| IDNET CHANNEL M1 | | ADDRESSES IN USE: 2 (0.8%) \| SPARE ADDRESSES: 248 (99.2%) | | SWITCH SETTINGS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Address | Device Type | Point Type | Location Description | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| M1-1 | 1AM | UTILITY | BUILDING 151 - FL1 ELEC 125 | 1-1 | X | | | | | | | ON | |
| M1-2 | NAC4PT | SIGNAL | BUILDING 151 - FL1 ELEC 125 | 1-2 | | X | | | | | | ON | |
| M1-3 | | | | | X | X | | | | | | ON | |
| M1-4 | | | | | | | X | | | | | ON | |
| M1-5 | | | | | X | | X | | | | | ON | |
| M1-6 | | | | | | X | X | | | | | ON | |
| M1-7 | | | | | X | X | X | | | | | ON | |
| M1-8 | | | | | | | | X | | | | ON | |
| M1-9 | | | | | X | | | X | | | | ON | |
| M1-10 | | | | | | X | | X | | | | ON | |
| M1-11 | | | | | X | X | | X | | | | ON | |
| M1-12 | | | | | | | X | X | | | | ON | |
| M1-13 | | | | | X | | X | X | | | | ON | |
| M1-14 | | | | | | X | X | X | | | | ON | |
| M1-15 | | | | | X | X | X | X | | | | ON | |
| M1-16 | | | | | | | | | X | | | ON | |
| M1-17 | | | | | X | | | X | | | | ON | |
| M1-18 | | | | | | X | | X | | | | ON | |
| M1-19 | | | | | X | X | | X | | | | ON | |
| M1-20 | | | | | | | X | X | | | | ON | |
| M1-21 | | | | | X | | X | X | | | | ON | |
| M1-22 | | | | | | X | X | X | | | | ON | |
| M1-23 | | | | | X | X | X | X | | | | ON | |
| M1-24 | | | | | | | X | X | | | | ON | |
| M1-25 | | | | | X | | X | X | | | | ON | |
| M1-26 | | | | | | X | X | X | | | | ON | |
| M1-27 | | | | | X | X | X | X | | | | ON | |
| M1-28 | | | | | | X | X | X | | | | ON | |
| M1-29 | | | | | X | X | X | X | | | | ON | |
| M1-30 | | | | | | X | X | X | | | | ON | |
| M1-31 | | | | | X | X | X | X | | | | ON | |
| M1-32 | | | | | | | | | X | | | ON | |
| M1-33 | | | | | X | | | | X | | | ON | |
| M1-34 | | | | | | X | | | X | | | ON | |
| M1-35 | | | | | X | X | | | X | | | ON | |
| M1-36 | | | | | | | X | | X | | | ON | |
| M1-37 | | | | | X | | X | | X | | | ON | |
| M1-38 | | | | | | X | X | | X | | | ON | |
| M1-39 | | | | | X | X | X | | X | | | ON | |
| M1-40 | | | | | | | | X | X | | | ON | |
| M1-41 | | | | | X | | X | | X | | | ON | |
| M1-42 | | | | | | X | | X | X | | | ON | |
| M1-43 | | | | | X | X | | X | X | | | ON | |
| M1-44 | | | | | | X | X | X | X | | | ON | |
| M1-45 | | | | | X | | X | X | X | | | ON | |
| M1-46 | | | | | | X | X | | X | | | ON | |
| M1-47 | | | | | X | X | X | | X | | | ON | |
| M1-48 | | | | | | | | X | X | | | ON | |
| M1-49 | | | | | X | | | X | X | | | ON | |
| M1-50 | | | | | | X | | X | X | | | ON | |
| M1-51 | | | | | X | X | | X | X | | | ON | |
| M1-52 | | | | | | X | | X | X | | | ON | |
| M1-53 | | | | | X | | X | X | X | | | ON | |
| M1-54 | | | | | | X | X | | X | | | ON | |
| M1-55 | | | | | X | X | | X | X | | | ON | |
| M1-56 | | | | | | | X | X | X | | | ON | |
| M1-57 | | | | | X | | X | X | X | | | ON | |
| M1-58 | | | | | | X | | X | X | | | ON | |
| M1-59 | | | | | X | X | | X | X | | | ON | |
| M1-60 | | | | | | X | X | X | X | | | ON | |
| M1-61 | | | | | X | | X | X | X | | | ON | |
| M1-62 | | | | | | X | X | X | X | | | ON | |
| M1-63 | | | | | X | X | X | X | X | | | ON | |
| M1-64 | | | | | | | | | | X | | ON | |
| M1-65 | | | | | X | | | | | X | | ON | |
| M1-66 | | | | | | X | | | | X | | ON | |
| M1-67 | | | | | X | X | | | | X | | ON | |
| M1-68 | | | | | | X | | | | X | | ON | |
| M1-69 | | | | | X | | X | | | X | | ON | |
| M1-70 | | | | | | X | X | | | X | | ON | |
| M1-71 | | | | | X | X | X | | | X | | ON | |
| M1-72 | | | | | | | | X | | X | | ON | |
| M1-73 | | | | | X | | | X | | X | | ON | |
| M1-74 | | | | | | X | | X | | X | | ON | |
| M1-75 | | | | | X | X | | X | | X | | ON | |
| M1-76 | | | | | | | X | X | | X | | ON | |
| M1-77 | | | | | X | | X | X | | X | | ON | |
| M1-78 | | | | | | X | X | X | | X | | ON | |
| M1-79 | | | | | X | X | X | X | | X | | ON | |
| M1-80 | | | | | | | | X | | X | | ON | |
| M1-81 | | | | | X | | | X | | X | | ON | |
| M1-82 | | | | | | X | | X | | X | | ON | |
| M1-83 | | | | | X | X | | X | | X | | ON | |
| M1-84 | | | | | | | X | X | | X | | ON | |
| M1-85 | | | | | X | | X | X | | X | | ON | |
| M1-86 | | | | | | X | X | X | | X | | ON | |
| M1-87 | | | | | X | X | X | X | | X | | ON | |
| M1-88 | | | | | | | X | X | | X | | ON | |
| M1-89 | | | | | X | | X | X | | X | | ON | |
| M1-90 | | | | | | X | | X | | X | | ON | |
| M1-91 | | | | | X | X | | X | | X | | ON | |
| M1-92 | | | | | | | X | X | | X | | ON | |
| M1-93 | | | | | X | | X | X | | X | | ON | |
| M1-94 | | | | | | X | X | X | | X | | ON | |
| M1-95 | | | | | X | X | X | X | | X | | ON | |
| M1-96 | | | | | | | | | X | X | | ON | |
| M1-97 | | | | | X | | | | X | X | | ON | |
| M1-98 | | | | | | X | | | X | X | | ON | |
| M1-99 | | | | | X | X | | | X | X | | ON | |
| M1-100 | | | | | | | X | | X | X | | ON | |

NOTE: THE LABELS SHOWN ABOVE WILL BE USED FOR PROGRAMMING PURPOSES.
THE LABELS ARE BASED UPON INFORMATION SHOWN ON THE ARCHITECTURAL DRAWINGS.
ANY CHANGES TO THESE LABELS MUST BE NOTED ON THE SUBMITTAL REVIEW, PRIOR TO PROGRAMMING.
POINTS SHOWN IN ITALIC TEXT REFER TO EXISTING DEVICES.

| POWER SUPPLY SUMMARY | | | Powered By Ext. Source Qty: | Standby Current | Alarm Current 24vdc Aux Totals |
|---|---|---|---|---|---|
| PANEL COMPONENTS POWERED BY POWER SUPPLY | | | | | |
| 4007-9101 | 1 | FIRE ALARM CONTROL PANEL 100 PT ADDRESSABLE - RED | | 0.1450 | 0.1900 |
| 4007-9801 | 2 | ZONE - RELAY MODULE | | 0.0830 | 0.3500 |
| 4007-9806 | 1 | SDACT MODULE | | 0.0300 | 0.0400 |
| | | | | | Components |
| | | | | | NAC Currents from Voltage Drops |
| | | | | | MAPNET/IDNet Device Addresses used |

| 4007 SUMMARY | | |
|---|---|---|
| Qty | Total Standby | Total Alarm |
| | 0.0000 | 0.0000 |
| 1 | 0.1450 | 0.1900 |
| 2 | 0.1660 | 0.7000 |
| 1 | 0.0300 | 0.0400 |
| | 0.3410 | 0.9300 |
| | 0.0000 | 4.5990 |
| 2 | 0.0016 | 0.0020 |
| Total | 0.3410 | 5.5290 |

| FACP BUILDING 151 - FL1 ELEC 125 4007 FACP | | | | Standby Current | Total Standby | Alarm Current | Total Alarm |
|---|---|---|---|---|---|---|---|
| Module | Qty | Description | | | | | |
| Panel Equipment | | | | | | | |
| 4007-9101 | 1 | FIRE ALARM CONTROL PANEL 100 PT ADDRESSABLE - RED | * | 0.1450 | 0.1450 | 0.1900 | 0.1900 |
| 4007-9801 | 2 | ZONE - RELAY MODULE | 1 | 0.0830 | 0.1660 | 0.3500 | 0.7000 |
| 4007-9806 | 1 | SDACT MODULE | | 0.0300 | 0.0300 | 0.0400 | 0.0400 |
| | | | Panel Totals | | 0.3410 | | 0.9300 |
| IDNet Addressable Devices (SLC) | | | | | | | |
| 4090-9001 | 1 | IDNET SUPERVISED 1AM | * | | | | |
| 4009-9201 | 1 | 4009 IDNET NAC EXTENDER, 120 VAC | * | | | | |
| Notification Appliances | | | Setting | | | | |
| 4906-9101 | 3 | V/O MC NON-ADDRESS, RED, WALL | 15 | 0.0000 | 0.0000 | 0.0600 | 0.1800 |
| 4906-9137 | 3 | TRUEALERT MULTI-TONE HORN/STROBE, RED, WALL | 15 | 0.0000 | 0.0000 | 0.0810 | 0.2430 |
| 4906-9139 | 1 | 0 | 15 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 4906-9139 | 7 | HICD A/V MC NONADDRESS RED WALL | 177 | 0.0000 | 0.0000 | 0.4180 | 2.9260 |
| EXIST-DEV1 | 1 | EXISTING SG NOTIFICATION APPLIANCES | | 0.0000 | 0.0000 | 1.2500 | 1.2500 |
| | | | Peripheral Totals | | 0.0000 | | 4.5990 |
| | | | Added Current for EPS Conversion of 24 to 29 Volt IDNac Devices | | 0.0000 | | 0.0000 |
| | | | RUI Totals | 0 | 0.0000 | | 0.0000 |
| | | | Address Totals | 2 Addresses | 0.0016 | | 0.0020 |
| | | | System Totals*: | Standby | 0.3426 | Alarm | 5.5310 |

* Device Address current draw included below (See Additional Current Draws):
1. 2-wire detector alarm current is included in the alarm current of the Initiating Device Circuit.

| Battery Set #1 (Cabinet/Charger #1) | | | Standby Current | Standby Total | Alarm Current | Alarm Total |
|---|---|---|---|---|---|---|
| Select ALL Power Supplies on this battery set: | | | | | | |
| 4007 | | | | 0.3410 | | 5.5290 |
| | | | Sub Total | 0.3410 | | 5.5290 |
| Additional Current Draws: | | | | | | |
| MAPNET/IDNet Device Address Communication Current | | 2 | x 0.000800 | = 0.0016 | x 0.001000 | = 0.0020 |
| | | | Sub Total | 0.3426 | | 5.5310 |
| Spare addressable point capacity | 0% | 0 | x 0.0008 | = 0.0000 | x 0.001 | = 0.0000 |
| | | | Total | 0.3426 | | 5.5310 |
| Standby Time = | 24 | Hrs | x 0.3426 | = 8.2224 | Standby Ah | |
| Alarm Time = | 5 | Min | 0.08333 x 5.531 | = 0.4609 | Alarm Ah | |
| | | | | 8.6833 | | |
| Additional Spare Battery Capacity = | 0% | | + | 0.0000 | | |
| | | | | 8.6833 | | |
| Battery Discharge Factor = | 20% | | + | 1.7367 | | |
| Minimum Battery Required | 2081-9288 12AH (2x) | | | 10.4200 | | |
| Battery Supplied | 2081-9275 18AH (2x) | | | | | |

* System Totals represent total system current requirements. Those currents may be distributed between multiple battery sets or power supplies as shown above.

| VOLTAGE DROP SUMMARY | | | | |
|---|---|---|---|---|
| Plan Circuit | Description | | Load | % Drop |
| V1 | ADA/COMM RMS | SIG1 | 0.977A | 5.69% |
| V2 | ADA/COMM RMS | SIG2 | 1.254A | 10.06% |
| V3 | ADA/COMM RMS | SIG3 | 1.118A | 8.07% |
| V4 | EXISTING VISUALS | SIG4 | 1.250A | 9.41% |
| | | | 4.599A | Total |

POINTS SHOWN IN ITALIC TEXT REFER TO EXISTING DEVICES.

V1 — Distributed Load Voltage Drop

| | | | |
|---|---|---|---|
| Allowable % Drop: | 21.6% | Wire Res. Per Ft. | 0.003070 @ 75° Celsius |
| Wire Gauge: | 14ga | Min. Device Voltage: | 16.vdc |
| Starting Voltage: | 20.4vdc | % Voltage Drop | 5.69% |
| Circuit Capacity | 3.A | | |

| Device # | PID | Setting | Distance (Feet) | Device Current (Normal Operation) | Voltage Drop (Normal Operation) | Voltage At Device (Normal Operation) |
|---|---|---|---|---|---|---|
| V1-1 | 4906-9139 | 177cd | 100 | 0.418 | 0.600 | 19.80 |
| V1-2 | 4906-9139 | 177cd | 60 | 0.418 | 0.806 | 19.59 |
| V1-3 | 4906-9137 | 15cd | 125 | 0.081 | 0.914 | 19.49 |
| V1-4 | 4906-9101 | 15cd | 65 | 0.060 | 0.938 | 19.46 |
| V1-5 | 4906-9139 | 15cd | 20 | 0.000 | 0.938 | 19.46 |
| | | Totals: | 370 Ft. | 0.977A | | |

V2 — Distributed Load Voltage Drop

| | | | |
|---|---|---|---|
| Allowable % Drop: | 21.6% | Wire Res. Per Ft. | 0.003070 @ 75° Celsius |
| Wire Gauge: | 14ga | Min. Device Voltage: | 16.vdc |
| Starting Voltage: | 20.4vdc | % Voltage Drop | 10.06% |
| Ckt Capacity | 3.A | | |

| Device # | PID | Setting | Distance (Feet) | Device Current (Normal Operation) | Voltage Drop (Normal Operation) | Voltage At Device (Normal Operation) |
|---|---|---|---|---|---|---|
| V2-1 | 4906-9139 | 177cd | 50 | 0.418 | 0.385 | 20.02 |
| V2-2 | 4906-9139 | 177cd | 300 | 0.418 | 1.925 | 18.48 |
| V2-3 | 4906-9139 | 177cd | 50 | 0.418 | 2.053 | 18.35 |
| | | Totals: | 400 Ft. | 1.254A | | |

V3 — Distributed Load Voltage Drop

| | | | |
|---|---|---|---|
| Allowable % Drop: | 21.6% | Wire Res. Per Ft. | 0.003070 @ 75° Celsius |
| Wire Gauge: | 14ga | Min. Device Voltage: | 16.vdc |
| Starting Voltage: | 20.4vdc | % Voltage Drop | 8.07% |
| Ckt Capacity | 3.A | | |

| Device # | PID | Setting | Distance (Feet) | Device Current (Normal Operation) | Voltage Drop (Normal Operation) | Voltage At Device (Normal Operation) |
|---|---|---|---|---|---|---|
| V3-1 | 4906-9137 | 15cd | 75 | 0.081 | 0.515 | 19.89 |
| V3-2 | 4906-9101 | 15cd | 20 | 0.060 | 0.642 | 19.76 |
| V3-3 | 4906-9139 | 177cd | 20 | 0.418 | 0.762 | 19.64 |
| V3-4 | 4906-9101 | 15cd | 225 | 0.060 | 1.534 | 18.87 |
| V3-5 | 4906-9137 | 15cd | 20 | 0.081 | 1.596 | 18.80 |
| V3-6 | 4906-9139 | 177cd | 20 | 0.418 | 1.647 | 18.75 |
| | | Totals: | 380 Ft. | 1.118A | | |

V4 — Distributed Load Voltage Drop

| | | | |
|---|---|---|---|
| Allowable % Drop: | 21.6% | Wire Res. Per Ft. | 0.003070 @ 75° Celsius |
| Wire Gauge: | 14ga | Min. Device Voltage: | 16.vdc |
| Starting Voltage: | 20.4vdc | % Voltage Drop | 9.41% |
| Ckt Capacity | 3.A | | |

| Device # | PID | Setting | Distance (Feet) | Device Current (Normal Operation) | Voltage Drop (Normal Operation) | Voltage At Device (Normal Operation) |
|---|---|---|---|---|---|---|
| *V4-1* | *EXIST-DEV1* | | *250* | *1.250* | *1.919* | *18.48* |
| | | Totals: | 250 Ft. | 1.250A | | |

## NAC 1 CALCULATIONS TYPICAL FOR ALL BUILDINGS

NAC 1 ALL BUILDINGS 4009 NAC VOLTAGE DROPS — PID Setting: EXIST-DEV1

WIRE RESISTANCE BASED ON TABLE 8 FROM NATIONAL ELECTRICAL CODE (UNCOATED SOLID COPPER WIRE) @ 75 Celsius

| | | | | | | | | | | | | Device Type | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Supv. Current | 0.0000 |
| | | | | | | | | | | | | Alarm Current | 1.7500 |
| | | | | | | | | | | | | Alarm Current @ 23 Volts | 0.0000 |
| NOTIFICATION CIRCUIT DESCRIPTION | Power Supply | Panel Circuit | Plan Ckt. | Dist. (D) Feet | Wire Gauge | Wire Res. / Ft. (R) | Total Alarm (A) | V. Drop (A*2D*R) | Volt @ End | % Volt Drop | Min Device Voltage | Max Distance | |
| EXISTING CIRCUIT | 4009 | SIG1 | NAC1:V1 | 326 | 14ga | 0.0031 | 1.750 | 3.503 | 16.897 | 17.17% | 16vdc | 326 Ft. | 1 |
| EXISTING CIRCUIT | 4009 | SIG2 | NAC1:V2 | 326 | 14ga | 0.0031 | 1.750 | 3.503 | 16.897 | 17.17% | 16vdc | 326 Ft. | 1 |
| EXISTING CIRCUIT | 4009 | SIG3 | NAC1:V3 | 326 | 14ga | 0.0031 | 1.750 | 3.503 | 16.897 | 17.17% | 16vdc | 326 Ft. | 1 |
| EXISTING CIRCUIT | 4009 | SIG4 | NAC1:V4 | 326 | 14ga | 0.0031 | 1.750 | 3.503 | 16.897 | 17.17% | 16vdc | 326 Ft. | 1 |

NOTE:
LUMP SUM METHOD WAS USED TO CALCULATE ALLOWABLE VOLTAGE DROP. THIS METHOD ALLOWS FOR A SMALL MARGIN OF SAFETY, TAKING INTO CONSIDERATION THAT THE ACTUAL INSTALLED CIRCUIT ROUTING MAY DIFFER FROM WHAT IS SHOWN ON THE SHOP DRAWINGS. IF THE ACTUAL CIRCUIT LENGTH IS GOING TO EXCEED THE MAXIMUM ALLOWABLE CIRCUIT LENGTH, CONTACT YOUR LOCAL SIMPLEXGRINNELL DISTRICT OFFICE.

## NAC 1 CALCULATIONS TYPICAL FOR ALL BUILDINGS

| NAC 1 ALL BUILDINGS 4009 NAC | | | | | | |
|---|---|---|---|---|---|---|
| Module | Qty | Description | Standby Current | Total Standby | Alarm Current | Total Alarm |
| Panel Equipment | | | | | | |
| 4009-9201 | 1 | 4009 IDNET NAC EXTENDER, 120 VAC | 0.0850 | 0.0850 | 0.1850 | 0.1850 |
| | | Panel Totals | | 0.0850 | | 0.1850 |
| Notification Appliances | | Setting | | | | |
| EXIST-DEV1 | 4 | EXISTING SG NOTIFICATION APPLIANCES | 0.0000 | 0.0000 | 1.7500 | 7.0000 |
| | | Peripheral Totals | | 0.0000 | | 7.0000 |
| | | Added Current for EPS Conversion of 24 to 29 Volt IDNac Devices | | 0.0000 | | 0.0000 |
| | | RUI Totals 0 | | 0.0000 | | 0.0000 |
| | | Address Totals 0 Addresses | | 0.0000 | | 0.0000 |
| | | System Totals*: Standby | | 0.0850 | Alarm | 7.1850 |

| Battery Set #1 (Cabinet/Charger #1) | | | Standby Current | Standby Total | Alarm Current | Alarm Total |
|---|---|---|---|---|---|---|
| Select ALL Power Supplies on this battery set: | | | | | | |
| 4009 | | | | 0.0850 | | 7.1850 |
| | | | Sub Total | 0.0850 | | 7.1850 |
| | | | Total | 0.0850 | | 7.1850 |
| Standby Time = | 24 | Hrs | x 0.0850 | = 2.0400 | Standby Ah | |
| Alarm Time = | 5 | Min | 0.08333 x 7.185 | = 0.5988 | Alarm Ah | |
| | | | | 2.6388 | | |
| Additional Spare Battery Capacity = | 0% | | + | 0.0000 | | |
| | | | | 2.6388 | | |
| Battery Discharge Factor = | 20% | | + | 0.5278 | | |
| Minimum Battery Required | 2081-9272 6.2AH (2x) | | | 3.1665 | | |
| Battery Supplied | 2081-9274 10AH (2x) | | | | | |

* System Totals represent total system current requirements. Those currents may be distributed between multiple battery sets or power supplies as shown above.


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# NORTHFIELD GREEN BUILDINGS 147/149/151

NORTHFIELD GREEN
149 ALLEN AVENUE
PORTLAND, ME 04103-3734

| ISSUE LOG | | | | |
|---|---|---|---|---|
| MARK | DATE | CAD | CHK | DESCRIPTION |

Revisions shown with △ symbol

| | |
|---|---|
| DRAWN BY: | PRANESH/TT |
| CHECKED BY: | TT |
| ISSUE DATE: | 2/2/18 |
| JOB #: | 147428511 |
| PROJECT #: | 147:604471601 |

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SYSTEM:
FIRE ALARM SYSTEM

SHEET:
CHARTS AND CALCULATIONS

FA-602

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