Panasonic

4461

ADDRESSABLE MULTIPURPOSE I/O UNIT WITH ISOLATOR

Fire alarm solutions technical description

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1. INTRODUCTION

This document describes the addressable multipurpose I/O unit with isolator, type number 4461.
The document contains information about the product and instructions on how to mount and connect it.

2. ABBREVIATIONS

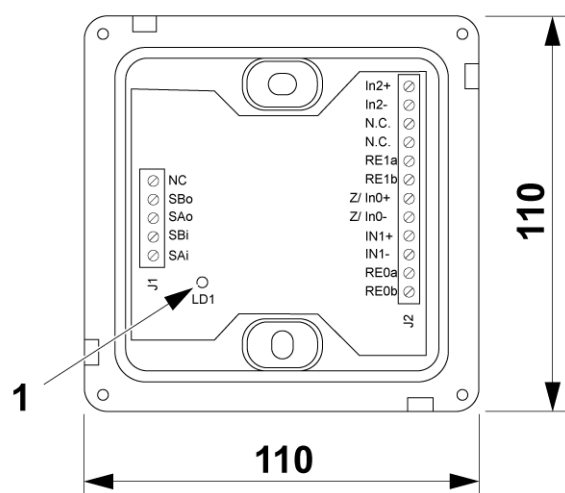|	
EOL	End-of-line
I/O	Input/Output
NC	Normally closed
NO	Normally open

3. GENERAL DESCRIPTION

The addressable multipurpose I/O unit has 17 screw terminals for cable connections.

All inputs and outputs are programmed via EBLWin.

The 4461 can be configured as a 3361, and is therefore backward compatible, see

The unit is intended to be surface mounted. The unit is intended for indoor use.

(Measure in mm)

1. LED

3.1. LED

The 4461 has a red LED. This LED will only be lit by the function 'Toggle LED' via EBLWin.

For more information, see Planning Instructions for the system.

The function is valid for EBL512 G3 and EBL128 from version 2.4.0. The function is also valid for EBLOne.

3.2. OUTPUTS

The unit has two programmable relay outputs: The relay outputs can be used for different control applications e.g. shutting fire doors in case of fire.

•   Relay output (Re0): NC or NO contacts

•   Relay output (Re1): NC or NO contacts

3.3. MONITORED INPUT

The unit has one monitored input. For the monitored input there are two alternatives:

•   Zone line input (Z)
     This input is intended for conventional detectors. The EOL capacitor 10 μF shall be mounted in the last unit on the line. Short circuit could activate fault or fire alarm (programmable).

•   General input (In0)
     An input for NC or NO contact

5 activated zone interfaces are allowed per COM loop.

The monitored input will be nominated Z/In0.

3.4. ISOLATED INPUT

The isolated input is triggered by a voltage level
(External 6 – 30 V DC / 8 mA is required).

The isolated input will be nominated In1

3.5. GENERAL INPUT

Input for NC or NO contact.
This input will not be in use when 4461 is configured as a 3361.

The general input will be nominated In2

3.6. SHORT CIRCUIT ISOLATOR

The 4461 has a built-in short circuit isolator that requires no separate COM loop address. Like any other short circuit isolator, it will be given an individual sequence number, either when programmed in EBLWin or via automatic addressing function.

For system EBL512 G3 ≤ 2.2.x: The isolators must be connected consecutively regarding sequence number 00-127, in the COM loop's A-direction.

For system EBL512 G3 ≥ 2.3.X: The sequence numbers can automatically be generated and sorted consecutively in the COM loop's A-direction. Function "Arrange sequence numbers" in EBLWin must be activated. (Tools/Options/EBLWin Settings).

Parameter	Symbol	Value
The maximum line voltage	V_{max}	30V DC
The nominal line voltage	V_{nom}	24V DC
The minimum line voltage	V_{min}	12V DC
The maximum rated continuous current with the switch closed	$I_{C\,max}$	350 mA
The maximum rated switching current on short circuit conditions	$I_{S\,max}$	2 A
The maximum leakage current with the switch open	$I_{L\,max}$	1.5 mA
The maximum series impedance with the switch closed	$Z_{C\,max}$	90 mΩ
The maximum voltage at which the device isolates (i.e. close to open)	$V_{SO\,max}$	11V DC
The minimum voltage at which the device isolates (i.e. close to open)	$V_{SO\,min}$	5V DC
The maximum voltage at which the device will change from open to close.	-	N/A[1]
The minimum voltage at which the device will change from open to close.	-	N/A[1]

1) The device can change from open to close by commands from the control and indicating equipment only. This can be done at minimum to maximum line voltage, i.e. 12V DC – 30V DC.

For more information on short circuit isolators, see the Planning instructions for EBL512 G3 and EBL128 version 2.3.x or later, or Planning instructions for EBLOne.

4. FUNCTION

4.1. MONITORED INPUT USED AS ZONE LINE INPUT

The monitored input Z/In0 can be used as zone line input.

The zone line input detects short circuit and open circuit according to the requirements in EN 54-13.

4.1.1. THRESHOLD LEVELS

The state of the zone line depends on the resistance measured

Zone line state	Resistance
Normal	$I \leq 1.5$ mA
High current fault	$I > 2mA@18V$
Alarm (normal case)	$100\ \Omega < R < 2.0\ k\Omega$
Alarm (if short circuit is detected as alarm)	$R < 2.0\ k\Omega$
Short circuit fault (normal case)[2]	$R \leq 50\ \Omega$
Open circuit fault	$R \geq 250\ \Omega$ (approx.)

2) A resistance below 100 Ω may be detected as alarm. This is programmed in the CIE.

4.1.2. PROGRAMMING IN EBLWIN

a) In the properties window for 4461, set the input type to Zone line input.

b) Select the alarm point type of the unit connected to the zone line.

Other A and Other B has the same functionality as Fire alarm Type A and Type B.
For more information, see Planning instructions for the system.

4.2. GENERAL INPUTS

The monitored input Z/In0 can be used as general input.
The input In2 is a fixed general input.
The general input can be supervised or not supervised.

4.2.1. THRESHOLD LEVELS

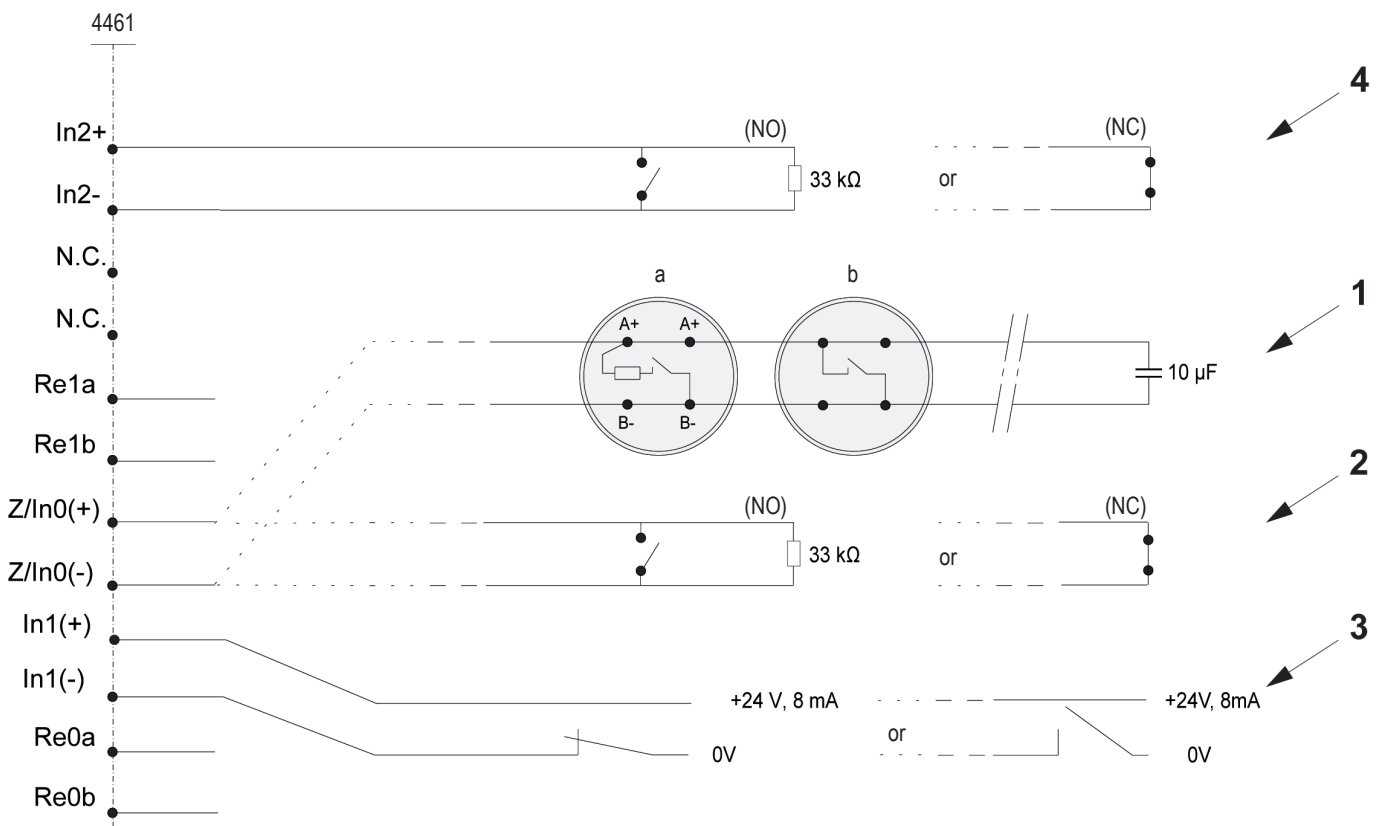The state of the general input depends on the resistance measured.

Line resistance R^3	Supervised		Not Supervised	
	NO	NC	NO	NC
R > 43 kΩ	Fault	N/A		Activated
43 kΩ ≥ R >10 kΩ (nom.33kΩ)	Not activated	N/A	Not activated	Activated
R ≤ 10 kΩ	Activated	N/A	Activated	Not activated

3) Approximate values, accuracy ± 10%.

EXAMPLE 1

1. Monitored input used as zone line input – For connection of conventional manual call points/ detectors.
   a) Detector with a closing contact and an alarm resistor.
   b) Detector with a closing contact. It can be programmed to "Alarm at short circuit". Short circuit on the zone line will then activate a fire alarm instead of a fault.
   - Max 50 Ω conductor resistance
   - Max 400m cable type EELQRB 2x0.6 mm
   - Max. 50 nF conductor capacitance
   - Max. 1.5 mA detector current consumption
   - Use 10 µF end-of-line capacitor
2. Monitored input used as type general input Z/In0. The input has to be programmed with a trigger condition and to be normally open (NO) or normally closed (NC).
   33 kΩ EOL resistance shall be used if the general input is configured as supervised in EBLWin. Supervision is applicable for (NO) only.
3. Isolated input In1. The input has to be programmed with a trigger condition and to be normally high (+24 v) or normally low.
   - Isolated input (Optocoupler)
   - External power supply is required
4. General input In2. The input has to be programmed with a trigger condition and to be normally open (NO) or normally closed (NC).
   33 kΩ EOL resistance shall be used if the general input is configured as supervised in EBLWin. Supervision is applicable for (NO) only.
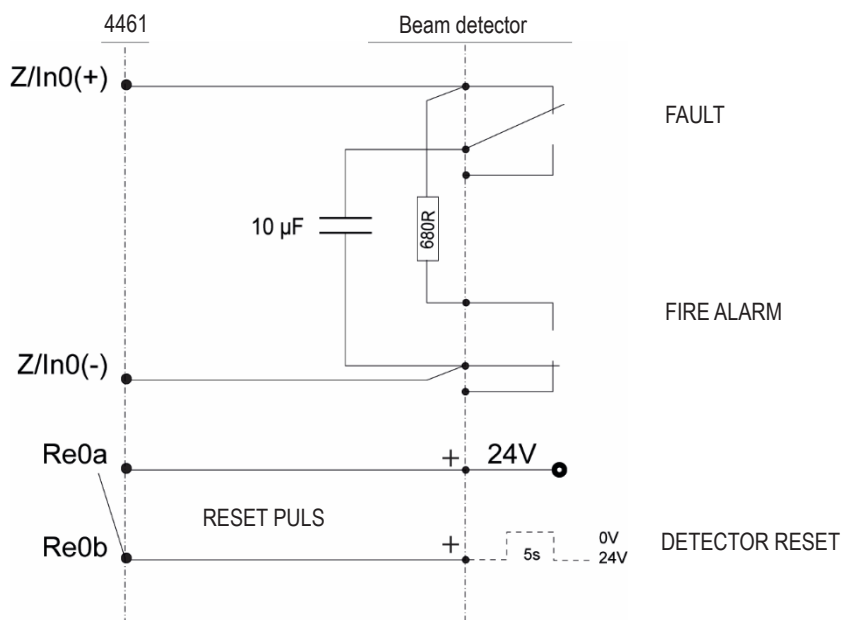
For each output a control expression has to be programmed and if the relay contacts shall be Normally Open (NO) or Normally Closed (NC).

Maximum 32 alarm points in each zone (EN54-2)

EXAMPLE 2

Connection of a beam detector/ flame detector/ stand-alone Grizzle and so on, via the 4461 zone line in put (Z/In). Use 10 µF EOL capacitor.
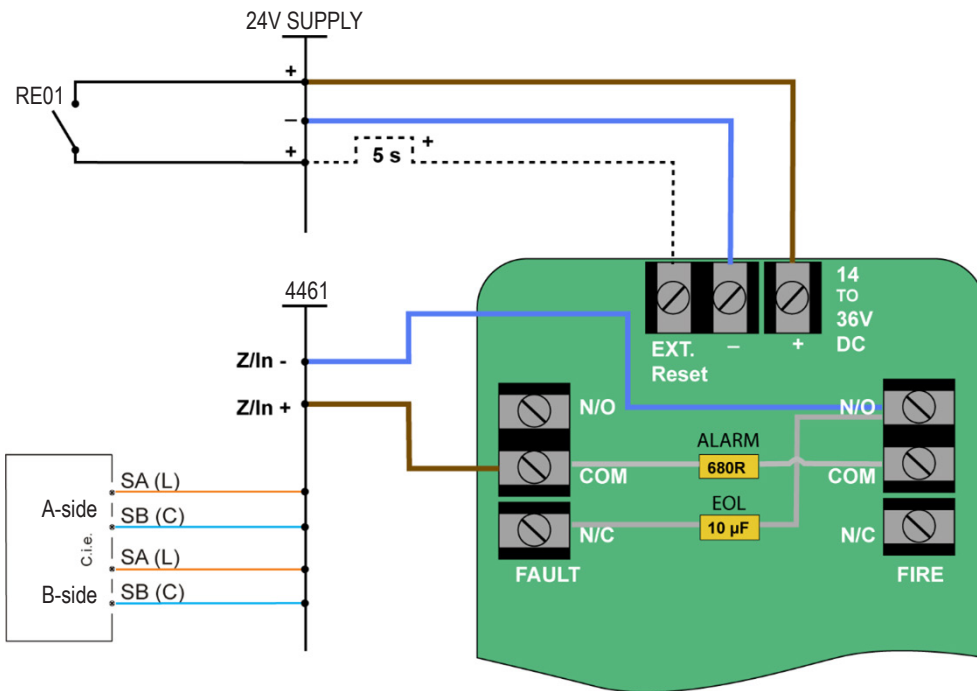
EXAMPLE 3

Connection of beam detector Fireray One (3411), via 4461 zone line in put (Z/In).
Enter argument in dialog for Re0: ResetPulseZoneAddress(z, a)
Attributes:

- Normally open
- Control, neutral
- Steady

5. SET THE COM LOOP ADDRESS

5.1. AUTO ADDRESSING

The 4461 supports automatic addressing via EBLWin.
For more information, see Planning instructions for the system.

5.2. MANUAL ADDRESSING

If auto addressing is not used, there is a possibility to manually set the address.
Each COM loop unit has to have a unique COM loop address (001-253). The address is set with the Address Setting Tool (4414 or 4414E).

The COM loop address and mode settings have to be done before the unit is connected to the COM loop.

The EOL capacitor for the monitored input must not be connected during address and mode setting.
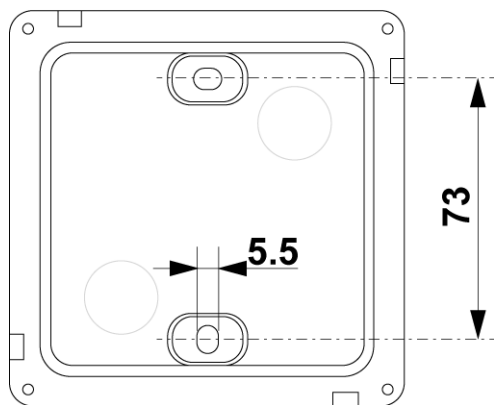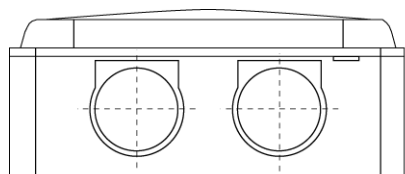
6. SET THE MODE

The mode is set with the Address Setting Tool (4414 or 4414E) according to the table below.

6.1. COMPATIBILITY TABLE

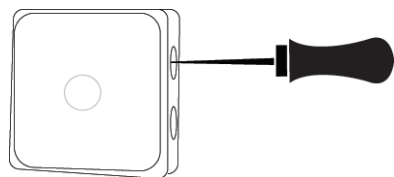|	Advanced mode	NORMAL mode	2330 mode	2312 mode
EBL512 G3	V ≥ 2.4	All versions	Not used	Not used
EBLOne	V ≥ 3.3	Not used	Not used	Not used
EBL128	V ≥ 2.4	All versions	Not used	Not used
Configured as:	-	3361	-	-
Isolator in use:	Yes	No	-	-

7. MOUNTING

Mount the 4461 on the wall or in the ceiling.
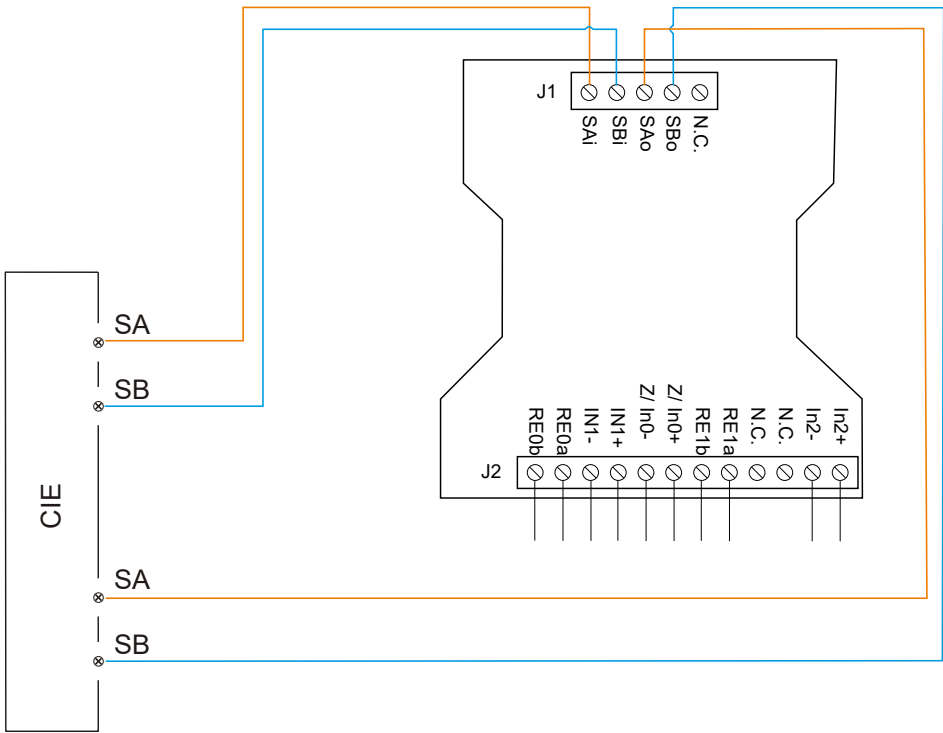
(Measure in mm)

7.1. PROTECTION COVER

Make a small hole in the cable entry membranes with a sharp tool. Push the cable through the inlet.

Compression glands are not included for the cable entries.

8. INSTALLATION AND WIRING

Screen wire termination is not provided.

Wire size (Min)	Ø 0.6 mm (0.28 mm²)
Wire size (Max)	Ø 1.2 mm (1.5 mm²)

8.1. ELECTRICAL INTERFACE

Power supply	Via COM loop
Monitored inputs	1
Isolated inputs (optocoupler inputs)	1
Relay outputs	2
General inputs	1 (Not in use when 4461 is configured as a 3361)

9. TECHNICAL DATA

All current consumptions are valid by nominal voltage and by 25 °C.

Voltage: Allowed Normal	12 – 30V DC (15-30V when the monitored input is used as zone line input) 24V DC
Current: Quiescent Active	≤ 4.3 mA ≤ 15 mA
Monitored inputs used as zone line input: Min voltage (at 15V COM loop voltage) Max voltage Max current (maximum detector cur-rent consumption) Limitation (maximum short circuit current) Maximum conductor resistance Maximum conductor capacitance	DC 12V DC 30V 1.5 mA 10mA typ 50 Ω 50 nF
Isolated Inputs: Max voltage, active Min voltage, active Max voltage, inactive Min voltage, inactive	30V DC 6V DC 1V DC –30V DC
Relay outputs:	The unit 4461 has two individually controllable single pole relay out-puts with the contact rating 2A@30V DC.
Address range	001-253
Address setting	Auto addressing (or with address setting tool)
Short circuit isolator	Yes
Internal battery	No
Material	Polypropylene
Enclosure	Standard Fibox encapsulation. (JB 6 G)
Ambient temperature: Operating Storage	-10 to +50 °C -20 to +60 °C
Ambient humidity	Maximum 95 % RH (Non condensing)
Ingress protection rating	IP65
Size: H x W x D	110 x 110 x 49 mm
Weight	188 g
Colour	RAL 9010

10. APPROVALS

Applicable directive/ Approval	Applicable standards	Notified body
CPR	EN54-17 (Short circuit isolator) EN54-18 (I/O Units)	VdS No. 0786-CPR-21579
VdS	EN54-17 EN54-18 VdS2344 VdS2504	VdS No. G218074
EMC	EN61000-6-3 (Emission) EN50130-4 (Immunity)	Self declaration VdS
RoHS	EN IEC 63000	Self declaration

DOCUMENT NAME: TECHNICAL DESCRIPTION 4461
DOCUMENT NUMBER: MEW01876 EN
DATE OF ISSUE: 2018-01-03
REV: 5
DATE OF REVISION: 2024-08-22

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