

# ONYX® Series

## Panel Circuit Modules



### Peripheral Devices

#### General

**Panel Circuit Modules** provide NOTIFIER's **NFS-640** with up to 64 panel (main FACP) circuits, and the **NFS-3030** with up to 96 panel circuits. Switches are provided for each circuit to provide manual ON/OFF of each output circuit.

**NFS-640:** Supports up to eight output modules — each with an optional expander. This includes the ICM-4RK, CRM-4RK, VCM-4RK, and DCM-4RK (no expander option).

**NFS-3030:** Supports up to twelve input or output modules. This includes the IZM-8RK (*for NFS-3030 only*; with or without Class A option), ICM-4RK, CRM-4RK, VCM-4RK, or DCM-4RK (no expander option for DCM-4RK).

- Four Form-C (SPDT) relay contacts are available on the **CRM-4RK** Control Relay Module to control auxiliary devices. The **CRE-4** Control Relay Expander will provide four additional Form-C (SPDT) relay contacts for a total of eight.
- The **ARM-4** Auxiliary Relay Module is used for high power switching and may be slaved to a CRM-4RK/CRE-4 module.
- The **ICM-4RK** Notification Appliance Circuit Module provides four Style Y (Class B) or Style Z (Class A) supervised audio/visual alarm Notification Appliance Circuits, expandable to eight with the **ICE-4**. The CRE-4 can be used (*one expander option per ICM-4RK*) to provide the ICM-4RK with four additional SPDT control relays.
- The **IZM-8RK** provides eight Class B (Style B) Initiating Zones (Initiating Device Circuits) that can be selected for Class A (Style D) with the addition of an **IZE-A** expander module. Each IZM-8RK/IZE-A zone can be programmed for a variety of initiating devices functions including: dry contact input, two-wire smoke detection, flow, tamper, non-fire, and many others. **Note:** *IZM-8RK/IZE-A for NFS-3030 only.*
- The **VCM-4RK** Voice Control Module provides four Style Y (Class B) or Style Z (Class A) speaker circuits, four Style Y (Class B) telephone circuits, eight manual select switches and indicators. **VCE-4** Voice Control Expander adds four circuits to VCM-4. **Note:** *VCM-4/VCE-4 combination must be eight speaker or eight phone circuits.*
- The **DCM-4RK** Dual Channel Module provides four Class B (Style Y) or Class A (Style Z) speaker circuits plus four channel A/B select relays. Not expandable.

#### Applications and Features

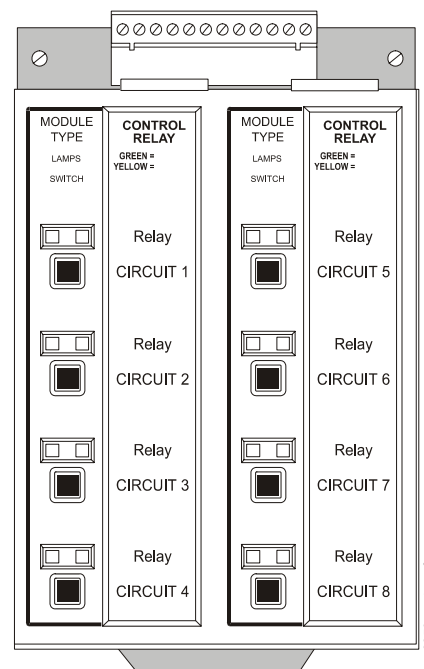
##### FOR CRM-4RK, CRE-4, AND ARM-4:

The **CRM-4RK** provides up to four Form-C (SPDT) relay contacts for auxiliary control functions.

The **CRE-4** expands the CRM-4RK to a total of eight Form-C (SPDT) relay contacts.

The **ARM-4** module can be used when greater load switching capability is required. The ARM-4 is slaved to a CRM-4RK or CRE-4 module.

- Four Form-C (SPDT) relay contacts.
- May be expanded to eight Form-C relay contacts.
- 20 amp N.O. (normally open contacts) and 10 amp N.C. (normally closed contacts) switching with ARM-4.



**Control Relay Module (CRM-4RK)**

- Green LEDs to indicate relay activation or I/O mapping.
- Amber LEDs to indicate relay disabled, module fault or system communications failure.
- Control switch for Manual On/Off of each relay.

##### FOR ICM-4RK AND ICE-4:

Each **ICM-4RK** provides four supervised audio-visual alarm notification circuits. The ICM-4K may be expanded with **one** of the following:

- Use the **ICE-4** to provide four additional Style Y (Class B) or Style Z (Class A) supervised alarm indicating circuits; OR...
  - Use the **CRE-4** to provide four SPDT control relays.
    - Four alarm notification circuits, expandable to eight.
    - Supervised, power-limited outputs, suitable for use with limited energy cable.
    - Outputs resound on subsequent alarm.
    - Outputs may be programmed as silenceable or nonsilenceable.
- Each circuit is provided with a switch for manual activation/deactivation.
  - LEDs for indication of circuit activation and trouble.
  - Separate input connections for audible-visual circuit power.

##### FOR IZM-8RK AND IZE-A:

The **IZM-8RK** Initiating Zone (Initiating Device Circuit) Module provides eight Style B (Class B) alarm initiating or supervisory circuits. The **IZE-A** Initiating Zone Expander, when used with the **IZM-8RK**, provides eight Style D (Class A) alarm initiating or supervisory circuits.

- Eight zones Style B (Class B) with IZM-8RK; eight zones Style D (Class A) with both IZM-8RK and IZE-A.

- Powered loop allows the use of two-wire smoke detectors/ devices. Alarm verification is optional, although if selected, non-fire circuits are not allowed on the same module.
- Initiating circuits are power-limited for use with limited-energy cable.
- Alarm and Trouble LEDs are provided for individual annunciation of each zone.
- Red LEDs indicate Alarm condition.
- Yellow LEDs indicate circuit Trouble, circuit Disabled, or System communication failure.
- LEDs flash for unacknowledged alarms or troubles and illuminate steady after being acknowledged or silenced.

**FOR VCM-4RK AND VCE-4:**

The **VCM-4RK** provides up to four speaker or telephone circuits, expandable to eight with the **VCE-4** (jumper-selectable for either four speaker circuits or four telephone circuits, expandable to eight of the same type).

- Four circuits expandable to eight.
- Slide-in label per circuit.
- Soft-feel rubber keypad (VCM-4RK).
- Jumper-selectable for speaker or telephone operation.
- Switches to activate or deactivate the speakers circuits or select a telephone circuit call.
- Green On and amber Trouble LEDs for each circuit.
- Supports 25 or 70.7 (Style Y, Class B only) volt speakers — switches up to 30 watts per circuit or 240 watts per module pair (120 on VCM-4RK and 120 on VCE-4).
- Can mount ICE-4 below VCM-4RK for four speaker or telephone circuits and four strobe circuits.

**FOR DCM-4RK:**

The **DCM-4RK** provides up to four dual channel speaker circuits. Dual channel function allows two speaker circuits to play two different messages at the same time.

- Four speakers per DCM-4RK module.
- Slide-in label per circuit.
- Soft-feel rubber keypad.

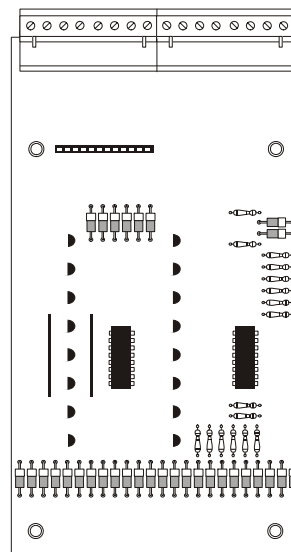
- Switches to activate or deactivate the speakers circuits and the channel (message playing — Message One or Message Two) per circuit.
- Green On and amber Trouble LEDs for each circuit; green On/Off to indicate which message is playing.

**Construction**

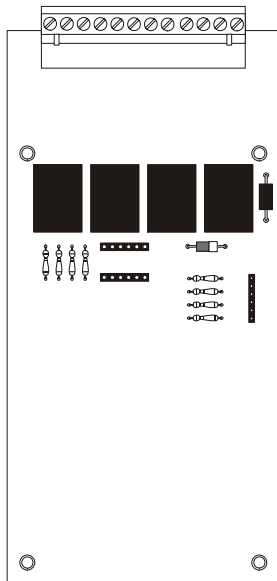
Modules consist of a panel-mounted printed circuit card with an integral tactile rubber membrane switch. Windows in the keypad allow viewing the status and trouble LEDs. Slide-in pockets allow the insertion of descriptive labels for the circuits. Removable terminal blocks are provided for connection of field wiring.

Expansion modules consist of a printed circuit card which mounts behind the master module with the hardware provided. Removable field-wiring terminal blocks are included.

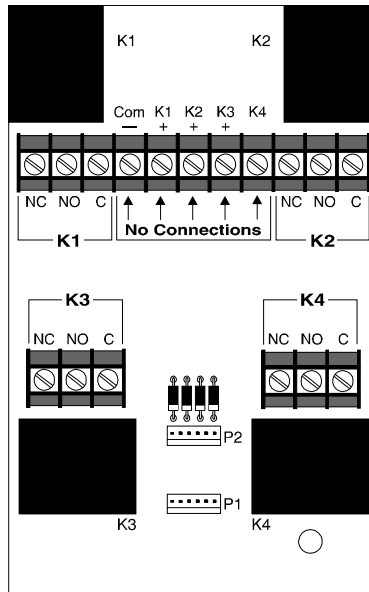
The **ARM-4** consists of a printed circuit card which mounts on the bottom of the **CHS-4N** chassis.



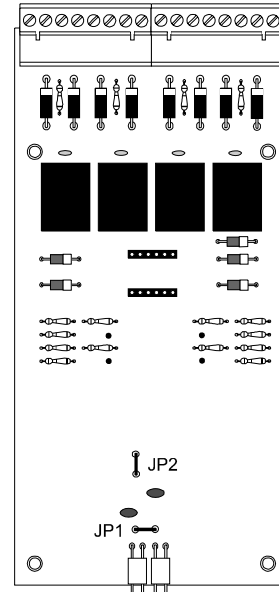
**Initiating Zone (IDC) Expander (ICE-A)**



**Control Relay Expander (CRE-4)**



**Auxiliary Relay Module (ARM-4)**



**Notification Appliance Circuit Expander (ICE-4) and Voice Control Expander (VCE-4)**

## Installation

Expansion modules mount to the back of the master modules with the hardware provided.

The master module mounts in one module position of a **CHS-4N** or **CHS-M2** chassis using two captive screws. The Expander Ribbon cable connects the module to the CPU module.

The **ARM-4** is mounted on the rear of the CHS-4N or CHS-MZ chassis (adjacent to the controlling CRM-4RK/CRE-4), and may be located under an **ICM-4RK**, or **CRM-4RK** (with or without expanders).

## Agency Listings and Approvals

These listings and approvals apply to the modules specified in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **UL Listed:** S635
- **ULC Listed:** CS118
- **MEA Listed:** 317-01-E (NFS-640, except IZM-8RK, IZE-A); 345-02-E (NFS-3030); 232-06-E (NFS2-3030)
- **FM Approved:** NFS-640 (except IZM-8RK, IZE-A); NFS-3030
- **California State Fire Marshall:** 7165-0028:214 (NFS-640, except IZM-8RK, IZE-A); 7170-0028:216 (NFS-640, except VCM-4RK, IZM-8RK, IZE-A); 7165-0028:223 (NFS-3030, NFS2-3030); 7170-0028:228 (NFS-3030, NFS2-3030)
- **U.S. Coast Guard:** 161-002/42/41 (except IZE-A, VCM-4RK, VCE-4, DCM-4RK)
- **Lloyd's Register:** 02/60007 (except ICE-4, CRE-4, VCE-4, ARM-4, IZE-A)
- **China Classification Society (CCS):** NL05T00001
- **Fire Service Department (Hong Kong)**
- **City of Chicago** approved: Class1, Class 2
- **City of Denver** approved

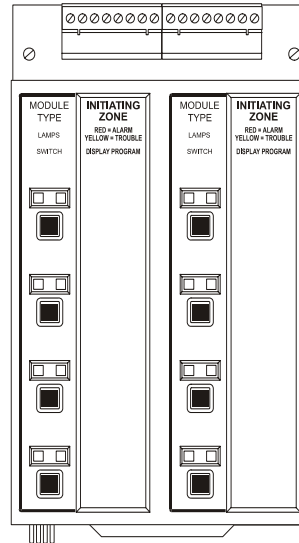
## Specifications

**Temperature and humidity ranges:** This system meets NFPA requirements for operation at 0°C to 49°C (32°F to

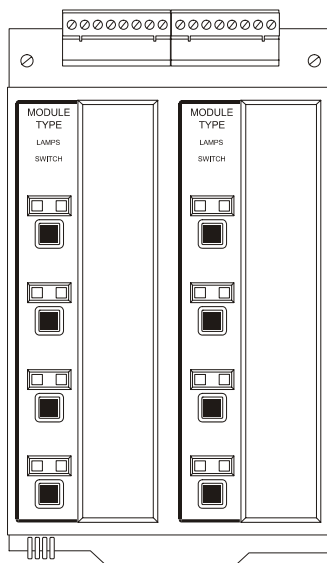
120°F); and at a relative humidity (noncondensing) of 85% at 30°C (86°F) per NFPA, and 93% ± 2% at 32°C ± 2°C (89.6°F ± 1.1°F) per ULC. However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and all peripherals be installed in an environment with a nominal room temperature of 15°C to 27°C (60°F to 80°F)

### FOR CRM-4RK, CRE-4, AND ARM-4:

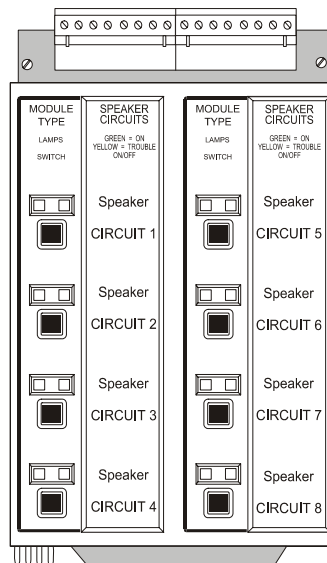
- Programmable for activation when an alarm is detected for an individual zone, a group of zones, or all zones.
- Form-C (SPDT) contacts UL rated at 5 amps @ 30 VDC or 125 VAC (resistive); and 2 amps @ 125 VAC (inductive) [CRM-4RK and CRE-4 modules].
- Form-C (SPDT) contacts rated at 20 amps @ 30 VDC or 125 VAC or 250 VAC (normally open contacts) or 10 amps @ 30 VDC or 125 VAC or 250 VAC (normally closed contacts) [ARM-4 module].
- Current draw: **For CRM-4RK**, 0.007 A in standby, 0.072 A in alarm. **For CRE-4**, 0 A in standby, 0.065 A in alarm. **For ARM-4**, 0 A in standby, 0.148 A in alarm.



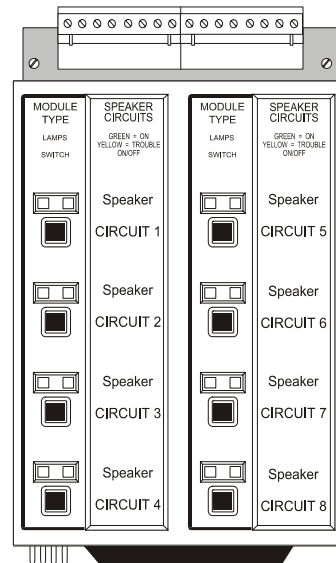
**Initiating Zone (IDC) Module (IZM-8RK)**



**Notification Appliance Circuit Module (ICM-4RK)**



**Voice Control Module (VCM-4RK)**



**Dual Channel Module (DCM-4RK)**

#### **FOR ICM-4RK AND ICE-4:**

- Maximum current per module is 6.0 amps.
- Maximum current per circuit is 3.0 amps.
- End-of-line device is a 4.7 K ohm, 1/2 Watt resistor, for Class B configuration.
- Current draw: **For ICM-4RK**, 0.007 A in standby, 0.072 A in alarm. **For ICE-4**, 0.001 A in standby, 0.065 A in alarm.

**Note:** Each ICM-4RK or ICE-4 may be powered from two separate power supplies. Use one main power supply plus one APS-6R, or use two APS-6Rs to provide a total alarm current per module or expander of 6.0 amps with a maximum current per circuit of 3.0 amps.

#### **FOR IZM-8RK AND IZE-A:**

- Loop voltage (standby): 17 – 26.5 VDC.
- Ripple: 100 mV maximum.
- Detector standby current: 2.5 maximum.
- Loop resistance: 100 ohm maximum.
- Alarm impedance: 400 ohm minimum to 1150 ohm maximum.
- Minimum voltage with minimum alarm impedance: 10 VDC.
- Maximum alarm current available: 45 mA.
- End-of-line device is a 4.7 K ohm, 1/2 Watt resistor, for Class B configuration. Note: IZM-8 with IZE-A does not require an EOL device.
- Current draw: **For IZM-8RK**, 0.047 A in standby, 0.047 A in alarm. **For IZE-A**, 0.004 A in standby, 0.047 A in alarm.

#### **FOR VCM-4RK AND VCE-4:**

- Up to 30 watts per circuit or 120 watts per VCM-4RK or VCE-4.
- Up to seven telephones on the telephone circuit (on any circuit).
- 25 or 70.7 Vrms speakers.
- End-of-line device is a 4.7 K ohm, 1/2 watt resistor, for Class B configuration for 25 V; or 4.7 K ohm, 2 watts for 70.7 V.
- Select switches by circuit with soft-feel, rubber tactile keypad.
- Current draw: **For VCM-4RK**, 0.007 A in standby, 0.040 A in alarm. **For VCE-4**, 0.001 A in standby, 0.040 A in alarm.

#### **FOR DCM-4RK**

- Four dual-channel circuits (expansion to eight circuits not permitted).
- 25 or 70.7 Vrms speakers.
- End-of-line device is a 4.7 K ohm, 1/2 watt resistor, for Class B configuration; 4.7 K ohm, 2 watts for 70.7 Vrms.
- Select switches by circuit with soft-feel, rubber tactile keypad.
- Current draw: 0.008 A in standby, 0.080 A in alarm.

## **Product Line Information**

<b>CRM-4RK</b>	Control Relay Module, rubber keypad.
<b>CRE-4</b>	Control Relay Expander.
<b>ARM-4</b>	Auxiliary Relay Module.
<b>ICM-4RK</b>	Notification Appliance Circuit Module, rubber keypad.
<b>ICE-4</b>	Notification Appliance Circuit Expander.
<b>IZM-8RK</b>	Initiating Zone (Initiating Device Circuit) Module (NFS-3030 only).
<b>IZE-A</b>	Initiating Zone Expander; allows Class A/B selection for IZM-8RK (NFS-3030 only).
<b>VCM-4RK</b>	Four-circuit Voice Control Module, rubber keypad. Selected as either a speaker or telephone module.
<b>VCE-4</b>	Voice Control Expander. Expands the VCM-4 to eight circuits.
<b>DCM-4RK</b>	Dual Channel Module, rubber keypad.
<b>CHS-4MB</b>	Expansion Chassis. Mounts up to four modules. Includes <b>CHS-4N</b> , <b>MP-1B</b> (Module Dress Panel), and <b>Expander Ribbon Cable</b> .

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