



## INSTALLATION GUIDE FOR THE E-ACDCLM AC & DC Voltage and Current Monitor

### INTRODUCTION

The NTI E-ACDCLM AC & DC Voltage and Current Monitor monitors AC and DC voltage sources and current levels when connected to an E-16D, E-5D or E-2D Server Environment Monitoring System(SYSTEM). The voltage sources can be anything with a range between -60 to +60VDC or 0-240VAC. Current measurements can be taken on AC and DC loads and with the use of hall effect sensors (sold separately) loads can be as much as 500A. When connected to a SYSTEM via 18-24AWG CAT5/5e/6 cable (up to 1,000 feet away), the voltage and/or current source(s) can be monitored and the SYSTEM can be configured to alert users as to variations in the voltage and current levels.

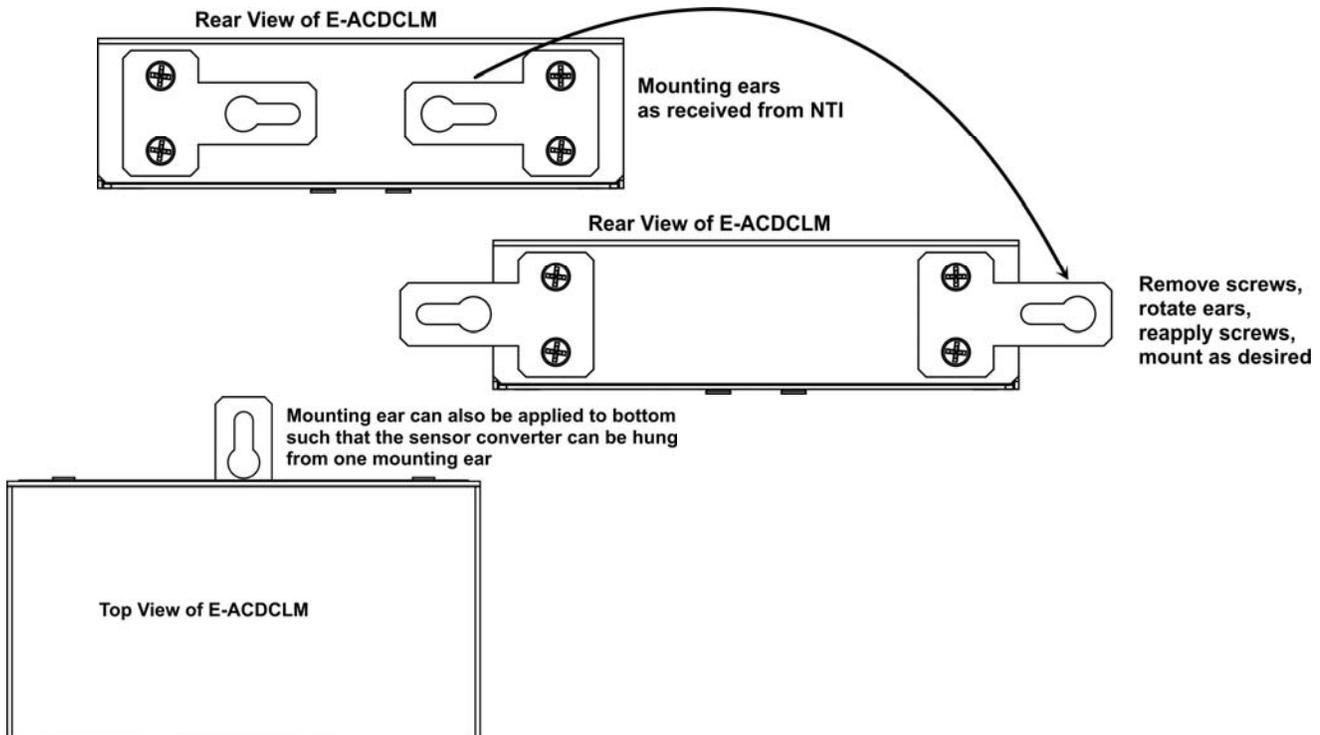
### Features:

- Detects and monitors up to two voltages, one AC (up to 240VAC) and the other DC (-60 to +60VDC)
- Current measurements (AC and DC) up to 500A using hall-effect transducers (sold separately)
- 2 and 4-position screw-terminal connections
- Supports 18-24AWG CAT5/5e/6 cable up to 1,000 ft. (305M) (not included)
- Includes Mounting Ears
- CE certified and RoHS compliant
- Powered by E-2D/5D/16D
- Dimensions WxDxH (in): 6.2x2.3x1.6
- Accuracy and range are transducer-dependent (sold separately).
- Compatible with E-FSC Fiber Converter/Extender
  - Use to extend sensor up to 1.2 miles (2km) from the ENVIROMUX unit.

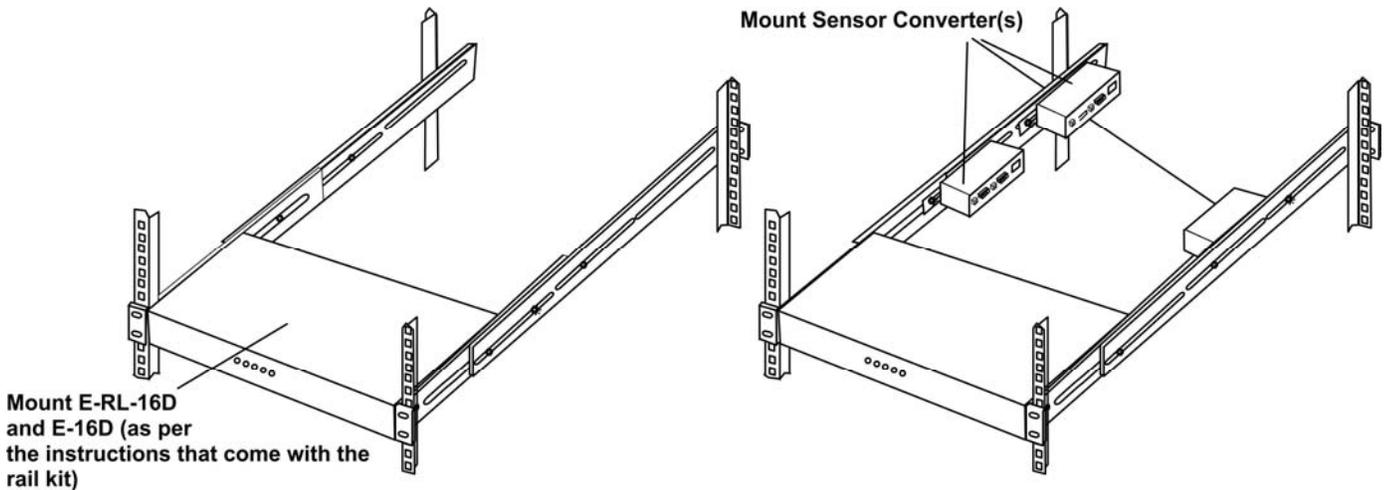
**Note: The E-xD must be running firmware version 2.31 or later in order to use the E-ACDCLM with it. Refer to the E-xD manual for firmware upgrade instructions as needed.**

### INSTALLATION

Mount the E-ACVDCLM using the mounting ears provided. To use the ears, remove the screws securing the ears to the rear of the E-ACDCLM, turn the ears around, and reapply the screws. Alternatively, secure one ear to holes on the bottom of the unit so that it can be hung as shown in the image below.



To mount multiple E-ACDCLM in close proximity to the E-16D, install an extension rail kit (NTI E-RL-16D - sold separately) and mount E-ACDCLM as seen in the illustration below.



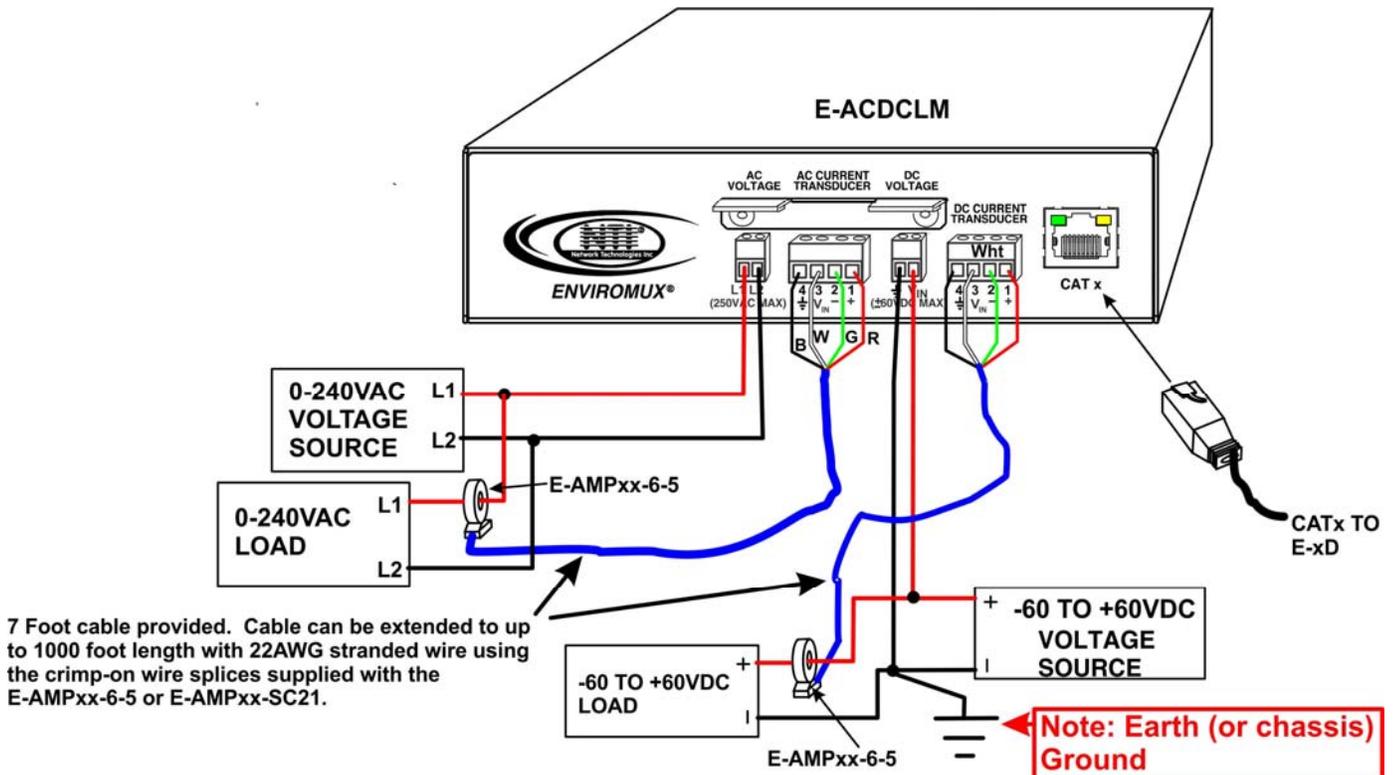
## CONNECTION

**Note: To prevent damage to the voltage source or the Sensor Adapter proper polarity must be observed when making connections.**

1. At the "AC VOLTAGE" terminal block, connect an AC voltage source to be monitored between 0 and 240VAC.  
**Note: The AC connection does not require any specific polarity.**
2. At the "DC VOLTAGE" terminal block, connect a **grounded** -60 to +60VDC voltage source to be monitored to the "Vin" and "GND" (earth ground) connections using the removable terminal block.
3. If current sensing is desired, install a hall effect sensor to the AC or DC circuit to be monitored. Then connect the supplied 4-wire cable to the sensor. Connect the 4 wires at the end of the cable to the AC or DC CURRENT TRANSDUCER (depending upon the type of circuit being sensed) terminals on the E-ACDCLM.

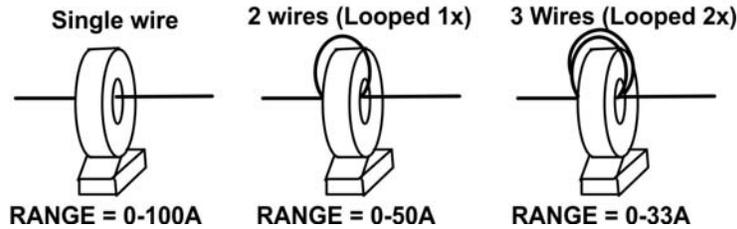
**Note: If a hall-effect sensor is installed on a DC circuit and then the sensing cable is connected to the "AC CURRENT TRANSDUCER" side of the E-ACDCLM, no reading will be displayed for that sensor.**

**Note: The wire connection terminal block is easily removed from the Sensor Adapter for convenient wire termination.**

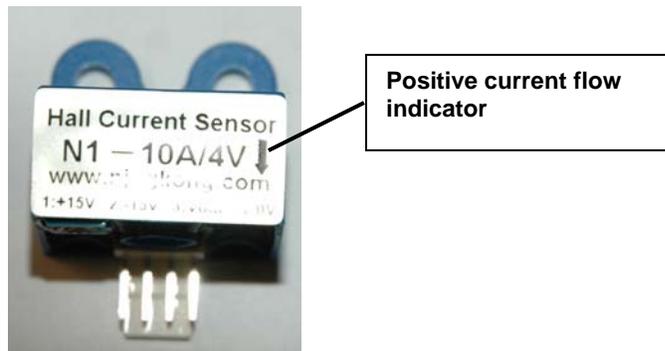


**TIP:** A single hall effect sensor can be used to measure current at different ranges. By passing a wire through the sensor loop repeatedly (looping the wire around), the range of the sensor will be divided by the number of times the wire passes through. For a 100A AC sensor, for example, two passes will reduce it by 100/2 (range of 0-50A), three passes will reduce it by 100/3 (range of 0-33A), and so on. See example below. If you need to increase the sensitivity of your sensor, this is a way to do so.

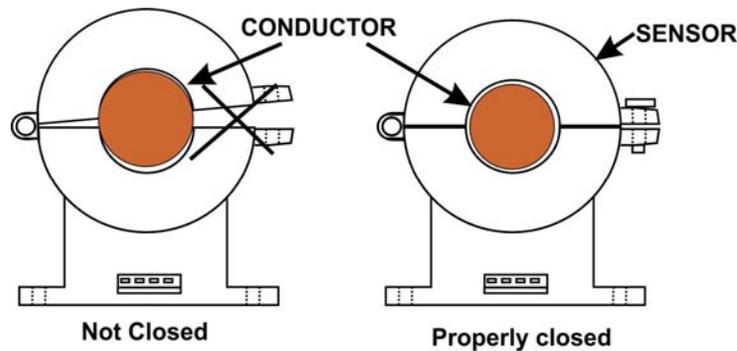
**100A Hall Effect Sensor**



**Installation Note:** Hall Effect sensors can be rated AC Current-only, DC Current-only, or AC/DC current compatible. Sensors rated for DC current will include a directional current flow arrow either on the label or on the body of the sensor, indicating that current flowing in that direction will be reported by the sensor as positive current flow. When installing a hall effect sensor to a DC circuit, you will want to install it oriented such that the arrow points in the direction you want represented as positive current flow on the status page for that sensor.



**Installation Note:** When placing a split core hall effect sensor (i.e. E-AMP100-SC12) around a conductor, make sure the sensor core is large enough to be placed completely around the conductor and is closed in order to sense current properly.



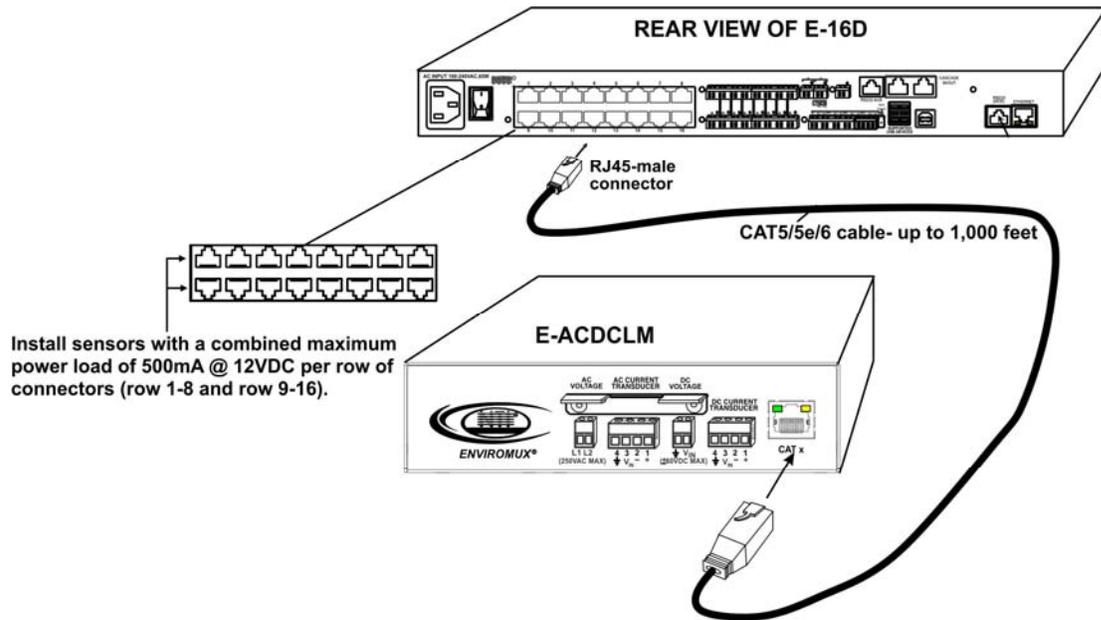
**Hall Effect Sensors Available**

MODEL	RATING	LOOP DIAMETER
E-AMP10-6-5	10A	0.26" (6.5mm)
E-AMP20-6-5	20A	0.26" (6.5mm)
E-AMP50-6-5	50A	0.26" (6.5mm)
E-AMP50-SC12	50A	0.47" (12MM)
E-AMP100-SC12	100A	0.47" (12MM)
E-AMP200-SC12	200A	0.47" (12MM)
E-AMP300-SC12	300A	0.47" (12MM)
E-AMP400-SC12	400A	0.47" (12MM)
E-AMP30-SC21	30A	0.83" (21MM)
E-AMP50-SC21	50A	0.83" (21MM)
E-AMP100-SC21	100A	0.83" (21MM)
E-AMP200-SC21	200A	0.83" (21MM)
E-AMP500-SC21	500A	0.83" (21MM)

For pricing, go to <http://www.networktechinc.com/hall-effect-sensors.html>. For more sensor size options, contact NTI at 330-562-7070.

3. Connect a 18-24AWG CAT5/5e/6 patch cable (up to 1,000 feet long) between the “Cat x” port on the E-ACDCLM and an “RJ45 Sensor” port on the SYSTEM. (The use of smaller gauge CATx cabling will result in shorter distances that can be spanned.)

**Note: Each row of RJ45 Sensor connectors (1-8 and 9-16) is rated for a combined load of 500mA at 12VDC. Each E-ACDCLM uses 66mA. When applying sensors, be sure that the total load on each row does not exceed 500mA at 12VDC or failure of the SYSTEM or may result.**



4. Configure the SYSTEM to react to changes in the voltage and/or current from the source(s), as desired. See examples on the following pages.

# CONFIGURATION

## Sensors

Conn.	Description	Type	Value	Status	Action
5	<a href="#">Sensor #5.1</a>	AC Voltage	0.2V	Alarm	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
5	<a href="#">Sensor #5.2</a>	AC Current	0.2amp	Alarm	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
5	<a href="#">Sensor #5.3</a>	DC Voltage	0.0V	Normal	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>
5	<a href="#">Sensor #5.4</a>	DC Current	0.0A	Alarm	<a href="#">View</a> <a href="#">Edit</a> <a href="#">Delete</a>

When an E-ACDCLM is connected to the ENVIROMUX, the summary page (above) will update with 4 different sensor types, AC Voltage, AC Current, DC Voltage and DC Current. The sensor is plugged into RJ45 Sensor port #5 in this example. Click on the Sensor in the Description column (or "View" under Action) and display the status page for each sensor. (Below). In order to better define the sensor on the Summary Page, in SNMP traps, or in an MIB browser, click on the "Edit" link to open the sensor configuration page and configure the sensor.

### Sensor #5.1 Status

**Type: AC Voltage** **Connector:5**

**0.2V**

**Status: Alarm**

Handle Alert:

Last alert was at: 09-10-2009 09:41:46 PM 0.2  
 Lowest Reading: 11-24-2015 02:19:15 PM -40.0  
 Highest Reading: 11-25-2015 02:07:14 PM 46.2 [Clear Records](#)

### Sensor #5.3 Status

**Type: DC Voltage** **Connector:5**

**0.0V**

**Status: Normal**

Handle Alert:

Last alert was at: 11-24-2015 02:19:45 PM 0.0  
 Lowest Reading: 09-10-2009 08:17:31 PM -35.1  
 Highest Reading: 11-30-2015 01:25:51 PM 80.1 [Clear Records](#)

### Sensor #5.2 Status

**Type: AC Current** **Connector:5**

**3.4amp**

**Status: Alarm**

Handle Alert:

Last alert was at: 12-09-2015 10:29:11 AM 0.0  
 Lowest Reading: 12-09-2015 10:27:15 AM 0.0  
 Highest Reading: 12-09-2015 10:31:05 AM 30.1 [Clear Records](#)

### Sensor #5.4 Status

**Type: DC Current** **Connector:5**

**3.8A**

**Status: Normal**

Handle Alert:

Last alert was at: 12-09-2015 10:38:50 AM 0.0  
 Lowest Reading: 12-09-2015 10:40:00 AM 0.0  
 Highest Reading: 12-09-2015 10:36:30 AM 50.2 [Clear Records](#)

Click on the "Configure" button on any Status Page to display the Configuration page for any sensor.

### Sensor #5.1 Configuration (Type: AC Voltage)

<b>Sensor Settings</b>	
Description	Sensor #5.1 Descriptive name for the sensor
Min. Level	0.0 Min. supported value for the sensor
Max. Level	560.0 Max. supported value for the sensor
Min. Non-Critical Threshold	0.0 Min. threshold below which indicates a non-critical alert condition
Max. Non-Critical Threshold	500.0 Max. threshold above which indicates a non-critical alert condition
Min. Critical Threshold	0.0 Min. threshold below which indicates an alert condition
Max. Critical Threshold	500.0 Max. threshold above which indicates an alert condition
Enable Disconnection Alert	<input type="checkbox"/> Enable alert if not connected
Refresh Rate	10 <input type="text"/> Sec <input type="button" value="v"/> The refresh rate at which the sensor view is updated
Enable Graph	<input checked="" type="checkbox"/> Enable graph for this sensor
<b>Group Settings</b>	
<b>Schedule Settings</b>	
<b>Non-Critical Alert Settings</b>	
<b>Critical Alert Settings</b>	
<b>Data Logging</b>	
<input type="button" value="Save"/>	
<b>Alert Simulation</b>	
<input type="button" value="Simulate Alert"/> <input type="button" value="Clear Alert"/>	

### Sensor #5.2 Configuration (Type: DC Voltage)

<b>Sensor Settings</b>	
Description	Sensor #5.2 Descriptive name for the sensor
Min. Level	-60.0 Min. supported value for the sensor
Max. Level	60.0 Max. supported value for the sensor
Min. Non-Critical Threshold	-40.0 Min. threshold below which indicates a non-critical alert condition
Max. Non-Critical Threshold	40.0 Max. threshold above which indicates a non-critical alert condition
Min. Critical Threshold	-40.0 Min. threshold below which indicates an alert condition
Max. Critical Threshold	40.0 Max. threshold above which indicates an alert condition
Enable Disconnection Alert	<input type="checkbox"/> Enable alert if not connected
Refresh Rate	10 <input type="text"/> Sec <input type="button" value="v"/> The refresh rate at which the sensor view is updated
Enable Graph	<input checked="" type="checkbox"/> Enable graph for this sensor
<b>Group Settings</b>	
<b>Schedule Settings</b>	
<b>Non-Critical Alert Settings</b>	
<b>Critical Alert Settings</b>	
<b>Data Logging</b>	
<input type="button" value="Save"/>	
<b>Alert Simulation</b>	
<input type="button" value="Simulate Alert"/> <input type="button" value="Clear Alert"/>	

### Sensor #5.3 Configuration (Type: AC Current)

<b>Sensor Settings</b>	
Description	Sensor #5.3 Descriptive name for the sensor
Sensor Unit	% Measurement unit
Nominal Range	100.000000 Hall-Effect transducer rated current
Min. Non-Critical Threshold	0.0 Min. threshold below which indicates
Max. Non-Critical Threshold	80.0 Max. threshold above which indicate
Min. Critical Threshold	0.0 Min. threshold below which indicates
Max. Critical Threshold	80.0 Max. threshold above which indicates an alert condition
Enable Disconnection Alert	<input type="checkbox"/> Enable alert if not connected
Refresh Rate	10 <input type="text"/> Sec <input type="button" value="v"/> The refresh rate at which the sensor view is updated
Enable Graph	<input checked="" type="checkbox"/> Enable graph for this sensor
<b>Group Settings</b>	
<b>Schedule Settings</b>	
<b>Non-Critical Alert Settings</b>	
<b>Critical Alert Settings</b>	
<b>Data Logging</b>	
<input type="button" value="Save"/>	
<b>Alert Simulation</b>	
<input type="button" value="Simulate Alert"/> <input type="button" value="Clear Alert"/>	

Default Unit is % and Range is 100 (0-100%). This does not have to be changed. If you change the Unit to "A" for Amps, then enter the rating of the hall effect sensor. for the Range.

### Sensor #5.4 Configuration (Type: DC Current)

<b>Sensor Settings</b>	
Description	Sensor #5.4 Descriptive name for the sensor
Sensor Unit	% Measurement unit
Nominal Range	100.000000 Hall-Effect transducer rated current
Min. Non-Critical Threshold	-80.0 Min. threshold below which indicates a non-critical alert condition
Max. Non-Critical Threshold	80.0 Max. threshold above which indicates a non-critical alert condition
Min. Critical Threshold	-80.0 Min. threshold below which indicates an alert condition
Max. Critical Threshold	80.0 Max. threshold above which indicates an alert condition
Enable Disconnection Alert	<input type="checkbox"/> Enable alert if not connected
Refresh Rate	10 <input type="text"/> Sec <input type="button" value="v"/> The refresh rate at which the sensor view is updated
Enable Graph	<input checked="" type="checkbox"/> Enable graph for this sensor
<b>Group Settings</b>	
<b>Schedule Settings</b>	
<b>Non-Critical Alert Settings</b>	
<b>Critical Alert Settings</b>	
<b>Data Logging</b>	
<input type="button" value="Save"/>	
<b>Alert Simulation</b>	
<input type="button" value="Simulate Alert"/> <input type="button" value="Clear Alert"/>	

## TECHNICAL SPECIFICATIONS

Description	Specification
Polling rate	1Sa/s
AC Voltage Range	600V isolated 0 to 247Vrms
AC Reporting Accuracy	2.5VAC (up to 240VAC)
AC Resolution	0.25VAC
DC Voltage Range	Non-isolated -60 to +60V DC
DC Reporting Accuracy	1.2VDC
DC Resolution	0.12VDC
Current Measurement	Requires Hall-Effect transducer (sold separately)
Power	Powered by the SYSTEM
Current Draw	12V @ 66mA / 5V @ 8mA
Operating Temperature	32 to 158°F (0 to 70°C)
Size (In.) W x D x H	6.2 x 2.3 x 1.6
Regulatory Approvals	CE, RoHS

## COPYRIGHT

Copyright © 2009-2021 Network Technologies Inc. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written consent of Network Technologies Inc, 1275 Danner Drive, Aurora, OH 44202.

## CHANGES

The material in this guide is for information only and is subject to change without notice. Network Technologies Inc reserves the right to make changes in the product design without reservation and without notification to its users.

## WARRANTY INFORMATION

The warranty period on this product (parts and labor) is two (2) years from date of purchase. Please contact Network Technologies Inc at (800) 742-8324 or 330-562-7070 for information regarding repairs and/or returns. A return authorization number is required for all repairs/returns.

MAN250 Revised 4/13/2021