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			
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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			
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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

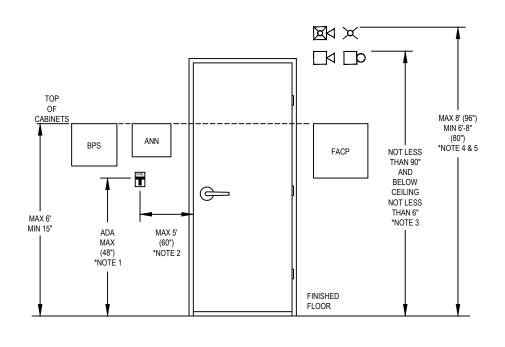
HYDROGEN ENGINE

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)

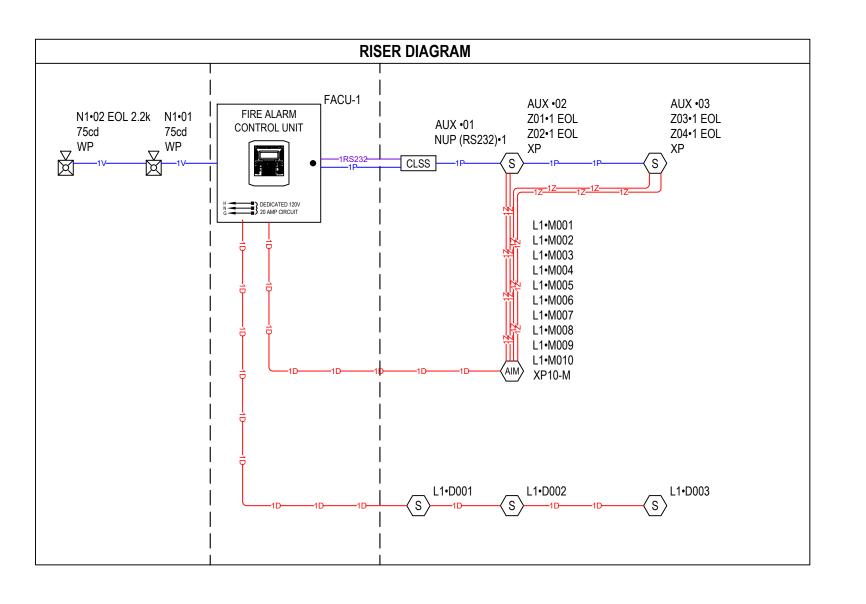
FIRST RELEASE

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

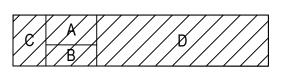
DATE: 10.21.2022

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

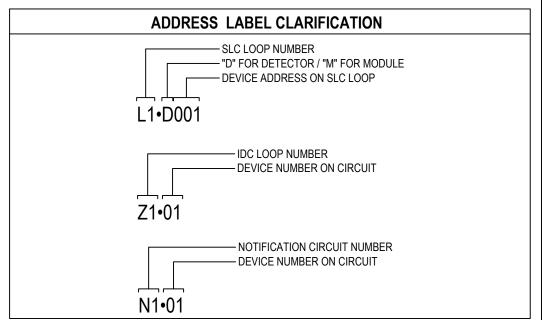
KEYPLAN



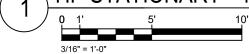
N1•02 <u>EOL 2.2k</u> 75cd WP	AUX •02 Z01•1 <u>EOL</u> Z02•1 <u>EOL</u> XP	
S L1-D003 S FACU N1-01 AUX +01 NUP (RS232)-1	1P,4Z FUEL CELL ENGINE ROOM AUX • 203-1 204-1 XP 295.65 in	S TOURS E FANS)

	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"

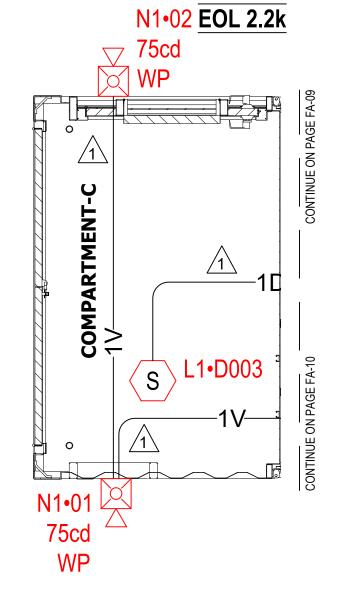
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1" EXLOSION PROOF CONDUIT FOR FIRE ALARM WIRING IF DETERMINED CLASS 1 DIVISION 1 CLASSIFICATION BY OWNER

KEYPLAN

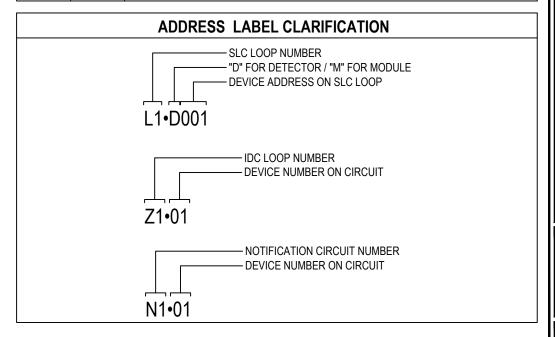
D

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

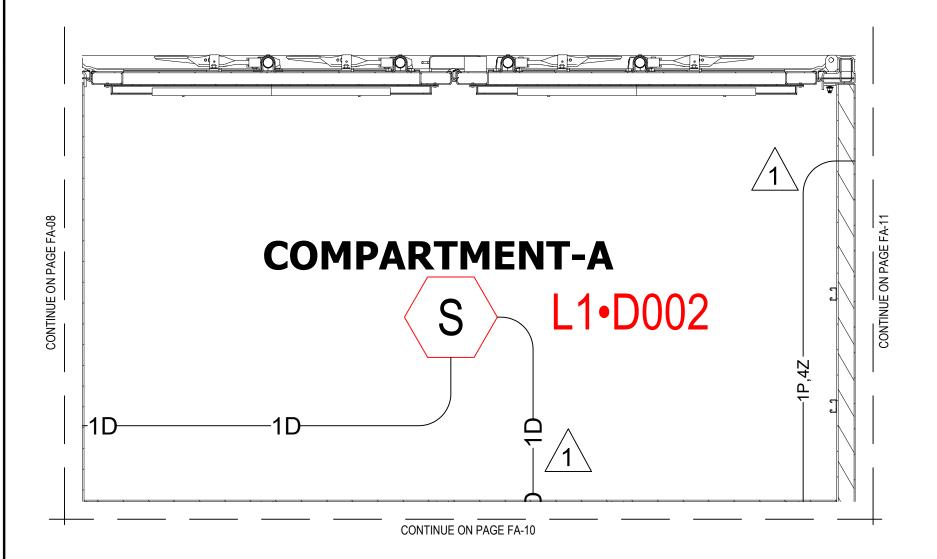
FIRST RELEASE

PLUG POWER - HYDROGEN ENGINE DESIGN LAYOUT

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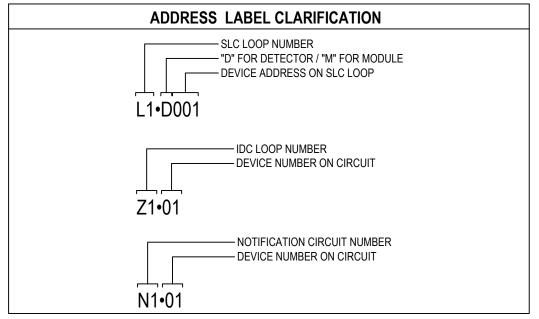
1" EXLOSION PROOF CONDUIT FOR FIRE ALARM WIRING IF DETERMINED CLASS 1 DIVISION 1 CLASSIFICATION BY OWNER

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





PLUG POWER - HYDROGEN ENGINE DESIGN LAYOUT

SHEET DESCRIPTION

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

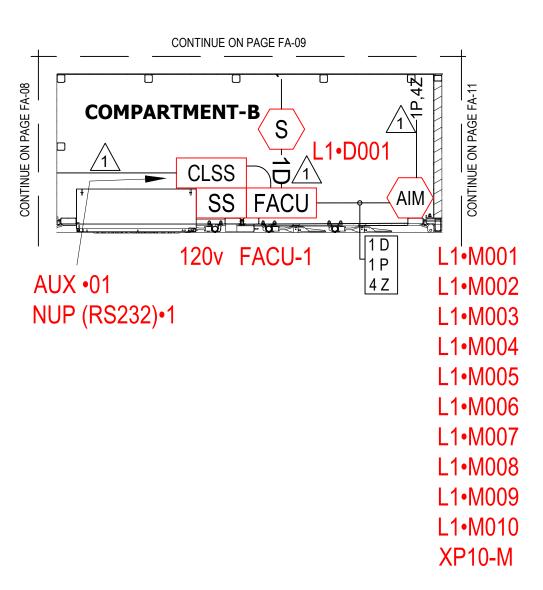
DATE: 10.21.2022

SCALE: 1" = 1'-0"

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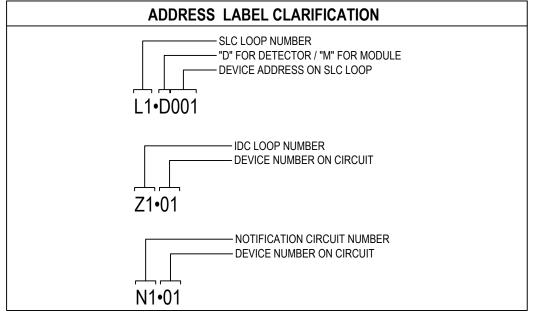
1" EXLOSION PROOF CONDUIT FOR FIRE ALARM WIRING IF DETERMINED CLASS 1 DIVISION 1 CLASSIFICATION BY OWNER

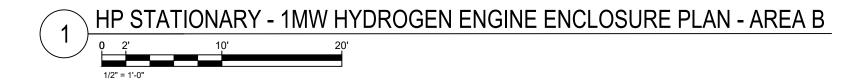
KEYPLAN C A D



	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
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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

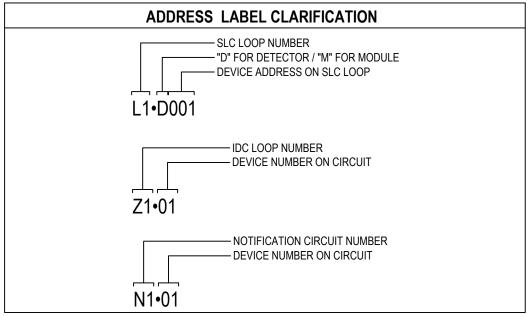
1" EXLOSION PROOF CONDUIT FOR FIRE ALARM WIRING IF DETERMINED CLASS 1 DIVISION 1 CLASSIFICATION BY OWNER

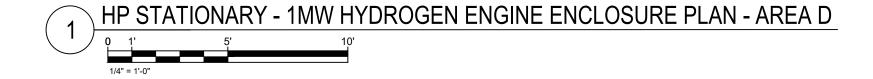
C A B

	AUX •02 Z01•1 <u>EOL</u> Z02•1 <u>EOL</u> XP	
*—1P,4Z————————————————————————————————————	s 1P,2Z	AUX •03
•	o	Z03•1 <u>EOL</u> S

	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



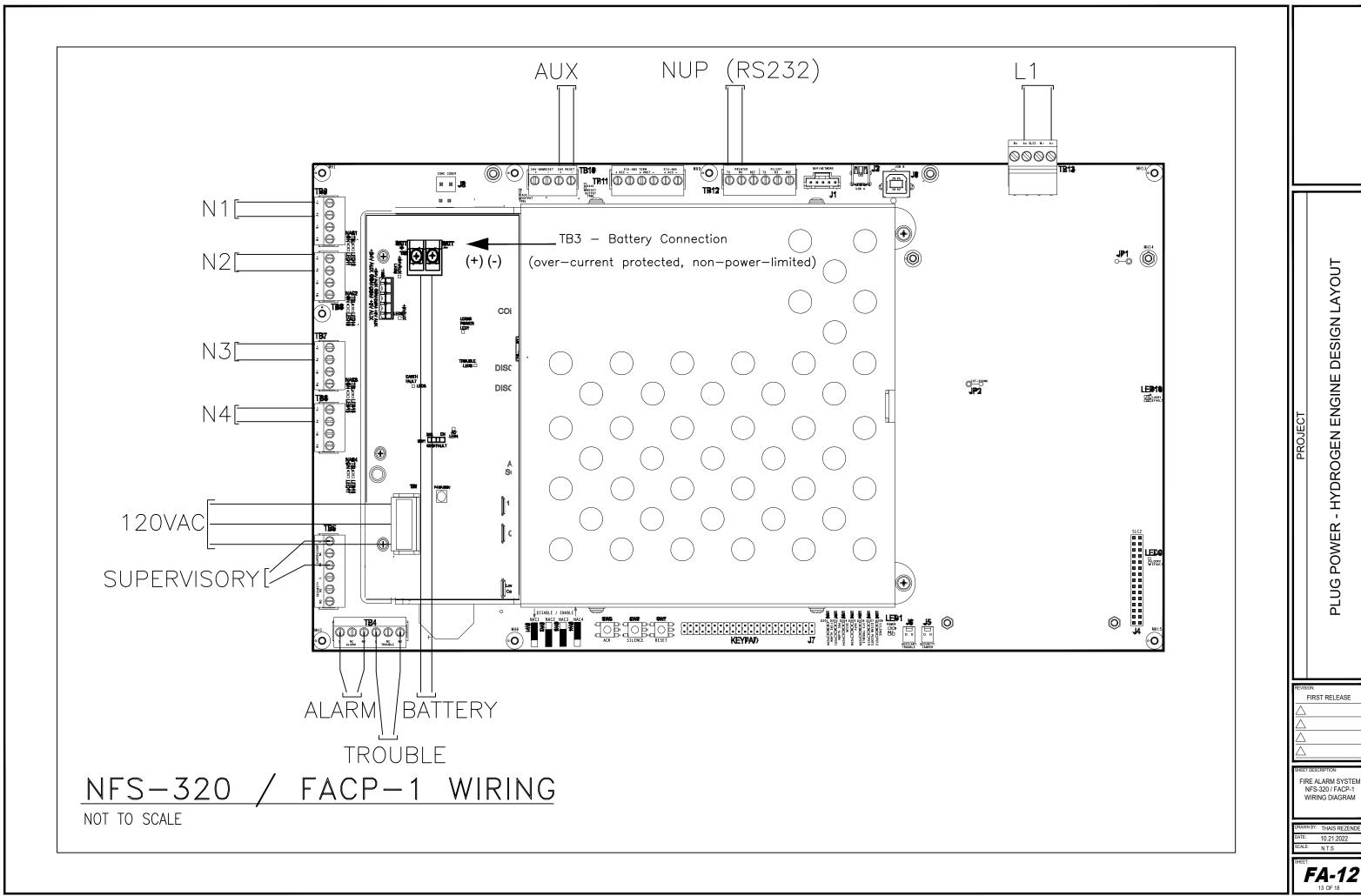


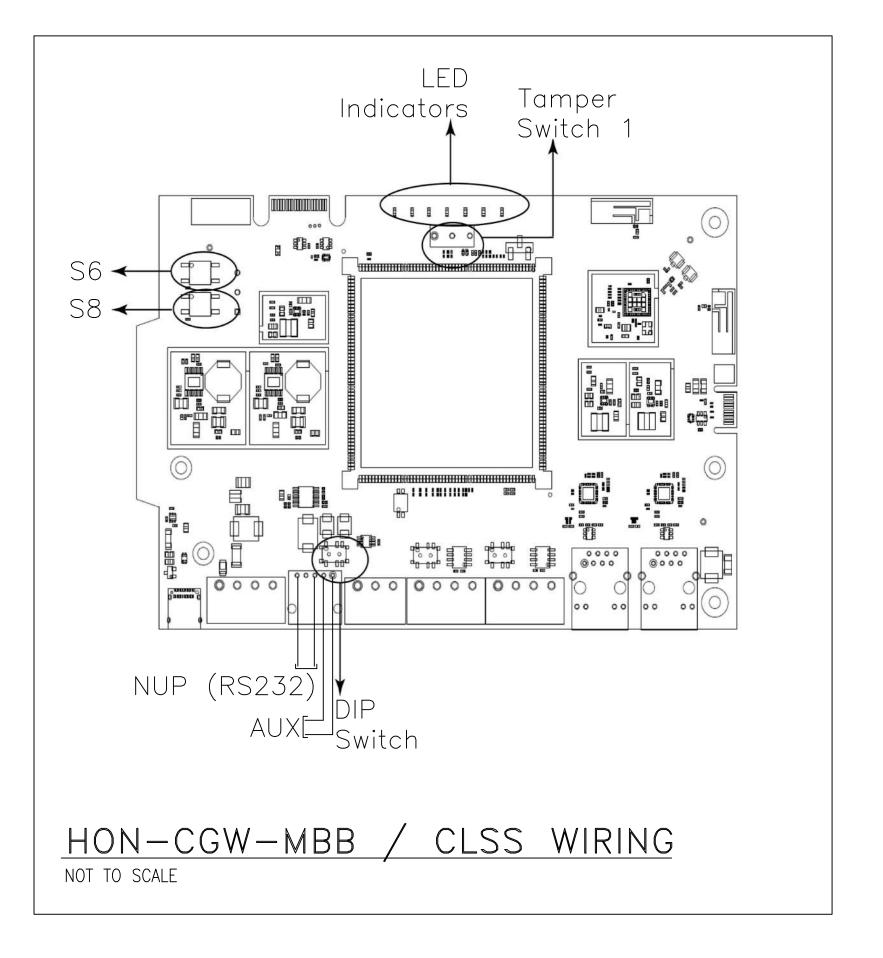
PLUG POWER - HYDROGEN ENGINE DESIGN LAYOUT

SHEET DESCRIPTION

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

DATE: 10.21.2022
SCALE: 1/4" = 1'-0"





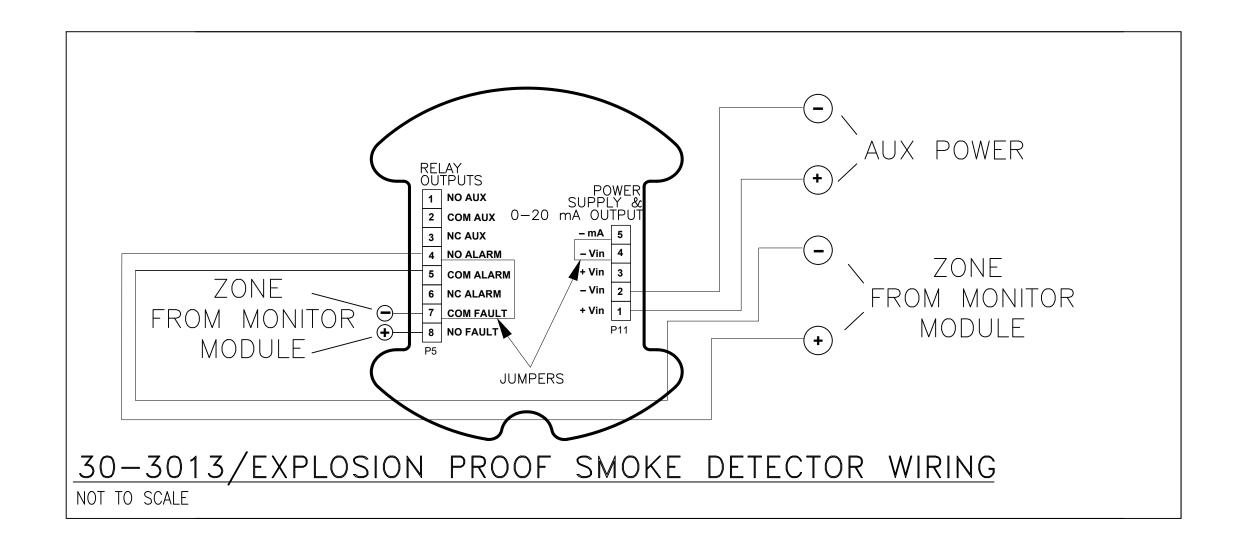
REVISION:
FIRST RELEASE

A
A

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

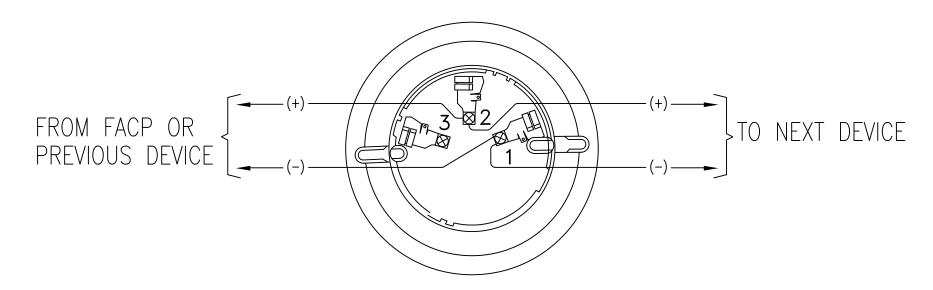
DRAWN BY: THAIS REZENDE

DATE: 10.21.2022

SCALE: N.T.S

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

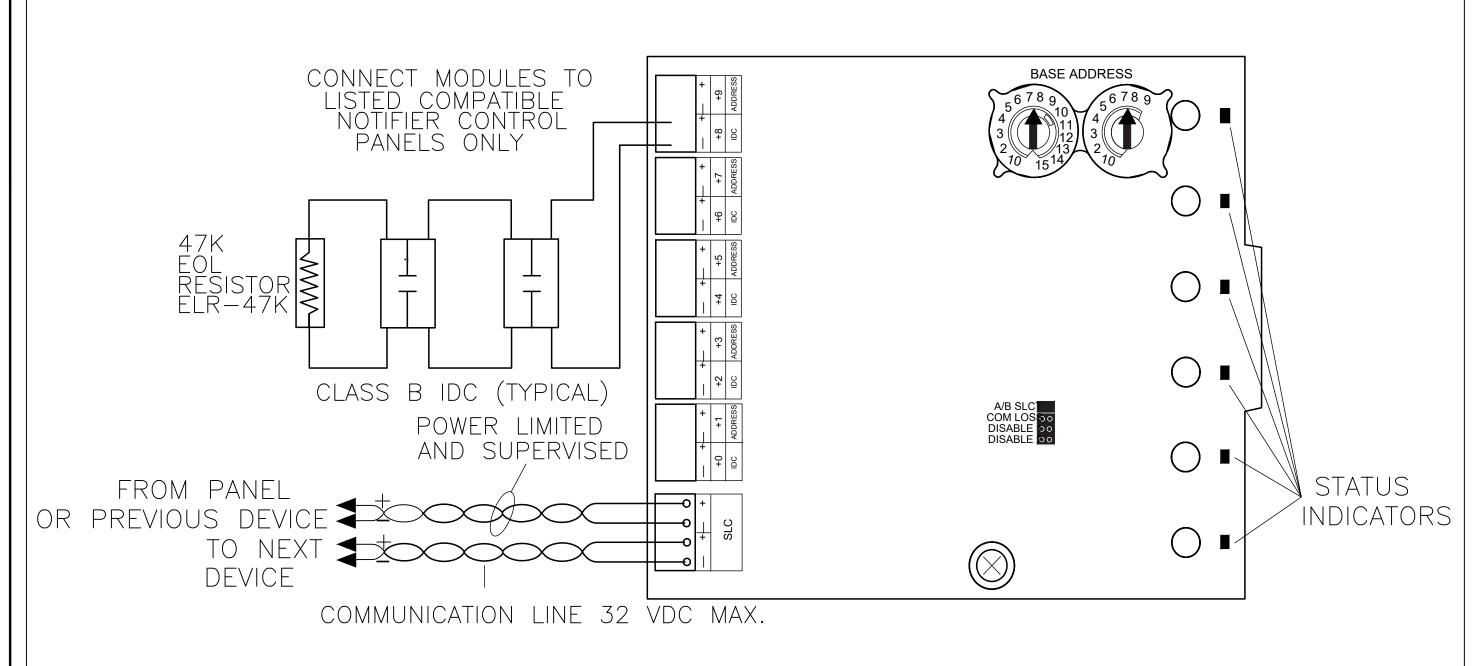
NOT TO SCALE

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



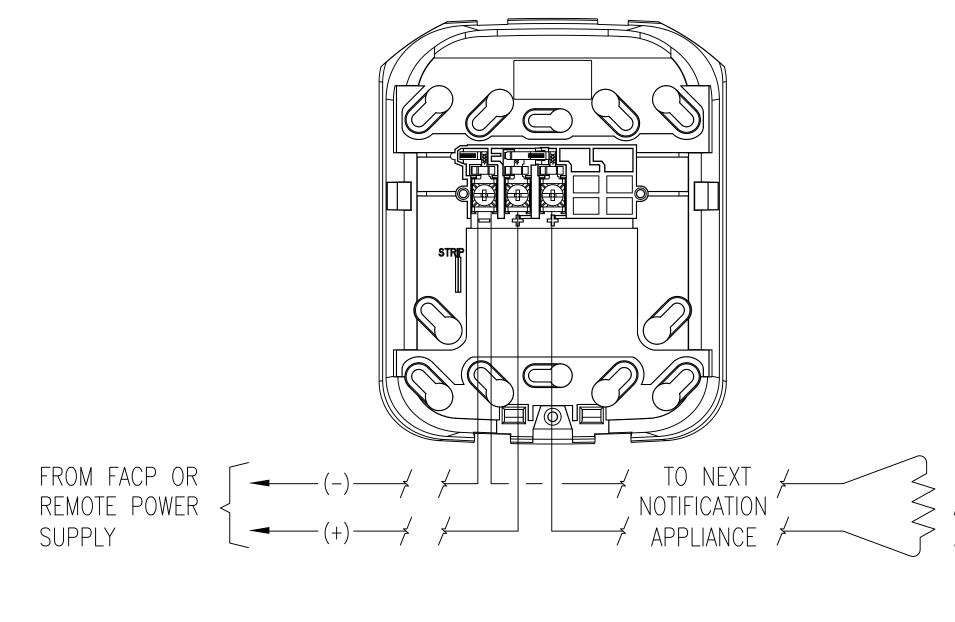
XP10-M/TEN INPUT MONITOR MODULE

NOT TO SCALE

FIRE ALARM SYSTEM XP10-M / TEN INPUT MONITOR MODULE WIRING DIAGRAM

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

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

INDUSTRIAL 5 (EXISTING)

NUMBER OF STORIES: AUTOMATIC SPRINKLERS: ADA COMPLIANT:

CBC BUILDING OCCUPANCY:

N/A TYPE OF SYSTEM: MANUAL FIRE ALARM SYSTEM DESIGNER: JOHN VENCILL

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

MONITORING STATION: LOCAL FIRE ALARM SYSTEM

CODES

- CALIFORNIA BUILDING CODE, (CBC) 2019 EDITION CALIFORNIA FIRE CODE, (CFC) 2019 EDITION CALIFORNIA ELECTRICAL CODE, (CEC) 2019 EDITION NFPA CODES AND STANDARDS 72, 2016 EDITION
- NFPA CODES AND STANDARDS 70, 2017 EDITION CALIFORNIA STATE FIRE MARSHAL LISTING 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
- 4. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL 120VAC POWER REQUIREMENTS FOR THE FIRE ALARM SYSTEM UNLESS OTHERWISE NOTED.
- ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL FIRE ALARM TERMINAL CABINETS, JUNCTION BOXES, DEVICE BACKBOXES, UNLESS OTHERWISE NOTED.
- ALL BACKBOXES PROVIDED BY COSCO FIRE SHALL BE INSTALLED BY THE ELECTRICAL CONTRACTOR.
- WIRING SHALL NOT BE LOOPED THROUGH DEVICES; ALL WIRING SHALL BE CUT FOR IN AND
- 8. ALL DEVICE WIRING, AND ANNUNCIATOR PANELS SHALL BE SUPERVISED TO THE PRINCIPAL POINT OF ANNUNCIATION.
- 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.

				EQUIPMENT LIST		
SYMBOL	QTY	MANUFACTURER	PART NO	DESCRIPTION	CSFM	MOUNTING
	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>(S)</u>	2	NOTIFIER	DNR W/FSP-951R	INTELLIGENT NON-RELAY PHOTOELECTRIC DUCT DETECTOR/FSP-951R	3240-1653:0209	N/A
\bigcirc	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	26 HONEYWELL FLS100 FLAME DETECTOR, UV, 24 VDC 38 NOTIFIER FSP-951 W/B300-6 DETECTOR. FLASHSCAN ONLY. 8 HONEYWELL SPSTAXO1 GAS DETECTOR		N/A	PROVIDED		
	4	SYSTEM SENSOR	P2RL	2-WIRE, HORN STROBE, RED	7135-1653:0503	4" SQ. DEEP
\searrow	7	SYSTEM SENSOR	P2RL	2-WIRE, WALL, HORN STROBE, RED	7135-1653:0503	4" SQ. DEEP
WH	7	SYSTEM SENSOR	BZW-AL	WALL BEZEL, ALERT	7135-1055.0505	4 3Q. DEEP
∇	7	SYSTEM SENSOR	P2WL	2-WIRE, WALL, HORN STROBE, WHITE	7425 4052-0502	411.00 DEED
38 GAS 8 WH 7		SYSTEM SENSOR	LENS-B2	WALL BLUE LENS	7135-1653:0503	4" SQ. DEEP
又	2	SYSTEM SENSOR	PC2RL	2-WIRE, CEILING, HORN STROBE, RED	7405 4050 0500	411.00 DEED
₩ _{WH}	2	SYSTEM SENSOR	BZWC-AL	CEILING BEZEL, ALERT	7135-1653:0503	4" SQ. DEEP
.∇.	2	SYSTEM SENSOR	PC2WL	2-WIRE, CEILING, HORN STROBE, WHITE		
₩ _{BL}	2	SYSTEM SENSOR	LENS-BC2	CEILING BLUE LENS	7135-1653:0503	4" SQ. DEEP
	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
L		-				

				CABLE AND WIRE LEGEND	
LABEL	PART NO	AWG	RESISTANCE (Ω/KFT)	DESCRIPTION	TOTAL LENGTH
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

						OL UI CIATI						NOT	IFICA	TION			
ITEM NO.	SYSTEM INPUTS	SYSTEM OUTPUTS	➤ ACTIVATE COMMON ALARM SIGNAL INDICATOR (RED LED)	Φ ACTIVATE AUDIBLE ALARM SIGNAL (PIEZO BUZZER)	റ ACTIVATE COMMON SUPERVISORY SIGNAL INDICATOR (YELLOW LED)	□ ACTIVATE AUDIBLE SUPERVISORY SIGNAL (PIEZO BUZZER)	m ACTIVATE COMMON TROUBLE SIGNAL INDICATOR (YELLOW LED)	규 ACTIVATE AUDIBLE TROUBLE SIGNAL (PIEZO BUZZER)	activate evacuation signal throughout the building (clean strobes)	\pm 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 02 INPUT TO BMS	≥ ACTIVATE HYDROGEN INPUT TO BMS	Z ACTIVATE CLEAN AGENT ALARM INPUT TO BMS	O ACTIVATE CO2 ALARM INPUT TO BMS
01	AREA SMOKE DETECTOR		•	•					•		•						
02	AREA HEAT DETECTOR										•						
03	MANUAL PULL STATION		•						•		•						
04	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 TROUBLE												•				
14	FIRE ALARM SYSTEM AC POWER FAILURE						•	•					•				
15	FIRE ALARM SYSTEM LOW BATTERY						•	•					•				
16	OPEN CIRCUIT						•	•					•				
17	GROUND FAULT						•	•					•				
18	NOTIFICATION APPLIANCE CIRCUIT SHORT			1		I				1	1					1	

TYPICAL MOUNTING HEIGHTS

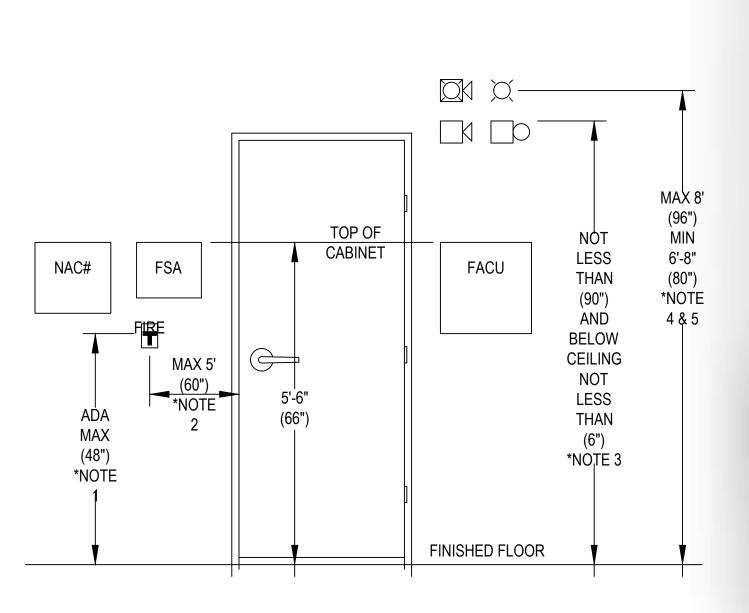
1. NFPA 72 2016 17.14.5 THE OPERABLE PART OF EACH MANUAL FIRE ALARM BOX SHALL BE NOT LESS THAN 42in AND NOT MORE THAN 48in ABOVE FLOOR LEVEL.

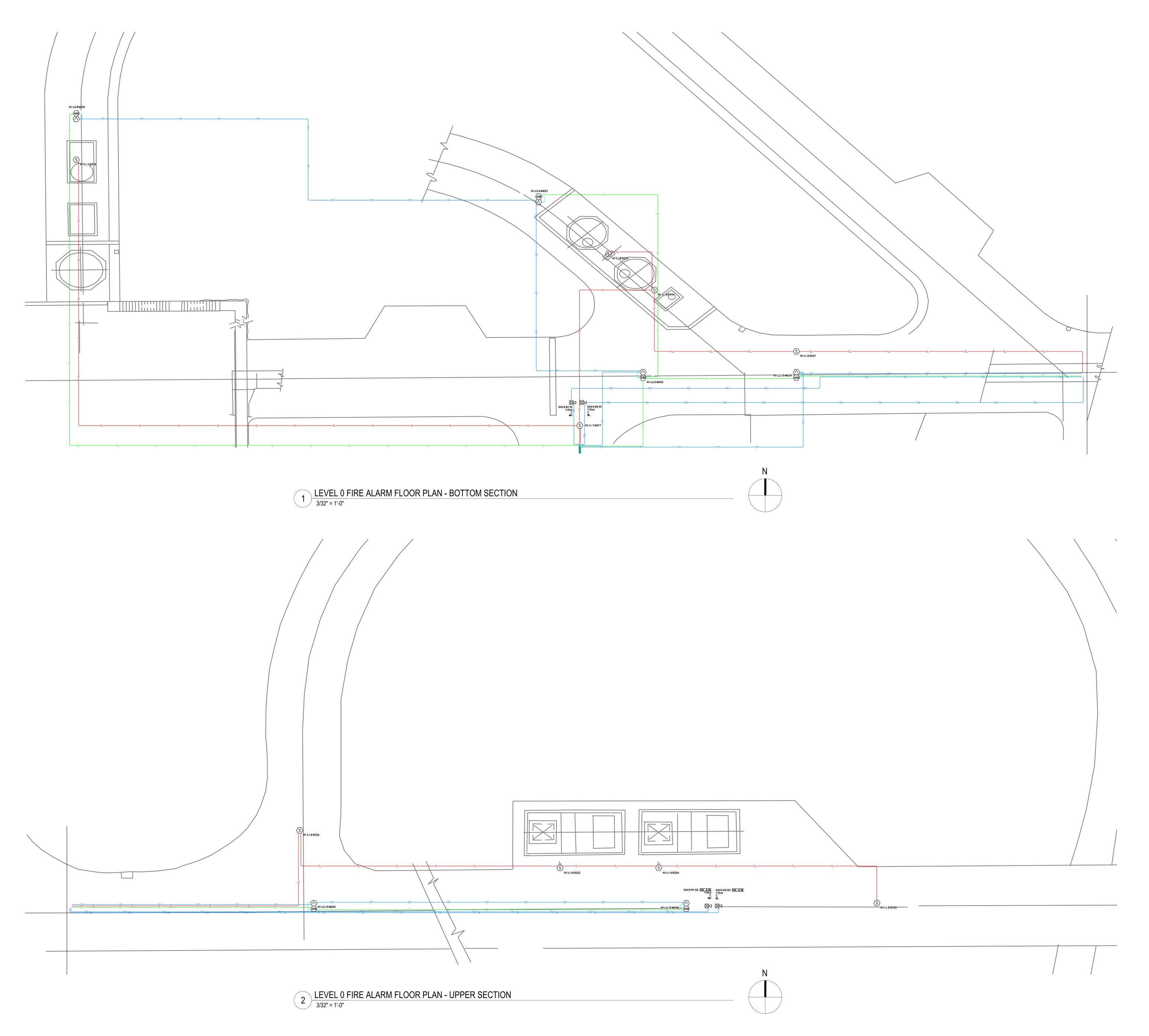
2. NFPA 72 2016 17.14.8.4 MANUAL FIRE ALARM BOXES SHALL BE LOCATED WITHIN 60in OF THE EXIT DOORWAY OPENING AT EACH EXIT ON EACH FLOOR.

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.

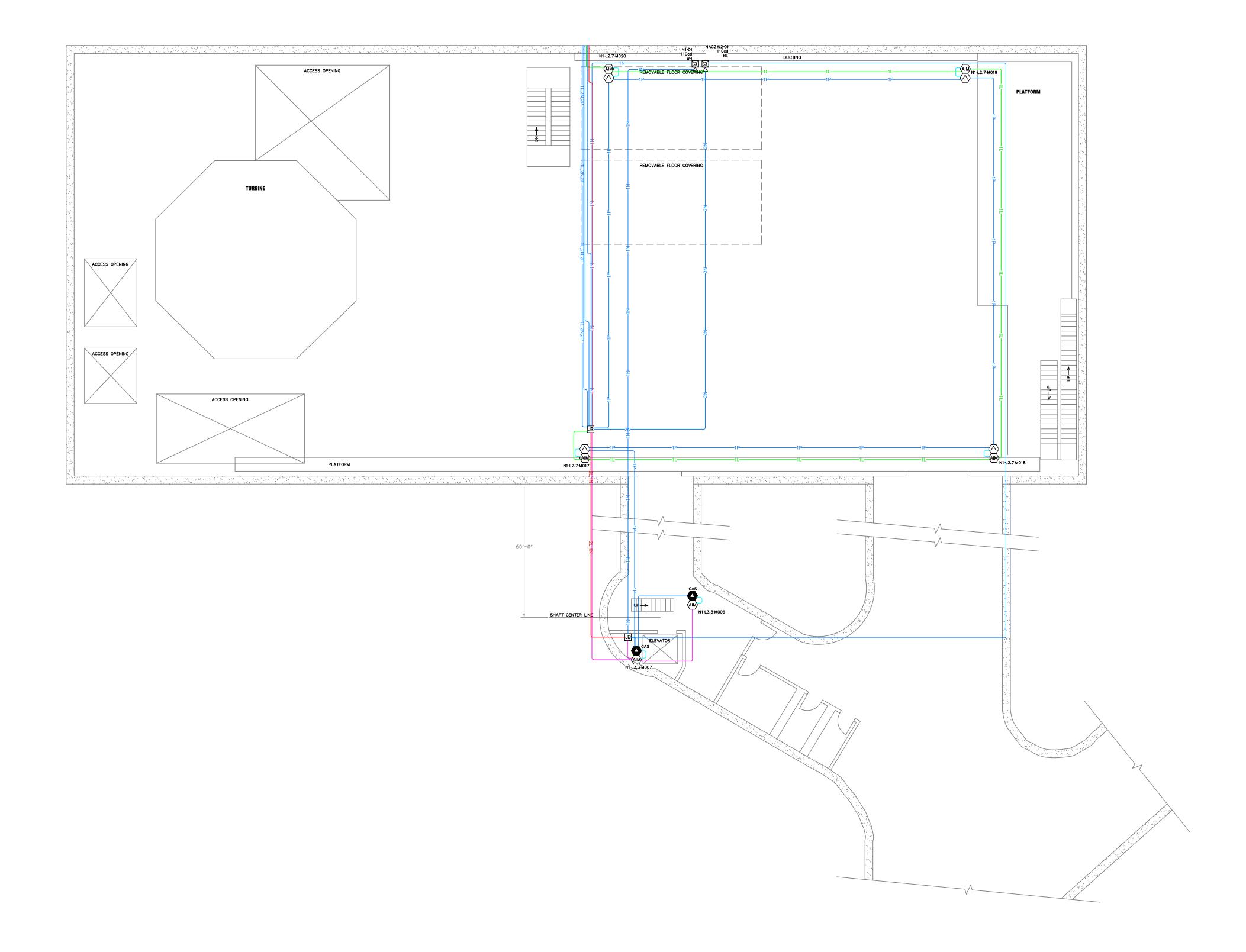
4. NFPA 72 2016 18.4.8.3 IF COMBINATION AUDIBLE/ VISIBLE APPLIANCES ARE INSTALLED, THE LOCATION OF THE INSTALLED APPLIANCE SHALL BE DETERMINED BY THE REQUIREMENTS OF 18.5.4. (SEE NOTE 5).

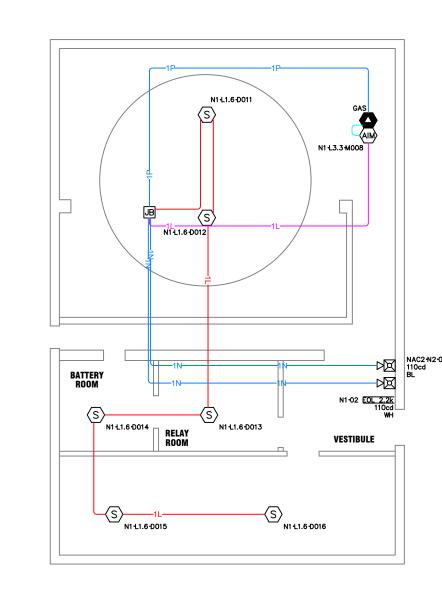
5. NFPA 72 2016 18.5.5.1 WALL-MOUNTED APPLIANCES SHALL BE MOUNTED SUCH THAT THE ENTIRE LENS IS NOT LESS THAN 80in. AND NOT GREATER THAN 96in ABOVE THE FINISHED FLOOR OR AT THE MOUNTING HEIGHT SPECIFIED USING THE PERFORMANCE BASED ALTERNATIVE OF 18.5.5.6.



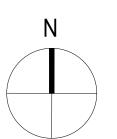


A	DEVICE LEGEND						
SYMBOL	DESCRIPTION						
FACU	FACP, ADDRESSABLE, CPU2-3030D, 1X LCM-320, 1X LEM-320, AMPS-24, NCM-W						
NAC	6.0 A OR 10.0 A ADDRESSABLE CHARGING POWER SUPPLY						
(AIM)	ADDRESSABLE MONITOR MODULE W/ FLASHSCAN, SUPERVISES CLASS A OR CLASS B OF DRY CONTACT INPUT						
(AIM)	ADDRESSABLE 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 SMOKE DETECTOR. FLASHSCAN ONLY.						
△ GAS	GAS DETECTOR						
\bigvee	2-WIRE, WALL, HORN STROBE						
₩c	2-WIRE, CEILING, HORN STROBE, RED						
茶	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						
	/ NO/NEW NY						

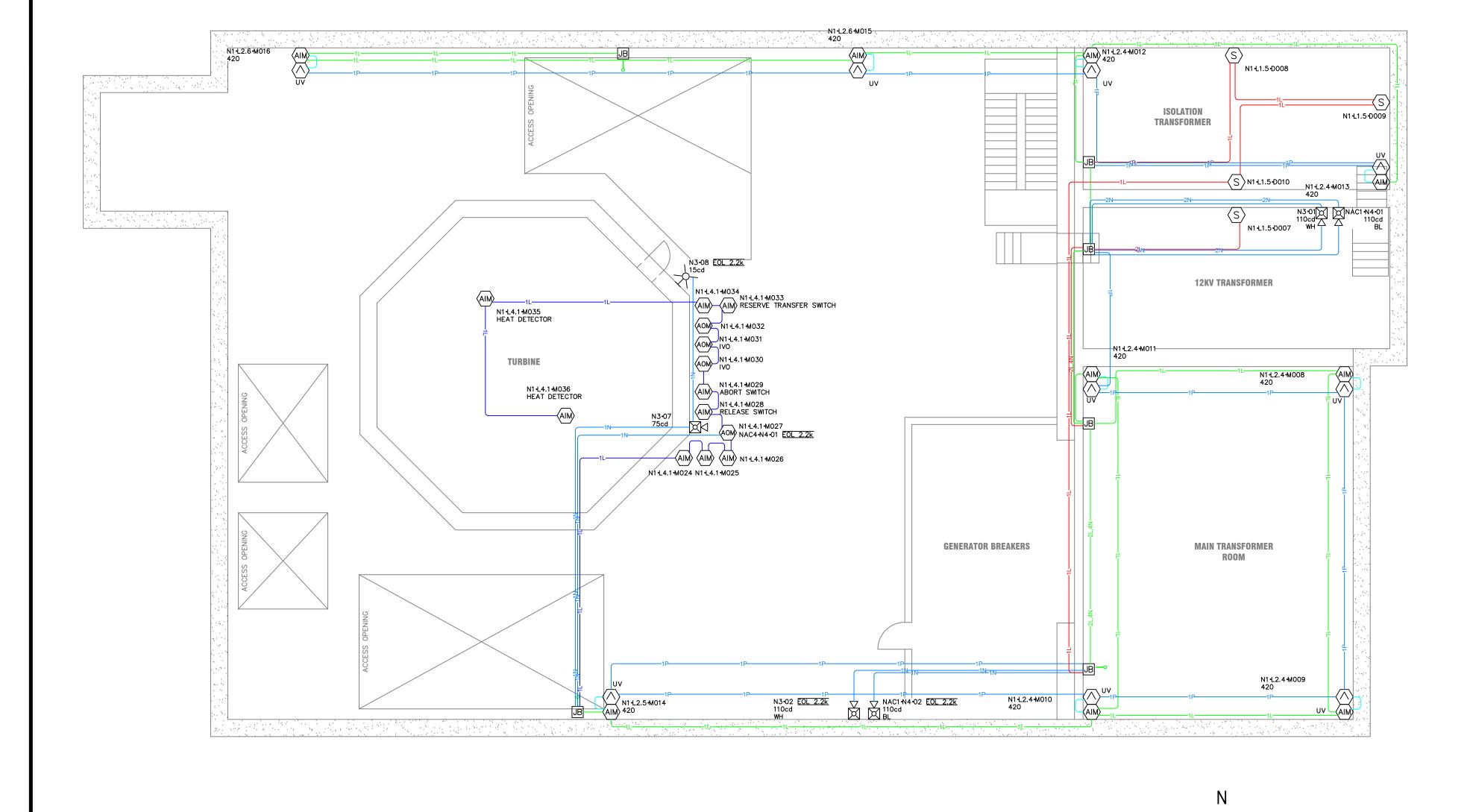




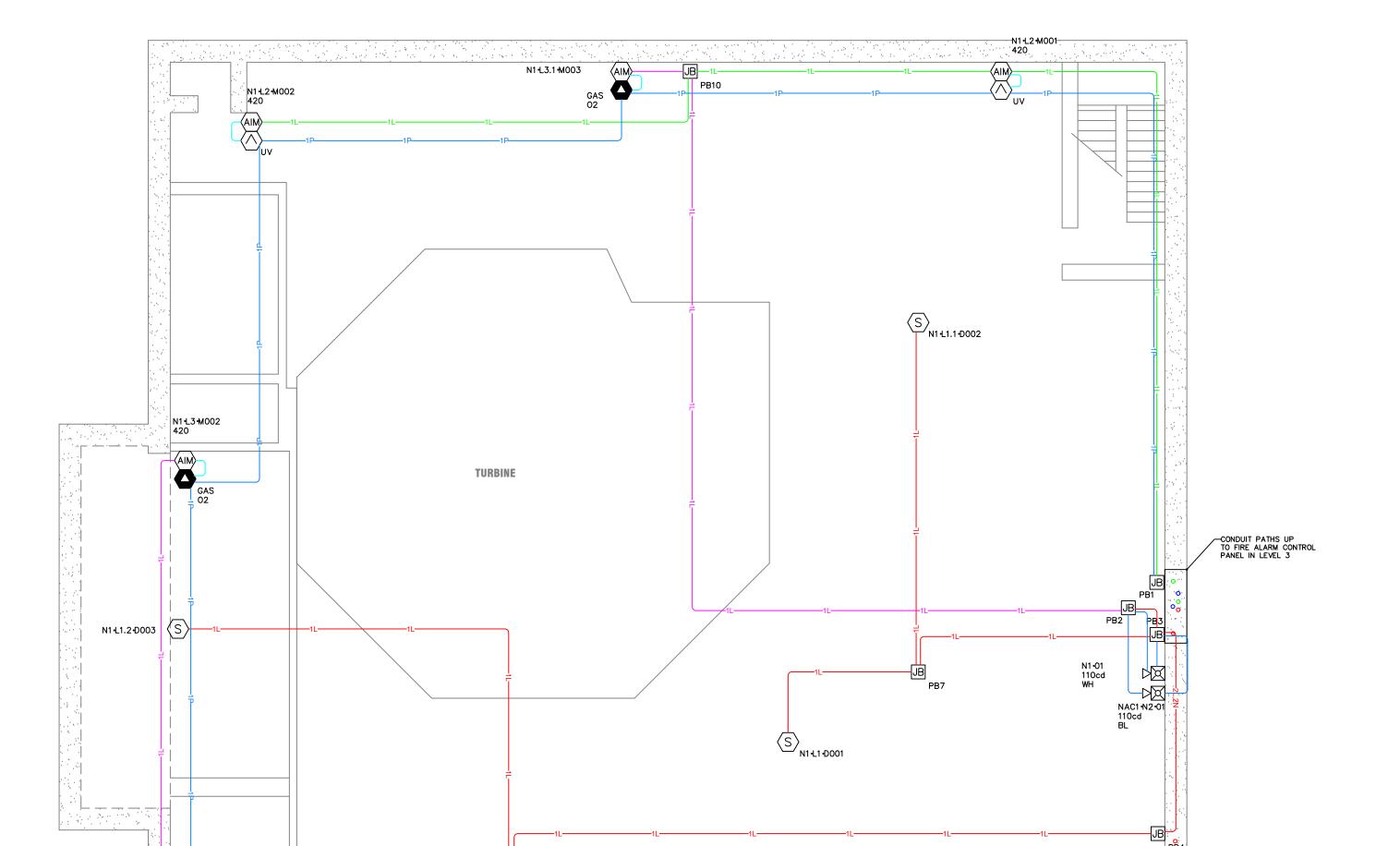
1 LEVEL 1 FIRE ALARM FLOOR PLAN
3/32" = 1'-0"



A	DEVICE LEGEND
SYMB	
FAC	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
$\langle \rangle$	FLAME DETECTOR, UV, 24 VDC
(S)	ADDRESSABLE LOW-PROFILE PHOTOELECTRIC SMOKE DETECTOR. FLASHSCAN ONLY.
△ G	AS GAS DETECTOR
X	2-WIRE, WALL, HORN STROBE
\bigotimes_{i}	2-WIRE, CEILING, HORN STROBE, RED
文	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"

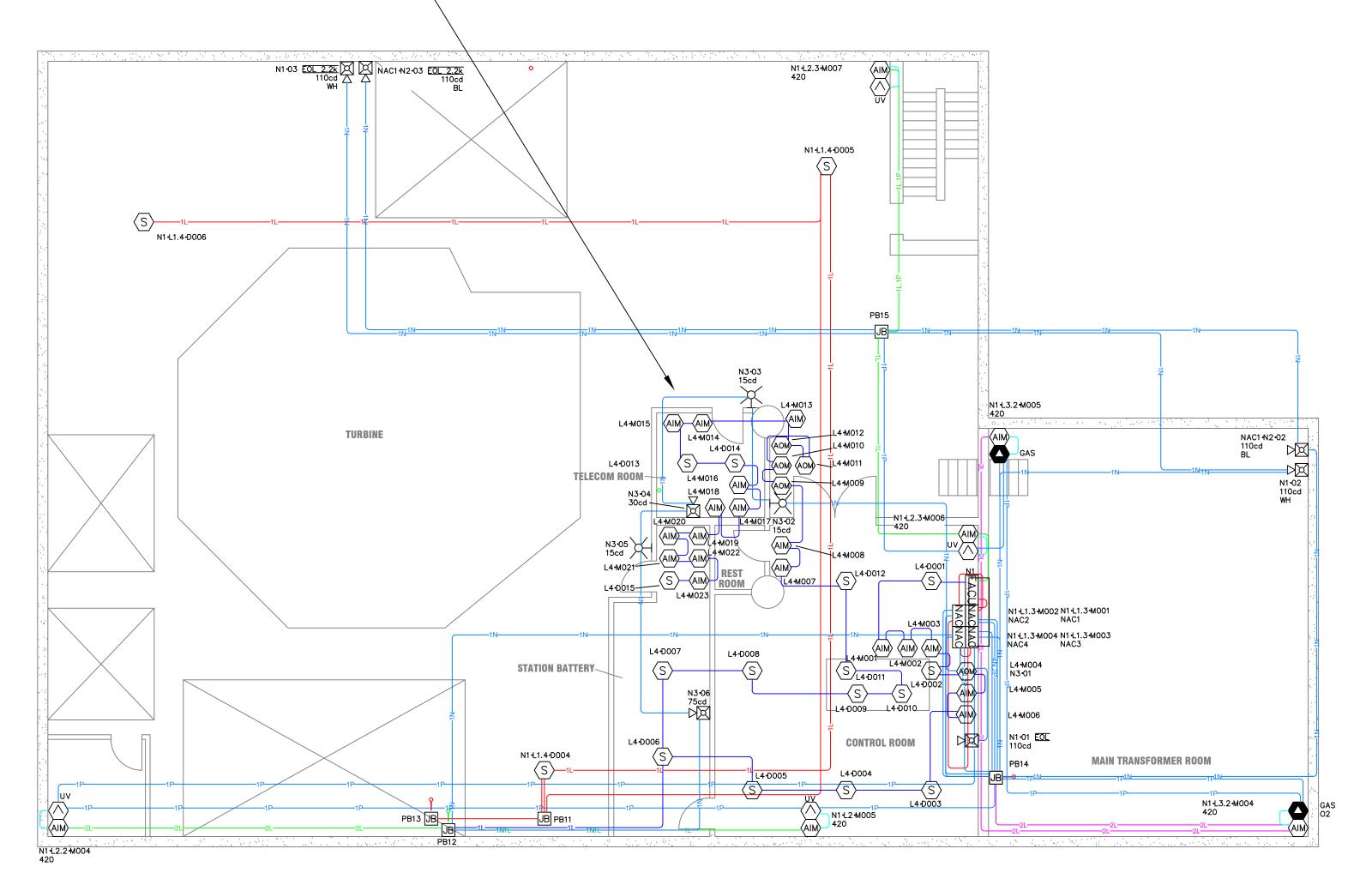




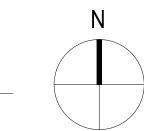
DEVICE'S FUNCTION - CONTROL ROOM								
Device Label	Function							
L1•M005	BY-PASS SWITCH							
L1•D009	LOW CEILING DETECTOR							
L1•D010	LOW CEILING DETECTOR							
L1•M007	RELEASE SWITCH							
L1•M008	ABORT SWITCH							
L1•M010	IVO							
L1•M011	IVO							
L1•M013	RESERVE TRANSFER SWITCH	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

SYMBO						
STINID						
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					
$\langle \rangle$	FLAME DETECTOR, UV, 24 VDC					
(S)	ADDRESSABLE LOW-PROFILE PHOTOELECTRIC SMOKE DETECTOR. FLASHSCAN ONLY.					
△ _{G/}	AS GAS DETECTOR					
X	2-WIRE, WALL, HORN STROBE					
\ ∑	2-WIRE, CEILING, HORN STROBE, RED					
太	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					
P	AUXILIANT					

DEVICE LEGEND



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



			(SECOND.	ARY POWER SOURCE REQUI	, , , , , , , , , , , , , , , , , , ,			
	PANEL P	OWER SUPPLY MAX CU	RRENT = 5A				IN ALARM) = 1.4923A (29.85 %)	
					STANDBY CURR	,	SECONDARY ALARM (CURRENT (AMPS
		QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
1		1	ACPS-610	6.0 A or 10.0 A Addressable Charging Power Supply	0.09	0.09	0.09	0.09
		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 COMPONENTS 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
		3	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	\(\s\)	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
	<u>(S)</u>	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	
		ANDDV I OAD (A)		1 07/00		REQUIRED ALAF	RM TIME = 5 MINUTES	
	SECONDARY ST	` '		1.27106	24	10	30.5054	
	SECONDARY A STANDBY AND ALARM S	` '	1	1.4923	0.0833		0.1243	р
	DERATING	<u> </u>)			3	0.6298 1.2	
	SECONDARY LOAD REQU		6)	+		20	6.75576	

				PS-610 ASSEMBLY) BAT				
	DANEL DA	OWED CLIDDLY MAY CLIDE	<u>'</u>	DARY POWER SOURCE REQUI	· · · · · · · · · · · · · · · · · · ·	TOTAL LISED CADACITY	/INI AI ADM) = 1 90A /21 50 9/\	
	PANEL PO	OWER SUPPLY MAX CURF	KENT = 6A				(IN ALARM) = 1.89A (31.50 %) SECONDARY ALARM (CLIDDENT (AMD
		OTV	DARTHO	DECORPTION	STANDBY CURRENT (AMPS) SECONDARY ALARM CUR CURRENT DRAW (A) TOTAL (A) CURRENT DRAW (A)			
PANEL COM	MPONENTS	QTY	PART NO. ACPS-610	DESCRIPTION 6.0 A or 10.0 A Addressable	0.09			TOTAL 0.09
CIRCUIT	SYMBOL	QTY	PART NO	Charging Power Supply DESCRIPTION	CURRENT DRAW (A)	0.09 TOTAL (A)	0.09 CURRENT DRAW (A)	TOTAL (A
CIRCUIT		QII	PART NO		CORRENT DRAW (A)	TOTAL (A)	CORRENT BRAW (A)	TOTAL (A
NAC1•N1	\(\sqrt{\sq}\sqrt{\sq}}\sqrt{\sq}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}	1	P2RL	2-Wire, Horn Strobe, Red 110cd	0	0	0.162	0.162
	X	2	P2RL	2-Wire, Horn Strobe, Red 110cd	0	0	0.198	0.396
NAC1•N2	×	3	P2WL	2-Wire, Horn Strobe, White 110cd	0	0	0.162	0.486
NAC1•N3	×	2	P2RL	2-Wire, Horn Strobe, Red 110cd	0	0	0.198	0.396
NAC4.NA	×	1	P2WL	2-Wire, Horn Strobe, White 110cd	0	0	0.162	0.162
NAC1•N4	×	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 STAND	DBY TIME = 24 HOURS	
						REQUIRED ALAR	M TIME = 5 MINUTES	
	SECONDARY STA	ANDBY LOAD (A)		0.09	24 2.16			
	SECONDARY AL	_ARM LOAD (A)		1.89	0.08333 0.1575			5
	STANDBY AND ALARM S	UBTOTAL (AMP HOURS)			2.3175			
	DERATING	FACTOR			1.2			
	SECONDARY LOAD REQU	IREMENTS (AMP HOURS)			2.781			
		, ,	PRO	VIDE (2) 12V 7AH BATTERIES @) 24VDC)			
			PANFI NAC2 (ACI	PS-610 ASSEMBLY) BAT				
				PS-610 ASSEMBLY) BAT	TERY CALCULATION			
	DANEL DO		(SECON	PS-610 ASSEMBLY) BAT IDARY POWER SOURCE REQUI	TERY CALCULATION IREMENTS)	TOTAL LICED CADACITY	//N ALADM\ = 0.944 /42.50.9/\	
	PANEL PO	OWER SUPPLY MAX CURF	(SECON		TERY CALCULATION IREMENTS)		(IN ALARM) = 0.81A (13.50 %)	
	PANEL PO		(SECON RENT = 6A	DARY POWER SOURCE REQU	TERY CALCULATION IREMENTS) STANDBY CURF	RENT (AMPS)	SECONDARY ALARM	· · · · · · · · · · · · · · · · · · ·
PANEL CO		OWER SUPPLY MAX CURP QTY 1	(SECON RENT = 6A PART NO.	DARY POWER SOURCE REQUIRED TO BESCRIPTION 6.0 A or 10.0 A Addressable	TERY CALCULATION IREMENTS) STANDBY CURRENT DRAW (A)	RENT (AMPS) TOTAL (A)	SECONDARY ALARM (CURRENT DRAW (A)	TOTAL
PANEL CO		QTY	(SECON RENT = 6A	DARY POWER SOURCE REQUI	TERY CALCULATION IREMENTS) STANDBY CURF	RENT (AMPS)	SECONDARY ALARM	TOTAL 0.09
	MPONENTS SYMBOL	QTY 1	(SECON RENT = 6A PART NO. ACPS-610	DESCRIPTION 6.0 A or 10.0 A Addressable Charging Power Supply	TERY CALCULATION IREMENTS) STANDBY CURF CURRENT DRAW (A) 0.09	RENT (AMPS) TOTAL (A) 0.09	SECONDARY ALARM (CURRENT DRAW (A) 0.09	TOTAL 0.09
CIRCUIT	MPONENTS SYMBOL	QTY 1 QTY	(SECON RENT = 6A PART NO. ACPS-610 PART NO	DARY POWER SOURCE REQUIDED TO SOURCE REQUIRED TO SO	TERY CALCULATION IREMENTS) STANDBY CURF CURRENT DRAW (A) 0.09 CURRENT DRAW (A)	RENT (AMPS) TOTAL (A) 0.09 TOTAL (A)	SECONDARY ALARM (CURRENT DRAW (A) 0.09 CURRENT DRAW (A)	TOTAL 0.09 TOTAL (A
CIRCUIT NAC2•N1	MPONENTS SYMBOL	QTY 1 QTY 2	(SECON RENT = 6A PART NO. ACPS-610 PART NO P2RL	DARY POWER SOURCE REQUIDED TO SOURCE REQUIRED TO SO	TERY CALCULATION IREMENTS) STANDBY CURF CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0	TOTAL (A) O.09 TOTAL (A) 0	SECONDARY ALARM (CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0.198	TOTAL 0.09 TOTAL (A 0.396
NAC2•N1 NAC2•N2 NAC2•N3	MPONENTS SYMBOL A A A A A A A A A A A A A	QTY 1 QTY 2	(SECON RENT = 6A PART NO. ACPS-610 PART NO P2RL P2WL	DARY POWER SOURCE REQUIDED TO SOURCE REQUIRED TO SO	TERY CALCULATION IREMENTS) STANDBY CURF CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0	TOTAL (A) 0.09 TOTAL (A) 0 0 0	SECONDARY ALARM (CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0.198 0.162	TOTAL 0.09 TOTAL (A 0.396 0.324
CIRCUIT NAC2•N1 NAC2•N2	MPONENTS SYMBOL SYMBOL A A	QTY 1 QTY 2 2 3	(SECON RENT = 6A PART NO. ACPS-610 PART NO P2RL P2WL 30-2021-24	DESCRIPTION 6.0 A or 10.0 A Addressable Charging Power Supply DESCRIPTION 2-Wire, Horn Strobe, Red 110cd 2-Wire, Horn Strobe, White 110cd Flame Detector, UV, 24 VDC Flame Detector, UV, 24	TERY CALCULATION IREMENTS) STANDBY CURF CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0 0 0 0 0 0	RENT (AMPS) TOTAL (A) 0.09 TOTAL (A) 0 0 0 0 0 0	SECONDARY ALARM (CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0.198 0.162 0 0 0	TOTAL 0.09 TOTAL (A 0.396 0.324 0 0
NAC2•N1 NAC2•N2 NAC2•N3	MPONENTS SYMBOL A A A A A A A A A A A A A	QTY 1 QTY 2 2 3 1	(SECON RENT = 6A PART NO. ACPS-610 PART NO P2RL P2WL 30-2021-24 30-2021-24	DESCRIPTION 6.0 A or 10.0 A Addressable Charging Power Supply DESCRIPTION 2-Wire, Horn Strobe, Red 110cd 2-Wire, Horn Strobe, White 110cd Flame Detector, UV, 24 VDC Flame Detector, UV, 24 VDC	TERY CALCULATION IREMENTS) STANDBY CURF CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0 0 0 0	RENT (AMPS) TOTAL (A) 0.09 TOTAL (A) 0 0 0 0 0 0 0 0 0	SECONDARY ALARM (CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0.198 0.162 0 0 TOTAL ALARM (A)	TOTAL 0.09 TOTAL (A 0.396 0.324 0
NAC2•N1 NAC2•N2 NAC2•N3	MPONENTS SYMBOL A A A A A A A A A A A A A	QTY 1 QTY 2 2 3 1	(SECON RENT = 6A PART NO. ACPS-610 PART NO P2RL P2WL 30-2021-24 30-2021-24	DESCRIPTION 6.0 A or 10.0 A Addressable Charging Power Supply DESCRIPTION 2-Wire, Horn Strobe, Red 110cd 2-Wire, Horn Strobe, White 110cd Flame Detector, UV, 24 VDC Flame Detector, UV, 24 VDC	TERY CALCULATION IREMENTS) STANDBY CURF CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0 0 0 0 0 0	RENT (AMPS) TOTAL (A) 0.09 TOTAL (A) 0 0 0 0 0 0 REQUIRED STAND	SECONDARY ALARM (CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0.198 0.162 0 0 TOTAL ALARM (A) DBY TIME = 24 HOURS	TOTAL 0.09 TOTAL (A 0.396 0.324 0 0
NAC2•N1 NAC2•N2 NAC2•N3	SYMBOL SYMBOL A A A A A A A A A A A A A	QTY 1 QTY 2 2 3 1	(SECON RENT = 6A PART NO. ACPS-610 PART NO P2RL P2WL 30-2021-24 30-2021-24	DESCRIPTION 6.0 A or 10.0 A Addressable Charging Power Supply DESCRIPTION 2-Wire, Horn Strobe, Red 110cd 2-Wire, Horn Strobe, White 110cd Flame Detector, UV, 24 VDC Flame Detector, UV, 24 VDC Ember Detector, IR, 24 VDC	TERY CALCULATION IREMENTS) STANDBY CURF CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0 0 0 0 TOTAL STANDBY (A)	RENT (AMPS) TOTAL (A) 0.09 TOTAL (A) 0 0 0 0 0 0 REQUIRED STANE	SECONDARY ALARM (CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0.198 0.162 0 0 0 TOTAL ALARM (A) DBY TIME = 24 HOURS M TIME = 5 MINUTES	TOTAL 0.09 TOTAL (A 0.396 0.324 0 0 0 0 0.81
NAC2•N1 NAC2•N2 NAC2•N3	SYMBOL SYMBOL SECONDARY STA	QTY 1 QTY 2 2 3 1 2	(SECON RENT = 6A PART NO. ACPS-610 PART NO P2RL P2WL 30-2021-24 30-2021-24	DESCRIPTION 6.0 A or 10.0 A Addressable Charging Power Supply DESCRIPTION 2-Wire, Horn Strobe, Red 110cd 2-Wire, Horn Strobe, White 110cd Flame Detector, UV, 24 VDC Flame Detector, UV, 24 VDC Ember Detector, IR, 24 VDC	TERY CALCULATION IREMENTS) STANDBY CURF CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0 0 0 0 TOTAL STANDBY (A)	RENT (AMPS) TOTAL (A) 0.09 TOTAL (A) 0 0 0 0 0 0 REQUIRED STANE	SECONDARY ALARM (CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0.198 0.162 0 0 TOTAL ALARM (A) DBY TIME = 24 HOURS M TIME = 5 MINUTES 2.16	TOTAL 0.09 TOTAL (A 0.396 0.324 0 0 0 0 0.81
NAC2•N1 NAC2•N2 NAC2•N3	SECONDARY STA	QTY 1 QTY 2 2 3 1 2 ANDBY LOAD (A) LARM LOAD (A)	(SECON RENT = 6A PART NO. ACPS-610 PART NO P2RL P2WL 30-2021-24 30-2021-24	DESCRIPTION 6.0 A or 10.0 A Addressable Charging Power Supply DESCRIPTION 2-Wire, Horn Strobe, Red 110cd 2-Wire, Horn Strobe, White 110cd Flame Detector, UV, 24 VDC Flame Detector, UV, 24 VDC Ember Detector, IR, 24 VDC	TERY CALCULATION IREMENTS) STANDBY CURF CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0 0 0 0 TOTAL STANDBY (A)	TOTAL (A) 0.09 TOTAL (A) 0 0 0 0 0 0 REQUIRED STANE	SECONDARY ALARM (CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0.198 0.162 0 0 TOTAL ALARM (A) DBY TIME = 24 HOURS M TIME = 5 MINUTES 2.16 0.067	TOTAL 0.09 TOTAL (A 0.396 0.324 0 0 0 0 0.81
NAC2•N1 NAC2•N2 NAC2•N3	SYMBOL SYMBOL SECONDARY STA	QTY 1 QTY 2 2 3 1 2 ANDBY LOAD (A) LARM LOAD (A) UBTOTAL (AMP HOURS)	(SECON RENT = 6A PART NO. ACPS-610 PART NO P2RL P2WL 30-2021-24 30-2021-24	DESCRIPTION 6.0 A or 10.0 A Addressable Charging Power Supply DESCRIPTION 2-Wire, Horn Strobe, Red 110cd 2-Wire, Horn Strobe, White 110cd Flame Detector, UV, 24 VDC Flame Detector, UV, 24 VDC Ember Detector, IR, 24 VDC	TERY CALCULATION IREMENTS) STANDBY CURF CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0 0 0 0 TOTAL STANDBY (A)	RENT (AMPS) TOTAL (A) 0.09 TOTAL (A) 0 0 0 0 0 0 0 REQUIRED STAND REQUIRED ALAR	SECONDARY ALARM (A) CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0.198 0.162 0 0 TOTAL ALARM (A) DBY TIME = 24 HOURS M TIME = 5 MINUTES 2.16 0.067	TOTAL 0.09 TOTAL (A 0.396 0.324 0 0 0 0 0.81
NAC2•N1 NAC2•N2 NAC2•N3	SECONDARY STA	QTY 1 QTY 2 2 3 1 2 ANDBY LOAD (A) LARM LOAD (A) UBTOTAL (AMP HOURS) FACTOR	(SECON RENT = 6A PART NO. ACPS-610 PART NO P2RL P2WL 30-2021-24 30-2021-24	DESCRIPTION 6.0 A or 10.0 A Addressable Charging Power Supply DESCRIPTION 2-Wire, Horn Strobe, Red 110cd 2-Wire, Horn Strobe, White 110cd Flame Detector, UV, 24 VDC Flame Detector, UV, 24 VDC Ember Detector, IR, 24 VDC	TERY CALCULATION IREMENTS) STANDBY CURF CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0 0 0 0 TOTAL STANDBY (A)	RENT (AMPS) TOTAL (A) 0.09 TOTAL (A) 0 0 0 0 0 0 0 REQUIRED STAND REQUIRED ALAR	SECONDARY ALARM (CURRENT DRAW (A) 0.09 CURRENT DRAW (A) 0.198 0.162 0 0 TOTAL ALARM (A) DBY TIME = 24 HOURS M TIME = 5 MINUTES 2.16 0.067	TOTAL 0.09 TOTAL (A 0.396 0.324 0 0 0 0 0.81

			(SECON	IDARY POWER SOURCE REQUI				
	PANEL P	OWER SUPPLY MAX CURR	RENT = 6A				IN ALARM) = 1.762A (29.37 %)	
					STANDBY CURRE	'	SECONDARY ALARM (
DANE: 00	MOONENTO	QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
	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)
NAC3•N1	\bigcirc	3	30-2021-24	Flame Detector, UV, 24 VDC	0	0	0	0
	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	\bigcirc	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
	△ 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 M TIME = 5 MINUTES	
	SECONDARY ST	ANDBY LOAD (A)		1.762	24	NEQUINED ALAK	42.28	8
	SECONDARY A			1.762	0.0833	3	0.1468	
	STANDBY AND ALARM S			111 🗸	0.000		.43483	· -
	DERATING	, , ,					1.2	
	SECONDARY LOAD REQU).9218	
		· · · · · ·	PRO\	/IDE (2) 12V 55AH BATTERIES @) 24VDC)			
			PANEL NAC4 (AC	PS-610 ASSEMBLY) BAT	TERY CALCULATION			
				IDARY POWER SOURCE REQUI				
	PANEL P	OWER SUPPLY MAX CURR	١		,	TAL USED CAPACITY (N ALARM) = 1.4914A (24.86 %)	
					STANDBY CURRE	ENT (AMPS)	SECONDARY ALARM (CURRENT (AMPS)
		QTY	PART NO.	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
PANEL CO	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)
	⊗c	2	PC2RL	2-Wire, Horn Strobe, Red 115cd	0	0	0.187	0.374
NAC4•N1		0	PC2WL	2-Wire, Horn Strobe, White	0	0	0.187	0.374
	\mathbf{a}_{c}	2		115cd	Ŭ I			
NAC4•N2	₩ _C	1	FCM-1	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B	0	0	0.1637	0.1637
NAC4•N2	₩		FCM-1 P2RL	Addressable Control Module W/ FlashScan, 1 Class A or		0	0.1637	0.1637
	(AOM)	1		Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B 2-Wire, Horn Strobe, Red	0			
NAC4•N2	₩	1	P2RL	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B 2-Wire, Horn Strobe, Red 30cd 2-Wire, Horn Strobe, Red	0	0	0.074	0.074
NAC4•N2		1 1 2	P2RL P2RL	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B 2-Wire, Horn Strobe, Red 30cd 2-Wire, Horn Strobe, Red 75cd	0 0	0	0.074	0.074 0.242
NAC4•N2	X X	1 1 2 4	P2RL P2RL SRL	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B 2-Wire, Horn Strobe, Red 30cd 2-Wire, Horn Strobe, Red 75cd Strobe, Red 15cd Addressable Control Module W/ FlashScan, 1 Class A or	0 0 0 0	0 0 0 0	0.074 0.121 0.043 0.0017 TOTAL ALARM (A)	0.074 0.242 0.172
NAC4•N2	X X	1 1 2 4	P2RL P2RL SRL	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B 2-Wire, Horn Strobe, Red 30cd 2-Wire, Horn Strobe, Red 75cd Strobe, Red 15cd Addressable Control Module W/ FlashScan, 1 Class A or	0 0 0 0	0 0 0 0	0.074 0.121 0.043 0.0017	0.074 0.242 0.172 0.0017
NAC4•N2 NAC4•N3		1 1 2 4	P2RL P2RL SRL	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B 2-Wire, Horn Strobe, Red 30cd 2-Wire, Horn Strobe, Red 75cd Strobe, Red 15cd Addressable Control Module W/ FlashScan, 1 Class A or	0 0 0 0	0 0 0 0 0 0 0.09 REQUIRED STANI	0.074 0.121 0.043 0.0017 TOTAL ALARM (A)	0.074 0.242 0.172 0.0017
NAC4•N2	SECONDARY ST.	1 1 2 4 1 1 1 ANDBY LOAD (A)	P2RL P2RL SRL	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B 2-Wire, Horn Strobe, Red 30cd 2-Wire, Horn Strobe, Red 75cd Strobe, Red 15cd Addressable Control Module W/ FlashScan, 1 Class A or	0 0 0 0	0 0 0 0 0 0 0.09 REQUIRED STANI	0.074 0.121 0.043 0.0017 TOTAL ALARM (A) DBY TIME = 24 HOURS	0.074 0.242 0.172 0.0017 1.4914
NAC4•N2	SECONDARY ST. SECONDARY A	1 2 4 1 1 ANDBY LOAD (A) LARM LOAD (A)	P2RL P2RL SRL	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B 2-Wire, Horn Strobe, Red 30cd 2-Wire, Horn Strobe, Red 75cd Strobe, Red 15cd Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B	0 0 0 0 0 0 TOTAL STANDBY (A)	0 0 0 0 0 0 REQUIRED STAND	0.074 0.121 0.043 0.0017 TOTAL ALARM (A) DBY TIME = 24 HOURS M TIME = 5 MINUTES	0.074 0.242 0.172 0.0017 1.4914
NAC4•N2 NAC4•N3	SECONDARY ST. SECONDARY ASTANDBY AND ALARM S	1 2 4 1 1 ANDBY LOAD (A) LARM LOAD (A) UBTOTAL (AMP HOURS)	P2RL P2RL SRL	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B 2-Wire, Horn Strobe, Red 30cd 2-Wire, Horn Strobe, Red 75cd Strobe, Red 15cd Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B	0 0 0 0 0 0 TOTAL STANDBY (A)	0 0 0 0 0 0.09 REQUIRED STANI	0.074 0.121 0.043 0.0017 TOTAL ALARM (A) DBY TIME = 24 HOURS M TIME = 5 MINUTES 2.16 0.1242	0.074 0.242 0.172 0.0017 1.4914
NAC4•N2 NAC4•N3	SECONDARY ST. SECONDARY A STANDBY AND ALARM S DERATING	1 2 4 1 1 ANDBY LOAD (A) LARM LOAD (A) UBTOTAL (AMP HOURS) FACTOR	P2RL P2RL SRL	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B 2-Wire, Horn Strobe, Red 30cd 2-Wire, Horn Strobe, Red 75cd Strobe, Red 15cd Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B	0 0 0 0 0 0 TOTAL STANDBY (A)	0 0 0 0 0 0.09 REQUIRED STANI	0.074 0.121 0.043 0.0017 TOTAL ALARM (A) DBY TIME = 24 HOURS M TIME = 5 MINUTES 2.16 0.1242 28428 1.2	0.074 0.242 0.172 0.0017 1.4914
NAC4•N2	SECONDARY ST. SECONDARY ASTANDBY AND ALARM S	1 2 4 1 1 ANDBY LOAD (A) LARM LOAD (A) UBTOTAL (AMP HOURS) FACTOR	P2RL P2RL SRL FCM-1	Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B 2-Wire, Horn Strobe, Red 30cd 2-Wire, Horn Strobe, Red 75cd Strobe, Red 15cd Addressable Control Module W/ FlashScan, 1 Class A or 1 Class B	0 0 0 0 0 TOTAL STANDBY (A)	0 0 0 0 0 0.09 REQUIRED STANI	0.074 0.121 0.043 0.0017 TOTAL ALARM (A) DBY TIME = 24 HOURS M TIME = 5 MINUTES 2.16 0.1242	0.074 0.242 0.172 0.0017 1.4914

				CIRCUIT SE	TTINGS	TOTA	LS
				Starting Calculation Voltage:	20.39339	Max. Voltage Drop:	0.00876
	L4•M004 N1 LUM	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 AV	NG, 2 Cond. Solid Copper	FPLP/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 Re	esistance (Ω/Ft) x 2 x Total C	Circuit Length (Ft)					

				CIRCUIT SI	ETTINGS	IOIA	LS
				Starting Calculation Voltage:	20.39339	Max. Voltage Drop:	0.00876
	L4•M004 N1 LUM	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: 'I	N' 14/2 FPLP/R (NAC) 14 AV	NG, 2 Cond. Solid Copper F	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	
alculation Methods:							
otal Resistance (Ω) = Wire Re	esistance (Ω/Ft) x 2 x Total C	Circuit Length (Ft)					
otal Voltage Drop = Total Res	istance (Ω) x Total Circuit C	urrent (A)					

				CIRCUIT SETTINGS		TOTAL	S
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.79677
	NAC1 N1 LUMP	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' 14/2 FPLP/R (NAC) 14 A\	WG, 2 Cond. Solid Copper	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 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS	MA	P2RL	2-Wire, Horn Strobe, Red 110cd	1	0.162	0.162	
	×	P2RL	2-Wire, Horn Strobe, Red 110cd	2	0.198	0.396	
Iculation Methods:			,				
al Resistance (Ω) = Wire F	Resistance (Ω/Ft) x 2 x Total C	Circuit Length (Ft)					
al Voltage Drop = Total Re	esistance (Ω) x Total Circuit C	urrent (A)					

Lotal Resistance (Ω) = Wire I	Resistance (Ω/Ft) x 2 x Total (Circuit Length (Ft)					
Total Voltage Drop = Total R	esistance (Ω) x Total Circuit C	urrent (A)					
				CIRCUIT S	ETTINGS	TOTA	LS
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.72802
	NAC1 N2 LUMP	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' 14/2 FPLP/R (NAC) 14 AV	WG, 2 Cond. Solid Copper Ff	PLP/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	
Calculation Methods:			1				
Total Resistance (Ω) = Wire I	Resistance (Ω/Ft) x 2 x Total C	Circuit Length (Ft)					
Total Voltage Drop = Total R	esistance (Ω) x Total Circuit C	urrent (A)					
				CIRCUIT S	ETTINGS	TOTA	LS
				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 (O/kFt):	3.07	Total Circuit Current (A):	0.396

				CIRCUITS	ETTINGS	1017	ALO
				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: 'I	N' 14/2 FPLP/R (NAC) 14 AV	VG, 2 Cond. Solid Copper F	FPLP/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	×	P2RL	2-Wire, Horn Strobe, Red 110cd	2	0.198	0.396	
Calculation Methods:							
Total Resistance (Ω) = Wire Re	\ /	• ()					
Total Voltage Drop = Total Res	sistance (Ω) x Total Circuit Cu	urrent (A)					

				CIRCUIT S	ETTINGS	TOTA	LS
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.47698
	NAC1 N4 LUMI	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	er 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:				<u> </u>		· ·	
al Resistance (Ω) = Wire Res	sistance (Ω/Ft) x 2 x Total	Circuit Length (Ft)					
al Voltage Drop = Total Resi	stance (O) v Total Circuit (Current (A)					

						_	
				CIRCUIT SI	ETTINGS	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
rcuit Wiring Properties: 'P' 1	4/2 FPLP/R (AUX) 14 AW	G, 2 Cond. Solid Copper FP	PLP/R Addressable Unshielded	Total Circuit Length (Ft):	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)	
DEVICE TOTALS	$\langle \wedge \rangle$	30-2021-24	Flame Detector, UV, 24 VDC	3	0	0	
GAS XCD Gas Detector				3	0.209	0.627	
culation Methods:						•	

				CIRCUIT SI	ETTINGS	TOTAL	S
				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	
Iculation Methods:						<u> </u>	
tal Resistance (Ω) = Wire Re	sistance (Ω/Ft) x 2 x Total (Circuit Lenath (Ft)					

				CIRCUIT SI	ETTINGS	TOTALS	
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0
	NAC3 N3 LUM	IP 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 FF	PLP/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:							
otal Resistance (Ω) = Wire Re	sistance (O/Ft) x 2 x Total	Circuit Length (Ft)					

				CIRCUIT SI	ETTINGS	TOTA	LS
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	2.09562
	NAC3 N4 LUMF	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
rcuit 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):	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	
Iculation Methods:							
al Resistance (O) = Wire Re	sistance (Ω/Ft) x 2 x Total (Circuit Lenath (Ft)					

				CIRCUIT SE	TTINGS	TOTALS	6
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	3.78084
	NAC4 N1 LUM	P 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	l' 14/2 FPLP/R (NAC) 14 <i>A</i>	WG, 2 Cond. Solid Coppe	r FPLP/R Analog Unshielded	Total Circuit Length (Ft):	1646	Spare Current (A):	1.126
				Total Circuit Resistance (Ω):	10.109202	Spare Current (A) Percent:	75.07 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS	⊗c	PC2RL	2-Wire, Horn Strobe, Red 115cd	2	0.187	0.374	
Iculation Methods:		•	•			· ·	
al Resistance (Ω) = Wire Re	sistance (Ω/Ft) x 2 x Total	Circuit Length (Ft)					
al Voltage Drop = Total Resi	stance (Ω) x Total Circuit (Current (A)					

				CIRCUIT SI	ETTINGS	TOTA	ALS
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	3.78128
	NAC4 N2 LUMP	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: 'I'	N' 14/2 FPLP/R (NAC) 14 AV	VG, 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 Re	esistance (Ω/Ft) x 2 x Total C	ircuit Length (Ft)					
Total Voltage Drop = Total Res	istance (Ω) x Total Circuit C	urrent (A)				_	

				CIRCUIT S	ETTINGS	TOTA	ALS
				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	N' 14/2 FPLP/R (NAC) 14 AV	VG, 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)	
		SRL	Strobe, Red 15cd	4	0.043	0.172	
DEVICE TOTALS —	∇	P2RL	2-Wire, Horn Strobe, Red 30cd	1	0.074	0.074	
DEVICE TOTALS	∇	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		0.1637	0.1637	
alculation Methods:					·		·
tal Resistance (Ω) = Wire Re	sistance (Ω/Ft) x 2 x Total C	ircuit Length (Ft)					
tal Voltage Drop = Total Resi	istance (Ω) x Total Circuit Ci	urrent (A)					

_				CIRCUIT S	ETTINGS	TOTALS	S
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.00267
	NAC4 N4 LUMF	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	l' 14/2 FPLP/R (NAC) 14 A	WG, 2 Cond. Solid Coppe	er 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		0.0017	0.0017	
alculation Methods:							
otal Resistance (Ω) = Wire Re	sistance (Ω/Ft) x 2 x Total (Circuit Length (Ft)					
otal Voltage Drop = Total Resi	stance (Ω) x Total Circuit C	Surrent (A)					

				CIRCUIT SE	ETTINGS	TOTA	LS
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.93789
	NAC2 N1 LUMP	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 AV	NG, 2 Cond. Solid Copper F	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	¥	P2RL	2-Wire, Horn Strobe, Red 110cd	2	0.198	0.396	
Calculation Methods:			•				
Total Resistance (Ω) = Wire F	Resistance (Ω/Ft) x 2 x Total C	Circuit Length (Ft)					
Total Voltage Drop = Total Re	esistance (Ω) x Total Circuit C	urrent (A)					
				CIRCUIT SE	ETTINGS	TOTA	LS
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0.79398
	NAC2 N2 LUMP	SUM REPORT		Starting Calculation Voltage: Min. Operational Voltage:	20.4 16	Max. Voltage Drop: End Of Line Voltage:	0.79398 19.60602

				CIRCUIT S	ETTINGS	TOTA	ALS
				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 A\	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 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS	\boxtimes	P2WL	2-Wire, Horn Strobe, White 110cd	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 SI	ETTINGS	TOTAL	S
				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0
	NAC2 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' 14/2 FPLP/R (AUX) 14 AWG, 2 Cond. Solid Copper FPLP/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	$\langle \wedge \rangle$	30-2021-24	Flame Detector, UV, 24 VDC	3	0	0	
alculation Methods:							
otal Resistance (Ω) = Wire Re	sistance (Ω/Ft) x 2 x Total	Circuit Length (Ft)					

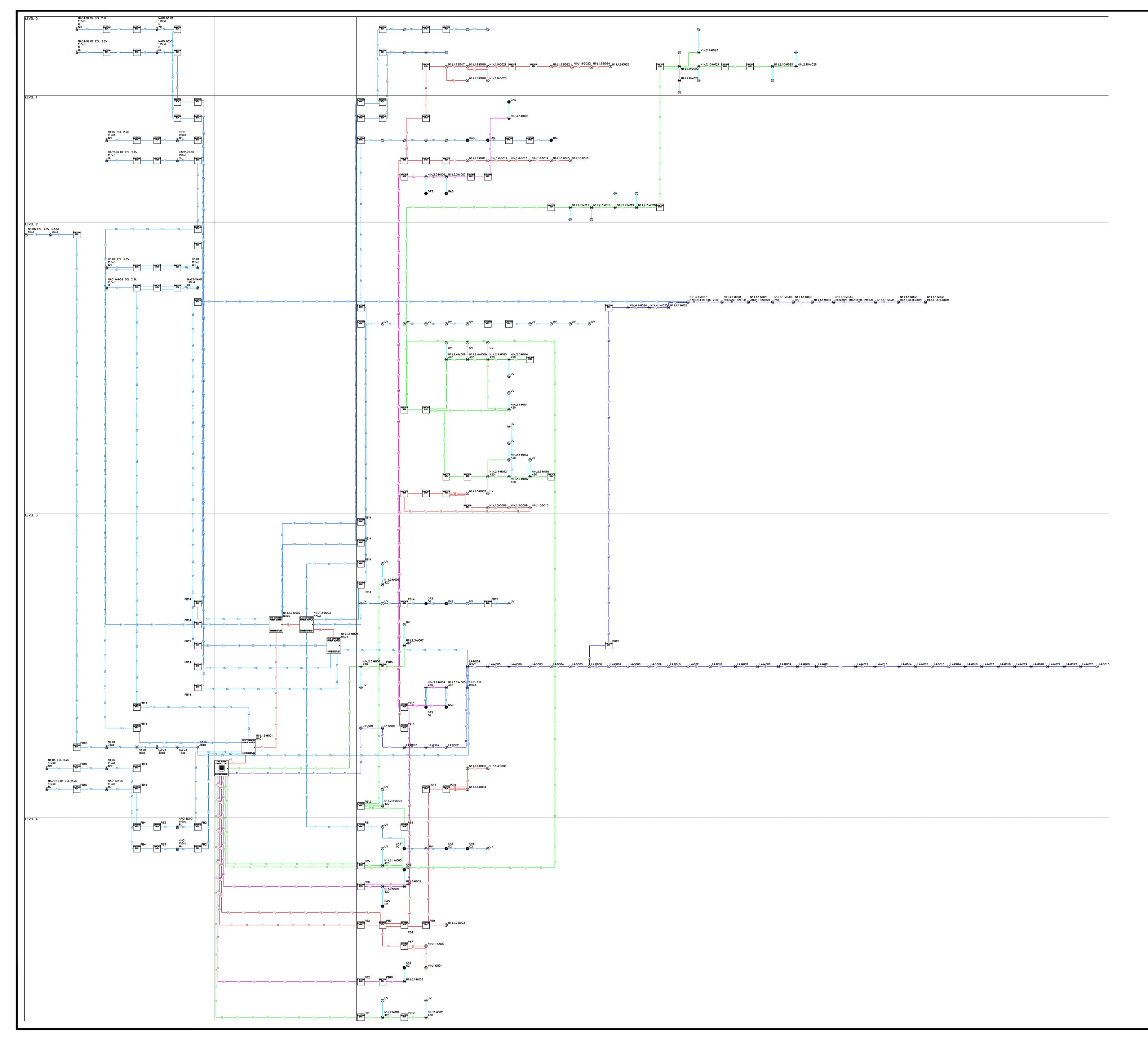
			CIRCUIT SETTINGS		TOTALS		
NAC2 N4 LUMP SUM REPORT Circuit Wiring Properties: 'P' 14/2 FPLP/R (AUX) 14 AWG, 2 Cond. Solid Copper FPLP/R Addressable Unshielded				Starting Calculation Voltage:	20.4	Max. Voltage Drop:	0
				Min. Operational Voltage:	16	End Of Line Voltage:	20.4
				Max. Circuit Current (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 %
	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
DEVICE TOTALS	\bigcirc	30-2021-24	Flame Detector, UV, 24 VDC	1	0	0	

Ember Detector, IR, 24 VDC

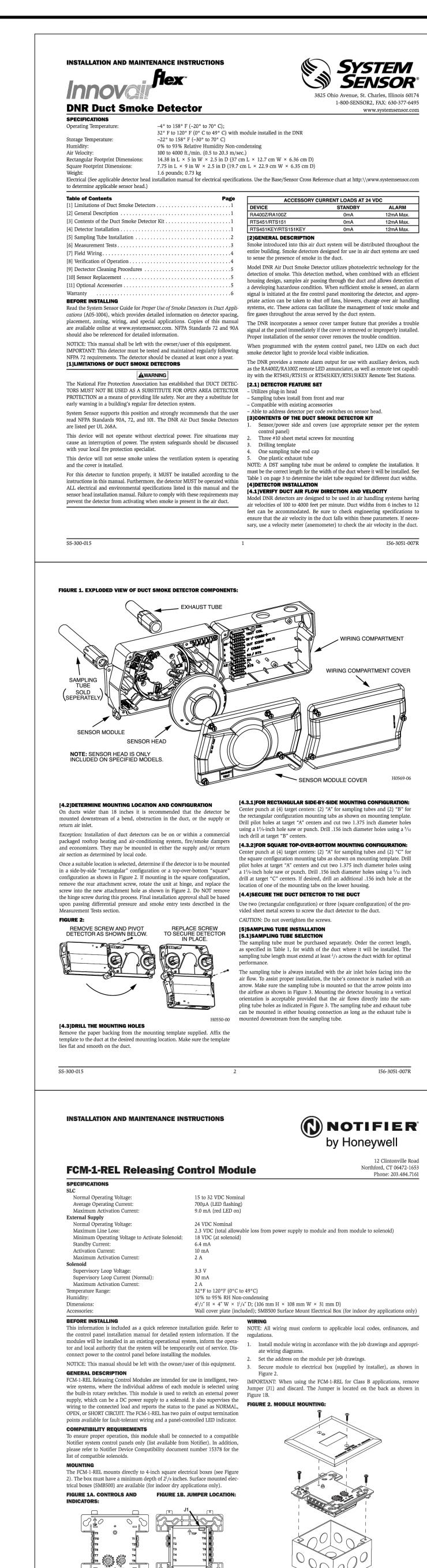
Calculation Methods: Total Resistance (Ω) = Wire Resistance (Ω /Ft) x 2 x Total Circuit Length (Ft)

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

30-2054-24



CVMD	DEVICE LEGEND				
SYMB(DESCRIPTION FACP, ADDRESSABLE, CPU2-3030D, 1X LCM-320, 1X LEM-320,				
	AMPS-24, NCM-W				
NAC					
(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				
$\langle \rangle$	FLAME DETECTOR, UV, 24 VDC				
(S)	ADDRESSABLE LOW-PROFILE PHOTOELECTRIC SMOKE DETECTOR. FLASHSCAN ONLY.				
O G/	GAS DETECTOR				
\boxtimes	2-WIRE, WALL, HORN STROBE				
<u> </u>	2-WIRE, CEILING, HORN STROBE, RED				
太	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				
	IDC				



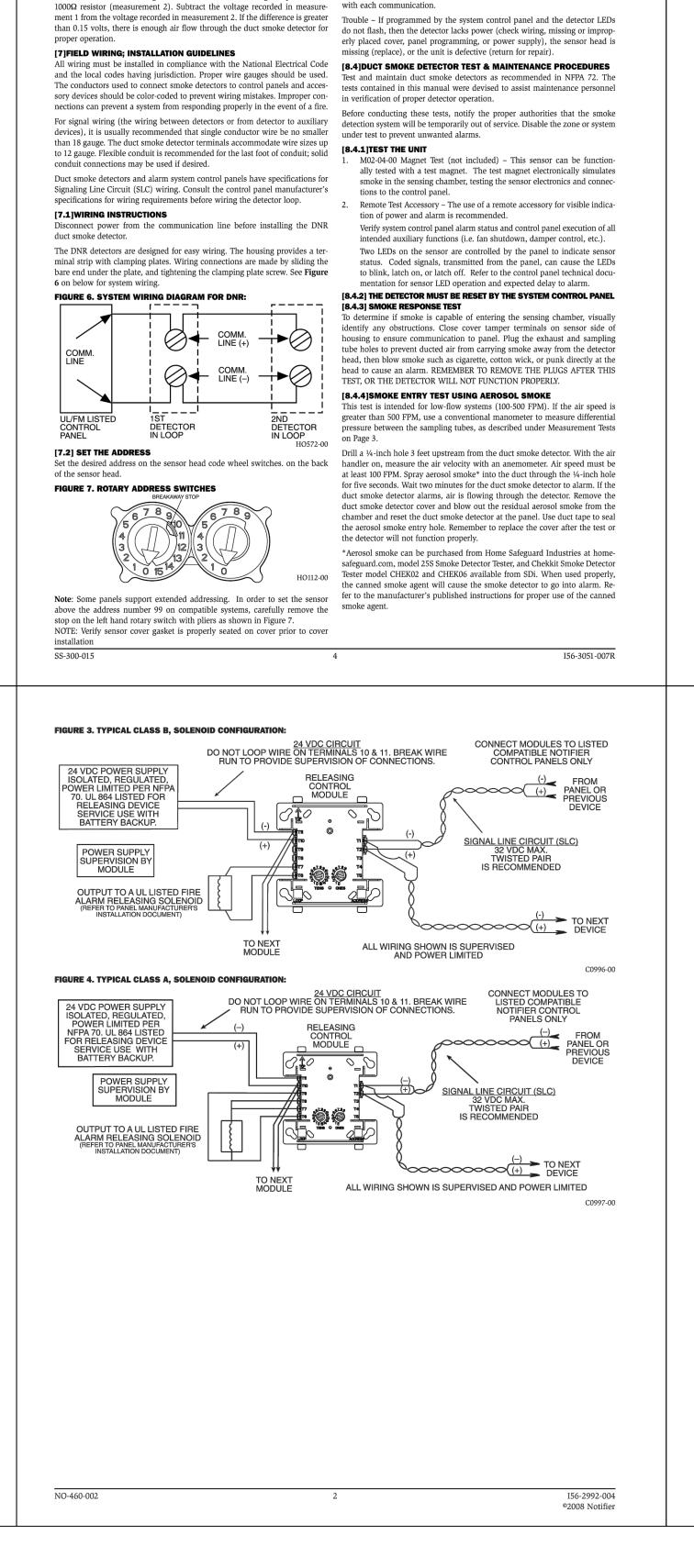


TABLE 1. SAMPLING TUBES RECOMMENDED FOR

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 34 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-

3825 Ohio Avenue, St. Charles, Illinois 60174

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

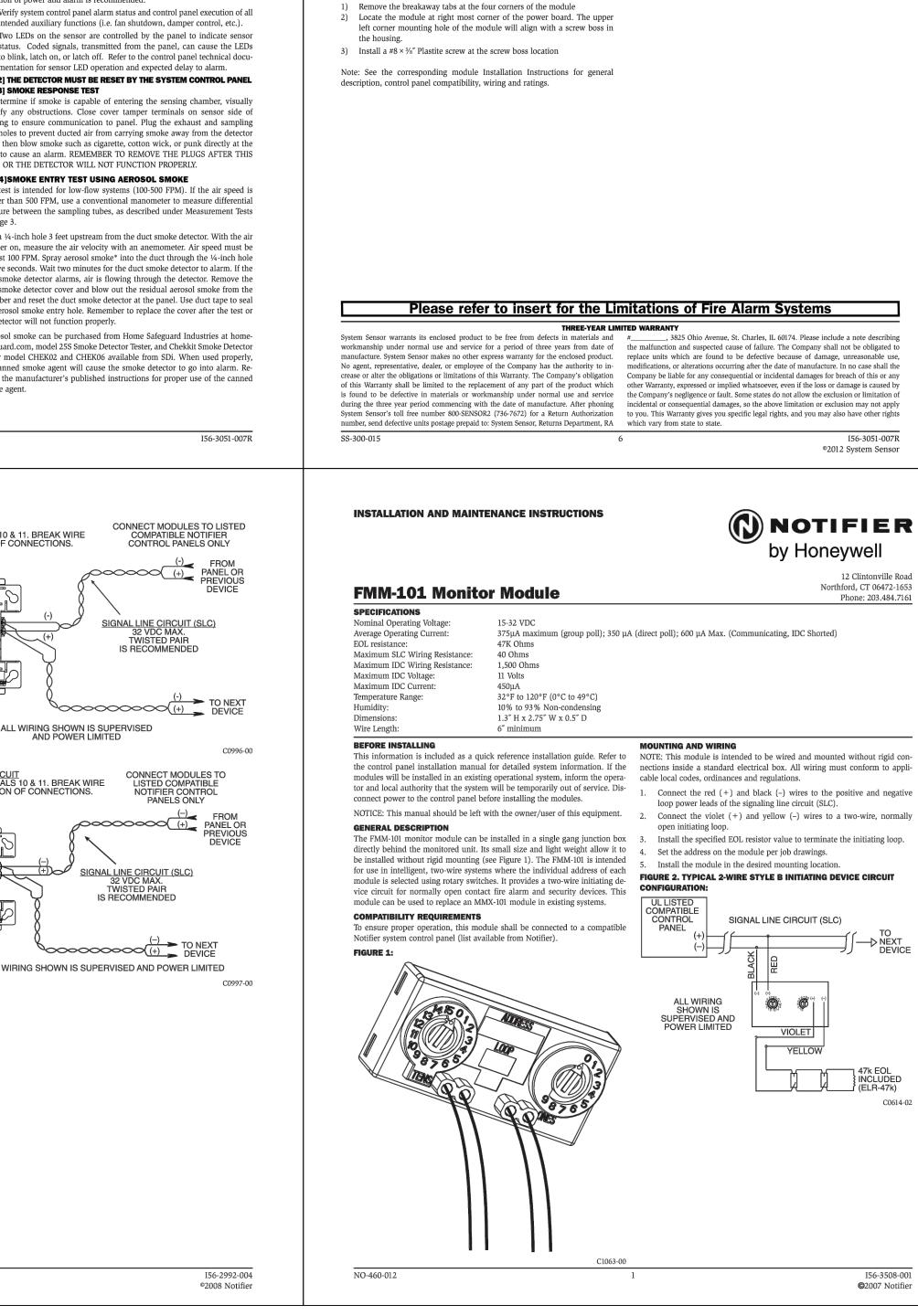
I56-3051-007R

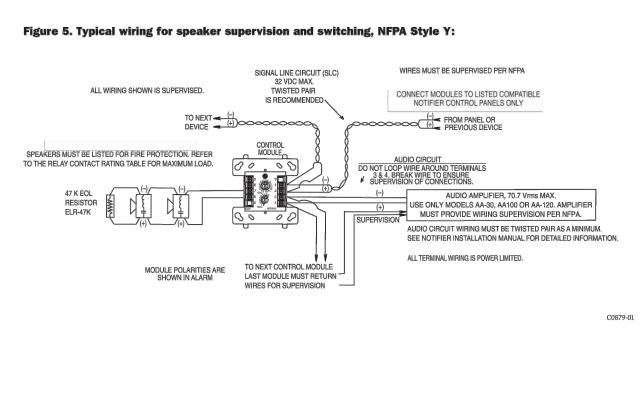
ING COMPARTMENT COVER

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

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

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.

published instructions for any further warnings or caution statements.

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-

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

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

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

H0163-01

I56-3051-007R

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

FIGURE 5. PROCEDURE FOR VERIFYING AIR FLOW:

Activate the communication line on terminals COM + and COM -

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: WIRES MUST BE SUPERVISED PER NFPA SIGNAL LINE CIRCUIT (SLC) ALL WIRING SHOWN IS SUPERVISED. TWISTED PAIR FROM PANEL OR PREVIOUS DEVICE SPEAKERS MUST BE LISTED FOR FIRE PROTECTION, REFER USE ONLY MODELS AA-30, AA100 OR AA-120, AMPLIFI MUST PROVIDE WIRING SUPERVISION PER NFPA. AUDIO CIRCUIT WIRING MUST BE TWISTED PAIR AS A MINIMUM. ALL TERMINAL WIRING IS POWER LIMITED. MODULE POLARITIES ARE SHOWN IN ALARM

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 T56-1169-01

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

Maximum Current Draw:

Normal Operating Voltage

Standby Current:

Maximum Current:

Maximum Current:

GENERAL DESCRIPTION

COMPATIBILITY REQUIREMENTS

FIGURE 1. CONTROLS AND INDICATORS

list of compatible devices.

lemperature Range:

Dimensions:

Initiating Device

External Supply

Average Operating Current:

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.



FCM-1 Supervised Control Module

Installation And Maintenance Instructions Specifications Normal Operating Voltage: Maximum Current Draw: 375μA (LED flashing - in group poll mode) 350μA (LED of flashing - in direct poll Average Operating Current: 485µA Max. (LED flashing, NAC shorted) Maximum NAC Line Loss: (between Terminals T3 and T4) External Supply Voltage: Regulated 24 VDC Maximum (NAC): 70.7 V RMS, 50 W Maximum (Speakers): 1.7 mA Maximum using 24 VDC supply; 2.2 mA Maximum using 80 VRMS supply Drain on External Supply: For class B wiring system, the current rating is 3A Max NAC Current Ratings: For class A wiring system, the current rating is 2A 32°F to 120°F (0°C to 49°C) Temperature Range Humidity: 10% to 93% Non-condensing 41/2" H × 4" W × 11/4" D (Mounts to a 4" square by 21/8" deep box.) Dimensions:

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

SMB500 Electrical Box: CB500 Barrier

General Description 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 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



Accessories:

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I56-1169-013

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Northford, CT 06472-1653

NOTIFIER

by Honeywell

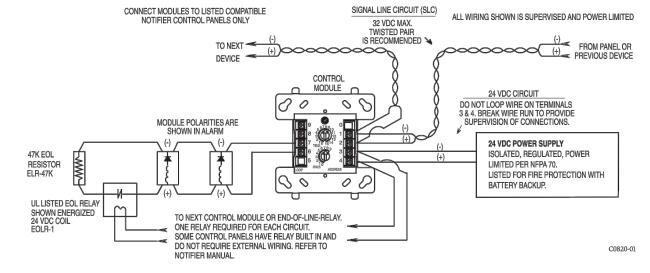
NOTE: All wiring must conform to applicable local codes, ordinances, and regulations. This module is intended for powerlimited wiring only.

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

ate wiring diagrams.

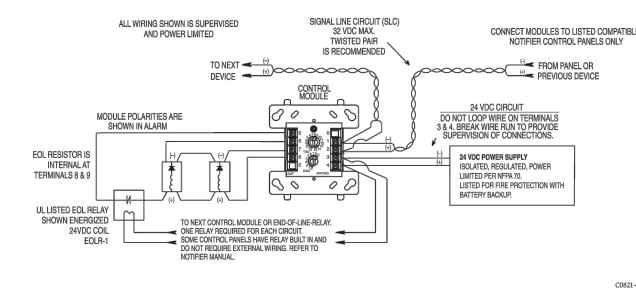
2. Set the address on the module per job drawings.

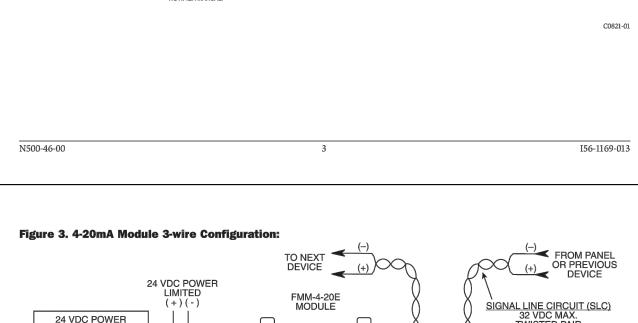
. Install module wiring in accordance with the job drawings and appropri-

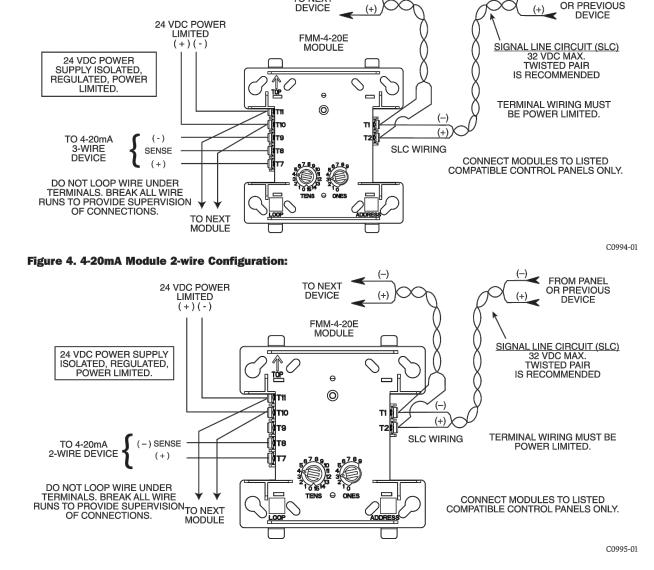


Notifier, 12 Clintonville Rd., Northford, CT 06472

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

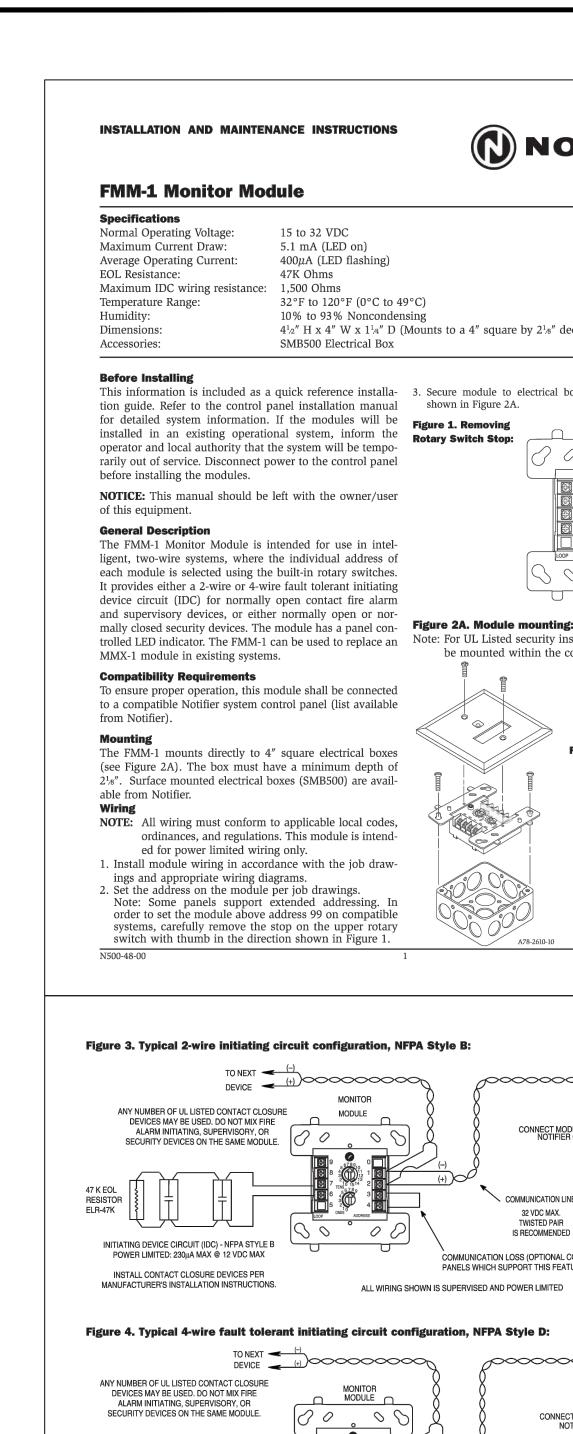






I56-2991-002

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IS INTERNAL AT

INSTALL CONTACT CLOSURE DEVICES PER

ANY NUMBER OF UL LISTED CONTACT CLOSURE

ALARM INITIATING, SUPERVISORY, OR

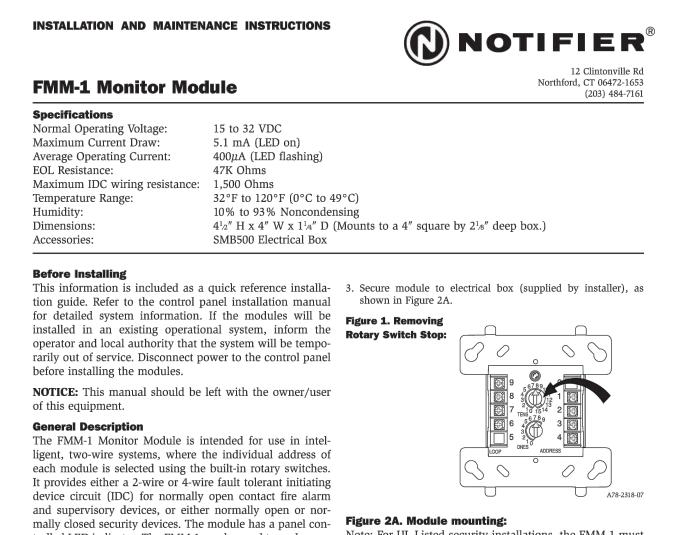
SECURITY DEVICES ON THE SAME MODULE.

INITIATING DEVICE CIRCUIT (IDC) - NFPA STYLE B POWER LIMITED: 230µA MAX @ 12 VDC MAX

INSTALL CONTACT CLOSURE DEVICES PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

14K SERIES RESISTOR ---

MANUFACTURER'S INSTALLATION INSTRUCTIONS.



trolled LED indicator. The FMM-1 can be used to replace an Note: For UL Listed security installations, the FMM-1 must be mounted within the control panel enclosure.

CONNECT MODULES TO LISTED COMPATIBLE NOTIFIER CONTROL PANELS ONLY

CONNECT MODULES TO LISTED COMPATIBLE NOTIFIER CONTROL PANELS ONLY

A78-2281-58

A78-2281-59

I56-1171-05

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32 VDC MAX.

IS RECOMMENDED

COMMUNICATION LOSS (OPTIONAL CONNECTION FOR

PANELS WHICH SUPPORT THIS FEATURE)

COMMUNICATION LOSS (OPTIONAL CONNECTION

FOR PANELS WHICH SUPPORT THIS FEATURE)

32 VDC MAX.

IS RECOMMENDED

COMMUNICATION LOSS (OPTIONAL CONNECTION FOR

PANELS WHICH SUPPORT THIS FEATURE)

ALL WIRING SHOWN IS SUPERVISED AND POWER LIMITED

(+) FROM PANEL OR PREVIOUS DEVICE

CONNECT MODULES TO LISTED COMPATIBLE NOTIFIER CONTROL PANELS ONLY

ALL WIRING SHOWN IS SUPERVISED AND POWER LIMITED

Figure 5. Typical 2-wire initiating circuit configuration for security systems (with alarm versus short capability):

Note: For UL Listed security installations, the FMM-1 must be mounted within the control panel enclosure.

DEVICE (+)

FIGURE 1. CONTROLS AND INDICATORS: 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 system, inform the operator and local authority that the system will be temporarily 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 supervised by the module. The module also has a panel controlled LED indi-

LOAD DESCRIPTION

PF = 0.35

Resistive

Resistive

(L/R = 20ms)

PF = 0.35

Resistive

PF = 0.75

PF = 0.35

The FRM-1 mounts directly to 4-inch square electrical boxes (see Figure 2A). The box must have a minimum depth of $2^1/8$ inches. Surface mounted electrical boxes (SMB500) are available from Notifier. The module can also mount to the DNR(W) duct housing.

NOTIFIER® by Honeywell

12 Clintonville Road

Phone: 203.484.7161

Northford, CT 06472-1653

APPLICATION

Non-coded

Non-coded

Coded

Non-coded

Non-coded

Non-coded

Non-coded

Non-coded

INSTALLATION AND MAINTENANCE INSTRUCTIONS

SPECIFICATIONS

NOTIFIER® 8

Honeywell FSL100 Series Flame Detector

On the flame detector side of the cable, leave a 4 in. (10 cm) loop of spare cable to allow for alignment of the detector.

Quick Start Guide

FSP-951 and FSP-951-IV 12 Clintonville Road Northford, CT 06472-1653 **Intelligent Photoelectric Smoke Sensors** Phone: 203.484.7161

Operating Voltage Range: 200 uA (one communication every 5 seconds with green LED blink on communication) Operating Current @ 24 VDC: Maximum Alarm Current: 2 mA @ 24 VDC (one communication every 5 seconds with red LED solid on) 4.5 mA @ 24 VDC (one communication every 5 seconds with amber LED solid on) 10% to 93% Relative Humidity, Non-condensing Operating Humidity Range: 32°F to 122°F (0°C to 50°C) 0 to 4000 ft./min. (0 to 1219.2 m/min.) 2.0" (51 mm) installed in B300-6 Base 6.2" (156 mm) installed in B300-6 Base; 4.1" (104 mm) installed in B501 Base

Operating Temperature Range: Air Velocity: 3.4 oz. (95 g) Isolator Load Rating:

*Please refer to your isolator base/module manual for isolator calculation instructi UL 268 listed for Open Air Protection. UL268A listed for Duct Applications. This sensor must be installed in compliance with the control panel system

WIRING GUIDE installation manual. The installation must meet the requirements of the Auinstallation manual. The installation must meet the requirements of the Authority Having Jurisdiction (AHJ). Sensors offer maximum performance when installed in compliance with the National Fire Protection Association (NFPA); see NFPA 72

GENERAL DESCRIPTION Models FSP-951 and FSP-951-IV are plug-in type smoke sensors that combine event of a fire. munication line to a control panel. Rotary dial switches are provided for setting the sensor's address. (See Figure 1.) 2. Set the desired address on the sensor address switches. (See Figure 1.) FIGURE 1. ROTARY ADDRESS SWITCHES:

3. Install the sensor into the sensor base. Push the sensor into the base while Two LEDs on the sensor are controlled by the panel to indicate sensor status. An output is provided for connection to an optional remote LED annunciator

Notifier panels offer different features sets across different models. As a result, certain features of the photoelectric sensors may be available on some control panels, but not on others. FSP-951 will support only FlashScan® protocol mode. FSP-951-IV will support either FlashScan or CLIP (Classic Loop Interface Protocol) mode. The possible features available in the photoelectric sensors, if supported by the control panel are: 1. The sensor's LEDs can operate in three ways—on, off, and blinking-and they can be set to red, green, or amber. This is controlled by the panel.

2. The remote output may be synchronized to the LED operation or controlled independent of the LEDs. 3. Devices are point addressable up to 159 addresses. Please refer to the operation manual for the UL listed control panel for specific operation. The photoelectric sensors require compatible addressable communications to function properly. Connect these sensors to listed-compatible control panels only.

plications, refer to NFPA 72 or the System Smoke Detector Application Guide, Duct Applications: FSP-951 and FSP-951-IV are listed for use in ducts. See Duct Smoke Detectors Applications Guide HVAG53 for details on pendant mount

maintenance, and will temporarily be out of service. Disable the system to the sensing chamber.

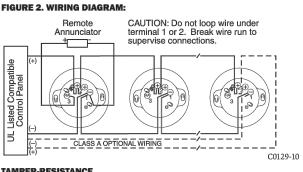
Before testing, notify the proper authorities that the system is undergoing 5. Use a vacuum cleaner or compressed air to remove dust and debris from

applications. NOTE: Intelligent photoelectric smoke sensors are also listed for use inside DNR(W) duct smoke detectors.

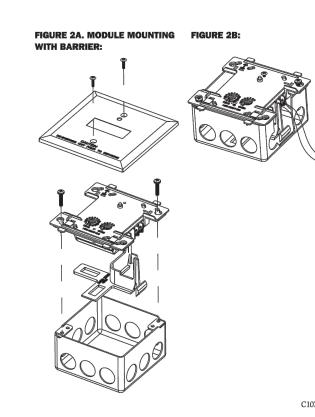
be color-coded to limit wiring mistakes and ease system troubleshooting. Ima photoelectronic sensing chamber with addressable-analog communications. Remove power from the communication line before installing sensors, The sensors transmit an analog representation of smoke density over a com
1. Wire the sensor base (supplied separately) as shown in the wiring

> turning it clockwise to secure it in place. 4. After all sensors have been installed, apply power to the control panel and activate the communication line. 5. Test the sensor(s) as described in the TESTING section of this manual.

shipping. Dust covers must be removed before the sensors can sense smoke. Remove sensors prior to heavy remodeling or construction.



Notifier recommends spacing sensors in compliance with NFPA 72. In low air flow applications with smooth ceilings, space sensors 30 feet apart (9.1 m). For specific information regarding sensor spacing, placement, and special applications refer to NEPA 72 or the System Cond. Placement, and special applications refer to NEPA 72 or the System Cond. Placement, and special applications refer to NEPA 72 or the System Cond. Placement, and special applications refer to NEPA 72 or the System Cond. Placement applications or the System Cond. Placement applications are specially s



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

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

32°F to 120°F (0°C to 49°C)

10% to 93% Non-condensing

SPECIFICATIONS

EOL Resistance:

Normal Operating Voltage:

Average Operating Current:

RELAY CONTACT RATINGS:

CURRENT RATING

0.7 A

0.9 A

GENERAL DESCRIPTION

configured for Form-C operation.

COMPATIBILITY REQUIREMENTS

Notifier system control panel (list available from Notifier).

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

Maximum Current Draw

Temperature Range:

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 $4'' \times 4'' \times 2^{1}/8''$ junction box, and the control module must be placed into the barrier and attached to the junction box (Figure 2A). The power-limited wiring must be placed into the isolated quadrant of the module barrier (Figure 2B). 1. Install module wiring in accordance with the job drawings and appropri-

ate wiring diagrams. Set the address on the mod 3. Secure module to electrical box (supplied by installer), see Figure 2A. Wire should be stripped to the appropriate length (recommended strip length is 1/4" to 3/8"). Exposed conductor should be secured under the clamping plate and should not protrude beyond the terminal block area. Caution: Do not loop wire under terminals. Break wire run to provide supervision of connections.

> B. Smoke Entry Sensitivity readings are available through the FACP. Refer to the manufacturer's published instructions for proper use. Additionally, canned aerosol simulated smoke (canned smoke agent) may be used for smoke entry testing of the smoke detector. Tested and approved aerosol smoke products include: 25S, 30S (PURCHECK) SMOKE CENTURIAN, SOLOA

prevent unwanted alarms.

The sensor can be tested in the following ways:

A. Functional: Magnet Test (P/N M02-04-01 or M02-09-00)

Hold the test magnet in the magnet test area as shown in Figure 3.

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

electronics and connections to the control panel.

The sensor should alarm the panel.

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

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 manufacturer'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 under CLEANING, and retested. When testing is complete, restore the system to normal operation and notify the proper authorities that the system is back in operation. Before removing the detector, notify the proper authorities that the smoke

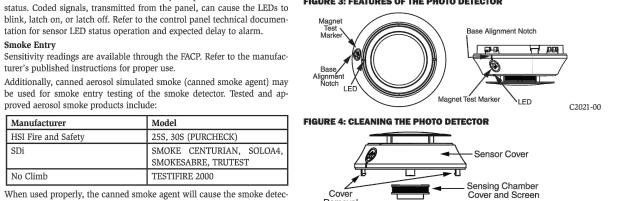
detector system is undergoing maintenance and will be temporarily out of service. Disable the zone or system undergoing maintenance to prevent un-1. Remove the sensor to be cleaned from the system. 2. Remove the sensor cover by pressing firmly on each of the four removal tabs that hold the cover in place. (See Figure 4.)

Notifier® and FlashScan® are registered trademarks of Honeywell International, Inc.

6. Reinstall the chamber cover/screen assembly by sliding the edge over the All sensors must be tested after installation and periodically thereafter. Testsensing chamber. Turn until it is firmly in place. ing methods must satisfy the Authority Having Jurisdiction (AHJ). Sensors
7. Replace the cover using the LEDs to align the cover and then gently pushoffer maximum performance when tested and maintained in compliance with ing it until it locks into place. Reinstall the detector. Test the detector as described in TESTING. This sensor can be functionally tested with a test magnet. The test magnet 10. Reconnect disabled circuits. electronically simulates smoke in the sensing chamber testing the sensor 11. Notify the proper authorities that the system is back on line

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

SPECIAL NOTE REGARDING SMOKE DETECTOR GUARDS Smoke detectors are not to be used with detector guards unless the combination has been evaluated and found suitable for that purpose. Two LEDs on the sensor are controlled by the panel to indicate sensor FIGURE 3: FEATURES OF THE PHOTO DETECTOR



Sensing Chamber C2022-00

3. Vacuum the screen carefully without removing it. If further cleaning is required continue with Step 4, otherwise skip to Step 7. 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 radiacte 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 release the approach to the variety 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.

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