City of Aurora
Building Codes Division
15151 E Alameda Pkwy
Aurora, CO 80012
(303) 739-7420

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1400 S. POTOMAC

PROJECT:

ONCOLOGY CLINIC/INFUSION CENTER
1400 S. POTOMAC ST. - SUITE 215
AURORA, CO

BUILDING CLASSIFICATIONS AND CODES

STORIES: 2 FLOORS
USE: OFFICE
CONSTRUCTION TYPE: TYPE-1-A
SPRINKLERED: FULLY

OCCUPANCY GROUP: B

REQUIREMENTS: REQUIRED PER 2006 I.F.C. SECTION 907.2.2

CODES: 2006 I.B.C.
2006 I.F.C.
2002 N.F.P.A. 72

SYSTEM TYPE AND MONITORING

FIRE ALARM SYSTEM CLASSIFICATIONS: (NFPA 72, CHAPTER 8, SECTION 4)
THIS SYSTEM WILL CONTINUE TO BE MONITORED BY AN APPROVED CLASS 1 CENTRAL STATION

CITY OF AURORA
BUILDING DIVISION
APPROVED AS NOTED
DATE 2/16/10
OK for Counter
JMP
NFPA 72 ('02)

Metro State Fire
INCORPORATED

Metro State Fire, Inc
P.O. Box 150548
Lakewood, Colorado 80215

303-789-0016 (Phone)
303-789-1893 (Fax)
kip@metrostatefire.com (E-Mail)

10 454211

RSN : 521412
Permit : 10 454211

UBC IN SPK
IBC: B

PROFESSIONAL ENGINEER:

ARAPPCO ENGINEERING CO.
P.O. BOX 620788
LITTLETON, CO 80162
303-973-6407

Metro State Fire INCORPORATED

NOTES/ REVISIONS

FIRE ALARM SYSTEM TENANT FINISH FOR:

PROJECT NAME: ONCOLOGY CLINIC/INFISION CENTER
BUILDING: 1400 S. POTOMAC
ADDRESS: 1400 S. POTOMAC ST. - SUITE 215 AURORA, CO

STAMP

COLORADO LICENSED
RONALD HERBERT
26136
PROFESSIONAL ENGINEER
2-16-10

DRAWN BY: DJO
DATE: 2/15/10
JOB NUMBER: P10-125
FLOOR/SUITE: SUITE 215
SHEET TITLE: FIRE

SHEET NUMBER:

FA-00

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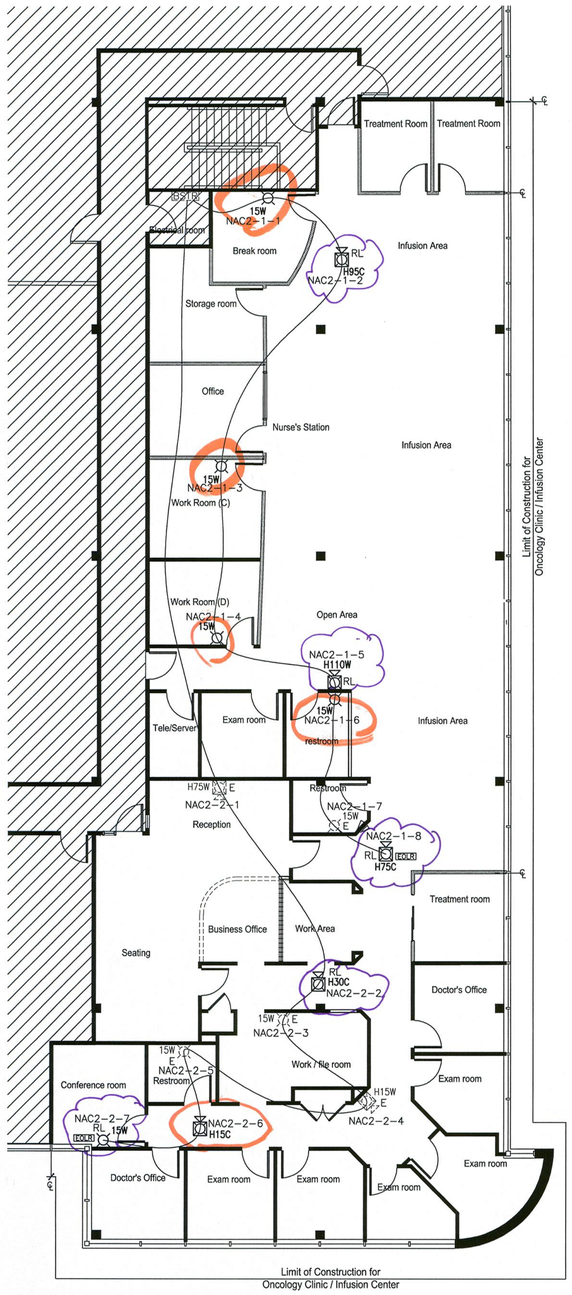
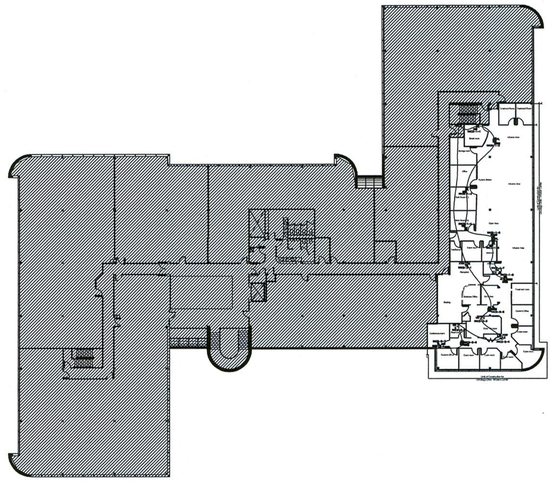




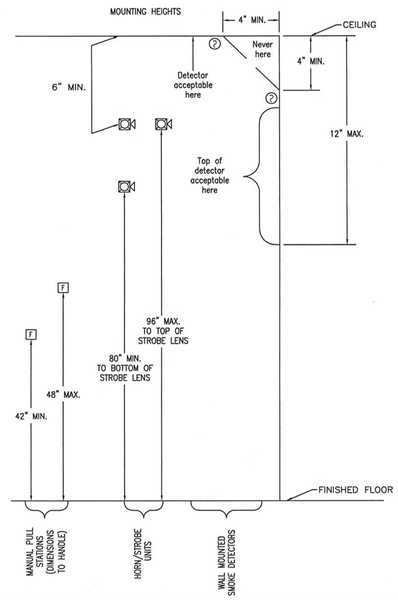
KEY MAP

FIRE ALARM SYMBOLS LEGEND

DEVICES	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL
GMAP	GRAPHIC MAP
BSTR	POWER SUPPLY
F	PULL STATION
	HEAT DETECTOR/BASE
	PHOTO DETECTOR/BASE
HxxC	HORN STROBE – xx INDICATES CANDELA – CEILING MT.
H C/W	HORN – CEILING/WALL MOUNT
xxW	STROBE – xx INDICATES CANDELA – WALL MT.
FS	FLOW SWITCH
TS	TAMPER SWITCH
MM	MONITOR MODULE
	DUCT DETECTOR
RTS	REMOTE TEST SWITCH

E= EXISTING DEVICE
RL= RELOCATED DEVICE
NAC WIRE TYPE CLASS B STYLE Y

RR= REMOVE AND REINSTALL DEVICE
D= DEMO DEVICE
SLC WIRE TYPE CLASS B STYLE 4



1400 S. POTOMAC ST - 2ND FLOOR

NAC SCHEDULE / VOLTAGE DROP CALCULATION
17 % MAXIMUM VOLTAGE DROP
CIRCUIT OUTPUT VOLTAGE = 20.4 (FOR CALCULATIONS)

CIRCUIT	DESCRIPTION	CIRCUIT TYPE	ESTIMATED CIRCUIT LENGTH	A/V 15cd 0.129	A/V 75cd 0.281	A/V 110cd 0.337	V/O 15cd 0.103	A/V CIL 15CD 0.147	A/V CIL 30cd 0.190	A/V CIL 75cd 0.316	A/V CIL 95cd 0.372	TOTAL CKT. LOAD (AMPS)	WIRE GAUGE (18, 16, 14, 12)	CALCULATED VOLTAGE DROP %	CALCULATED VOLTAGE DROP (VOLTS)	TOTAL CIRCUIT RESISTANCE	MAXIMUM ALLOWABLE CKT. LENGTH
NAC2-1	SUITE 215 SOUTH CIRCUIT	A/V	224 ft.	0	0	1	5	0	0	1	1	1.540	14	10.38%	2.118	1.4 Ohms	370 ft.
NAC2-2	SUITE 215 NORTH CIRCUIT	A/V	258 ft.	1	1	0	3	1	1	0	0	1.056	14	8.20%	1.673	1.6 Ohms	540 ft.
NAC2-3	SPARE	A/V	0 ft.	0	0	0	0	0	0	0	0	0.000	14	0.00%	0.000	0.0 Ohms	0 ft.
NAC2-4	SPARE	A/V	0 ft.	0	0	0	0	0	0	0	0	0.000	14	0.00%	0.000	0.0 Ohms	0 ft.
			Appliance Summary	1	1	1	8	1	1	1	1	Total Load (AMPS) 2.596					

METHOD USED TO CALCULATE PERCENT OF VOLTAGE DROP:
[(CIRCUIT LENGTH IN FEET X 2) (AMPS X OHMS/FOOT)] X 100
20.4 VOLTS

Wire Resistance At
75 Degrees Celsius
Ohm/1000 ft
12GA = 1.93
14GA = 3.07
16GA = 4.89
18GA = 7.77
WIRE RESISTANCE BASED ON 2002 NEC, CHAPTER 9, TABLE 8 (UNCOATED SOLID COPPER WIRE)

BATTERY CALCULATIONS

FOR: 1400 S. POTOMAC
2ND FLOOR

HOURS OF SUPERVISION: 24 HOURS
MINUTES OF ALARM: 5 MINUTES

PANEL: EST BPS10

ITEM	QTY	PART NUMBER	DESCRIPTION	Device Supervisory Current	Device Alarm Current	Total Supervisory Current	Total Alarm Current
1	1	EXISTING	EST BOOSTER PANEL	0.065000	0.065000	0.065000	0.065000
			TOTAL:			0.065000	0.065000

PERIPHERAL:

ITEM	QTY	PART NUMBER	DESCRIPTION	Device Supervisory Current	Device Alarm Current	Total Supervisory Current	Total Alarm Current
1	4	EXISTING	15CD STROBE WALL MOUNT	0.000000	0.103000	0.000000	0.412000
2	1	EXISTING	15CD HORN/STROBE WALL MOUNT	0.000000	0.129000	0.000000	0.129000
3	1	EXISTING	75CD HORN/STROBE WALL MOUNT	0.000000	0.281000	0.000000	0.281000
4	1	EXISTING	95CD HORN/STROBE WALL MOUNT	0.000000	0.337000	0.000000	0.337000
5	1	EXISTING	30CD HORN/STROBE CEILING MOUNT	0.000000	0.190000	0.000000	0.190000
6	1	EXISTING	75CD HORN/STROBE CEILING MOUNT	0.000000	0.316000	0.000000	0.316000
7	1	EXISTING	95CD HORN/STROBE CEILING MOUNT	0.000000	0.372000	0.000000	0.372000
8	4	G1-VM	15CD STROBE WALL MOUNT	0.000000	0.103000	0.000000	0.412000
9	1	GC-HDVM	15CD HORN/STROBE CEILING MOUNT	0.000000	0.147000	0.000000	0.147000
			TOTAL:			0.000000	2.596000

SUPERVISORY:		
PANEL:	0.065000	AMPS
PERIPHERAL	0.000000	AMPS
SUB-TOTAL:	0.065000	AMPS
X HOURS OF SUPERVISORY:	24.0000	HOURS
SUB-TOTAL:	1.560000	AMP HOURS
ALARM:		
PANEL:	0.065000	AMPS
PERIPHERAL:	2.596000	AMPS
SUB-TOTAL:	2.661000	AMPS
X MINUTES OF ALARM:	0.08333	HOURS
SUB-TOTAL:	0.221750	AMP HOURS
TOTALS:		
TOTAL SUPERVISORY:	1.560000	AMP HOURS
TOTAL ALARM:	0.221750	AMP HOURS
TOTAL:	1.781750	AMP HOURS
TOTAL PLUS SAFETY FACTOR(20%)	2.13810	AMP HOURS
Batteries Supplied - 1 Set of:	7.00000	AMP HOURS

CITY OF AURORA
BUILDING DIVISION
APPROVED AS NOTED JMP
DATE 2/16/10
NFPA 72(.02)

10 454211

1400 S. POTOMAC SEQUENCE OF OPERATIONS

SYSTEM INPUTS / SYSTEM OUTPUTS

		FACP Annunciation						Notification				Fire Safety				Monitoring			
		Actuate Common Alarm Signal Indicator	Actuate Audible Alarm Signal	Actuate Common Supervisory Signal Indicator	Actuate Audible Supervisory Signal	Actuate Common Trouble Signal Indicator	Actuate Audible Common Trouble Signal	Display Change of Status	Actuate 1st Floor Evacuation Signals (Horns/Strobes)	Actuate 2nd Floor Evacuation Signals (Horns/Strobes)	Actuate Exterior Horns/Strobe	Silence Audible Signal (Horns)	Release Magnetically Held Smoke Doors	Recall Elevator(s) to 1st Floor – Primary Recall	Recall Elevator(s) to 2nd Floor – Alternate Recall	Shut Down Air Handling Units	Transmit Fire Alarm Signal to Supervising Station	Transmit Trouble Signal to Supervising Station	Transmit Supervisory Signal to Supervising Station	
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
1	Manual Pull Station – 1st Floor	X	X					X	X			X				X	X			1
2	Manual Pull Station – 2nd Floor	X	X					X	X	X		X				X	X			2
3	Smoke Sensor – 1st Floor Elev Lobby	X	X					X	X	X		X	X			X	X			3
4	Smoke Sensor – 2nd Floor Elev Lobby	X	X					X	X	X		X	X			X	X			4
5	Smoke Sensor – 1st Floor	X	X					X	X	X		X				X	X			5
6	Smoke Sensor – 2nd Floor	X	X					X	X	X		X				X	X			6
7	Duct Smoke Sensor – 1st Floor			X	X			X								X			X	7
8	Duct Smoke Sensor – 2nd Floor			X	X			X								X			X	8
9	Heat Sensors – 1st Floor	X	X					X	X	X		X				X	X			9
10	Heat Sensors – 2nd Floor	X	X					X	X	X		X				X	X			10
11	Sprinkler Waterflow – 1st Floor	X	X					X	X	X	X	X				X	X			11
12	Sprinkler Waterflow – 2nd Floor	X	X					X	X	X	X	X				X	X			12
13	Sprinkler Control Valve			X	X			X											X	13
14	FACP AC Power Failure					X	X	X				X						X		14
15	FACP Low Battery					X	X	X										X		15
16	Open Circuit					X	X	X										X		16
17	Ground Fault					X	X	X										X		17
18	Notification Appliance Circuit Short					X	X	X										X		18
19	Alarm Signal Silence											X								19
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	

SUITE 215

SCALE: 1/8" = 1'-0"

Metro State Fire INCORPORATED

NOTES/ REVISIONS

FIRE ALARM SYSTEM TENANT FINISH FOR:
ONCOLOGY CLINIC/INFUSION CENTER

PROJECT NAME
BUILDING 1400 S. POTOMAC
ADDRESS 1400 S. POTOMAC AURORA, CO

STAMP

COLORADO LICENSED
DONALD HUNTLEY
REGISTERED
26136
PROFESSIONAL ENGINEER
2-16-10

DRAWN BY: DJO
DATE: 2/15/10
JOB NUMBER: P10-125
FLOOR/SUITE: SUITE 215
SHEET TITLE: FIRE

SHEET NUMBER: FA-01

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PSN 521412

Metro State Fire
INCORPORATED

P.O. Box 150548 • Lakewood, CO 80215 • Phone (303) 789-0016 • Fax (303) 789-1893

ONCOLOGY CLINIC / INFUSION CENTER
1400 S. POTOMAC ST. – SUITE 215
AURORA, COLORADO

SCOPE OF WORK:

1. PROVIDE AND INSTALL FOUR (4) STROBES.
2. PROVIDE AND INSTALL ONE (1) HORN/STROBE.
3. RELOCATE ONE (1) STROBE.
4. RELOCATE FOUR (4) HORN/STROBES.

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Overview

Genesis ceiling horn-strobes are small, compact, and attractive audible-visible emergency signaling devices. Protruding no more than 1.6" (41 mm) from the ceiling, Genesis horn-strobes blend with any decor.

Thanks to patented breakthrough technology, GE Security Genesis strobes do not require bulky specular reflectors and lenses. Instead, an exclusive cavity design conditions light to produce a highly controlled distribution pattern. Significant development efforts employing this new technology have given rise to a new benchmark in strobe performance – FullLight technology.

FullLight strobe technology produces a smooth light distribution pattern without the spikes and voids characteristic of specular reflectors. This ensures the entire coverage area receives consistent illumination from the strobe flash. As a result, Genesis strobes with FullLight technology go well beyond the minimum UL-required "cross" pattern.

Depending on the model, Genesis horn-strobes feature 15 to 95, or 95 to 177 candela output (see ordering information), which is selectable with a conveniently-located switch on the front of the device. The candela output setting is clearly visible even after final installation, yet it remains locked in place to prevent unauthorized movement after installation.

Genesis horn-strobes feature textured housings in architecturally neutral white or eye-catching fire alarm red. An ingenious iconographic symbol indicates the purpose of the device. This universal symbol is code-compliant and is easily recognized by all building occupants regardless of what language they speak. Models with "FIRE" markings are also available.

Standard Features

- Field configurable – no need to remove the device!
  - 15/30/75/95 cd and 95/115/150/177 cd models available
  - Switch settings remain visible even after the unit is installed
  - Low/high dB settings
- Unique low-profile design
  - 30 per cent slimmer profile than comparable signals
  - No visible mounting screws
  - Available with white or red housings
- Easy to install
  - Fits all standard 4" square electrical boxes with plenty of room behind the signal for extra wire – no extension ring or trim plate needed
  - Pre-assembled with captive hardware – no loose pieces
  - #18 to #12 AWG terminals – ideal for long runs or existing wiring
- Unparalleled performance
  - Exclusive FullLight strobe technology produces the industry's most even light distribution
  - Single high-efficiency microprocessor controls both horn and strobe
  - Low current draw minimizes system overhead
  - Independent horn control provided over a single pair of wires
  - Highly regulated in-rush current allows the maximum number of strobes on a circuit
  - 100 dB peak – multiple frequency tone improves wall penetration

Field Configurable Ceiling Horn-Strobes

Genesis Series

FM Pending MEA

One or more patents pending.

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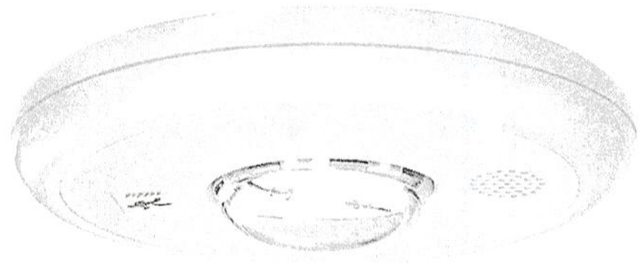


Application

Genesis strobes are UL 1971-listed for use indoors as ceiling-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed 105 dBA (87dBA in Canada), where occupants use hearing protection, and in areas of public accommodation as defined in the *Americans with Disabilities Act (see application notes – USA).*

Combination horn-strobe signals must be installed in accordance with guidelines established for strobe devices.

Strobes

Genesis strobes are UL 1971-listed for use indoors as wall-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed specified levels, where occupants use hearing protection, and in areas of public accommodation. Consult with your Authority Having Jurisdiction for details.

All Genesis strobes exceed UL synchronization requirements (within 10 milliseconds other over a two-hour period) when used with a synchronization source. Synchronization is important in order to avoid epileptic sensitivity.

NOTE: The flash intensity of some visible signals may not be adequate to alert or waken occupants in the protected area. Research indicates that the intensity of strobe needed to awaken 90% of sleeping persons is approximately 100 cd. GE Security recommends that strobes in sleeping rooms be rated at at least 110 cd.

WARNING: These devices will not operate without electrical power. As fires frequently cause power interruptions, further safeguards such as backup power supplies may be required.

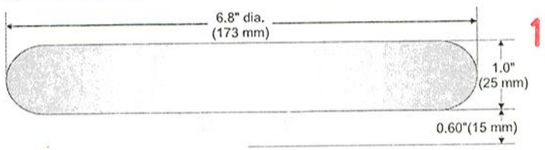
Horns

Genesis horn output reaches as high as 99 dB (peak) and features a unique multiple frequency tone that results in excellent wall penetration and an unmistakable warning of danger. All models may be configured for either coded or non-coded signal circuits. They can also be set for low dB output with a jumper cut that reduces horn output by about 5 dB.

The suggested sound pressure level for each signaling zone used with alert or alarm signals is at least 15 dB above the average ambient sound level, or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5 feet (1.5 m) above the floor. The average ambient sound level is, A-weighted sound pressure measured over a 24-hour period.

Doubling the distance from the signal to the ear will theoretically result in a 6 dB reduction of the received sound pressure level. The actual effect depends on the acoustic properties of materials in the space. A 3 dBA difference represents a barely noticeable change in volume.

Dimensions



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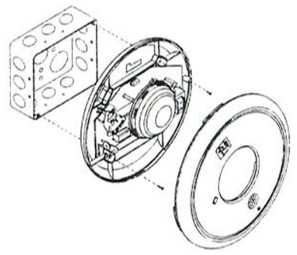
Installation and Mounting

All models are intended for indoor wall or ceiling applications only. Horn-strobes mount to any flush North-American 4" square electrical box.



Genesis ceiling horn-strobes simply unlatch and twist to open. This gains access to mounting screws and the selectable candela switch. The shallow depth of Genesis devices leaves ample room behind the signal for extra wiring. Once installed with the cover in place, no mounting screws are visible.

GE Security recommends that these fire alarm horn-strobes always be installed in accordance with the latest recognized edition of national and local fire alarm codes.

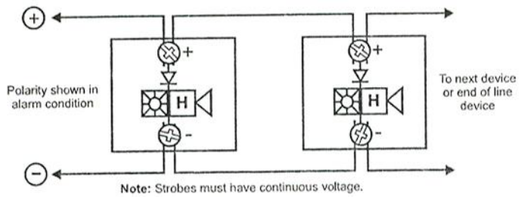
Field Configuration

Depending on the model, Genesis horn-strobes may be set for 15 to 95, or 95 to 177 candela output (see ordering information). The output setting is changed by simply opening the device and sliding the switch to the desired setting. The horn-strobe does not have to be removed to change the output setting. The setting remains visible through a small window on the front of the device after the cover is closed.

The horn-strobe comes factory set for high dB output. Low dB output may be selected by cutting a jumper on the circuit board. This reduces the output by about 5 dB.

Wiring

Field wiring terminals accommodate #18 to #12 AWG (0.75 mm² to 2.5 mm²) wiring. Horn/strobes are interconnected with a single pair of wires as shown below.



Note: Strobes must have continuous voltage.

Current Draw

GC-HDVM Temporal Horn-strobe: High dB Setting

UL Rating	15 cd RMS	30 cd RMS	75 cd RMS	95 cd RMS
16 Vdc	147	190	316	372
16 Vfwr	189	253	417	451

GC-HDVM Temporal Horn-strobe: High dB Setting

Typical Current	15 cd RMS	15 cd Mean	30 cd RMS	30 cd Mean	75 cd RMS	75 cd Mean	95 cd RMS	95 cd Mean
16 Vdc	111	95	152	143	281	276	333	328
20 Vdc	91	80	124	117	219	214	257	251
24 Vdc	80	71	108	101	185	180	212	207
33 Vdc	69	62	89	84	144	140	160	156
16 Vfwr	153	81	218	123	388	240	420	268
20 Vfwr	141	70	190	100	325	188	378	219
24 Vfwr	135	64	176	90	280	154	310	180
33 Vfwr	139	61	167	80	241	122	254	133

GC-HDVM Temporal Horn-strobe: Low dB Setting

Typical Current	15 cd RMS	15 cd Mean	30 cd RMS	30 cd Mean	75 cd RMS	75 cd Mean	95 cd RMS	95 cd Mean
16 Vdc	108	91	149	139	275	269	327	322
20 Vdc	87	75	120	113	214	209	250	245
24 Vdc	76	66	103	97	180	175	205	201
33 Vdc	64	57	85	80	138	135	153	150
16 Vfwr	141	76	204	118	384	239	418	265
20 Vfwr	127	65	176	95	312	181	371	214
24 Vfwr	118	60	162	82	262	149	301	171
33 Vfwr	127	56	155	73	229	118	249	129

GC-HDVMH High cd Temporal Horn-strobe: High dB Setting

95 cd RMS	115 cd RMS	150 cd RMS	177 cd RMS
341	399	506	570
487	578	670	711

GC-HDVMH High cd Temporal Horn-strobe: High dB Setting

95 cd RMS	95 cd Mean	115 cd RMS	115 cd Mean	150 cd RMS	150 cd Mean	177 cd RMS	177 cd Mean
324	322	377	374	477	474	554	551
258	256	299	296	369	366	417	414
220	217	252	249	304	301	341	338
172	169	188	185	223	220	244	241
463	265	535	312	665	400	718	442
392	211	439	240	517	287	587	334
346	179	382	212	458	246	498	271
296	142	323	152	358	178	387	194

GC-HDVMH High cd Temporal Horn-strobe: Low dB Setting

95 cd RMS	95 cd Mean	115 cd RMS	115 cd Mean	150 cd RMS	150 cd Mean	177 cd RMS	177 cd Mean
317	315	378	376	480	477	544	542
252	250	292	290	364	362	414	411
212	211	245	243	297	295	334	332
159	157	181	179	215	213	234	232
461	265	521	305	656	396	705	432
381	208	437	242	508	285	576	326
335	172	370	195	440	235	485	264
285	134	308	149	349	169	373	186

Notes and Comments

1. Current values are shown in mA.
2. UL Nameplate Rating can vary from Typical Current due to measurement methods and instruments used.
3. GE Security recommends using the Typical Current for system design including NAC and Power Supply loading and voltage drop calculations.
4. Use the Vdc RMS current ratings for filtered power supply and battery AH calculations. Use the Vfwr RMS current ratings for unfiltered power supply calculations.
5. Fuses, circuit breakers and other overcurrent protection devices are typically rated for current in RMS values. Most of these devices operate based upon the heating affect of the current flowing through the device. The RMS current (not the mean current) determines the heating affect and therefore, the trip and hold threshold for those devices.
6. Our industry has used 'mean' currents over the years. However, UL will direct the industry to use the 2004 RMS values in the future.

dBA output

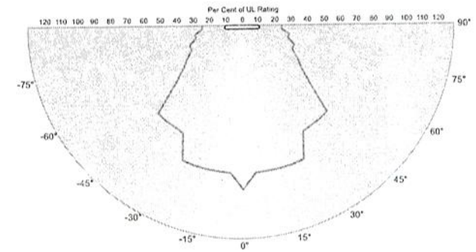
High dB Setting	UL464 Temporal	UL464 Steady	Average Temporal/ Steady	Peak Temporal/ Steady
16 Vdc	79.8	83.2	90.6	93.6
24 Vdc	83.3	85.4	93.6	96.6
33 Vdc	85	87.8	95.7	98.7

Low dB Setting	UL464 Temporal	UL464 Steady	Average Temporal/ Steady	Peak Temporal/ Steady
16 Vdc	75	79.3	86.3	88.7
24 Vdc	78	83	88.8	92.4
33 Vdc	80.9	85.9	91.8	95.1

Notes
1. All values shown are dBA measured at 10 feet (3.01m); **2.** UL464 values measured in reverberation room; **3.** Average and Peak values are measured in anechoic chamber.

Light output - (effective cd)

Percent of UL rating versus angle



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U.S.
T 888-378-2329
F 866-503-3996

Canada
T 519 376 2430
F 519 376 7258

Asia
T 852 2907 8108
F 852 2142 5063

Australia
T 61 3 9259 4700
F 61 3 9259 4799

Europe
T 32 2 725 11 20
F 32 2 721 86 13

Latin America
T 305 593 4301
F 305 593 4300

www.gesecurity.com/est

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Specifications

Housing	Textured UV stabilized, color impregnated engineered plastic. Exceeds 94V-0 UL flammability rating. Red and white models available.
Lens	Optical grade polycarbonate (clear)
Mounting	North-American 4" square box, 2 1/8" (54 mm) deep (indoor wall or ceiling applications only).
Wire connections	Screw terminals: single input for both horn and strobe. #18 to #12 AWG (0.75 mm² to 2.5 mm²) wire size
Operating environment	Indoor: 32-120°F (0-49°C) ambient temperature. 93% relative humidity
Agency listings/approvals	Meets or exceeds ULC-S541, year 2004 UL requirements for standards UL1638 and UL1971, and complies with UL1480. All horn-strobes comply with ADA Code of Federal Regulation Chapter 28 Part 36 Final Rule. CSFM, MEA. FM pending.
Operating voltage	GC-HDVM series temporal-tone horn-strobes: non-coded, filtered 16-33 Vdc or unfiltered 16-33 Vdc FWR (or coded (audible NAC only) when used with optional G1M Genesis Signal Master)
Strobe output rating	UL 1971, UL 1638, ULC S526: selectable 15/30/75/95 cd (GC-HDVM) and 95/115/150/177 cd (GC-HDVMH)
Strobe flash rate	GC-HDVM series temporal-tone horn-strobes: one flash per second synchronized with optional G1M Genesis Signal Master indefinitely within 10 milliseconds (or self-synchronized within 200 milliseconds over thirty minutes on a common circuit without G1M Genesis Signal Master) Temporal setting (private mode only): synchronized to temporal output of horns on same circuit
Synchronization Sources	G1M-RM, SIGA-CC1S, SIGA-MCC1S, BPS6A, BPS10A
Horn pulse rate	GC-HDVM series temporal-tone horn-strobes: temporal rate synchronized with optional G1M Genesis Signal Master indefinitely within 10 milliseconds (or self-synchronized within 200 milliseconds over thirty minutes on a common circuit without G1M Genesis Signal Master)
Temporal audible pattern	½ sec ON, ½ sec OFF, ½ sec ON, ½ sec OFF, ½ sec ON, 1½ sec OFF, then repeat cycle

Ordering Information

Catalog Number	Housing Color	Marking	Description	Ship Wt. lbs (kg)
GC-HDVM	White	None	Genesis Ceiling/Wall Horn-Strobe with selectable 15, 30, 75, or 95 cd output	0.82 (1.8)
GCF-HDVM	White	"FIRE"		
GCFR-HDVM	Red	"FIRE"		
GC-HDVMH	White	None	Genesis Ceiling/Wall Horn-Strobe with selectable 95, 115, 150, or 177 cd output	
GCF-HDVMH	White	"FIRE"		

Accessories		
G1M-RM	Genesis Signal Master – Remote Mount (1-gang)	0.2 (0.1)
SIGA-CC1S	Intelligent Synchronization Output Module (2-gang)	0.5 (0.23)
SIGA-MCC1S	Intelligent Synchronization Output Module (Plug-in UIO)	0.18 (0.08)



White Field Configurable Ceiling Horn-Strobes may be ordered with or without optional 'FIRE' marking. Red Horn-Strobes come with 'FIRE" marking.

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imagination at work

Overview

The Genesis line of signals are among the smallest, most compact audible-visible emergency signaling devices in the world. About the size of a deck of playing cards, these devices are designed to blend with any decor.

Thanks to patented breakthrough technology, GE Security Genesis strobes do not require bulky specular reflectors and lenses. Instead, an exclusive cavity design conditions light to produce a highly controlled distribution pattern. Significant development efforts employing this new technology have given rise to a new benchmark in strobe performance – FullLight technology.

FullLight strobe technology produces a smooth light distribution pattern without the spikes and voids characteristic of specular reflectors. This ensures the entire coverage area receives consistent illumination from the strobe flash. As a result, Genesis strobes with FullLight technology go well beyond the minimum UL-required "T" pattern, significantly exceeding UL-1971 and ULC-S526 light distribution requirements.

Genesis strobes and horn-strobes offer 15 to 110 candela output, which is selectable with a conveniently-located switch on the side of the device. Models are also available that offer fixed 15/75 cd output. The candela output setting remains clearly visible even after final installation, yet it stays locked in place to prevent unauthorized tampering.

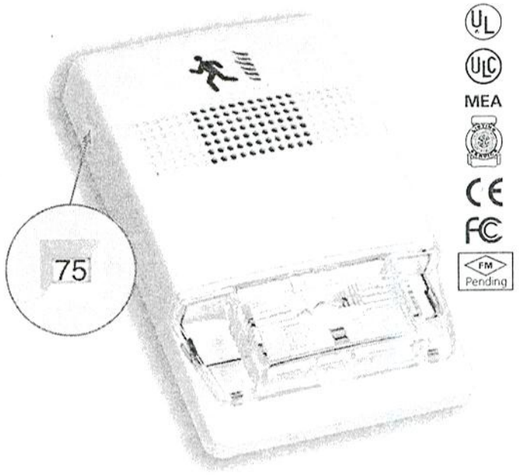
Genesis signals feature textured housings in architecturally neutral white or traditional fire red. An ingenious iconographic symbol indicates the purpose of the device. This universal symbol is code-compliant and is easily recognized by all building occupants regardless of what language they speak. Models with "FIRE" markings are also available.

Standard Features

- Unique low-profile design
  - The most compact UL-1971/ULC-S526 listed strobe available
  - Ultra-slim – protrudes less than one inch
  - Attractive appearance
  - No visible mounting screws
- Four field-configurable options in one device
  - Select 15, 30, 75, or 110 cd strobe output
  - Select high (default) or low dB horn output
  - Select temporal (default) or steady horn output
  - Select public mode flash rate (default) or private mode temporal flash
- Fixed 15/75 cd model available
- Easy to install
  - Fits standard 1-gang electrical boxes – no trim plate needed
  - Optional trim plate accommodates oversized openings
  - Pre-assembled with captive hardware
  - #12 AWG terminals – ideal for long runs or existing wiring
- Unparalleled performance
  - Industry's most even light distribution
  - Meets tough synchronizing standards for strobes
  - Single microprocessor controls both horn and strobe
  - Low current draw minimizes system overhead
  - Independent horn control over a single pair of wires
  - Highly regulated in-rush current
  - Multiple frequency tone improves sound penetration
  - Industry's first temporal strobe output

Field Configurable Horns and Strobes

Genesis Series



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Application

Genesis strobes are UL 1971-listed for use indoors as wall-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed 105 dBA (87dBA in Canada), where occupants use hearing protection, and in areas of public accommodation as defined in the *Americans with Disabilities Act (see application notes – USA)*.

Combination horn-strobe signals must be installed in accordance with guidelines established for strobe devices.

Strobes

Genesis strobes are UL 1971-listed for use indoors as wall-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed specified levels, where occupants use hearing protection, and in areas of public accommodation. Consult with your Authority Having Jurisdiction for details.

All Genesis strobes exceed UL synchronization requirements (within 10 milliseconds other over a two-hour period) when used with a synchronization source. Synchronization is important in order to avoid epileptic sensitivity.

NOTE: The flash intensity of some visible signals may not be adequate to alert or waken occupants in the protected area. Research indicates that the intensity of strobe needed to awaken 90% of sleeping persons is approximately 100 cd. GE Security recommends that strobes in sleeping rooms be rated at at least 110 cd.

WARNING: These devices will not operate without electrical power. As fires frequently cause power interruptions, further safeguards such as backup power supplies may be required.

Horns

Genesis horn output reaches as high as 99 dB and features a unique multiple frequency tone that results in excellent sound penetration and an unmistakable warning of danger. Horns may be configured for either coded or non-coded signal circuits. They can also be set for low dB output with a jumper cut that reduces horn output by about 5 dB. Horn-only models may be ceiling-mounted or wall-mounted.

The suggested sound pressure level for each signaling zone used with alert or alarm signals is at least 15 dB above the average ambient sound level, or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5 feet (1.5 m) above the floor. The average ambient sound level is, A-weighted sound pressure measured over a 24-hour period.

Doubling the distance from the signal to the ear will theoretically result in a 6 dB reduction of the received sound pressure level. The actual effect depends on the acoustic properties of materials in the space. A 3 dBA difference represents a barely noticeable change in volume.

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Installation

Genesis horns and strobes mount to any standard one-gang surface or flush electrical box. Matching optional trim plates are used to cover oversized openings and can accommodate one-gang, two-gang, four-inch square, or octagonal boxes, and European 100 mm square.



Genesis Horn/Strobe with optional trim plate

All Genesis signals come pre-assembled with captive mounting screws for easy installation. Two tabs at the top of the signal unlock the cover to reveal the mounting hardware. The shallow depth of Genesis devices leaves ample room behind the signal for extra wiring. Once installed with the cover in place, no mounting screws are visible.

Field Configuration

Temporal horn and horn-strobe models are factory set to sound in a **three-pulse temporal pattern**. Units may be configured for use with coded systems by cutting a jumper on the circuit board. This results in a **steady output** that can be turned on and off (coded) as the system applies and removes power to the signal circuit. A Genesis Signal Master is required when horn-strobe models are configured for coded systems. Non-temporal, horn-only models sound a steady tone.

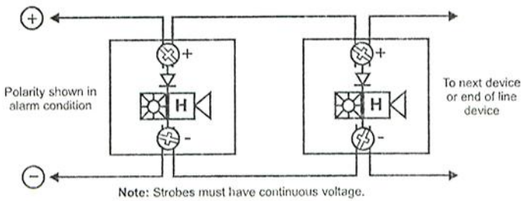
Genesis strobes and horn-strobes are shipped from the factory ready for use as **UL 1971 compliant** signals for public mode operation. These signals may be configured for **temporal flash** by cutting a jumper on the circuit board. This battery-saving feature is intended for private mode signaling only.

Genesis strobes and horn-strobes may be set for **15, 30, 75, or 110 candela output**. The output setting is changed by simply opening the device and sliding the switch to the desired setting. The device does not have to be removed to change the output setting. The setting remains visible through a small window on the side of the device after the cover is closed.

Horns and horn-strobes are factory set for **high dB output**. **Low dB output** may be selected by cutting a jumper on the circuit board. This reduces the output by about 5 dB.

Wiring

Field wiring terminals accommodate #18 to #12 AWG (0.75 mm² to 2.5 mm²) wiring. Horns, strobes, and combination horn-strobes are interconnected with a single pair of wires as shown below.



Note: Strobes must have continuous voltage.

Current Draw

Strobes, Horn-Strobes

Multi-cd Wall Strobes (G1-VM)

UL Rating	15 cd*	30 cd*	15/75 cd**	75 cd*	110 cd*
	RMS	RMS	RMS	RMS	RMS
16 Vdc	103	141	152	255	311
16 Vfwr	125	179	224	346	392

*G1-VM multi-cd; **G1F-V1575 fixed 15/75 cd

Typical Current	15 cd		30 cd		15/75		75 cd		110 cd	
	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean
16 Vdc	85	79	127	124	150	140	245	243	285	283
20 Vdc	71	66	98	96	123	114	188	186	240	238
24 Vdc	59	55	82	80	104	97	152	150	191	190
33 Vdc	46	44	64	63	84	77	112	111	137	136
16 Vfwr	119	64	169	97	223	126	332	203	376	240
20 Vfwr	103	51	143	76	189	100	253	150	331	198
24 Vfwr	94	44	129	65	169	85	218	121	262	152
33 Vfwr	87	37	112	52	148	68	179	89	205	106

Wall Temporal Horn-strobes – High dB Setting

UL Rating	15 cd*	30 cd*	15/75 cd**	75 cd*	110 cd*
	RMS	RMS	RMS	RMS	RMS
16 Vdc	129	167	172	281	337
16 Vfwr	176	230	269	397	443

*G1-HDVM multi-cd
**G1F-HDV1575 fixed 15/75 cd

Typical Current	15 cd		30 cd		15/75		75 cd		110 cd	
	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean
16 Vdc	102	89	135	129	160	152	246	242	309	305
20 Vdc	88	77	109	104	137	129	193	190	248	243
24 Vdc	81	71	94	90	122	114	161	158	203	200
33 Vdc	74	64	72	74	106	98	124	121	154	151
16 Vfwr	144	77	182	106	247	143	352	212	393	249
20 Vfwr	141	68	162	87	220	120	274	158	362	210
24 Vfwr	136	65	152	76	203	106	235	133	282	165
33 Vfwr	125	54	144	65	196	94	201	101	232	123

Wall Temporal Horn-strobes – Low dB Setting

UL Rating	15 cd*	30 cd*	15/75 cd**	75 cd*	110 cd*
	RMS	RMS	RMS	RMS	RMS
16 Vdc	122	160	146	274	330
16 Vfwr	162	216	231	383	429

*G1-HDVM multi-cd
**G1F-HDV1575 fixed 15/75 cd

Typical Current	15 cd		30 cd		15/75		75 cd		110 cd	
	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean
16 Vdc	96	84	130	124	158	149	243	240	302	297
20 Vdc	79	70	104	99	133	124	189	186	241	237
24 Vdc	68	61	88	84	119	110	156	154	197	193
33 Vdc	56	52	71	68	100	93	118	116	146	143
16 Vfwr	128	69	180	104	241	139	344	204	389	244
20 Vfwr	118	60	157	84	213	115	266	156	343	200
24 Vfwr	113	54	144	74	195	101	230	128	279	161
33 Vfwr	112	48	137	64	182	87	197	99	226	117

Horns

Wall or Ceiling Mounted Temporal Horns (G1-HD)

UL Rating	High dB (RMS)	Low dB (RMS)
16 Vdc	26	19
24 Vdc	36	27
33 Vdc	41	33
16 Vfwr	51	37
24 Vfwr	69	52
33 Vfwr	76	70

Typical Current	High dB		Low dB	
	RMS	Mean	RMS	Mean
16 Vdc	22	17	17	14
20 Vdc	24	19	19	16
24 Vdc	27	21	22	18
33 Vdc	32	25	26	22
16 Vfwr	34	15	30	14
20 Vfwr	40	19	34	16
24 Vfwr	45	21	38	18
33 Vfwr	52	24	47	22

Wall or Ceiling Mounted Horns (G1-P)

UL Designation	Voltage Range	Max. Current, RMS
Regulated 24 Vdc	16 - 33 Vdc	13 mA
24 fwr	16 - 33 Vfwr	11 mA

Typical Current	RMS	Mean
24 Vdc	10	10
24 Vdc	11	11
31 Vdc	12	12
20 Vfwr	9	8
24 Vfwr	10	9

Notes and Comments

1. Current values are shown in mA.
2. UL Nameplate Rating can vary from Typical Current due to measurement methods and instruments used.
3. GE Security recommends using the Typical Current for system design including NAC and Power Supply loading and voltage drop calculations.
4. Use the Vdc RMS current ratings for filtered power supply and battery AH calculations. Use the Vfwr RMS current ratings for unfiltered power supply calculations.
5. Fuses, circuit breakers and other overcurrent protection devices are typically rated for current in RMS values. Most of these devices operate based upon the heating affect of the current flowing through the device. The RMS current (not the mean current) determines the heating affect and therefore, the trip and hold threshold for those devices.
6. Our industry has used 'mean' currents over the years. However, UL will direct the industry to use the 2004 RMS values in the future.

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