

# SRH1 Series

## Single phase, Intergrated heatsink type SSR

NEW

### Features

- Superior dielectric strength : 4,000VAC
- Improved reliability by maximizing heat protection efficiency with heatsink integrated design and ceramic board
- Various mounting methods (DIN rail, panel front)
- Supports Zero cross turn-on/  
Random turn-on type
- Checks input status by Input LED (Green)



**!** Please read "Caution for your safety" in operation manual before using.



### Ordering information

**SRH 1 - 1 4 60 R**

|                                        |         |                                               |
|----------------------------------------|---------|-----------------------------------------------|
| Function                               | No Mark | Zero cross turn-on                            |
|                                        | R       | Random turn-on                                |
| Rated load current<br>(Resistive load) | 15      | 15A                                           |
|                                        | 20      | 20A                                           |
|                                        | 30      | 30A                                           |
|                                        | 40      | 40A                                           |
|                                        | 60      | 60A                                           |
| Load voltage (Rated)                   | 2       | 24-240VAC                                     |
|                                        | 4       | 48-480VAC                                     |
| Input voltage (Rated)                  | 1       | 4-30VDC                                       |
|                                        | 2       | 24VAC                                         |
|                                        | 4       | 90-240VAC                                     |
| Control phase                          | 1       | Single phase                                  |
|                                        | SRH     | Solid State Relay (Integrated heat sink type) |
| Item                                   |         |                                               |

| Model      | Input voltage | Rated load current | Load voltage | Zero cross turn-on/Random turn-on |
|------------|---------------|--------------------|--------------|-----------------------------------|
| SRH1-1215  | 4-30VDC       | 15A                | 24-240VAC    | Zero cross turn-on                |
| SRH1-2215  | 24VAC         |                    |              |                                   |
| SRH1-4215  | 90-240VAC     |                    |              |                                   |
| SRH1-1220  | 4-30VDC       | 20A                |              |                                   |
| SRH1-2220  | 24VAC         |                    |              |                                   |
| SRH1-4220  | 90-240VAC     |                    |              |                                   |
| SRH1-1230  | 4-30VDC       | 30A                |              |                                   |
| SRH1-2230  | 24VAC         |                    |              |                                   |
| SRH1-4230  | 90-240VAC     |                    |              |                                   |
| SRH1-1240  | 4-30VDC       | 40A                |              |                                   |
| SRH1-2240  | 24VAC         |                    |              |                                   |
| SRH1-4240  | 90-240VAC     |                    |              |                                   |
| SRH1-1260  | 4-30VDC       | 60A                |              |                                   |
| SRH1-2260  | 24VAC         |                    |              |                                   |
| SRH1-4260  | 90-240VAC     |                    |              |                                   |
| SRH1-1420  | 4-30VDC       | 20A                | 48-480VAC    | Zero cross turn-on                |
| SRH1-1420R |               |                    |              | Random turn-on                    |
| SRH1-2420  | 24VAC         | Zero cross turn-on |              |                                   |
| SRH1-1430  | 4-30VDC       | 30A                |              | Zero cross turn-on                |
| SRH1-1430R |               |                    |              | Random turn-on                    |
| SRH1-2430  | 24VAC         | Zero cross turn-on |              |                                   |
| SRH1-1460  | 4-30VDC       | 60A                |              | Zero cross turn-on                |
| SRH1-1460R |               |                    |              | Random turn-on                    |
| SRH1-2460  | 24VAC         |                    |              | Zero cross turn-on                |

# Integrated Heatsink Type SSR

## ■ Specifications

### ◎ Input

| 4-30VDC input voltage         |                    |                                               |
|-------------------------------|--------------------|-----------------------------------------------|
| Input voltage range           |                    | 4-32VDC                                       |
| Max. input current            |                    | 9mA(Zero cross turn-on), 12mA(Random turn-on) |
| Pick-up voltage               |                    | Min. 4VDC                                     |
| Drop-out voltage              |                    | Max. 1VDC                                     |
| Turn-on time                  | Zero cross turn-on | Max. 0.5 cycle of load source + 1ms           |
|                               | Random turn-on     | Max. 1ms                                      |
| Turn-off time                 |                    | Max. 0.5 cycle of load source + 1ms           |
| 24VAC input voltage           |                    |                                               |
| Input voltage range (50/60Hz) |                    | 19-30VACrms                                   |
| Max. input current            |                    | 12mArms(24VACrms)                             |
| Pick-up voltage               |                    | Min. 19VACrms                                 |
| Drop-out voltage              |                    | Max. 4VACrms                                  |
| Turn-on time                  |                    | Max. 1.5 cycle of load source + 1ms           |
| Turn-off time                 |                    | Max. 1.5 cycle of load source + 1ms           |
| 90-240VAC input voltage       |                    |                                               |
| Input voltage range (50/60Hz) |                    | 85-264VACrms                                  |
| Max. input current            |                    | 7mArms(240VACrms)                             |
| Pick-up voltage               |                    | Min. 85VACrms                                 |
| Drop-out voltage              |                    | Max. 10VACrms                                 |
| Turn-on time                  |                    | Max. 1.5 cycle of load source + 1ms           |
| Turn-off time                 |                    | Max. 1.5 cycle of load source + 1ms           |

### ◎ Output

| 24-240VAC load voltage                                        |                                                               |                                                  |                     |                      |                      |                      |
|---------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------|---------------------|----------------------|----------------------|----------------------|
| Load voltage range (50/60Hz)                                  |                                                               | 24-264VACrms                                     |                     |                      |                      |                      |
| Rated load current<br>Ta=25℃                                  | Resistive load (AC-51)                                        | 15Arms                                           | 20Arms              | 30Arms               | 40Arms               | 60Arms               |
|                                                               | Min. load current                                             | 0.15Arms                                         | 0.2Arms             | 0.2Arms              | 0.5Arms              | 0.5Arms              |
|                                                               | Max. 1 cycle surge current(60Hz)                              | 190A                                             | 270A                | 330A                 | 500A                 | 1000A                |
|                                                               | Max. non-repetitive surge current (I <sup>2</sup> t, t=8.3ms) | 150A <sup>2</sup> s                              | 300A <sup>2</sup> s | 500A <sup>2</sup> s  | 1000A <sup>2</sup> s | 4000A <sup>2</sup> s |
| Peak voltage(Non-repetitive)                                  |                                                               | 600V                                             |                     |                      |                      |                      |
| Leakage current (240VAC/60Hz, Ta=25℃)                         |                                                               | Max. 10mArms                                     |                     |                      |                      |                      |
| Output ON voltage drop [Vpk](Max. load current)               |                                                               | Max. 1.6V                                        |                     |                      |                      |                      |
| Static off state dv/dt                                        |                                                               | 500V/μs                                          |                     |                      |                      |                      |
| 48-480VAC load voltage                                        |                                                               |                                                  |                     |                      |                      |                      |
| Load voltage range (50/60Hz)                                  |                                                               | 48-528VACrms                                     |                     |                      |                      |                      |
| Rated load current<br>Ta=25℃                                  | Resistive load (AC-51)                                        | 20Arms                                           |                     | 30Arms               |                      | 60Arms               |
|                                                               | Motor load (AC-53a)                                           | 5Arms                                            |                     | 8Arms                |                      | 15Arms               |
|                                                               | Min. load current                                             | 0.5Arms                                          |                     | 0.5Arms              |                      | 0.5Arms              |
|                                                               | Max. 1 cycle surge current(60Hz)                              | 300A                                             |                     | 500A                 |                      | 1000A                |
| Max. non-repetitive surge current (I <sup>2</sup> t, t=8.3ms) |                                                               | 350A <sup>2</sup> s                              |                     | 1000A <sup>2</sup> s |                      | 4000A <sup>2</sup> s |
| Peak voltage(Non-repetitive)                                  |                                                               | 1200V(Zero cross turn-on), 1000V(Random turn-on) |                     |                      |                      |                      |
| Leakage current (480VAC/60Hz, Ta=25℃)                         |                                                               | Max. 10mArms                                     |                     |                      |                      |                      |
| Output ON voltage drop [Vpk](Max. load current)               |                                                               | Max. 1.6V                                        |                     |                      |                      |                      |
| Static off state dv/dt                                        |                                                               | 500V/μs                                          |                     |                      |                      |                      |

(A)  
Photo  
electric  
sensor

(B)  
Fiber  
optic  
sensor

(C)  
Door/Area  
sensor

(D)  
Proximity  
sensor

(E)  
Pressure  
sensor

(F)  
Rotary  
encoder

(G)  
Connector/  
Socket

(H)  
Temp.  
controller

(I)  
SSR/  
Power  
controller

(J)  
Counter

(K)  
Timer

(L)  
Panel  
meter

(M)  
Tacho/  
Speed/  
Pulse  
meter

(N)  
Display  
unit

(O)  
Sensor  
controller

(P)  
Switching  
power  
supply

(Q)  
Stepping  
motor &  
Driver &  
Controller

(R)  
Graphic/  
Logic  
panel

(S)  
Field  
network  
device

(T)  
Production  
stoppage  
models &  
replacement

# SRH1 Series

## Specifications

### General Specifications

|                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Certification                                                 | UL508, CSA22.2 No.14, IEC/EN 60947-4-3                                                                                                                                                                                                                                                                                                                                                                                    |
| Type of the coordination of conditional short-circuit current | type 1                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Dielectric strength(Vrms)                                     | 4000VAC 50/60Hz for 1 min. (Input-Output, Input/Output-Case)                                                                                                                                                                                                                                                                                                                                                              |
| Insulation resistance                                         | Min. 100M $\Omega$ (at 500VDC megger)                                                                                                                                                                                                                                                                                                                                                                                     |
| Vibration                                                     | 10 to 55Hz double amplitude 0.75mm in each X, Y, Z direction for 1 hour                                                                                                                                                                                                                                                                                                                                                   |
| Input LED                                                     | Green                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Ambient temperature                                           | -20 to 80°C, Storage : -30 to 100°C (Rated load current capacity is different based on the surrounding temperature. Refer to <b>SSR Derating curve.</b> )                                                                                                                                                                                                                                                                 |
| Ambient humidity                                              | 45 to 85%RH, Storage : 45 to 85%RH                                                                                                                                                                                                                                                                                                                                                                                        |
| Input terminal connection                                     | Min. 1×0.5mm <sup>2</sup> (1×AWG20) Max. 2×1.5mm <sup>2</sup> (2×AWG16)                                                                                                                                                                                                                                                                                                                                                   |
| Output terminal connection                                    | <ul style="list-style-type: none"> <li>Case width 22.5mm(M4 terminal bolt): Min. 1×0.75mm<sup>2</sup>(1×AWG18) Max. 1×4mm<sup>2</sup>(1×AWG12) or 2×2.5mm<sup>2</sup>(2×AWG14)</li> <li>Case width 45mm(M5 terminal bolt): Min. 1×1.5mm<sup>2</sup>(1×AWG16) Max. 1×16mm<sup>2</sup>(1×AWG6) or 2×6mm<sup>2</sup>(2×AWG10)</li> <li>Use wires compliant with load current capacity to connect to the terminal.</li> </ul> |
| Input terminal fixed torque                                   | 0.75N·m to 0.95N·m                                                                                                                                                                                                                                                                                                                                                                                                        |
| Output terminal fixed torque                                  | <ul style="list-style-type: none"> <li>Case width 22.5mm(M4 terminal bolt): 1N·m to 1.35N·m</li> <li>Case width 45mm(M5 terminal bolt): 1.6N·m to 2.2N·m</li> </ul>                                                                                                                                                                                                                                                       |
| Unit weight                                                   | <ul style="list-style-type: none"> <li>Rated load current(Resistive load) 15A/20A : Approx. 225g</li> <li>Rated load current(Resistive load) 30A/40A : Approx. 410g</li> <li>Rated load current(Resistive load) 60A : Approx. 680g</li> </ul>                                                                                                                                                                             |

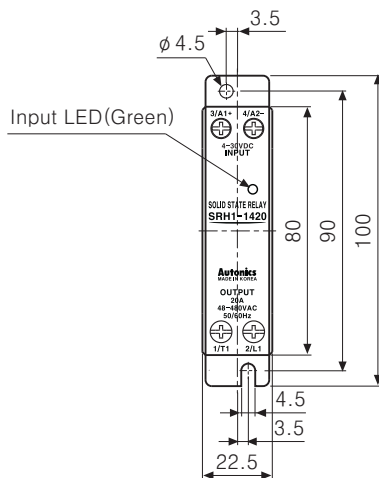
\*Condition for use in Environment is no freezing or condensation.

\*For wiring the terminal, an O-ring terminal must be used.

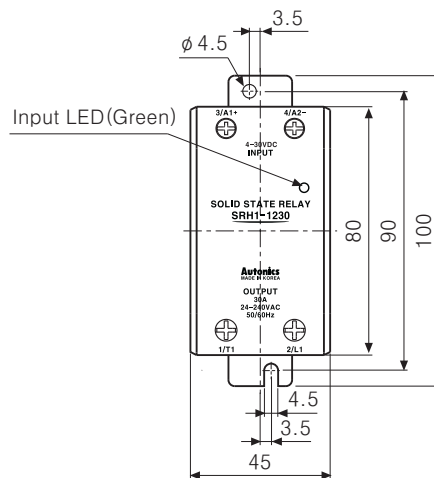
## Dimensions & Mounting

### Dimensions

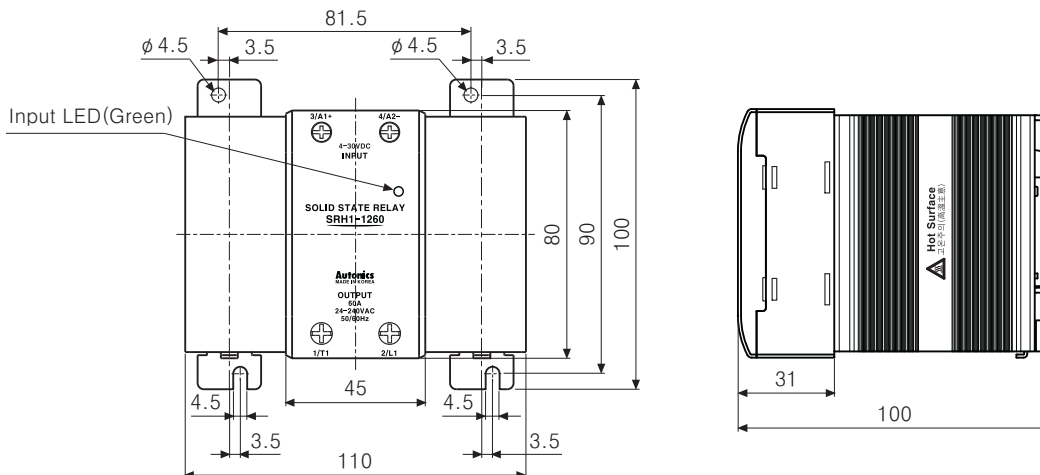
#### 15A/20A Rated load current



#### 30A/40A Rated load current



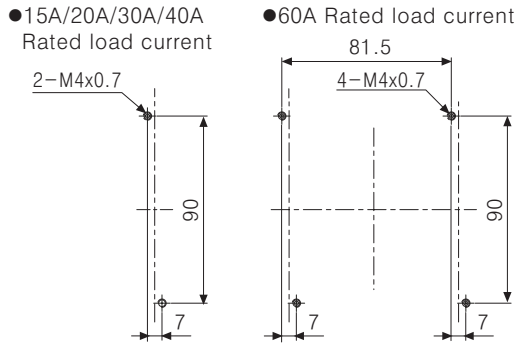
#### 60A Rated load current



(Unit:mm)

# Integrated Heatsink Type SSR

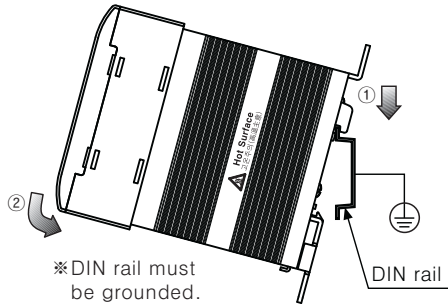
## ○Hole cut-out for panel front mounting



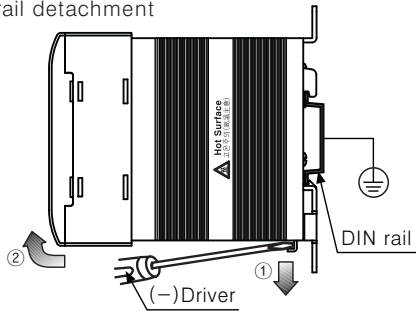
※Tightening torque for mounting : 1.8 to 2.5N · m

## ○DIN rail mounting

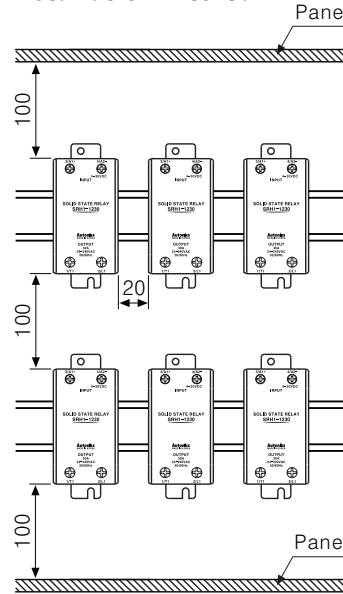
- DIN rail attachment



- DIN rail detachment



## ○Installation interval



※For mounting multiple SSR, please keep certain installation intervals for heat prevention.  
For horizontal installation (when the heights of input part and output part are equal), it is recommended to apply 50% of rated load current.

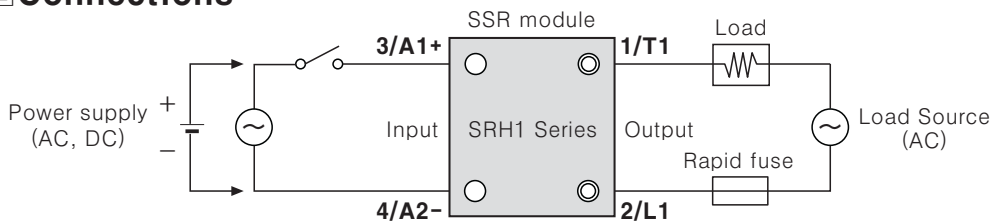


### High temperature caution

Make sure do not touch the heat sink or the unit body while power is supplied or right after load power is turned off. If not, it may cause a burn.

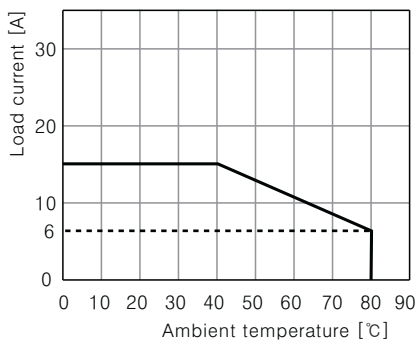
(Unit:mm)

## ■Connections

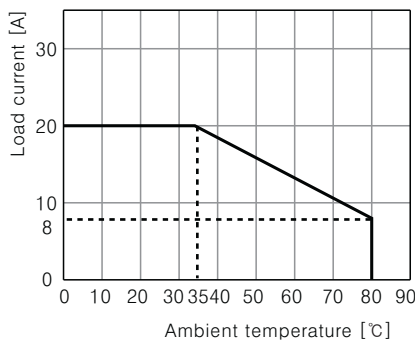


## ■SSR Characteristic curve

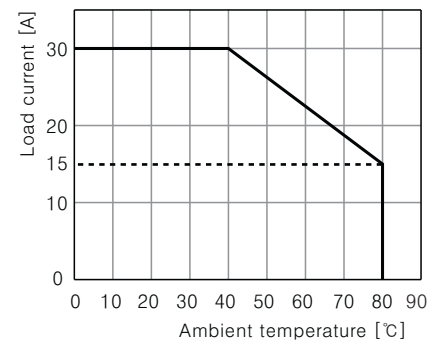
### ○SRH1-1215/2215/4215



### ○SRH1-1220/2220/4220 SRH1-1420/1420R/2420



### ○SRH1-1230/2230/4230

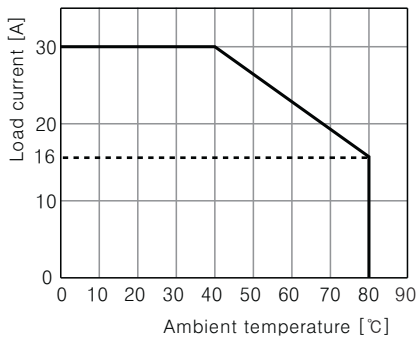


|     |                                          |
|-----|------------------------------------------|
| (A) | Photo electric sensor                    |
| (B) | Fiber optic sensor                       |
| (C) | Door/Area sensor                         |
| (D) | Proximity sensor                         |
| (E) | Pressure sensor                          |
| (F) | Rotary encoder                           |
| (G) | Connector/Socket                         |
| (H) | Temp. controller                         |
| (I) | SSR/Power controller                     |
| (J) | Counter                                  |
| (K) | Timer                                    |
| (L) | Panel meter                              |
| (M) | Tacho/Speed/Pulse meter                  |
| (N) | Display unit                             |
| (O) | Sensor controller                        |
| (P) | Switching power supply                   |
| (Q) | Stepping motor & Driver & Controller     |
| (R) | Graphic/Logic panel                      |
| (S) | Field network device                     |
| (T) | Production stoppage models & replacement |

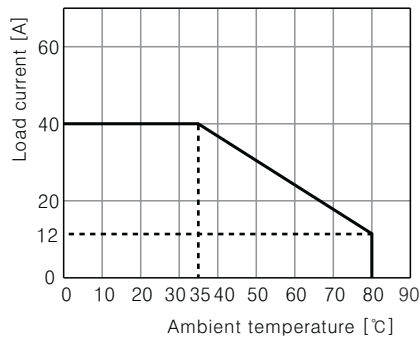
# SRH1 Series

## ■ SSR Characteristic curve

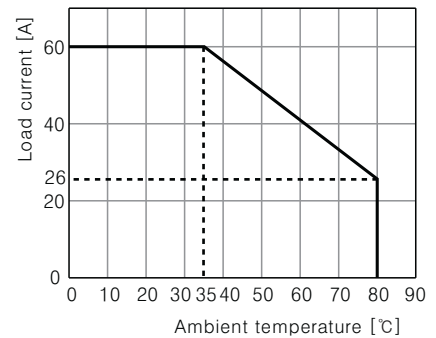
○SRH1-1430/1430R/2430



○SRH1-1240/2240/4240



○SRH1-1260/1460/1460R  
SRH1-2460/2260/4260



## ■ Proper usage



### High temperature caution

**Make sure do not touch the heat sink or the unit body while power is supplied or right after load power is turned off. If not, it may cause a burn.**



### Caution for using

- Ventilate for smooth convection current. If not, congested heat transfer may cause product failure or malfunction.
- For mounting multiple SSR, please keep certain installation intervals for heat prevention. For horizontal installation (when the heights of input part and output part are equal), it is recommended to apply less than 50% of the rated load current.
- Make sure do not touch the heatsink or the unit body while power is supplied or right after load power is turned OFF. If not, it may cause a burn.
- Connect the proper cable for the rated load current with output terminal.
- Use rapid fuse of which  $I^2t$  is under  $1/2$  of SSR  $I^2t$  in order to protect the unit from load short-circuit current.
- In case of a short-circuit please replace the fuse with a  $1/2$  of SSR  $I^2t$  value specified semiconductor protective type.
- In case that load's current is lower than SSR min. load current, connect dummy resistance to the load in parallel so as to make load current higher than SSR min. load current.
- When selecting phase control with random turn-on model, install the noise filter between load and load source.
- Make sure that the screw on output terminal is tightly fastened. Using the unit with loose bolt may cause product failure or malfunction.
- Do not touch the load terminal even if output is OFF. It may cause an electric shock.
- The signal input of the 4-30VDC/24VAC model should be supplied by the insulated and limited voltage/current or by Class 2 power supply.
- Proper application environment (Avoid following environments to install)
  - Where temperature / humidity is beyond the specification
  - Where dew condensation occurs due to temperature change
  - Where inflammable or corrosive gas exists
  - Where direct rays of light exist
  - Where severe shock, vibration or dust exists
  - Where near facilities generating strong magnetic forces or electric noise
- Installation environment
  - It shall be used indoor
  - Altitude Max. 2,000m
  - Pollution Degree 2
  - Installation Category III