

## EN INSTALLATION INSTRUCTIONS - EM210EA / EM220EA INPUT MODULES, EM221EA INPUT /OUTPUT MODULE

This manual is intended as a quick reference installation guide. Please refer to the control panel manufacturers installation manual for detailed system information.

The EM200 series of modules are a family of microprocessor controlled interface devices permitting the monitoring and/or control of auxiliary devices.

### EM210EA SINGLE CHANNEL INPUT MODULE

Provides single channel monitoring of normally open contact fire alarm and supervisory devices.

The EM210EA has a single tri-colour green/red/yellow LED, which can be set by panel command to pulse green each time the module is polled. In case of an alarm the panel can switch the red indicator on continuously. The Yellow-LED is controlled by the module and blinks to indicate an open circuit on the input circuit. This fault indication is overridden by a panel command to turn the red LED on.

### EM220EA DUAL CHANNEL INPUT MODULE

This is a dual channel module used for the monitoring of normally open contact fire alarm and supervisory devices.

It has two tri-colour LED's, one referring to each channel. Each LED can be set by panel command to pulse green each time the module channel is polled. In case of an alarm the panel can switch the red indicator on continuously. The Yellow LED is controlled by the module and blinks to indicate an open circuit on the input circuit. This fault indication is always overridden by a panel command to turn the red LED on.

### EM221EA DUAL INPUT, SINGLE OUTPUT MODULE

This module provides dual channel monitoring of normally open contact fire alarm and supervisory devices, and also provides single pole changeover contacts for the control of auxiliary devices such as fire shutters and sounders.

Three tri-colour LED's are provided to indicate the status of each channel.

LED's IN1 and IN2 refer to the two input channels. Each LED can be set by panel command to pulse green each time the module channel is polled. In case of an alarm the panel can switch the red indicator on continuously.

LED OUT refers to the output channel. The LED can be set by panel command to pulse green each time the channel is polled. The LED will be switched continuously on green by command from the control panel when the relay contacts are in the energised state.

The EM221EA relay contact ratings are 30 VDC, 2A (Resistive load).

### SPECIFICATIONS

Operating Voltage Range:	15 to 32 VDC (Min 16.5VDC for LED operation)
Maximum Standby Current:	140 µA @24 V and 25°C (no communication)
LED Current (Red):	1.5 mA
LED Current (Yellow):	5.5 mA
Isolator features:	see S00-7100
Humidity:	5% to 95% relative humidity (non-condensing)
Maximum Wire Gauge	2.5 mm <sup>2</sup>

### INSTALLATION

**Note:** These modules must only be connected to control panels using compatible proprietary analogue addressable communication protocols for monitoring and control.

EM200 series modules can be mounted in several ways (See Figure 1):

**1:1** An M200E-SMB custom low profile surface-mounting box. The SMB Base is affixed to mounting surface, and then the module and cover are screwed onto the base using the two screws supplied. Box dimensions: 132 mm (H) x 137 mm (W) x 40 mm (D)

**1:2** The DIN bracket on top allows mounting onto standard 35 mm x 7.5 mm "Top Hat" DIN rail inside a control panel or other suitable enclosure. Install and remove as shown in Figure 1:2.

Wiring to all series EM200 modules is via plug in type terminals capable of supporting conductors up to 2.5 mm<sup>2</sup>

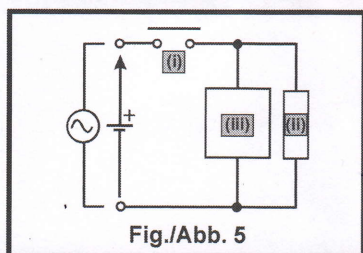
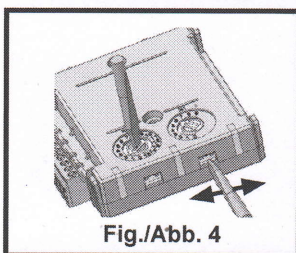
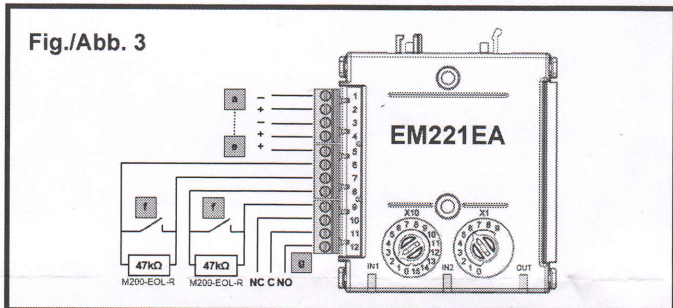
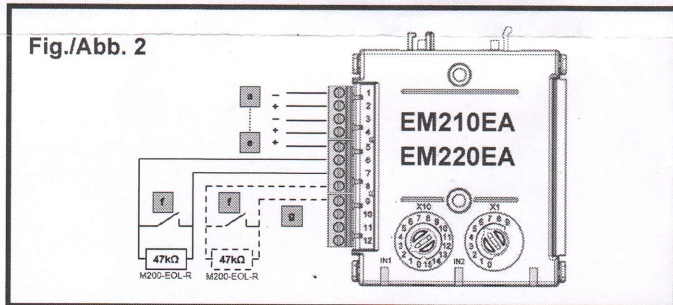
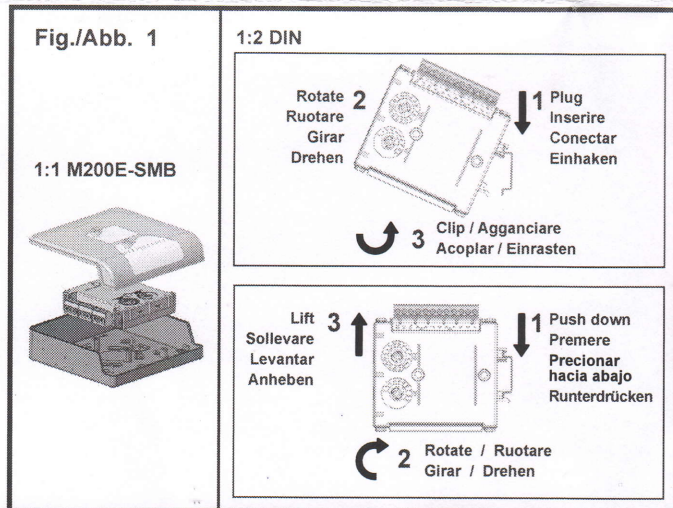
### CAUTION

**Disconnect loop power before installing modules or sensors.**

The module address is selected by means of rotary decade address switches (see Figure 4). A screwdriver should be used to rotate the wheels to select the desired address, either from the front or the top of the module.

For modules having more than one channel, the address selected will refer to the first input channel, the module will automatically assign the next one or two addresses as appropriate to the second input channel and output channel. As a result, address 159 will be invalid for dual channel modules, and addresses 158 and 159 are invalid for three channel modules. If these addresses are selected, no response will be seen from the module (not relevant if using Advanced Protocol - consult panel manufacturer if in doubt).

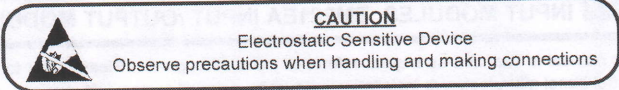
**Note:** Some control panels are only able to use 99 addresses. If this is the case, 99 will be invalid for dual channel modules, and addresses 98 and 99 are invalid for three channel modules.



CE 0905 21	EM210EA: DOP-IOD092	Schneider Electric Buildings AB Mobilvägen 8 223 62 Lund, Sweden
	EM220EA: DOP-IOD093	
	EM221EA: DOP-IOD094	
	EN 54-17: 2005, EN 54-18: 2005	

### Short Circuit Isolators

All EM200 series modules are provided with short circuit monitoring and isolators on the intelligent loop. If required, the isolators may be wired out of the loop to facilitate the use of the modules on high current loaded loops, for example if sounders are used. To achieve this, the loop out positive should be wired to terminal 5 rather than terminal 2. See the relevant wiring diagram for details.



### EM210EA / EM220EA Wiring

Wire as follows (see Figure 2):

- a: T1 Loop Output - . b: T2 Loop Output + . c: T3 Loop Input - . d: T4 Loop Input +
- e: T5 Loop Output + . If short circuit isolation is not required, loop output+ should be wired to terminal 5 and not 2. Terminal 5 is internally connected to terminal 4.
- f: Provided the control panel is compatible, short circuit monitoring of the input circuit may be possible. An 18kΩ resistor should be wired in series with each device switch being monitored.
- g: The dashed line circuit connected to terminals 8 and 9 should only be used with the EM220EA. There are no connections to these terminals on the EM210EA.

### EM221EA Wiring

Wire as follows (see Figure 3):

- a: T1 Loop Output - . b: T2 Loop Output + . c: T3 Loop Input - . d: T4 Loop Input +
- e: T5 Loop Input + . If short circuit isolation is not required, loop output+ should be wired to terminal 5 and not 2. Terminal 5 is internally connected to terminal 4.
- f: Provided the control panel is compatible, short circuit fault monitoring of the input circuit may be possible. An 18kΩ resistor should be wired in series with each device switch being monitored.
- g: Relay contact rating: 30 V DC, 2A resistive load.

### Warning: Switching Inductive Loads (EM221EA Output Channel Only)

See Figure 5. Inductive loads can cause switching surges, which may damage the module relay contacts (i).

To protect the relay contacts, connect a suitable Transient Voltage Suppressor (iii) - for example 1N6284CA - across the load (ii) as shown in Figure 5.

Alternatively, for unsupervised DC applications, fit a diode with a reverse breakdown voltage greater than 10 times the circuit voltage.

### SAFETY INFORMATION

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.