KIDDE KE-IO3122 Intelligent Addressable Two Four Input Output Module

# KIDDE KE-IO3122 Intelligent Addressable Two Four Input Output Module Installation Guide



Contents



## KIDDE KE-IO3122 Intelligent Addressable Two Four Input Output Module


## Product Usage Instructions

**WARNING:** Electrocution hazard. Ensure all power sources are removed before installation.

**Caution:** Follow EN 54-14 standards and local regulations for system planning and design.

- Use the NeXT System Builder application to determine maximum module capacity.
- Install the module inside a compatible protective housing (eg, N-IO-MBX-1 DIN Rail Module Box).
- Earth is the protective housing.
- Mount the housing securely on the wall.
- Connect loop wires according to Table 1 and use recommended cable specifications from Table 2.
- Set the device address (001-128) using the DIP switch. Refer to the provided figures for configuration.
- The input mode is set at the control panel. Various modes are available with corresponding resistor requirements (refer to Table 3).

## FAQ

- **Q:** Can I install the module outdoors?
- **A:** No, the module is suitable for indoor installation only.
- **Q:** How do I know the maximum distance for loop wiring?
- **A:** The maximum distance from the input terminal to the end of the line is 160m.
- **Q:** What firmware version is compatible with this module?
- **A:** The module is compatible with firmware version 5.0 or later for 2X-A Series fire alarm control panels.

**Figure 1: Device overview (KE-IO3144)**

1. Loop terminal block
2. Mounting holes (×4)
3. Test (T) button
4. Channel (C) button
5. Input terminal blocks
6. Input status LEDs
7. Output status LEDs

8. Output terminal blocks
9. DIP switch
10. Device status LED

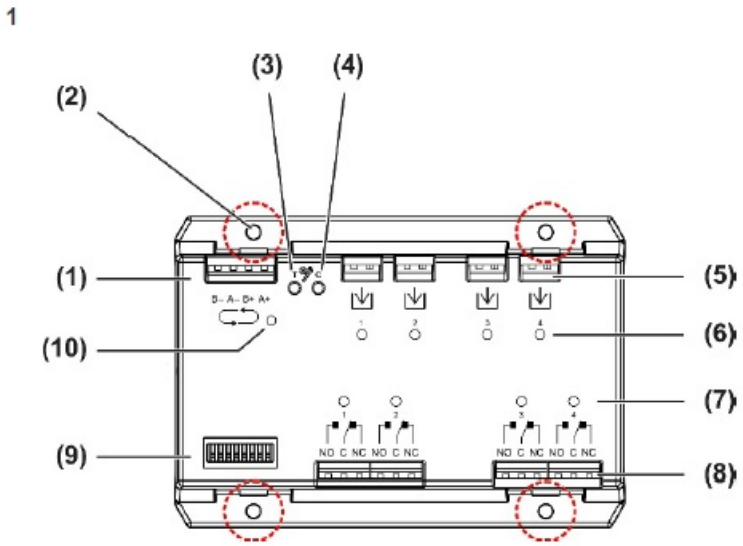
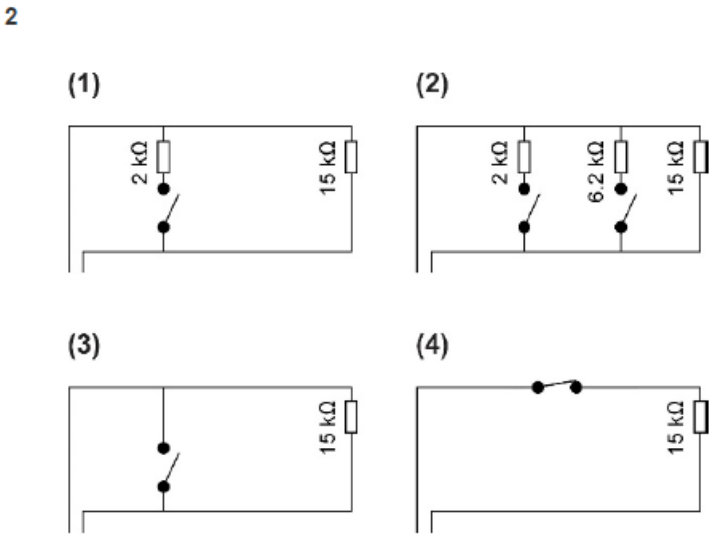



**Figure 2: Input connections**

1. Normal mode
2. Bi-Level mode
3. Normally Open mode
4. Normally Closed mode




## Description

This installation sheet includes information on the following 3000 Series input/output modules.

| Model | Description | Device type |
|---|---|---|
| KE-IO3122 | Intelligent addressable 2 input/output module with integr ated short circuit isolator | 2IOni |
| KE-IO3144 | Intelligent addressable 4 input/output module with integr ated short circuit isolator | 4IOni |

- Each module includes an integrated short circuit isolator and is suitable for indoor installation.
- All 3000 Series modules support the Kidde Excellence protocol and are compatible for use with 2X-A Series fire alarm control panels with firmware version 5.0 or later.

## Installation

**WARNING:** Electrocution hazard. To avoid personal injury or death from electrocution, remove all sources of power and allow stored energy to discharge before installing or removing equipment.
**Caution:** For general guidelines on system planning, design, installation, commissioning, use, and maintenance, refer to the EN 54-14 standard and local regulations.

### Installing the module

- Always use the NeXT System Builder application to calculate the maximum number of modules that can be installed.
- The module must be installed inside a compatible protective housing (not supplied) – we recommend the N-IO-MBX-1 DIN Rail Module Box. Remember to earth the protective housing.
- **Note:** An alternative protective housing may be used providing it meets the specifications indicated in “Protective housing” on page 4.
- Mount the protective housing onto the wall using a suitable mounting system for the wall characteristics.

### Wiring the module

Connect the loop wires as shown below. See Table 2 for recommended cable specifications.

**Table 1: Loop connection**

| Terminal | Description |
|---|---|
| B– | Negative line (–) |
| A– | Negative line (–) |
| B+ | Positive line (+) |
| A+ | Positive line (+) |

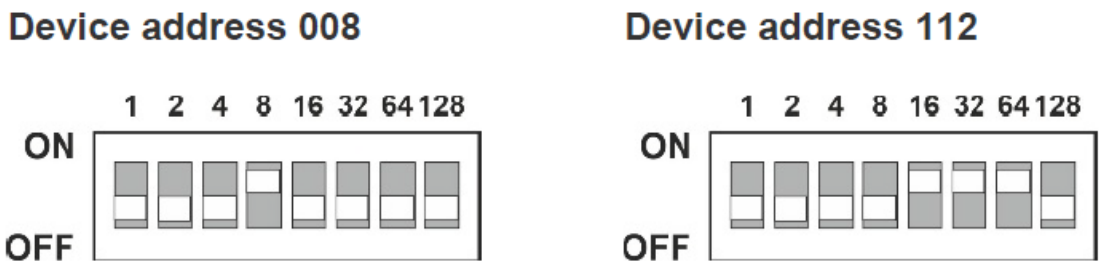
**Table 2: Recommended cable specifications**

| Cable | Specification |
|---|---|
| Loop | 0.13 to 3.31 mm² (26 to 12 AWG) shielded or unshielded twisted-pair (52 Ω and 500 nF max.) |
| Output | 0.13 to 3.31 mm² (26 to 12 AWG) shielded or unshielded twisted-pair |
| Input [1] | 0.5 to 4.9 mm² (20 to 10 AWG) shielded or unshielded twisted-pair |
| [1] The maximum distance from the input terminal to the end of the line is 160 m. | |

- [1] The maximum distance from the input terminal to the end of the line is 160 m.
- See Figure 2 and “Input configuration” below for input connections.

**Addressing the module**

- Set the device address using the DIP switch. The address range is 001-128.
- The configured device address is the sum of the switches in the ON position, as shown in the figures below.




## Input configuration

The module input mode is configured at the control panel (Field setup > Loop device configuration).
The available modes are:

- Normal
- Bi-Level
- Normally Open (NO)
- Normally Closed (NC)

Each input can be set to a different mode if required.
The resistors required for each mode are shown below.

**Table 3: Input configuration resistors**

| | End-of-line resistor | Series resistor [1] | Series resistor [1] |
|---|---|---|---|
| **Mode** | **15 kΩ, ¼ W, 1%** | **2 kΩ, ¼ W, 5%** | **6.2 kΩ, ¼ W, 5%** |
| Normal | X | X | |
| Bi-Level | X | X | X |
| NO | X | | |
| NC | X | | |
| [1] With activation switch. | | | |

**Normal mode**
Normal mode is compatible for use in installations requiring EN 54-13 compliance.
Input activation characteristics for this mode are shown in the table below.

**Table 4: Normal mode**

| State | Activation value |
|---|---|
| Short circuit | < 0.3 kΩ |
| Active 2 | 0.3 kΩ to 7 kΩ |
| High resistance fault | 7 kΩ to 10 kΩ |
| Quiescent | 10 kΩ to 17 kΩ |
| Open circuit | > 17 kΩ |

**Bi-Level mode**

- Bi-Level mode is not compatible for use in installations requiring EN 54-13 compliance.
- Input activation characteristics for this mode are shown in the table below.

**Table 5: Bi-Level mode**

| State | Activation value |
|---|---|
| Short circuit | < 0.3 kΩ |
| Active 2 [1] | 0.3 kΩ to 3 kΩ |
| Active 1 | 3 kΩ to 7 kΩ |
| Quiescent | 7 kΩ to 27 kΩ |
| Open circuit | > 27 kΩ |
| [1] Active 2 takes priority over Active 1. | |

**Normally Open mode**
In this mode, a short circuit is interpreted as active at the control panel (only open circuit faults are notified).
**Normally Closed mode**

In this mode, an open circuit is interpreted as active at the control panel (only short circuit faults are notified).

### Status indications

- The device status is indicated by the Device status LED (Figure 1, item 10), as shown in the table below.

**Table 6: Device status LED indications**

| State | Indication |
|---|---|
| Isolation active | Steady yellow LED |
| Device fault | Flashing yellow LED |
| Test mode | Fast flashing red LED |
| Located device [1] | Steady green LED |
| Communicating [2] | Flashing green LED |
| [1] Indicates an active Locate Device command from the control panel.<br>[2] This indication can be disabled from the control panel or the Configuration Utility application. | |

The input status is indicated by the Input status LED (Figure 1, item 6), as shown in the table below.

**Table 7: Input status LED indications**

| State | Indication |
|---|---|
| Active 2 | Steady red LED |
| Active 1 | Flashing red LED |
| Open circuit, short circuit | Flashing yellow LED |
| Test mode [1] Active Fault Normal<br>Test Activation | Steady red LED Steady yellow LED Steady green LED Flashing green LED |
| [1] These indications are only visible when the module is in Test mode. | |

The output status is indicated by the Output status LED (Figure 1, item 7), as shown in the table below.
**Table 8: Output status LED indications**

| State | Indication |
|---|---|
| Active | Flashing red LED (flashing only when polled, every 15 seconds) |
| Fault | Flashing yellow LED (flashing only when polled, every 15 seconds) |
| Test mode [1] Active Fault Normal<br>Selected for test [2] Test Activation | Steady red LED Steady yellow LED Steady green LED<br>Slow flashing green LED Slow flashing red LED |
| [1] These indications are only visible when the module is in Test mode. [2] Not activated. | |

## Maintenance and testing

### Maintenance and cleaning

- Basic maintenance consists of a yearly inspection. Do not modify internal wiring or circuitry.
- Clean the outside of the module using a damp cloth.

### Testing

- Test the module as described below.
- See Figure 1 for the location of the Test (T) button, Channel (C) button, Device Status LED, Input status LED, and Output status LED. See Table 6, Table 7, and Table 8 for status LED indications.

### To perform the test

1. Press and hold the Test (T) button for at least 3 seconds (long press) until the Device status LED flashes red (fast flashing), and then release the button.
   The module enters Test mode.
   The Device status LED flashes red for the duration of the test.
   The Input/Output status LEDs indicate the input/output state on entering Test mode: normal (steady green), active (steady red), or fault (steady yellow).
   Note: Inputs can only be tested when the input state is normal. If the LED indicates an active or fault state, exit the test. Outputs can be tested in any state.
2. Press the Channel (C) button.
   The selected input/output status LED flashes to indicate the selection.
   Input 1 is the first channel selected. To test a different input/output, press the Channel (C) button repeatedly until the required Input/Output status LED flashes.
3. Press the Test (T) button (short press) to start the test.
   The selected input or output test activates.
   See Table 9 below for input and output test details.

4. To stop the test and exit Test mode, press and hold the Test (T) button again for at least 3 seconds (long press).
   Pressing the Channel (C) button again after the last channel is selected also exits the test.
   The module exits the test automatically after 5 minutes if the Test (T) button is not pressed.

After the test the input or output returns to its original state.

**Note**
If an input is activated, the Input status LED indicates the activation state when the module exits Test mode. Reset the control panel to clear the LED indication.
The module exits Test mode automatically if the control panel sends a command to switch a relay (for example an alarm command) or if the control panel is reset.

**Table 9: Input and output tests**

| Input/Output | Test |
|---|---|
| Input | The Input status LED flashes red (slow flashing) to indicate the test.<br>The input activates for 30 seconds and the activation status is sent to the control panel.<br>Press the Test (T) button again to extend the input activation test for another 30 seconds, if required. |
| Output | If the output state is not activated when entering Test mode, the Output status LED flashes green.<br>If the output state is activated when entering Test mode, the Output status LED flashes red.<br>Press the Test (T) button again (short press) to start the test.<br>If the initial output state (above) is not activated, the Output status LED flashes red.<br>If the initial output state (above) is activated, the Output status LED flashes green.<br>Check that any connected devices or equipment operate correctly.<br>Press the Test (T) button again to switch the relay state again, if required. |

## Specifications

### Electrical

| | |
|---|---|
| Operating voltage | 17 to 29 VDC (4 to 11 V pulsed) |
| Current consumption Standby<br>KE-IO3122 KE-IO3144<br>Active<br>KE-IO3122 KE-IO3144 | <br>300 µA A at 24 VDC<br>350 µA A at 24 VDC<br><br>2.5 mA at 24 VDC<br>2.5 mA at 24 VDC |
| End-of-line resistor | 15 kΩ, ¼ W, 1% |
| Polarity sensitive | Yes |
| Number of inputs KE-IO3122 KE-IO3144 | 2<br>4 |
| Number of outputs KE-IO3122 KE-IO3144 | 2<br>4 |

**Isolation**

| | |
|---|---|
| Current consumption (isolation active) | 2.5 mA |
| Isolation voltage<br>Minimum Maximum | <br>14 VDC<br>15.5 VDC |
| Reconnect voltage Minimum Maximum | <br>14 VDC<br>15.5 VDC |
| Rated current<br>Continuous (switch closed) Switching (short circuit) | <br>1.05 A<br>1.4 A |

| | |
|---|---|
| Leakage current | 1 mA max. |
| Series impedance | 0.08 Ω max. |
| Maximum impedance [1]<br>Between the first isolator and the control panel<br>Between each isolator | 13 Ω<br>13 Ω |
| Number of isolators per loop | 128 max. |
| Number of devices between isolators | 32 max. |
| [1] Equivalent to 500 m of 1.5 $mm^2$ (16 AWG) cable. | |

**Mechanical and environmental**

| | |
|---|---|
| IP rating | IP30 |
| Operating environment Operating temperature St orage temperature Relative humidity | –22 to +55°C<br>–30 to +65°C<br>10 to 93% (noncondensing) |
| Color | White (similar to RAL 9003) |
| Material | ABS+PC |
| Weight<br>KE-IO3122 KE-IO3144 | 135 g<br>145 g |
| Dimensions (W × H × D) | 148 × 102 × 27 mm |

**Protective housing**
Install the module inside a protective housing that meets the following specifications.

| | |
|---|---|
| IP rating | Min. IP30 (indoor installation) |
| Material | Metal |
| Weight [1] | Min. 4.75 kg |
| [1] Excluding the module. | |

## Regulatory information

This section provides a summary of the declared performance according to the Construction Products Regulation (EU) 305/2011 and Delegated Regulations (EU) 157/2014 and (EU) 574/2014.
For detailed information, see the product Declaration of Performance (available at **firesecurityproducts.com**).

| | |
|---|---|
| Conformity | CE |
| Notified/Approved body | 0370 |
| Manufacturer | Carrier Safety System (Hebei) Co. Ltd., 80 Changjiang East Road, Q ETDZ, Qinhuangdao 066004, Hebei, China.<br><br>Authorized EU manufacturing representative:<br><br>Carrier Fire & Security B.V., Kelvinstraat 7, 6003 DH Weert, Netherla nds. |
| Year of the first CE marking | 2023 |
| Declaration of Performance number | 12-0201-360-0004 |
| EN 54 | EN 54-17, EN 54-18 |
| Product identification | KE-IO3122, KE-IO3144 |

| | |
|---|---|
| Intended use | See the product Declaration of Performance |
| Declared performance | See the product Declaration of Performance |
|  | 2012/19/EU (WEEE Directive): Products marked with this symbol can not be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier u pon the purchase of equivalent new equipment, or dispose of it at desi gnated collection points. For more information see: **recyclethis.info.** |

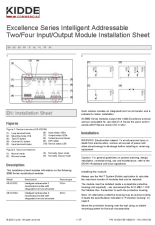
### Contact information and product documentation

- For contact information or to download the latest product documentation, visit **firesecurityproducts.com**.

### Product warnings and disclaimers

THESE PRODUCTS ARE INTENDED FOR SALE AND INSTALLATION BY QUALIFIED PROFESSIONALS. CARRIER FIRE & SECURITY B.V. CANNOT PROVIDE ANY ASSURANCE THAT ANY PERSON OR ENTITY BUYING ITS PRODUCTS, INCLUDING ANY “AUTHORIZED DEALER” OR “AUTHORIZED RESELLER”, IS PROPERLY TRAINED OR EXPERIENCED TO CORRECTLY INSTALL FIRE AND SECURITY RELATED PRODUCTS.
For more information on warranty disclaimers and product safety information, please check **https://firesecurityproducts.com/policy/product-warning/** or scan the QR code:

## Documents / Resources

| | |
|---|---|
|  | KIDDE KE-IO3122 Intelligent Addressable Two Four Input Output Module [pdf] Installation Guide<br>KE-IO3122, KE-IO3144, KE-IO3122 Intelligent Addressable Two Four Input Output Module, KE-IO3122, Intelligent Addressable Two Four Input Output Module, Two Four Input Output Module, Input Output Module, Output Module |

## References

- Home - Fire Security Products
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