



October 19, 1998

DN-6601 • J-134

# Wheelock NS/NS4 Series Horn Strobes and NH Series Horns

Section: Audio/Visual Devices

## GENERAL

Wheelock's new devices, the **NS/NS4 Series Horn Strobes** and the **NH Series Horns**, feature low current design with reduced inrush. The horn devices provide a selectable continuous horn tone or a temporal pattern (Code 3) tone when constant voltage from a Fire Alarm Control Panel (FACP) is applied. Each tone has two dB settings to choose from. All models (horn only or horn with strobe) may be synchronized when used in conjunction with **SM or DSM Sync Modules**. Additionally, the horn may be silenced while maintaining strobe activation of the NS/NS4 Series horn-strobe devices. All of these features are achievable with either the patented two-wire NS Series or with the four-wire NS4 Series models.

The NS/NS4 Series horn-strobe devices and the NH horn devices are designed for maximum performance, reliability, and cost-effectiveness while meeting or exceeding the latest requirements of NFPA 72 (National Fire Alarm Code), ANSI 117.1 (American National Standard for Accessible and Usable Buildings and Facilities), and UL Standard 1971 (Standard for Signaling Devices for the Hearing Impaired), and UL 464 (Audible Signal Appliances). NS/NS4 audible strobe devices, when properly specified and installed in accordance with NFPA/ANSI standards, can provide the Equivalent Facilitation allowed under ADA Accessibility Guidelines (ADAAG General Section 2.2) by meeting or exceeding the illumination which results from the ADA-specified strobe intensity of 75 candela at 50 feet (15.24 m). This is an illumination of 0.030 lumens per square foot.

When used with the Wheelock SM or DSM Series Sync Modules, the continuous horn tone produces a synchronized temporal (Code 3) tone. This ensures a distinct temporal (Code 3) pattern when two or more horns are within hearing distance. If not synchronized, the temporal sound could overlap and not be distinctive. Additionally, if strobes on the same circuit are synchronized, this provides the ability to comply with ADA recommendations concerning photosensitive epilepsy and to meet NFPA requirements when installing two or more visual devices within the field of view. All of this, plus the ability to silence the horn, is achieved by using only two wires (NS/NH).

## FEATURES

- ADA/NFPA/ANSI compliant. Meets OSHA 29 Part 1910.165.
- Low current draw and reduced inrush.
- Wall-mount only.
- Two selectable tones and dB levels:
  - Continuous tone:** anechoic, 90 or 95 dB; reverberant, 82 or 88 dB @ 24 VDC.
  - Temporal Code 3 tone:** anechoic, 90 or 95 dB; reverberant, 75 or 82 dB @ 24 VDC.
- Patent pending Universal Mounting Plate for single-gang, double-gang, 4" (10.16 cm) square, or 100 mm European backboxes, or Wheelock's SHBB shallow surface backbox.
- No additional trim plates required.



E 5946



CS 243 (NH)  
CS 356 (NS/NS4):  
15 cd, 75 cd, & 110 cd)



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California  
State Fire  
Marshal  
7125-0785:142

**MEA**

151-92-E



**NS/NS4  
Horn  
Strobe**

**NH Horn**



- Available with 15, 15/75, 30, 75, and 110 candela strobe intensities.
- 15/75 candela wall-mounted strobes are listed at 15 candela under UL Standard 1971 and meet 75 candela intensity on axis for ADA guidelines with low current draw.
- Two versions available: **two-wire** for both horn and strobe; **four-wire** model.
- Non-sync and sync in one model (*synchronization requires a SM or DSM Sync Module*).
- Matching horn in 12/24 volts (selectable).

This document is not intended to be used for installation purposes. We try to keep our product information up-to-date and accurate. We cannot cover all specific applications or anticipate all requirements. All specifications are subject to change without notice. For more information, contact **NOTIFIER**. Phone: (203) 484-7161 FAX: (203) 484-7118



**NOTIFIER**

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## GENERAL NOTES

- Strobes are designed to flash at 1 flash per second minimum from 20 to 31 VDC (for 24 VDC models), or 10.5 to 15.6 VDC (for 12 VDC models). Note that NFPA-72 (1996) specifies a flash rate of 1 to 2 flashes per second, and ADA guidelines specify a flash rate of 1 to 3 flashes per second.
- All candela ratings represent minimum effective strobe intensity based on UL 1971.
- NS/NS4 Horn Strobe products are listed under UL 1971 for indoor use with a temperature range of 32°F to 120°F (0°C to 49°C) and maximum humidity of 85%.

- NH Series horns are listed under UL 464 for audible signal appliances.



**PLEASE READ THESE SPECIFICATIONS AND ASSOCIATED INSTALLATION INSTRUCTIONS CAREFULLY BEFORE USING, SPECIFYING, OR APPLYING THIS PRODUCT. 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.**

## ORDERING INFORMATION

MODEL NUMBER	INPUT VOLTAGE	STROBE CANDELA	MOUNTING OPTIONS*	MODEL NUMBER	INPUT VOLTAGE	STROBE CANDELA	MOUNTING OPTIONS*
NS-2415W-FR	24 VDC	15	B, D, F, G, X	NS4-2415W-FR	24 VDC	15	B, D, F, G, X
NS-241575W-FR	24 VDC	15/75	B, D, F, G, X	NS4-241575W-FR	24 VDC	15/75	B, D, F, G, X
NS-2430W-FR	24 VDC	30	B, D, F, G, X	NS4-2430W-FR	24 VDC	30	B, D, F, G, X
NS-2475W-FR	24 VDC	75	B, D, F, G, X	NS4-2475W-FR	24 VDC	75	B, D, F, G, X
NS-24110W-FR	24 VDC	110	B, D, F, G, X	NS4-24110W-FR	24 VDC	110	B, D, F, G, X
NS-121575W-FR	12 VDC	15/75	B, D, F, G, X	NS4-121575W-FR	12 VDC	15/75	B, D, F, G, X
				NH-12/24-R	12/24 VDC	—	B, D, F, G, X
SYNC MODULES**	INPUT VOLTAGE	AVERAGE CURRENT		MOUNTING OPTIONS*			
SM-12/24-R	12 VDC / 24 VDC	0.014 (12 VDC) / 0.025 (24 VDC)		E, N			
DSM-12/24-R	12 VDC / 24 VDC	0.020 (12 VDC) / 0.038 (24 VDC)		W			

**NOTES:** 1) ALL MODELS are wall-mount and offered in red only. 2) SUFFIXES USED ABOVE: W = Wall mounting; F = Fire lettering; R at end = Red; 4 = 4-wire. *EXAMPLES:* NS-2415W-FR (2-wire – Wall mounting – Fire lettering, Red); NS4-2415W-FR (4-wire – Wall mounting – Fire lettering, Red). 3) SYNCHRONIZED TEMPORAL (Code 3) TONE is achieved when the “continuous horn tone” is selected and connected to the SM or DSM Sync Modules. Refer to installation instructions for the NS Series (Wheelock #P83518), NS4 Series (Wheelock #P83601), and NH (Wheelock #P83600).

\* For descriptions of **MOUNTING OPTIONS**, refer to NOTIFIER data sheet DN-6111, derived from Wheelock #S7000.

\*\* **SM Sync Modules** are rated for 3.0 amperes at 12 or 24 VDC; **DSM Dual Control Modules** are rated for 3.0 amperes per circuit. The maximum number of interconnected DSM modules is twenty (20). Refer to installation instructions for SM (Wheelock #P83123) and DSM (Wheelock #P83177).

NS/NS4/NH Series: average current* – 24-volt models						
NS SERIES:	VOLTAGE	NS-2415W	NS-241575W	NS-2430W	NS-2475W	NS-24110W
AVERAGE CURRENT* with Low dBA Setting (90 dBA)	20.0 VDC	0.071 A	0.089 A	0.100 A	0.173 A	0.210 A
	24.0 VDC	0.065 A	0.080 A	0.087 A	0.145 A	0.174 A
	31.0 VDC	0.059 A	0.068 A	0.077 A	0.118 A	0.141 A
AVERAGE CURRENT* with High dBA Setting (95 dBA)	20.0 VDC	0.078 A	0.094 A	0.108 A	0.177 A	0.219 A
	24.0 VDC	0.072 A	0.086 A	0.097 A	0.155 A	0.185 A
	31.0 VDC	0.070 A	0.081 A	0.088 A	0.129 A	0.153 A
NS4/NH SERIES:	VOLTAGE	NS4-2415W	NS4-241575W	NS4-2430W	NS4-2475W	NS4-24110W
AVERAGE CURRENT* STROBE ONLY INPUT	20.0 VDC	0.064 A	0.080 A	0.095 A	0.157 A	0.199 A
	24.0 VDC	0.054 A	0.068 A	0.081 A	0.133 A	0.161 A
	31.0 VDC	0.047 A	0.056 A	0.066 A	0.108 A	0.131 A
AVERAGE CURRENT* Audible Only NS4/NH Input with Low dBA Setting (90 dBA)	20.0 VDC	0.016 A	0.016 A	0.016 A	0.016 A	0.016 A
	24.0 VDC	0.021 A	0.021 A	0.021 A	0.021 A	0.021 A
	31.0 VDC	0.026 A	0.026 A	0.026 A	0.026 A	0.026 A
AVERAGE CURRENT* Audible Only NS4/NH Input with High dBA Setting (95 dBA)	20.0 VDC	0.020 A	0.020 A	0.020 A	0.020 A	0.020 A
	24.0 VDC	0.027 A	0.027 A	0.027 A	0.027 A	0.027 A
	31.0 VDC	0.034 A	0.034 A	0.034 A	0.034 A	0.034 A

NS-121575W average current*			NS4-121575W average current*			
VOLTAGE (12-volt model)	AVG. CURRENT* Low dBA Setting (90 dBA)	AVG. CURRENT* High dBA Setting (95 dBA)	VOLTAGE (12-volt model)	STROBE ONLY INPUT	AUDIBLE ONLY NS4/NH INPUT with LOW dBA Settings (90 dBA)	AUDIBLE ONLY NS4/NH INPUT with HIGH dBA Settings (95 dBA)
10.5 VDC	0.197	0.199	10.5 VDC	0.189 A	0.011 A	0.016 A
12.0 VDC	0.172	0.175	12.0 VDC	0.162 A	0.014 A	0.018 A
15.6 VDC	0.143	0.147	15.6 VDC	0.130 A	0.017 A	0.023 A

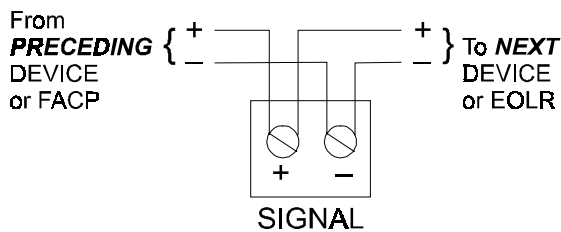
\*Average current per actual Wheelock Production Testing @ 10.5, 12, 15.6, 20, 24, and 31 VDC. For rated average and peak current across the UL listed voltage range for both filtered and unfiltered V<sub>RMS</sub>, see installation instructions (Wheelock #P83518).

# FEATURES QUICK REFERENCE

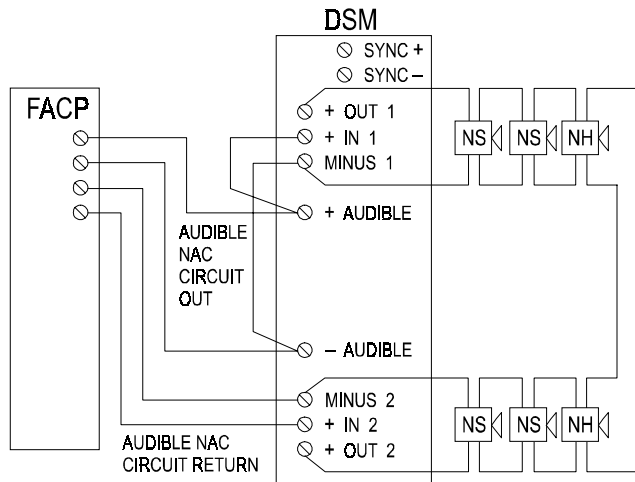
MODEL NUMBER	WALL MOUNT	NON-SYNC	SYNC'S w/ SM or DSM	STROBE CANDELA	24 VDC	12 VDC	2-WIRE	4-WIRE
NS-2415W-FR	X	X	X	15	X		X	
NS-241575W-FR	X	X	X	15/75	X		X	
NS-2430W-FR	X	X	X	30	X		X	
NS-2475W-FR	X	X	X	75	X		X	
NS-24110W-FR	X	X	X	110	X		X	
NS-121575W-FR	X	X	X	15/75		X	X	
NS4-2415W-FR	X	X	X	15	X			X
NS4-241575W-FR	X	X	X	15/75	X			X
NS4-2430W-FR	X	X	X	30	X			X
NS4-2475W-FR	X	X	X	75	X			X
NS4-242110W-FR	X	X	X	110	X			X
NS4-121575W-FR	X	X	X	15/75		X		X
NH-12/24-R (can also ceiling-mount)	X	X	X	—	X	X	X	

## WIRING DIAGRAMS

NS device non-synchronized.



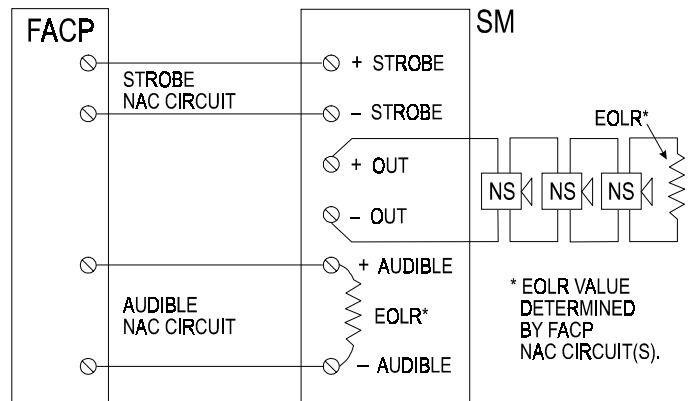
NS and NH devices synchronized with DSM Module dual Class "A" (Style Z) circuit with NO audible silence feature.



### NOTES:

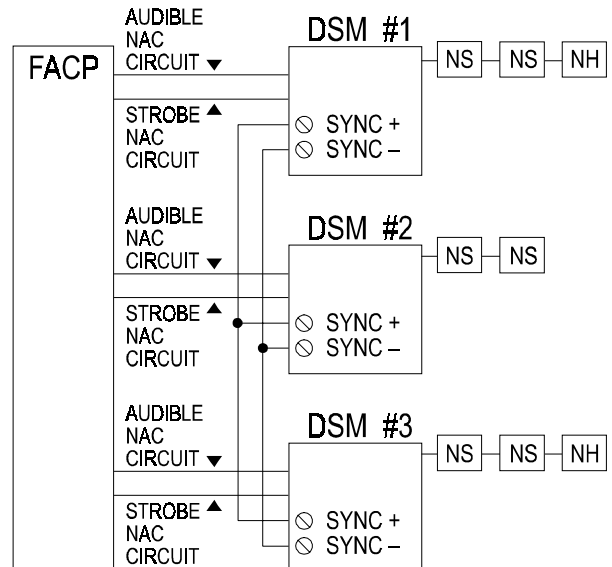
- NS/NS4/NH must be set on continuous horn tone to achieve synchronized temporal (Code 3) tone. Refer to installation instructions (Wheelock #P83518).
- For details on using SM or DSM Sync Modules, refer to Wheelock data sheet #S3000, or Wheelock installation instructions #P83123 (for SM) or #P83177 (for DSM).

NS devices synchronized with SM Module single Class "B" (Style Y) circuit WITH audible silence feature.



NS and NH devices synchronized with multiple DSM Modules.

INTERCONNECTING WIRING SHOWN. MAXIMUM OF TWENTY (20) DSM MODULES.





**WARNING!** CONTACT WHEELOCK FOR "INSTALLATION INSTRUCTIONS" (Wheelock #P83518) AND "GENERAL INFORMATION" SHEET (Wheelock #P82380) ON THESE PRODUCTS. THESE MATERIALS UNDERGO PERIODIC CHANGES. IT IS IMPORTANT THAT YOU HAVE CURRENT INFORMATION ON THESE PRODUCTS. THESE MATERIALS CONTAIN IMPORTANT INFORMATION THAT SHOULD BE READ PRIOR TO SPECIFYING OR INSTALLING THESE PRODUCTS, INCLUDING:

- TOTAL CURRENT REQUIRED BY ALL DEVICES CONNECTED TO SYSTEM PRIMARY AND SECONDARY POWER SOURCES.
- FUSE RATINGS ON NAC CIRCUITS TO HANDLE PEAK CURRENTS FROM ALL DEVICES ON THOSE CIRCUITS.
- COMPOSITE FLASH RATE FROM MULTIPLE STROBES WITHIN A PERSON'S FIELD OF VIEW.
- VOLTAGE APPLIED: THE VOLTAGE APPLIED TO THESE PRODUCTS MUST BE WITHIN THEIR RATED INPUT VOLTAGE RANGE.
- INSTALLATION OF 110 CANDELA STROBE PRODUCTS IN SLEEPING AREAS.
- INSTALLATION IN OFFICE AREAS AND OTHER SPECIFICATION AND INSTALLATION ISSUES.
- **Note:** USE NS/NS4/NH ONLY ON CIRCUITS WITH CONTINUOUSLY APPLIED OPERATING VOLTAGE. DO NOT USE NS/NS4/NH SERIES ON CODED OR INTERRUPTED NAC CIRCUITS IN WHICH THE APPLIED VOLTAGE IS CYCLED ON AND OFF, AS THE STROBE MAY NOT FLASH.
- CONDUCTOR SPECIFICATIONS: CONDUCTOR SIZE (AWG), LENGTH AND AMPACITY SHOULD BE TAKEN INTO CONSIDERATION PRIOR TO DESIGN AND INSTALLATION OF THESE PRODUCTS, PARTICULARLY IN RETROFIT INSTALLATIONS.

**FAILURE TO COMPLY WITH THE INSTALLATION INSTRUCTIONS OR GENERAL INFORMATION SHEETS COULD RESULT IN IMPROPER INSTALLATION, APPLICATION, 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.**

Wheelock products must be used within their published specifications and must be PROPERLY specified, applied, installed, operated, maintained, and operationally tested in accordance with their installation instructions at the time of installation and at least twice a year or more often and in accordance with local, state, and federal codes, regulations, and laws. Specification, application, installation, operation, maintenance, and testing must be performed by qualified personnel for proper operation in accordance with all of the latest National Fire Protection Association (NFPA), Underwriters' Laboratories (UL), National Electrical Code (NEC), Occupational Safety and Health Administration (OSHA), local, state, county, province, district, federal, and other applicable building and fire standards, guidelines, regulations, laws, and codes including, but not limited to, all appendices and amendments and the requirements of the local authority having jurisdiction (AHJ).

## ARCHITECTS' & ENGINEERS' SPECIFICATIONS

- The notification appliances shall be Wheelock NS/NS4 Series Horn Strobe and NH Series Horn devices; and companion SM and DSM Sync Modules, or approved equivalents. NS/NS4 Series devices shall be listed under UL Standard 1971 (Emergency Devices for the Hearing Impaired for Indoor Fire Protection Service). NH Series Horn and SM and DSM Sync Modules shall be UL listed under Standard 464 (Fire Protective Signaling). NS/NS4/NH and SM/DSM devices shall be certified to meet FCC Part 15, Class B.
- The devices shall be designed for two- or four-wire operation and shall provide either a continuous horn/strobe signal or temporal (Code 3) tone when constantly applied voltage from a Notification Appliance Circuit (NACs) of the Fire Alarm Control Panel (FACP) or synchronized temporal (Code 3) horn and synchronized strobe when used in conjunction with the SM or DSM Sync Modules.
- The NS Series shall be designed so that the audible signal may be silenced while maintaining strobe activation (when used with the SM or DSM Sync Modules). The SM and DSM Sync Modules shall incorporate two inputs from Notification Appliance Circuits (NACs) for power connection from the Fire Alarm Control Panel (FACP); one for the strobe (NAC) circuit and one for the audible (NAC) circuit. A single two- or four-wire output shall control both the audible and visual appliances. Upon activation of the audible silence function of the FACP, the audible signal shall be silenced while maintaining strobe activation.
- Sound output at 10 feet (3.048 m) shall be field-selectable for 92 or 97 dBA anechoic for both continuous or temporal (Code 3) tone. The NS/NS4 Series shall provide listed strobe intensities of 15, 15/75, 30, 75, and 110 candela, with a flash rate of one flash per second minimum across the listed voltage range. The strobe shall incorporate a Xenon® flashtube enclosed in a rugged LEXAN® lens.
- The Sync Module shall be designed and available in two versions: the **SM-12/24**, for control of a single Class B NAC circuit; and a dual-output version, the **DSM-12/24**, for control of either a single Class A or two Class B NAC circuits. The DSM dual-circuit version shall provide the additional capability of "daisy-chaining," i.e., the ability to interconnect multiple DSM's for synchronous horn and strobe operation on multiple NAC circuits. DSM-12/24 coverage interconnection capability shall be for a maximum of 20 modules (40 Class "B" NAC circuits or 20 Class "A" NAC circuits). Rated average current requirement for the SM-12/24 shall be 0.014 amperes @ 12 VDC and 0.025 amperes @ 24 VDC; the DSM-12/24 shall be 0.020 amperes @ 12 VDC and 0.038 amperes @ 24 VDC. The SM Sync Module shall be capable of handling a three-ampere load at 12 or 24 VDC. The DSM Sync Modules shall be capable of handling a load of three amperes *per circuit* in the Class "B" mode, and three amperes *per module* in the Class "A" mode at 12 or 24 VDC.
- SM or DSM Sync Modules and NS/NS4 Horn Strobes shall be designed as a **system** for continuous activation of the strobes should the Sync Module contacts fail in the passive state (i.e., contacts remain closed). In this default mode, the strobes shall revert to a non-synchronized default flash rate.
- NS/NS4/NH devices shall be designed for operation at 12 or 24 VDC, over their respective listed voltage ranges of 10.5 to 15.6 VDC; and 20.0 to 31.0 VDC. The units shall be designed for operation on filtered DC, or unfiltered  $V_{RMS}$ . Rated average current for NS/NS4 Series devices shall depend upon voltage and strobe intensity; the NS Series current shall be as low as 0.053 amperes for 24 VDC versions and 0.133 amperes for 12 VDC versions (both with volume set at high-dB output). Rated average current for Series NH (volume set at high-dB output) shall be 0.021 amperes for 24 VDC versions and 0.014 amperes for 12 VDC versions.
- All versions shall be polarized for DC supervision and shall incorporate screw terminals for in/out field wiring of size #18 AWG (0.75 mm<sup>2</sup>) to #12 AWG (3.25 mm<sup>2</sup>).
- NS/NS4/NH shall incorporate a unique Universal Mounting Plate which shall allow mounting to single-gang, double-gang, 4" (10.16 cm) square, 100 mm European backboxes or Wheelock's SHBB surface backbox. No additional trim plate shall be required for flush mounting.
- Dimensions for NS/NS4/NH appliances shall be 4.75" (120.650 mm) square by 1.22" (30.988 mm) deep.

*Due to continuous development of products offered by NOTIFIER, specifications and product availability are subject to change without notice in accordance with NOTIFIER standard terms and conditions.*