc | | |
| | | OK Cancel Apply |
| | | |

Fig. 9 – Options selections

6. Below are the various command buttons for RET operations.



- a. The COM setting options icon is used to verify that the COM port is recognized with an assigned COM#, and that options are selected per Figure 9.
- b. Bus reset button to clear the device list for a new scan.



CLEAR ALL

CALIBRATE

c. Scan button to scan for ALDs.

- d. Stop scan.
- e. For device selection, use the drop down in the Properties window or click on ALD#.
- f. Get or clear the RET data.
- g. RET Calibrate button. The button will change to "calibrating" when calibration is in progress.

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- h. Set or Get Tilt buttons will change to "moving" when a set tilt is in progress.
- i. Operator data such as Antenna Serial Number, Base Station, and Sector Id, etc.

| AisgController - ALD #1 | | | | | | | | | | | | |
|------------------------------------|-------------------|---------|-----|--------|-----------|-------|--------|---|-----|------------|--------------------|--------------|
| : File View Help | | | | | | | | | | | | |
| | D P CL | | | | | | | | | | | |
| ALD #1 | | | | | | | | | ▼ × | Properties | | → # × |
| Commands | RET | | | | | Subur | nits | _ | - | | | - |
| RESET DOWNLOAD SELF TEST | GET TUT | SET TTI | т | | | | GET | | | | | |
| | | 501 111 | | | | N: | | | | UniqueId | CC0000000000046825 | |
| GET INFO GET ALL CLEAR ALL | CALIBRATE | | | | | 1 | | | | Status | ALARMED | - |
| Product Number CSS RET-200 | CONFIG DWN | | | | | | | | | Туре | Single RET | |
| Serial Number 000000000046829 | | | | | | Sele | ected: | | | Version | 2.0 | |
| Software Version CSS 140707 P | | | | | | | | | | Polling | True | |
| 501 CHAIL C VCI 51011 C33_140727_B | Device Data Field | s | | | | | | | | | | |
| Hardware Version 561105 Rev B | | - | | | | | | | | | | |
| Alarms | ANTENNA | OPERATO | ЛК | | | | | | = | | | |
| GET CLEAR SUBSCRIBE | Model Number | GET | SET | C7C-FR | 0-656-VR0 |) | | | | | | |
| Not Calibrated | Serial Number | GET | SET | | 26 | 66 | | | | | | |
| | Frequency Band | GET | SET | 5, 6 | 5, 12, 13 | , 14 | | | | | | |
| | Beamwidth | GET | SET | 56 | 0 | 0 | 0 | | | | | |
| Last Result / Error | Gain | GET | SET | 15.9 | 0.0 | 0.0 | 0.0 | | | | | |
| Success | Max Tilt | GET | SET | 10.0 | | | | | | | | |
| Not Calibrated | Min Tilt | GET | SET | 0.0 | | | | | | | | |
| | | | | | | | | | * | | | - |

Fig. 10 - The Command and Properties windows, with sample antenna information entered.



j. This icon is for saving the report in .txt format for the devices from the ALD list. See Figure 11.

| ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | ****** |
|--|--|
| ADDRESS | : 1 |
| STATUS | : CONNECTED |
| TYPE | STNGLE BET |
| /ENDOR | |
| SERTAL NUMBER | . 00009201703026-в1 |
| PRODUCT NUMBER | - B1000 |
| SOFTWARE VERSION | FW V1 1 0 |
| HARDWARE VERSTON | HW 81000 B |
| ALARM | NONE |
| RET TTLT | - 0.0 |
| ANTENNA MODEL NUMBER | MX08ER0860-02B1 |
| ANTENNA SERTAL NUMBER | · \//////////////////////////////////// |
| ANTENNA ERECUENCY BAND | · 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 |
| ANTENNA REAMWIDTH | 50, 10, 10, 10, 10, 10, 20, 21, 22, 25, 24, 25, 20, 27, 20, 25, 50, 51, 50, 50, 50, 50, 50, 50, 50, 50, 50, 50 |
| | |
| | |
| | |
| ANTENNA MIN TILI | |
| OPERATOR INSTALL DATE | - <u>yyyyy</u> |
| OPERATOR INSTALL ID | - ууууу |
| OPERATOR BASESTATION ID | • |
| OPERATOR SECTOR ID | : ````````````````````````````````````` |
| OPERATOR ANTENNA BEARING | : 65535 |
| OPERATOR MECHANICAL TILT | : -0.1 |
| <i> ####################################</i> | ********************** |

Fig. 11 - Sample RET report

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IV. RET system & GUI operation

- 1. Follow the connection diagram in Figure 12 which shows the various RET system diagram connections to the PCU-220 controller and PC.
 - · Homerun cable to RET
 - Smart Bias T to Smart Bias T to RET
 - Smart Bias T to AISG TMA to RET



Fig. 12- RET system connection diagram

2. Note the RET firmware rev and serial number in Figure 13.



Fig. 13 - RET firmware rev and serial number

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3. Verify that COM port is chosen by selecting the right of "Serial Port."



and clicking on the COM# to

| Application Options | 8.0 · · · | × |
|-------------------------|--------------------------|---------------------------|
| Serial Port | COM4 - | Detect Port |
| Baudrate: | 9600 | Restore Default |
| Scan Max Iterations: | 9999 | Com Port Auto Detect |
| Scan Auto Connect | | Auto Refresh Selected ALD |
| Scan Repeat Mode | | Scan ALD previously found |
| Auto Connect After D | lownload | C Enable Polling |
| ALD List Field Selector | | |
| 0, 1, 2, 3, 4, 5, 6, 7, | 8, 9, 10, 11, 12, 13, 14 | - |
| Trace Configuration: | | |
| Trace Main | | ✓ Trace Aisg |
| Trace Comm | | ✓ Trace Poll |
| Trace Hdlc | | |
| | | OK Cancel Apply |

Fig. 14 – Application options

- Do NOT click on Detect Port This works when ONLY one RET is connected.
- If you see multiple COMs on the Serial Port drop down, select one at a time and do a scan to see which one will work.
- If the USB does NOT flash GREEN-RED, then it's not the correct one and the scan will not find any motor.
- Try another COM. Find the one that flashed GREEN-RED during the scan.
- 4. Always perform a bus reset prior to starting a scan by clicking the
- 5. Click the Scan button **b** to scan for RETs (ALDs).
- 6. After the scan is completed, the list of devices will show in the properties box.
- 7. Select the device you want to control and configure from the Properties window drop down list or single click on the ALD#, and ALD fields will load in the Command window. A single click will load data when there are multiple ALDs.
 - GET ALL will also read from the device and load ALD fields.
 - Verify that the antenna model is correct; if not, refer to "ACF download," Section V, page 10, for instructions to load the correct antenna file.

icon.

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8.



- Calibrate the RET by clicking CALIBRATE
- 9. Set/get the tilt within the min/max range:
- 10. Verify that the results show "Success" and verify that there are no alarms by clicking **GET** under "Alarms." See Table 2 for alarm lists.
- 11. Configure the operator data such as Antenna Serial#, Base Station Id, and Sector Id, etc. Click **Set** for each item to write to the RET.
- 12. Save a report using for the devices from the ALD list in the Properties window.
 - Name the report and save.
 - Allow time for the report to generate. GET ALL will show "Running" while each motor is being accessed to get the data for the report.

SET TILT

GET TILT

- A report will be generated for ALL ALDs connected see Figure 11 for a report sample.
- 13. Alarms are listed below in Table 2 with recommended actions.

| Basic alarm | Reason | Corrective action | |
|--------------------|--|--|--|
| Not calibrated | Antenna is in an un-calibrated state. This can be caused by ACF download, power cycle during motor movement, or an invalid tilt was set. | Run the Calibration sequence. | |
| Busy | The RET is busy processing another command. | Allow the active command to complete. | |
| Motor/actuator jam | The RET was unable to move properly during a Calibration or Set Tilt command. | Ensure the proper antenna configuration file is loaded in the RET. Run the Calibration sequence. If the problem persists, contact technical support. | |
| Out of range | An invalid tilt value was set. | Run Calibration sequence. Set the tilt to a valid number within the range shown for max/min tilt. | |
| Read only | User trying to write data to a read- only field. | No corrective action. Fields cannot be changed by user. | |

Table 2 – Alarm list and corrective actions

JMR

V. Antenna configuration file (ACF) download

- 1. RET configuration files can be obtained from our website or by contacting JMA tech support
 - Toll Free: +1-888-201-6073
 - techsupport@jmawireless.com
 - www.jmawireless.com
- 2. ACF selection is based on antenna model, frequency band, and RET firmware rev. See Figure 15 for an example.



Fig. 15 – ACF selection guide

- Antenna models with one RET will only have one file.
- If antenna models have two or three RETs:
 - For different bands, one for low and one for high band:
 - A is High Band file (Remember A for AWS)
 - C is Low Band file (Remember C for Cell)
 - For two of the same bands:
 - -1 is for Ant 1
 - -2 is for Ant 2

Click on CONFIG DWN – ACF load button.

3.

- 4. Browse for the antenna configuration file.
 - Software Version 140727_A or 140727_B are in .txt format and are NOT compatible with motors having Version 150702_6.

QAP-480-VR0-ANT 1-140727-<u>B.txt</u>

OAP-480-VR0-ANT 1-140727-A.txt

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 Software Version 150702_6 is in .cfg format and is NOT compatible with motors having Version 140727_A or 140727_B.

X7C-480-VR4-150702_6.cfg

5. Verify the software/firmware version of the motor, as shown in the GUI, to select the correct Ant file, then go to the folder for that version. Examples below.





| Software V | ersion: |
|------------|---------|
| CSS_RET_14 | 40727_A |

- 6. In the folder, select the antenna file per the selection guide in Section V: step 2, referring to Figure 13 as necessary.
- 7. Double click on the antenna file or click **Open** to load to the RET.
- 8. The "Antenna Model Number" will update to the new file.
- 9. Calibrate the RET.
- 10. Set Tilt. Done.

VI. RET firmware download

- 1. Click on DOWNLOAD
- 2. Browse for the new firmware file.
- 3. <u>Double click</u> on firmware file or click **Open** to load to the RET.
- 4. **DOWNLOAD** will change to "Downloading."
- 5. This will take approximately 5-6 minutes to load (32000 bytes).
- 6. When completed, the button will change back to bownLOAD
- 7. Click for ALL and verify that the software version changed to the new rev.

| Product Number | CSS RET-200 |
|------------------|------------------|
| Serial Number | 0000000000046829 |
| Software Version | CSS_140727_B |
| Hardware Version | 561105 Rev B |

8. Done.

VII. Clearing COM ports

- 1. For additional support, go to this link:
 - The link below has the same instructions, so you can use it to copy the commands and paste them in Command Prompt. You won't be able to copy the commands from this user guide since it is in PDF.
 - http://answers.microsoft.com/en-us/windows/forum/windows_xp-hardware/howdo-i-clear-com-ports-that-are-appearing-as-in/0c3a3e6c-5623-4d93-ba89-124399d90448



2. Right-click "Command Prompt" in Accessories and choose "Run as Administrator." See Figures 16 and 17.



Fig. 16 – Accessories – command prompt selection

| Administrator: Command Pro | mpt | | Starter Inc. | - 0 X |
|--|----------------------------|-----------------|----------------------|--------------|
| Hicrosoft Windows [Ver Copyright (c) 2009 Mic | sion 6.1.76 rosoft Corp | 01] oration. | All rights reserved. | â |
| C:\windows\system32>se | t devmgr_s} | iow_nonpre | esent_devices=1 | |
| C:\windows\system32>st | art devngnt | .nsc | | |
| C:\windows\system32> | Mark | | | |
| | Сору | Enter | | |
| | Paste | | | |
| | Select All | | | |
| | Scroll | | | |
| | Find | | | |
| | | | | |
| | | | | _ |
| | | | | * |

Fig. 17 – Command prompt

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- Copy the commands below without the quotes and paste (right click) in the Command Prompt. This will prevent misspelling.
- Enter "set devmgr_show_nonpresent_devices=1" without the quotes.
- Enter "start devmgmt.msc" without the quotes.
- 3. In the box that opens, select "Show hidden devices" in the "View" menu. See Figure 18.



Fig. 18 – Device manager view selection

4. If you expand the section on COM ports, all the COM ports that have ever been created will be displayed, the non-present ones being in gray. You can uninstall anything that you don't want (right click, select uninstall). See Figure 19.



| File Action View Help | |
|---------------------------------|----------------------------|
| | 1 |
| > =] Memory technology driver | |
| Mice and other pointing device | 6 |
| Modems | |
| p Monitors | |
| Network adapters | |
| b - a Non-Plug and Play Drivers | |
| D- D Other devices | |
| Portable Devices | |
| Ports (COM & LPT) | |
| LINX SDM+USB+QS+S (COM | (12) |
| LINX SDM-USB-QS-S (COM | 18) R + (COL #) |
| Prolific USB-to-Senal Com | m Port (COME) |
| Prolific USP to Serial Com | m Port (COMS) |
| Silicon Labs CP210x USB to | UART Bridge (COM18) |
| USB Serial Port (COM10) | er er en ege (e e en er er |
| - USB Serial Port (COM11) | Update Driver Software |
| USB Serial Port (COM13) | Uninstall |
| USB Serial Port (COM14) | Scan for hardware changes |
| USB Serial Port (COM16) | Properties |
| USB Serial Port (COM3) | |
| USB Serial Port (COM4) | |
| USB Serial Port (COM7) | |
| USB Serial Port (COM9) | |
| Printers | |
| | |
| Processors | |

