

**DESCRIPTION**

The NEXEM AX1 series is AC relay for On Board Charger (OBC) applications of Electric Vehicle for automobiles which require high quality and high performance.

The AX1 series have higher carrying current performance for AC load.

**FEATURE**

- Large current capacity for AC load (16A and 32A rated current)
- Small size
- High heat resistance
- Flux tight and Plastic sealed housing
- Pb free

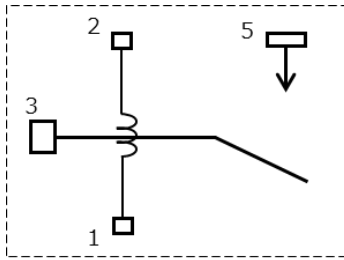
**APPLICATION**

- On Board Charger (OBC) of Electric Vehicles (PHEV and BEV)

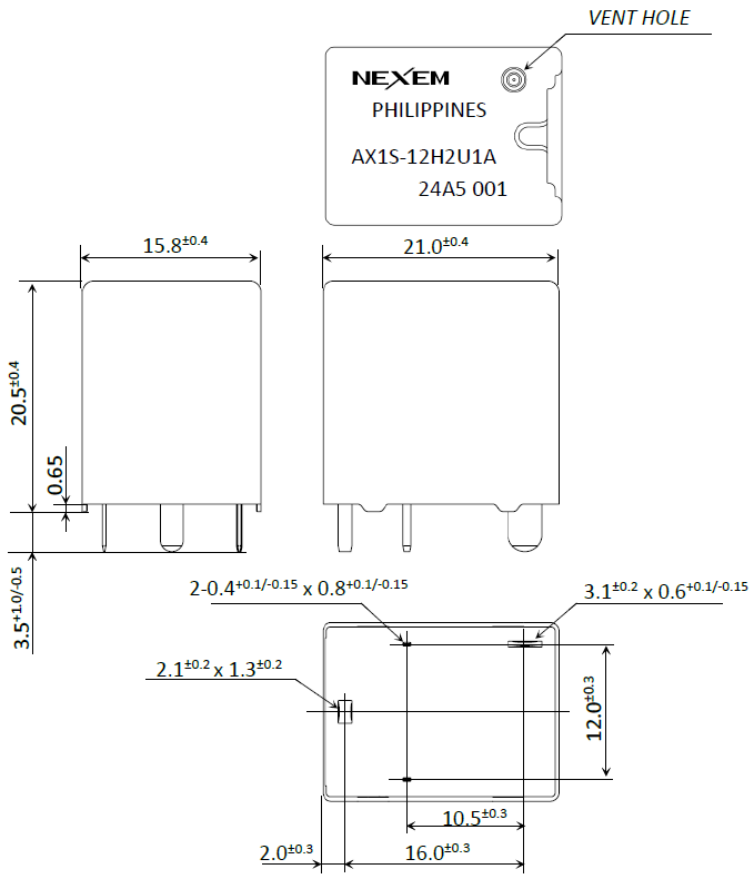


[1a Type]

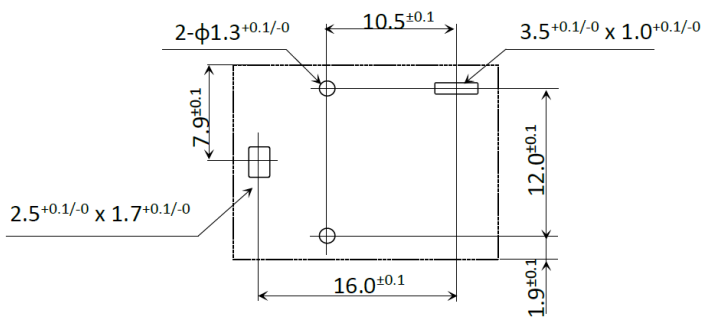
**SCHEMATICS (BOTTOM VIEW)**



**DIMENSIONS (in mm)**



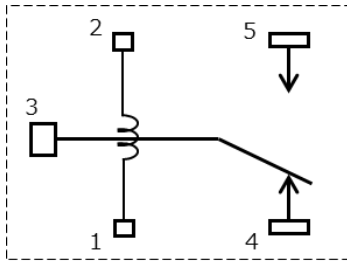
**RECOMMENDED PCB PAD LAYOUT (BOTTOM VIEW) (in mm)**



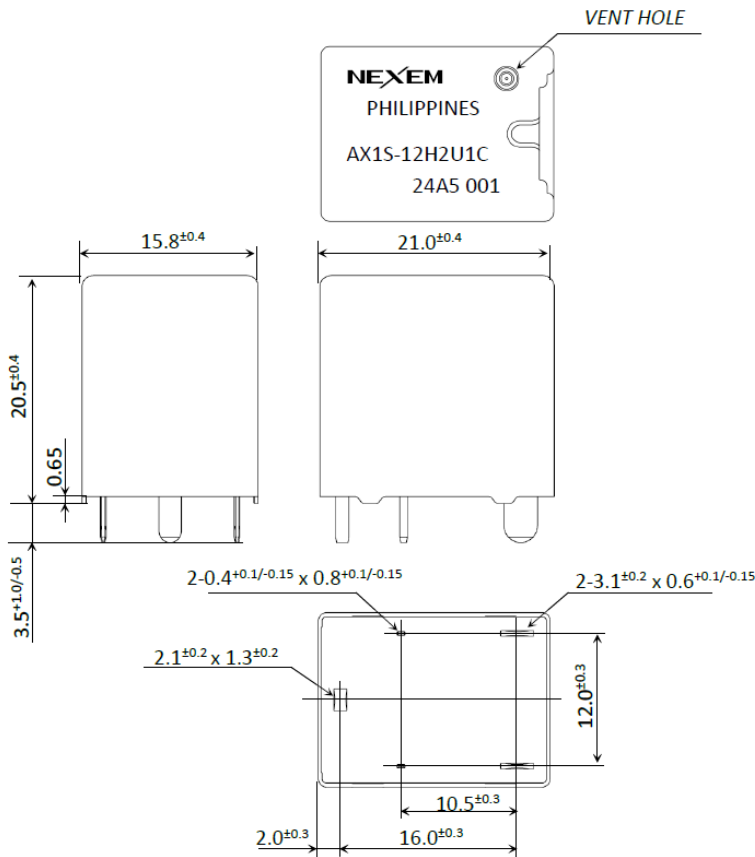
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[1c Type]

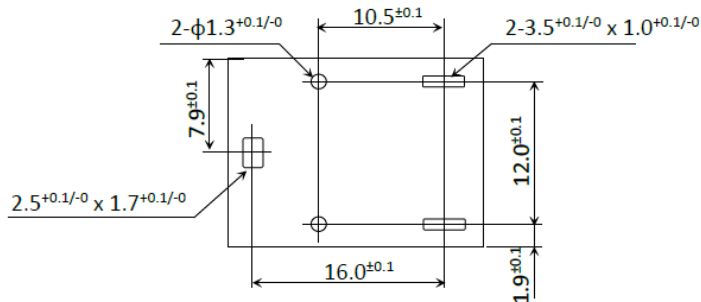
**SCHEMATICS (BOTTOM VIEW)**



**DIMENSIONS (in mm)**



**RECOMMENDED PCB PAD LAYOUT (BOTTOM VIEW) (in mm)**



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**SPECIFICATIONS (Rated current: 32A)**

(Ambient temperature: 20°C)

| Items                       |  | Specifications  |   |
|-----------------------------|--|---|---|
| Contact form                |  | 1 form A  | 1 form C  |
| Contact rating              | Max. switching voltage                 | 277Vac  |   |
|                             | Max. switching current                 | 32A   |   |
|                             | Max. continuous current <sup>(1)</sup> | 40A (at 105°C)  |   |
|                             | Contact resistance                     | 10mΩ (20A 6Vdc)   |   |
|                             | Rated load                             | 277Vac 32A, Resistive load  |   |
| Contact material            |  | Ag alloy  |   |
| Operate time <sup>(2)</sup> |  | 15ms max.   |   |
| Release time <sup>(2)</sup> |  | 10ms max.   |   |
| Insulation                  | Insulation resistance                  | 1000MΩ min. at 500Vdc   |   |
|                             | Dielectric strength                    | Between open contacts   | 1000Vac, 50/60Hz 1minute  |
|                             |  | Between coil and contact  | 4000Vac, 50/60Hz 1minute  |
| Shock resistance            | Misoperation                           | 98m/s <sup>2</sup>  |   |
|                             | Destructive failure                    | 980m/s <sup>2</sup>   |   |
| Vibration resistance        | Misoperation                           | 10 to 55Hz, 1.5mm DA  |   |
|                             | Destructive failure                    |   |   |
| Ambient temperature         |  | -40 to +105°C (no freezing and condensation)                            |   |
| Life expectancy             | Mechanical                             | 300,000 cycles  |   |
|                             | Electrical (N/O) <sup>(3)</sup>        | Making 25A, Carrying 32A, Breaking 25A, 250Vac at 105°C<br>10,000cycles |   |
|                             | Electrical (N/C) <sup>(3)</sup>        | -   | Making 5A,<br>Carrying 32A, Breaking 5A,<br>250Vac at 105°C<br>10,000cycles |
| Weight                      |  | Approx. 16g   |   |

(1) After the rated voltage is applied to the coil for 200ms, the coil excitation voltage is reduced to the holding voltage.

(2) Excluding contact bounce without flywheel coil diode.

(3) This performance is Flux tight type. Regarding performance of plastic sealed type, please contact EM Devices Corporation.

(4) EM Devices recommends that the usage of the coating agent close to the relay is to be avoided.

(5) Please take care of the relay orientation installed in a car to avoid the malfunction by the vibration, impact and so on. If you have any questions, please contact EM Devices Corporation.

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**SPECIFICATIONS (Rated current: 16A)**

(Ambient temperature: 20°C)

| Items                       |  | Specifications                               |  |
|-----------------------------|--|--|--|
| Contact form                |  | 1 form A                                     | 1 form C   |
| Contact rating              | Max. switching voltage                 | 277Vac                                       |  |
|                             | Max. switching current                 | 16A  |  |
|                             | Max. continuous current <sup>(6)</sup> | 20A (at 105°C)                               |  |
|                             | Contact resistance                     | 10mΩ (20A 6Vdc)                              |  |
|                             | Rated load                             | 277Vac 16A, Resistive load                   |  |
| Contact material            |  | Ag alloy                                     |  |
| Operate time <sup>(7)</sup> |  | 15ms max.                                    |  |
| Release time <sup>(7)</sup> |  | 10ms max.                                    |  |
| Insulation                  | Insulation resistance                  |  | 1000MΩ min. at 500Vdc  |
|                             | Dielectric strength                    | Between open contacts                        | 1000Vac, 50/60Hz 1minute   |
|                             |  | Between coil and contact                     | 4000Vac, 50/60Hz 1minute   |
| Shock resistance            | Misoperation                           | 98m/s <sup>2</sup>                           |  |
|                             | Destructive failure                    | 980m/s <sup>2</sup>                          |  |
| Vibration resistance        | Misoperation                           | 10 to 55Hz, 1.5mm DA                         |  |
|                             | Destructive failure                    |  |  |
| Ambient temperature         |  | -40 to +105°C (no freezing and condensation) |  |
| Life expectancy             | Mechanical                             |  | 300,000 cycles   |
|                             | Electrical (N/O) <sup>(8)</sup>        |  | 16A- 250Vac at 105°C, 10,000cycles   |
|                             | Electrical (N/C) <sup>(8)</sup>        |  | -<br>Making 5A,<br>Carrying 16A, Breaking 5A,<br>250Vac at 105°C<br>10,000cycles |
| Weight                      |  | Approx. 16g                                  |  |

(6) After the rated voltage is applied to the coil for 200ms, the coil excitation voltage is reduced to the holding voltage.

(7) Excluding contact bounce without flywheel coil diode.

(8) This performance is Flux tight type. Regarding performance of plastic sealed type, please contact EM Devices Corporation.

(9) EM Devices recommends that the usage of the coating agent close to the relay is to be avoided.

(10) Please take care of the relay orientation installed in a car to avoid the malfunction by the vibration, impact and so on. If you have any questions, please contact EM Devices Corporation.

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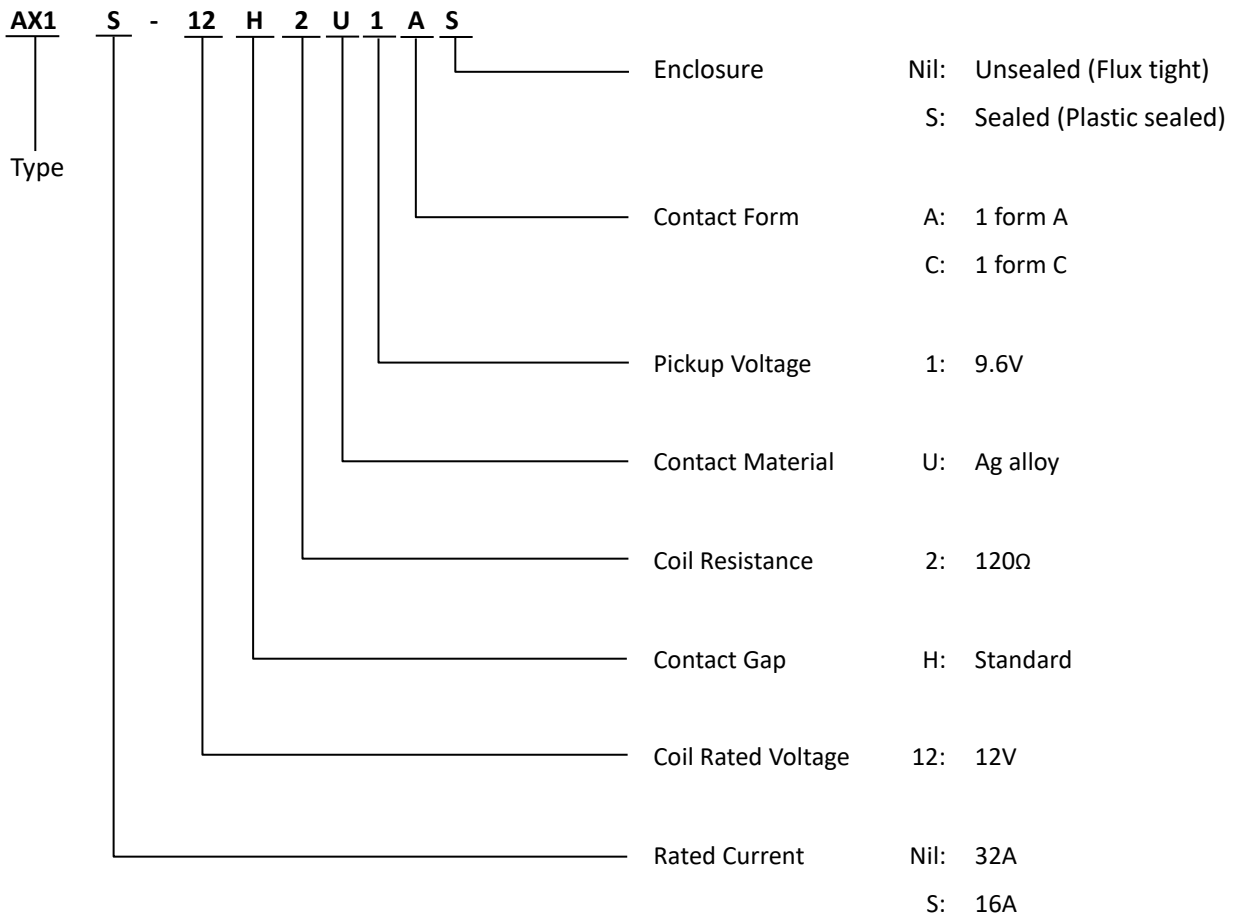
**COIL RATING**

(Ambient temperature: 20°C)

| Nominal Voltage (VDC) | Coil Resistance (Ω)±10% | Must Operate Voltage <sup>(11)</sup> (VDC) | Must Release Voltage <sup>(11)</sup> (VDC) | Holding voltage (VDC)  | Nominal Operating Power (W) |
|-----------------------|-------------------------|--|--|--|-----------------------------|
| 12                    | 120                     | 9.6  | 0.6  | 30~80% of rated voltage (at 23°C)<br>40~45% rated voltage (at 105°C) | 1.2W                        |

(11) Test by pulse voltage

**PART NUMBER SYSTEM**



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