Southwest Microwave, Inc.

Security Systems Division

INTREPIDTM

Control Module II Technical Manual

ALARM RELAY OUTPUT SYSTEM CONTROLLER



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CE Notice

This equipment has been designed and tested to EN61000-6-2:2005 and EN61000-6-4:2006 per Directive 89/336/EEC.

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1.0 Introduction

The Control Module II (CM II) is part of the INTREPID™ family of products. Its' function as a system controller is to be a "Poll Master" and poll all of the INTREPID Series II compatible IPP II (INTREPID Polling Protocol II) sensor devices, relay input devices, and relay output devices that are connected to its communications ports. It also has eight (8) relay outputs. When an alarm is detected on any device, it will send the command to set the appropriate relay(s) on the output device(s).

As a Poll Master, the CM II communicates with other system devices using RS422 communications. This communication can be done over 22 or 24 gauge stranded twisted shielded pair wire (max 5,000 feet [1,500m]) or fiber optic devices.

As an output device each CM II provides eight (8) form C relay outputs used to trigger camera presets, impact lighting or any function that can be activated by a contact closure. Both Normally Open (N.O.) and Normally Closed (N.C.) contacts are available at the terminal strip.

The CM II operates from 10.5 to 60 VDC @ 2 Watts. The operational current rating with standard power supplies are: 12 VDC @ 150mA, 24 VDC @ 80mA and 48 VDC @ 45mA.

During installation, the CM II will automatically detect each INTREPID Series II device that is connected to its' comports through a process called Device Discovery. This will provide a list of all possible alarm inputs and all possible relay outputs. From this Discovery list, the installer will be able to define up to 256 Alarm Zone Records, which defines the relationships between alarm inputs and relay outputs.

1.1 Limitations

When used in conjunction with other INTREPID Series II devices, a maximum of 16 devices can be connected to the communications ports of the CM II as shown in Figure 1. Eight (8) to each port or sixteen (16) on any one (1) port or any combination as long as it does not exceed sixteen (16) devices. The system can also be configured as Fault Tolerant.

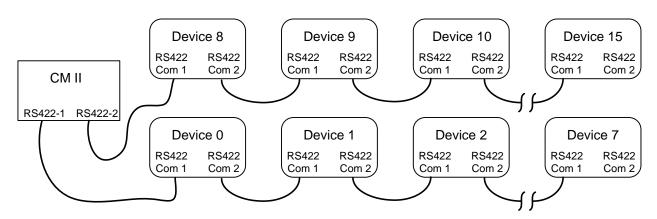


Figure 1 – Maximum Devices

The address range for these devices is limited to address 0 to address 239. The CM II has a fixed address of 254. Regardless of configuration total length of all RS422 communications wire between devices must not exceed 5,000 feet (1,500 meters).

After configuration, the CM II will poll each discovered device every 125ms for alarms. With the maximum of 8 devices connected to the RS422 communications ports, any alarm will be received within a 1 second timeframe. If more than 8 devices are on one communications port the polling time will be 150ms. *Note: with the Tamper Switch closed only the Pulse LED will be illuminated.*

1.2 Basic System Requirements

A computer or laptop with Windows XPTM, VistaTM or Windows 7TM operating system and a RS232 serial port or USB port. *Note; if a USB port is to be used, a USB to RS232 serial cable is required. The Windows USB driver should be Version 1.0.* A dB9 straight (not a null modem cable) male to female cable is required to connect from the PC to the CM II. The Controller Setup Tool II (CST II) should be installed on the computer as discussed in Section 3.0.

If copper wire is to be used, it is recommended that only stranded/twisted shielded 22 or 24 gauge wire be used for communications between the CM II and other INTREPIDTM Series II devices. The maximum distance between any two devices should not exceed 5,000 feet (1,500m). Any variations from this schedule should reference TIA/EIA TSB 89 - Applications Guidelines for TIA-422-B. Most RS422 fiber optic devices can be used as well.

2.0 Hardware

2.1 Control Module II (CM II)

The CM II assigns alarm sources to alarm outputs and serves as the poll master to monitor and maintain the communications link between other INTREPID Series II devices by RS422.

The CM II is packaged in the standard INTREPID enclosure as shown in Figure 2. The dimensions are 5.5 in H x 13.5 in W x 5 in deep (14cm H x 34.3cm W x 12.7cm D). It weighs 2.5 lbs (1.1kg).



Figure 2 – INTREPID Enclosure for RCM II

2.2 Optional Power Supplies

12 VDC power supply: Model PS13 Power Supply operates from 85-246VAC, 47-63Hz and furnishes 13.6 VDC at up to 2.8A. Power supplies contain automatic switchover and battery charging circuitry for optional standby batteries of up to 25AH. Temperature rated from 14° to 122° F (-10° to 50° C). UL, ETS, EMC, CE, and RoHS compliant.

- **12 VDC power supplies:** Model PS40 Power Supply operates from 120 VAC, 50-60Hz, 0.5A and furnishes 13.7 VDC at up to 1.6A. Model PS41 Power Supply operates from 220 VAC, 50-60Hz, 0.25A. Both contain automatic switchover and battery charging circuitry for optional standby batteries of up to 25AH and are fused on both input and output for maximum protection. Temperature rated from -40° to 150° F (-40° to 66° C).
- **24 VDC power supply**: Model 78B1064 operates from 120VAC to provide 24VDC at 5A with 6.5AH battery backup. Includes; indoor enclosure 15 x 11 x 4 in. (381 x 280 x 102mm). Temperature rated from -32° to 122° F (0° to 50° C).
- **48 VDC power supplies**: Model PS48 operates from 120VAC to provide 48VDC at 3A. Includes; indoor enclosure 14 x 12 x 4 in. (356 x 305 x 102mm). Model PS49 operates from 220VAC to provide 48VDC at 3A. *This supply does not include enclosure*. Temperature rated from 32° to 122° F (0° to 50° C). UL, CSA, TUV and CE compliant.

2.3 Interconnections

Figure 3 shows the various connection points, programming port and diagnostic LED's available on the CM II circuit board assembly.

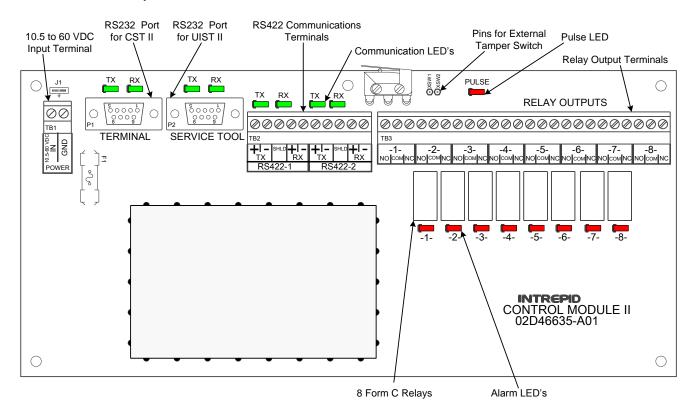


Figure 3 -Control Module II (CM II) Circuit Card

Figure 4 shows the typical RS422 wiring diagram from the Control Module II (CM II) to other INTREPIDTM Series II devices. In this case an Alarm Input Module II (AIM II) and a MicroTrack Processor II (MTP II) located on the perimeter. The CM II and the Relay Output Module II-16 (ROM II-16) are located in the control room for relay output interface to other control room devices. A maximum of eight (8) devices can be connected to each of the RS422 communications lines. The communications is RS422 and should use a 22 or 24 gauge twisted, stranded, shielded pair wire. Fiber optic devices can be used as well. Since this RS422 communications format is a point to point configuration, no termination device is required for the last unit on the line. The RS422

communications wiring is from the transmit side of one device to the receive side of the next device with the wiring from + to + and - to - as shown in Figure 4.

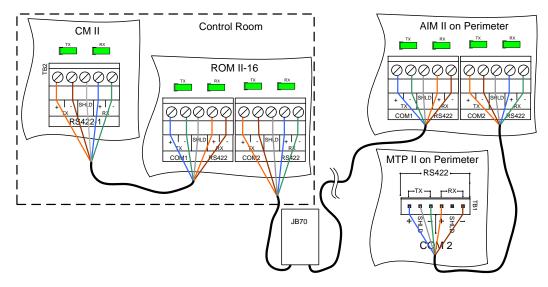


Figure 4 –CM II Communications Wiring Diagram

2.4 Typical Configuration

Figure 5 shows a typical configuration using a CM II, ROM II-16, AIM II, MTP II, PM II and a Microwave Link. The Control Room has a matrix switcher, lighting control system, paging system and an alarm panel. A computer is shown as the configuration/programming tool to set up the CM II and communicate to the sensors with the UIST II. The JB70A Surge/Lightning protection module is shown on the outside of the control room and at the sensors. The ROM II-16, AIM II and MTP II are connected together with the RS422-1 communications line and the PM II to the RS422-2 communications line. The Microwave Link alarm relay and tamper switches are wired into the AIM II. The CM II and the ROM II-16 are programmed so their relay outputs trigger inputs on the alarm panel, lighting control system, pager system and CCTV matrix. A UPS is also shown and is recommended for backup of the INTREPIDTM products.

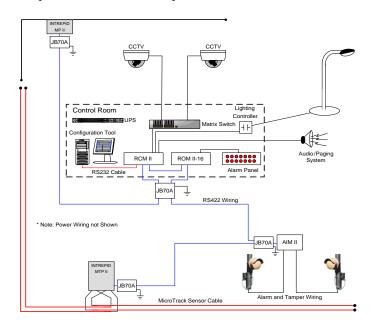


Figure 5 – Typical CM II Network Configuration

3.0 System Communications

3.1 Introduction

To set up alarm reporting and communications hierarchy of the CM II network, the Controller Setup Tool II (CST II) must be installed on the computer that will be used to configure the system. The software is provided on a CD and is a "drop" and "drag" or copy installation.

Insert the disc into the CD drive of the computer. Locate the application software and drag or copy it to the desktop or any other location on the hard driver that is convenient for use.

Connect a RS232 serial cable between the communications port on the computer and the RS232 Terminal communications port (P1) on the CM II.

3.2 System Setup Using CST II

Open the CST II software to launch the program to the default configuration screen as shown in Figure 6. On the menu bar for the default screen are the Options, Edit, Languages and Help menus.

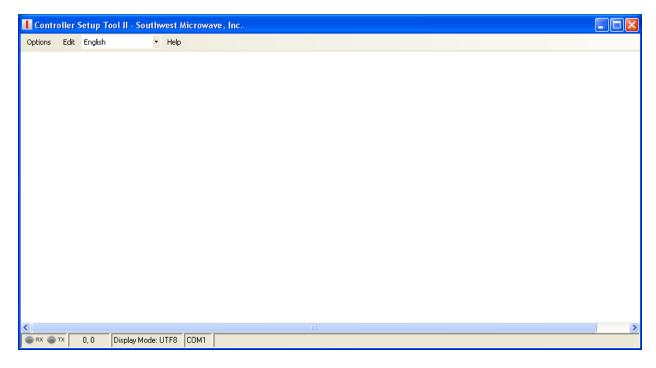
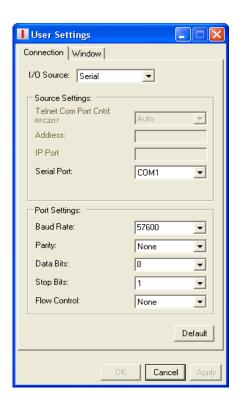


Figure 6 – CST II Default Screen

3.2.1 Options

The "Options" menu opens the "Settings", "Forced Disconnect" and "Close" functions. Selecting "Settings" will open the User Settings dialog box with the "Connection" and "Window" setup parameters.

The "Connection" tab will allow setting the I/O source (serial or network), the source setting (com port, telnet port/address/IP port) and the port settings (baud rate, parity, data bits, stop bits and flow control) as shown in Figure 7. These are default setting and should not be changed except for the Serial Port.



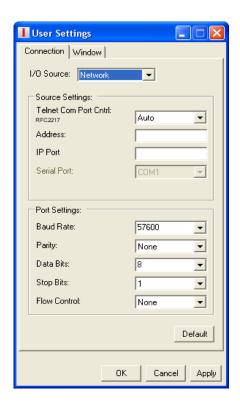
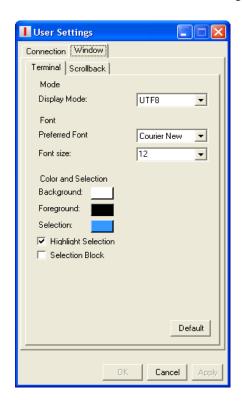


Figure 7 – CST II Connection Tab

The "Window" tab will allow setting Terminal Display Mode, Font and Color while the Scrollback will set the Rows, Columns and no Scrollback as shown in Figure 8. *These are default setting and should not be changed*.



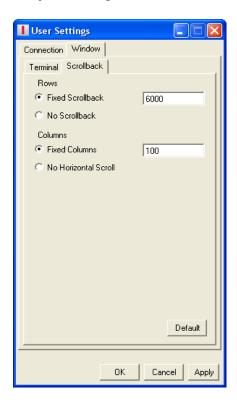


Figure 8 – CST II Window Tab

3.2.2 Edit

The "Edit" menu opens the "Copy", "Paste", "Clear" and "Form Feed" functions.

3.2.3 Languages

The "Languages" pull down menu allows selecting one of the 5 available languages to change the language of the menu bar. The language choices are: English, Spanish, Russia, Chinese and Korean.

3.2.4 Help

The "Help" menu will list the product name, part number, build time, Southwest Microwave information, copyright information and an OK button.

4.0 Definitions

4.1 System Definitions

Before beginning the programming process, there are a few definitions and concepts to understand.

- **CM II** This is the Control Module II. It has 8 relay outputs per board. Sixteen (16) INTREPID™ Series II devices can be connected to the two (2) communications ports. It is the Poll Master in the system and has a fixed address of 254. It has communications status LED's, Alarm LED's and a Pulse LED to indicate the device application is functioning.
- MTP II This is the MicroTrack™ Processor II. It will monitor up to two 656 feet (200m) buried sensor cable sets and will report Alarms, Cable Faults, Communication Failure and Tamper back to the Poll Master on request. It has communications status LED's, Alarm LED's, Tamper LED and a Pulse LED to indicate the device application is functioning.
- **AIM II** This is the Alarm Input Module II. It is used to bring auxiliary alarms from other sensors such as: microwave sensors, infrared sensor and contact closures. Typically these are alarm and tamper contacts. It can accommodate normally open (N.O.) or normally closed (N.C.) contacts. The input can also be set as a supervised input. It has communications status LED's, Alarm LED's and a Pulse LED to indicate the device application is functioning.
- **ROM II** This is the Relay Output Module II. It is available with 8 or 16 relay outputs. It has communications status LED's, Alarm LED's, and a Pulse LED to indicate the device application is functioning.
- **PM II** This is the MicroPointTM Processor II. It will monitor up to 1,443 feet (440m) of fence mounted sensor cable and will report Alarms, Cable Faults, Communication Failures and Tampers back to the Poll Master on request. It has communications status LED's, Alarm LED's, Tamper LED, External Input LED's and a Pulse LED to indicate the device application is functioning.
- Model 330 This is a microwave intrusion link with transmitter and receiver. It has communications status LED's, Alarm LED, Tamper LED, Jam LED, Wrong Channels and a Pulse LED to indicate the device application is functioning.

- Zone Record The zone record consists of up to four (4) inputs that can be assigned to up to four (4) relay outputs. This information is what is programmed into the CM II to control the alarm relay output functions. Inputs that can be assigned are: intrusion alarms from sensors such as microwaves, infrareds, etc., intrusion alarms from cell groupings from MicroPoint II or MicroTrack II systems, tamper switches, cable faults, communication failures, supervised alarms, configuration change alarms, and service alarms.
- **Zone Record Input / Output Assignment Matrix** In Attachment A of this manual is a matrix to list the inputs and outputs that have been assigned for a particular Zone Record. This should be saved for future reference.

5.0 PROGRAMMING MENU

The programming menus that will be displayed in the CST II are shown in section 5.1. A brief description of the function is inserted after the menu. Section 6.0 will cover each menu in detail for the programming of the CM II.

5.1 CST II Programming Screens for CM II

5.1.1 Main Menu

- 1. CM II Properties
- 2. Device Management
- 3. Zone Administration
- 4. Reports
- 5. About
- 6. Language

5.1.2 CM II Properties

- 1. Restore CM II to Factory Default Settings (restores factory default setting into CM II)
- 2. Assign Site Name (allows for naming of CM II device)
- 3. Set Real Time Clock (sets clock to be broadcasted to all connected device)
- 4. Backup System (allows backing up the CM II with all programmed information)
- 5. Restore System (allows importing backup into CM II with all programmed information)
- 6. Functional Testing and Verification (tests the RS232/RS422 communications ports of CM II)

5.1.3 Device Management

- 1. Device Discovery (automatically finds all devices on communications lines)
- 2. Device Name Update (allows for naming of other devices connected)
- 3. Accept Device Configuration Changes (acceptance for changes or edits to system)
- 4. View Devices Status (views status of all connected devices)
- 5. Change Device Polling Interval (ms) (allows adjustment of polling time for intranet use)

5.1.4 Zone Administration

- 1. Add Zones (where zone records are created)
- 2. Modify Zones (modification of existing zone records)
- 3. Delete Zones (deletes zone records)
- 4. View Zones (view existing zone records)
- 5. List All Zones (shows list of all zone records)
- 6. View Zone Status (shows status of zone records)

5.1.5 Reports

- 1. View Configuration Report (*shows zone records that were created*)
- 2. Download Configuration Report (*allows saving of zone records*)
- 3. View Event Log Report (allows viewing of all zone record activity)
- 4. Download Event Log Report (allows saving of event log)
- 5. Erase Event Log (allows for erasing of event log file)

5.1.6 About

1. List software version with build date and time

5.1.7 Language

1. Allows selecting operator language in English, Spanish, Russian, Chinese or Korean

6.0 PROGRAMMING SEQUENCE

6.1 Main Menu

NOTE! When the CM II has been programmed with a zone record the system will automatically start polling that zone record. Any alarm activity will be displayed on the CST II and by the relay(s) assignment(s). Selecting "ESC" will return to previous menu without saving any changes.

After the CST II has been configured and opened, all the devices communications wiring connected and verified and power has been applied, hit any key to open the Main Menu screen as shown in Figure 9.

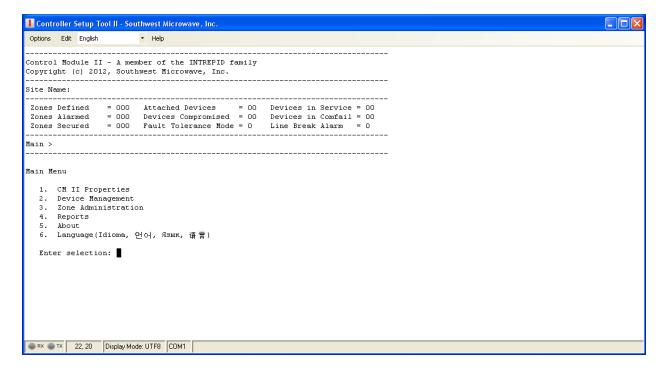


Figure 9 – Main Menu Screen

The Main Menu screen as well as all subsequent screens will have a banner as shown in Figure 9. The banner will display:

- Control Module II A member of the INTREPIDTM family: product model that is connected
- Copyright information
- Site Name: displays user defined site name (used for reference only)
- Zones Defined = 000: displays the number of Zone Records created
- Zones in Alarm = 000: displays the number of Zone Records in an alarm state
- Zones Secured = 000: displays the number of Zone Records in the secure state
- Attached Devices = 00: displays devices found on the RS422 communications ports
- Devices Compromised = 00: displays the number of devices in Configuration Change Alarm
- Fault Tolerance Mode = 0: displays if the system is in or out of Fault Tolerance Mode
- Devices in Service = 00: displays devices that have the UIST II programming tool connected
- Devices in Comfail = 00: displays any device(s) that are not responding to the polling message
- Line Break Alarm = 0: displays if the communications line has been broken in Fault Tolerance Mode
- Main: this line will display what menu is currently being used
- Main Menu: selection list for programming

From this Main Menu screen all programming of the CM II will be performed. Selecting the appropriate command number (1-6) will open the various menu functions for programming and reviewing the data of the CM II. Entering the number will open the requested menu. Selecting "ESC" will return to the previous menu.

6.2 CM II Properties Menu

Selecting "1" from the Main Menu will open the "CM II Properties" menu as shown in Figure 10. There will be six (6) command selections available.

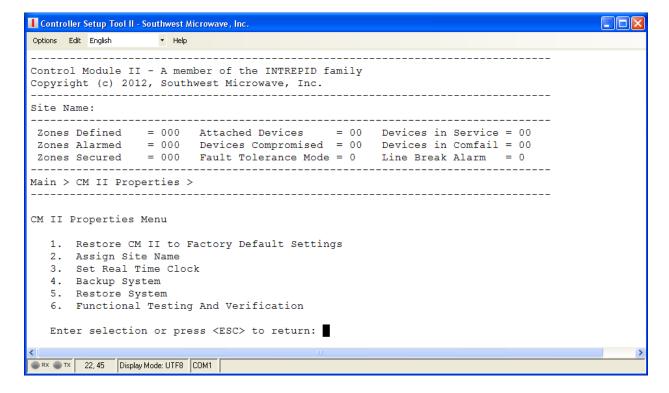


Figure 10 -CM II Properties Screen

6.2.1 Restore CM II to Factory Default Settings

Selecting command 1 will open the "Restore CM II to Factory Default Settings" screen as shown in Figure 11. This menu is used to erase all data in the CM II and restore it to the factory default settings. A warning will be displayed. Note: *This will stop all alarm polling and reporting!*

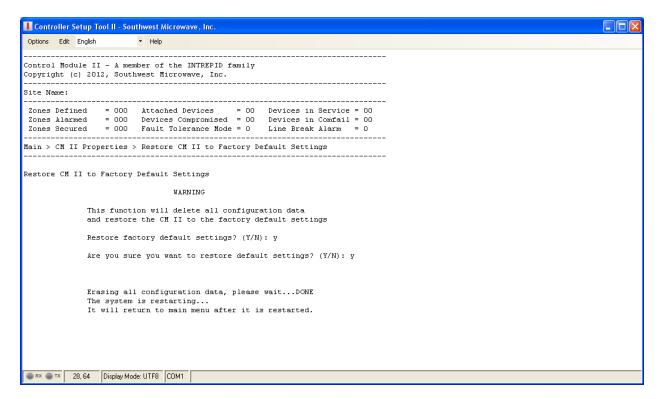


Figure 11 – Restore CM II to Factory Default Settings Screen

It is recommended that this function be performed for any new installation before any data entry is to be made. This will ensure that any miscellaneous data from previous use or any factory testing data is removed and only current data for the new installation should be found in the system.

Select "Y" for "Yes" and press "Enter". A prompt will ask "Are you sure you want to restore default settings? (Y/N) Select "Y" for "Yes" and press "Enter" to start the process. The screen will display "Erasing all configuration data, please wait. When finished erasing it will state: "DONE". Selecting "N" for "No" will end the process.

The screen will then display "The system is restarting". It will return to the main menu after it is restarted. All relays on the system should reset and all LED's should be illuminated. Select 1 to return to the CM II Properties Menu.

6.2.2 Assign Site Name

Selecting command 2 will open the "Assign Site Name" screen as shown in Figure 12. This screen will display a Current Name field (if there has been one given from a previous time it will be displayed otherwise it will be blank) for reference and New Name field that is blank. This screen allows the naming of the site or CM II. Enter an appropriate name for the CM II or site (up to 64 characters long). This name will also be displayed in the "List All Zones" function.

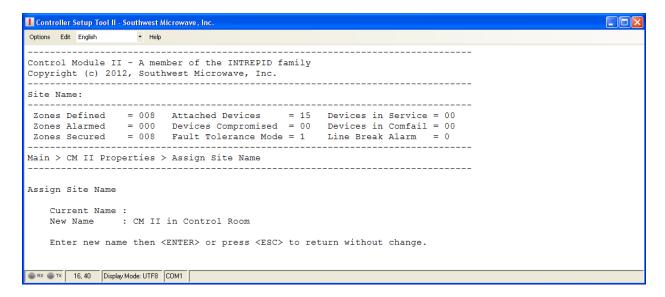


Figure 12 – Assign CM II Site Name Screen

Once the new name has been typed, select "ENTER" to save the new name. This name will now be displayed in the header next to the "Site Name:" field. This name is for reference only and will also be used in the Configuration Report that will be discussed later. Select "ESC" to return to the previous menu.

6.2.3 Set Real Time Clock

Selecting command 3 will open the "Set Real Time Clock" screen as shown in Figure 13. Only the "Enter Year" will be displayed when the screen is first opened.

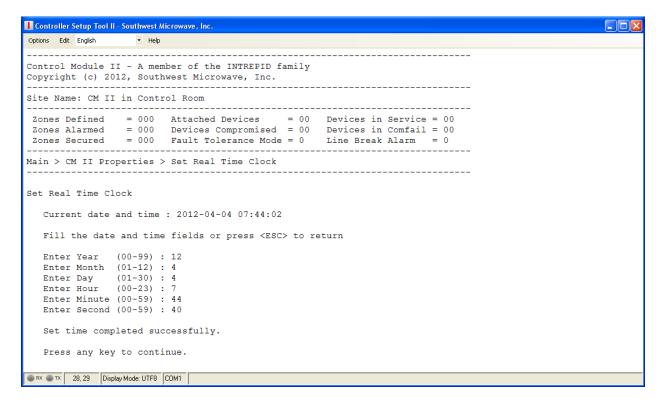


Figure 13 – Real Time Clock Screen

The other fields (month, day, hour, minute and second) will be displayed after each entry. Press enter after each entry. This command will set the Real Time Clock in the CM II and update the time to all devices connected to the RS422 communications line that support a Real Time Clock function. After all fields are entered a prompt "Set time completed successfully" will be displayed. Select any key to continue.

Daylight Savings Time is not supported by the devices. Manual adjustment of the clock is required twice per year to maintain correct time on the devices.

6.2.4 Backup System

Selecting command 4 will open the WindowsTM Directory to save a backup file of all programmed information in a *.txt format. Select a location to save the file on the PC hard drive or other location, provide a file name and "Save". The bottom of the screen will state "Downloading File". Once completed, the screen will state "File Transfer Completed". Press any key to continue.

An independent folder is recommended for all files associated with this CM II and the site where it resides.

6.2.5 Restore System

Selecting command 5 will open the WindowsTM Directory to restore a backup file of all programmed information. Find the location where the file was saved on the PC hard drive or other location and "Open". The bottom of the screen will state "Uploading File". Once the upload is completed it will return to the Main Menu.

6.2.6 Functional Testing and Verification

Selecting command 6 will open the "Functional Testing and Verification" screen as shown in Figure 14. This screen will allow for relay testing and testing the RS422 and RS232 communications ports of the CM II. These tests are recommended before the CM II is put into service.

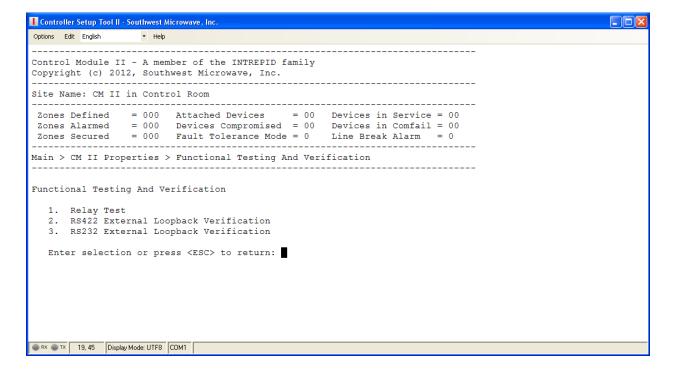


Figure 14 – Functional Testing and Verification Screen

The CM II will need the RS422 communications ports wired from the RS422-1 TX + / TX - to RS422-2 RX + / RX - and RS422-1 RX + / RX - to RS422-2 TX + / TX - to test the RS422 ports communications. Transmit plus (+) should be wired to Receive plus (+) and Transmit minus (-) should be wired to Receive minus (-).

The CM II will need a null modem cable connected from the Terminal port (dB9) to the Service port (dB9) to test the RS232 ports communications.

Note: All LED's should be illuminated as no programming has been done to the CM II. Selecting command 1, 2 or 3 will turn off all LED's during these test functions.

6.2.6.1 Relay Test

Selecting command 1 will open the "Relay Test" screen as shown in Figure 15. The commands on this screen will allow setting and clearing of a single relay or all relays of the CM II as a verification test.

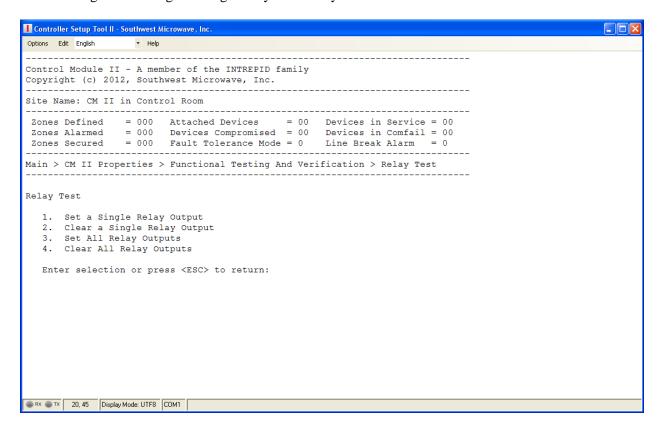


Figure 15 – Relay Test

Selecting "Relay Test" command 1 will set a single relay output on the CM II. Enter the relay number to be set and press enter. That relay and the associated LED will activate (the LED will turn on). Select "Relay Test" command 2, enter the relay number and press enter to clear the relay output. Selecting command 3 will set all relay outputs of the CM II. Command 4 will clear all the relay outputs.

6.2.6.2 RS422 External Loopback Verification

Selecting command 2 will open the "RS422 External Loopback Verification" screen as shown in Figure 16.

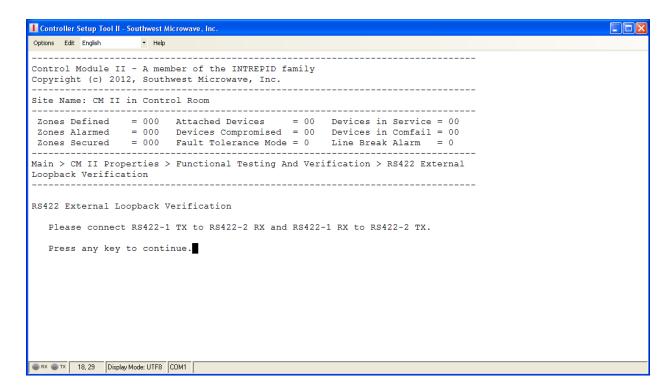


Figure 16 – RS422 External Loopback Verification Screen

Press any key to start the loopback verification test. The screen will display "Testing RS422-1 and RS422-2 Ports... as shown in Figure 17. The test results will display PASSED or FAILED. If connected to devices during this test only the Fault Tolerance Mode will work as polling to all devices will continue.

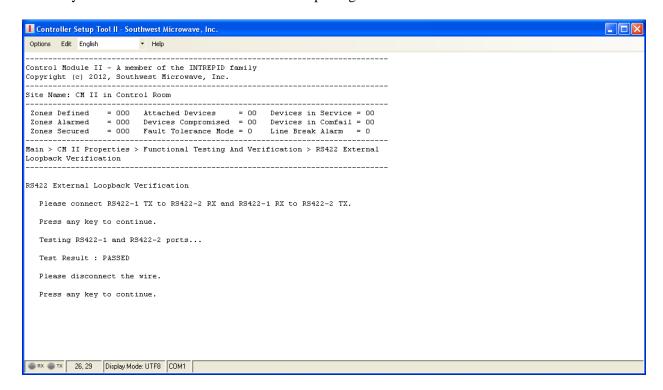


Figure 17 – RS422 External Loopback Verification Results Screen

After testing has been completed and successfully passed, press any key to return to the Functional Testing and Verification screen as shown in Figure 15. Press "ESC" twice to return to the Main Menu.

Disconnect the local wiring at the CM II RS422 ports and make the wiring connections to all the devices that will be used in the system at this particular site.

If the testing failed, replace the CM II (provided all wiring was correct for the test).

6.2.6.3 RS232 External Loopback Verification

Selecting command 3 will open the "RS232 External Loopback Verification" screen as shown in Figure 18. A null modem cable connected between the two (2) dB9 ports will be required to perform this test.

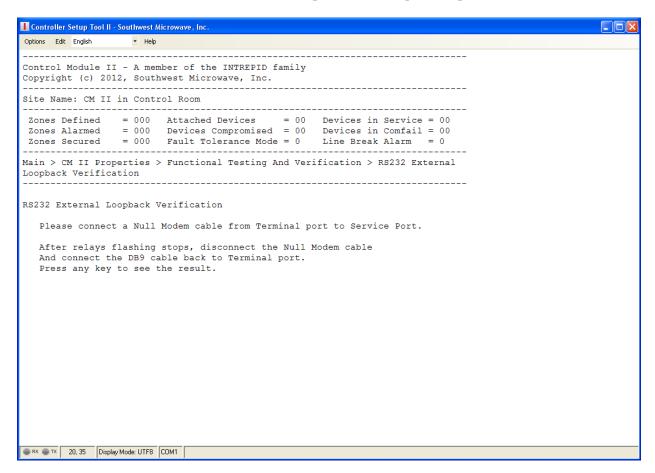


Figure 18 – RS232 External Loopback Verification Screen

Once the command has been selected, remove the dB9 serial cable from the "Terminal" port and attach a null modem cable between the "Terminal" and "Service" ports. The relays will start to cycle. When the relays complete the process and stop cycling, disconnect the null modem cable and re-connect the dB9 serial cable from the PC to the "Terminal" port.

Press any key to get the test results as PASSED or FAILED as shown in Figure 19. If the testing failed, replace the CM II (provided all wiring was correct for the test).

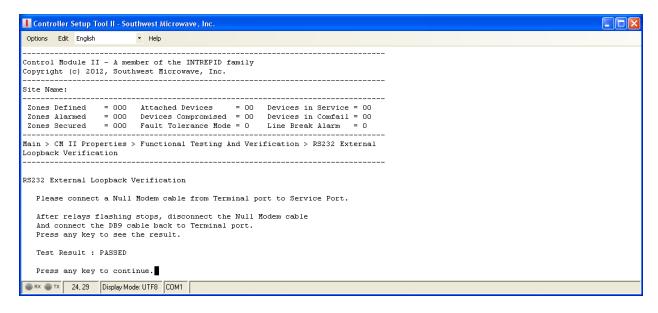


Figure 19 – RS232 External Loopback Verification Results Screen

6.3 Device Management Menu

Selecting "2" from the Main Menu will open the "Device Management" menu as shown in Figure 20. There will be five (5) command selections available:

- 1. Device Discovery
- 2. Device Name Update
- 3. Accept Device Configuration Changes
- 4. View Device Status
- 5. Change Device Polling Interval (ms), Current Value is 125

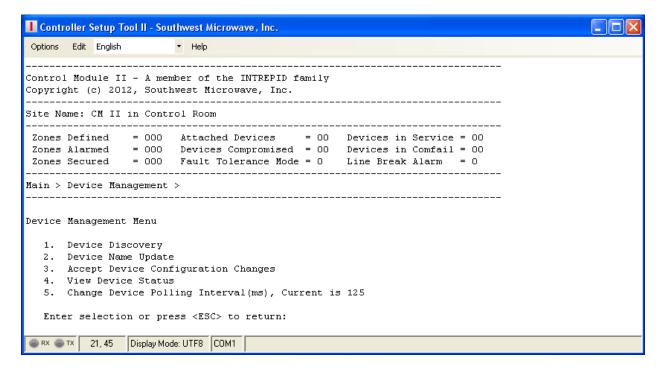


Figure 20 – Device Management Screen

6.3.1 Device Discovery

Selecting command 1 will open the "Device Discovery" screen as shown in Figure 21. The Device Discovery function will poll all addresses in the range from 0 to 239. The default setting has the Fault Tolerance Mode disabled and the address range set from 000 to 007 on port RS422-1 and from 008 to 015 on port RS422-2. The CM II can have a maximum of sixteen (16) devices connected. The discovery parameters can be changed at this time by entering "Y" for Yes and enter. Entering "N" for No will not change the default settings.

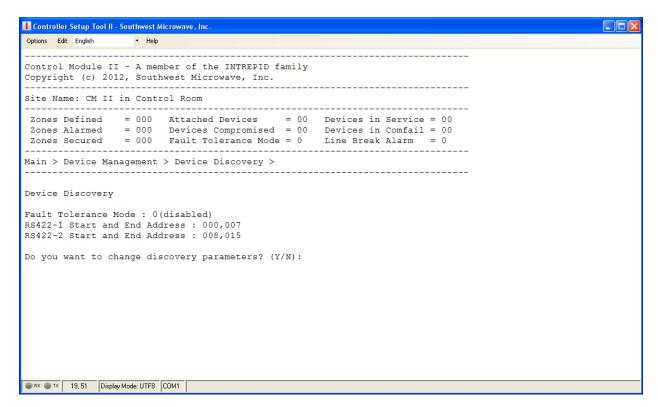


Figure 21 – Device Discovery Screen

Selecting "Yes" will open a prompt to "Disable" (0) or "Enable: (1) the Fault Tolerance Mode. Figure 1 show an open loop configuration where the Fault Tolerance would be disabled. Figure 22 shows a closed loop configuration where the Fault Tolerance Mode would be enabled. Enter the appropriate command for the configured system at this site.

With the Fault Tolerance Mode disabled (0) the next prompt will be to enter the start address of port RS422-1 to be polled. The next prompt will be to enter the end address of port RS422-1 to be polled. Enter the address and select Enter. The same will apply for port RS422-2 if it is being used as shown in Figure 23. Press enter to start the Discovery process. *Note: the more addresses entered the longer the discovery process will take*.

With the Fault Tolerance Mode enabled (1) the next prompt will be to enter the RS422-1 and RS422-2 port start address. Enter the node address and select enter. The next prompt will be to enter the RS422-1 and RS422-2 port end address as shown in Figure 24. Press enter to start the discovery process.

If devices are properly connected to the RS422 communications ports that respond to the address poll, the CM II will determine what type of device it is and will display it in the Discovered Device list. This process will continuously repeat and update the list until "any key" is selected to stop the discovery process as shown in Figure 25.

The discovered devices will list the Node Address, Device Type, Status and Device Name. The Device Name will be entered or updated using command selection 2 (if a sensor, the name may have been entered using the UIST II during sensor setup). The Status column will display whether that device is Supported or Unsupported. If any device displays "Unsupported", then the CM II software does not have the proper driver for that device configuration. Please contact the factory.

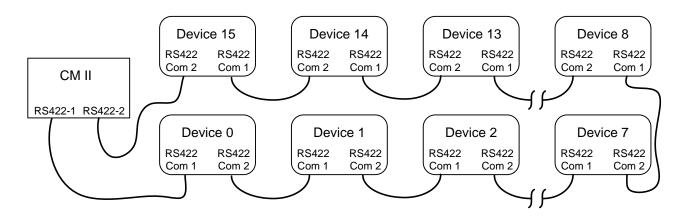


Figure 22 – Fault Tolerance Mode

```
■ Controller Setup Tool II - Southwest Microwave, Inc.
                                                                                                          Options Edit English
Control Module II - A member of the INTREPID family
Copyright (c) 2012, Southwest Microwave, Inc.
Site Name: CM II in Control Room
 Zones Defined
                 = 000
                                              = 00 Devices in Service = 00
                         Attached Devices
                         Devices Compromised = 00
                 = 000
                                                       Devices in Comfail = 00
 Zones Alarmed
                = 000 Fault Tolerance Mode = 0
                                                     Line Break Alarm = 0
 Zones Secured
Main > Device Management > Device Discovery >
Device Discovery
Fault Tolerance Mode : 0 (disabled)
RS422-1 Start and End Address: 000,007
RS422-2 Start and End Address: 008,015
Do you want to change discovery parameters? (Y/N): y
Enter Fault Tolerance Mode (0: disable, 1:enable): 0
Enter RS422-1 Start Address(000 - 239): 0
Enter RS422-1 End Address(000 - 239): 7
Enter RS422-2 Start Address(000 - 239):
Enter RS422-2 End Address(008 - 239): 16
RX TX 24, 40 Display Mode: UTF8 COM1
```

Figure 23 – Device Discovery Open Loop

Press any key to stop the device discovery. A prompt to: "Accept this setup? (Y/N)" will be displayed at the bottom of the screen. Selecting "N" for "No" will discard the list and the CM II will revert back to the Currently Defined Devices list (if one exists). Selecting "Y" for "Yes" will accept the discovery. All relays on the system should reset and all LED's should turn off.

The banner will now display how many Attached Devices have been found.

Figure 24 – Device Discovery Fault Tolerance Loop

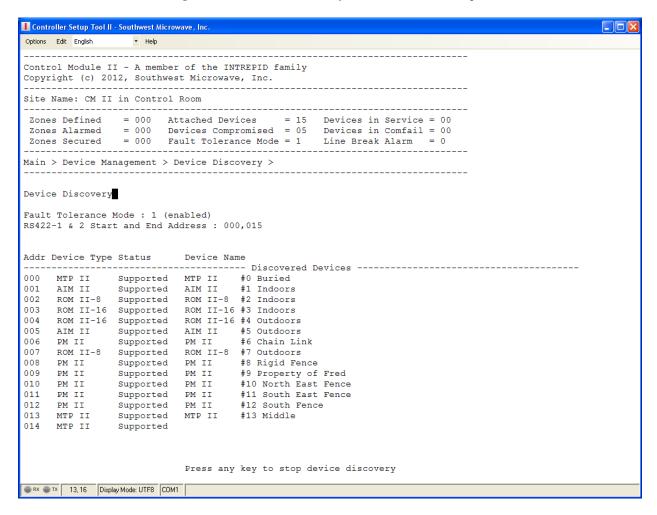


Figure 25 – Device Discovery List

6.3.2 Device Name Update

Selecting command 2 will open the "Device Name Update" screen as shown in Figure 26. After the Device Discovery has been accepted, the devices found can be given a name for reference. In a new installation the name fields should be blank. In Figure 26 all devices except one has been give names. If a name has been assigned using the UIST II, that name will be displayed.

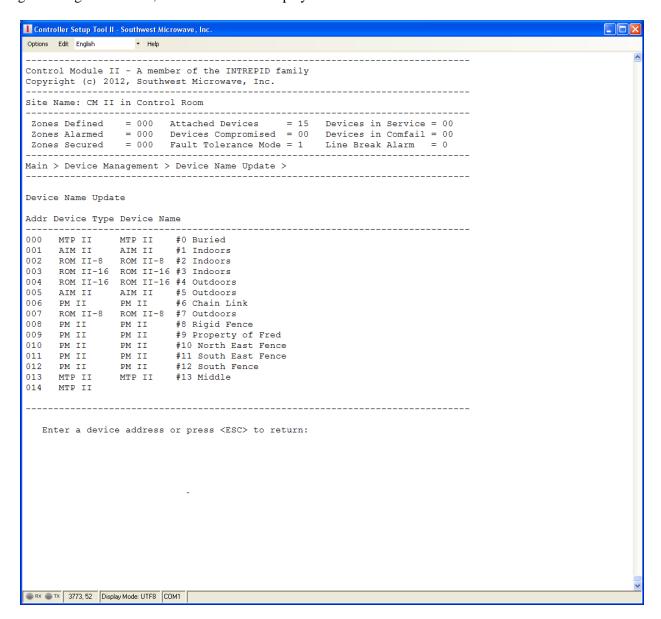


Figure 26 – Device Name Update Screen

Enter the Node Address of the device to be given a name and press the enter key to display the current name (if one) and the new name entry field as shown in Figure 27. Type in the new name (maximum of 64 characters) and press the enter key. Perform this step for all found devices.

To erase a name enter the node address and press enter.

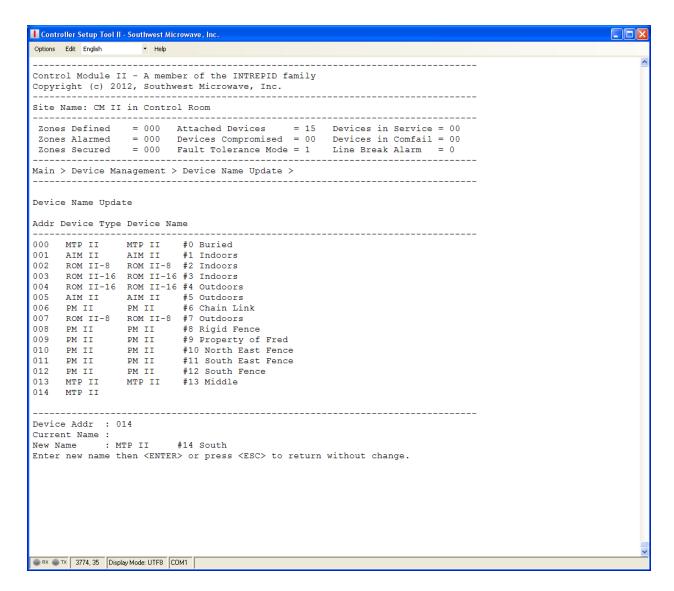


Figure 27 – Device Name Entered Screen

6.3.3 Accept Device Configuration Changes

Selecting command 3 will open the "Accept Device Configurations" screen as shown in Figure 28. If any of the control parameters on a device have been changed that affect alarm detection or alarm reporting, a "Device Configuration Change Alarm" will be generated for that device. This is shown in the banner as "Devices Compromised".

This alarm is latched in the CM II. The "Status" indication will either display "OK" or "COMPROMISED". In order to clear this alarm, the Accept Device Configuration Changes screen must be opened.

As shown in Figure 28, the AIM II Indoors is displaying a Compromised Alarm. By entering the node address (in this example: 01) the Compromised Alarm for that device will be cleared and unlatched in the CM II. Alternately, entering the digits of the node address and pressing enter will perform the same function.

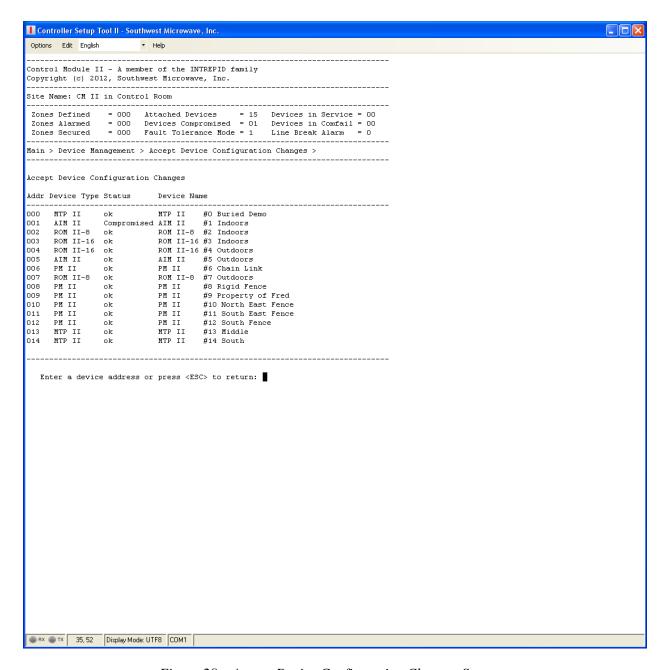


Figure 28 – Accept Device Configuration Changes Screen

6.3.4 View Device Status

Selecting command 4 will open the "View Device Status" screen as shown in Figure 29. This screen provides a real time display of the status of each device.

This screen can be used for testing of the input/output configuration, but also requires manual verification that the proper alarm relays are being activated. Figure 29 shows all devices with no alarm condition.

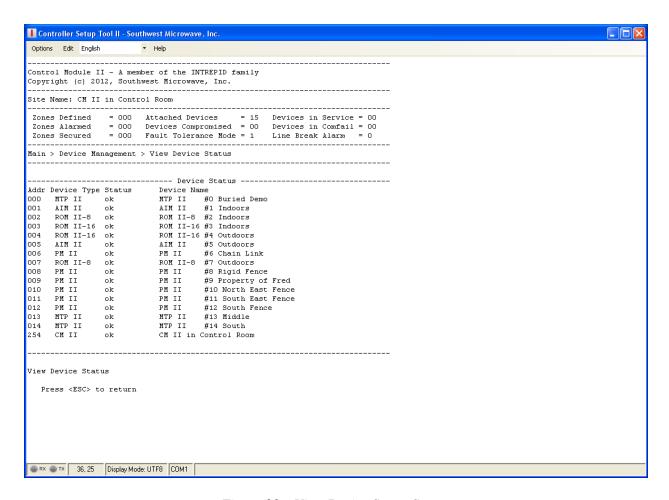


Figure 29 – View Device Status Screen

The Device Status can be listed as Com Fail, Compromised, Line Break, Alarm, Service, or OK. These are defined as:

- ➤ Com Fail a device is not communicating to the controller.
- ➤ Compromised the configuration of the device has been changed since it was last accepted. Alarm detection or reporting by the device may have been altered.
- ➤ Line Break the Fault Tolerance wiring has been disrupted.
- Alarm the device is currently detecting an alarm condition. This could be a normal detection alarm, device fault, or tamper.
- ➤ Service the Universal Installation/Service Tool II (UIST II) is currently connected to the device. The UIST II allows the installer to make changes to the configuration of the device, which could affect alarm detection or reporting. There is approximately a 30 second delay from the time the UIST II is disconnected until the Service status is cleared.
- ➤ OK no type of alarm conditions is currently active.

If multiple Device Status conditions occur at the same time, the display will show the highest priority condition, based on the above order.

6.3.5 Change Device Polling Interval (ms), Current is 125

Selecting command 5 will open the "Change Device Polling Interval" screen as shown in Figure 30. This screen will allow for changing the polling time from the CM II to the devices in milliseconds (ms) when using the CM II over a dedicated Intranet connection as shown in Figure 31.

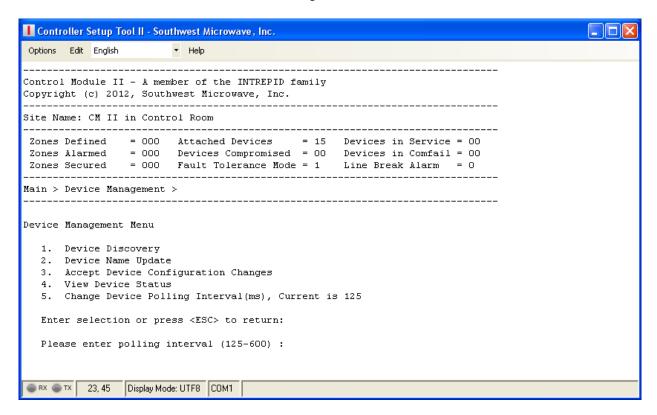


Figure 30 - Change Device Polling Interval Screen

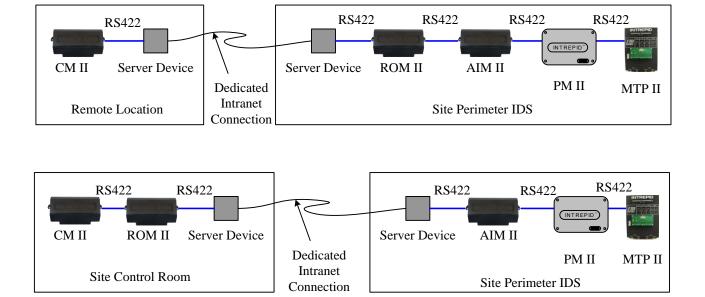


Figure 31 – Intranet Connection

There are two (2) intranet options supported as shown in Figure 31. One is using the CM II at a remote location to poll the sensors and devices over the dedicated intranet connection while the other option is using the CM II and ROM II (s) in a control room with the network connection to the perimeter.

This polling interval time is adjustable from 125 to 600ms. Enter the time required to compensate for latency in the dedicated intranet for proper polling as shown in Figure 32 and select Enter. The screen will display the current setting. The default value is 125ms.

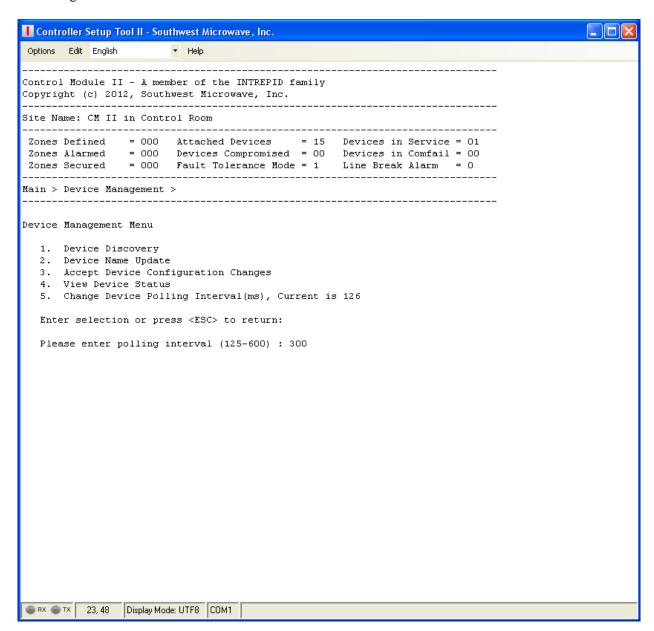


Figure 32 – Changed Device Polling Interval Screen

Note: the polling time is required to be between 125 and 600ms. If this polling time can not be maintained a communications failure will be reported. Each device is polled 3 times before a ComFail is declared. If this polling time can not be maintained, please correct your intranet connection or revert back to the standard hardwire configuration.

6.4 Zone Administration Menu

Selecting "3" from the Main Menu will open the "Zone Administration" menu as shown in Figure 33. There will be six (6) command selections available:

- 1. Add Zones
- 2. Modify Zones
- 3. Delete Zones
- 4. View Zones
- 5. List All Zones
- 6. View Zone Status

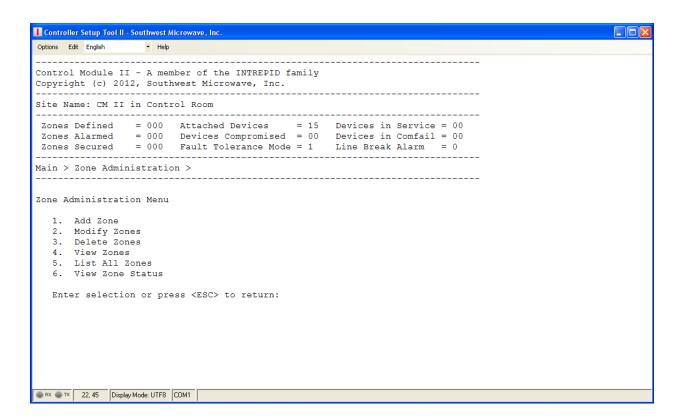


Figure 33 – Zone Administration Screen

6.4.1 Add Zones

Selecting command 1 will open the "Add Zones" screen as shown in Figure 34. This will open as a blank Zone Record screen that will be used to create a Zone Record. A maximum of 256 Zone Records can be created. A Zone Record can have up to four (4) inputs and four (4) outputs assigned to it. There are four (4) commands to make the Zone Record; Assign Name, Assign Comment, Assign Input and Assign Relay Output. A copy of this blank record will be in Attachment A for handwriting the assignments for a specific site.

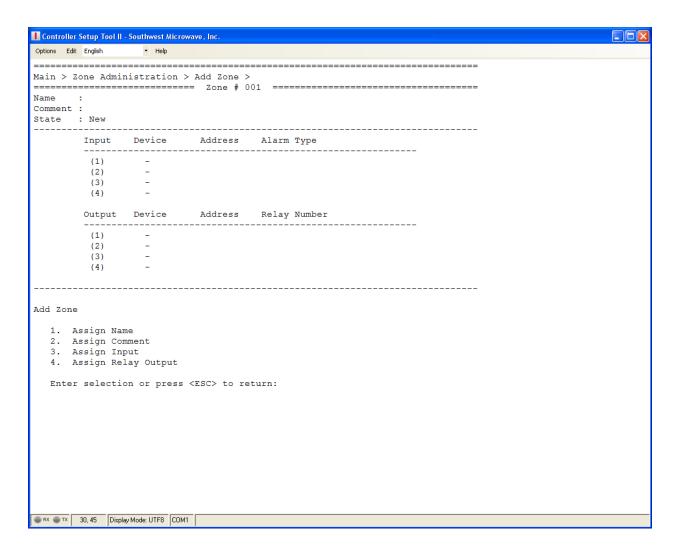


Figure 34 – Add Zones Screen

The banner will list the area of the programming that is open. In this case it states Main > Zone Administration > Add Zone > then lists the Zone Record number. In this case it is Zone Record # 001.

The next area will list the Name, Comment and State. This will be blank until this information has been entered. The State will be listed as NEW as this is a new record. Once it has been named it will state that it is UNASSIGNED. The next area will be used for entering the input and output assignment information.

6.4.1.1 Assign Name

Selecting command 1 opens the "Assign Name" field that allows for naming of the Zone Record as shown in Figure 35. The name can be up to 64 characters long. This name is used for reference only. The name will be shown in the "List All Zones" function. Press enter to complete.

6.4.1.2 Assign Comment

Selecting command 2 opens the "Assign Comment" field that allows a comment to be attached to the Zone Record. The name can be up to 80 characters long. This name is used for reference only. Referencing Figure 32 the banner will read Assign Comment. Press enter to complete.

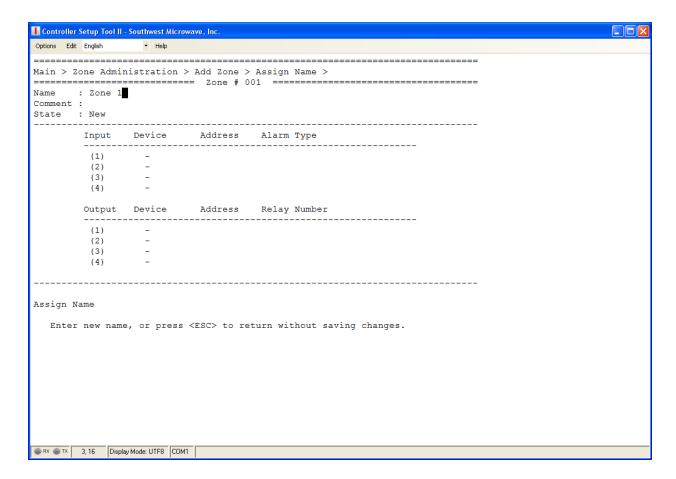


Figure 35 – Add Zone Name and Comment Screen

6.4.1.3 Assign Input

Selecting command 3 opens the "Assign Input" field that allows entering of inputs to the Zone Record. The Zone Record can have a maximum of four (4) inputs assigned as shown in Figure 36. The available inputs are determined by the devices that were found during the Device Discovery process. Inputs that would be available for assignment are:

- Alarm Input Module II
 - Enclosure Tamper activation of the tamper switch
 - ➤ Comfail loss of communications with the CM II
 - ➤ Device Configuration Change any changes to the setup, such as NO vs. NC, Supervised vs. Non-Supervised
 - ➤ Alarm Input activation of one of the 8 inputs
 - ➤ Supervised Alarm open or short of a Supervised Input
- Relay Output Module II
 - Enclosure Tamper activation of the tamper switch
 - ➤ Comfail loss of communications with the CM II
 - ➤ Device Configuration Change any changes to the setup, such as a change to the comfail timeout jumper

MicroTrackTM II

- Enclosure Tamper activation of the tamper switch
- ➤ Comfail loss of communications with the CM II
- ➤ Device Configuration Change any changes to the setup, such as control parameters, calibration, threshold, etc
- ➤ Cable Alarm detection of an alarm by the sensor cable A or B
- Cable Fault detection of a cable fault condition on the sensor cable A or B
- ➤ UIST II Service Alarm activated when the Universal Installation Service Tool II is connected to the sensor

MicroPointTM II

- Enclosure Tamper activation of the tamper switch
- ➤ Comfail loss of communications with the CM II
- ➤ Device Configuration Change any changes to the setup, such as control parameters, calibration, threshold, etc.
- Cable Alarm detection of an alarm by the sensor cable A or B
- Cable Fault detection of a cable fault condition on the sensor cable A or B
- ➤ UIST II Service Alarm activated when the Universal Installation Service Tool II is connected to the sensor
- External Input Alarm detection of an alarm from an auxiliary device (MW, IR, gate contact, etc.)

Microwave Model 330

- Enclosure Tamper activation of the tamper switch, transmitter, receiver or transceiver
- ➤ Comfail loss of communications with the CM II
- > Device Configuration Change any changes to the setup, such as control parameters, threshold, etc.
- ➤ Microwave Sensor Alarm detection of an alarm by the sensor
- ➤ Path Fault alarm from a change in the received signal strength (alignment)
- ➤ UIST II Service Alarm activated when the Universal Installation Service Tool II is connected to the sensor
- Auxiliary Input detection of an alarm from an auxiliary device (MW, IR, gate contact, etc.)

• Control Module II

- Enclosure Tamper activation of the tamper switch
- ➤ Line Break fault tolerance wiring has been disrupted
- ➤ Low Voltage will alarm when input voltage is at 11.0 VDC

To enter an input, a prompt will be displayed to enter the Input Line Number (1-4) as shown in Figure 33. These can be selected in any order and gaps can be left in the table if desired. Select the desired number and press ENTER.

Once the input line number has been selected, a prompt will be displayed to "Select a Device Address" from the Available Devices list as shown in Figure 37. Only Discovered Devices that have assignable inputs will appear in the list. Input the three (3) number node address and press enter.

Depending on the device type selected, a prompt will be displayed to select one of that devices alarm inputs and any additional information that is needed as shown in Figure 38. For cable alarms from MicroPointTM II or MicroTrackTM II, prompts will be displayed for which cable (A or B) and the cell range. For cable fault alarms prompts will be displayed for which cable (A or B). Press enter after each assignment.

Note: in the banner of each screen is a description of what programming step is being performed.

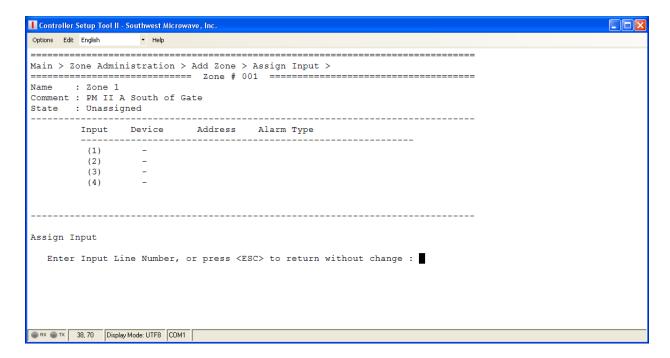


Figure 36 – Assign Input Line Number Screen

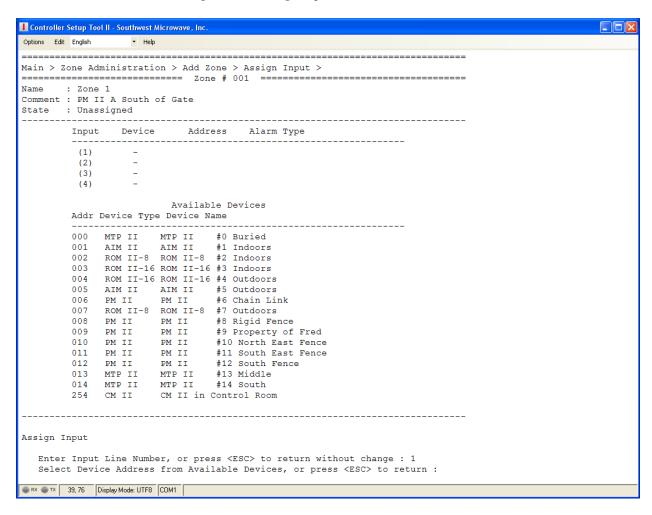


Figure 37 – Available Input Devices Screen

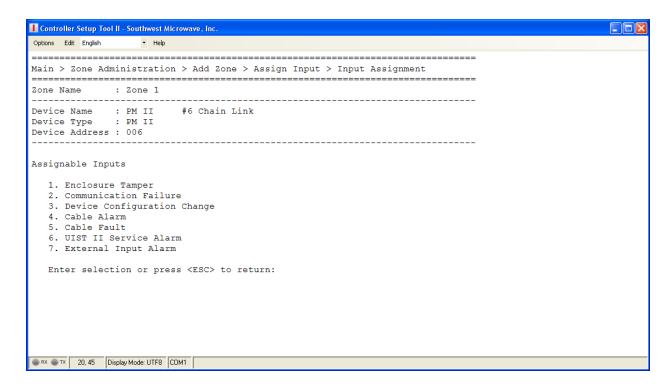


Figure 38 – Available Inputs Screen

An assigned input using a cable alarm is shown in Figure 39.

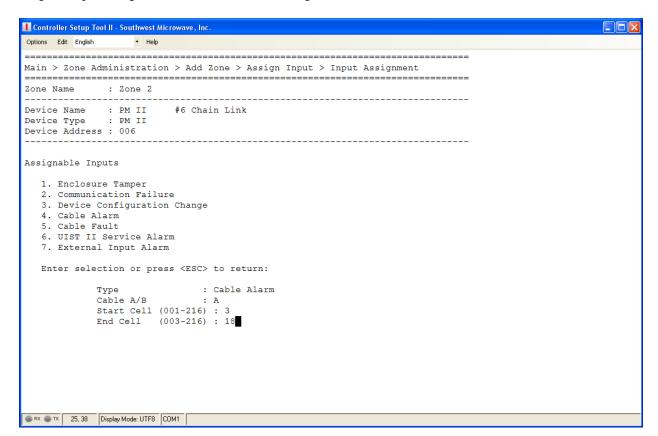


Figure 39 – Assigned Input Screen

6.4.1.4 Assign Relay Output

Selecting command 4 opens the "Assign Relay Output" field that allows entering of outputs to the Zone Record. The Zone Record can have a maximum of four (4) outputs assigned as shown in Figure 35. The available outputs are determined by the devices that were found during the Device Discovery process. Outputs that would be available for assignment are:

- Control Module II
 - CM II has 8 relays that can be assigned
- Relay Output Module II 8/16
 - ROM II-8 has 8 relays that can be assigned
 - ➤ ROM II-16 has 16 relays that can be assigned

To enter an output, a prompt will be displayed to enter the Output Line Number (1-4) as shown in Figure 40. These can be selected in any order and gaps can be left in the table if desired. Select the desired number and press ENTER.

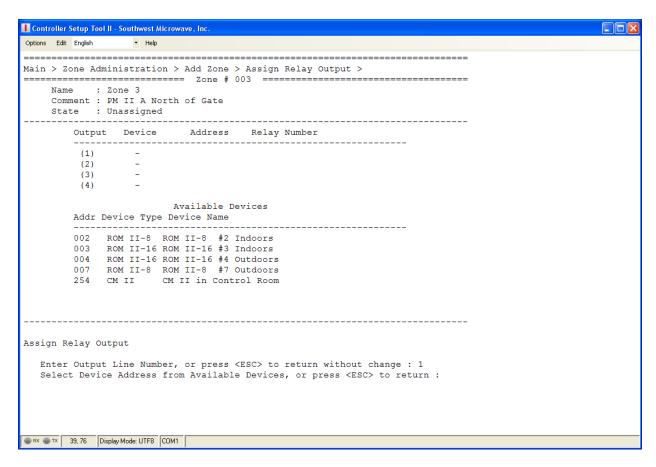


Figure 40 – Available Output Devices Screen

Once the output line number(s) has been selected, a prompt will be displayed to "Select a Device Address" from the Available Devices list as shown in Figure 40. Only Discovered Devices that have assignable outputs will appear in the list. Input the three (3) number node address and press enter.

Depending on the device type selected, a prompt will be displayed to select one of that devices alarm outputs. Press enter after each assignment.

A completed Zone Record will now be displayed as shown in Figure 41. Perform these steps for all Zone Records that need to be created. Again, in Attachment A is a blank record for writing in all the programming to be accomplished. This should be saved for future use or reference. Also, once all Zone Records have been created they can be saved in electronic format using the Reports > Download Configuration Report.

Note: a maximum of 120 inputs can be assigned to one (1) relay output. If exceeded, a notice will be displayed.

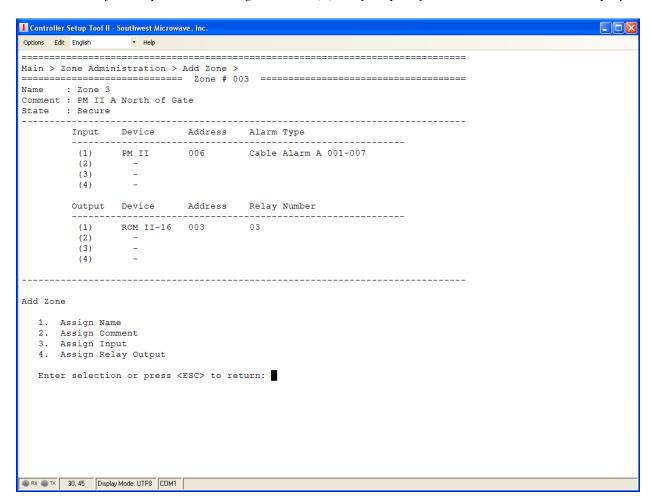


Figure 41 – Completed Zone Record Screen

6.4.2 Modify Zones

Selecting command 2 from the Zone Administration Menu will open the "Modify Zones" screen as shown in Figure 42. There will be nine (9) command selections available: Next Zone, Previous Zone, Select Zone, Edit Name, Edit Comment, Edit Input, Delete Input, Edit Relay Output and Delete Relay Output. Once a Zone Record has been completed, any existing Zone Record can be modified from this menu.

6.4.2.1 Next Zone

Selecting command 1 "Next Zone" will allow selecting of the next higher number of defined Zone Record. The screen will open with Zone Record 1. Pressing "1" will tab through all Zone Records that have been defined.

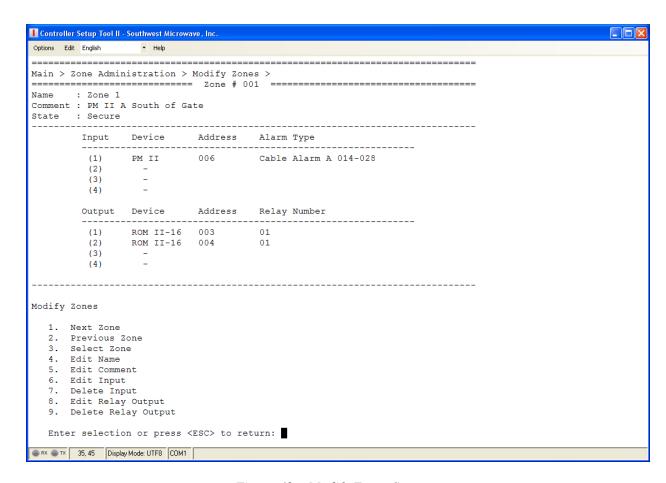


Figure 42 – Modify Zones Screen

6.4.2.2 Previous Zone

Selecting command 2 "Previous Zone" will allow selecting of the previous defined Zone Record. The screen will open with Zone Record 1. Pressing "2" will tab through all Zone Records that have been defined.

6.4.2.3 Select Zone

Selecting command 3 "Select Zone" will allow for entering the Zone Record number (001 to 256) to be modified. Enter the record number and select enter to jump the requested zone record.

6.4.2.4 Edit Name

Selecting command 4 "Edit Name" allows for changing the name of the Zone Record.

6.4.2.5 Edit Comment

Selecting command 5 "Edit Comment" allows for changing the comment of the Zone Record.

6.4.2.6 Edit Input

Selecting command 6 "Edit Input" allows for edits of any of the four (4) inputs of a Zone Record.

6.4.2.7 Delete Input

Selecting command 7 "Delete Input" allows for deleting any of the four (4) inputs of a Zone Record.

6.4.2.8 Edit Relay Output

Selecting command 8 "Edit Relay Output" allows for edits of any of the four (4) outputs of a Zone Record.

6.4.2.9 Delete Relay Output

Selecting command 9 "Delete Relay Output" allows for deleting any of the four (4) outputs of a Zone Record.

6.4.3 Delete Zones

Selecting command 3 from the Zone Administration Menu will open the "Delete Zones" screen as shown in Figure 43. There will be four (4) command selections available: Next Zone, Previous Zone, Select Zone and Delete Zone. Once a Zone Record has been completed, any existing Zone Record can be deleted using this menu. Next (1) and Previous (2) tab through all defined Zone Records. Select Zone (3) allows entering the Zone Record to be deleted. Delete Zone (4) will delete the record. A prompt for Yes or No will be displayed. Select action and press enter.

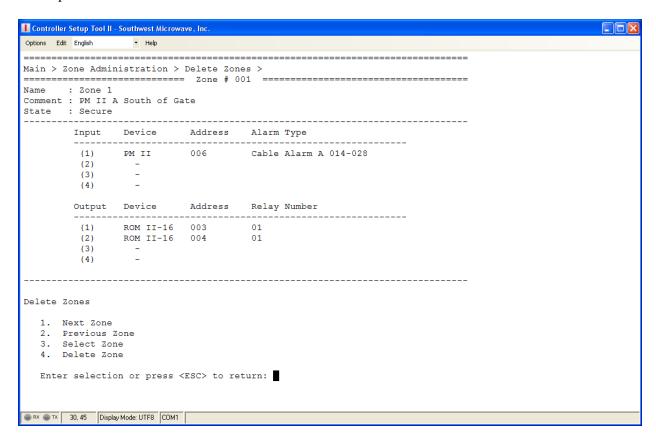


Figure 43 – Delete Zones Screen

6.4.4 View Zones

Selecting command 4 from the Zone Administration Menu will open the "View Zones" screen as shown in Figure 44. There will be three (3) command selections available: Next Zone, Previous Zone and Select Zone. Once a Zone Record has been completed, any existing Zone Record can be viewed using this menu. Next (1) and Previous (2) tab through all defined Zone Records. Select Zone (3) allows selecting of the zone to be viewed. No changes or edits can be made from this screen.

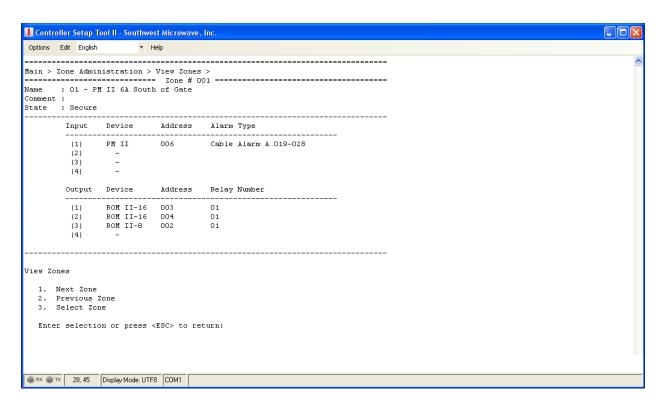


Figure 44 – View Zones Screen

6.4.5 List All Zones

Selecting command 5 from the Zone Administration Menu will open the "List All Zones" screen as shown in Figure 45. This will display all Zone Records that have been created.



Figure 45 – List All Zones Screen

6.4.6 View Zone Status

Selecting command 6 from the Zone Administration Menu will open the "View Zone Status" screen as shown in Figure 46. Each zone record will display "OK" to show that the zone is not in an alarm condition. If a zone record has any of its defined alarm conditions active, the zone record will display "Alarm" as shown in Figure 47. Note: an exclamation point (!) in place of the OK means no inputs or outputs have been assigned to that zone record.

```
■ Controller Setup Tool II - Southwest Microwave, Inc.
                                                                                                        Options Edit English ▼ Help
Main > Zone Administration > View Zone Status >
    ----- Zone Status -----
 003 ok
 004 ok
 005 ok
 006 ok
 007 ok
 008 ok
 009 ok
 010 ok
 011 ok
View Zone Status
   Press <ESC> to return
RX TX 39, 25 Display Mode: UTF8 COM1
```

Figure 46 – View Zone Status Screen

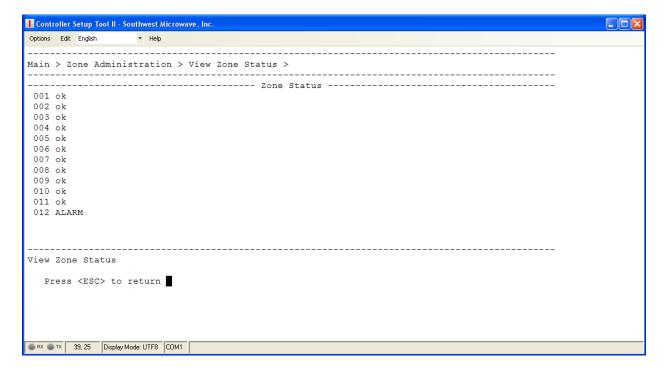


Figure 47 – View Zone in Alarm Status

6.5 Reports

Selecting command "4" from the Main Menu will open the "Reports" screen as shown in Figure 48. There will be five (5) command selections available: View Configuration Report, Download Configuration Report, View Event Log Report, Download Event Log Report and Erase Event Log.

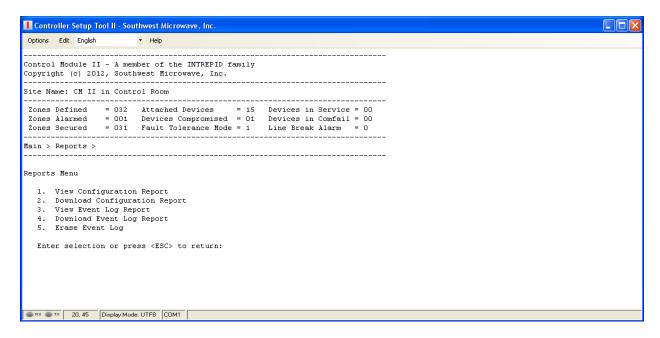


Figure 48 – Reports Screen

6.5.1 View Configuration Report

Selecting command 1 will open the "View Configuration Report" screen as shown in Figure 49. This report lists the same header as displayed in the other menus plus the CM II's software version and MAC address (serial number). To avoid displaying other information that the CST II has saved, disconnect the CM II from the CST II and then re-connect. Next select "1" to only display the configuration data. *Figure 49 only shows a partial example*.

```
001 AIM II Supported AIM II #1 Indoors
002 ROM II-8 Supported ROM II-8 #2 Indoors
003 ROM II-16 Supported ROM II-16 #3 Indoors
004 ROM II-16 Supported ROM II-16 #4 Outdoors
005 AIM II Supported AIM II #5 Outdoors
       Supported PM II #6 Chain Link
006 PM II
007 ROM II-8 Supported ROM II-8 #7 Outdoors
       Supported PM II #8 Rigid Fence
Supported PM II #9 Property of Fred
008 PM II
009 PM II
       Supported PM II #10 North East Fence
010 PM II
011 PM II
        Supported PM II #11 South East Fence
012 PM II
       Supported PM II #12 South Fence
013 MTP II Supported MTP II #13 Middle
014 MTP II Supported MTP II #14 South
Name: Zone 1
Comment: PM II A South of Gate
______
  Input Device Address Alarm Type
  -----
   1 PM II 006
                Cable Alarm A 014-028
  Output Device Address Relay Number
   _____
   1 ROM II-16 003
                 01
     ROM II-16 004
                 01
Name: Zone 2
Comment: PM II A Front Gate
_____
   Input Device Address Alarm Type
   _____
   1 PM II 006
                Cable Alarm A 003-018
   Output Device Address Relay Number
     ROM II-16 003
   2 ROM II-16 004
                 01
Name: Zone 3
Comment: PM II A North of Gate
______
   Input Device Address Alarm Type
   1 PM II 006 Cable Alarm A 001-007
   Output Device Address Relay Number
   _____
      ROM II-16 003
                 03
      ROM II-16 004
                 01
```

======================================
Name : Zone 4 Comment : PM II B South End
Input Device Address Alarm Type
1 PM II 006 Cable Alarm B 001-049
Output Device Address Relay Number
1 ROM II-16 003 04
2 ROM II-16 004 01
======================================
Name : Zone 5 Comment : PM II B Asphalt
Input Device Address Alarm Type
1 PM II 006 Cable Alarm B 050-060

Configuration report is completed. Press any key to continue.

Figure 49 – View Configuration Report Screen

6.5.2 Download Configuration Report

Selecting command 2will open the WindowsTM directory to save the Configuration Report as a *.txt format. Select a location for the file, provide a file name and save. The bottom of the screen will display "Downloading File". Once downloaded, the screen will display "File Transfer Complete". Press any key to continue.

6.5.3 View Event Log Report

Selecting command 3 will open the "View Event Log Report" as shown in Figure 50. The event log report will list all system alarm and notice activity that has taken place since setup began on the CM II.

4, ALARM, 2012-04-05, 06:41:17, 011, Zone 11		
5, ALARM, 2012-04-05, 06:41:17, 011, Zone 11		
6, ALARM, 2012-04-05, 06:41:16, 011, Zone 11		
7, ALARM, 2012-04-05, 06:41:16, 011, Zone 11		
8, ALARM, 2012-04-05, 06:41:15, 011, Zone 11		
9, ALARM, 2012-04-05, 06:41:13, 011, Zone 11		
10, NOTICE, 2012-04-04, 10:52:01, Discovery Accepted		
11, NOTICE, 2012-04-04, 07:46:15, CM II Date/Time Changed		
12, NOTICE, 2012-04-04, 07:43:26, CM II Started		
13, NOTICE, 2012-04-04, 07:43:23, Restore Defaults		
	 	======

Event log report is completed. Press any key to continue.

Figure 50 – Event Log Report

6.5.4 Download Event Log Report

Selecting command 4 will open the WindowsTM directory to save the Event Log Report as a *.txt format. Select a location for the file, provide a file name and save. The bottom of the screen will display "Downloading File". Once downloaded, the screen will display "File Transfer Complete". Press any key to continue.

6.5.5 Erase Event Log Report

Selecting command 5 "Erase Event Log Report" will display Erase Event Log? (Y/N): Select "Y" for Yes and enter to erase the log. Selecting "N" for No will cancel the operation.

6.6 About

Selecting command 5 from the Mani Menu will open the "About" screen as shown in Figure 51. The about screen will have the same header as other screen and list the Software Version, Build Time and Build Date.

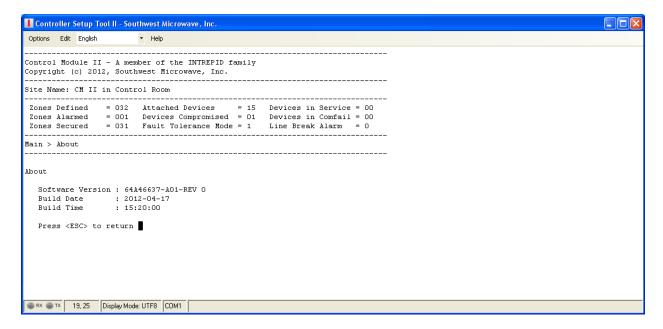


Figure 51 – About Screen

6.7 Languages

Selecting command 6 from the Main Menu will open the "Languages" screen as shown in Figure 52. The available languages to select from are: English, Spanish, Russian, Chinese and Korean. Select the command for the language to be used.

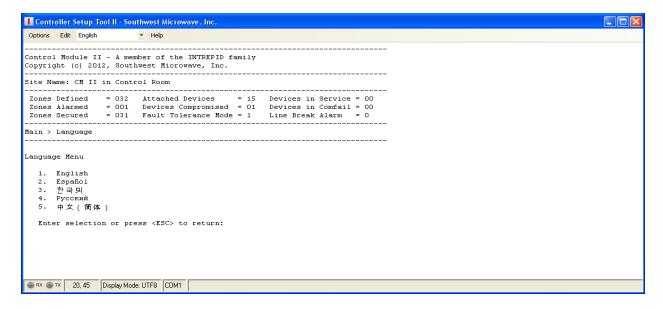


Figure 52 – Languages Screen

ATTACHMENT A

INPUT/OUTPUT ASSIGNMENT RECORD

Zone: Name: Comment:			== Zone Record # ===		==
Input		Device	Address	Alarm Type	
(1) (2) (3) (4)	- - -				
Outpu	t	Device	Address	Relay Number	
(1) (2) (3) (4)	- - -				