

INSTALLATION INSTRUCTIONS SERIES DSM SYNCHRONIZATION (SYNC) MODULE

Use this product according to this instruction manual. Please keep this instruction manual for future reference.

GENERAL:

Eaton's Cooper Notification's Dual Sync Modules (Series DSM) are uniquely designed to accept two independent strobe and audible inputs and convert them to a single output that connects to the appliances listed in Table 1. When interfaced with the DSM, the appliances produce the synchronized code 3 horn and synchronized strobe upon actuation. The audible portion of the appliances can be controlled independently from the strobe using only a 2-wire alarm circuit. DSMs are the ideal choice for alarm systems where an audible silencing feature is required during an alarm condition. The DSM is designed for use with Class A or Class B wiring and are capable of synchronizing multiple alarm circuits if required. The DSM can be used with 12VDC or 24VDC systems. The DSM is UL Listed under Standard 1971 (Emergency Appliances for the Hearing Impaired) for indoor use, Fire Protective Service and ULC Listed under CAN/ULC-S525-07 for Audible Signal Devices for Fire Alarm Systems and CAN/ULC-S526-07 for Visual Signal Devices for Fire Alarm Systems. All inputs are polarized for compatibility with standard reverse polarity supervision of circuit wiring by a Fire Alarm Control Panel (FACP).

WARNING: THE DSM APPLIANCE IS A "FIRE ALARM DEVICE - DO NOT PAINT."

WARNING: PLEASE READ THESE INSTRUCTIONS CAREFULLY. FAILURE TO COMPLY WITH ANY OF THE FOLLOWING INSTRUCTIONS, CAUTIONS AND WARNINGS COULD RESULT IN IMPROPER APPLICATION, INSTALLATION AND/OR OPERATION OF THESE PRODUCTS IN AN EMERGENCY SITUATION, WHICH COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

Series	Appliance
Series AH-WP, HS	Audible Horn
Series MT with Strobe*	Multitone Horn with Sync Strobes
Series E and EH with Strobe	E and EH HIFI Speakers with Sync Strobe
Series ET70/90/1080 with Strobe	ET Speakers with Sync Strobe
Series RSS/RSSP Strobes	Remote Sync Strobes
Series CH70 Strobes*	Chimes with Sync Strobes
Series AS-WP, HS4	Audible Horn with Sync Strobes
Series LSPST, LHS	LED Speaker Strobes and Horn Strobes
Series LLFH	Low Frequency (520Hz) Sounder Strobes

* Strobe portion of device is compatible; audible portion does not synchronize

NOTE: All Canadian Installations should be in accordance with the Canadian Standard for the Installation of Fire Alarm Systems - CAN/ULC-S524 and Canadian Electrical Code, Part 1. Final acceptance is subject to Authorities Having Jurisdiction.

SPECIFICATIONS:

Model	Regulated Voltage (VDC/VRMS)	Voltage Range Limit Per UL 1971 (VDC/VRMS)	Voltage Range Per CAN/ULC-S525-07 & S526-07 (VDC/VRMS)	Mounting Option
DSM-12/24	12/24	8.0 - 33.0	8.0 - 33.0	A

WARNING: THIS APPLIANCE WAS TESTED TO THE REGULATED VOLTAGE LIMITS OF 8.0-33.0 VOLTS USING FILTERED (DC OR UNFILTERED FULL-WAVE RECTIFIED (FWR)). DO NOT APPLY VOLTAGE OUTSIDE OF THIS RANGE.

WARNING: CHECK THE MINIMUM AND MAXIMUM OUTPUT OF THE POWER SUPPLY AND STANDBY BATTERY AND SUBTRACT THE VOLTAGE DROP FROM THE CIRCUIT WIRING RESISTANCE TO DETERMINE THE APPLIED VOLTAGE TO THE STROBES.

UL Voltage		Maximum RMS Current	
		In1/In2	Audible
DC	8-33VDC	0.045	0.010
FWR	8-33VRMS	0.062	0.012

WARNING: MAKE SURE THAT THE TOTAL RMS CURRENT REQUIRED BY ALL APPLIANCES CONNECTED TO THE SYSTEM'S PRIMARY AND SECONDARY POWER SOURCES, NAC CIRCUITS, DSM SYNC MODULES OR COOPER NOTIFICATIONS POWER SUPPLIES DO NOT EXCEED THE POWER SOURCES' RATED CAPACITY OR THE CURRENT RATINGS OF ANY FUSES ON THE CIRCUITS TO WHICH THESE APPLIANCES ARE WIRED. OVERLOADING POWER SOURCES OR EXCEEDING FUSE RATINGS COULD RESULT IN LOSS OF POWER AND FAILURE TO ALERT OCCUPANTS DURING AN EMERGENCY, WHICH COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

When calculating the total currents: Use Table 3 to determine the highest value of "RMS Current" for an individual strobe (across the expected operating voltage range of the strobe), then multiply these values by the total number of strobes; be sure to add the currents for any other appliances, including audible signaling appliances, powered by the same source and include any required safety factors.

WIRING INFORMATION:

NOTE: Non-sync appliances can be installed before or after a DSM. If the Non-Sync appliance requires audible silence, four wire connection is necessary with the strobe circuit connected before the DSM NAC circuit, and the audible leads connected to a silenceable NAC circuit from the FACP.

CAUTION: Power Supply may be used in conjunction with the DSM Sync Modules **ONLY** in the order shown in Figure 1. Only one DSM Sync Module shall be allowed on a signaling circuit. Do not connect the Power Supply to the signaling circuit after the one DSM Sync Module. **Exception:** The Eaton's Cooper Notification PS-6/PS8 Power Supply (UL Only) can be connected either before or after the DSM Sync Module. Refer to Power Supply instruction manuals for proper installation and application.

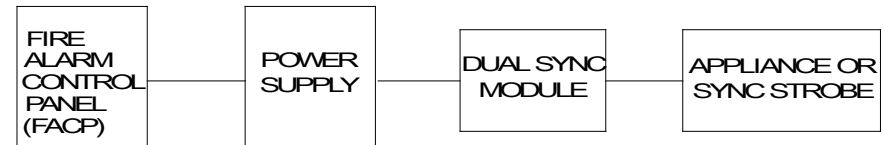


Figure 1: DSM Connection Diagram with Power Supply

For applications that require synchronizing multiple alarm circuits together, daisy chain DSM's as shown in Figure 2 using the sync terminals, then follow the wiring diagrams for specific applications. Sync screw terminals can accept two #18 AWG wires for in-out wiring. Strip leads 3/8 inches for connection to screw terminals.

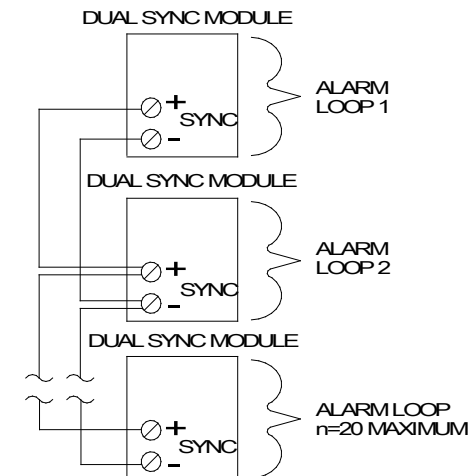


Figure 2: Multiple Alarm Circuits Synchronization (Up to 20 DSM's)

NOTE: The total length of wire connecting the DSM's SYNC terminals should not exceed 1,000 feet of #18 American Wire Gauge (AWG) overall between the first and last DSM. If this limit is exceeded, loss of synchronization between DSM's may result.

Important: The appliances draw power from strobe appliance circuit only.

CLASS B WIRING:

A single DSM unit can be used with one or two Class B signal circuits; if using only one appliance circuit the DSM terminals for the second appliance circuit should be left open.

Class B Wiring Diagrams for Series AS, NS, AH and NH Appliances

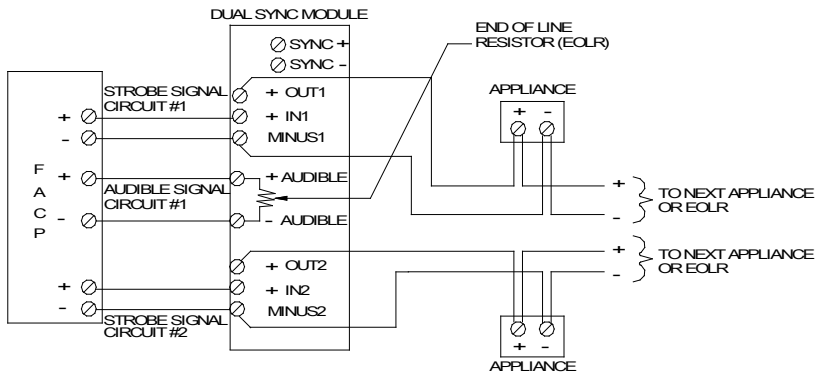


Figure 3: Dual Class "B" Circuit with Audible Silence Feature

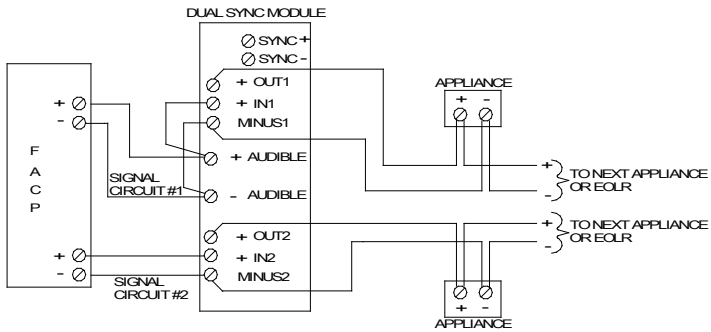


Figure 4: Dual Class "B" Circuit without Audible Silence Feature (Red and Black Shunt Wires are Supplied with DSM)

Class B Wiring Diagram for Series RSS/RSSP, CH, MT and Series E/ET Sync Strobes

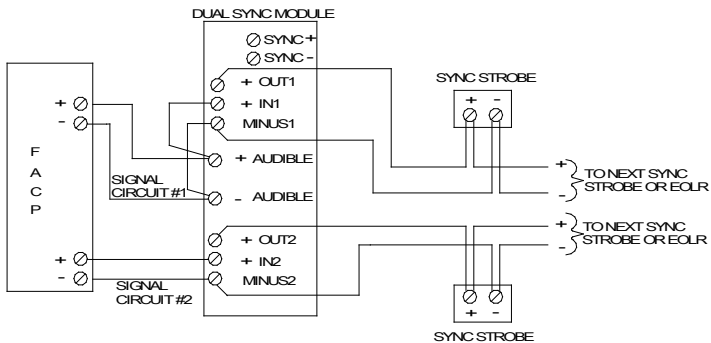


Figure 5: Class "B" Circuit Wiring for Sync Strobe (Red and Black Shunt Wires are Supplied with DSM)

WARNING: DO NOT CONNECT THE MT OR CHIME AUDIBLE INPUT TERMINALS (AUD) TO THE OUTPUT OF A DSM; THE AUDIBLE MAY STOP SOUNDING AS A RESULT. A FOUR WIRE CONFIGURATION SHOULD BE USED, WITH THE AUD TERMINALS CONNECTED TO A SEPARATE APPLIANCE CIRCUIT.

Class B Wiring Diagram for the Sync Strobes (Series LLFH 520Hz)

Note: Only LLFH appliances may be used in conjunction with the DSM in T3/T4 mode. All appliances must be set to T3/T4 mode.

NOTE: When using the LLFHS and LLFHN 520 Hz Low Frequency Sounder and Sounder Strobes in the T3/T4 mode, connect a standard NAC circuit to the (+) and (-) Audible Inputs on the DSM. In the T3/T4 mode, the DSM utilizes NAC 1 and/or NAC 2 in conjunction with the Audible Inputs to actively toggle between T3/fire and T4/CO as indicated in Table 4.

Table 4: 520 Hz Low frequency Sounder States for T3/T4 Mode Class B Wiring*			
NAC 1 Input	NAC 2 Input	Audible Input (Standard NAC Input)	520 Hz Low Frequency Sounder State
Active	Active	Active	T4/CO Active for both NAC 1 and NAC 2
Active	Active	Not Active	T3/Fire Active for both NAC 1 and NAC 2
Active	Not Active	Active	T4/CO Active for NAC 1
Active	Not Active	Not Active	T3/Fire Active for NAC 1
Not Active	Active	Active	T4/CO Active for NAC 2
Not Active	Active	Not Active	T3/Fire Active for NAC 2
Not Active	Not Active	Active or Not Active	Not Active for both NAC 1 and NAC 2

* For Class A Wiring, only NAC 1 is Active or Not Active; NAC 2 is used as the circuit's return

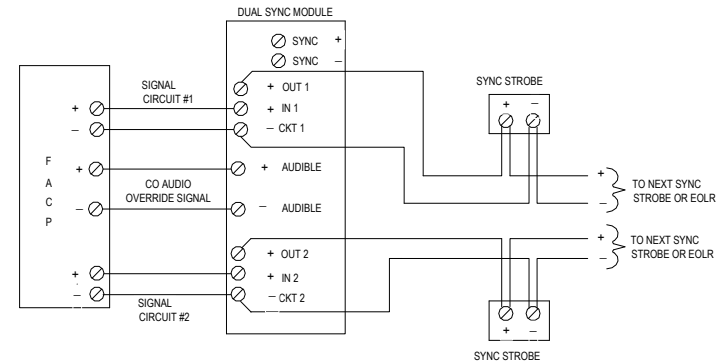


Figure 6: Wiring Diagram for LLFH Sync Strobes (Red and Black Shunt Wires are supplied with DSM)

CLASS A WIRING:

Class A Wiring Diagrams for Series AS, NS, AH and NH Appliances

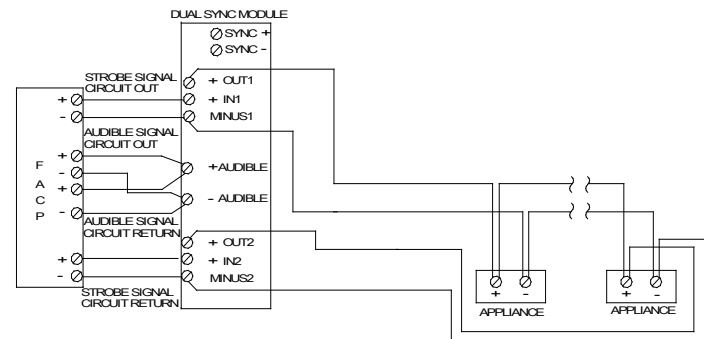


Figure 7: Single Class "A" Circuit with Audible Silence Feature

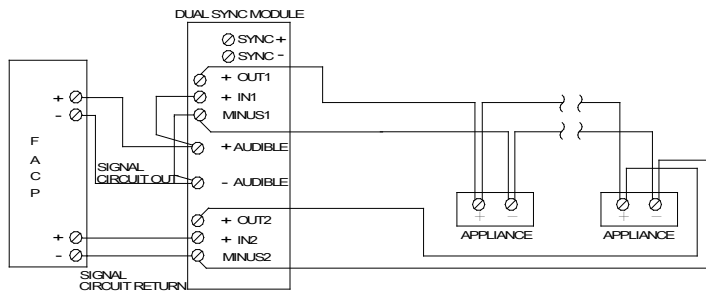


Figure 8: Single Class "A" Circuit without Audible Silence Feature (Red and Black Shunt Wires are Supplied with DSM)

Class A Wiring Diagram for Series RSS/RSSP, CH, MT and Series E/ET Sync Strobes

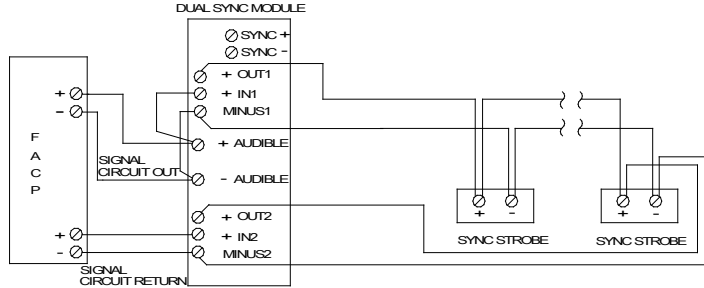


Figure 9: Wiring Diagram Sync Strobes (Red and Black Shunt Wires are supplied with DSM)

WARNING: DO NOT CONNECT THE MT'S AUDIBLE INPUT TERMINALS (AUD) TO THE OUTPUT OF A DSM. THE AUDIBLE MAY STOP SOUNDING AS A RESULT. A FOUR WIRE CONFIGURATION SHOULD BE USED WITH THE AUD TERMINALS CONNECTED TO A SEPARATE APPLIANCE CIRCUIT.

Class A Wiring Diagram for Series LLFH 520 Hz Sync Strobes

Note: Only LLFH appliances may be used in conjunction with the DSM in T3/T4 mode. All appliances must be set to T3/T4 mode.

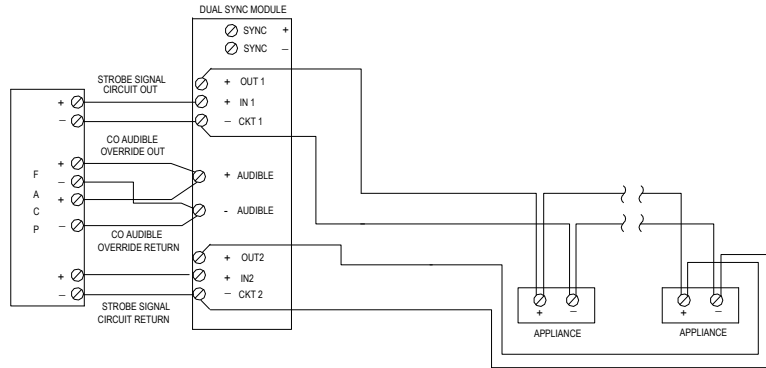


Figure 10: Wiring Diagram for LLFH Sync Strobes (Red and Black Shunt Wires are supplied with DSM)

WIRING AND MOUNTING:

1. Dual Sync Modules have in-out appliance circuit wiring terminals that accepts two #12 to #18 AWG wires at each screw terminal.
2. Strip leads 3/8 inches for connection to screw terminals. Break all in-out wire runs on supervised circuits to assure integrity of circuit supervision as shown in Figure 9.
3. The polarity shown in the wiring diagrams is for the operation of the appliances. The polarity is reversed by the FACP during supervision.

GROUNDING: Install the appliance to a grounded Backbox (Per NFPA 70, the National Electrical Code) using the lockwashers provided in the hardware bag under the head of each mounting screw for the appliance.

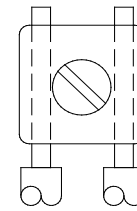


Figure 11: Wiring Connection

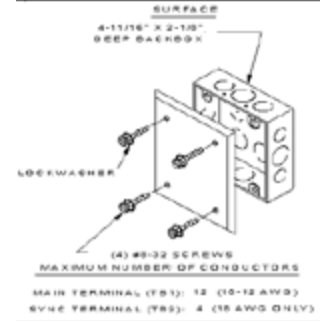


Figure 12: BackBox Surface Mounting

CAUTION: Figure 12 indicates the maximum number of field wires (conductors) that can enter the backbox used with this mounting option, per NFPA 70. If these limits are exceeded, there may be insufficient space in the backbox to accommodate the field wires. Stresses from the wires could damage the product.

APPLICATION NOTES:

CAUTION: Check that the installed product will have sufficient clearance and wiring room prior to installing backboxes and conduit, especially if sheathed multiconductor cable or 3/4" conduit fittings are used.

1. Mounting hardware is supplied with each product.
2. Conduit entrances to the backbox should be selected to provide sufficient wiring clearance for the installed product.
3. When terminating field wires, do not use more lead length than required. Excess lead length could result in insufficient wiring space for the module.
4. Use care and proper installation techniques to position the field wires in the backbox so that they use minimum space and produce minimum stress on the product. This is especially important for stiff, heavy gauge wires and wires with thick insulation or sheathing.
5. Do not pass additional wires (used for other than the module) through the backbox. Such additional wires could result in insufficient wiring space for the module.
6. All models are UL/ULC Listed for indoor use with a temperature range of +32° F to +120° F (0° C to +49° C) and maximum relative humidity of 93%, +/- 2%.

CAUTION: Use DSM Sync Module only on circuits with continuously applied voltage. Do not use DSM Sync Module on coded or interrupted circuits in which the applied voltage is cycled on and off.

WARNING: BOTH NAC 1 AND NAC 2 MUST REMAIN ACTIVE FOR T4 OPERATION.

WARNING: WHEN USING THE T3/4 OPERATING CODE ON SOUNDER AND SOUNDER STROBES, THE DSM WILL PROVIDE SYNCHRONIZATION; THEREFORE, THE FACP AND THE NOTIFICATION APPLIANCE CIRCUIT CANNOT USE THE EATON'S COOPER WHELLOCK PROTOCOL.

ANY MATERIAL EXTRAPOLATED FROM THIS DOCUMENT OR FROM EATON'S COOPER NOTIFICATION MANUALS OR OTHER DOCUMENTS DESCRIBING THE PRODUCT FOR USE IN PROMOTIONAL OR ADVERTISING CLAIMS, OR FOR ANY OTHER USE, INCLUDING DESCRIPTION OF THE PRODUCT'S APPLICATION, OPERATION, INSTALLATION AND TESTING IS USED AT THE SOLE RISK OF THE USER; EATON'S COOPER NOTIFICATION WILL NOT HAVE ANY LIABILITY FOR SUCH USE.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital appliance, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: 1) Reorient or relocate the receiving antenna, 2) Increase the separation between the equipment and receiver, 3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected, and 4) Consult the dealer or an experienced radio/TV technician for help.

CAUTION: CHECK THE INSTALLATION INSTRUCTIONS OF THE MANUFACTURERS OF OTHER EQUIPMENT USED IN THE SYSTEM FOR ANY GUIDELINES OR RESTRICTIONS ON WIRING AND/OR LOCATING NOTIFICATION APPLIANCE CIRCUITS (NAC) AND NOTIFICATION APPLIANCES. SOME SYSTEM COMMUNICATION CIRCUITS AND/OR AUDIO CIRCUITS, FOR EXAMPLE, MAY REQUIRE SPECIAL PRECAUTIONS TO ASSURE IMMUNITY FROM ELECTRICAL NOISE (E.G. AUDIO CROSSTALK).

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

LIMITATION OF LIABILITY

SELLER'S LIABILITY ON ANY CLAIM OF ANY KIND, INCLUDING NEGLIGENCE AND BREACH OF WARRANTY, FOR ANY LOSS OR DAMAGE RESULTING FROM, ARISING OUT OF, OR CONNECTED WITH THIS CONTRACT, OR FROM THE MANUFACTURE, SALE, DELIVERY, RESALE, REPAIR OR USE OF ANY PRODUCT COVERED BY THIS ORDER SHALL BE LIMITED TO THE PRICE APPLICABLE TO THE PRODUCT OR PART THEREOF WHICH GIVES RISE TO THE CLAIM. SELLER'S LIABILITY ON ANY CLAIM OF ANY KIND SHALL CEASE IMMEDIATELY UPON THE INSTALLATION IN THE PRODUCT OF ANY PART NOT FURNISHED BY SELLER. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY CLAIM OF ANY KIND UNLESS IT IS PROVEN THAT ITS PRODUCT WAS THE DIRECT CAUSE OF SUCH CLAIM. FURTHER, IN NO EVENT, INCLUDING IN THE CASE OF A CLAIM OF NEGLIGENCE, SHALL SELLER BE LIABLE FOR INCIDENTAL, INDIRECT, CONSEQUENTIAL, SPECIAL, PUNITIVE OR EXEMPLARY DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE PRECEDING LIMITATION MAY NOT APPLY TO ALL PURCHASERS.

Copyright 2014 Eaton's Cooper Wheelock Inc., dba Cooper Notification. All rights reserved.