THESE DRAWINGS DEPICT GENERAL LOCATIONS OF LIFE SAFETY EQUIPMENT & FIELD DEVICES. EXACT ROUTING OF CONDUITS TO BE DETERMINED IN THE FIELD BY THE INSTALLING CONTRACTOR TO SUIT CONDITIONS.

GENERAL NOTES

- 2. ALL FIRE ALARM SYSTEM WIRING SHALL BE CLEAR FROM SHORTS, OPENS AND GROUNDS.
- 3. SHOULD ANY CONDITIONS EXIST THAT DIFFER FROM WHAT IS INDICATED ON THESE DRAWINGS WHICH CAUSE MAJOR DEVIATIONS IN THE WORK SHOWN, THE CONTRACTOR SHALL CONTACT THE DESIGNER IN A TIMELY MANNER SO AS NOT TO IMPAIR THE CONSTRUCTION SCHEDULE.
- 4. CONTRACTOR IS RESPONSIBLE FOR MAKING AND OBTAINING APPROVAL FOR ALL NECESSARY ADJUSTMENTS IN CIRCUITING AS REQUIRED TO ACCOMMODATE THE RELOCATION OF EQUIPMENT AND/OR DEVICES WHICH ARE AFFECTED BY ANY AUTHORIZED CHANGE.
- 5. THE POWER CIRCUIT TO THE FACP AND TO THE FIRE ALARM POWER SUPPLIES SHALL BE ON A DEDICATED 120V, 20A BRANCH CIRCUIT BREAKER, AND SHALL HAVE A RED MARKING, LOCK-ON PROVISION AND SHALL BE IDENTIFIED AS "FIRE ALARM CIRCUIT CONTROL." THE LOCATION OF THE CIRCUIT DISCONNECT MEANS (CIRCUIT BREAKER) SHALL BE PERMANENTLY IDENTIFIED AT THE FIRE ALARM CONTROL UNIT.
- ANY SMOKE DETECTOR HEAD INSTALLED BEFORE THE BUILDING IS CLEANED AND ACCEPTED SHALL BE COVERED TO PROTECT FROM DUST.
- INSTALLATION OF DEVICES SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. POWER LIMITED AND NON-POWER LIMITED FIELD WIRING MUST BE INSTALLED WITHIN THE FACP ENCLOSURE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- 8. ALL WIRING SHALL BE INSTALLED ACCORDING TO NFPA 70 (NEC)
- 9. FIRE ALARM CIRCUITS EXTENDING BEYOND ONE BUILDING AND RUN OUTDOORS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 70 ARTICLES 760, 770, 725 AND 800 WHERE APPLICABLE.
- 10. ALL WIRING, INCLUDING SHIELDS MUST BE DRY AND FREE OF SHORTS AND GROUNDS.
- 11. ALL SHIELDED WIRE MUST HAVE SHIELD CONTINUITY AT FULL LENGTH OF THE WIRE.
- 12. ONLY FIRE ALARM SYSTEM WIRING CAN BE RUN IN THE SAME CONDUIT.
- 13. MAINTAIN 40 PERCENT MAXIMUM CONDUIT FILL RATIO AS PER NEC REQUIREMENTS.
- 14. EXISTING CONDUITS MAY BE USED BY THE INSTALLATION CONTRACTOR AS DEEMED NECESSARY, HOWEVER, ANY EXISTING CONDUIT WILL BE USED ONLY IF CONDUITS MEET CURRENT STANDARDS AND CODES.
- 15. THE FIRE ALARM SYSTEM SHALL BE MONITORED BY A CENTRAL UL LISTED MONITORING STATION. THE MEANS OF MONITORING SHALL BE VIA TWO COPPER ANALOG PHONE LINES, AND THE FIRE ALARM PANEL WILL SEIZE THE LINES FOR FIRE USE.
- 16. ALL CEILINGS ARE ASSUMED TO BE 10' A.F.F., SMOOTH CONSTRUCTION UNLESS NOTED OTHERWISE.
- 17. DEVICES LOCATED INSIDE THE RATED AREA MUST ADHERE TO EXPLOSION PROOF CONDUIT AND BACK BOX REQUIREMENTS.

SCOPE OF WORK

- 1. INSTALLATION OF NEW FIRE ALARM DEVICES AS SHOWN ON PLANS.
- 2. THE FIRE ALARM SYSTEM SHALL BE COMPLIANT TO CURRENT CODES.

APPLICABLE CODES

INTERNATIONAL BUILDING CODE - 2018 ED.

INTERNATIONAL MECHANICAL CODE - 2018 ED.

UNIFORM PLUMBING CODE - 2018 ED.

INTERNATIONAL FUEL GAS CODE - 2018 ED.

INTERNATIONAL ENERGY CONSERVATION CODE - 2018 ED.

NATIONAL ELECTRICAL CODE - 2017 ED.

INTERNATIONAL FIRE CODE - 2018 ED.

ADA STANDARDS FOR ACCESSIBLE DESIGN - 2010 ED

NFPA 72 2019 EDITION

SHEET INDEX				
SHEET#	SHEET DESCRIPTION			
FA-00	COVER SHEET			
FA-01	SEQUENCE OF OPERATION			
FA-02	EQUIPMENT LIST, CABLE & WIRE LEGEND			
FA-03	BATTERY CALCULATION			
FA-04	VOLTAGE DROP			
FA-05	MODULE FUNCTION			
FA-06	RISER DIAGRAM			
FA-07	HP STATIONARY - 1MW HYDROGEN ENGINE ENCLOSURE PLAN - DIMENSIONS			
FA-08	HP STATIONARY - 1MW HYDROGEN ENGINE ENCLOSURE PLAN - AREA C			
FA-09	HP STATIONARY - 1MW HYDROGEN ENGINE ENCLOSURE PLAN - AREA A			
FA-10	HP STATIONARY - 1MW HYDROGEN ENGINE ENCLOSURE PLAN - AREA B			
FA-11	HP STATIONARY - 1MW HYDROGEN ENGINE ENCLOSURE PLAN - AREA D			
FA-12	NFS-320 / FACP-1 WIRING DIAGRAM			
FA-13	HON-CGW-MBB / CLSS WIRING DIAGRAM			
FA-14	30-3013/EXPLOSION PROOF SMOKE DETECTOR WIRING DIAGRAM			
FA-15	SMOKE DETECTOR WIRING DIAGRAM			
FA-16	XP10-M/TEN INPUT MONITOR MODULE WIRING DIAGRAM			
FA-17	WALL MOUNT HORN/STROBE WIRING DIAGRAM			

POWER PLUG

DESIGN

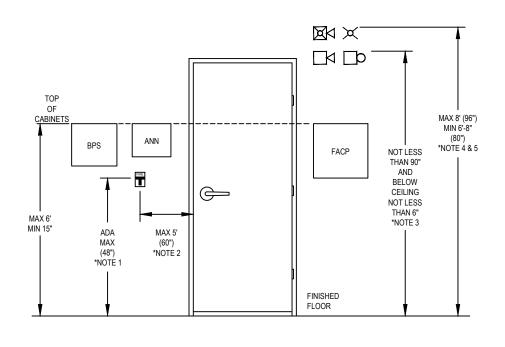
HYDROGEN ENGINE

REVIS	ION:	
	FIRST RELEASE	
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FIRE ALARM SYSTEM COVER SHEET

TYPICAL MOUNTING HEIGHTS

- 1. NFPA 72 2019 17.15.6 THE OPERABLE PART OF EACH MANUAL FIRE ALARM BOX SHALL BE NOT LESS THAN 42in AND NOT MORE THAN 48in FROM THE FINISHED FLOOR.
- 2. NFPA 72 2019 17.15.9.4 MANUAL FIRE ALARM BOXES SHALL BE LOCATED WITHIN 5ft OF EACH EXIT DOORWAY ON EACH FLOOR.
- 3. NFPA 72 2019 18.4.9.1 IF CEILING HEIGHTS ALLOW, AND UNLESS OTHERWISE PERMITTED BY 18.4.9.2 THROUGH 18.4.9.5, WALL-MOUNTED APPLIANCES SHALL HAVE THEIR TOPS ABOVE THE FINISHED FLOORS AT HEIGHTS OF NOT LESS THAN 90in AND BELOW THE FINISHED CEILINGS AT DISTANCES OF NOT LESS THAN 6in.
- 4. NFPA 72 2019 18.4.9.3 IF COMBINATION AUDIBLE/ VISIBLE APPLIANCES ARE INSTALLED, THE LOCATION OF THE INSTALLED APPLIANCE SHALL BE DETERMINED BY THE REQUIREMENTS OF 18.5.5. (SEE NOTE 5).
- 5. NFPA 72 2019 18.5.5.1 WALL-MOUNTED APPLIANCES SHALL BE MOUNTED SUCH THAT THE ENTIRE LENS IS NOT LESS THAN 80in. AND NOT GREATER THAN 96in ABOVE THE FINISHED FLOOR OR AT THE MOUNTING HEIGHT SPECIFIED USING THE PERFORMANCE BASED ALTERNATIVE OF 18.5.5.7.



ALARM SIGNAL OF FREE ALARM CONTROL PANEL **EVENT** SMOKE DETECTOR **EXPLOSION-PROOF SMOKE DETECTOR FACP AC POWER FAILURE** SYSTEM LOW BATTERY **OPEN CIRCUIT GROUND FAULT** NOTIFICATION APPLIANCE CIRCUIT SHORT

NOTE: ALL SIGNALS WILL BE SENT TO A CENTRAL STATION

PROJECT

PLUG POWER - HYDROGEN ENGINE DESIGN LAYOUT

HEET DESCRIPTION: FIRE ALARM SYSTEM SEQUENCE OF

AWN BY: THAIS REZEND
TE: 10 21 2022

OPERATION

EQUIPMENT LIST					
SYMBOL	QTY	MANUFACTURER	PART NO	DESCRIPTION	AGENCY LISTING
[FACU]	1	NOTIFIER	NFS-320	INTELLIGENT ADDRESSABLE FIRE ALARM CONTROL PANEL	UL/ULC Listed: S635 - FM Approved - CSFM: 7165-0028:0243 - MEA: 128-07 - Fire Dept. of New York: COA# 6212 - City of Chicago - ULC Listed: S527-11 - US Coast Guard 161.002/50/0, 161.002/55/0 - Lloyd's Register 11/600013 - American Bureau of Shipping (ABS) Type Approval.
[CLSS]	1	HONEYWELL	HON-CGW-MBB	CONNECTED LIFE SAFETY SERVICES (CLSS) GATEWAY FOR PLC INTERFACE	UL: File No. S35608- CSFM: 7300-1637:0504 - FDNY: COA# 2021-TMCOAP-006279-AMND - FCC ID: PV3CGWMB - IC: 1609A-CGWMB.
SS _{120v}	1	DITEK	DTK-120HW	OVERVOLTAGE PROTECTOR CIRCUIT PROTECTION-120V	UL 1449, 3rd Edition, cUL
XP10-M	1	NOTIFIER	XP10-M	TEN INPUT MONITOR MODULE	UL Listed: S635 - ULC Listed: S635 (XP10-MA) - CSFM approved: 7300-0028:219 - FM approved - MEA approved: 43-02-E - Maryland State Fire Marshal approved: Permit #2106.
(S) _{XP}	2	NOTIFIER	30-3013	EXPLOSION-PROOF SMOKE DETECTOR	FM Approved (Class 1 Div 1 Groups B, C. D T4 - Class 1 Div 2 Groups A, B, C, D, T4 - Class 1 Zone1 AWX db ia IIC T4 Gb) - IEC/IECx (FMG 15.0014X - Ex db ia IIC T4 Gb).
(S)	3	NOTIFIER	FSV-951R W/B300-6 BASE	VERY INTELLIGENT EARLY WARNING SMOKE DETECTOR, STANDARD BASE	UL/ULC Listed: (S911, S1115, S747) - FM Approved: (450568, 3062622) - CSFM: (7272-0028:0506, 7300-1653:0109).
₩ _P	2	GENTEX	WGEC24-75WR	HORN STROBE, RED, WALL, OUTDOOR	ANSI/UL Listed:(464, 1638) - CAN/ULC Listed:(S525, S526) - CSFM: (7135-0569:122, 7300-0569:124) - MEA approved: 285-91E-XVI.

	CABLE AND WIRE LEGEND					
LABEL	PART NO	AWG	RESISTANCE (Ω/KFT)	DESCRIPTION	TOTAL LENGTH	
RS232	18/2 FPLP (CLSS)	18	6.5	CLSS - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED	3'	
D	18/2 FPLP (SLC)	18	6.5	SLC - 2 COND. SOLID COPPER FPLP ADDRESSABLE UNSHIELDED	14'	
Р	14/2 FPLP (AUX)	14	2.6	AUX POWER - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED	38'	
V	14/2 FPLP (NAC)	14	2.6	NAC - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED	17'	
Z	18/2 FPLP (IDC)	18	6.5	IDC - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED	106'	

REVISION:
FIRST RELEASE

SHEET DESCRIPTION

FIRE ALARM SYSTEM
EQUIPMENT LIST,
CABLE & WIRE LEGEND

DRAWN BY: THAIS REZEND
DATE: 10.21.2022

			PANEL FAC	CU-1 (NFS-320) BATTERY CA	ALCULATION			
			(SECONDA	RY POWER SOURCE REQUI	,			
	PANEL P	OWER SUPPLY MAX CURF	RENT = 6A				N ALARM) = 1.4445A (24.08 %)	
					STANDBY CURR	ENT (AMPS)	SECONDARY ALARM (CURRENT (AMPS)
		QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
1			CPS-24	Fire Alarm Power Supply Card	0	0	0	0
PANEL COMPONENTS		1	CPU-320	NFS-320 Fire Alarm Control Panel Main Board (Central Processing Unit)	0.39	0.39	0.39	0.39
		1	KDM-R2	Keypad/Display Unit	0.1	0.1	0.1	0.1
CIRCUIT	SYMBOL	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
FACU-1•AUX	⟨S⟩ _{XP}	2	30-3013	Explosion-Proof Smoke Detector	0.115	0.23	0.146	0.292
FACU-TAUX	CLSS	1	HON-CGW-MBB	CLSS Gateway with the enclosure	0.14	0.14	0.25	0.25
FACU-1•L1	S	3	FSV-951R w/B300-6 Base	Very Intelligent Early Warning smoke detector. Standard Base	0.0002	0.0006	0.0045	0.0135
	XP10-M	1	XP10-M	Ten Input Monitor Module	0.003	0.003	0.003	0.003
FACU-1•N1	₩ _P	2	WGEC24-75WR	Horn Strobe, Red, Wall, Outdoor 75cd	0	0	0.198	0.396
FACU-1•NUP (RS232)	CLSS	1	HON-CGW-MBB	CLSS Gateway with the enclosure	0	0	0	0
					TOTAL STANDBY (A)	0.8636	TOTAL ALARM (A)	1.4445
							DBY TIME = 24 HOURS	
						REQUIRED ALAR	M TIME = 5 MINUTES	
SECONDARY STANDBY LOAD (A) 0.8636					24 20.73			
		LARM LOAD (A)		1.4445	0.08		0.12	
		SUBTOTAL (AMP HOURS)				7	20.85	
		G FACTOR					1.2	
	SECONDARY LOAD REQU	JIREMENTS (AMP HOURS)					25.02	
			PR	OVIDE (2) 12V 26AH BATTER	RIES			

REVISION:
FIRST RELEASE

T DESCRIPTION:

FIRE ALARM SYSTEM BATTERY CALCULATION

DATE: 10.21.2022

SCALE: N.T.S

d Copper FPLP Analog Unshielded	Starting Calculation Voltage: Min. Operational Voltage: Max. Circuit Current (A): Wire Resistance (Ω/kFt): Total Circuit Length (Ft):	20.4 16 5 2.6 36	Max. Voltage Drop: End Of Line Voltage: Voltage Drop Percent: Total Circuit Current (A): Spare Current (A):	0.1 20.3 0.50 % 0.542 4.458
•	Max. Circuit Current (A): Wire Resistance (Ω/kFt):		Voltage Drop Percent: Total Circuit Current (A):	0.50 % 0.542
•	Wire Resistance (Ω/kFt):		Total Circuit Current (A):	0.542
•	, ,		, ,	
•	Total Circuit Length (Ft):	36	Spare Current (A):	4.458
Distance measured using drawn segment lengths with 10.00 % additional length calculated		0.189646	Spare Current (A) Percent:	89.16 %
Description	Qty.	Device Current (A)	Total Current (A)	
Explosion-Proof Smoke Detr	ector 2	0.146	0.292	
CLSS Gateway with the encl	osure 1	0.25	0.25	
	Description Explosion-Proof Smoke Det	Description Qty. Explosion-Proof Smoke Detector 2	Description Qty. Device Current (A) Explosion-Proof Smoke Detector 2 0.146	Description Qty. Device Current (A) Total Current (A) Explosion-Proof Smoke Detector 2 0.146 0.292

Total Resistance (Ω) = Wire Resistance (Ω /Ft) x 2 x Total Circuit Length (Ft) Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

Starting Calculation Voltage: Min. Operational Voltage: Max. Circuit Current (A): Wire Resistance (Ω/kFt):	20.4 16 3 2.6	Max. Voltage Drop: End Of Line Voltage: Voltage Drop Percent: Total Circuit Current (A):	0.04 20.36 0.17 %
Max. Circuit Current (A):	16 3 2.6	Voltage Drop Percent:	0.17 %
` '	3 26	• .	
Wire Resistance (Ω/kFt):	2.6	Total Circuit Current (A):	
, , ,	2.0	Total Circuit Culterit (A).	0.396
Total Circuit Length (Ft):	17	Spare Current (A):	2.604
Total Circuit Resistance (Ω):	0.090058	Spare Current (A) Percent:	86.80 %
Qty.	Device Current (A)	Total Current (A)	
tdoor 2	0.198	0.396	
	Total Circuit Resistance (Ω):	Total Circuit Resistance (Ω): 0.090058 Qty. Device Current (A)	Total Circuit Resistance (Ω): 0.090058 Spare Current (A) Percent: Qty. Device Current (A) Total Current (A)

Calculation Methods:

Total Resistance (Ω) = Wire Resistance (Ω /Ft) x 2 x Total Circuit Length (Ft)

Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

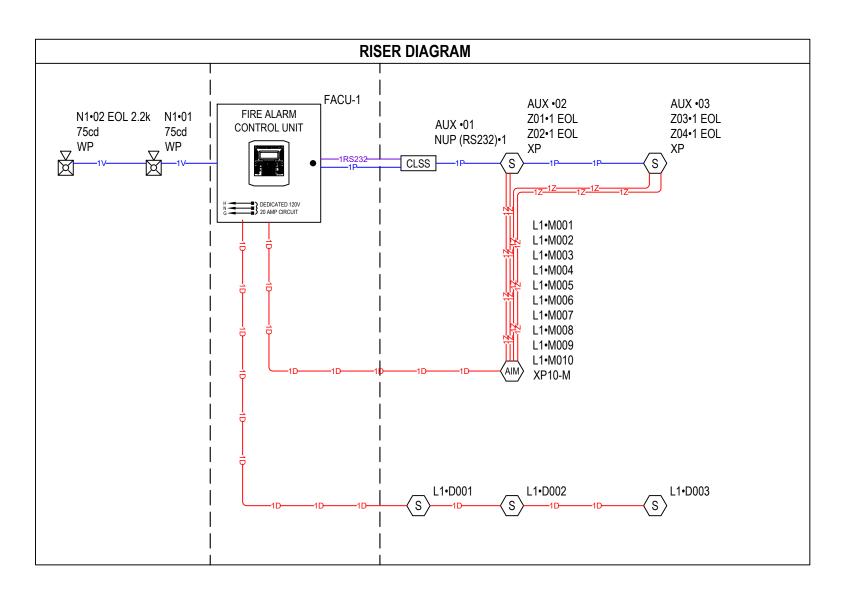
FIRST RELEASE

FIRE ALARM SYSTEM VOLTAGE DROP

	MODULE FUNCTION
L1•M001	Z01 - Explosion-Proof Smoke Detector 1 - Alarm
L1•M002	Z02 - Explosion-Proof Smoke Detector 1 - Trouble
L1•M003	Z03 - Explosion-Proof Smoke Detector 2 - Alarm
L1•M004	Z04 - Explosion-Proof Smoke Detector 2 - Trouble
L1•M005	Spare
L1•M006	Spare
L1•M007	Spare
L1•M008	Spare
L1•M009	Spare
L1•M010	Spare

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
MODULE FUNCTION

DRAWN BY: THAIS REZEND
DATE: 10.21.2022



HEET DESCRIPTION:

FIRE ALARM SYSTEM RISER DIAGRAM

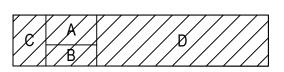
DATE: 10.21.2022

SCALE: N.T.S.

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1" EXLOSION PROOF CONDUIT FOR FIRE ALARM WIRING IF DETERMINED CLASS 1 DIVISION 1 CLASSIFICATION BY OWNER

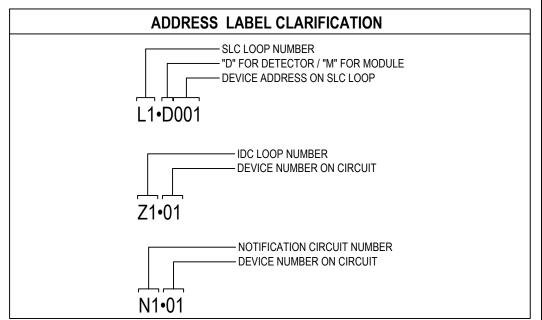
KEYPLAN



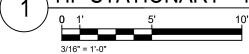
N1•02 <u>EOL 2.2k</u> ————————————————————————————————————	AUX •02 Z01•1 <u>EOL</u> Z02•1 <u>EOL</u> XP	
S L1-D003 S FACU N1-01 AUX +01 NUP (RS232)-1	PUEL CELL ENGINE ROOM AUX *03 Z03*1 EOL Z04*1 EOL XP 295.65 in 295.65 in 205.65 in 205.65 in 206.65 in 207.65 i	REAR END (DOUBLE FANS)

	DEVICE LEGEND
SYMBOL	DESCRIPTION
FACU	INTELLIGENT ADDRESSABLE FIRE ALARM CONTROL PANEL
CLSS	CONNECTED LIFE SAFETY SERVICES (CLSS) GATEWAY FOR PLC INTERFACE
SS 120v	OVERVOLTAGE PROTECTOR CIRCUIT PROTECTION-120V
XP10-M	TEN INPUT MONITOR MODULE
S XP	EXPLOSION-PROOF SMOKE DETECTOR
(S)	VERY INTELLIGENT EARLY WARNING SMOKE DETECTOR, STANDARD BASE
₩P	HORN STROBE, RED, WALL, OUTDOOR

CABLE AND WIRE LEGEND				
LABEL	AWG	DESCRIPTION		
RS232	18	CLSS - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED		
D	18	SLC - 2 COND. SOLID COPPER FPLP ADDRESSABLE UNSHIELDED		
Р	14	AUX POWER - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED		
V	14	NAC - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED		
Z	18	IDC - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED		



HP STATIONARY - 1MW HYDROGEN ENGINE ENCLOSURE PLAN - DIMENSIONS



FIRST RELEASE

PLUG POWER - HYDROGEN ENGINE DESIGN LAYOUT

SHEET DESCRIPTION

FIRE ALARM SYSTEM HP STATIONARY - 1MW HYDROGEN ENGINE ENCLOSURE PLAN DIMENSIONS

DATE: 10.21.2022

SCALE: 3/16" = 1'-0"

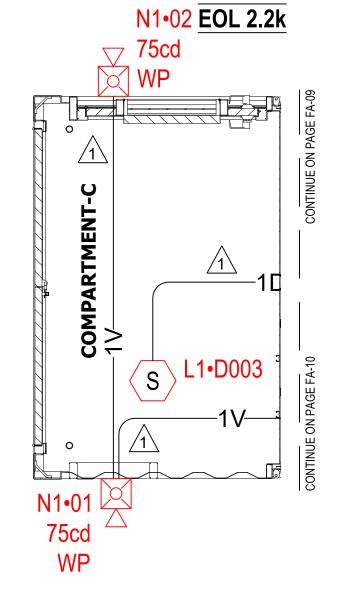
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1" EXLOSION PROOF CONDUIT FOR FIRE ALARM WIRING IF DETERMINED CLASS 1 DIVISION 1 CLASSIFICATION BY OWNER

KEYPLAN

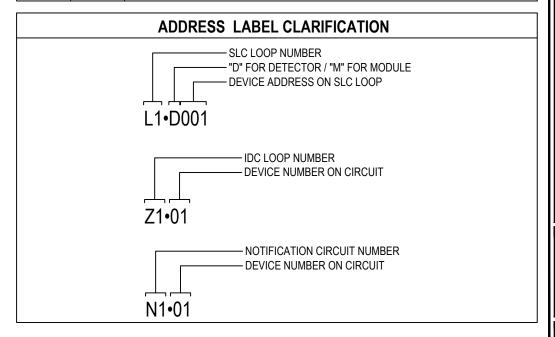
D

FRONT END (GOOSENECK TUNNEL)



DEVICE LEGEND				
SYMBOL	DESCRIPTION			
FACU	INTELLIGENT ADDRESSABLE FIRE ALARM CONTROL PANEL			
CLSS	CONNECTED LIFE SAFETY SERVICES (CLSS) GATEWAY FOR PLC INTERFACE			
SS 120v	OVERVOLTAGE PROTECTOR CIRCUIT PROTECTION-120V			
XP10-M	TEN INPUT MONITOR MODULE			
(S) _{XP}	EXPLOSION-PROOF SMOKE DETECTOR			
(S)	VERY INTELLIGENT EARLY WARNING SMOKE DETECTOR, STANDARD BASE			
₩ _{WP}	HORN STROBE, RED, WALL, OUTDOOR			

CABLE AND WIRE LEGEND									
LABEL	AWG	DESCRIPTION							
RS232	18	CLSS - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED							
D	18	SLC - 2 COND. SOLID COPPER FPLP ADDRESSABLE UNSHIELDED							
Р	14	AUX POWER - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED							
V	14	NAC - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED							
Z	18	IDC - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED							





THAIS REZENDE
TE: 10.21.2022
ALE: 1/2" = 1'-0"

HP STATIONARY - 1MW HYDROGEN ENGINE ENCLOSURE PLAN AREA C

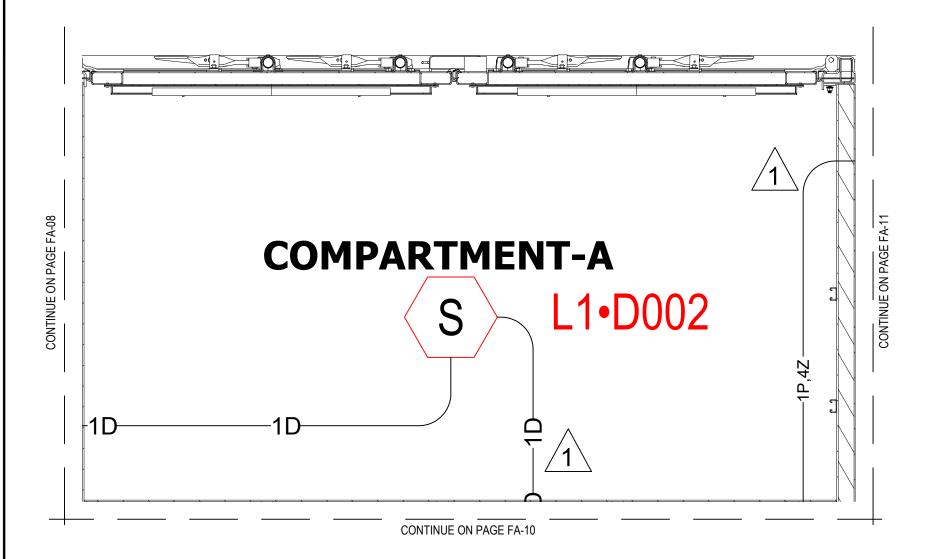
FIRST RELEASE

PLUG POWER - HYDROGEN ENGINE DESIGN LAYOUT

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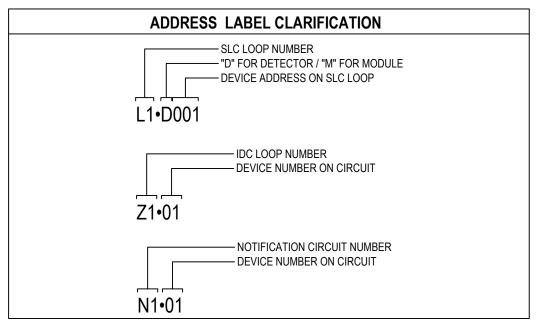
1" EXLOSION PROOF CONDUIT FOR FIRE ALARM WIRING IF DETERMINED CLASS 1 DIVISION 1 CLASSIFICATION BY OWNER

KEYPLAN C B D



	DEVICE LEGEND
SYMBOL	DESCRIPTION
FACU	INTELLIGENT ADDRESSABLE FIRE ALARM CONTROL PANEL
CLSS	CONNECTED LIFE SAFETY SERVICES (CLSS) GATEWAY FOR PLC INTERFACE
SS _{120v}	OVERVOLTAGE PROTECTOR CIRCUIT PROTECTION-120V
XP10-M	TEN INPUT MONITOR MODULE
⟨S⟩ _{XP}	EXPLOSION-PROOF SMOKE DETECTOR
(S)	VERY INTELLIGENT EARLY WARNING SMOKE DETECTOR, STANDARD BASE
₩P	HORN STROBE, RED, WALL, OUTDOOR

	CABLE AND WIRE LEGEND									
LABEL	AWG	DESCRIPTION								
RS232	18	CLSS - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED								
D	18	SLC - 2 COND. SOLID COPPER FPLP ADDRESSABLE UNSHIELDED								
Р	14	AUX POWER - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED								
V	14	NAC - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED								
Z	18	IDC - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED								



1 HP STATIONARY - 1MW HYDROGEN ENGINE ENCLOSURE PLAN - AREA A

REVISION:
FIRST RELEASE

PLUG POWER - HYDROGEN ENGINE DESIGN LAYOUT

SHEET DESCRIPTION

FIRE ALARM SYSTEM HP STATIONARY - 1MW HYDROGEN ENGINE ENCLOSURE PLAN AREA A

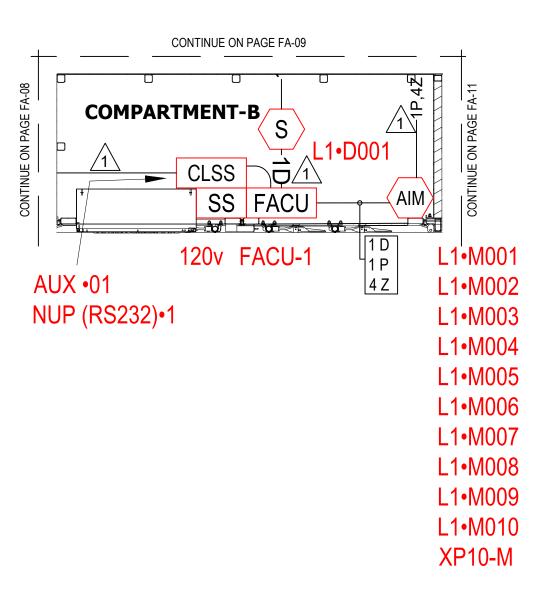
DATE: 10.21.2022

SCALE: 1" = 1'-0"

1

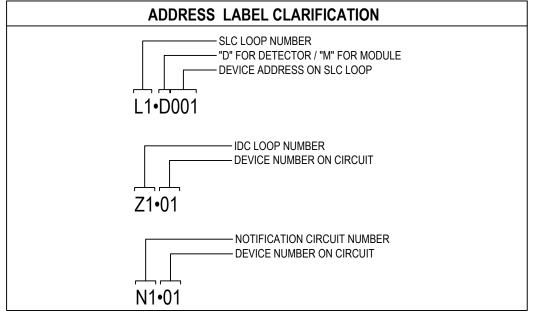
1" EXLOSION PROOF CONDUIT FOR FIRE ALARM WIRING IF DETERMINED CLASS 1 DIVISION 1 CLASSIFICATION BY OWNER

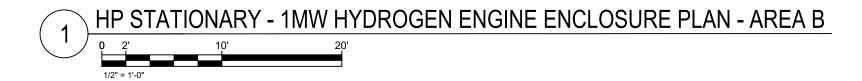
KEYPLAN C A D



	DEVICE LEGEND
SYMBOL	DESCRIPTION
FACU	INTELLIGENT ADDRESSABLE FIRE ALARM CONTROL PANEL
CLSS	CONNECTED LIFE SAFETY SERVICES (CLSS) GATEWAY FOR PLC INTERFACE
SS 120v	OVERVOLTAGE PROTECTOR CIRCUIT PROTECTION-120V
XP10-M	TEN INPUT MONITOR MODULE
S XP	EXPLOSION-PROOF SMOKE DETECTOR
(S)	VERY INTELLIGENT EARLY WARNING SMOKE DETECTOR, STANDARD BASE
₩P	HORN STROBE, RED, WALL, OUTDOOR

	CABLE AND WIRE LEGEND									
LABEL	AWG	DESCRIPTION								
RS232	18	CLSS - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED								
D	18	SLC - 2 COND. SOLID COPPER FPLP ADDRESSABLE UNSHIELDED								
Р	14	AUX POWER - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED								
V	14	NAC - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED								
Z	18	IDC - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED								





PLUG POWER - HYDROGEN ENGINE DESIGN LAYOUT

SHEET DESCRIPTIO

FIRE ALARM SYSTEM HP STATIONARY - 1MW HYDROGEN ENGINE ENCLOSURE PLAN AREA B

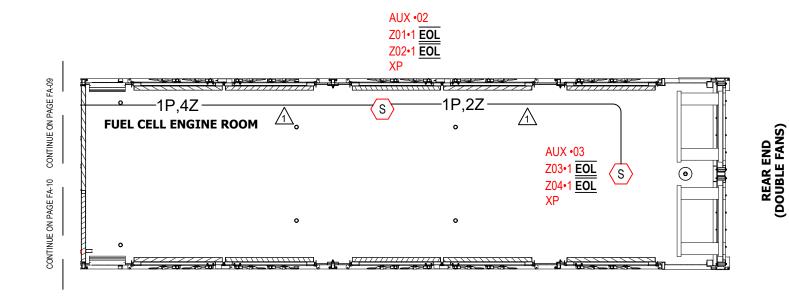
DATE: 10.21.2022

SCALE: 1/2" = 1'-0"

1

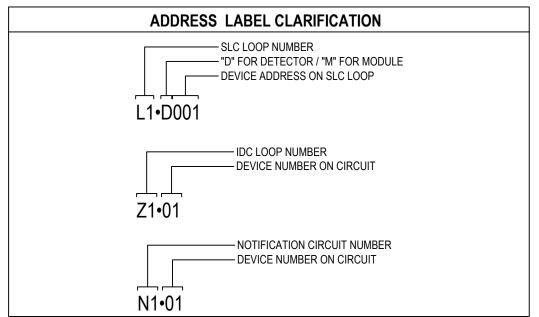
1" EXLOSION PROOF CONDUIT FOR FIRE ALARM WIRING IF DETERMINED CLASS 1 DIVISION 1 CLASSIFICATION BY OWNER

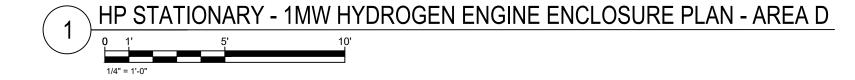
C A B



	DEVICE LEGEND
SYMBOL	DESCRIPTION
FACU	INTELLIGENT ADDRESSABLE FIRE ALARM CONTROL PANEL
CLSS	CONNECTED LIFE SAFETY SERVICES (CLSS) GATEWAY FOR PLC INTERFACE
SS _{120v}	OVERVOLTAGE PROTECTOR CIRCUIT PROTECTION-120V
XP10-M	TEN INPUT MONITOR MODULE
⟨S⟩ _{XP}	EXPLOSION-PROOF SMOKE DETECTOR
(S)	VERY INTELLIGENT EARLY WARNING SMOKE DETECTOR, STANDARD BASE
₩ _{WP}	HORN STROBE, RED, WALL, OUTDOOR

CABLE AND WIRE LEGEND									
LABEL	AWG	DESCRIPTION							
RS232	18	CLSS - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED							
D	18	SLC - 2 COND. SOLID COPPER FPLP ADDRESSABLE UNSHIELDED							
Р	14	AUX POWER - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED							
V	14	NAC - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED							
Z	18	IDC - 2 COND. SOLID COPPER FPLP ANALOG UNSHIELDED							





PLUG POWER - HYDROGEN ENGINE DESIGN LAYOUT

FIRST RELEASE

FIRST RELEASE

C

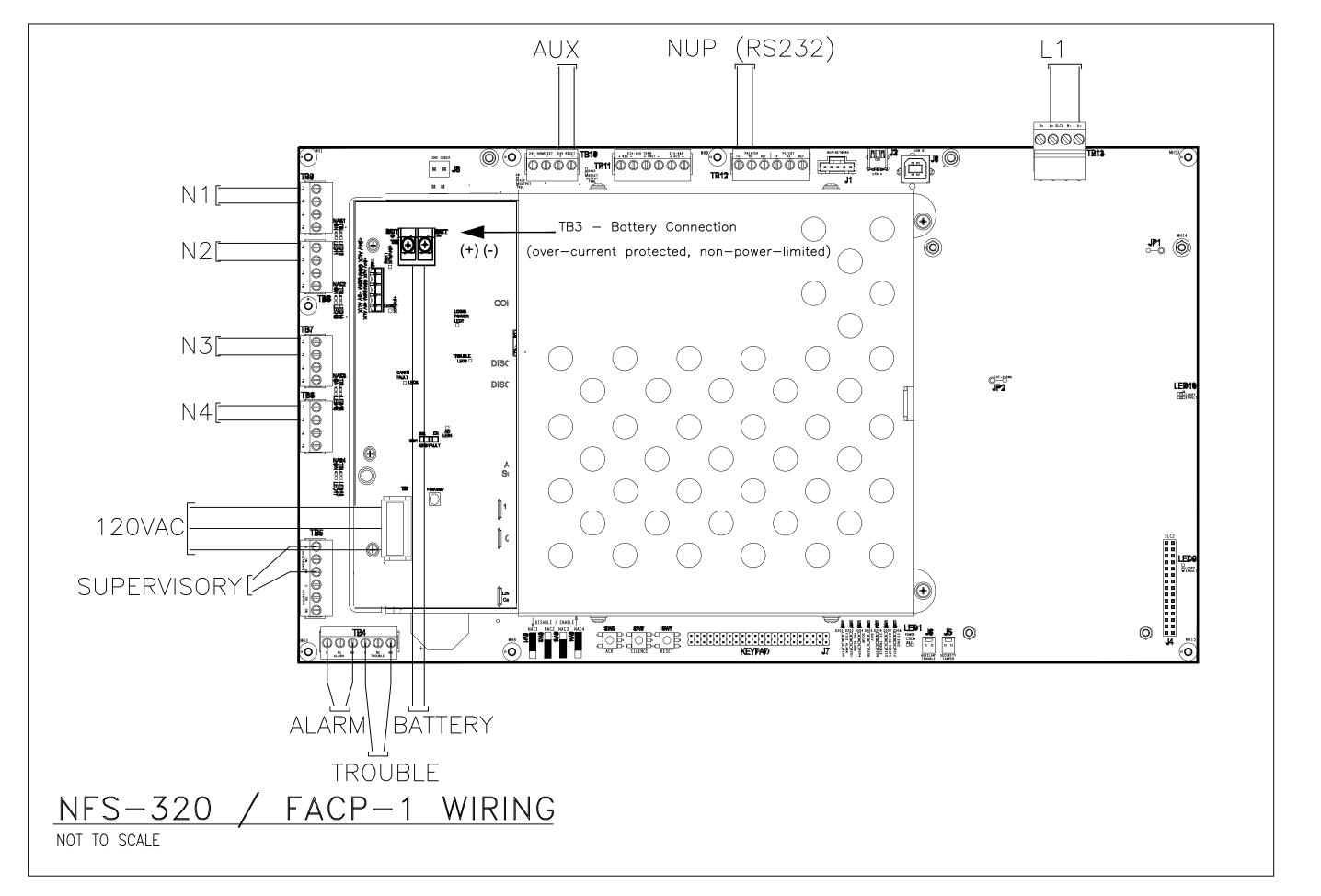
C

SHEET DESCRIPTION

FIRE ALARM SYSTEM HP STATIONARY - 1MW HYDROGEN ENGINE ENCLOSURE PLAN AREA D

DATE: 10.21.2022

SCALE: 1/4" = 1'-0"



REVISION:
FIRST RELEASE

A

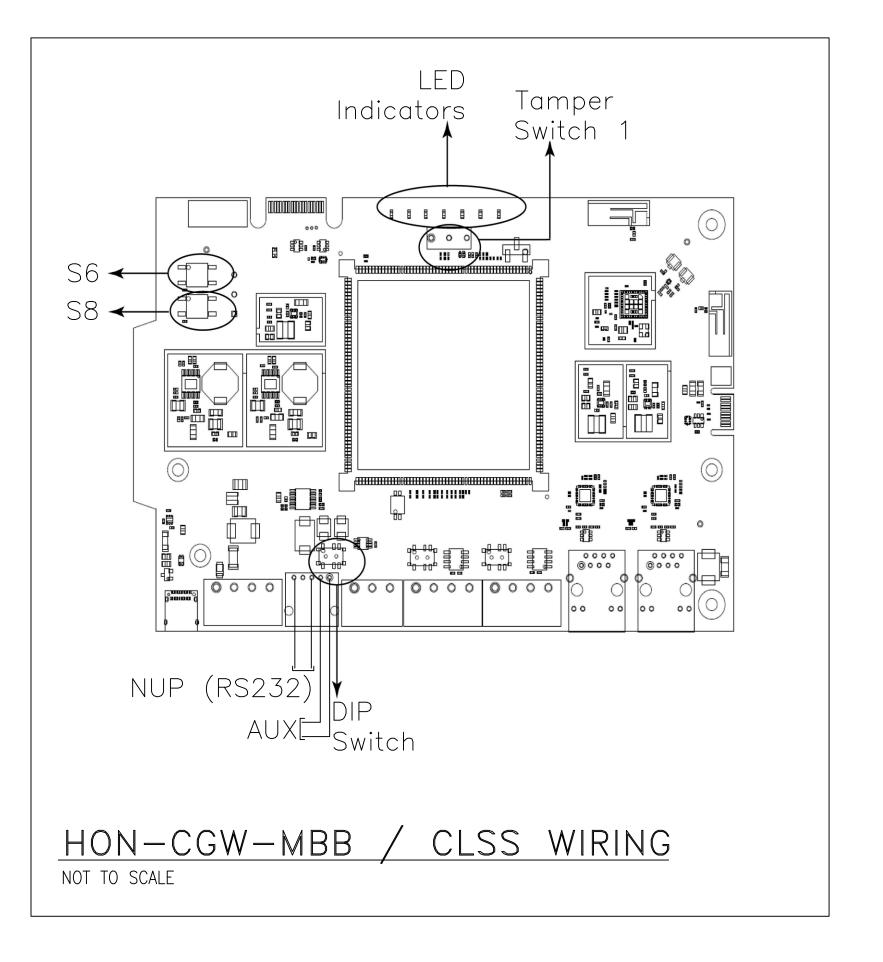
SHIPET DESCRIPTION

FIRE ALARM SYSTEM NFS-320 / FACP-1 WIRING DIAGRAM

DATE: 10.21.2022

SCALE: N.T.S

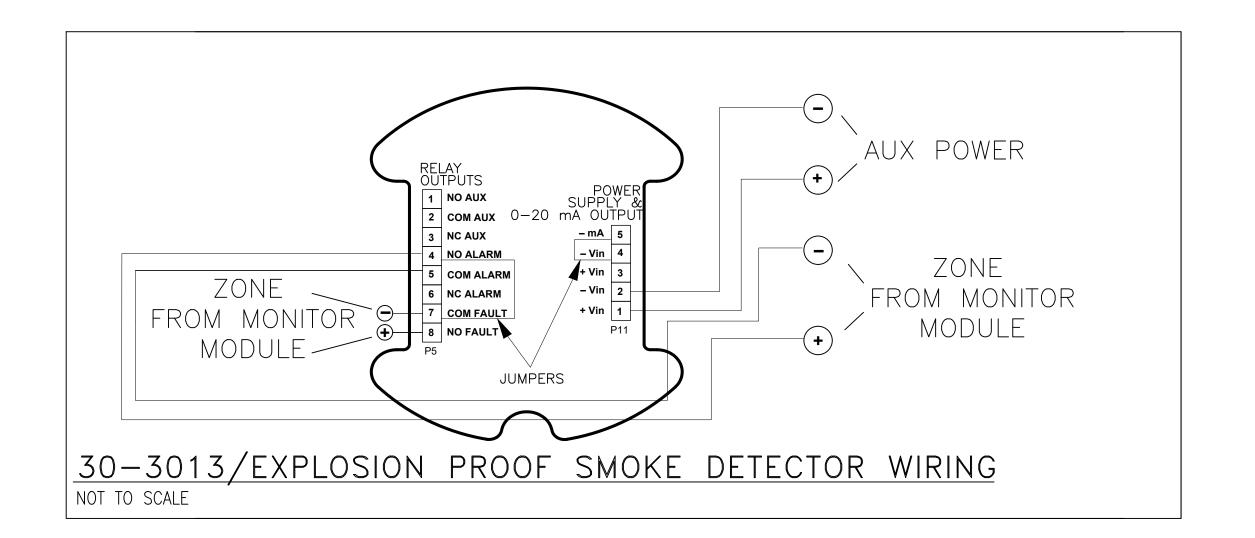
FA-1213 OF 18



FIRE ALARM SYSTEM HON-CGW-MBB / CLSS WIRING DIAGRAM

DATE: 10.21.2022

SCALE: N.T.S



REVISION:
FIRST RELEASE

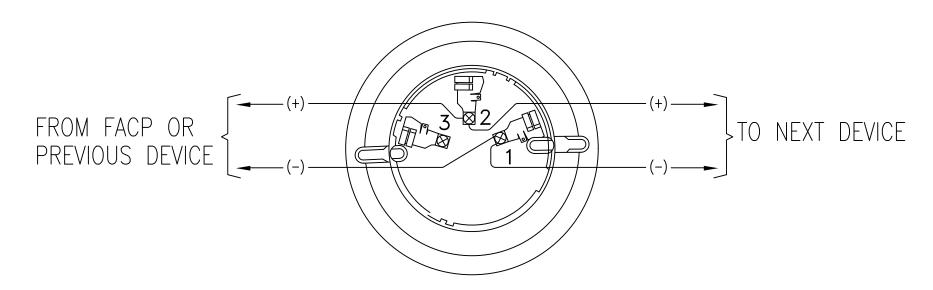
SHEET DESCRIPTION:
FIRE ALARM SYSTEM
30-3013 / EXPLOSION
PROOF SMOKE
DETECTOR
WIRING DIAGRAM

DRAWN BY: THAIS REZENDE

DATE: 10.21.2022

NOTE: DO NOT LOOP WIRE UNDER TERM 1 OR TERM 2. BREAK WIRE RUN TO PROVIDE SUPERVISION OF CONNECTIONS.

NOTE: SEE FLOORPLANS FOR DEVICE ADDRESS



SMOKE DETECTOR WIRING

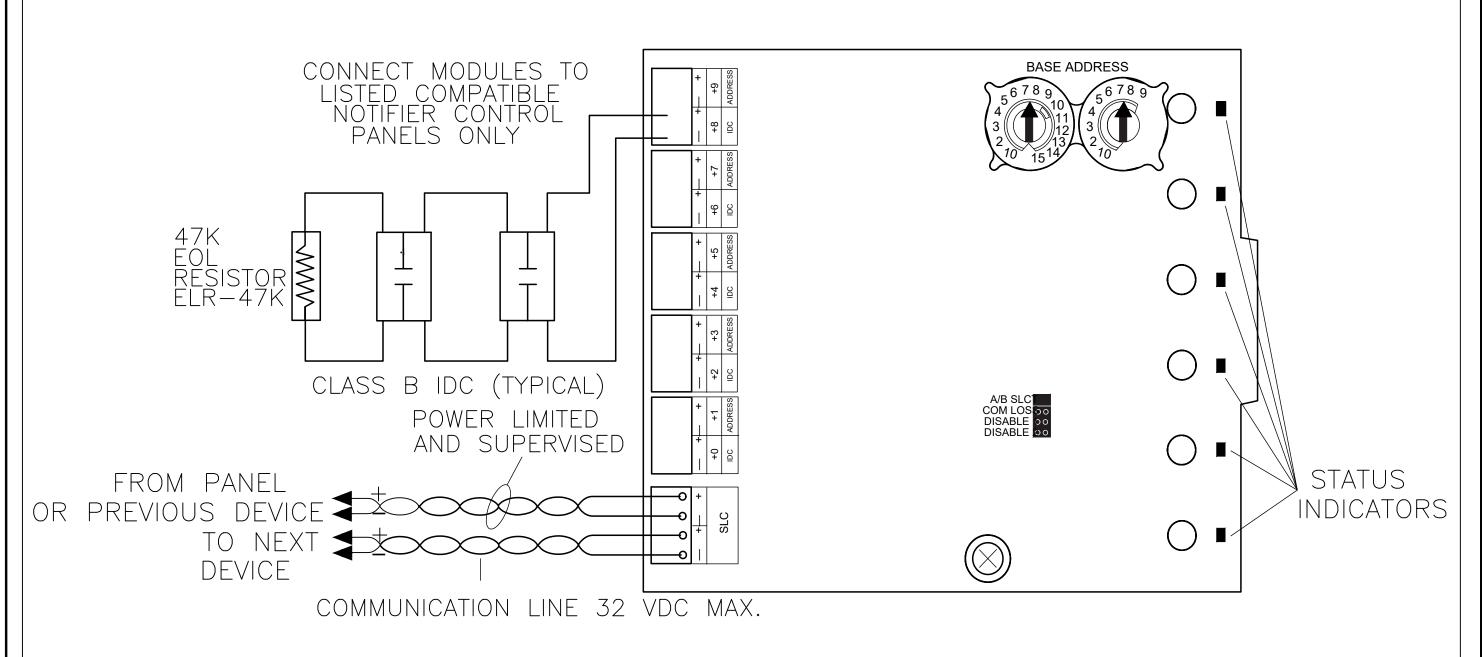
NOT TO SCALE

NOTE: IF THIS IS THE LAST DEVICE,
THE SLC DOES NOT REQUIRE
AN END OF LINE RESISTOR.
IF THE SLC IS CLASS A, RETURN
THE LOOP WIRE TO THE FACP.

FIRE ALARM SYSTEM SMOKE DETECTOR WIRING DIAGRAM

DATE: 10.21.2022

SCALE: N.T.S



XP10-M/TEN INPUT MONITOR MODULE

NOT TO SCALE

REVISION:

FIRST RELEASE

A

SHEET DESCRIPTION:

FIRE ALARM SYSTEM

XP10-M / TEN INPUT

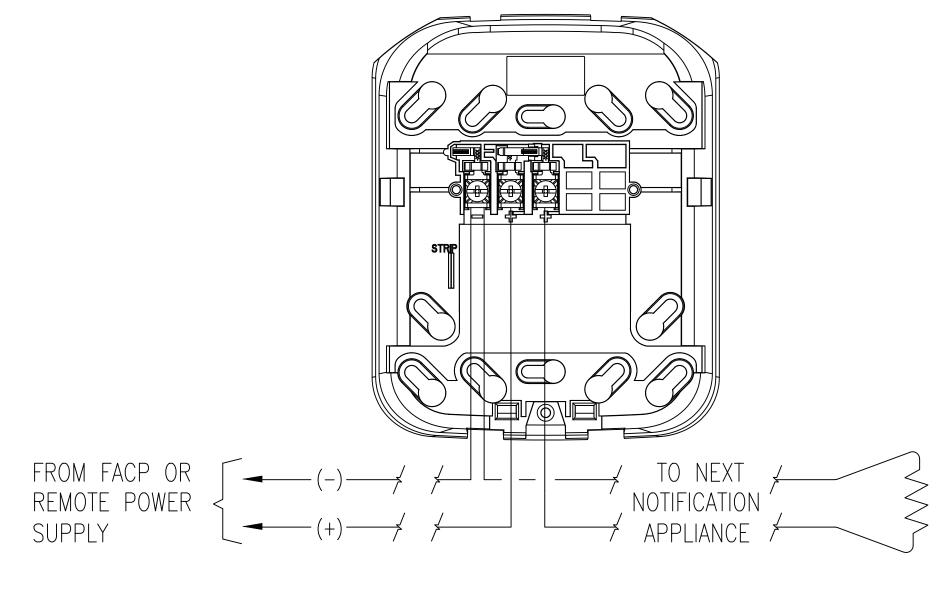
MONITOR MODULE

WIRING DIAGRAM

DRAWN BY: THAIS REZENDE

DATE: 10.21.2022

SCALE: N.T.S.



PLACE EOL AT LAST NOTIFICATION APPLIANCE ON THE CIRCUIT ACCORDING TO THE FLOORPLANS.

WALL MOUNT HORN/STROBE WIRING

NOT TO SCALE

REVISION:
FIRST RELEASE

FIRE ALARM SYSTEM WALL MOUNT HORN/STROBE WIRING DIAGRAM

DATE: 10.21.2022

SCALE: N.T.S

SCOPE OF WORK COSCO FIRE PROTECTION SHALL PROVIDE CONSULTATION, DESIGN, INSTALLATION, AND EQUIPMENT PER THE CONTRACTUAL AGREEMENTS OF THE PROJECT NAME AND PROJECT NUMBER IDENTIFIED WITHIN THE TITLE BLOCK; CONSISTING, BUT NOT LIMITED TO THE FOLLOWING:

REMOVE EXISTING CONVENTIONAL FIRE ALARM SYSTEM AND REPLACE WITH NEW ADDRESSABLE FIRE ALARM SYSTEM. OXYGEN AND HYDROGEN DETECTION SHALL BE CONNECTED AND CONTROLLED BY THE BUILDING FIRE ALARM SYSTEM. NEW NOTIFICATION DEVICES SHALL USE CLEAR LENS FOR FIRE ALARM ACTIVATION AND BLUE LENS FOR GAS/O2 ACTIVATION. INSTALLATION SHALL COMPLY WITH APPLICABLE CODES.

BUILDING AND PROJECT DATA

CBC BUILDING OCCUPANCY: INDUSTRIAL NUMBER OF STORIES: 5 (EXISTING)
AUTOMATIC SPRINKLERS: N/A
ADA COMPLIANT: NO

ADA COMPLIANT: NO
TYPE OF SYSTEM: MANUAL FIRE ALARM
SYSTEM DESIGNER: JOHN VENCILL

JOHN VENCILL
NICET LEVEL IV FIRE ALA

NICET LEVEL IV FIRE ALARM SYSTEMS #121525 P: 559-275-3795

MONITORING STATION: LOCAL FIRE ALARM SYSTEM

CODES

1) CALIFORNIA BUILDING CODE, (CBC) 2019 EDITION
2) CALIFORNIA FIRE CODE, (CFC) 2019 EDITION
3) CALIFORNIA ELECTRICAL CODE, (CEC) 2019 EDITION
4) NFPA CODES AND STANDARDS 72, 2016 EDITION
5) NFPA CODES AND STANDARDS 70, 2017 EDITION
6) CALIFORNIA STATE FIRE MARSHAL LISTING
7) UNDERWRITERS LABORATORIES (UL)

GENERAL NOTES

- ALL FIRE ALARM WIRING AND CONDUIT SHALL BE IN ACCORDANCE WITH NFPA 70 AND 72, 2016 TITLE 24 BUILDING CODE, NEC, THE AUTHORITY HAVING JURISDICTION AND THE MANUFACTURERS REQUIREMENTS.
- 2. ALL FIRE ALARM EQUIPMENT SHALL BE C.S.F.M AND U.L. LISTED.
- 3. ALL JUNCTION BOXES SHALL BE SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
- 4. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL 120VAC POWER REQUIREMENTS FOR THE FIRE ALARM SYSTEM UNLESS OTHERWISE NOTED.
- 5. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL FIRE ALARM TERMINAL CABINETS, JUNCTION BOXES, DEVICE BACKBOXES, UNLESS OTHERWISE NOTED.
- 6. ALL BACKBOXES PROVIDED BY COSCO FIRE SHALL BE INSTALLED BY THE ELECTRICAL CONTRACTOR.
- 7. WIRING SHALL NOT BE LOOPED THROUGH DEVICES; ALL WIRING SHALL BE CUT FOR IN AND OUT.
- 8. ALL DEVICE WIRING, AND ANNUNCIATOR PANELS SHALL BE SUPERVISED TO THE PRINCIPAL POINT OF ANNUNCIATION.
- 9. THE FIRE ALARM CONTROL PANEL AND POWER SUPPLIES ARE NOT TO BE USED AS A TERMINAL CABINET OR WIREWAY.
- 10. ALL FIELD WIRING MUST ENTER AT THE TOP AND NO LOWER THAN 8" FROM BOTTOM ON THE SIDES OF THE FIRE ALARM CONTROL PANEL.
- 11. ALL FIRE ALARM WIRING MUST TEST FREE OF GROUNDS, SHORTS AND OPENS.
- 12. T-TAPPING IS PROHIBITED FOR ALL CLASS A AND CLASS B CIRCUITS.
- 13. ALL INDICATING APPLIANCE CIRCUITS SHALL BE WIRED WITH #12 AWG THHN/THWN WIRE.
- 14. ALL INITIATING DEVICES (ADDRESSABLE) SHALL BE WIRED WITH #18 AWG TP FPL WIRE.
- 15. ALL AUDIO/VISUAL DEVICES TO ACTIVATE UPON GENERAL ALARM.
- 16. ALL DEVICES IN THE ALARM SYSTEM SHALL BE COMPATIBLE WITH THE FIRE ALARM CONTROL PANEL AND INSTALLED TO MANUFACTURERS SPECIFICATIONS.
- 17. AUDIBILITY OF ALARM SHALL BE NOT LESS THAN 15db ABOVE AMBIENT SOUND THROUGHOUT AREA OF ALARM. AND SHALL BE CODE 3 TEMPORAL SOUND.
- 18. FIRE ALARM SYSTEM WILL BE A LOCAL FIRE ALARM SYSTEM CENTRAL STATION MONITORING.
- 19. TWO PHONE LINES ARE REQUIRED.
- 20. ALL VISUAL DEVICES TO BE SYNCHRONIZED.
- 21. SMOKE DETECTORS SHALL NOT BE PLACED WITHIN 3 FEET OF AC REGISTERS OR WITHIN 1 FOOT OF FLORESCENT LIGHT FIXTURES AND SPRINKLER HEADS.
- 22. ALL EXTERIOR MOUNTED EQUIPMENT SHALL BE LISTED AS WEATHERPROOF INCLUDED BUT NOT LIMITED TO, VISUAL, AUDIO, SUPERVISORY AND INITIATING DEVICES. THEY SHALL BE NOTED ON THE PRINT WITH WP DESIGNATION FOR WEATHERPROOF. THEIR ELECTRICAL TERMINATION COUNTER PARTS SHALL ALSO BE LISTED AS SUCH AND ALSO NOTED IN THE JOB SPECIFICATIONS.

				FOUIDMENT LIST		
SYMBOL	QTY	MANUFACTURER	PART NO	EQUIPMENT LIST DESCRIPTION	CSFM	MOUNTING
STWIDGE	1	NOTIFIER	NFS2-3030D (FACP)	FACP, ADDRESSABLE, CPU2-3030D, 1X LCM-320, 1X LEM-320, AMPS-24, NCM-W	7165-0028:0224	PROVIDED
	3	NOTIFIER	LEM-320	LOOP EXPANDER MODULE, PROVIDES EVEN NUMBERED SLC LOOPS	7165-0028:0224	IN FACU
FACU	1	NOTIFIER	LCM-320	LOOP CONTROL MODULE	7165-0028:0224	IN FACU
	1	NOTIFIER	AMPS-24	ADDRESSABLE POWER SUPPLY/BATTERY CHARGER	7165-0028:0224	IN FACU
	1	SPACE AGE	ACE-11	FIRE ALARM DOCUMENT BOX	7300-0553:0110	PROVIDED
NAC	4	NOTIFIER	ACPS-610	6.0 A OR 10.0 A ADDRESSABLE CHARGING POWER SUPPLY	7165-0028:0224	PROVIDED
(AIM)	15	NOTIFIER	FMM-1	ADDRESSABLE MONITOR MODULE W/ FLASHSCAN, SUPERVISES CLASS A OR CLASS B OF DRY CONTACT INPUT	7300-0028:0219	4"SQ. DEEP
(AIM)	12	NOTIFIER	FMM-101	ADDRESSABLE MINI MONITOR MODULE	7300-0028:0219	4"SQ. DEEP
(AIM)	34	NOTIFIER	FMM-4-20	ANALOG INPUT MODULE	7300-0028:0254	4"SQ. DEEP
(AOM)	2	NOTIFIER	FCM-1	ADDRESSABLE CONTROL MODULE W/ FLASHSCAN, 1 CLASS A OR 1 CLASS B	7300-0028:0219	4" SQ. DEEP
(AOM)	6	NOTIFIER	FCM-1-REL	RELEASING CONTROL MODULE	7300-0028:0249	4"SQ. DEEP
(AOM)	1	NOTIFIER	FRM-1	ADDRESSABLE RELAY MODULE W/ FLASHSCAN, 2 FORM-C DRY CONTACTS	7300-0028:0219	4" SQ. DEEP
<u>(2)</u>	2	NOTIFIER	DNR W/FSP-951R	INTELLIGENT NON-RELAY PHOTOELECTRIC DUCT DETECTOR/FSP-951R	3240-1653:0209	N/A
$\langle \wedge \rangle$	26	HONEYWELL	FLS100	FLAME DETECTOR, UV, 24 VDC	7210-2005:0500	PROVIDED
(S)	38	NOTIFIER	FSP-951 W/B300-6	ADDRESSABLE LOW-PROFILE PHOTOELECTRIC SMOKE DETECTOR. FLASHSCAN ONLY.	7272-0028:0503	4" SQ. DEEP
GAS	8	HONEYWELL	SPSTAXO1	GAS DETECTOR	N/A	PROVIDED
×	4	SYSTEM SENSOR	P2RL	2-WIRE, HORN STROBE, RED	7135-1653:0503	4" SQ. DEEP
₩ _{WH}	7	SYSTEM SENSOR	P2RL	2-WIRE, WALL, HORN STROBE, RED	7135-1653:0503	4" SQ. DEEP
₩ _H	7	SYSTEM SENSOR	BZW-AL	WALL BEZEL, ALERT	7 100-1000.0000	T OQ. DELI
∇ BL	7	SYSTEM SENSOR	P2WL	2-WIRE, WALL, HORN STROBE, WHITE	7135-1653:0503	4" SQ. DEEP
∟BL	7	SYSTEM SENSOR	LENS-B2	WALL BLUE LENS	7 133-1033.0303	4 SQ. DEEF
	2	SYSTEM SENSOR	PC2RL	2-WIRE, CEILING, HORN STROBE, RED	7425 4652,0502	411.00 DEED
₩ _{WH}	2	SYSTEM SENSOR	BZWC-AL	CEILING BEZEL, ALERT	7135-1653:0503	4" SQ. DEEP
又	2	SYSTEM SENSOR	PC2WL	2-WIRE, CEILING, HORN STROBE, WHITE	7405 4050 0500	411.00 DEED
\bigotimes_{BL}	2	SYSTEM SENSOR	LENS-BC2	CEILING BLUE LENS	7135-1653:0503	4" SQ. DEEP
X	4	SYSTEM SENSOR	SRL	STROBE, WALL, RED	7125-1653:0504	4" SQ. DEEP
-	2	POWER SONIC	PS-12550	12V - 55AH SEALED LEAD ACID BATTERY	-	N/A
-	8	POWER SONIC	PS-12380	12V - 38AH SEALED LEAD ACID BATTERY	-	N/A
-	2	POWER SONIC	PS-1270	12V - 7AH SEALED LEAD ACID BATTERY	-	N/A

				CABLE AND WIRE LEGEND		
LABEL	PART NO	AWG	RESISTANCE (Ω/KFT)	DESCRIPTION TOTAL LE		
L	18/2 FPLP/R (SLC)	18	7.77	2 COND. SOLID COPPER FPLP/R ADDRESSABLE UNSHIELDED	5113'	
N	14/2 FPLP/R (NAC)	14	3.07	2 COND. SOLID COPPER FPLP/R ANALOG UNSHIELDED	2614'	
P	14/2 FPLP/R (AUX)	14	3.07	2 COND. SOLID COPPER FPLP/R ADDRESSABLE UNSHIELDED	5286'	
Z	18/2 FPLP/R (IDC)	18	7.77	2 COND. SOLID COPPER FPLP/R ANALOG UNSHIELDED	75'	

	SHEET INDEX					
SHEET No.	SHEET DESCRIPTION					
FA-01	FIRE ALARM TITLE PAGE, MATRIX AND CALCULATIONS					
FA-02	FIRE ALARM FLOOR PLAN LEVEL0					
FA-03	FIRE ALARM FLOOR PLAN LEVEL1					
FA-04	FIRE ALARM FLOOR PLAN LEVEL2, 3 & 4					
FA-05	FIRE ALARM BATTERY CALCULATIONS					
FA-06	FIRE ALARM VOLTAGE DROP CALCULATIONS					
FA-07	FIRE ALARM RISER DIAGRAM					
FA-08	FIRE ALARM INSTALLATION DETAILS					
FA-09	FIRE ALARM INSTALLATION DETAILS					

					NTR							NOT	IFICA	TION			
				AN	NUN	CIATI	ION										
ITEM		SYSTEM OUTPUTS	ACTIVATE COMMON ALARM SIGNAL INDICATOR (RED LED)	ACTIVATE AUDIBLE ALARM SIGNAL (PIEZO BUZZER)	ACTIVATE COMMON SUPERVISORY SIGNAL INDICATOR (YELLOW LED)	ACTIVATE AUDIBLE SUPERVISORY SIGNAL (PIEZO BUZZER)	ACTIVATE COMMON TROUBLE SIGNAL INDICATOR (YELLOW LED)	ACTIVATE AUDIBLE TROUBLE SIGNAL (PIEZO BUZZER)	ACTIVATE EVACUATION SIGNAL THROUGHOUT THE BUILDING (CLEAN STROBES)	= ACTIVATE ALERT SIGNAL THROUGHOUT THE BUILDING (BLUE STROBES)	- ACTIVATE FIRE ALARM INPUT TO BMS	- ACTIVATE SUPERVISORY INPUT TO BMS	ACTIVATE TROUBLE INPUT TO BMS	- ACTIVATE LOW O2 INPUT TO BMS	ACTIVATE HYDROGEN INPUT TO BMS	ACTIVATE CLEAN AGENT ALARM INPUT TO BMS	ACTIVATE CO2 ALARM INPUT TO BMS
NO. 01	SYSTEM INPUTS AREA SMOKE DETECTOR		A	В	С	D	Е	F	G	Н		J	K	L	M	N	0
02	AREA HEAT DETECTOR																
03	MANUAL PULL STATION																
03	HVAC DUCT SMOKE DETECTOR																
05	CLEAN AGENT SYSTEM ALARM																
06	CLEAN AGENT SYSTEM SUPERVISORY																
07	CLEAN AGENT SYSTEM TROUBLE																
08	CO2 SYSTEM ALARM																
09	CO2 SYSTEM TROUBLE																
10	O2 DETECTOR ALARM																
11	O2 DETECTOR TROUBLE																
12	HYDROGEN DETECTOR ALARM																
13	HYDROGEN DETECTOR ALARM HYDROGEN DETECTOR TROUBLE																
14	FIRE ALARM SYSTEM AC POWER FAILURE																
15	FIRE ALARM SYSTEM AC POWER FAILURE FIRE ALARM SYSTEM LOW BATTERY																
16																	
10	OPEN CIRCUIT GROUND FAULT																
17					1	ı			1	İ	l	1		1	1	ı	Ì

TYPICAL MOUNTING HEIGHTS

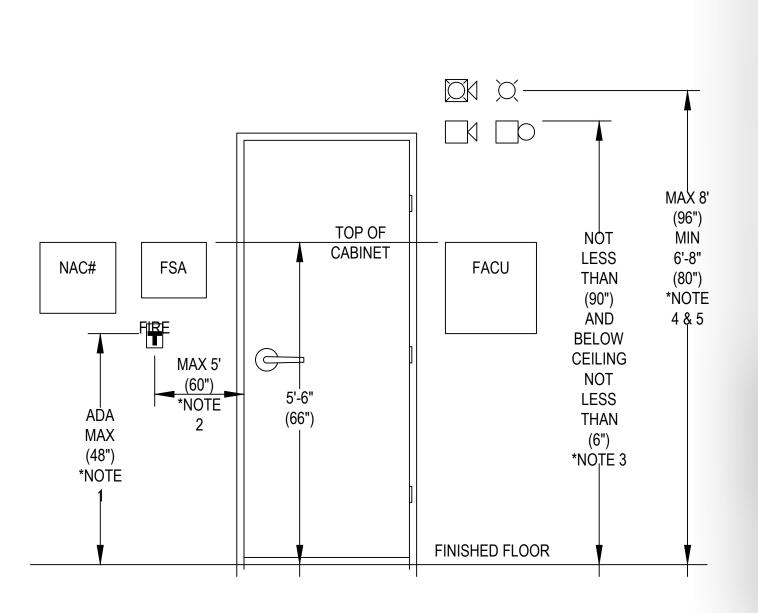
1. NFPA 72 2016 17.14.5 THE OPERABLE PART OF EACH MANUAL FIRE ALARM BOX SHALL BE NOT LESS THAN 42in AND NOT MORE THAN 48in ABOVE FLOOR LEVEL.

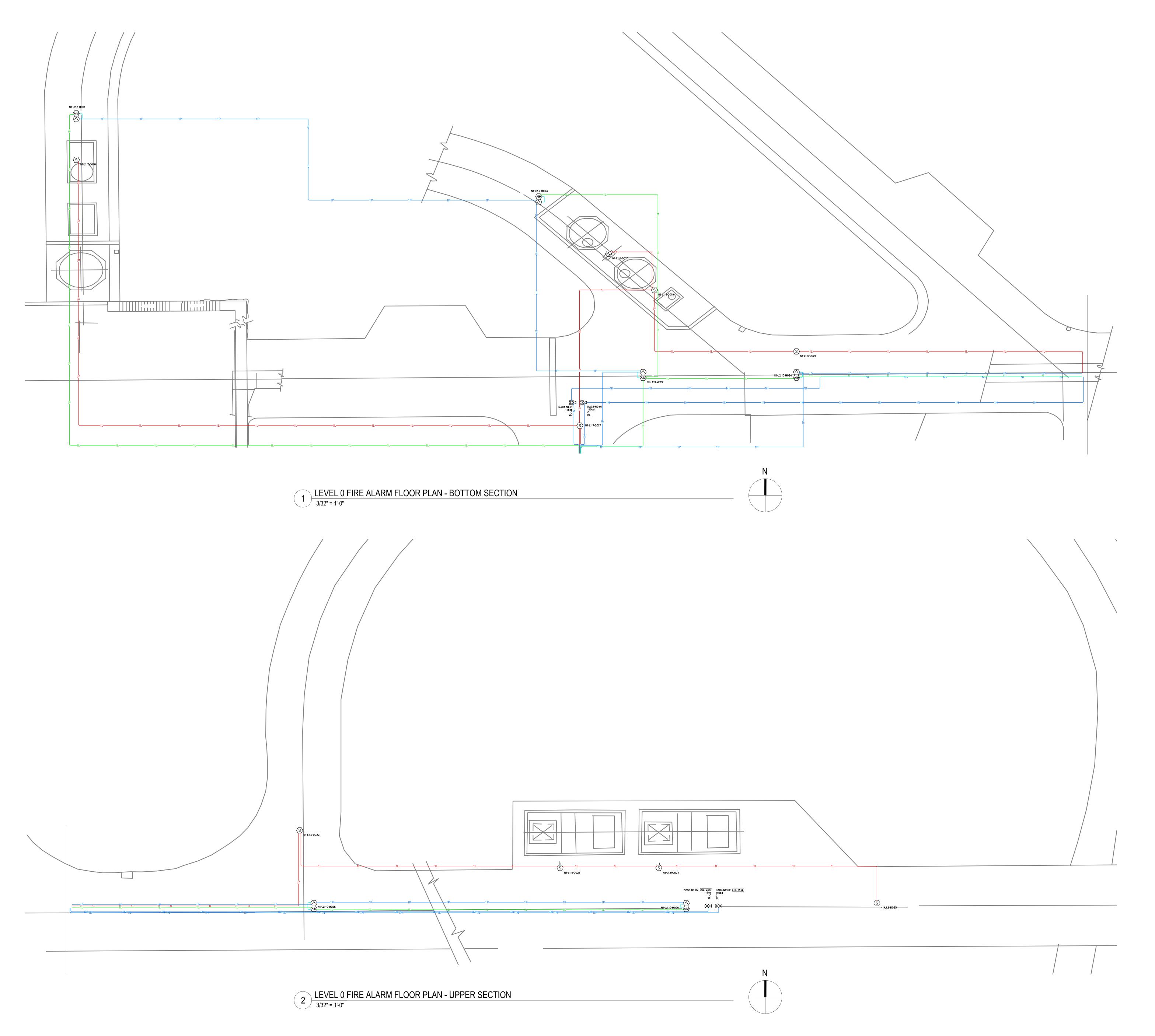
2. NFPA 72 2016 17.14.8.4 MANUAL FIRE ALARM BOXES SHALL BE LOCATED WITHIN 60in OF THE EXIT DOORWAY OPENING AT EACH EXIT ON EACH FLOOR.

3. NFPA 72 2016 18.4.8.1 IF CEILING HEIGHTS ALLOW, AND UNLESS OTHERWISE PERMITTED BY 18.4.8.2 THROUGH 18.4.8.5, WALL-MOUNTED APPLIANCES SHALL HAVE THEIR TOPS ABOVE THE FINISHED FLOORS AT HEIGHTS OF NOT LESS THAN 90in AND BELOW THE FINISHED CEILINGS AT DISTANCES OF NOT LESS THAN 6in.

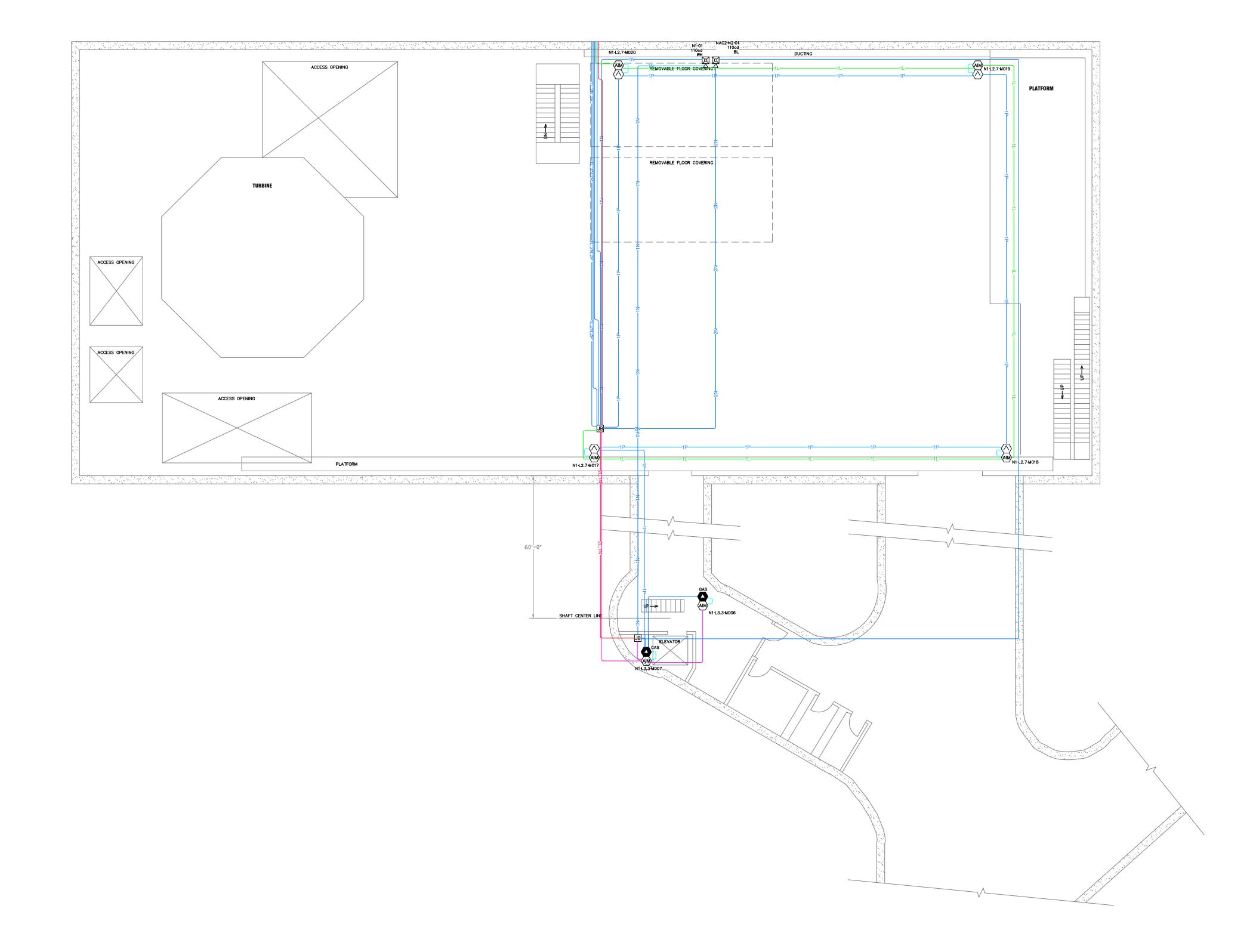
4. NFPA 72 2016 18.4.8.3 IF COMBINATION AUDIBLE/ VISIBLE APPLIANCES ARE INSTALLED, THE LOCATION OF THE INSTALLED APPLIANCE SHALL BE DETERMINED BY THE REQUIREMENTS OF 18.5.4. (SEE NOTE 5).

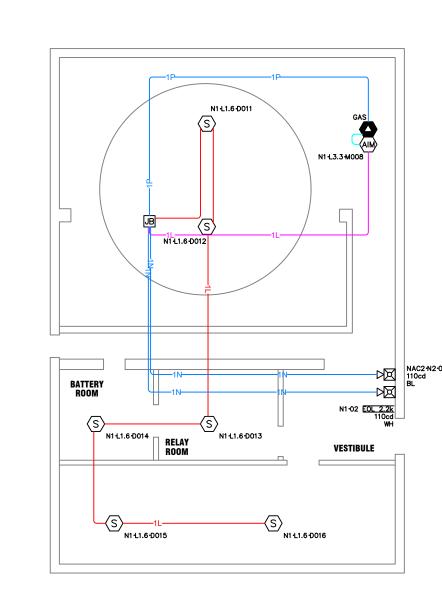
5. NFPA 72 2016 18.5.5.1 WALL-MOUNTED APPLIANCES SHALL BE MOUNTED SUCH THAT THE ENTIRE LENS IS NOT LESS THAN 80in. AND NOT GREATER THAN 96in ABOVE THE FINISHED FLOOR OR AT THE MOUNTING HEIGHT SPECIFIED USING THE PERFORMANCE BASED ALTERNATIVE OF 18.5.5.6.



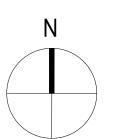


	DECODIDETON							
SYMBOL	DESCRIPTION FACP, ADDRESSABLE, CPU2-3030D, 1X LCM-320, 1X LEM-320							
FACU	AMPS-24, NCM-W							
NAC	6.0 A OR 10.0 A ADDRESSABLE CHARGING POWER SUPPLY							
(AIM)	ADDRESSABLE MONITOR MODULE W/ FLASHSCAN, SUPERVISES CLASS A OR CLASS B OF DRY CONTACT INPUT							
(AIM)	ADDRESSABLE MINI MONITOR MODULE							
(AIM)	ANALOG INPUT MODULE							
(AOM)	ADDRESSABLE CONTROL MODULE W/ FLASHSCAN, 1 CLASS A OR 1 CLASS B							
(AOM)	RELEASING CONTROL MODULE							
(AOM)	ADDRESSABLE RELAY MODULE W/ FLASHSCAN, 2 FORM-C DRY CONTACTS							
(S)	INTELLIGENT NON-RELAY PHOTOELECTRIC DUCT DETECTOR/FSP-951R							
$\langle \wedge \rangle$	FLAME DETECTOR, UV, 24 VDC							
(S)	ADDRESSABLE LOW-PROFILE PHOTOELECTRIC SMOKI DETECTOR. FLASHSCAN ONLY.							
lacktriangle GAS	GAS DETECTOR							
\boxtimes	2-WIRE, WALL, HORN STROBE							
⊗c	2-WIRE, CEILING, HORN STROBE, RED							
×	STROBE, RED							
	CABLE AND WIRE LEGEND							
LABEL	DESCRIPTION							
L	LOOP 1 - FIRE ALARM DEVICES							
L	LOOP 2 - FLAME DETECTORS							
L	LOOP 3 - GAS DETECTORS							
L	LOOP 4 - FIRE SUPRESSION SYSTEM							
N	NAC							
	AUXILIARY							

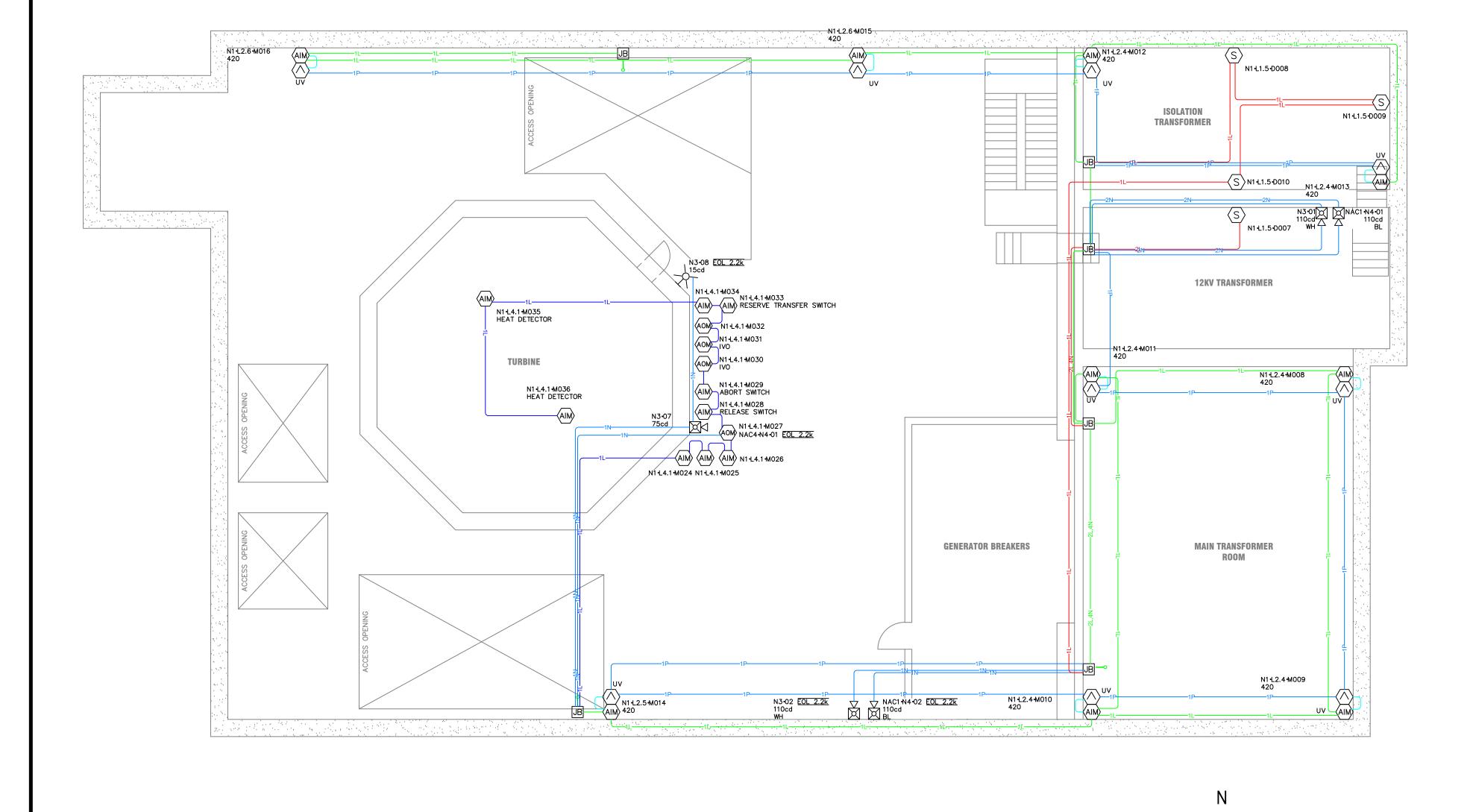




1 LEVEL 1 FIRE ALARM FLOOR PLAN
3/32" = 1'-0"

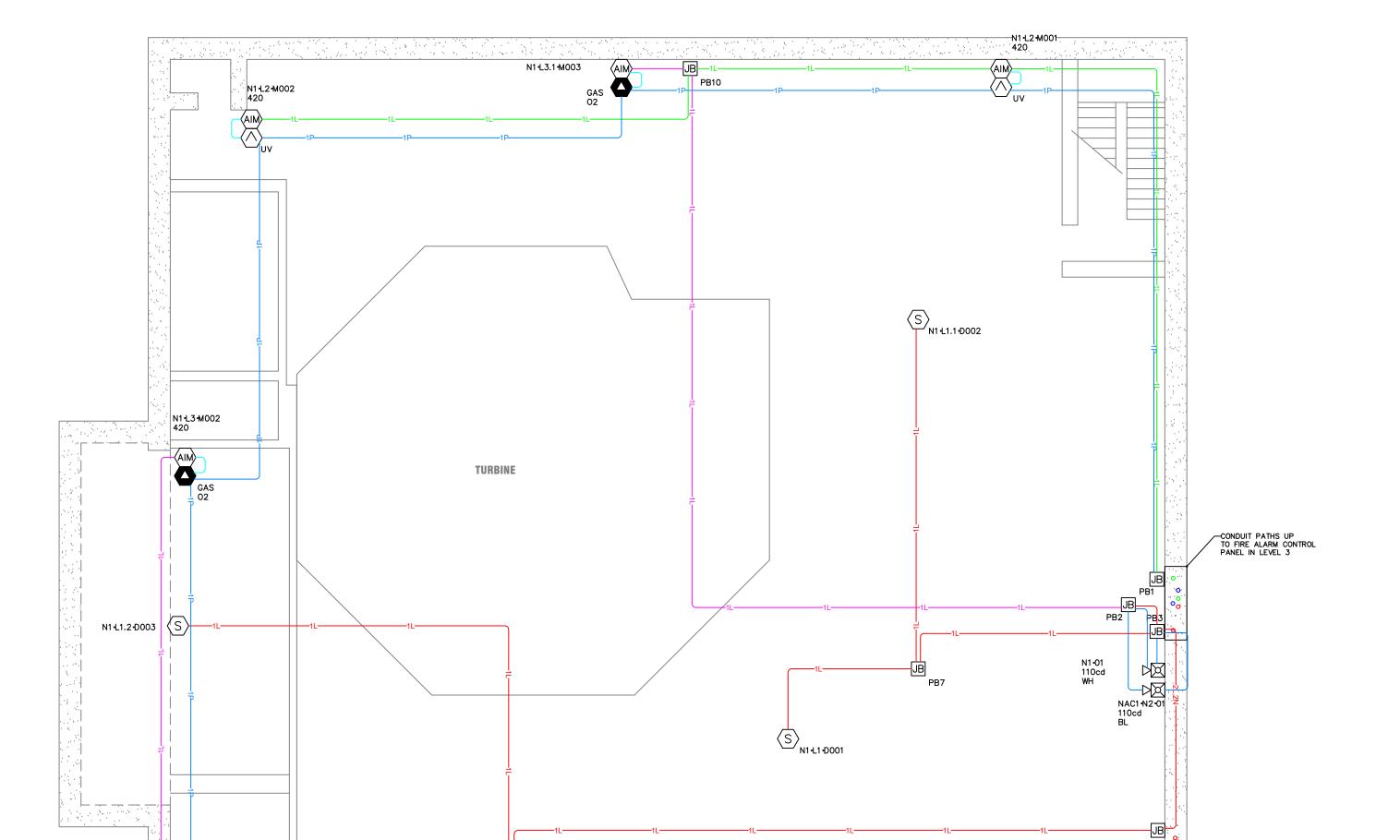


0)/1:50:	DEVICE LEGEND				
SYMBOL	DESCRIPTION				
FACU	FACP, ADDRESSABLE, CPU2-3030D, 1X LCM-320, 1X LEM-320 AMPS-24, NCM-W				
NAC	6.0 A OR 10.0 A ADDRESSABLE CHARGING POWER SUPPLY				
(AIM)	ADDRESSABLE MONITOR MODULE W/ FLASHSCAN, SUPERVISES CLASS A OR CLASS B OF DRY CONTACT INPUT				
(AIM)	ADDRESSABLE MINI MONITOR MODULE				
(AIM)	ANALOG INPUT MODULE				
(AOM)	ADDRESSABLE CONTROL MODULE W/ FLASHSCAN, 1 CLASS A OR 1 CLASS B				
(AOM)	RELEASING CONTROL MODULE				
(AOM)	ADDRESSABLE RELAY MODULE W/ FLASHSCAN, 2 FORM-C DRY CONTACTS				
(S)	INTELLIGENT NON-RELAY PHOTOELECTRIC DUCT DETECTOR/FSP-951R				
$\langle \wedge \rangle$	FLAME DETECTOR, UV, 24 VDC				
(S)	ADDRESSABLE LOW-PROFILE PHOTOELECTRIC SMOK DETECTOR. FLASHSCAN ONLY.				
△ GAS	GAS DETECTOR				
\(\sqrt{\sq}\sqrt{\sq}}\sqrt{\sq}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}	2-WIRE, WALL, HORN STROBE				
⊗c	2-WIRE, CEILING, HORN STROBE, RED				
X	STROBE, RED				
	CABLE AND WIRE LEGEND				
LABEL	DESCRIPTION				
L	LOOP 1 - FIRE ALARM DEVICES				
L	LOOP 2 - FLAME DETECTORS				
L	LOOP 3 - GAS DETECTORS				
L	LOOP 4 - FIRE SUPRESSION SYSTEM				
N_	NAC				
Р	AUXILIARY				



1 LEVEL 2 FIRE ALARM FLOOR PLAN
1/8" = 1'-0"

3 LEVEL 4 FIRE ALARM FLOOR PLAN
1/8" = 1'-0"





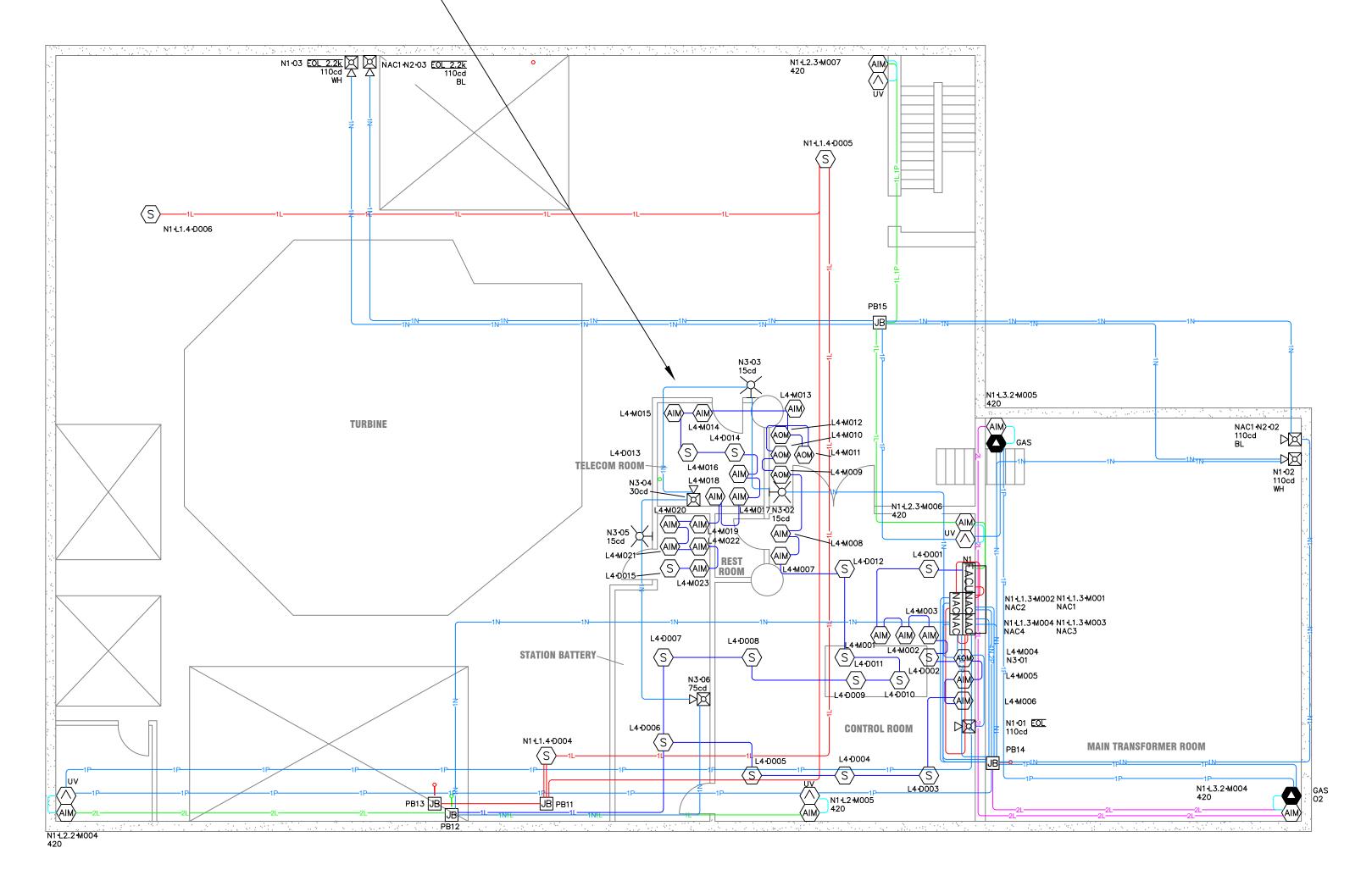
DEVICE'S FUNCTION - CONTROL ROOM						
Device Label	Function					
L1•M005	BY-PASS SWITCH					
L1•D009	LOW CEILING DETECTOR					
L1•D010	LOW CEILING DETECTOR					
L1•M007	RELEASE SWITCH					
L1•M008	ABORT SWITCH					
L1•M010	IVO					
L1•M011	IVO					
L1•M013	RESERVE TRANSFER SWITCH					
L1•M014	ABORT SWITCH					
L1•M015	RELEASE SWITCH					
L1•M020	ABORT SWITCH					
L1•M021	RELEASE SWITCH					

FACU	FACP, ADDRESSABLE, CPU2-3030D, 1X LCM-320, 1X LEM-320, AMPS-24, NCM-W				
NAC	6.0 A OR 10.0 A ADDRESSABLE CHARGING POWER SUPPLY				
(AIM)	ADDRESSABLE MONITOR MODULE W/ FLASHSCAN, SUPERVISES CLASS A OR CLASS B OF DRY CONTACT INPUT				
(AIM)	ADDRESSABLE MINI MONITOR MODULE				
(AIM)	ANALOG INPUT MODULE				
(AOM)	ADDRESSABLE CONTROL MODULE W/ FLASHSCAN, 1 CLASS A OR 1 CLASS B				
(AOM)	RELEASING CONTROL MODULE				
(AOM)	ADDRESSABLE RELAY MODULE W/ FLASHSCAN, 2 FORM-C DRY CONTACTS				
(\$)	INTELLIGENT NON-RELAY PHOTOELECTRIC DUCT DETECTOR/FSP-951R				
	FLAME DETECTOR, UV, 24 VDC				
<u>(S)</u>	ADDRESSABLE LOW-PROFILE PHOTOELECTRIC SMOKE DETECTOR. FLASHSCAN ONLY.				
△ GA	S GAS DETECTOR				
\times \t	2-WIRE, WALL, HORN STROBE				
⊠ _c	2-WIRE, CEILING, HORN STROBE, RED				
X	STROBE, RED				
	CABLE AND WIRE LEGEND				
LABEL	DESCRIPTION				
L	LOOP 1 - FIRE ALARM DEVICES				
L	LOOP 2 - FLAME DETECTORS				
L	LOOP 3 - GAS DETECTORS				
L	LOOP 4 - FIRE SUPRESSION SYSTEM				
N	NAC				
P	AUXILIARY				
Z	IDC				

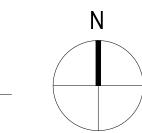
DEVICE LEGEND

DESCRIPTION

SYMBOL



2 LEVEL 3 FIRE ALARM FLOOR PLAN
1/8" = 1'-0"



	DANELD	OMED CLIDDLY MAY OF	· · · · · · · · · · · · · · · · · · ·	ARY POWER SOURCE REQUI	,	TAL LIGED CADACITY /	(IN ALADM) - 1 40234 (20 05 0/)	
	PANEL P	OWER SUPPLY MAX CU	KKENI = DA		TOTAL USED CAPACITY (IN ALARM) = 1.4923A (29.85 % STANDBY CURRENT (AMPS) SECONDARY ALAR			CURRENT (AMDS)
		QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
1			ACPS-610	6.0 A or 10.0 A Addressable Charging Power Supply	0.09	0.09	0.09	0.09
		1	AMPS-24	Addressable Power Supply/Battery Charger	0.13	0.13	0	0
		1	BACNET-GW-3	BACnet Gateway	0.125	0.125	0.125	0.125
PANEL CO	MPONENTS	1	CPU2-3030D	NFS2-3030 Fire Alarm Control Panel Main Board (Central Processing Unit), 120V Power, Includes Chassis, Display Option	0.34	0.34	0.34	0.34
		1	LCM-320	Loop Control Module	0.13	0.13	0.13	0.13
			LEM-320	Loop Expander Module, Provides Even Numbered SLC Loops	0.1	0.3	0.1	0.3
		1	NCM-W	Network Communication Module, Wire	0.11	0.11	0.11	0.11
CIRCUIT	SYMBOL	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
	NAC	4	ACPS-610 Assembly	ACPS-610 in Stand-Alone Cabinet	0	0	0	0
N1•L1	Š Š	2	DNR w/FSP-951R	Intelligent Non-Relay Photoelectric Duct Detector/FSP-951R	0.0002	0.0004	0.0045	0.009
	(S)	23	FSP-951 w/B300-6	Addressable low-profile photoelectric smoke detector. FlashScan only.	0.0002	0.0046	0.0045	0.1035
N1•L2	(AIM)	26	FMM-4-20	Analog Input Module	0.0007	0.0182	0.0007	0.0182
N1•L3	(AIM)	8	FMM-4-20	Analog Input Module	0.0007	0.0056	0.0007	0.0056
	(AOM)	2	FCM-1	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B	0.000485	0.00097	0.0065	0.013
	(AOM)	6	FCM-1-REL	Releasing Control Module	0.000485	0.00291	0.0065	0.039
N1•L4	(AIM)	15	FMM-1	Addressable Monitor Module W/ FlashScan, Supervises Class A or Class B of Dry Contact Input	0.000375	0.005625	0.005	0.075
=	(AIM)	12	FMM-101	Addressable Mini Monitor Module	0.000375	0.0045	0.005	0.06
	(AOM)	1	FRM-1	Addressable Relay Module W/ FlashScan, 2 Form-C Dry Contacts	0.000255	0.000255	0.0065	0.0065
	(S)	15	FSP-951 w/B300-6	Addressable low-profile photoelectric smoke detector. FlashScan only.	0.0002	0.003	0.0045	0.0675
					TOTAL STANDBY (A)	1.27106	TOTAL ALARM (A)	1.4923
							DBY TIME = 24 HOURS	-
							RM TIME = 5 MINUTES	
	SECONDARY ST			1.27106	24		30.505	
	SECONDARY A		1	1.4923	0.083		0.1243	36
	STANDBY AND ALARM S DERATING	<u> </u>	J		30.6298 1.2			

MBOL	QTY 1 QTY 1 QTY	· · · · · · · · · · · · · · · · · · ·	DARY POWER SOURCE REQUI DESCRIPTION 6.0 A or 10.0 A Addressable Charging Power Supply			(IN ALARM) = 1.89A (31.50 %) SECONDARY ALARM (CURRENT (AMPS)
MBOL V	QTY 1	PART NO. ACPS-610	6.0 A or 10.0 A Addressable	STANDBY CURRI	ENT (AMPS)	SECONDARY ALARM (CURRENT (AMPS)
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1	ACPS-610	6.0 A or 10.0 A Addressable				JURKENT (AMPS)
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1	ACPS-610	6.0 A or 10.0 A Addressable	CURRENT DRAW (A)	IOIAI (A)		
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1 QTY 1					CURRENT DRAW (A)	TOTAL
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	QTY 1	PART NO		0.09	0.09	0.09	0.09
Z Ø	1		DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
	1 P2RL		2-Wire, Horn Strobe, Red 110cd	0	0	0.162	0.162
Z	2	P2RL	2-Wire, Horn Strobe, Red 110cd	0	0	0.198	0.396
	3	P2WL	2-Wire, Horn Strobe, White 110cd	0	0	0.162	0.486
Z Z	2	P2RL	2-Wire, Horn Strobe, Red 110cd	0	0	0.198	0.396
	1	P2WL	2-Wire, Horn Strobe, White 110cd	0	0	0.162	0.162
Z Ø	1	P2WL	2-Wire, Horn Strobe, White 110cd	0	0	0.198	0.198
•				TOTAL STANDBY (A)	0.09	TOTAL ALARM (A)	1.89
				REQUIRED STANDBY TIME = 24 HOURS			
					REQUIRED ALAR	M TIME = 5 MINUTES	
			0.09	24		2.16	
			1.89	0.08333 0.1575			5
AND ALARM SUB	TOTAL (AMP HOURS)				2	.3175	
						1.2	
RY LOAD REQUIRE	EMENTS (AMP HOURS)					2.781	
		PANEL NAC2 (ACF	PS-610 ASSEMBLY) BAT	TERY CALCULATION			
		(SECON	DARY POWER SOURCE REQUI	REMENTS)			
PANEL POW	ER SUPPLY MAX CURR	RENT = 6A		T(OTAL USED CAPACITY		
				STANDBY CURRENT (AMPS) SECONDARY ALARM CURREN			CURRENT (AMPS)
	QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
	1	ACPS-610	6.0 A or 10.0 A Addressable Charging Power Supply	0.09	0.09	0.09	0.09
	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)
	2	P2RL	2-Wire, Horn Strobe, Red 110cd	0	0	0.198	0.396
Z Ø	2	P2WL	2-Wire, Horn Strobe, White 110cd	0	0	0.162	0.324
	3	30-2021-24	VDC	0	0	0	0
	1	30-2021-24	Flame Detector, UV, 24 VDC	0	0	0	0
<u> </u>	2	30-2054-24	Ember Detector, IR, 24 VDC	0 TOTAL STANDBY (A)	0	0 TOTAL ALABM (A)	0
				IOTAL STAINDRY (A)		` ,	0.81
CONDADV STAND	ORVIOAD (A)		0.00	04	KEQUIKED ALAR		
	` ,				າ		
	. ,		0.81	0.0833			0
	,				2		
VI LOUD IVEROUNE	INITIALIO (VINIL LIOONO)	DDON		24\/DC\	•	L.UI J	
	PANEL POW PANEL POW SECONDARY STANG SECONDARY ALAF Y AND ALARM SUB DERATING FA PANEL POW DECONDARY STANG SECONDARY ALAF Y AND ALARM SUB DERATING FA	DECONDARY STANDBY LOAD (A) SECONDARY ALARM LOAD (A) Y AND ALARM SUBTOTAL (AMP HOURS) DERATING FACTOR RY LOAD REQUIREMENTS (AMP HOURS) PANEL POWER SUPPLY MAX CURR QTY 1 MBOL QTY 2 2 3 1	TECONDARY STANDBY LOAD (A) SECONDARY ALARM LOAD (A) Y AND ALARM SUBTOTAL (AMP HOURS) DERATING FACTOR RY LOAD REQUIREMENTS (AMP HOURS) PANEL NAC2 (ACF (SECONI PANEL POWER SUPPLY MAX CURRENT = 6A QTY PART NO. 1 ACPS-610 MBOL QTY PART NO 2 P2RL 2 P2WL 2 P2WL 3 3-2021-24 1 30-2021-24 2 30-2054-24 ECONDARY STANDBY LOAD (A) SECONDARY STANDBY LOAD (A) Y AND ALARM SUBTOTAL (AMP HOURS) DERATING FACTOR RY LOAD REQUIREMENTS (AMP HOURS)	1	1	1	1

	DANELD	OWED OUDDLY MAY OUD	\	DARY POWER SOURCE REQU	/	TAL LICED CADACITY	/INI AL ADM) = 1.762A /20.27.9/ \		
	PANEL P	OWER SUPPLY MAX CUR	RENT = 6A		TOTAL USED CAPACITY (IN ALARM) = 1.762A (29.37 %) STANDBY CURRENT (AMPS) SECONDARY ALARM CURRENT (AMPS)				
	1	QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	, ,			
PANEL COM	IPONENTS	1	ACPS-610	6.0 A or 10.0 A Addressable Charging Power Supply	0.09	0.09	0.09	TOTAL 0.09	
CIRCUIT	CIRCUIT SYMBOL QTY		PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)	
CIRCUIT		<u> </u>		Flame Detector, UV, 24	• •			. ,	
NAC3•N1	\bigcirc	3	30-2021-24	VDC	0	0	0	0	
10.00 111	GAS	3	XCD	Gas Detector	0.209	0.627	0.209	0.627	
NAC3•N2	\bigcirc	4	30-2021-24	Flame Detector, UV, 24 VDC	0	0	0	0	
	GAS	2	XCD	Gas Detector	0.209	0.418	0.209	0.418	
NAC3•N3	igorplus	9	30-2021-24	Flame Detector, UV, 24 VDC	0	0	0	0	
NAC3•N4	\bigcirc	4	30-2021-24	Flame Detector, UV, 24 VDC	0	0	0	0	
10.00111	△ GAS	3	XCD	Gas Detector	0.209	0.627	0.209	0.627	
					TOTAL STANDBY (A)	1.762	TOTAL ALARM (A)	1.762	
							DBY TIME = 24 HOURS		
						REQUIRED ALAF	RM TIME = 5 MINUTES		
	SECONDARY STA	` ,		1.762	24		42.28		
	SECONDARY AI	` ,		1.762	0.0833		0.1468	33	
	STANDBY AND ALARM S	· ,			42.43483				
	DERATING						1.2		
	SECONDARY LOAD REQU	IREMENTS (AMP HOURS				5	0.9218		
				IDE (2) 12V 55AH BATTERIES @	·				
			PANEL NAC4 (AC	PS-610 ASSEMBLY) BAT	TERY CALCULATION				
			(SECON	IDARY POWER SOURCE REQU	IREMENTS)				
	PANEL P	OWER SUPPLY MAX CUR	RENT = 6A				IN ALARM) = 1.4914A (24.86 %)		
					STANDBY CURRENT (AMPS) SECONDARY ALARM CUR			CURRENT (AMPS	
		QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL	
PANEL COM	MPONENTS	1	ACPS-610	6.0 A or 10.0 A Addressable Charging Power Supply	0.09	0.09	0.09	0.09	
CIRCUIT	SYMBOL	QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL (A)	
NAC4•N1	凝 _c	2	PC2RL	2-Wire, Horn Strobe, Red 115cd	0	0	0.187	0.374	
NAC4•N2	⊗c	2	PC2WL	2-Wire, Horn Strobe, White 115cd	0	0	0.187	0.374	
	(AOM)	1	FCM-1	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B	0	0	0.1637	0.1637	
NAC4•N3	×	1	P2RL	2-Wire, Horn Strobe, Red 30cd	0	0	0.074	0.074	
	×	2	P2RL	2-Wire, Horn Strobe, Red 75cd	0	0	0.121	0.242	
	※	4	SRL	Strobe, Red 15cd	0	0	0.043	0.172	
NAC4•N4	(AOM)	1	FCM-1	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B	0	0	0.0017	0.0017	
			<u> </u>	<u> </u>	TOTAL STANDBY (A)	0.09	TOTAL ALARM (A)	1.4914	
							DBY TIME = 24 HOURS		
						REQUIRED ALAF	RM TIME = 5 MINUTES		
	SECONDARY STA	` ,		0.09	24		2.16		
	SECONDARY AI	` ,		1.4914	0.0833		0.1242	28	
	STANDBY AND ALARM S					2	.28428		
		EACTOR			2.28428 1.2				
	DERATING SECONDARY LOAD REQU						.74114		
	DED 17:1:0	EALTHAL		i l			17		

				CIRCUIT S	ETTINGS	TOTA	ALS
				Starting Calculation Voltage:	20.39339	Max. Voltage Drop:	0.00876
	L4•M004 N1 LUN	IP SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	20.38463
				Max. Circuit Current (A):	2	Voltage Drop Percent:	0.04 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.162
Circuit Wiring Properties	: 'N' 14/2 FPLP/R (NAC) 14 A'	WG, 2 Cond. Solid Copper I	PLP/R Analog Unshielded	Total Circuit Length (Ft):	9	Spare Current (A):	1.838
				Total Circuit Resistance (Ω):	0.054077	Spare Current (A) Percent:	91.90 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS	×	P2RL	2-Wire, Horn Strobe, Red 110cd	1	0.162	0.162	
Calculation Methods:						•	
Total Resistance (Ω) = Wire I	Resistance (Ω/Ft) x 2 x Total (Circuit Length (Ft)					

th (Ft)

				CIRCUIT SI	ETTINGS	TOTALS	3
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.79677
	NAC1 N1 LUMI	P SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	19.60323
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	3.91 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.558
Circuit Wiring Properties: 'N	l' 14/2 FPLP/R (NAC) 14 A	WG, 2 Cond. Solid Coppe	er FPLP/R Analog Unshielded	Total Circuit Length (Ft):	233	Spare Current (A):	0.942
				Total Circuit Resistance (Ω):	1.427897	Spare Current (A) Percent:	62.80 %
DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
	∇	P2RL	2-Wire, Horn Strobe, Red 110cd	1	0.162	0.162	
	\boxtimes	P2RL	2-Wire, Horn Strobe, Red 110cd	2	0.198	0.396	
culation Methods:		•	•				
al Resistance (Ω) = Wire Res	sistance (Ω/Ft) x 2 x Total	Circuit Length (Ft)					
al Voltage Drop = Total Resi	stance (O) x Total Circuit (Current (A)					

				CIRCUIT S	ETTINGS	TOTAL	S
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.72802
	NAC1 N2 LUMF	SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	19.67198
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	3.57 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.486
Circuit Wiring Properties: 'N	N' 14/2 FPLP/R (NAC) 14 A	WG, 2 Cond. Solid Coppe	FPLP/R Analog Unshielded	Total Circuit Length (Ft):	244	Spare Current (A):	1.014
				Total Circuit Resistance (Ω):	1.497982	Spare Current (A) Percent:	67.60 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS	∇	P2WL	2-Wire, Horn Strobe, White 110cd	3	0.162	0.486	
Iculation Methods:			•				
tal Resistance (Ω) = Wire Re	sistance (Ω/Ft) x 2 x Total (Circuit Length (Ft)					
otal Voltage Drop = Total Res	istance (O) v Total Circuit C	turrent (A)					

				CIRCUIT S	ETTINGS	TOTA	ALS
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.50553
	NAC1 N3 LUMP	SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	19.89447
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	2.48 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.396
Circuit Wiring Properties	: 'N' 14/2 FPLP/R (NAC) 14 A	WG, 2 Cond. Solid Copper F	PLP/R Analog Unshielded	Total Circuit Length (Ft):	208	Spare Current (A):	1.104
				Total Circuit Resistance (Ω):	1.276602	Spare Current (A) Percent:	73.60 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS	X	P2RL	2-Wire, Horn Strobe, Red 110cd	2	0.198	0.396	

Total Resistance (Ω) = Wire Resistance (Ω /Ft) x 2 x Total Circuit Length
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

				CIRCUIT S	ETTINGS	TOTA	LS
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.47698
	NAC1 N4 LUMF	SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	19.92302
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	2.34 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.36
Circuit Wiring Properties: 'N	l' 14/2 FPLP/R (NAC) 14 A	WG, 2 Cond. Solid Coppe	r FPLP/R Analog Unshielded	Total Circuit Length (Ft):	216	Spare Current (A):	1.14
				Total Circuit Resistance (Ω):	1.324948	Spare Current (A) Percent:	76.00 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS	∇	P2WL	2-Wire, Horn Strobe, White 110cd	1	0.162	0.162	
	∇	P2WL	2-Wire, Horn Strobe, White 110cd	1	0.198	0.198	
culation Methods:							
al Resistance (Ω) = Wire Re	sistance (Ω/Ft) x 2 x Total (Circuit Length (Ft)					
al Voltage Drop = Total Resi	stance (O) x Total Circuit C	Current (A)					

			CIRCUIT SE	TTINGS	TOTALS	
			Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.92073
NAC3 N1 LUM	P SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	19.47927
			Max. Circuit Current (A):	1.5	Voltage Drop Percent:	4.51 %
			Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.627
Circuit Wiring Properties: 'P' 14/2 FPLP/R (AUX) 14 AWG, 2 Cond. Solid Copper FPLP/R Addressable Unshielded				239	Spare Current (A):	0.873
			Total Circuit Resistance (Ω):	1.468473	Spare Current (A) Percent:	58.20 %
Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
$\langle \wedge \rangle$	30-2021-24	Flame Detector, UV, 24 VDC	3	0	0	
△ GAS	XCD	Gas Detector	3	0.209	0.627	
	4/2 FPLP/R (AUX) 14 AW Symbol	Symbol Part No. 30-2021-24	NAC3 N1 LUMP SUM REPORT 4/2 FPLP/R (AUX) 14 AWG, 2 Cond. Solid Copper FPLP/R Addressable Unshielded Symbol Part No. Description 30-2021-24 Flame Detector, UV, 24 VDC	NAC3 N1 LUMP SUM REPORT Min. Operational Voltage: Max. Circuit Current (A): Wire Resistance (Ω/kFt): 4/2 FPLP/R (AUX) 14 AWG, 2 Cond. Solid Copper FPLP/R Addressable Unshielded Total Circuit Length (Ft): Total Circuit Resistance (Ω): Symbol Part No. Description Qty. Flame Detector, UV, 24 VDC VOR Ocer Patratus 2	NAC3 N1 LUMP SUM REPORT Min. Operational Voltage: 16 Max. Circuit Current (A): 1.5 Wire Resistance (Ω/kFt): 3.07	Starting Calculation Voltage:20.4Max. Voltage Drop:Min. Operational Voltage:16End Of Line Voltage:Max. Circuit Current (A):1.5Voltage Drop Percent:Wire Resistance (Ω/kFt):3.07Total Circuit Current (A):4/2 FPLP/R (AUX) 14 AWG, 2 Cond. Solid Copper FPLP/R Addressable UnshieldedTotal Circuit Length (Ft):239Spare Current (A):Total Circuit Resistance (Ω):1.468473Spare Current (A) Percent:SymbolPart No.DescriptionQty.Device Current (A)Total Current (A)Total Current (A)

Calculation Methods:
Total Resistance (Ω) = Wire Resistance (Ω /Ft) x 2 x Total Circuit Length (Ft)
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

				CIRCUIT SETTINGS		TOTALS	
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.90999
	NAC3 N2 LUMF	SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	19.49001
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	4.46 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.418
Circuit Wiring Properties: 'P' 1	4/2 FPLP/R (AUX) 14 AW	G, 2 Cond. Solid Copper FF	PLP/R Addressable Unshielded	Total Circuit Length (Ft):	355	Spare Current (A):	1.082
				Total Circuit Resistance (Ω):	2.177019	Spare Current (A) Percent:	72.13 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS	\Diamond	30-2021-24	Flame Detector, UV, 24 VDC	4	0	0	
	△ _{GAS}	XCD	Gas Detector	2	0.209	0.418	
Calculation Methods:							
Total Resistance (O) = Wire Re	sistance (O/Ft) v 2 v Total i	Circuit Length (Ft)	·	-	-	_	

Total Resistance (Ω) = Wire Resistance (Ω /Ft) x 2 x Total Circuit Length (Ft) Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

				CIRCUIT SETTINGS		TOTALS	
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0
	NAC3 N3 LUM	P SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	20.4
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	0.00 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0
Circuit Wiring Properties: 'P' 1	4/2 FPLP/R (AUX) 14 AW	G, 2 Cond. Solid Copper FP	LP/R Addressable Unshielded	Total Circuit Length (Ft):	401	Spare Current (A):	1.5
				Total Circuit Resistance (Ω):	2.460461	Spare Current (A) Percent:	100.00 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS	$\langle \wedge \rangle$	30-2021-24	Flame Detector, UV, 24 VDC	9	0	0	
alculation Methods:				•		·	

Total Resistance (Ω) = Wire Resistance (Ω /Ft) x 2 x Total Circuit Length (Ft) Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

				CIRCUIT SETTINGS		TOTALS	
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	2.09562
	NAC3 N4 LUMI	P SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	18.30438
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	10.27 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.627
ircuit Wiring Properties: 'P' 14	1/2 FPLP/R (AUX) 14 AW	G, 2 Cond. Solid Copper FF	PLP/R Addressable Unshielded	Total Circuit Length (Ft):	544	Spare Current (A):	0.873
				Total Circuit Resistance (Ω):	3.342296	Spare Current (A) Percent:	58.20 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS	$\langle \wedge \rangle$	30-2021-24	Flame Detector, UV, 24 VDC	4	0	0	
	lacktriangle GAS	XCD	Gas Detector	3	0.209	0.627	
culation Methods:							
al Resistance (Ω) = Wire Res	istance (Ω/Ft) x 2 x Total	Circuit Length (Ft)					

				CIRCUIT SE	ETTINGS	TOTALS			
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	3.78084		
	NAC4 N1 LUMP	SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	16.61916		
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	18.53 %		
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.374		
Circuit Wiring Properties: '	N' 14/2 FPLP/R (NAC) 14 AV	VG, 2 Cond. Solid Copper	FPLP/R Analog Unshielded	Total Circuit Length (Ft):	1646	Spare Current (A):	1.126		
					10.109202	Spare Current (A) Percent:	75.07 %		
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)			
DEVICE TOTALS	凝 _c	PC2RL	2-Wire, Horn Strobe, Red 115cd	2	0.187	0.374			
Calculation Methods:									
` '	Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft)								
Total Voltage Drop = Total Res	sistance (Ω) x Total Circuit Cu	urrent (A)							

				CIRCUIT S	SETTINGS	TOTALS	
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	3.78128
	NAC4 N2 LUM	P SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	16.61872
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	18.54 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.374
Circuit Wiring Properties:	'N' 14/2 FPLP/R (NAC) 14 A	WG, 2 Cond. Solid Copper F	PLP/R Analog Unshielded	Total Circuit Length (Ft):	1647	Spare Current (A):	1.126
				Total Circuit Resistance (Ω):	10.110377	Spare Current (A) Percent:	75.07 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS	⊗c	PC2WL	2-Wire, Horn Strobe, White 115cd	2	0.187	0.374	
Calculation Methods:							
Total Resistance (Ω) = Wire F	Resistance (Ω/Ft) x 2 x Total	Circuit Length (Ft)					

Total Resistance (Ω) = wire Resistance (Ω /Ft) x 2 x Total Circuit Len
Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

				CIRCUIT SE	ITINGS	TOTALS	
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.79298
	NAC4 N3 LUMP	SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	19.60702
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	3.89 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.6517
Circuit Wiring Properties: 'N' 14/2 FPLP/R (NAC) 14 AWG, 2 Cond. Solid Copper FPLP/R Analog Unshielded				Total Circuit Length (Ft):	198	Spare Current (A):	0.8483
				Total Circuit Resistance (Ω):	1.216793	Spare Current (A) Percent:	56.55 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
	X	SRL	Strobe, Red 15cd	4	0.043	0.172	
DEVICE TOTALS -	X	P2RL	2-Wire, Horn Strobe, Red 30cd	1	0.074	0.074	
DEVICE TOTALS	\boxtimes	P2RL	2-Wire, Horn Strobe, Red 75cd	2	0.121	0.242	
	(AOM)	FCM-1	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B	I I	0.1637	0.1637	

Total Resistance (Ω) = Wire Resistance (Ω /Ft) x 2 x Total Circuit Length (Ft) Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

				CIRCUIT S	ETTINGS	TOTA	LS
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.00267
	NAC4 N4 LUMI	P SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	20.39733
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	0.01 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.0017
Circuit Wiring Properties:	'N' 14/2 FPLP/R (NAC) 14 A	WG, 2 Cond. Solid Copper	FPLP/R Analog Unshielded	Total Circuit Length (Ft):	256	Spare Current (A):	1.4983
				Total Circuit Resistance (Ω):	1.569393	Spare Current (A) Percent:	99.89 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS	(AOM)	FCM-1	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B	1	0.0017	0.0017	
Calculation Methods:							
Total Resistance (Ω) = Wire R	lesistance (Ω/Ft) x 2 x Total	Circuit Length (Ft)					
Total Voltage Drop = Total Re	sistance (Ω) x Total Circuit (Current (A)	_				

				CIRCUIT SE	ETTINGS	TOTA	ALS
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.93789
	NAC2 N1 LUMF	SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	19.46211
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	4.60 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.396
Circuit Wiring Properties:	'N' 14/2 FPLP/R (NAC) 14 A'	WG, 2 Cond. Solid Copper	FPLP/R Analog Unshielded	Total Circuit Length (Ft):	386	Spare Current (A):	1.104
				Total Circuit Resistance (Ω):	2.368408	Spare Current (A) Percent:	73.60 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS	\boxtimes	P2RL	2-Wire, Horn Strobe, Red 110cd	2	0.198	0.396	
Calculation Methods:			•				
Total Resistance (Ω) = Wire R	esistance (Ω/Ft) x 2 x Total (Circuit Length (Ft)					

Total Resistance (Ω) = Wire Resistance (Ω /Ft) x 2 x Total Circuit Length (Ft) Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

				CIRCUIT S	ETTINGS	TOTALS	
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.79398
	NAC2 N2 LUMP	SUM REPORT		Min. Operational Voltage:	16	End Of Line Voltage:	19.60602
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	3.89 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0.324
Circuit Wiring Properties:	'N' 14/2 FPLP/R (NAC) 14 AV	NG, 2 Cond. Solid Copper Fl	PLP/R Analog Unshielded	Total Circuit Length (Ft):	399	Spare Current (A):	1.176
				Total Circuit Resistance (Ω):	2.450558	Spare Current (A) Percent:	78.40 %
DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
	\boxtimes	P2WL	2-Wire, Horn Strobe, White	2	0.162	0.324	

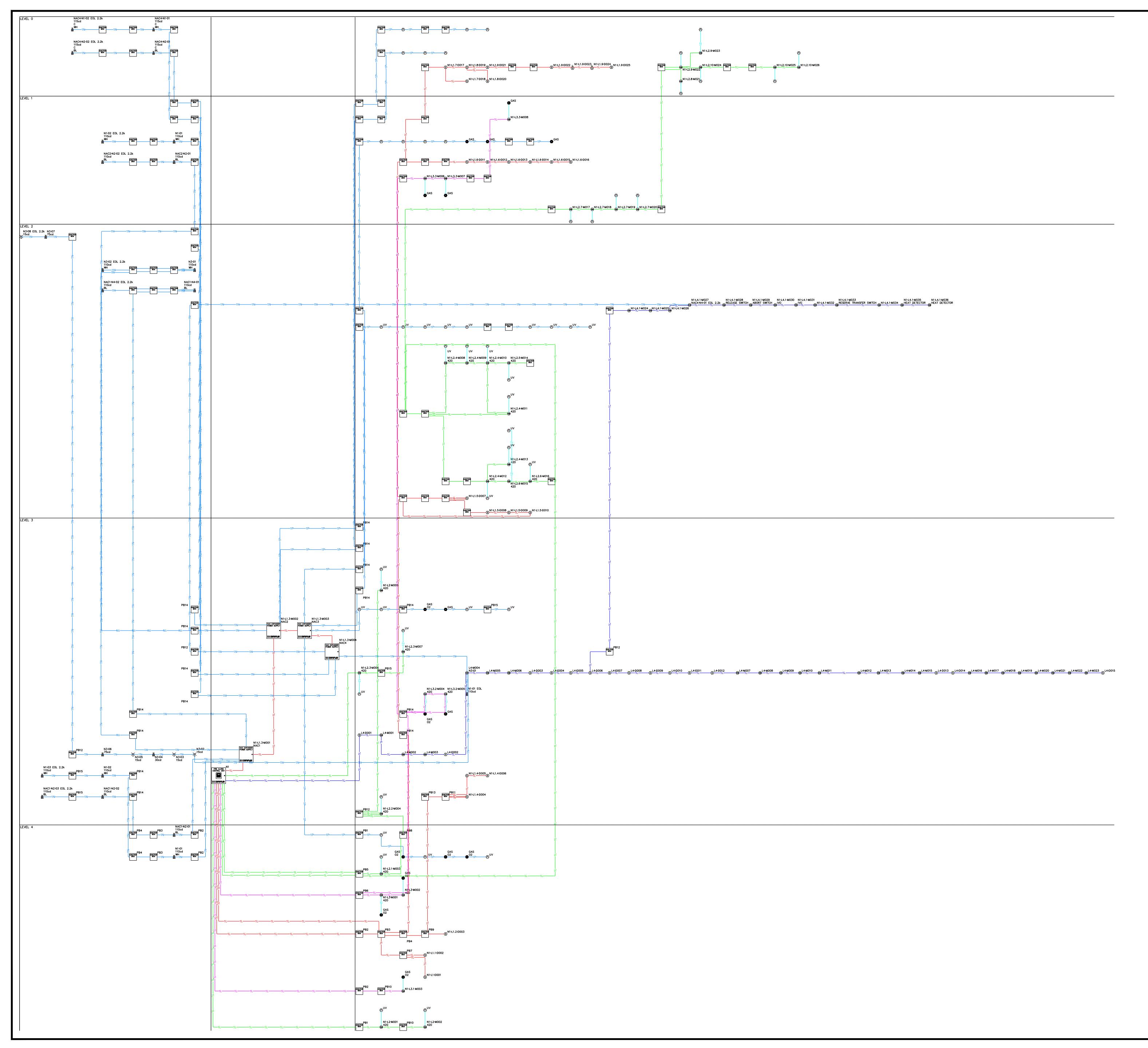
Calculation Methods: Total Resistance (Ω) = Wire Resistance (Ω /Ft) x 2 x Total Circuit Length (Ft) Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

				CIRCUIT SETTINGS		TOTALS	
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0
NAC2 N3 LUMP SUM REPORT				Min. Operational Voltage:	16	End Of Line Voltage:	20.4
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	0.00 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0
Circuit Wiring Properties: 'P	' 14/2 FPLP/R (AUX) 14 AWC	G, 2 Cond. Solid Copper FPLF	P/R Addressable Unshielded	Total Circuit Length (Ft):	413	Spare Current (A):	1.5
				Total Circuit Resistance (Ω):	2.53343	Spare Current (A) Percent:	100.00 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS		00 0004 04	Flame Detector, UV, 24	0	^		

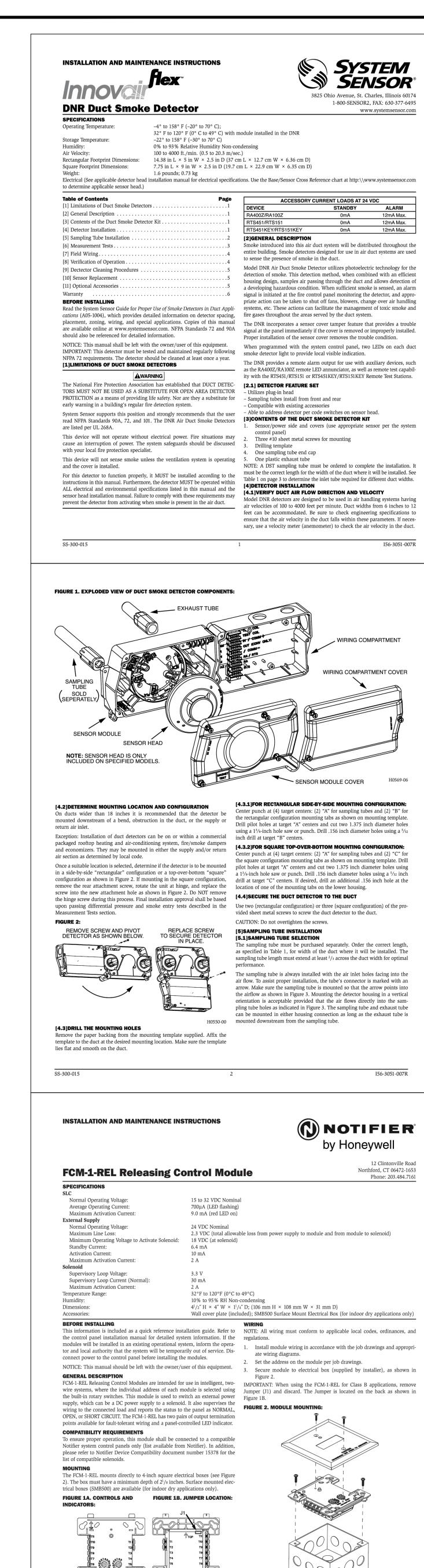
Calculation Methods: Total Resistance (Ω) = Wire Resistance (Ω /Ft) x 2 x Total Circuit Length (Ft) Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)

				CIRCUIT SETTINGS		TOTALS	
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0
NAC2 N4 LUMP SUM REPORT Circuit Wiring Properties: 'P' 14/2 FPLP/R (AUX) 14 AWG, 2 Cond. Solid Copper FPLP/R Addressable Unshielded				Min. Operational Voltage:	16	End Of Line Voltage:	20.4
				Max. Circuit Current (A):	1.5	Voltage Drop Percent:	0.00 %
				Wire Resistance (Ω/kFt):	3.07	Total Circuit Current (A):	0
				Total Circuit Length (Ft):	508	Spare Current (A):	1.5
				Total Circuit Resistance (Ω):	3.118372	Spare Current (A) Percent:	100.00 %
DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
	\Diamond	30-2021-24	Flame Detector, UV, 24 VDC	1	0	0	
	$\langle \wedge \rangle$	30-2054-24	Ember Detector, IR, 24 VDC	2	0	0	

Total Resistance (Ω) = Wire Resistance (Ω /Ft) x 2 x Total Circuit Length (Ft) Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)



	DEVICE LEGEND				
SYM	BOL	DESCRIPTION			
FAC	CU	FACP, ADDRESSABLE, CPU2-3030D, 1X LCM-320, 1X LEM-320, AMPS-24, NCM-W			
NAC		6.0 A OR 10.0 A ADDRESSABLE CHARGING POWER SUPP			
(AIM)		ADDRESSABLE MONITOR MODULE W/ FLASHSCAN, SUPERVISES CLASS A OR CLASS B OF DRY CONTACT INPU			
(AIM)		ADDRESSABLE MINI MONITOR MODULE			
(AIM)		ANALOG INPUT MODULE			
(AOM)		ADDRESSABLE CONTROL MODULE W/ FLASHSCAN, 1 CLAS A OR 1 CLASS B			
(AOM)		RELEASING CONTROL MODULE			
(AOM)		ADDRESSABLE RELAY MODULE W/ FLASHSCAN, 2 FORM- DRY CONTACTS			
(S)		INTELLIGENT NON-RELAY PHOTOELECTRIC DUCT DETECTOR/FSP-951R			
$\langle \wedge \rangle$		FLAME DETECTOR, UV, 24 VDC			
(S)		ADDRESSABLE LOW-PROFILE PHOTOELECTRIC SMOKE DETECTOR. FLASHSCAN ONLY.			
△ GAS		GAS DETECTOR			
		2-WIRE, WALL, HORN STROBE			
Ξ_{c}		2-WIRE, CEILING, HORN STROBE, RED			
		STROBE, RED			
		CABLE AND WIRE LEGEND			
LABEL		DESCRIPTION			
L		LOOP 1 - FIRE ALARM DEVICES			
L		LOOP 2 - FLAME DETECTORS			
L		LOOP 3 - GAS DETECTORS			
L	LOOP 4 - FIRE SUPRESSION SYSTEM				
N		NAC			
P		AUXILIARY			
Z		IDC			
	1				



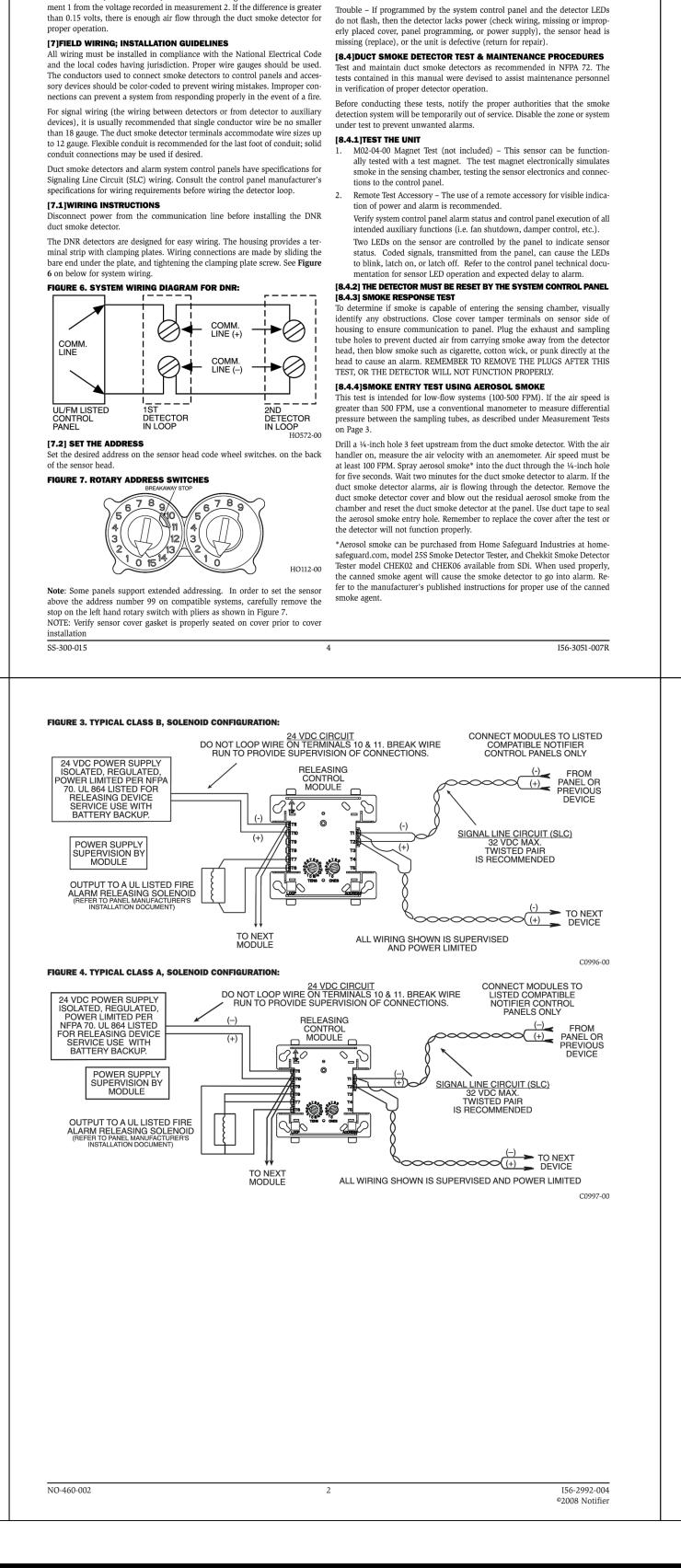


TABLE 1. SAMPLING TUBES RECOMMENDED FOR

1 to 2 ft.

2 to 4 ft.

4 to 8 ft.

tube with the provided end cap.

[5.2] SAMPLING TUBE INSTALLATION

*Must extend a minimum of ²/₃ the duct width

FIGURE 3. AIR DUCT DETECTOR SAMPLING TUBE:

SAMPLING TUBE ENDCAP

to proper operation of the duct smoke detector. The end cap is needed to

sampling tube length adjustments are made, plug the end of the sampling

create the proper air flow to the sensor of the duct smoke detector. Once any

sory in cases where the molded exhaust tube does not extend at least 2 inches

For tubes shorter than the width of the duct, slide the sampling tube,

flow first. Position the tube so that the arrow points into the airflow as

shown in Figure 3. Per NFPA sampling tubes over 3 feet long should be

supported at the end opposite of the duct detector. In ducts wider than 8

feet, work must be performed inside the duct to couple the other section

of the sampling tube to the section already installed using the ½ inch

air inlet sampling tube are lined up and facing into the airflow.

2. For tubes longer than the width of the air duct, the tube should extend

conduit fitting supplied. Make sure that the holes on both sections of the

out of the opposite side of the duct. Drill a 3/4 inch hole in the duct op-

posite the hole already cut for the sampling tube. Ensure that the sam-

pling tube is angled downward from the duct smoke detector to allow for

moisture drainage away from the detector. The sampling tube should

be angled at least 1/4" downward for every 12" of duct width per Figure

4. There should be 10 to 12 holes spaced as evenly as possible across the

width of the duct. If there are more than 2 holes in the section of the tube

extending out of the duct, select a shorter tube using Table 1. Otherwise,

trim the tube to leave approximately 1 to 2 inches extending outside the

duct. Plug the end with the end cap and tape closed any holes in the

protruding section of the tube. Be sure to seal the duct where the tube

[6.2]LOW FLOW AIR FLOW TEST USING DWYER SERIES 607

measure and record the voltage drop across the 1000Ω resistor (measurement

1), 4.00 volts is typical. Using flexible tubing and rubber stoppers, connect the

ENTIAL PRESSURE TRANSMITTER

or the back. A longer 1 foot exhaust tube, model ETX, is available as an acces-

with installed end cap, into the housing connection that meets the air-

825 Ohio Avenue, St. Charles, Illinois 60174

1-800-SENSOR2, FAX: 630-377-6495

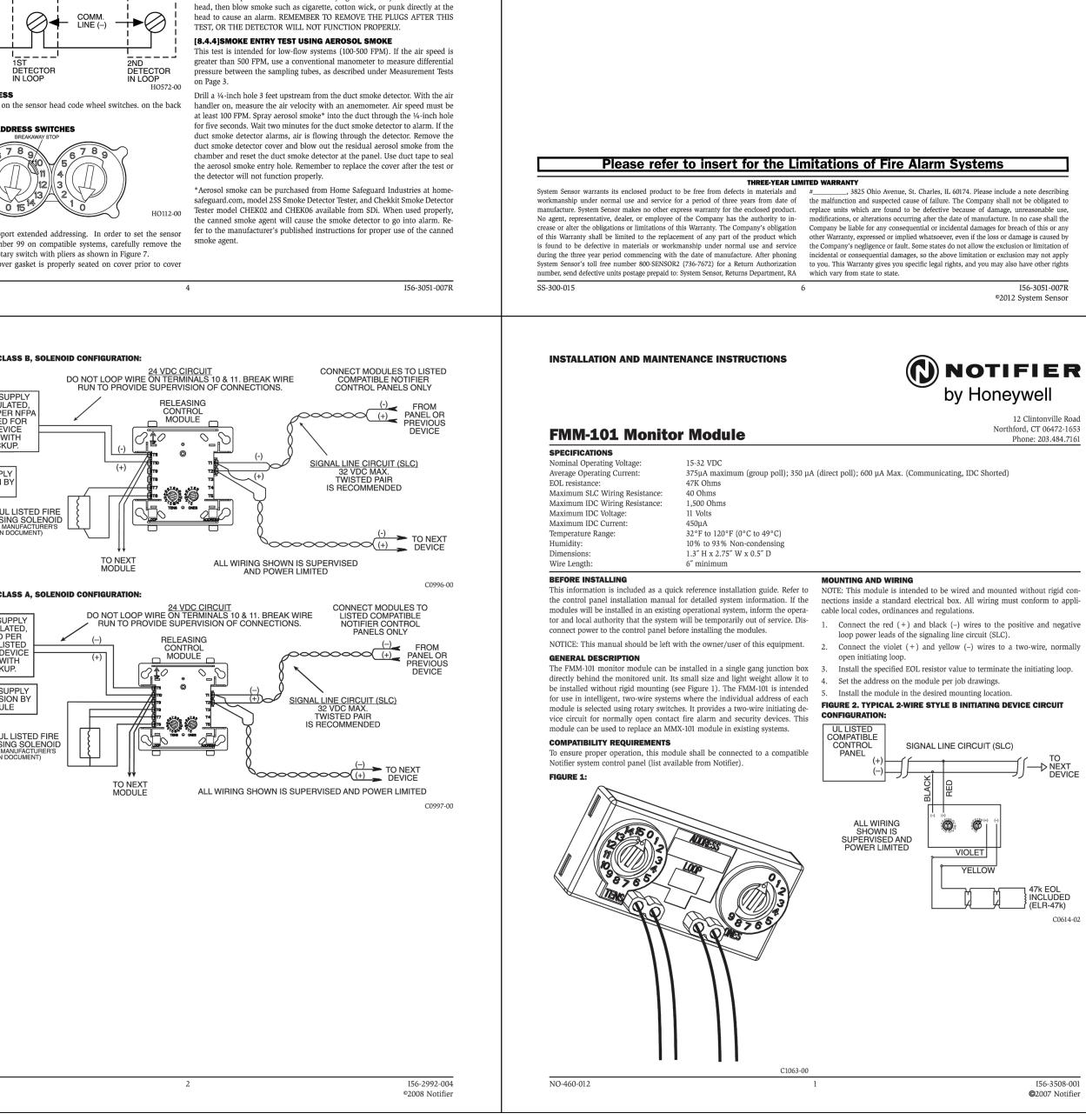
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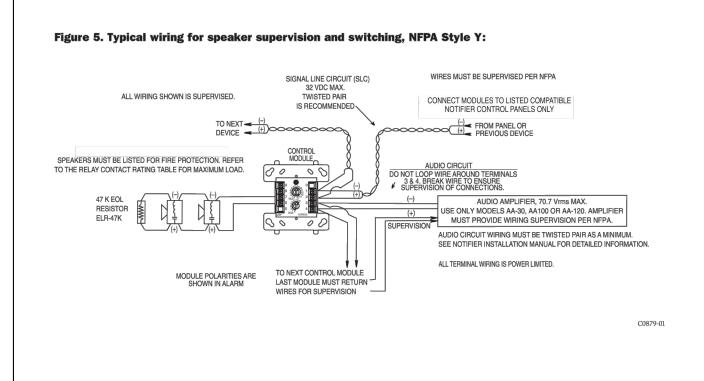
ING COMPARTMENT COVER

NOTIFIER

12 Clintonville Road

Northford, CT 06472-1653





The RTS451/RTS151/RTS451KEY/RTS151KEY Remote Test Station facilitates

A sensor with suffix "R" is available for use inside the DNR. Suffix "R"

represents a head with Remote Test Capability. Using this head inside the

DNR eliminates the need for a test coil when wired to a RTS451/RTS151/

To install the RTS451/RTS151/RTS451KEY/RTS151KEY, using the sensor with

remote test capability connect the device as shown in Figure 9; wire runs must

NOTE: Resistor assembly must be in place between RA+ and OUT+

The use of a remote test station requires the installation of an accessory

Install DCOIL in housing pocket insuring that arrow is pointing toward detector

I56-3051-007R

FIGURE 9. RTS451/RTS451KEY/RTS151/RTS151KEY USING

test of the alarm capability of the duct smoke detector. These accessories pr

REMOTE TEST USING SENSOR WITH REMOTE TEST CAPABILITY

Canned aerosol simulated smoke (canned smoke agent) formulas will vary by vide the stimulus to initiate an alarm condition at the detector. The DNR duct

[11.1] OPTION 1:

(WITHOUT A TEST COIL):

TEST COIL

OUT (CONV ONLY) +

[11.2] OPTION 2:

REMOTE TEST USING A TEST COIL:

coil, part number DCOIL, sold separately.

Install DCOIL mounting screw

FIGURE 10. DNR USING A TEST COIL

See Figure 10 below for reference.

TEST COIL TERMINALS

Connect each DCOIL lead to a Test Coil Terminal

RTS451KEY/RTS151KEY Remote Test Station.

be limited to 25 ohms or less per interconnecting wire.

inside the DNR for Remote Test function to operate.

manufacturer. Misuse or overuse to these products may have long term adverse

smoke detector must be reset by the system control panel.

▲CAUTION

effects on the smoke detector. Consult the canned smoke agent manufacturer's

Notify the proper authorities that the smoke detector system is undergoing

maintenance, and that the system will temporarily be out of service. Disable

Remove the sensor cover by pressing firmly on each of the four removal

3. Vacuum the screen carefully without removing it. If further cleaning is

4. Remove the chamber cover/screen assembly by pulling it straight out.

5. Use a vacuum cleaner or compressed air to remove dust and debris from

6. Reinstall the chamber cover/screen assembly by sliding the edge over the

7. Replace the cover using the LEDs to align the cover and then gently

4. Notify the proper authorities testing has been completed and the smoke

To replace the sensor head, align the mounting features and rotate clock

Optional accessories include RA400Z/RA100Z, RTS451/RTS151 and

NOTE: Ensure blue wire always remains connected to RA+ on the field

REMOTE ALARM LED

Note: If using a RA400Z, the tab should be broken for use with the intelli-

gent duct smoke detector. If using RA100Z, ensure that jumper is removed.

FIGURE 11. WIRING DIAGRAM FROM DNR TO RTS451/RTS151/

NOTE: The RTS451/151, RTS451/151KEY test coil circuit requires an

The DNR can also accommodate a relay or control module (sold separately)

within the power board side of the housing. The relay or control module must

2) Locate the module at right most corner of the power board. The upper

Note: See the corresponding module Installation Instructions for general

left corner mounting hole of the module will align with a screw boss in

Remove the breakaway tabs at the four corners of the module

3) Install a #8 \times 3/8" Plastite screw at the screw boss location

description, control panel compatibility, wiring and ratings.

external 24 VDC power supply which must be UL listed.

be listed as compatible to the fire alarm control panel.

[11.3] ADDITIONAL MODULE OPTION

Physical Module Mounting

REMOTE TEST STAT

RTS451KEY/RTS151KEY USING A TEST COIL

OUT (CONV ONLY) -

RA/RTS -

OPTION 1 PER UNIT

FIGURE 8. WIRING DIAGRAM FOR DNR TO RA400Z/RA100Z

Remove the sensor head by rotating counterclockwise.

the zone or system undergoing maintenance to prevent unwanted alarms and

published instructions for any further warnings or caution statements.

Remove the sensor to be cleaned from the system.

sensing chamber. Turn until it is firmly in place.

required continue with Step 4, otherwise skip to Step 7.

191DETECTOR OF FANING PROCEDURES

possible dispatch of the fire department

tabs that hold the cover in place.

pushing it until it locks into place.

Reinstall the detector in its housing.

detector system is back in operation.

[9.1]DETECTOR SENSOR

the sensing chamber.

Reinstall the detector.

[9.2]REINSTALLATION

Restore system power.

Perform Detector Check.

[10]SENSOR REPLACEMENT

Pull gently to remove it.

[11] OPTIONAL ACCESSORIES

connector side of the terminal block

wise into place.

NOTE: Air currents inside the duct may cause excessive vibration, especially

when the longer sampling tubes are used. In these cases, a 3 inch floor flange

echnique, drill a 1 to 1 ¼ inch hole where the flange will be used

[5.3]MODIFICATIONS OF SAMPLING TUBES

longer than necessary to span the duct width.

[5.4] REMOTE SAMPLING TUBE INSTALLATION

CAUTION: The sampling tube end cap, included with the detector, is critical **CAUTION:** This procedure should only be used as a temporary fix. It is not

A plastic exhaust tube is included with the unit to be installed if needed. In-

stall into the housing connection that is downstream from the sampling tube the pressure and vibrations caused by the air velocity. The location of the

Verify the air speed of the duct using an anemometer. Air speed must be at Install the covers making sure that the cover fits into the base groove. Tighten

least 100 FPM. Wire the Dwyer transmitter as shown in **Figure 5**. Connect the the seven screws that are captured in the covers. Note that the cover must be

tor housing, and the LOW side of the transmitter to the exhaust tube of the Standby – If programmed by the system control panel, look for the presence of

duct smoke detector housing. Measure and record the voltage drop across the the flashing LEDs through the transparent housing cover. The LED will flash

leads of the meter to either side of the 1000Ω resistor. Allow unit to warm up properly installed for proper operation of the sensor.

for 15 seconds. With both HIGH and LOW pressure ports open to ambient air,

[8.2] POWER THE UNIT

HIGH side of the transmitter to the sampling tube of the duct smoke detec-

 1000Ω resistor (measurement 2). Subtract the voltage recorded in measurewith each communication.

connection. The exhaust tube can be installed from the front of the detector detector's sampling tube should be such that there is uniform airflow in the

[6.1]AIR FLOW

available at most plumbing supply stores) may be used to fasten the sampling

tube to the other side of the duct. When using the flange/connector mounting

here may be applications where duct widths are not what is specified for the

installation. In such cases, it is permissible to modify a sampling tube that is

Use a 0.193-inch diameter (#10) drill and add the appropriate number of holes

The detector arrangement can also incorporate the remote mounting of the

sampling tube and/or exhaust tube. In this case both the detector, sampling

Pressure differential across the sampling and exhaust ports in the detector hous-

ing shall be verified to be between 0.01 and 1.11 inches of water. Do so by mea-

suring the pressure difference between the inlet and outlet ports on the detector

housing using a manometer as described in the Measurement Tests sectiont of

The DNR is designed to operate over an extended air speed range of 100 to

sampling tubes. The differential pressure should measure at least 0.01 inches

of water and no more than 1.11 inches of water. Because most commercially

available manometers cannot accurately measure very low pressure differen

tials, applications with less than 500 FPM of duct air speed may require one

of the following: 1) the use of a current-sourcing pressure transmitter (Dwve

Series 607) or 2) the use of aerosol smoke, see below for test descriptions.

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I56-3051-007R

FIGURE 5. PROCEDURE FOR VERIFYING AIR FLOW:

Activate the communication line on terminals COM + and COM -

4000 FPM. To verify sufficient sampling of ducted air, turn the air handler on

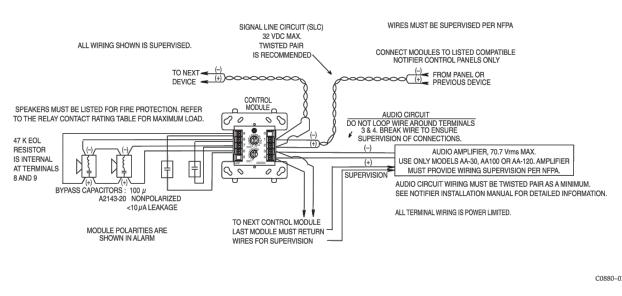
and use a manometer to measure the differential pressure between the tw

so that the total number of holes exposed to the air flow in the duct is 10 to 12.

Space the additional holes as evenly as possible over the length of the tube.

intended as a permanent substitute for ordering the correct length tubes.

Figure 6. Typical fault tolerant wiring for speaker supervision and switching, NFPA Style Z:



All relay switch contacts are shipped in the standby state (open) state, but may have transferred to the activated (closed) state during shipping. To ensure that the switch contacts are in their correct state, modules must be made to communicate with the panel before connecting circuits controlled by the module. N500-46-00 I56-1169-013

NOTE: All wiring must conform to applicable local codes, ordinances, and regulations. When using control modules in

nonpower limited applications, the CB500 Module Barrier must be used to meet UL requirements for the separation of

power-limited and nonpower-limited terminals and wiring. The barrier must be inserted into a 4" × 4" × 2¹/₈" junction

box, and the control module must be placed into the barrier and attached to the junction box (Figure 2A). The power-

Note: Some panels support extended addressing. In order to set the module above address 99 on compatible systems,

IMPORTANT: When using the FCM-1 for fire fighter telephone applications, remove Jumper (J1) and discard. The Jumper

is located on the back under the product label as shown in Figure 1B. The module does not provide ring back when used

Figure 1B. Jumper location:

J1 UNDER LABEL

limited wiring must be placed into the isolated quadrant of the module barrier (Figure 2B).

3. Secure module to electrical box (supplied by installer), as shown in Figure 2A.

2. Set the address on the module per job drawings.

as a firefighter telephone circuit.

Figure 1A. Removing rotary switch stop:

Figure 2A. Module mounting with barrier:

INSTALLATION AND MAINTENANCE INSTRUCTIONS

4-20mA Analog Input Module

connect power to the control panel before installing the modules.

NOTICE: This manual should be left with the owner/user of this equipment.

The FMM-4-20 4-20mA Analog Input Module is intended for use in intelligent.

two-wire systems, where the individual address of each module is selected

using the built-in rotary switches. This module allows intelligent panels to

interface and monitor two-wire or three-wire sensors, that produce a 4-20mA signal output. It transmits the status (normal, open, or alarm) of one sensor

back to the control panel. The FMM-4-20 has a panel controlled LED indicator.

To ensure proper operation, this module shall be connected to a compatible

Notifier system control panel only (list available from Notifier). In addition,

please refer to Notifier Device Compatibility document number 15378 for the

15 to 32 VDC

9.3 mA (LED on)

24 VDC Nominal

-10°C to 60°C

10% to 95% Non-condensing

tor and local authority that the system will be temporarily out of service. Dis-

SMB500 Electrical Box

 $4^1/2''$ H × 4'' W × $1^1/4''$ D (Mounts to a 4'' square by $2^1/8''$ deep box.)

modules will be installed in an existing operational system, inform the opera-electrical boxes (SMB500) are available from Notifier.

This information is included as a quick reference installation guide. Refer to

The FMM-4-20 mounts directly to 4-inch square electrical boxes (see Figure

the control panel installation manual for detailed system information. If the 2). The box must have a minimum depth of 2¹/s inches. Surface mounted

510 mA

1 mA (LED flashing)

N500-46-00

FMM-4-20

Normal Operating Voltage:

Average Operating Current:

Normal Operating Voltage

Standby Current:

Maximum Current:

Maximum Current:

GENERAL DESCRIPTION

COMPATIBILITY REQUIREMENTS

FIGURE 1. CONTROLS AND INDICATORS

list of compatible devices.

Initiating Device

Temperature Range:

Dimensions:

Maximum Current Draw:

External Supply

1. Install module wiring in accordance with the job drawings and appropriate wiring diagrams.

carefully remove the stop on the upper rotary switch with thumb in the direction shown in Figure 1A.

can be a DC power supply or an audio amplifier (up to 80 VRMS), to notification appliances. It also supervises the wiring to the connected loads and reports their status to the panel as NORMAL, OPEN, or SHORT CIRCUIT. The FCM-1 has two pairs of output termination points available for fault-tolerant wiring and a panel-controlled LED indicator. This module can be used to replace a CMX-2 module that has been configured for supervised wiring operation. To ensure proper operation, this module shall be connected to a compatible Notifier system control panels only (list avail-The FCM-1 mounts directly to 4" square electrical boxes (see Figure 2A). The box must have a minimum depth of 21/8". Surface mounted electrical boxes (SMB500) are available

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I56-1169-013

12 Clintonville Road

Northford, CT 06472-1653

NOTIFIER

by Honeywell

NOTE: All wiring must conform to applicable local codes, ordinances, and regulations. This module is intended for powerlimited wiring only.

ate wiring diagrams.

2. Set the address on the module per job drawings.

. Install module wiring in accordance with the job drawings and appropri-

Specifications

Normal Operating Voltage:

Average Operating Current:

Maximum NAC Line Loss:

External Supply Voltage:

Maximum (NAC):

Maximum (Speakers):

Drain on External Supply:

Temperature Range

Before Installing

General Description

Humidity:

Dimensions:

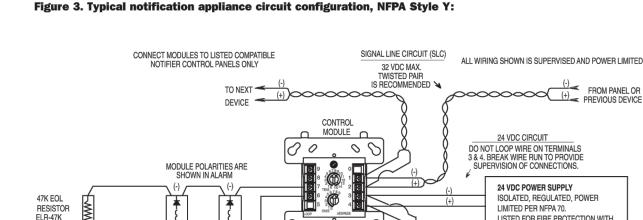
Accessories:

the modules.

N500-46-00

Max NAC Current Ratings:

Maximum Current Draw:



(N) NOTIFIER®

FCM-1 Supervised Control Module

Installation And Maintenance Instructions

485μA Max. (LED flashing, NAC shorted)

For class B wiring system, the current rating is 3A

This information is included as a quick reference installation guide. Refer to the control panel installation manual for

detailed system information. If the modules will be installed in an existing operational system, inform the operator and

local authority that the system will be temporarily out of service. Disconnect power to the control panel before installing

FCM-1 Supervised Control Modules are intended for use in intelligent, two-wire systems, where the individual address of

each module is selected using the built-in rotary switches. This module is used to switch an external power supply, which

For class A wiring system, the current rating is 2A

(between Terminals T3 and T4)

32°F to 120°F (0°C to 49°C)

10% to 93% Non-condensing

SMB500 Electrical Box: CB500 Barrier

Regulated 24 VDC

70.7 V RMS, 50 W

NOTICE: This manual should be left with the owner/user of this equipment.

375μA (LED flashing - in group poll mode) 350μA (LED of flashing - in direct poll

1.7 mA Maximum using 24 VDC supply; 2.2 mA Maximum using 80 VRMS supply

Notifier, 12 Clintonville Rd., Northford, CT 06472

41/2" H × 4" W × 11/4" D (Mounts to a 4" square by 21/8" deep box.)

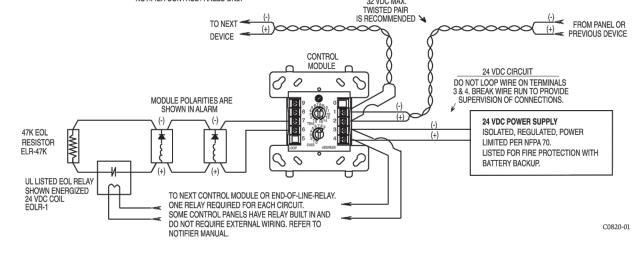
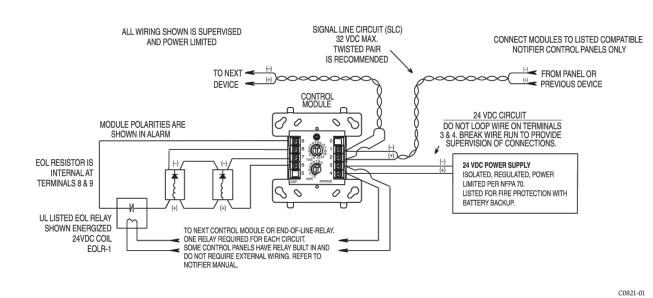
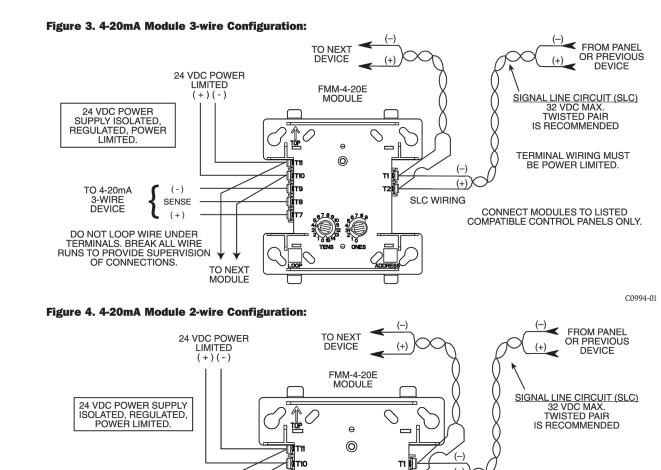
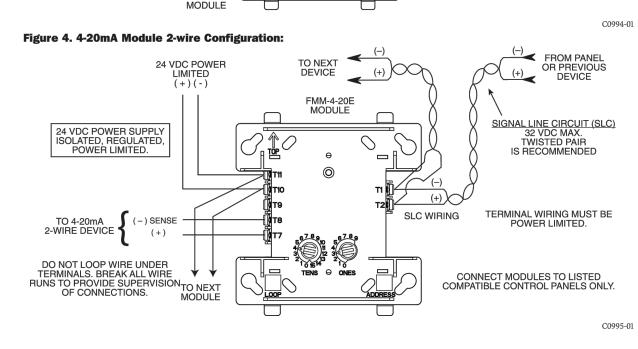


Figure 4. Typical fault tolerant notification appliance circuit configuration, NFPA Style Z:



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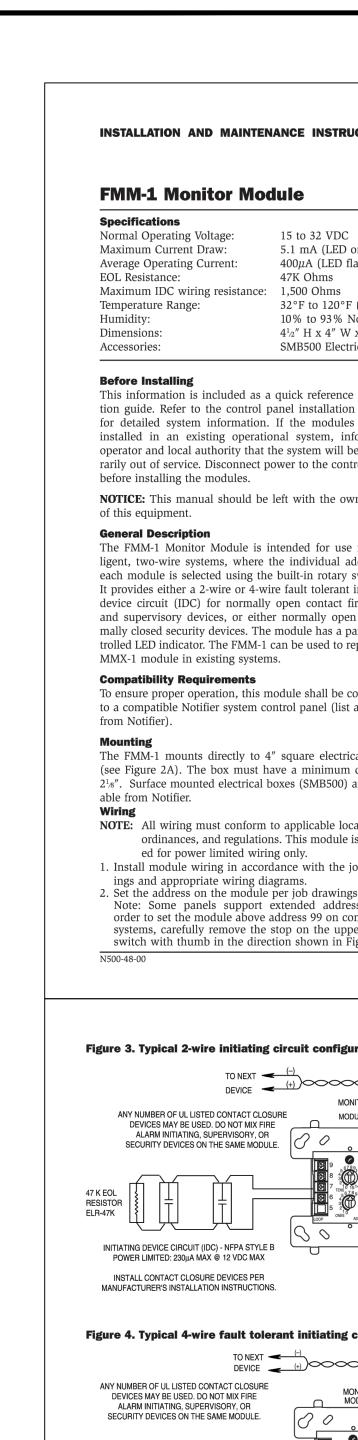


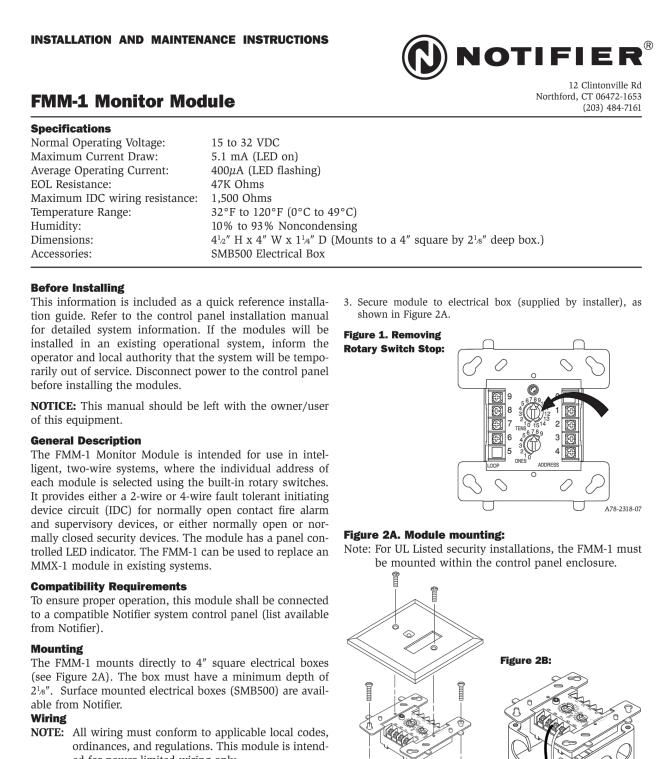


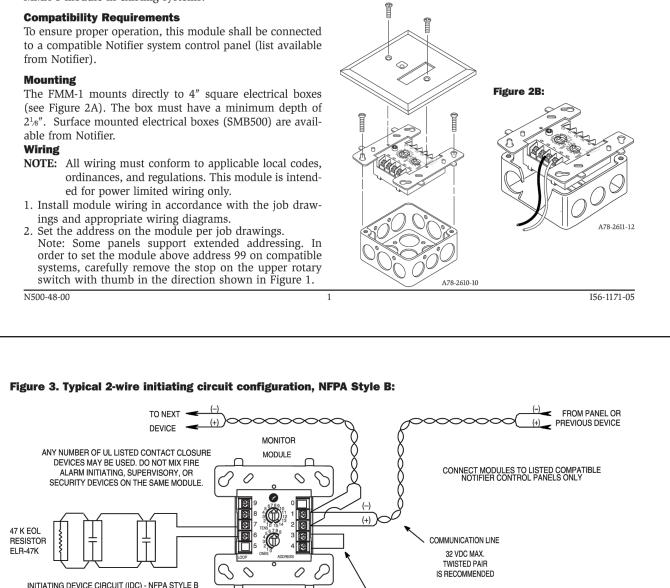
Secure module to electrical box (supplied by installer), Figure 2.

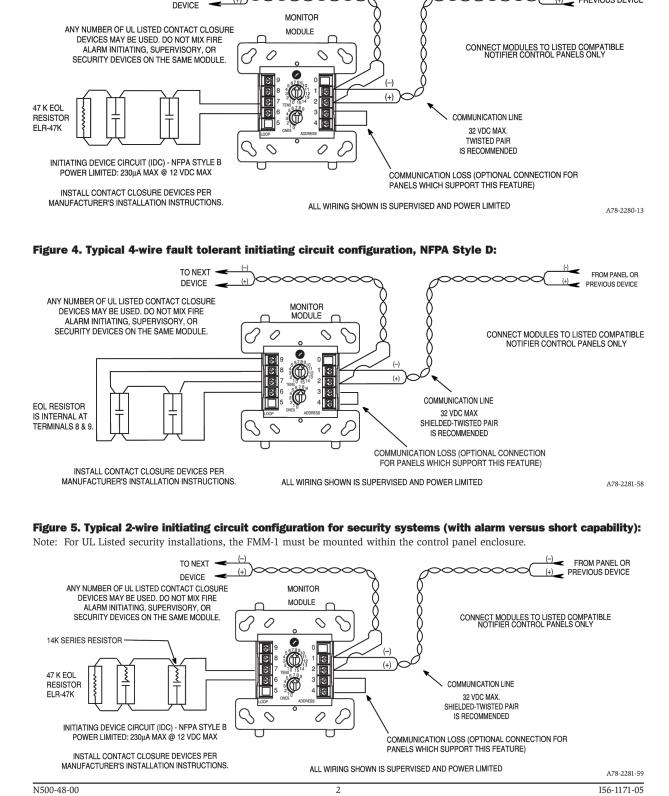
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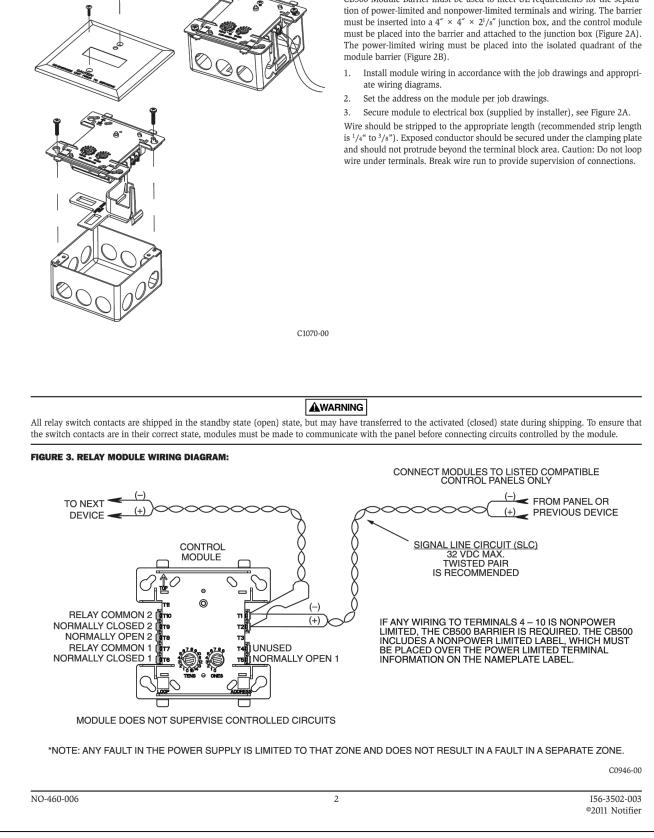








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INSTALLATION AND MAINTENANCE INSTRUCTIONS

FRM-1 Relay Control Module

15 to 32 VDC

6.5 mA (LED on)

230μA direct poll; 255μA group poll

SMB500 Electrical Box; CB500 Barrier

MAXIMUM VOLTAGE

25 VAC

30 VDC

30 VDC

30 VDC

70.7 VAC

125 VDC

125 VAC

125 VAC

his information is included as a quick reference installation guide. Refer to

the appropriate Notifier control panel installation manual for detailed system

information. If the modules will be installed in an existing operational sys-

tem, inform the operator and local authority that the system will be tempo-

rarily out of service. Disconnect power to the control panel before installing

NOTICE: This manual should be left with the owner/user of this equipment.

The FRM-1 Relay Control Module is intended for use in intelligent, two-wire

systems where the individual address of each module is selected using the

built-in rotary switches. It allows a compatible control panel to switch discrete

contacts by code command. The relay contains two isolated sets of Form-C

contacts, which operate as a DPDT switch and are rated in accordance with

the table in the manual. Circuit connections to the relay contacts are not su-

pervised by the module. The module also has a panel controlled LED indi-

cator. This module can be used to replace a CMX-2 module that has been

To ensure proper operation, this module shall be connected to a compatible

4.675" H x 4.275" W x 1.4" D (Mounts to a 4" square by 21/8" deep box.)

LOAD DESCRIPTION

PF = 0.35

Resistive

Resistive

(L/R = 20ms)

PF = 0.35

Resistive

PF = 0.75

PF = 0.35

the DNR(W) duct housing.

32°F to 120°F (0°C to 49°C)

10% to 93% Non-condensing

SPECIFICATIONS

EOL Resistance:

Normal Operating Voltage:

Maximum Current Draw

Temperature Range:

Average Operating Current:

RELAY CONTACT RATINGS:

CURRENT RATING

0.7 A

0.9 A

BEFORE INSTALLING

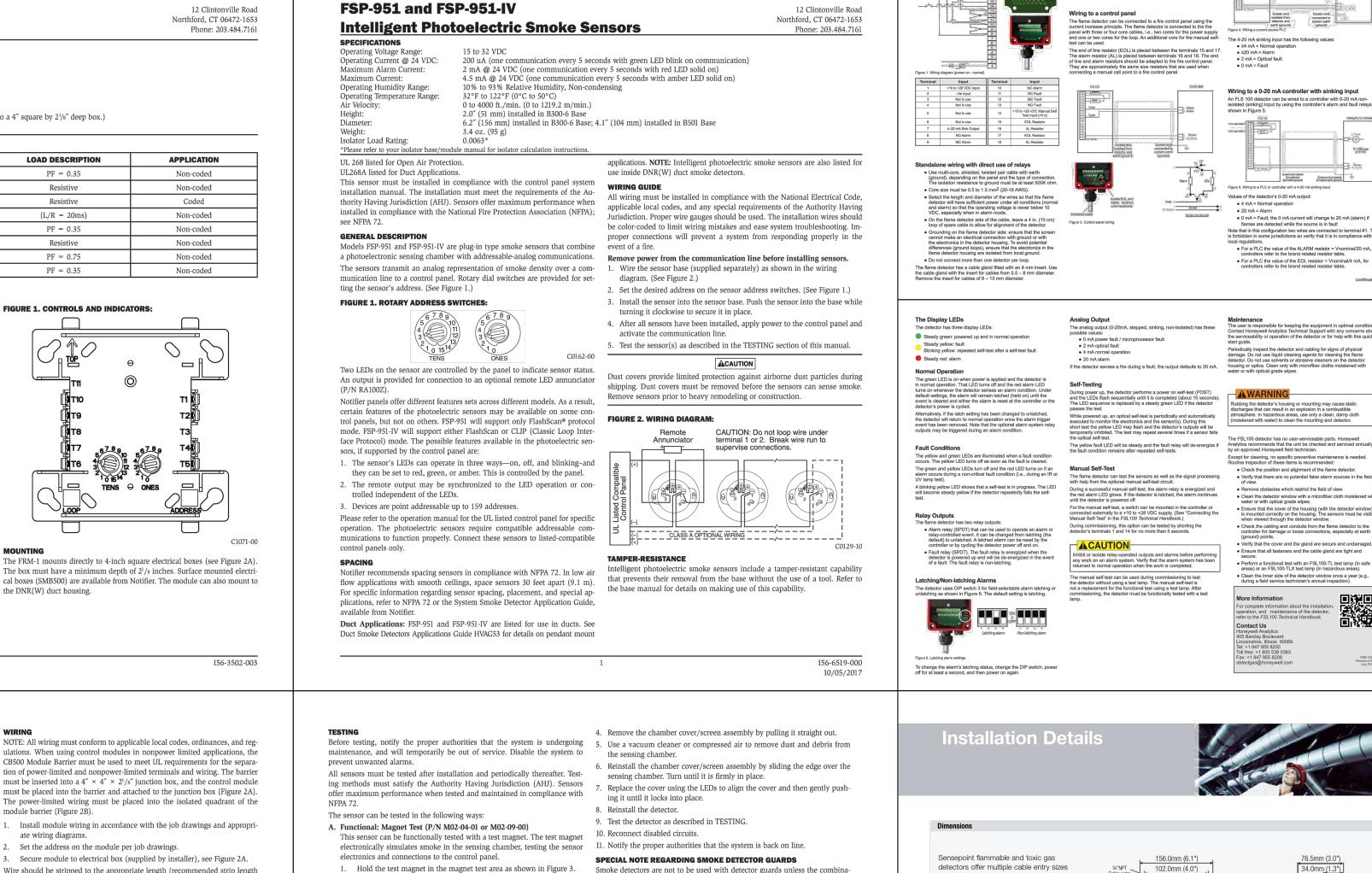
GENERAL DESCRIPTION

configured for Form-C operation.

COMPATIBILITY REQUIREMENTS

Notifier system control panel (list available from Notifier).

FIGURE 2A. MODULE MOUNTING FIGURE 2B



tion has been evaluated and found suitable for that purpose.

FIGURE 4: CLEANING THE PHOTO DETECTOR

Sensing Chamber

C2022-00

156-6519-000

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Two LEDs on the sensor are controlled by the panel to indicate sensor

Please refer to insert for the Limitations of Fire Alarm Systems

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a 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 cur 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:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

NOTIFIER® 8

INSTALLATION AND MAINTENANCE INSTRUCTIONS

The sensor should alarm the panel.

turer's published instructions for proper use.

proved aerosol smoke products include:

proper use of the canned smoke agent.

under CLEANING, and retested.

B. Smoke Entry

status. Coded signals, transmitted from the panel, can cause the LEDs to

blink, latch on, or latch off. Refer to the control panel technical documen-

tation for sensor LED status operation and expected delay to alarm.

Sensitivity readings are available through the FACP. Refer to the manufac-

Additionally, canned aerosol simulated smoke (canned smoke agent) may be used for smoke entry testing of the smoke detector. Tested and ap-

When used properly, the canned smoke agent will cause the smoke detector to go into alarm. Refer to the manufacturer's published instructions for

Canned aerosol simulated smoke (canned smoke agent) formulas will vary

by manufacturer. Misuse or overuse of these products may have long term

adverse effects on the smoke detector. Consult the canned smoke agent manu-

facturer's published instructions for any further warnings or caution statements

A sensor that fails any of these tests may need to be cleaned as described

When testing is complete, restore the system to normal operation and notify

Before removing the detector, notify the proper authorities that the smoke

detector system is undergoing maintenance and will be temporarily out of

2. Remove the sensor cover by pressing firmly on each of the four removal

3. Vacuum the screen carefully without removing it. If further cleaning is

service. Disable the zone or system undergoing maintenance to prevent un-

the proper authorities that the system is back in operation.

1. Remove the sensor to be cleaned from the system.

tabs that hold the cover in place. (See Figure 4.)

required continue with Step 4, otherwise skip to Step 7.

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25S, 30S (PURCHECK)

SMOKE CENTURIAN, SOLOA4, SMOKESABRE, TRUTEST

NOTIFIER by Honeywell

FSL100 Series Flame Detector

Quick Start Guide

