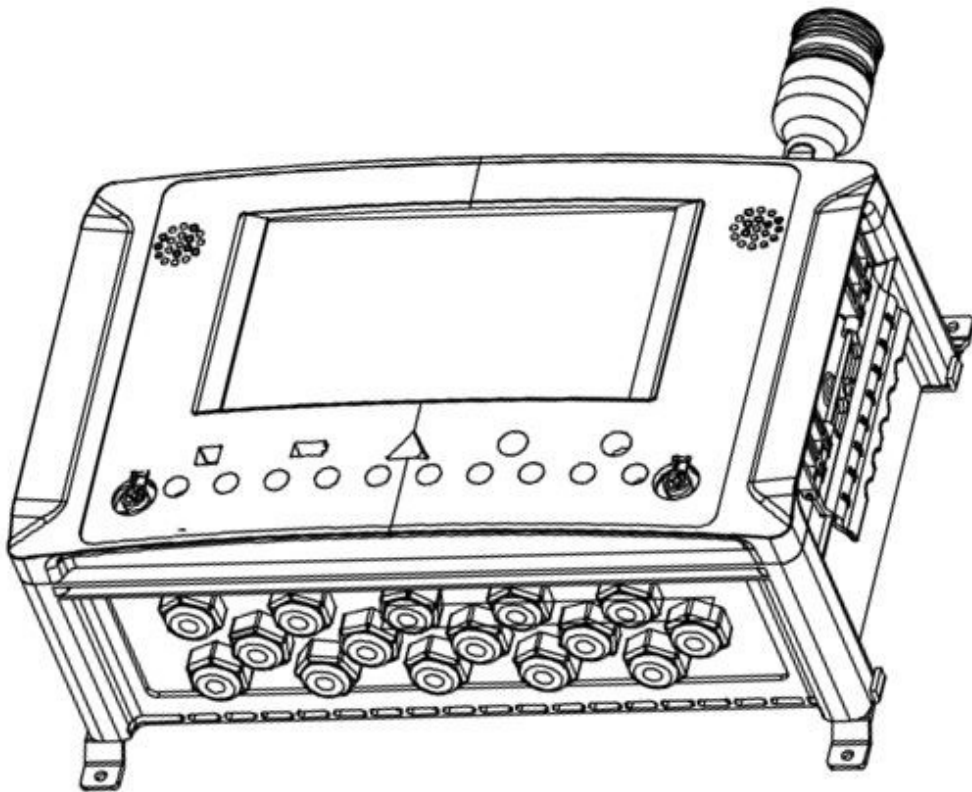


ASC-100

INSTRUCTION MANUAL



Instruction

Please read this Manual carefully for correct use of the Product.

Copyright (c)GASTRON CO., LTD. All rights reserved.

We truly thank you for choosing us.

GASTRON is a professional manufacture of gas detector & gas monitoring systems. With the best quality and great convenience of use, our products have been praised by a lot of clients. We are always making our best efforts to help them find the products they want easily and develop gas detectors which meet their needs. GASTRON can take care of all your concerns about gas detection. We will take all of the responsibilities and accomplish the highest client satisfaction.

This Manual describes the operating method and brief maintenance procedures of ASC-100. Read carefully and keep it properly for future reference.

If you find any problem during the use of the Product, feel free to contact us in one of the following ways:

- Address: (Bugok-dong), 23, Gunpocheomdansaneop 1-ro, Gunpo-si, Gyeonggi-do
- TEL: 031-490-0800
- Fax: 031-490-0801
- **URL: www.gastron.com**
- **e-mail: gastron@gastron.com**

This Manual is subject to changes without prior notice for the improvements of product performances and user convenience.

Instruction

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Instruction

1. Overview

ASC-100 is a digital alarm receiver connected with industrial and commercial gas detectors. The base unit is able to support mA analogue input/output channels (up to 10 channels). With an expansion unit, the number of channels can be increased up to 20. In addition to mA input/output, up to 20 channels are provided per unit to control diverse outputs such as visual/audible signals and solenoid valves. The integrated User Configurable Map View feature allows a user to monitor a local detector's location and status intuitively. The adoption of 10.1-inch wide-viewing angle LCD and MSDS viewer features enables easy handling of MSDS documents which should be kept in a toxic gas disaster-prone area.

The features of the Product are as follows:

- Gas detector monitoring (up to 10 channels) (4-20mA detection, DC 24V)
- 10 additional channels with an expansion unit (able to monitor up to 20 channels in total)
- Relay, 4-20mA input/output; module constructed individually
- 10.1" TFT LCD and multilingual
- Data & Event log
- Material Safety Data Sheet (MSDS) Viewer on gas detection
- High-output buzzer and voice alarm
- Diverse external interfaces such as TCP/IP and MODBUS



[Figure 1. ASC-100]

Performance degradation can take place temporarily in the features not related with gas detection depending on operating circumstances.

Instruction

2. Label Position and Descriptions

2.1. Alarm and Caution



Warning

Even after the power is cut off, residual voltage can cause an electric shock. Wait a while and then resume the operation.



Warning

Even after the power supply is disconnected, the high current can still flow through the equipment. An electric shock can result in bodily injury or death.



Warning

Incorrect grounding may result in system malfunction or failure. Ensure that protective grounding is properly done according to the Manual.



Warning

There is a risk of explosion.

[Figure 2. Warning Label]

2.2. I/O Modules and Quick Guide Labels

| <table border="1"> <tr><th>ROM</th></tr> <tr><td>CH9</td><td>CH10</td></tr> <tr><td>CH7</td><td>CH8</td></tr> <tr><td>CH5</td><td>CH6</td></tr> <tr><td>CH3</td><td>CH4</td></tr> <tr><td>CH1</td><td>CH2</td></tr> <tr><td>NC</td><td></td></tr> <tr><td>COM</td><td></td></tr> <tr><td>NO</td><td></td></tr> </table> | | | | | | | | | | ROM | CH9 | CH10 | CH7 | CH8 | CH5 | CH6 | CH3 | CH4 | CH1 | CH2 | NC | | COM | | NO | | <p style="text-align: center;">ROM</p> <div style="border: 1px solid black; padding: 5px;"> <p>Safety Controller(ASC-100) Module</p> <p><input checked="" type="checkbox"/> ROM <input type="checkbox"/> BAM <input type="checkbox"/> AOM <input type="checkbox"/> PAM</p> <p style="text-align: right;"><small>GASTRON MADE IN KOREA</small></p> </div> | | | | | | | | | | | | |
|---|------|--------|-------|--------|--------|--------|-----|----|-----|-----|-----|--------|-------|--------|--------|--------|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|---|-----|---|---|--|--|--|--|--|--|--|--|--|
| ROM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CH9 | CH10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CH7 | CH8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CH5 | CH6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CH3 | CH4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CH1 | CH2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| COM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr><th>BAM</th><th>CAN</th><th>ExtRST</th><th>FAULT</th><th>ALARM2</th><th>ALARM1</th><th>PWR SW</th></tr> <tr><td>L</td><td>H</td><td>-RST+</td><td>NC</td><td>COM</td><td>NO</td><td>NC</td><td>COM</td><td>NO</td><td>NC</td><td>COM</td><td>NO</td><td></td></tr> </table> | | | | | | | | | | BAM | CAN | ExtRST | FAULT | ALARM2 | ALARM1 | PWR SW | L | H | -RST+ | NC | COM | NO | NC | COM | NO | NC | COM | NO | | <p style="text-align: center;">BAM</p> <div style="border: 1px solid black; padding: 5px;"> <p>Safety Controller(ASC-100) Module</p> <p><input type="checkbox"/> ROM <input checked="" type="checkbox"/> BAM <input type="checkbox"/> AOM <input type="checkbox"/> PAM</p> <p style="text-align: right;"><small>GASTRON MADE IN KOREA</small></p> </div> | | | | | | | | | |
| BAM | CAN | ExtRST | FAULT | ALARM2 | ALARM1 | PWR SW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L | H | -RST+ | NC | COM | NO | NC | COM | NO | NC | COM | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr><th>AOM</th><th>CH5</th><th>CH4</th><th>CH3</th><th>CH2</th><th>CH1</th></tr> <tr><td></td><td>GND</td><td>mA</td><td>GND</td><td>mA</td><td>GND</td><td>mA</td><td>GND</td><td>mA</td><td>GND</td><td>mA</td></tr> </table> | | | | | | | | | | AOM | CH5 | CH4 | CH3 | CH2 | CH1 | | GND | mA | GND | mA | GND | mA | GND | mA | GND | mA | <p style="text-align: center;">AOM</p> <div style="border: 1px solid black; padding: 5px;"> <p>Safety Controller(ASC-100) Module</p> <p><input type="checkbox"/> ROM <input type="checkbox"/> BAM <input checked="" type="checkbox"/> AOM <input type="checkbox"/> PAM</p> <p style="text-align: right;"><small>GASTRON MADE IN KOREA</small></p> </div> | | | | | | | | | | | | |
| AOM | CH5 | CH4 | CH3 | CH2 | CH1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | GND | mA | GND | mA | GND | mA | GND | mA | GND | mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr><th>PAM</th><th>CH5</th><th>CH4</th><th>CH3</th><th>CH2</th><th>CH1</th></tr> <tr><td></td><td>GND</td><td>mA</td><td>PWR</td><td>GND</td><td>mA</td><td>PWR</td><td>GND</td><td>mA</td><td>PWR</td><td>GND</td><td>mA</td><td>PWR</td></tr> </table> | | | | | | | | | | PAM | CH5 | CH4 | CH3 | CH2 | CH1 | | GND | mA | PWR | GND | mA | PWR | GND | mA | PWR | GND | mA | PWR | <p style="text-align: center;">PAM</p> <div style="border: 1px solid black; padding: 5px;"> <p>Safety Controller(ASC-100) Module</p> <p><input type="checkbox"/> ROM <input type="checkbox"/> BAM <input type="checkbox"/> AOM <input checked="" type="checkbox"/> PAM</p> <p style="text-align: right;"><small>GASTRON MADE IN KOREA</small></p> </div> | | | | | | | | | | |
| PAM | CH5 | CH4 | CH3 | CH2 | CH1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | GND | mA | PWR | GND | mA | PWR | GND | mA | PWR | GND | mA | PWR | | | | | | | | | | | | | | | | | | | | | | | | | | | |

[Figure 3. I/O Module Label]

Instruction

| | |
|---|---|
| <p>주의 사항</p> <ol style="list-style-type: none"> 1. 장비의 매뉴얼을 읽고 충분히 이해 후 장치를 사용할 것. 2. 설치 전 사용 전압 및 기기의 설정 전압 확인 후 전원 스위치를 ON 할 것. 3. 전원 스위치 OFF 후 케이블 결선 추가/제거/교체 작업할 것. 4. 전원 스위치 OFF 후 내부 모듈의 추가/제거/교체 작업할 것. 5. 예비 배터리를 장착된 경우 배터리를 전원 스위치 OFF 후 케이블 결선/제거/교체 작업할 것. 6. 예비 배터리를 장착된 경우 배터리를 전원 스위치 OFF 후 내부 모듈 추가/제거/교체 작업할 것. 7. 누수 등의 영향이 있는 곳에서 사용하지 말 것. 8. 시험 및 점검, 고장은 허가받은 관리 담당자 및 제조사 이외에는 절대 조작을 금함. 9. 수신부 및 감지부는 허가받은 관리 담당자 및 제조사 이외에는 절대 조작을 금함. | <p>DETECTOR CONNECTION</p> |
| <p>AC WIRING</p> <p>DC WIRING</p> | <p>MAIN UNIT & EXPANSION UNIT CONNECTION</p> |

[Figure 4. Quick Guide Label]

GASTRON Aegis Safety Controller

P/N :
S/N :

Power : AC Type(110/220V, 50~60Hz, Max 150W)
 DC Type(18~32V, Max 150W)

Temp : -10°C to +55°C, Ingress Protection : IP65

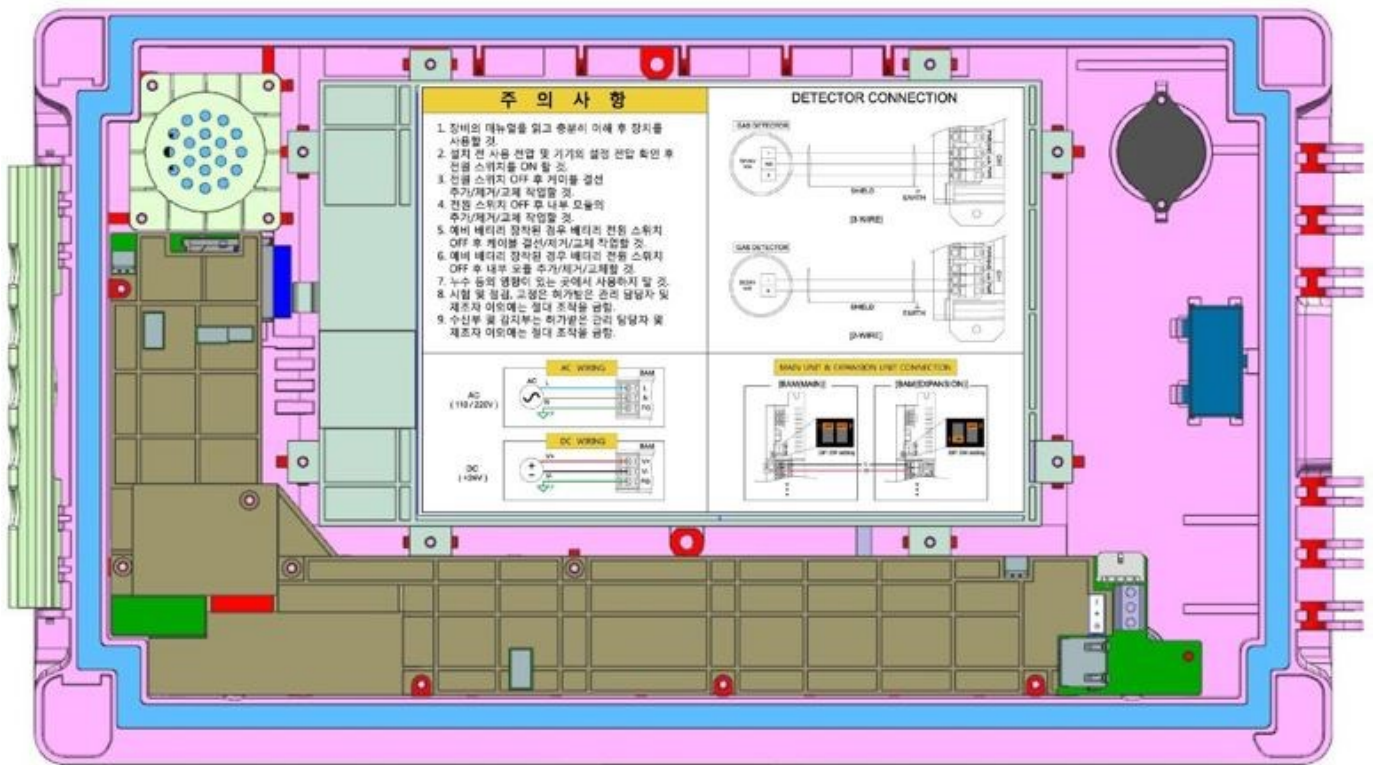
CAUTION / ATTENTION
For safety reasons, this equipment should only be operated by qualified personnel.

안전을 위해 해당 장비는 자격을 갖춘 사람만 조작해야 하며, 조작 전에 매뉴얼을 반드시 숙지 해야 합니다.

Manufactured by : Gastron.Co.,Ltd
23, Gunpocheomdansaneop 1-ro, Gunpo-si
Gyeonggi-do, 15881, Rep. of KOREA

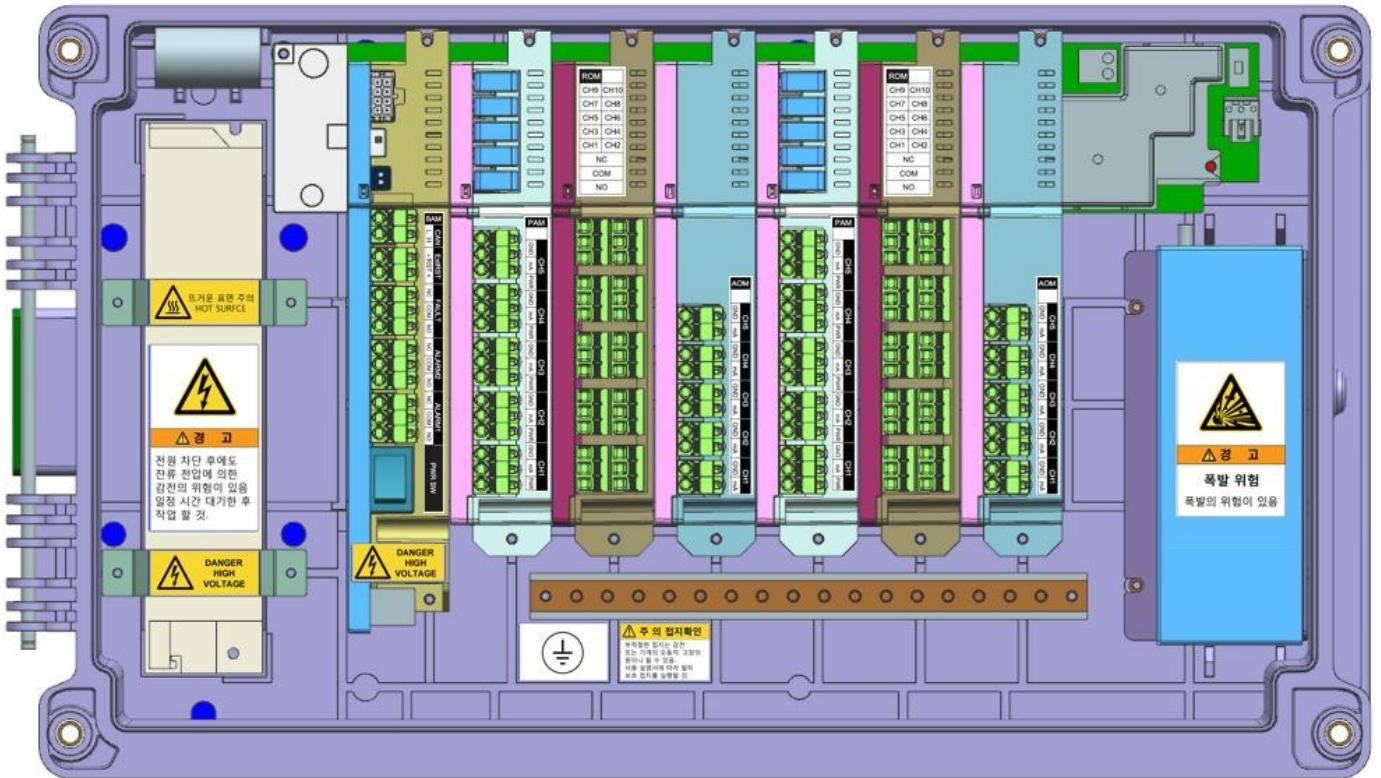
[Figure 5. Certification Label]

2.3. Inner Label Position

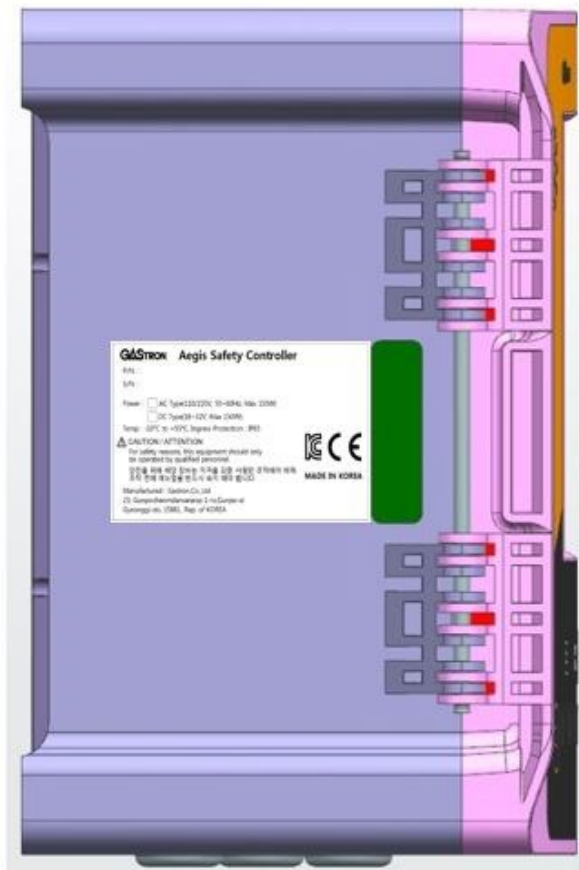


[Figure 6. Inner Quick Guide Label Positions]

Instruction

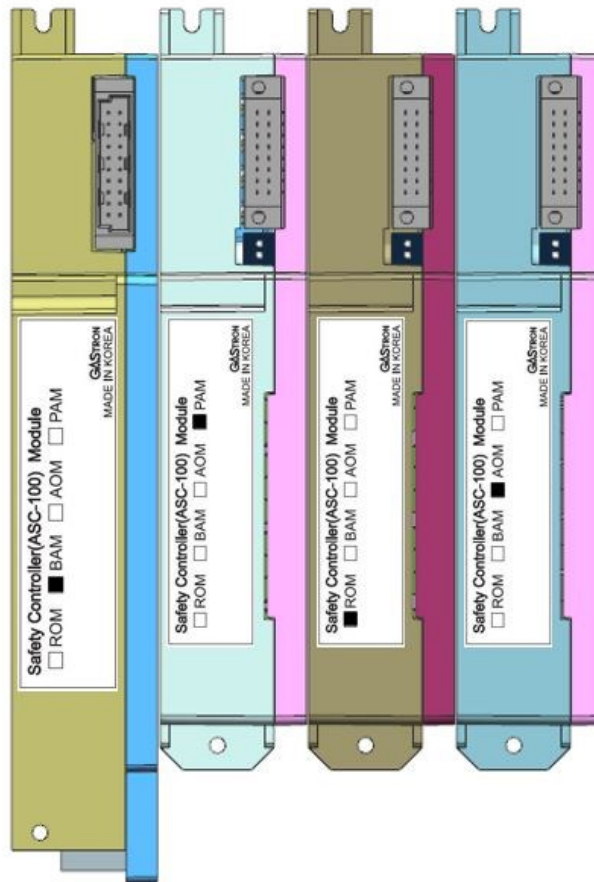


[Figure 7. Inner Label Positions]



[Figure 8. Certification Label Position]

Instruction



[Figure 9. I/O Module Label Positions]

Instruction

3. System Specifications

3.1. General

[Table 1. General Specifications]

| Items | Specification | Description |
|--|--|--|
| Product Name | AEGIS Safety Controller(ASC)-100 | - |
| Dimensions (W x H x D / mm) | 446 x 250 x 164 (outer warning lights NOT included) | - |
| Multichannel 4-20mA Input & 24V Power Settings | Up to 10 channels with 2 PAMs (5 channels per module) | Up to 20 channels with an expansion unit |
| Channel Relay (SPDT) Settings | Up to 20 channels with 2 ROMs (10 channels per module) | Up to 40 channels with an expansion unit |
| Common I/O | Alarm 1, Alarm 2, Fault, Remote Reset | - |
| Display and Input Devices | 10.1 in full color TFT with resistive touchscreen, all alarm, system status LED, I/Och communication status LED (normal, abnormal) | Language: Korean, Chinese, English |
| External Interface | TCP/IP, MODBUS (RS-485) | Option |
| Auxiliary Storage Device | SD Card | - |
| Main Storage Device | Micro SD | - |
| Sound Device | Buzzer: 90dB @ 1m (Warning sound) Speaker: 80dB @ 1m (Voice / melody) | - |
| Backup Battery (6S2P-5200) | 21.78V, 5,100mAh (111 Watt) | - |

3.2. Environments

[Table 2. Environmental Specifications]

| Items | Specification | Description |
|-----------------------|----------------|-------------|
| IP Grade | IP65 | - |
| Operating Temperature | -10°C to +55°C | - |
| Operating Humidity | 5 to 95% | - |

3.3. Power

[Table 3. Power Specifications]

| ITEMS | SPECIFICATION | Description |
|--------------------------|--|---|
| Power (AC) | AC 110/240V 50 – 60 Hz ± 6% / Max 150W | Auto Selectable |
| Power (DC) | DC 18 - 32V(Normal DC 24V) / Max 150W | 0.4A continuous current per channel enabled |
| Power Supply per Channel | 24V / 1A Limit / Over Latch-Off (Up to 24W per channel and 120W for all 5 channels) | - |
| Relay Contact | 5 A @ 250VAC / 5A @ 30VDC | - |
| Analog Input | 0-24mA (Fault, Measurement, OVER) | - |
| Analog Output | 0-24mA / Isolation per channel | - |

Instruction

4. System Configuration and Descriptions

4.1. I/O Module Construction and Descriptions

[Table 4. I/O Module Construction]

| Items | Description |
|----------------|--|
| Main Unit | A base unit of the receiver in a gas detector; able to construct up to 6 internal I/O modules; able to cover 10 gas detectors in linked with an expansion unit; controllable up to 20 channels |
| Expansion Unit | Able to control up to 10 channels without TFT screen configuration after linkage with a main unit |
| CTM | Controls all modules of the receiver in a gas detector; executes data processing & display and alarm function |
| STM | Displays product status and channel conditions in LED |
| SMPS | Input power AC/DC SMPS for main/expansion unit (DC24V, 6.5A/150W) |
| BAM | Controls power and processes the data between the bottom modules connected to the back plane and CTM |
| PAM | Supplies power to the detector and receives and handles 4-20mA; able to receive up to 5 channels |
| ROM | Executes relay actuation according to internal setting conditions; controls outer warning lights and external devices; able to cover up to 10 channels |
| AOM | Generates mA entered with PAM; able to cover up to 5 channels |
| Backup battery | Able to keep the system ON for nearly 30 minutes at power outage with standby power (DC21.78V, 5.1A/111W) |

4.2. I/O Module Specifications

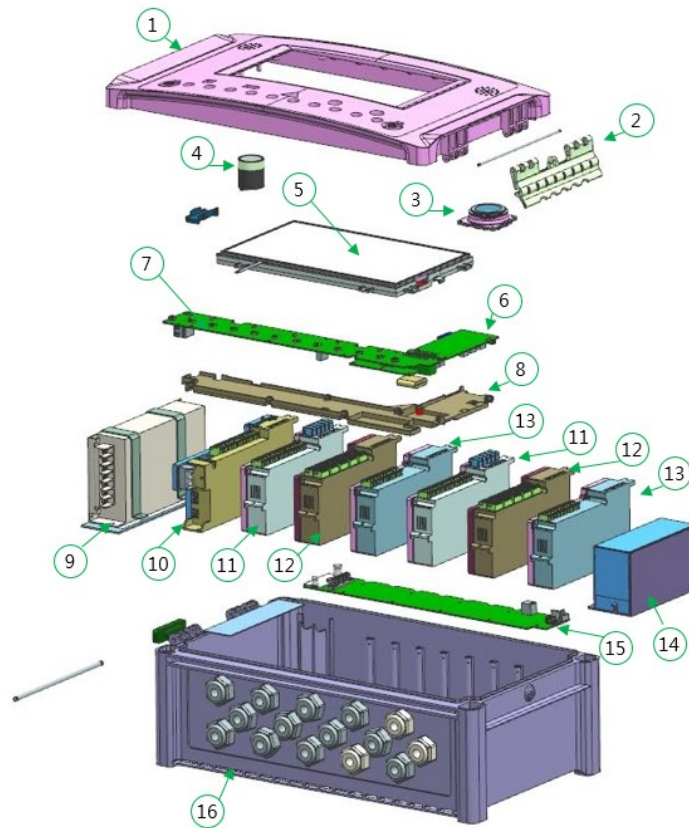
[Table 5. I/O Module Specifications]

| Items | Specification | Description |
|------------------------------------|----------------|---|
| Base Module (BAM) | Function | Internal module control, connection with an expansion unit |
| | Common I/O | External Remote Input 1ch |
| | Common Relay | Alarm Relay 2ch, Fault Relay 1ch |
| Power & Analog Module (PAM) | Function | Detector power supply, 2/3-wire, 5-channel 4-20mA input |
| | Power | 24W per channel, up to 120W for all 5 channels |
| | mA Input Range | 0-22mA (Max 24mA) |
| Relay Out Module (ROM) | Function | 10-channel, 3-terminal relay (NC, COM, NO), ENERGIZER / DE-ENERGIZER mode |
| | Relay Spec | 5A @ 250VAC / 5A @ 30VDC |
| Analog Out Module (AOM) | Function | Individual isolation, 5-channel mA output |
| | mA Out Range | 0-22mA (Max 24mA) |
| Control & Status Module (CTM, STM) | Function | TFT drive (GUI), data processing, module control |
| | Ext Interface | TCP/IP, RS485 MODBUS(Optional) |
| | LED | 5-channel system status, 10-channel channel status LED |
| Back Plane Module (BPM) | Function | Internal unit power, signal line construction, battery charge circuit |

5. Components and Descriptions

5.1. Product Architecture

Instruction



[Figure 10. Product Architecture]

[Table 6. Product Architecture Descriptions]

| No | Name | Descriptions |
|----|---|--|
| 1 | Top Cover Case | Front cover |
| 2 | Hook Handle | Acryl designed to install/remove the cover |
| 3 | Speaker Module | - |
| 4 | Buzzer Assy | - |
| 5 | LCD | 10.1-inch touch TFT |
| 6 | CTM Module Cover | To protect the CTM board |
| 7 | STM Module Cover | To protect the STM board |
| 8 | CTM, STM Module | - |
| 9 | AC/DC SMPS | 24V,6.5A / 150W |
| 10 | Base Module (BAM) and Protective Cover | - |
| 11 | Power & mA In Module (PAM) and Protective Cover | - |
| 12 | Relay Out Module (ROM) and Protective Cover | - |
| 13 | mA Out Module (AOM) and Protective Cover | - |
| 14 | Backup Battery Pack | 21.78V,5.1A / 111W |
| 15 | Back Plane Module | - |
| 16 | Enclosure | Body (top, bottom) |

5.2. External Components and Descriptions

Instruction



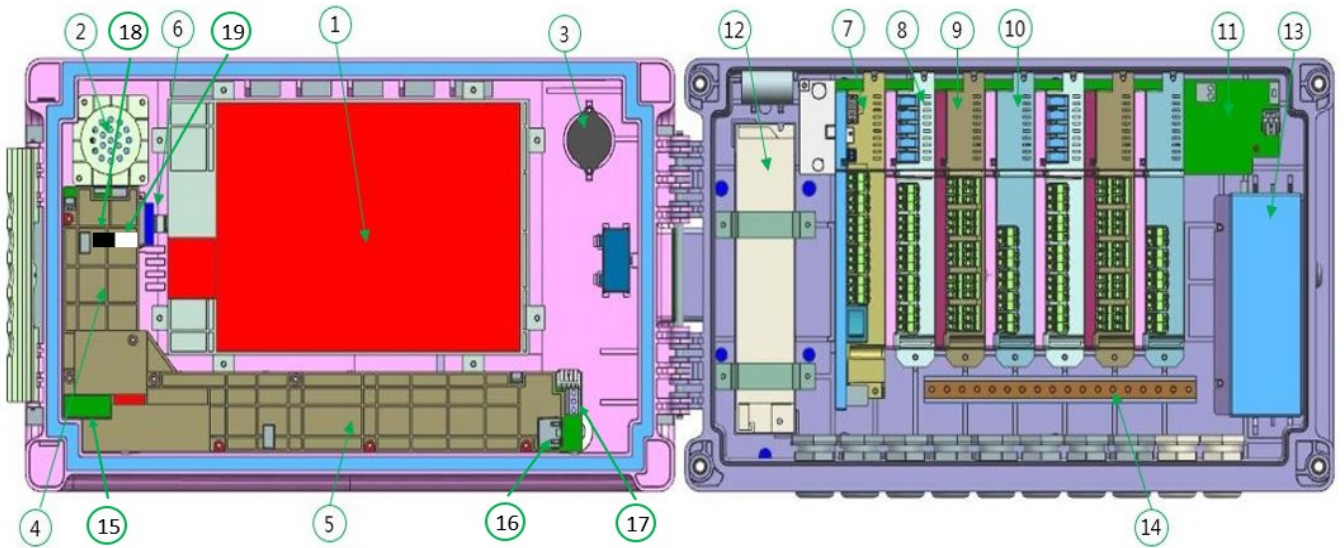
[Figure 11. ASC-100 Cover Components]

[Table 7. ASC-100 Cover Components]

| No | Name | Descriptions |
|----|---|--|
| 1 | Touch TFT (1024x600) | 10,1" full color TFT / monitoring display screen |
| 2 | Buzzer Output Unit | Piezo Buzzer 90 dB @ 1m / warning sound |
| 3 | Speaker Output Unit | 80 dB @ 1m / voice, melody |
| 4 | Power LED (External Power Display) | External power supply status (green) |
| 5 | Battery LED (Backup Battery Status Display) | Internal BAT power supply status (green) |
| 6 | Alarm LED | All alarm status (red) |
| 7 | Fault LED (Fault Display) | Fault status after internal diagnosis (yellow) |
| 8 | Status LED (Normal Status Display) | System operation status (green) |
| 9 | 10 Channel Status | Channel status (1-10 channel(s)) (Green: Normal, Yellow: 1 st alarm, Red: 2 nd alarm) |
| 10 | Audio Alarm Mute Button | Stops alarm |
| 11 | Reset Button | Latch off / returns back to the measurement mode (reset) |
| 12 | Hook Handle | Acryl designed to install/remove the cover |

5.3. Internal Components and Descriptions

Instruction



[Figure 12. Internal Layout]

[Table 8. Internal Components]

| No | Name | Descriptions |
|----|---------------------|---|
| 1 | Touch TFT | 10.1" full color TFT / monitoring display screen |
| 2 | Speaker Module | 80 dB @ 1m / voice, melody |
| 3 | Buzzer | Piezo Buzzer 90 dB @ 1m / warning sound |
| 4 | CTM | Control module |
| 5 | STM | Status module (LED indicator) |
| 6 | SD Card Socket | SD card slot |
| 7 | BAM | Base module (I/O control module) |
| 8 | PAM | Power & mA input module (CH Active USB included) |
| 9 | ROM | Relay output module |
| 10 | AOM | Analog output module |
| 11 | BPM | Back plane module (BAM) and I/O module connection board |
| 12 | AC/DC SMPS | AC 110/220V input, DC24V, 6.5A (150W) |
| 13 | Backup Battery Pack | 21.78V / 5.1A (111W) |
| 14 | Earth Bar | Field GND |
| 15 | D-SUB Port | Config D-SUB port disabled |
| 16 | Ethernet Port | 10/100 Ethernet port |
| 17 | MODBUS Port | RS-485 MODBUS port |
| 18 | J-TAG Download Port | J-TAG download port disabled |
| 19 | Debug Port | Debug port disabled |

Instruction

5.4. External Components and Descriptions (Expansion Unit)



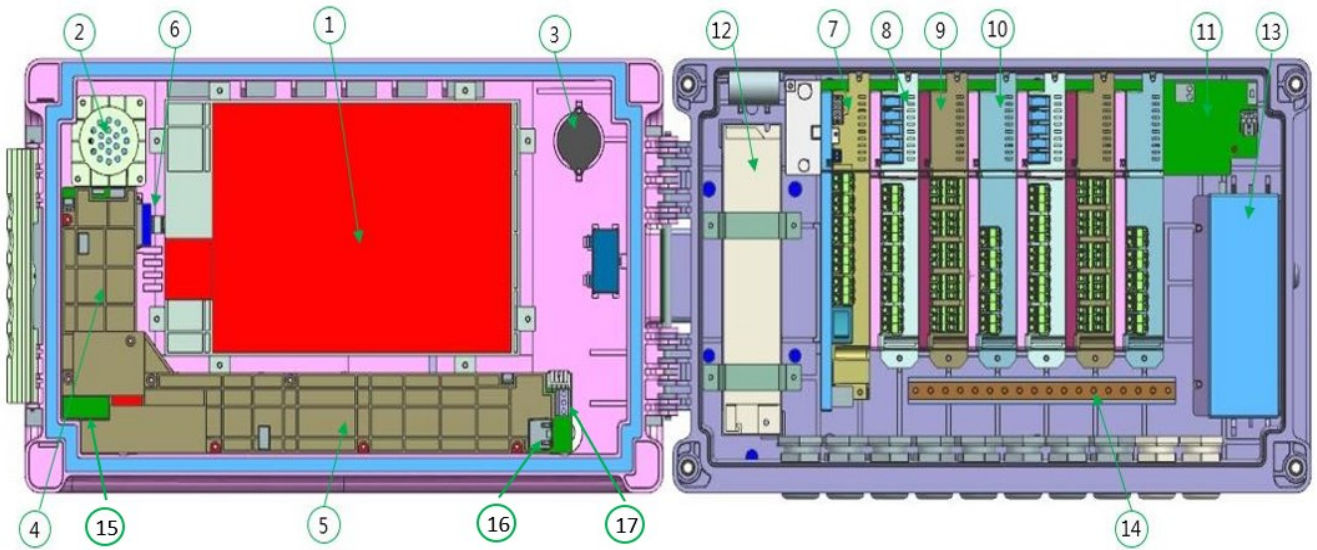
[Figure 13. Expansion Cover Components]

[Table 9. External Components of Expansion Unit]

| No | Name | Descriptions |
|----|---|---|
| 1 | Power LED (Power Display) | External power supply status (green) |
| 2 | Battery LED (Backup Battery Operating Status Display) | Internal BAT power supply status (green) |
| 3 | 10-Channel Status | Status of 11-20 channels (Green: Normal, Yellow: 1 st alarm, Red: 2 nd alarm) |
| 4 | Alarm LED | All alarm status (red) |
| 5 | Fault LED (Fault Display) | Fault status after internal diagnosis (yellow) |
| 6 | Status LED (Normal Status Display) | System operation status (green) |

5.5. Internal Components and Descriptions (Expansion Unit)

Instruction



[Figure 14. Internal Layout of Expansion Unit]

[Table 10. Internal Components of Expansion Unit]

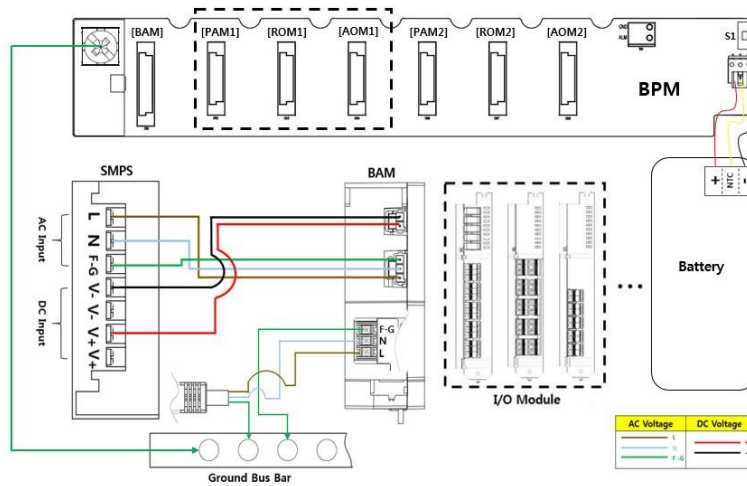
| No | Name | Descriptions |
|----|---------------------|---|
| 1 | Touch TFT | No touchscreen |
| 2 | Speaker Module | No speaker module |
| 3 | Buzzer | No buzzer |
| 4 | CTM | No CTM |
| 5 | STM | Status Module (LED indicator) |
| 6 | SD Card Socket | No SD card slot |
| 7 | BAM | Base module (I/O module control module) |
| 8 | PAM | Power & mA input module (ch-active USB included) |
| 9 | ROM | Relay output module |
| 10 | AOM | Analog output module |
| 11 | BPM | Back plane module (BAM) and I/O module connection board |
| 12 | AC/DC SMPS | AC 110/240V input, DC24V, 6.5A (150W) |
| 13 | Backup Battery Pack | 21.78V / 5.1A (111W) |
| 14 | Earth Bar | Field GND |
| 15 | D-SUB Port | Config D-SUB port disabled |
| 16 | Ethernet Port | 10/100 Ethernet port |
| 17 | MODBUS Port | RS-485 MODBUS port |

6. Installation

6.1. System Power and Signal Construction

- BAM and I/O modules are constructed as illustrated in the figure below, and the I/O is able to construct up to 6 channels.

Instruction



[Figure 15. System Power Connection Diagram]

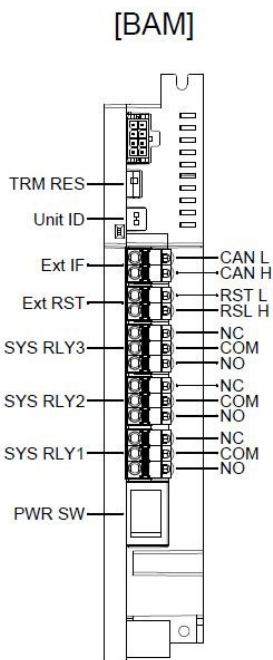
- Battery is available as a backup. S1 switch is turned ON/OFF to operate the system.
- The communication between I/O modules is comprised of circuits without separate wiring.

6.2. BAMB Terminal

- The CAN communication-connecting cable should have shield cables with CVVS or 1.5sq CVVSB or higher.

[Table 11. BAMB Terminal Configuration]

| Module | Terminal Configuration | Description |
|----------------------------------|-----------------------------------|--|
| BAMB | CAN L | A communication terminal connected to an expansion unit at channel expansion |
| | CAN H | |
| | ExtRST - | External reset control terminal |
| | ExtRST + | |
| | Fault RELAY NC | Fault status output relay |
| | Fault RELAY COM | |
| | Fault RELAY NO | |
| | 2 nd Warning RELAY NC | 2 nd alarm output relay |
| | 2 nd Warning RELAY COM | |
| | 2 nd Warning RELAY NO | |
| | 1 st Warning RELAY NC | 1 st alarm output relay |
| | 1 st Warning RELAY COM | |
| 1 st Warning RELAY NO | | |



[Figure 16. BAMB Terminal Construction Diagram]

6.2.1. Expansion Link Connection

Instruction

- Check if main and expansion units are matched in terms of the version of firmware.
- CAN Cable: 24AWG shielded twisted pair cable (less than 5 meters)
- The connection layout is as follows:

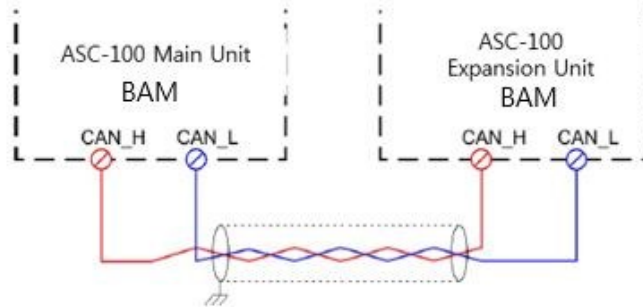


Figure 17. Connecting Main Unit to Expansion Unit

Note: Apply power to the expansion unit and then main unit for interactive communication.



| Module Label | Terminal Configuration | Descriptions |
|--------------|------------------------|-----------------------------------|
| CAN | CAN_H | Connects main and expansion units |
| | CAN_L | |

[Table 12. Expansion Link Terminal Configuration]

6.2.2. How to Operate ASC-100 DIP Switch

- ASC-100 can be controlled with BAM’s DIP switch for communication between main and expansion units and operated as follows:

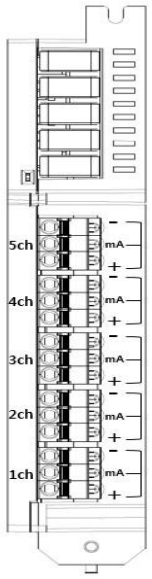
[Table 13. BAM DIP Switch Setting]

| Connection of Main and Expansion Units | | Main Unit Alone |
|--|---|-------------------------|
| Main Unit | Expansion Unit | Main Unit |
| | | |
| Channels 1&2 Off | Channel 1 On , Channel 2 Off | Channels 1&2 Off |

6.3. PAM Terminal Configuration

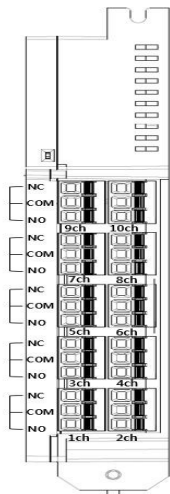
[Table 14. PAM Terminal Components]

Instruction

|  | Module | Terminal Configuration | Description |
|---|--------|------------------------|--|
| | PAM | Detector Power - | Power supply to the detector and 4-20mA signal input (1ch) |
| | | Detector 4-20mA Input | |
| | | Detector Power + | |
| | | Detector Power - | Power supply to the detector and 4-20mA signal input (2ch) |
| | | Detector 4-20mA Input | |
| | | Detector Power + | |
| | | Detector Power - | Power supply to the detector and 4-20mA signal input (3ch) |
| | | Detector 4-20mA Input | |
| | | Detector Power + | |
| | | Detector Power - | Power supply to the detector and 4-20mA signal input (4ch) |
| | | Detector 4-20mA Input | |
| | | Detector Power + | |
| | | Detector Power - | Power supply to the detector and 4-20mA signal input (5ch) |
| | | Detector 4-20mA Input | |
| Detector Power + | | | |

[Figure 18. PAM Terminal Layout]

6.4. ROM Terminal Configuration



[Figure 19. ROM Terminal Layout]

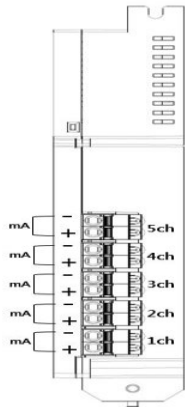
[Table 15. ROM Terminal Configuration]

| Module | Terminal Configuration | Description |
|--------|------------------------|---|
| ROM | Alarm RELAY NC | 1 st alarm, 2 nd alarm, fault status output relay (1ch, 2ch) |
| | Alarm RELAY COM | |
| | Alarm RELAY NO | |
| | Alarm RELAY NC | 1 st alarm, 2 nd alarm, fault status output relay (3ch, 4ch) |
| | Alarm RELAY COM | |
| | Alarm RELAY NO | |
| | Alarm RELAY NC | 1 st alarm, 2 nd alarm, fault status output relay (5ch, 6ch) |
| | Alarm RELAY COM | |
| | Alarm RELAY NO | |
| | Alarm RELAY NC | 1 st alarm, 2 nd alarm, fault status output relay (7ch, 8ch) |
| | Alarm RELAY COM | |
| | Alarm RELAY NO | |
| | Alarm RELAY NC | 1 st alarm, 2 nd alarm, fault status output relay (9ch, 10ch) |
| | Alarm RELAY COM | |
| | Alarm RELAY NO | |

Instruction

6.5. AOM Terminal Configuration

[Table 16. AOM Terminal Configuration]



[Figure 20. AOM Terminal Layout]

| Module | Terminal Configuration | Description |
|--------|------------------------|---------------------|
| AOM | Output 4-20mA - | 4-20mA output (ch1) |
| | Output 4-20mA + | |
| | Output 4-20mA - | 4-20mA output (ch2) |
| | Output 4-20mA + | |
| | Output 4-20mA - | 4-20mA output (ch3) |
| | Output 4-20mA + | |
| | Output 4-20mA - | 4-20mA output (ch4) |
| | Output 4-20mA + | |
| | Output 4-20mA - | 4-20mA output (ch5) |
| | Output 4-20mA + | |

6.5.1. How to Operate I/O Module DIP Switch

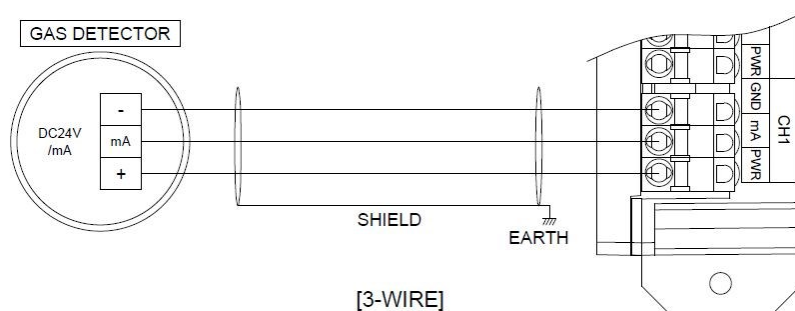
- To set ch0 or ch1 of ASC-100 I/O modules, the following settings are required.
- The DIP switches of I/O modules are positioned at the bottom of the connector connected to the BPM.

[Table 17. I/O Module DIP Switch Setting]

| Ch0 Status | Ch1 Status |
|------------------------------------|--|
| <p>Channels 1&2 Off</p> | <p>Channel 1 On, Channel 2 Off</p> |

6.6. How to Connect 3-wire Gas Detector

- If a gas detector's power and 4-20mA output are configured in 3 wires (V+, mA, V-), it is connected to the PAM as illustrated below:
- For a connection cable, a shield cable with CVVS or CVVSB 1.5sq or higher should be used.

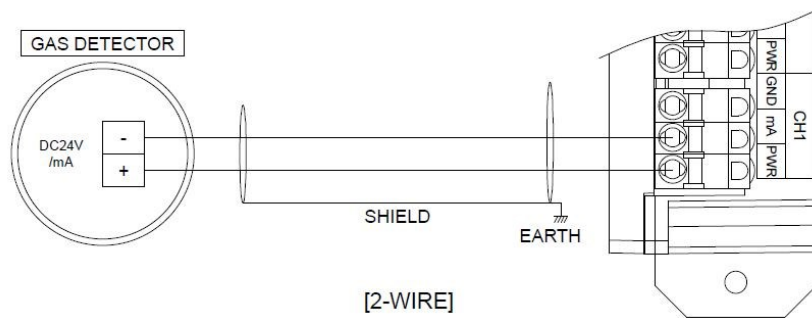


[Figure 21. 3-wire Gas Detector Connection]

Instruction

6.7. How to Connect 2-wire Gas Detector

- If a gas detector’s power and 4-20mA output are configured in 2 wires (V+, mA), it is connected to the PAM as illustrated below:
- For a connection cable, a shield cable with CVVS or CVVSB 1.5sq or higher should be used.

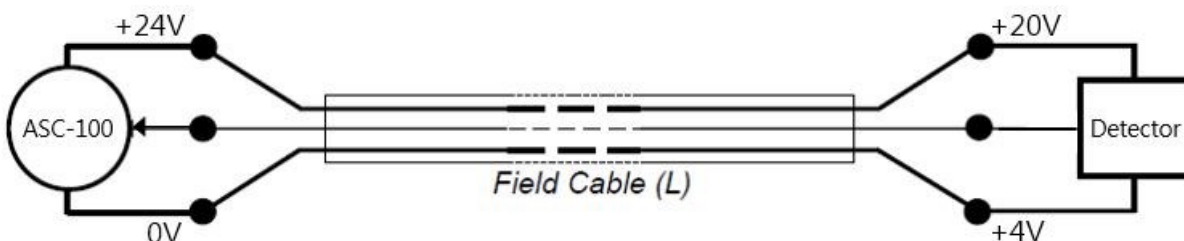


[Figure 22. 2-wire Gas Detector Connection]

6.8. Cable Length

6.8.1. Cable Length (IMAX)

- The maximum length between the detector and ASC-100 is decided by wire specifications.
- Maximum installation length = $V_{MAXDROP} \div I_{MAX} \div WIRER/m \div 2$
 - ✓ $V_{MAXDROP}$: Maximum voltage drop in loop (= Power supply voltage – Min. operating voltage)
 - ✓ I_{MAX} : Max. current of ASC-100
 - ✓ $WIRER/m$: The resistance of the wire (ohms/meter value available in wire manufacturer’s specification data sheet)
- An example of the installation length using 16AWG 24V power supply is as follows:
 - ✓ ASC-100 minimum operating voltage = 18 Vdc
 - ✓ $V_{MAXDROP} = 24 - 18 = 6V$
 - ✓ $I_{MAX} = 1A(1000mA)$
 - ✓ $6 \div 1 \div 0.01318 \div 2 = 227.617m \div 228m$



[Figure 23. Maximum Cable Distance]

- The power cable installation length by cable classification is as follows:

[Table 18. Maximum Power Cable Distance]

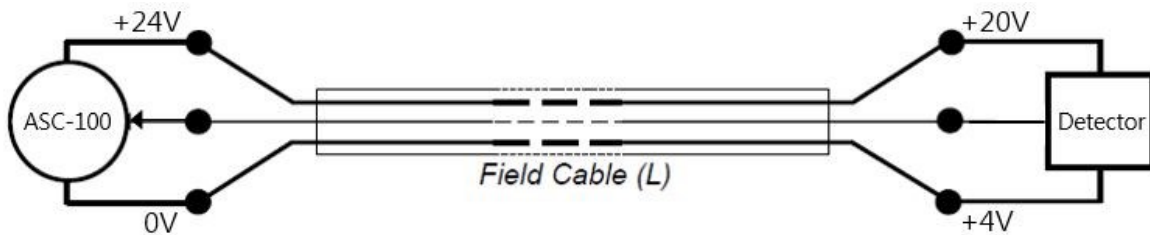
| AWG | mm ² | Copper Resistance (ohms/m) | Meters | Feet |
|-----|-----------------|----------------------------|--------|------|
| 12 | 3.31 | 0.00521 | 575 | 1886 |

Instruction

| | | | | |
|----|-------|---------|-----|------|
| 14 | 2.08 | 0.00828 | 362 | 1187 |
| 16 | 1.31 | 0.01318 | 228 | 748 |
| 18 | 0.82 | 0.02095 | 143 | 469 |
| 20 | 0.518 | 0.0333 | 90 | 295 |

6.8.2. Cable Length (ICON)

- The maximum length between the detector and ASC-100 is decided by wire specifications.
- Maximum installation length = $V_{MAXDROP} \div ICON \div WIRER/m \div 2$
 - ✓ $V_{MAXDROP}$: Maximum voltage drop in loop (= Power supply voltage – Min. operating voltage)
 - ✓ $ICON$: Continuous current of ASC-100
 - ✓ $WIRER/m$: The resistance of the wire (ohms/meter value available in wire manufacturer’s specification data sheet)
- An example of the installation length using 16AWG 24V power supply is as follows:
 - ✓ ASC-100 minimum operating voltage = 18 Vdc
 - ✓ $V_{MAXDROP} = 24 - 18 = 6V$
 - ✓ $ICON = 0.4A(400mA)$
 - ✓ $6 \div 0.4 \div 0.01318 \div 2 = 569.044m \approx 569m$



[Figure 24. Maximum Cable Distance]

- The power cable installation length by cable classification is as follows:

[Table 19. Maximum Power Cable Distance]

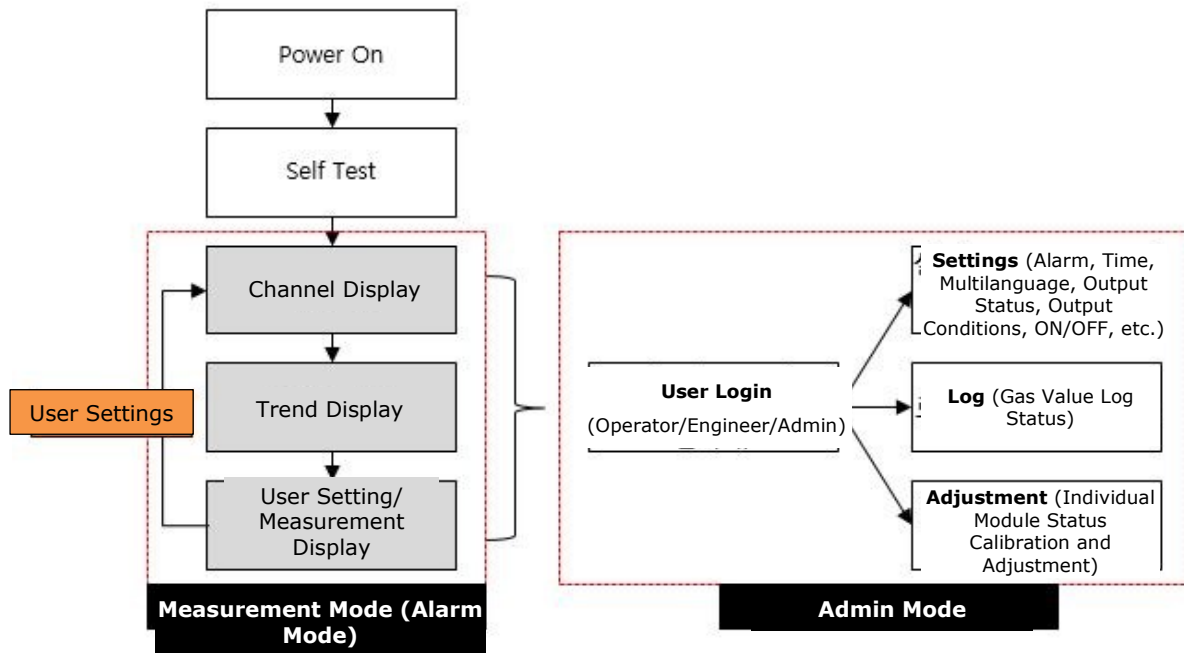
| AWG | mm ² | Copper Resistance (ohms/m) | Meters | Feet |
|-----|-----------------|----------------------------|--------|------|
| 12 | 3.31 | 0.00521 | 1439 | 4721 |
| 14 | 2.08 | 0.00828 | 905 | 2969 |
| 16 | 1.31 | 0.01318 | 569 | 1866 |
| 18 | 0.82 | 0.02095 | 358 | 1174 |
| 20 | 0.518 | 0.0333 | 225 | 738 |

7. Display Layout and Operation Method

7.1. Program Function Configuration

- ▷ The programs are configured as follows. All motions can be controlled by a touchscreen, and numbers can be entered through a virtual keyboard.

Instruction



[Figure 25. Program Layout]

- To keep operations stable, all F/W is configured based on RTOS.
- In terms of detector channel settings, channel-active USB should be inserted into the PAM.
- All F/W in the equipment can be updated from the CTM, using an SD card.

7.2. Booting

▷ Once the power is ON, the Diagnosis Mode is enabled. In nearly 10 seconds, a booting process is completed.

[Table 20. Diagnosis List]

| No | Diagnosis List |
|----|--|
| 1 | Communication status between external CAN and internal CAN |
| 2 | I/O module installation and F/W version |
| 3 | Internal and external SD card memory |
| 4 | System memory EEPROM |
| 5 | Default settings |
| 6 | Map load |

7.3. Main Screen Configuration (1-10ch)

▷ A gas detection status can be checked through a 10ch monitoring screen, and the details are as follows:

Instruction



[Figure 26. Main Page (1-10ch)]

[Table 21. Main Page Configuration]

| No | Function | Description |
|----|-------------------|---|
| 1 | CH.01 | • Able to check the allocated channels (ch.1 – ch.10) |
| 2 | CH4 | • Displays the name of the detected gas |
| 3 | Fault | • A yellow light is turned ON when fault is detected (black and white if nothing is detected) |
| 4 | 2nd Alarm | • A red light is turned ON at the 2 nd alarm (black and white if nothing is alarmed) |
| 5 | 1st Alarm | • An orange light is turned ON at the 1st alarm (black and white if nothing is alarmed) |
| 6 | TAG-123456 | • Able to check the tag name of the set detector |
| 7 | | • Displayed in graph according to the detected level (classified by the status display color) |
| 8 | 17 %LEL | • Able to check measured value (unit: ppm, ppb, %VOL, %LEL, mA) |
| 9 | | • If the icon is touched, a monitoring page in Figure 26 appears. |
| 10 | | • If the icon is touched, a monitoring page in Figure 27 appears. |
| 11 | | • If the icon is touched, a map page in Figure 30 appears. |

Instruction

7.4. Main Screen Configuration (1-20ch)

▷ A gas detection status can be checked through a 20ch monitoring screen, and the details are as follows:



[Figure 27. Main Page (1-20ch)]

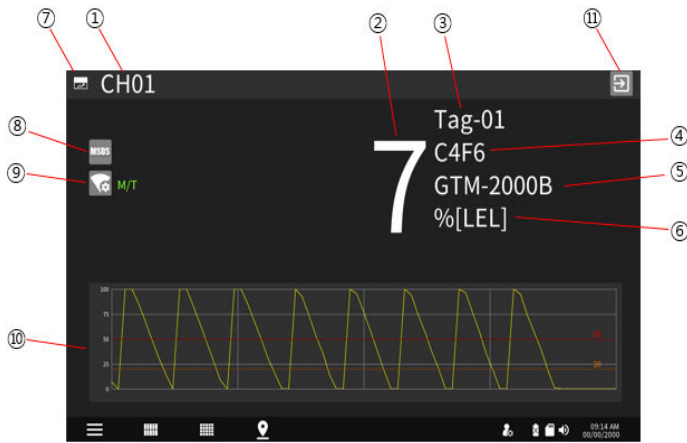
[Table 22. Main Page Configuration]

| No | Function | Description |
|----|------------|---|
| 1 | CH.01 | • Able to check the allocated channels (ch.1 - ch.20) |
| 2 | CH4 | • Displays the name of the set detected gas |
| 3 | TAG-123456 | • Able to check the tag name of the set detector |
| 4 | 35 %LEL | • Able to check measured value (unit: ppm, ppb, %VOL, %LEL, mA) |

7.5. Single Screen Configuration

▷ This is a feature designed to examine the details on each channel status. If each channel is touched on the main screen, the following page appears, and the details are as follows:

Instruction



[Figure 28. Single Screen Layout]



[Figure 29. MSDS]

[Table 23. Single Page Configuration]

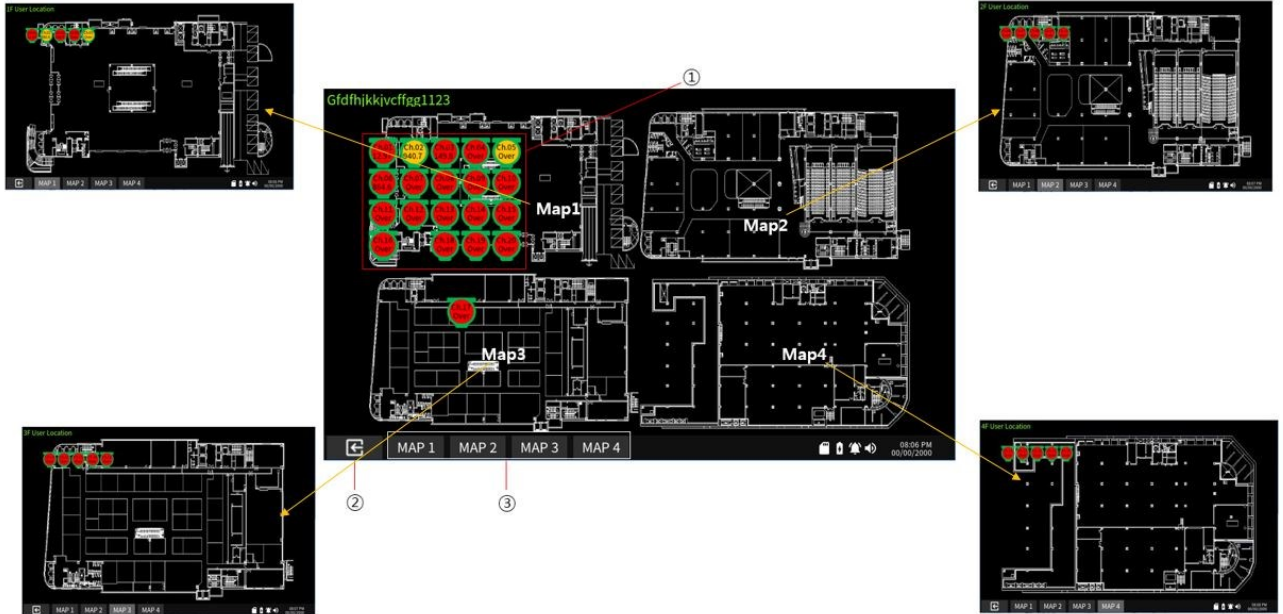
| No | Function | Description |
|----|------------------|--|
| 1 | CH01 | <ul style="list-style-type: none"> Able to check the allocated channels |
| 2 | 7 | <ul style="list-style-type: none"> Able to check measured value (unit: ppm, ppb, VOL, LEL, mA) |
| 3 | Tag-01 | <ul style="list-style-type: none"> Able to check the tag name of the set detector |
| 4 | C4F6 | <ul style="list-style-type: none"> Displays the name of the set detected gas |
| 5 | GTM-2000B | <ul style="list-style-type: none"> Displays the name of the detector |
| 6 | %[LEL] | <ul style="list-style-type: none"> Displays the unit of the measurement |
| 8 | MSDS | <ul style="list-style-type: none"> A button used to go to the GAS MSDS VIEW page (the MSDS resolution should not exceed 830-1100) |
| 9 | M/T | <ul style="list-style-type: none"> Standby Mode (Standby Mode can be set by the admin or person with higher authority) |
| 10 | | <ul style="list-style-type: none"> Able to check a trend in real time |
| 11 | | <ul style="list-style-type: none"> A button used to return back to the previous page |
| 12 | | <ul style="list-style-type: none"> MSDS document view |
| 13 | | <ul style="list-style-type: none"> A button used to move back to the previous page |
| 14 | | <ul style="list-style-type: none"> A button used to move to the next page |
| 15 | 1/8 | <ul style="list-style-type: none"> Displays current page / full page |

Instruction

7.6. MAP Page Configuration

▷ Able to view full map status and MAP(1-4) site which reveals detector positions

※ **NOTICE: The MAP resolution should not exceed 880x530 (JPG).**



[Figure 30. MAP Page Layout]


[Table 24. MAP Page Configuration]

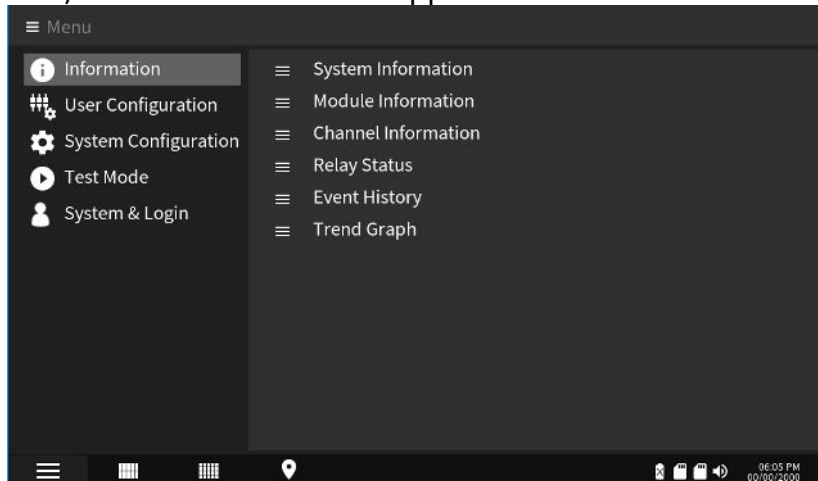
| No | Function | Description |
|----|----------|--|
| 1 | | <ul style="list-style-type: none"> As a detector status icon, it displays a channel name on top and gas detection values at the bottom. |
| 2 | | <ul style="list-style-type: none"> A button used to move back to the previous page |
| 3 | | <ul style="list-style-type: none"> This MAP site shift button allows a user to check a detector location by touching the tab to check each map. |

Instruction

8. Menu Setting and Status

8.1. Information Page

▷ Touch [] at the left bottom and move to the Menu Setting page. Once an items is touched, detailed information appears.



[Figure 31. Information Page Layout]

8.1.1. System Information Page



[Figure 32. System Information Page Layout]

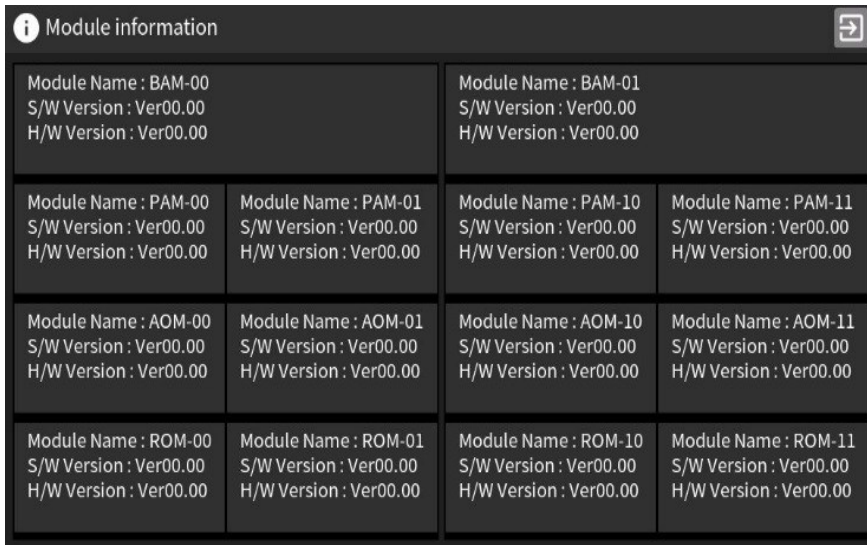
[Table 25. System Information Functions]

| No | Function | Description |
|----|--|--|
| 1 | Model Name : ASC - 100 | <ul style="list-style-type: none"> Checks the model name |
| 2 | S/W Version : 00.04 H/W Version : 00.00 | <ul style="list-style-type: none"> Checks the software and hardware versions of the CTM |
| 3 | Channel : 00 | <ul style="list-style-type: none"> Checks the number of PAM channels |
| 4 | Memory : 1024 KBytes SD Card : 1024 KBytes | <ul style="list-style-type: none"> Checks the capacity and remaining space of internal SD card (memory) (unit: bytes) Checks the capacity and remaining space of external SD card (memory) (unit: bytes) |
| 5 | Battery (M) : 0.0V, 0% Battery (E) : 0.0V, 0% | <ul style="list-style-type: none"> Battery (M): Displays the voltage status of main unit backup battery |

Instruction

| | | |
|--|--|--|
| | | <ul style="list-style-type: none"> and checks remaining space (unit: %) Battery (E): Displays the voltage status of expansion unit backup battery and checks remaining space (unit: %) |
|--|--|--|

8.1.2. Module Information Page Configuration



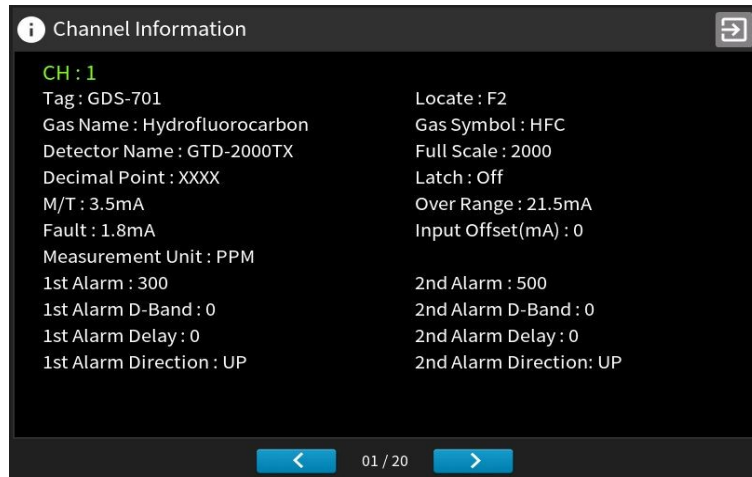
[Figure 33. Module Information Page Layout]

[Table 26. Module Information Functions]

| No | Function | Description | | | | | | | | |
|---|---|---|--|---|---|---|---|---|---|---|
| 1 | <table border="1"> <tr> <td colspan="2">Module Name : BAM-00 S/W Version : Ver00.00 H/W Version : Ver00.00 ①</td> </tr> <tr> <td>Module Name : PAM-00 S/W Version : Ver00.00 H/W Version : Ver00.00 ②</td> <td>Module Name : PAM-01 S/W Version : Ver00.00 H/W Version : Ver00.00 ③</td> </tr> <tr> <td>Module Name : AOM-00 S/W Version : Ver00.00 H/W Version : Ver00.00 ④</td> <td>Module Name : AOM-01 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑤</td> </tr> <tr> <td>Module Name : ROM-00 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑥</td> <td>Module Name : ROM-01 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑦</td> </tr> </table> | Module Name : BAM-00 S/W Version : Ver00.00 H/W Version : Ver00.00 ① | | Module Name : PAM-00 S/W Version : Ver00.00 H/W Version : Ver00.00 ② | Module Name : PAM-01 S/W Version : Ver00.00 H/W Version : Ver00.00 ③ | Module Name : AOM-00 S/W Version : Ver00.00 H/W Version : Ver00.00 ④ | Module Name : AOM-01 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑤ | Module Name : ROM-00 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑥ | Module Name : ROM-01 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑦ | <ul style="list-style-type: none"> Able to check the hardware and software versions of the main unit ① Checks the hardware and software versions of BAM ② Checks the hardware and software versions of PAM00 ③ Checks the hardware and software versions of PAM01 ④ Checks the hardware and software versions of AOM00 ⑤ Checks the hardware and software versions of AOM01 ⑥ Checks the hardware and software versions of ROM00 ⑦ Checks the hardware and software versions of ROM01 |
| Module Name : BAM-00 S/W Version : Ver00.00 H/W Version : Ver00.00 ① | | | | | | | | | | |
| Module Name : PAM-00 S/W Version : Ver00.00 H/W Version : Ver00.00 ② | Module Name : PAM-01 S/W Version : Ver00.00 H/W Version : Ver00.00 ③ | | | | | | | | | |
| Module Name : AOM-00 S/W Version : Ver00.00 H/W Version : Ver00.00 ④ | Module Name : AOM-01 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑤ | | | | | | | | | |
| Module Name : ROM-00 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑥ | Module Name : ROM-01 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑦ | | | | | | | | | |
| 2 | <table border="1"> <tr> <td colspan="2">Module Name : BAM-01 S/W Version : Ver00.00 H/W Version : Ver00.00 ①</td> </tr> <tr> <td>Module Name : PAM-10 S/W Version : Ver00.00 H/W Version : Ver00.00 ②</td> <td>Module Name : PAM-11 S/W Version : Ver00.00 H/W Version : Ver00.00 ③</td> </tr> <tr> <td>Module Name : AOM-10 S/W Version : Ver00.00 H/W Version : Ver00.00 ④</td> <td>Module Name : AOM-11 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑤</td> </tr> <tr> <td>Module Name : ROM-10 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑥</td> <td>Module Name : ROM-11 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑦</td> </tr> </table> | Module Name : BAM-01 S/W Version : Ver00.00 H/W Version : Ver00.00 ① | | Module Name : PAM-10 S/W Version : Ver00.00 H/W Version : Ver00.00 ② | Module Name : PAM-11 S/W Version : Ver00.00 H/W Version : Ver00.00 ③ | Module Name : AOM-10 S/W Version : Ver00.00 H/W Version : Ver00.00 ④ | Module Name : AOM-11 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑤ | Module Name : ROM-10 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑥ | Module Name : ROM-11 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑦ | <ul style="list-style-type: none"> Able to check the hardware and software versions of the expansion unit (same as above) |
| Module Name : BAM-01 S/W Version : Ver00.00 H/W Version : Ver00.00 ① | | | | | | | | | | |
| Module Name : PAM-10 S/W Version : Ver00.00 H/W Version : Ver00.00 ② | Module Name : PAM-11 S/W Version : Ver00.00 H/W Version : Ver00.00 ③ | | | | | | | | | |
| Module Name : AOM-10 S/W Version : Ver00.00 H/W Version : Ver00.00 ④ | Module Name : AOM-11 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑤ | | | | | | | | | |
| Module Name : ROM-10 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑥ | Module Name : ROM-11 S/W Version : Ver00.00 H/W Version : Ver00.00 ⑦ | | | | | | | | | |

8.1.3. Channel Information Page Configuration

Instruction



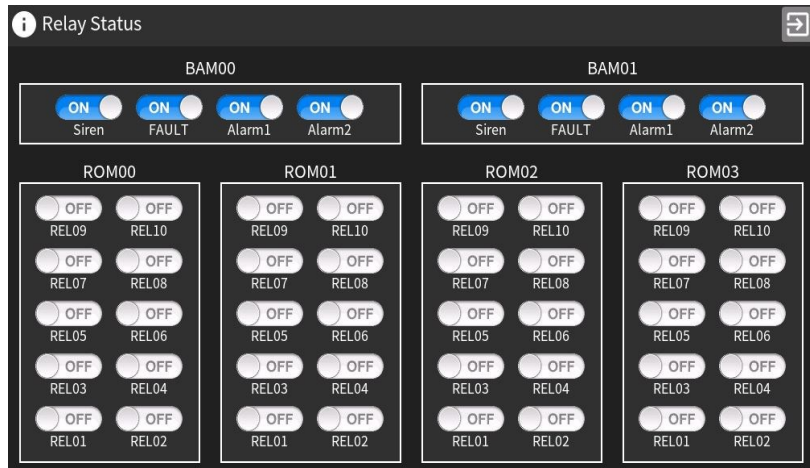
[Figure 34. Channel Information Page Layout]

[Table 27. Channel Information Functions]

| No | Function | Description |
|----|---|---|
| 1 | <p>CH : 1 ①</p> <p>Tag : GDS-701 ②</p> <p>Gas Name : Hydrofluorocarbon ③</p> <p>Detector Name : GTD-2000TX ④</p> <p>Decimal Point : XXXX ⑤</p> <p>M/T : 3.5mA ⑥</p> <p>Fault : 1.8mA ⑦</p> <p>Measurement Unit : PPM ⑧</p> <p>1st Alarm : 300 ⑨</p> <p>1st Alarm D-Band : 0 ⑩</p> <p>1st Alarm Delay : 0 ⑪</p> <p>1st Alarm Direction : UP ⑫</p> | <p>① Channel name</p> <p>② Channel tag name</p> <p>③ Gas name</p> <p>④ Detector name</p> <p>⑤ Decimal point setting status (unit: decimal point)</p> <p>⑥ M/T setting value (unit: mA)</p> <p>⑦ Fault setting value (unit: mA)</p> <p>⑧ Measurement unit setting status</p> <p>⑨ 1st alarm setting value</p> <p>⑩ 1st alarm D-band setting value</p> <p>⑪ 1st alarm delay setting value</p> <p>⑫ 1st alarm direction setting status (up/down)</p> |
| 2 | <p>Locate : F2 ①</p> <p>Gas Symbol : HFC ②</p> <p>Full Scale : 2000 ③</p> <p>Latch : Off ④</p> <p>Over Range : 21.5mA ⑤</p> <p>Input Offset(mA) : 0 ⑥</p> <p>2nd Alarm : 500 ⑦</p> <p>2nd Alarm D-Band : 0 ⑧</p> <p>2nd Alarm Delay : 0 ⑨</p> <p>2nd Alarm Direction: UP ⑩</p> | <p>① Detector location</p> <p>② Gas Chemistry symbol</p> <p>③ Full scale setting value</p> <p>④ Latch settings status (ON/OFF)</p> <p>⑤ Over range setting value (unit: mA)</p> <p>⑥ Input offset setting value (unit: mA)</p> <p>⑦ 2nd alarm setting value</p> <p>⑧ 2nd alarm D-band setting valve</p> <p>⑨ 2nd alarm delay setting value</p> <p>⑩ 2nd alarm direction setting status (up/down)</p> |


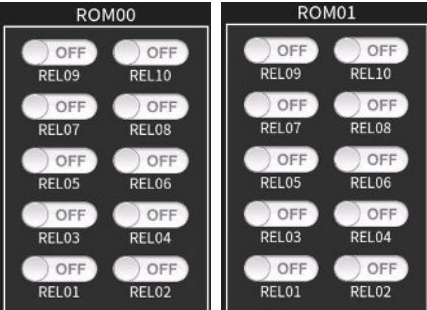


8.1.4. Relay Status Page Configuration

Instruction



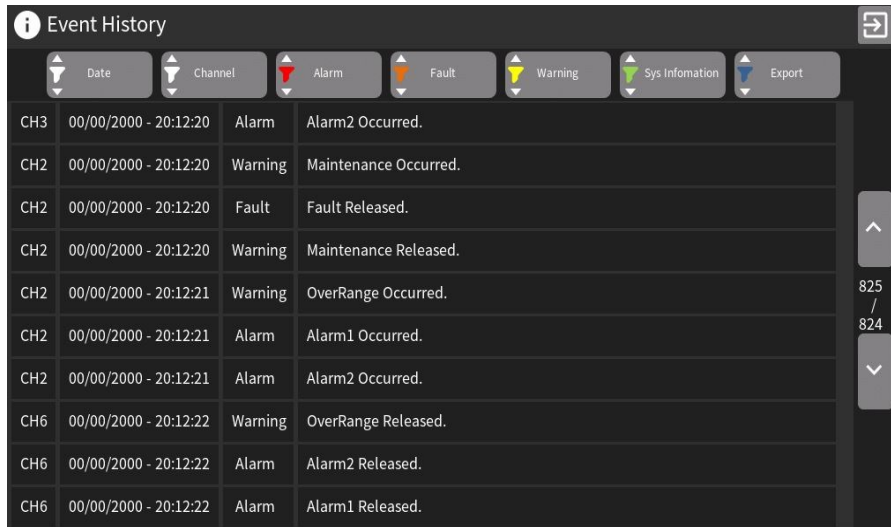
[Figure 35. Relay Status Page Layout]

[Table 28. Relay Status Functions]

| No | Function | Description |
|----|---|--|
| 1 |  | <ul style="list-style-type: none"> Siren, FAULT, Alarm1 and Alarm2 Relay ON/OFF status of BAM00 |
| 2 |  | <ul style="list-style-type: none"> Relay ON/OFF status of ROM00 and ROM01 |
| 3 |  | <ul style="list-style-type: none"> Siren, FAULT, Alarm1 and Alarm2 Relay ON/OFF status of BAM01 |
| 4 |  | <ul style="list-style-type: none"> Relay ON/OFF status of ROM02 and ROM03 |

8.1.5. Event History Page Configuration

Instruction

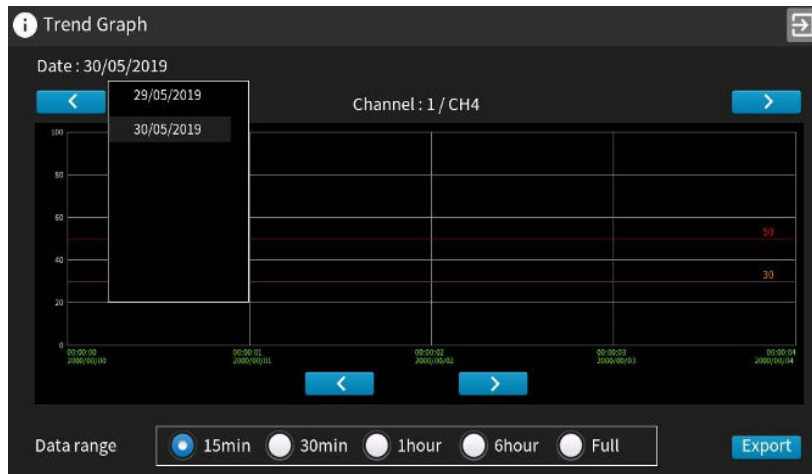


[Figure 36. Event History Page Layout]

[Table 29. Event History Functions]

| No | Function | Description |
|----|----------|---|
| 1 | | <ul style="list-style-type: none"> A feature designed to check log data only in the category; able to select a category and check log data |
| 2 | | <ul style="list-style-type: none"> A feature designed to store log data Created in the internal SD card if EXPORT is clicked (file format: CSV) |
| 3 | | <ul style="list-style-type: none"> Able to check the history of log data Channel → Date → Issues (E.g.: Alarm, Fault, etc.) → Details |

8.1.6. Trend Graph Page Configuration

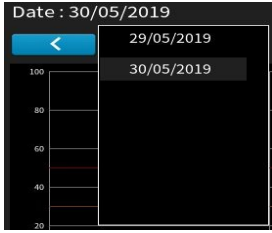

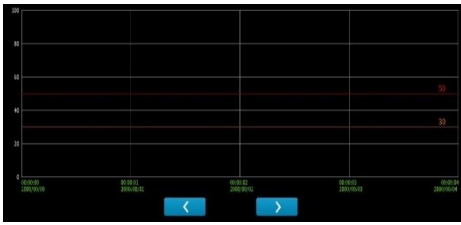




[Figure 37. Trend Graph Page Layout]

[Table 30. Trend Graph Functions]

| No | Function | Description |
|----|----------|-------------|
|----|----------|-------------|

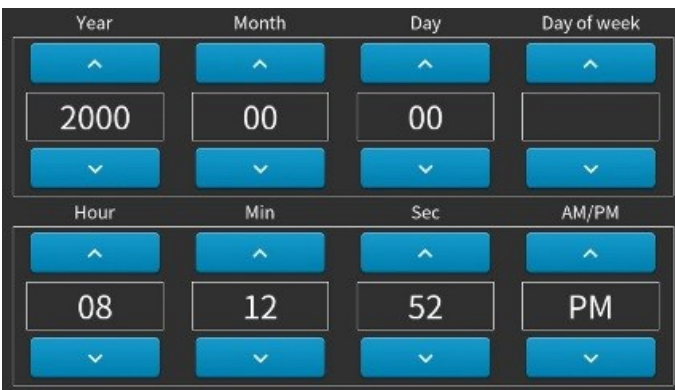
Instruction

| | | |
|---|---|---|
| 1 |  | <ul style="list-style-type: none"> • Date: Once Date/Month/Year is clicked, the date category in Trend Graph appears. If the category is selected, the Trend Graph shows up. |
| 2 |  | <ul style="list-style-type: none"> • A feature designed to check the trend graph for each channel; able to select a channel, using right and left arrow keys |
| 3 |  | <ul style="list-style-type: none"> • This feature is to display current gas concentration in graph. X-axis represents time while Y-axis refers to gas detection values. |
| 4 |  | <ul style="list-style-type: none"> • This feature is to set a range of data storage. • Data storage range: 15min, 30min, 1hr, 6hr, 24hr (Full) |
| 5 |  | <ul style="list-style-type: none"> • A feature designed to save log data • Generated in the external SD card if the EXPORT is clicked (file format: CSV) |

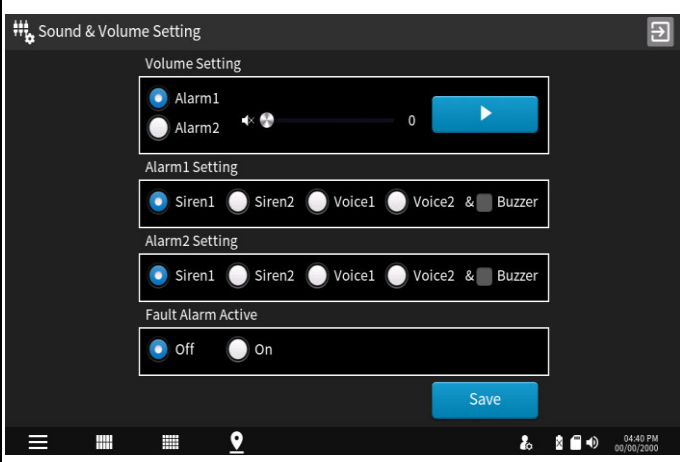

8.2. User Configuration Page

- ▷ To change user configuration settings, it is required to log in with Operator or Service authority.
<See 8.5.1 Login.>

[Table 31. User Configuration Method]

| No | Function | Description |
|----|---|---|
| 1 |  | <ul style="list-style-type: none"> • Able to adjust date and time settings |

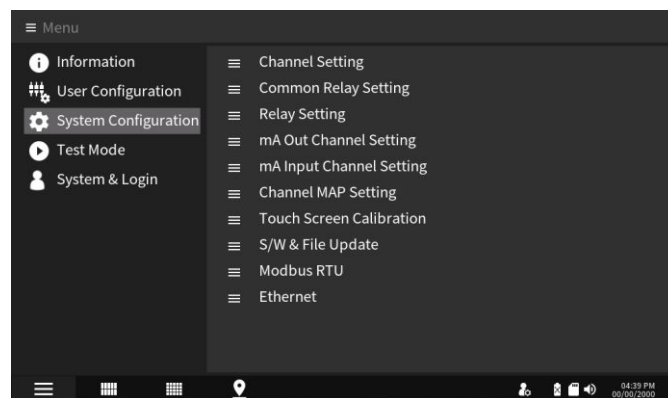
Instruction

| | | |
|----------|--|---|
| <p>2</p> |  | <ul style="list-style-type: none"> • Able to adjust Alarm1 and Alarm2 sound and sound volume settings (Volume range: 0-100) → Fault Alarm Active • An alarm goes off when FAULT occurs in each channel. It can be controlled through ON/OFF. |
| <p>3</p> |  | <ul style="list-style-type: none"> • Able to adjust brightness (range: 0-100) |

Note: Ensure to touch [SAVE] after the adjustment.

8.3. System Configuration Page

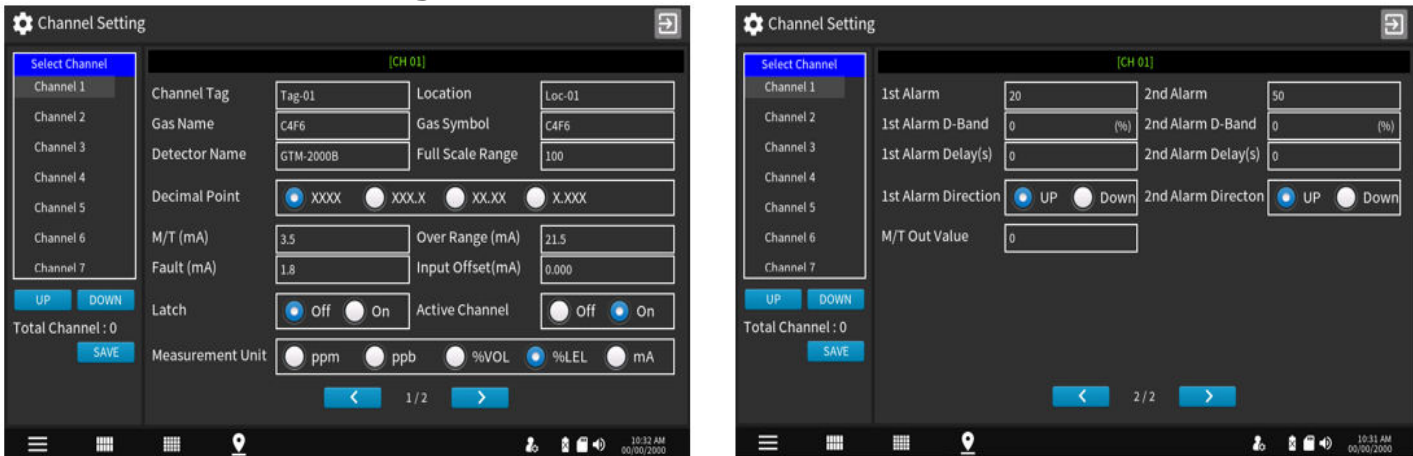
- ▷ To change system configuration settings, it is required to log in with Operator or Service authority.
< See 8.5.1 Login.>



[Figure 38. System Configuration Page Layout]

Instruction

8.3.1. Channel Setting









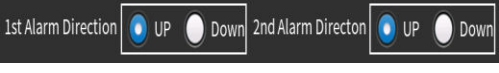


[Figure 39. Channel Setting Page Layout]

[Table 32. Channel Settings]

| | |
|--|--|
| | <ul style="list-style-type: none"> • Select a channel for channel setting. • It is able to select using the UP DOWN buttons. For a quick movement, scroll up or down. |
| | <ul style="list-style-type: none"> • Enter a channel tag name. • Enter the gas name. • Enter the detector name. ➤ If a box on the right side is selected, a virtual keyboard appears. Then, enter the value. |
| | <ul style="list-style-type: none"> • Set the detector position. • Enter the chemistry symbol. For this, an MSDS file (e.g. - parent folder: MSDS, child folder: CH4) should exist in the external memory. The MSDS filename extension should be JPG (resolution: below 830x1100). • It is able to set a full-scale range depending on the measurement range. Set the decimal point and check its range. Then, enter the values (unit: decimal point). ➤ If a box on the right side is selected, a virtual keyboard appears. Then, enter the value. |
| | <ul style="list-style-type: none"> • The decimal point is used when adjustment is needed according to the measurement range. When setting the decimal point position, select the tab on the left side of the decimal point (☐: Not Select, <input checked="" type="radio"/>: Select). |
| | <ul style="list-style-type: none"> • A feature to set the maintenance range (unit: mA) ➤ If a box on the right side is selected, a virtual keyboard appears. Then, enter the value. |
| | <ul style="list-style-type: none"> • A feature to set the fault range (unit: mA) ➤ If a box on the right side is selected, a virtual keyboard appears. Then, enter the value. |

Instruction

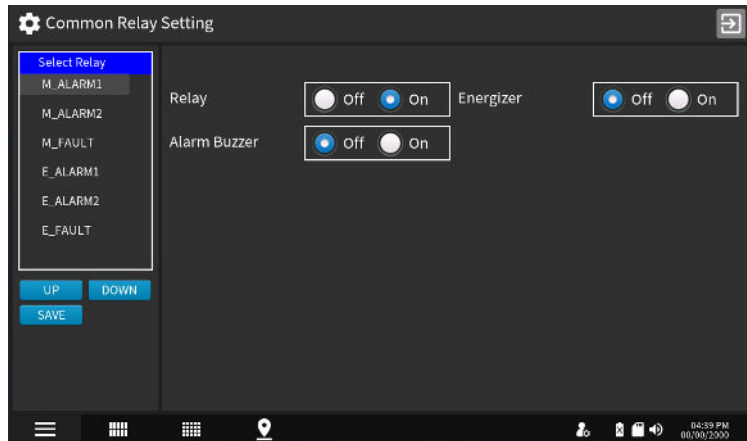
| | |
|---|---|
|  | <ul style="list-style-type: none"> • Able to set maximum mA input range (Up to 24mA) ➤ If a box on the right side is selected, a virtual keyboard appears. Then, enter the value. |
|  | <ul style="list-style-type: none"> • A feature designed to compensate an mA measurement error which occurs depending on the length of the detector-connecting wire (unit: mA) ➤ If a box on the right side is selected, a virtual keyboard appears. Then, enter the value. |
|  | <ul style="list-style-type: none"> • A feature which keeps displaying the highest value despite a drop in gas values when the set alarm value is reached; able to operate by touching ON/OFF tab |
|  | <ul style="list-style-type: none"> • A feature designed to enable/disable a channel; able to operate by touching ON/OFF tab |
|  | <ul style="list-style-type: none"> • A feature designed to select a gas measurement unit; required to touch the tab |
|  | <ul style="list-style-type: none"> • A feature designed to set Alarm1 and Alarm2 values ➤ If a box on the right side is selected, a virtual keyboard appears. Then, enter the value. |
|  | <ul style="list-style-type: none"> • A feature designed to set dead band values of alarm1 and alarm2; alarm1 and alarm2 are enabled at a dead band set value or higher while they are disabled at below the set value • If the concentration level reaches around the alarm set value, an alarm is turned ON and OFF continuously. To solve this issue, a hysteresis value is provided. The default value is '0'. E.g.) With 20% LEL alarm set value and 2% dead band, an alarm goes off at 22% and is disabled at 18% LEL. ➤ If a box on the right side is selected, a virtual keyboard appears. Then, enter the value. |
|  | <ul style="list-style-type: none"> • A feature designed to set the time until the alarm goes off after the gas reaches the set value in terms of the delay time of alarm1 and alarm2 (unit: Sec.) ➤ If a box on the right side is selected, a virtual keyboard appears. Then, enter the value. |
|  | <ul style="list-style-type: none"> • A feature designed to set an alarm direction; UP is enabled when equal to or greater than the set value while DOWN is enabled when smaller than the set value; able to set by touching UP/DOWN tab |

Instruction

| | |
|---|--|
| <p>M/T Out Value <input type="text" value="0"/></p> | <ul style="list-style-type: none"> m/t out value: AOM output value setting at STANDBY mode (input unit is set according to the preset measurement unit) |
|---|--|

8.3.2. Common Relay Setting

- ▷ This feature designed to set BAM Common Relay (Alarm1, Alarm2, Fault or Alarm Buzzer) output can be set as follows:



[Figure 40. Channel Setting Page Layout]

[Table 33. Common Relay Settings]

| | |
|---|--|
| | <ul style="list-style-type: none"> Select Relay to set Common Relay. M_ALARM1: Main BAM ALARM1 Relay. M_ALARM2: Main BAM ALARM2 Relay. M_FAULT: Main BAM FAULT Relay. E_ALARM1: Expansion BAM ALARM1 Relay. E_ALARM2: Expansion BAM ALARM2 Relay. E_FAULT: Expansion BAM FAULT Relay. |
| <p>Relay <input type="radio"/> Off <input checked="" type="radio"/> On</p> | <ul style="list-style-type: none"> A feature designed to turn the relay ON/OFF; required to touch the tab |
| <p>Energizer <input checked="" type="radio"/> Off <input type="radio"/> On</p> | <ul style="list-style-type: none"> A feature designed to turn ON/OFF Energizer; required to touch the ON/OFF tab |
| <p>Alarm Buzzer <input checked="" type="radio"/> Off <input type="radio"/> On</p> | <p>A feature designed to turn ON/OFF Alarm Buzzer in the selected relay; required to touch ON/OFF tab; if the Alarm Buzzer is ON, the Relay is available for Alarm Buzzer ONLY</p> |

TIPS: Energized Mode

<Relay Energized Mode>

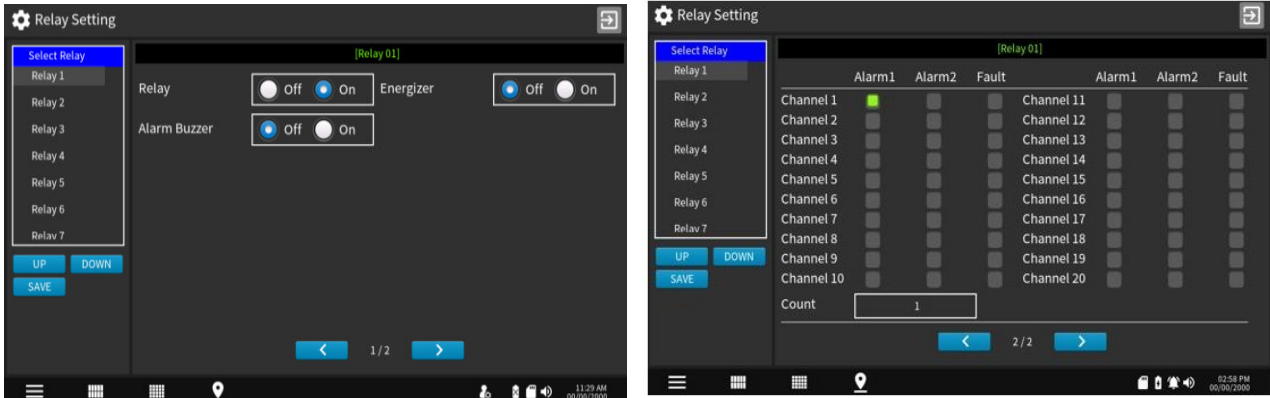
- If the main power is turned ON, the Normal Open turns into Normal Close while Normal Close becomes Normal Open.

<Relay De-Energized Mode>

- Basic relay actions

Instruction

8.3.3. Relay Setting



[Figure 41. Relay Setting Page Layout]

[Table 34. Relay Settings]

| | |
|--|--|
| | <ul style="list-style-type: none"> • Select a channel for channel setting . • It is able to select using the UP DOWN buttons. For a quick movement, scroll up or down. <p>TIPS: Able to select 1-20 channel(s) by scrolling up and down (up to 40 channels if an expansion unit is connected)</p> |
| | <ul style="list-style-type: none"> • A feature designed to turn ON/OFF the relay; required to touch the tab |
| | <ul style="list-style-type: none"> • A feature designed to turn ON/OFF Alarm Buzzer in the selected relay; required to touch ON/OFF tab; if the Alarm Buzzer is ON, the Relay is available for Alarm Buzzer ONLY |
| | <ul style="list-style-type: none"> • A feature designed to turn ON/OFF Energizer; required to touch the ON/OFF tab |
| | <ul style="list-style-type: none"> • Able to set Relay Group at a user's will; if the box tab is touched to enable or disable Alarm1, Alarm2 or Fault on each channel, is enabled. This feature is executed in two calculation methods is operated as follows: <ol style="list-style-type: none"> 1. OR Operation: If an alarm goes off in the active items among Alarm1, Alarm2 and Fault, the Relay is executed according to OR operation. 2. AND Operation: If an alarm goes off in the active items among the channels, the Relay is executed according to AND operation. 3. Count Setting: It is executed under AND operation. Provided that multiple channels are enabled, if the count is set to '1', the relay is executed when an alarm goes off even in just one channel. |

Ex) Relay Setting (Relay2 Grouping)

Instruction

- Relay2 output setting if Alarm2 goes off in at least three channels among the channel(s) 1-10

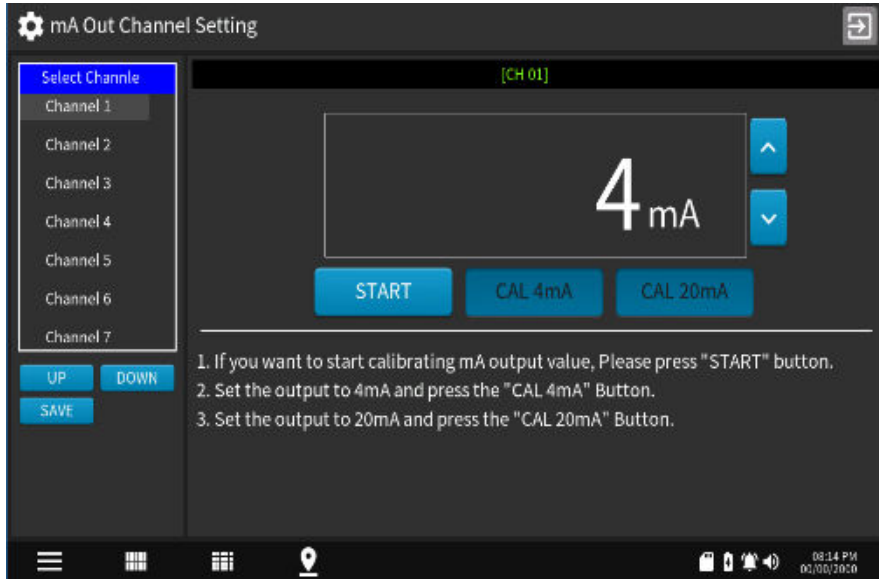
| Select Relay | Alarm1 | Alarm2 | Fault | Alarm1 | Alarm2 | Fault |
|--------------|------------|-------------------------------------|--------------------------|------------|--------------------------|--------------------------|
| Relay 1 | Channel 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 11 | <input type="checkbox"/> | <input type="checkbox"/> |
| Relay 2 | Channel 2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 12 | <input type="checkbox"/> | <input type="checkbox"/> |
| Relay 3 | Channel 3 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 13 | <input type="checkbox"/> | <input type="checkbox"/> |
| Relay 4 | Channel 4 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 14 | <input type="checkbox"/> | <input type="checkbox"/> |
| Relay 5 | Channel 5 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 15 | <input type="checkbox"/> | <input type="checkbox"/> |
| Relay 6 | Channel 6 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 16 | <input type="checkbox"/> | <input type="checkbox"/> |
| Relay 7 | Channel 7 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 17 | <input type="checkbox"/> | <input type="checkbox"/> |
| | Channel 8 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 18 | <input type="checkbox"/> | <input type="checkbox"/> |
| | Channel 9 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 19 | <input type="checkbox"/> | <input type="checkbox"/> |
| | Channel 10 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 20 | <input type="checkbox"/> | <input type="checkbox"/> |
| | Count | 3 | | | | |

- Relay output setting if at least one alarm goes off in the channels (ch.1-5)

| Select Relay | Alarm1 | Alarm2 | Fault | Alarm1 | Alarm2 | Fault |
|--------------|------------|-------------------------------------|--------------------------|------------|--------------------------|--------------------------|
| Relay 1 | Channel 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 11 | <input type="checkbox"/> | <input type="checkbox"/> |
| Relay 2 | Channel 2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 12 | <input type="checkbox"/> | <input type="checkbox"/> |
| Relay 3 | Channel 3 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 13 | <input type="checkbox"/> | <input type="checkbox"/> |
| Relay 4 | Channel 4 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 14 | <input type="checkbox"/> | <input type="checkbox"/> |
| Relay 5 | Channel 5 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Channel 15 | <input type="checkbox"/> | <input type="checkbox"/> |
| Relay 6 | Channel 6 | <input type="checkbox"/> | <input type="checkbox"/> | Channel 16 | <input type="checkbox"/> | <input type="checkbox"/> |
| Relay 7 | Channel 7 | <input type="checkbox"/> | <input type="checkbox"/> | Channel 17 | <input type="checkbox"/> | <input type="checkbox"/> |
| | Channel 8 | <input type="checkbox"/> | <input type="checkbox"/> | Channel 18 | <input type="checkbox"/> | <input type="checkbox"/> |
| | Channel 9 | <input type="checkbox"/> | <input type="checkbox"/> | Channel 19 | <input type="checkbox"/> | <input type="checkbox"/> |
| | Channel 10 | <input type="checkbox"/> | <input type="checkbox"/> | Channel 20 | <input type="checkbox"/> | <input type="checkbox"/> |
| | Count | 1 | | | | |

8.3.4. mA Output Calibration

Instruction



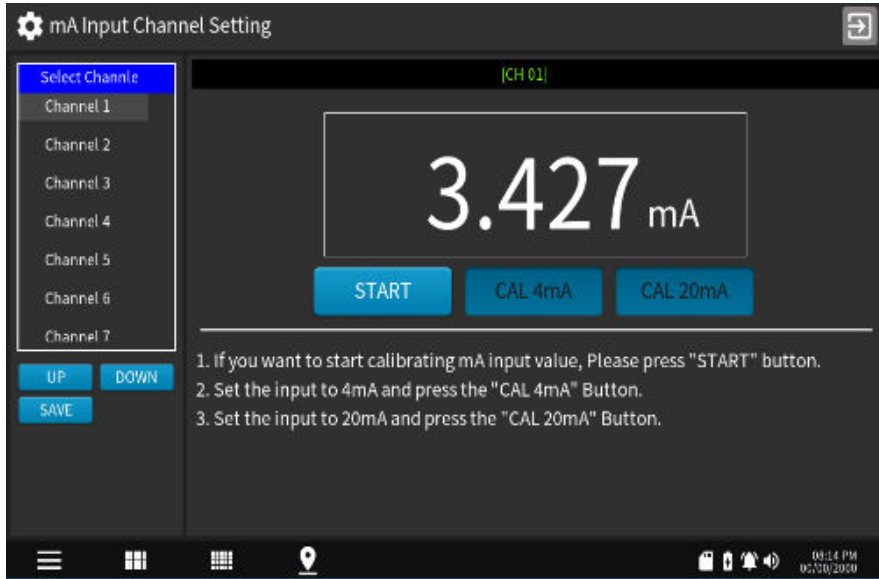
[Figure 42. mA Input Calibration Page Layout]

[Table 35. mA Output Calibration]

| | |
|--|--|
| | <ul style="list-style-type: none"> • Select a channel for channel setting. • It is able to select using the buttons. For a quick movement, scroll up or down. |
| | <ol style="list-style-type: none"> 1. Select a channel and touch []. 2. If 4mA is normally measured, touch []. 3. If 20mA is normally measured, touch []. <p>Tips: After completing the settings, touch [].</p> |

8.3.5. mA Input Calibration

Instruction

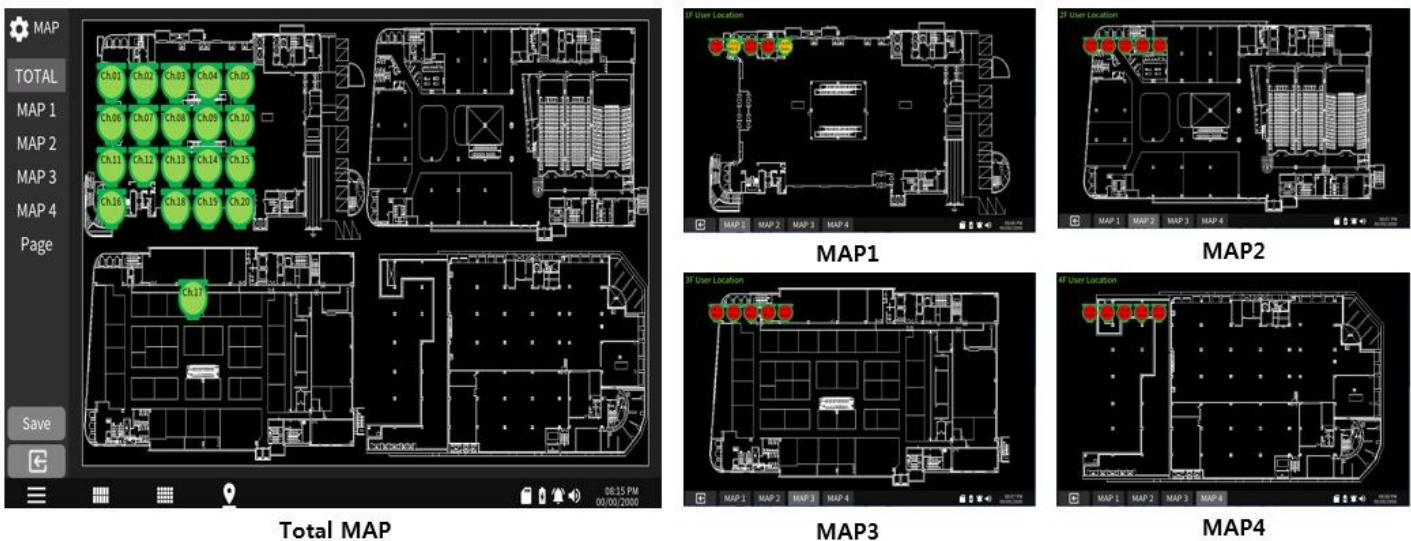


[Figure 43. mA Input Calibration Page Layout]

[Table 36. mA Input Calibration]

| | |
|--|--|
| | <ul style="list-style-type: none"> Select a channel for channel setting. It is able to select using the UP DOWN buttons. For a quick movement, scroll up or down. |
| | <ol style="list-style-type: none"> Select a channel and touch [START]. Enter 4mA and touch [CAL 4mA]. Enter 20mA and touch [CAL 20mA]. <p>TIPS: Once the calibration is done, touch [SAVE].</p> |

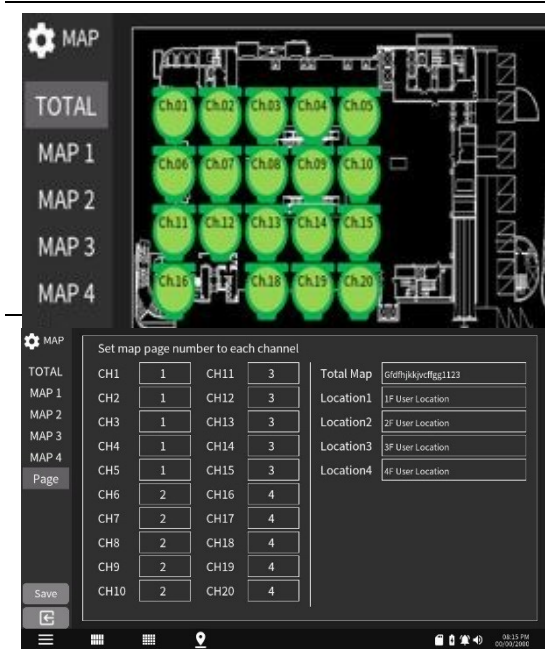
8.3.6. Channel MAP Setting



[Figure 44. Channel MAP Setting Layout]

[Table 37. Channel MAP Settings]

Instruction



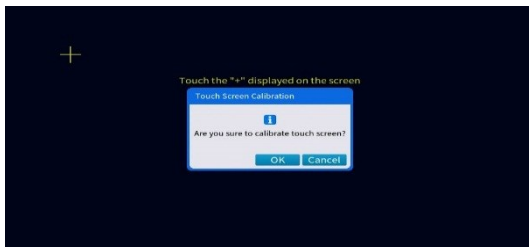
- If CHANNEL MAP SETTING is touched, the TOTAL MAP page appears. If each detector icon is scrolled to the wanted place, it is relocated accordingly.
- Select 'MAP 1 MAP 2 MAP 3 MAP 4' on the left top and change the detector position individually as described above.

- Once 'Page' at the center on the left picture is touched, the Setting page appears. Then, it is able to adjust MAP position (1-4) in each channel.
 - Able to change the total map name and location (1-4)
- ※ **After the settings, touch [Save].**

8.3.7. Touchscreen Calibration

<NOTICE> Be cautious that if the touchscreen is calibrated in an incorrect way, it may not be usable.

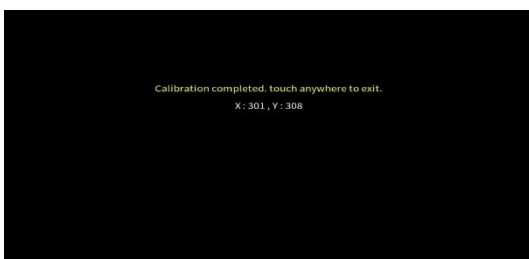
[Table 38. Touchscreen Calibration]



- If touchscreen Calibration is executed, a confirmation message pops up. If 'OK' is touched, calibration begins.



- Calibration Procedures
 1. A cross symbol appears at the left top. Touch it.
 2. A cross symbol appears at the center. Touch it.
 3. A cross symbol appears at the right bottom. Touch it.



- X- and Y-coordinates appear on the screen. Check if the touch points are matched with the coordinates. Touch 5 times in total.

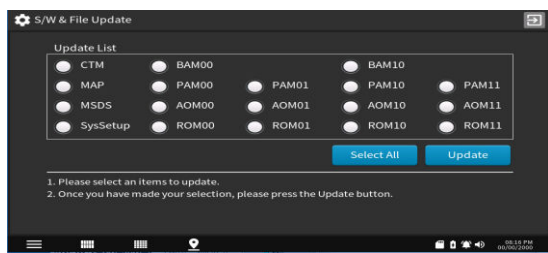
Instruction



- If all operations are done, touch [SAVE] and finish the calibration process.

8.3.8. Software & File Update

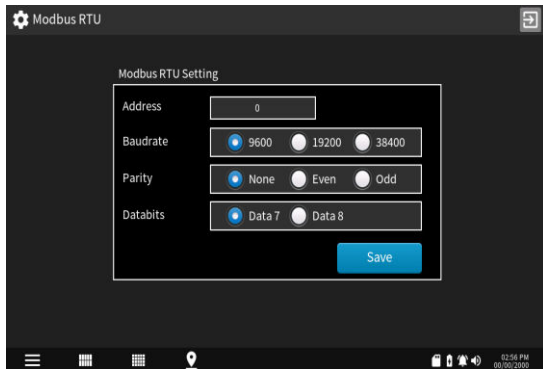
[Table 39. Software & File Update]



- Touch on the left side of the update item and have it enabled. Then, if is touched, the system automatically enters Booting Mode, and update begins in nearly 4 seconds.
- For all updates, touch .

8.3.9. Modbus RTU

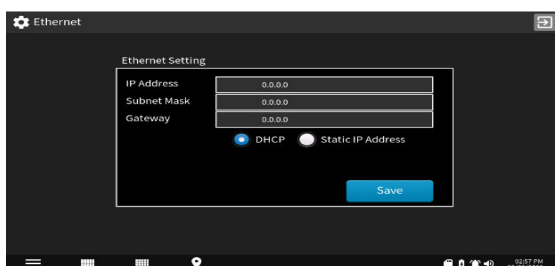
[Table 40. Modbus RTU Settings]



- Address: If a box on the right side of the Address is touched, a virtual keyboard appears. Then, enter the address.
- Baud Rate: Select 9600, 19200 or 38400.
- Parity: Select None, Even or Odd.
- Data bits: Select Data7 or Data8.

8.3.10. Ethernet

[Table 41. Ethernet Settings]

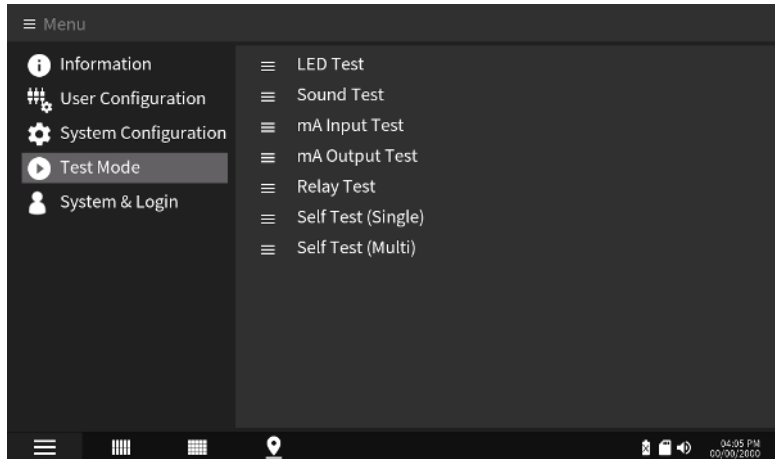


- If a box on the right side of each item is touched, a virtual keyboard appears. Then, enter the value.
- Select either DHCP or Static IP Address.

Instruction

8.4. Test Mode Selection

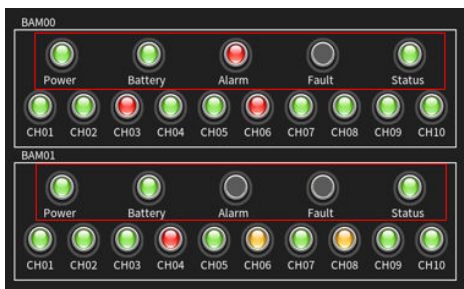
- ▶ To use System Test Mode, it is required to log in with Operator or Service authority.
 <See 8.5.1 Login.>



[Figure 45. Test Mode Menu Layout]

8.4.1. LED Test

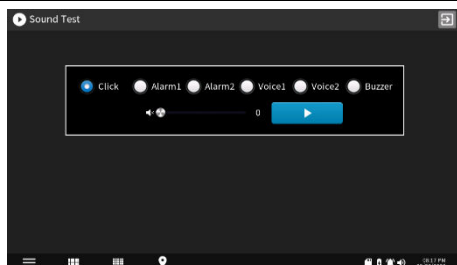
[Table 42. LED Testing]



- The BAM0 box at the top represents a main unit while the BAM1 at the bottom refers to an expansion unit. This feature is designed to check if LED in each item is normal or abnormal.
- Touch '●' in each item and examine if LED functions normally.
- LED TESTING
 - ▶ In the beginning, the buttons are inactive. Whenever touched, they turn Green → Yellow → Red in order.
 - ※ The system LED in a red box is not available in Test Mode.

8.4.2. SOUND Test

[Table 43. Sound Testing]

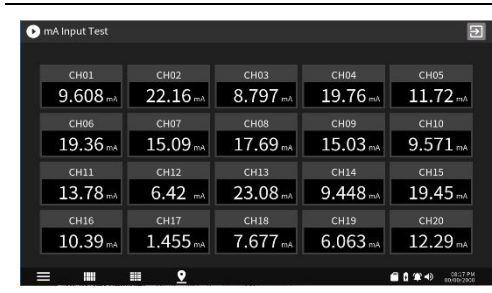


- Touch and enable '●' on the left side of the item. If '▶' is touched, sound changes according to the item.
- For volume adjustment, scroll '◀▶' by 0-100.

8.4.3. mA Input Test

[Table 44. mA Input Testing]

Instruction



- Able to check mA input values in each channel on a realtime basis; a feature designed to check if they are normal

8.4.4. mA Output Test

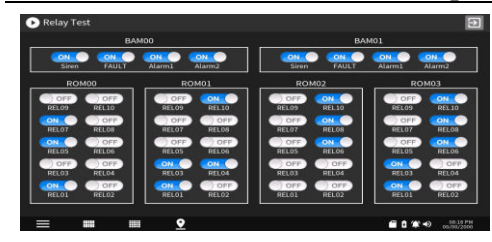
[Table 45. mA Output Testing]



- If '0 mA' at the bottom is touched, a virtual keyboard appears. Once the value is set, the set current value is generated.

8.4.5. Relay Test

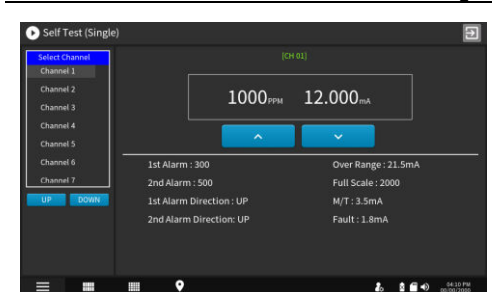
[Table 46. Relay Testing]




- Able to check if the Relay is operated by touching 'OFF ON' at the top of the Relay channel

8.4.6. Self-Test (Single)

[Table 47. Self-Testing]



- Able to check if the set values on each channel are normally operated easily; a test is performed, using the  tabs

8.4.7. Self-Test (Multi)

Once a channel is touched, a virtual keyboard pops up. If the value is entered, it is able to test if the system functions normally with the virtual input value. Unlike

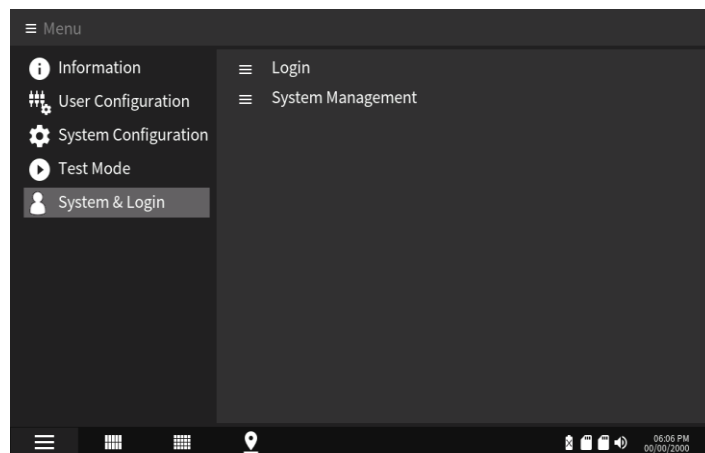
Instruction



Self-Test (Single), multi-channels can be set for testing.

8.5. System & Login Configuration

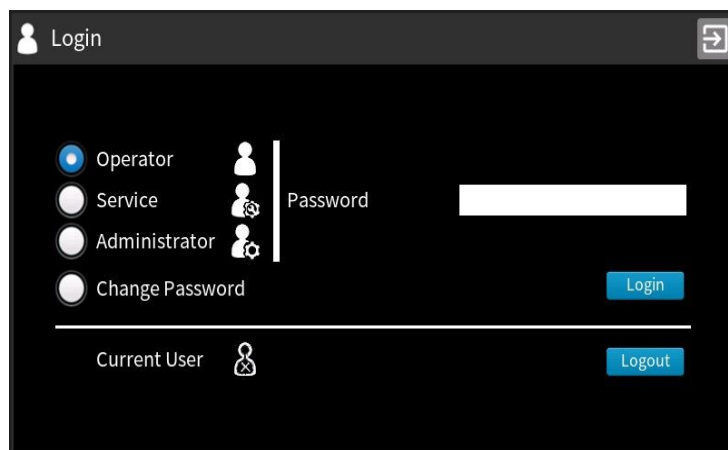
▷ This feature controls menu items and access according to the level of user authority in operating ASC-100. The allowed access level differs depending on user mode.



[Figure 46. System & Login Menu Layout]




8.5.1. Login

▷ To enter User Mode, it is required to go through the login procedure. The details are as follows:

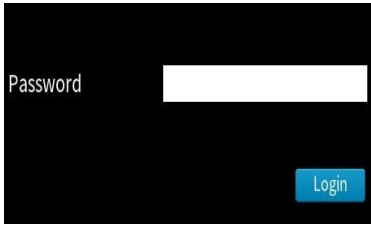
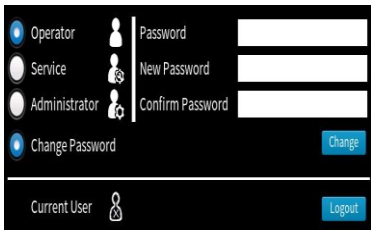

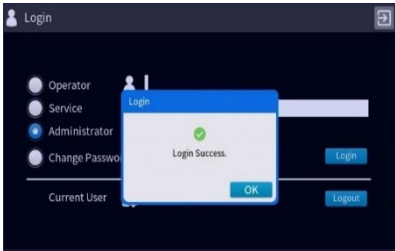


[Figure 47. Login Page Layout]

[Table 48. Login]

| No | Function | Description |
|----|--|---|
| 1 |  Operator  Service  Administrator | <ul style="list-style-type: none"> Displays each user's login types and icons accordingly; each user's access level is as follows: |


Instruction

| | | |
|---|---|---|
| | | <ul style="list-style-type: none"> ➤ Operator: Access allowed for Information and User Configuration menus only ➤ Service: All accesses allowed, except System Configuration menu ➤ Administrator: Command and access in all menus allowed |
| 2 |  | <ul style="list-style-type: none"> • To log in, a password should be entered. The default password is '0000'. ➤ To enter a password, touch the white tab on the right side of the password. Then, a virtual keyboard pops up. Enter your password and touch the LOGIN button at the right bottom. |
| 3 |  | <ul style="list-style-type: none"> • This feature is designed to change the default password. After entering the current password, enter a new password into the New Password box and Confirm Password box. Then, touch the CHANGE button. ➤ To enter a password, touch the white tab on the right side of the password. Then, a virtual keyboard pops up. Enter your password and touch the CHANGE button at the right bottom. |
| 4 |  | <ul style="list-style-type: none"> • If the password is incorrect, "Invalid or Wrong Password" message pops up, and login fails. |
| 5 |  | <ul style="list-style-type: none"> • If logged in successfully, "Login Success" appears. |



8.5.2. Active Access Status Icon

▷ The icons below representing current login status appear at the bottom of the main page.

[Table 49. Login Status Icons]

| Icon | Description |
|---|-------------------------|
|  | Operator has logged in. |

Instruction

| | |
|---|---------------------------------|
|  | Service Engineer has logged in. |
|  | Administrator has logged in. |

8.5.3. System Management

- ▷ For system management, it is required to log in with Administrator authority.
<Refer to 8.5.1 Login.>



[Figure 48. System Management Page Layout]

[Table 50. Relay Testing]

| | |
|---|---|
| <p>Idle Time (min) <input type="text" value="10"/></p> | <ul style="list-style-type: none"> This feature is designed to set the length of time for the LCD display to be turned off automatically when the system remains unused. ▷ Touch the white tab on the right side of Idle Time. If a virtual keyboard pops up. Then, set the time (unit: min.). <p>Note: 0-600 min. in time-setting range</p> |
| <p>Logout Time(min) <input type="text" value="5"/></p> | <ul style="list-style-type: none"> This feature is designed to set the length of time for a user to be logged out automatically when the system remains unused after login. ▷ Touch the white tab on the right side of Logout. If a virtual keyboard pops up, set the time (unit: min.). <p>Note: 0-600 min. in time-setting range</p> |
| <p>Event History Log <input type="button" value="Init..."/></p> | <ul style="list-style-type: none"> Able to reset the event history by touching the <input type="button" value="Init..."/> button |
| <p>Trend Log <input type="button" value="Init..."/></p> | <ul style="list-style-type: none"> Able to reset the trend log by touching the <input type="button" value="Init..."/> button |

Instruction

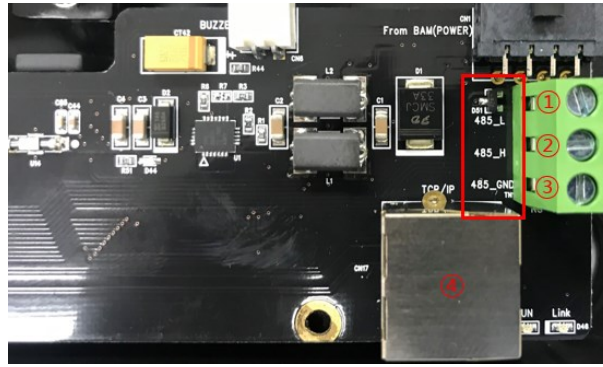
Note: Once all settings are done, ensure to touch the  button to complete the process.

9. Modbus RTU and TCP Interfaces

9.1. MODBUS RS-485

- The ASC-100 Modbus interface offers environments in which communication with external PC is enabled. It can be connected through a separate module (MODBUS).

Instruction



[Figure 49. RS-485 and TCP/IP Terminal Configuration]

| Module Label | Terminal Sequence | Configuration |
|--------------|-------------------|---------------|
| RS-485 | ① | L |
| | ② | H |
| | ③ | GND |
| TCP/IP | ④ | RJ-45 |

9.1.1. Interface Setting

- Data Format: RTU
- Address: Address input
- Baud rate: 9600 bps
- Data bits: 8bits
- Stop bits: 1bits
- Parity: None / even / odd
- Slave address settings: Separately configured by channel
- For more information, refer to www.modbus.org.

9.1.2. MODBUS RS-485 Register Map

[Table 51. Measurement Gas Concentration (Integers) RS-485 Address Configuration]

| Category | Ch. | Address | Bits | Description |
|----------------------------|------|---------|---------|----------------------------------|
| Measured gas concentration | Ch1 | 30001 | BIT15-0 | Gas measurements value(integers) |
| Measured gas concentration | Ch2 | 30002 | BIT15-0 | Same as above |
| Measured gas concentration | Ch3 | 30003 | BIT15-0 | Same as above |
| Measured gas concentration | Ch4 | 30004 | BIT15-0 | Same as above |
| Measured gas concentration | Ch5 | 30005 | BIT15-0 | Same as above |
| Measured gas concentration | Ch6 | 30006 | BIT15-0 | Same as above |
| Measured gas concentration | Ch7 | 30007 | BIT15-0 | Same as above |
| Measured gas concentration | Ch8 | 30008 | BIT15-0 | Same as above |
| Measured gas concentration | Ch9 | 30009 | BIT15-0 | Same as above |
| Measured gas concentration | Ch10 | 30010 | BIT15-0 | Same as above |
| Measured gas concentration | Ch11 | 30011 | BIT15-0 | Same as above |
| Measured gas concentration | Ch12 | 30012 | BIT15-0 | Same as above |
| Measured gas | Ch13 | 30013 | BIT15-0 | Same as above |

Instruction

| | | | | | |
|----------------------------|--|------|-------|---------|---------------|
| concentration | | | | | |
| Measured gas concentration | | Ch14 | 30014 | BIT15-0 | Same as above |
| Measured gas concentration | | Ch15 | 30015 | BIT15-0 | Same as above |
| Measured gas concentration | | Ch16 | 30016 | BIT15-0 | Same as above |
| Measured gas concentration | | Ch17 | 30017 | BIT15-0 | Same as above |
| Measured gas concentration | | Ch18 | 30018 | BIT15-0 | Same as above |
| Measured gas concentration | | Ch19 | 30019 | BIT15-0 | Same as above |
| Measured gas concentration | | Ch20 | 30020 | BIT15-0 | Same as above |

[Table 52. RS-485 Address (Function 4) Configuration]

| Category | Ch. | Address | Bits | Description |
|----------------------|-------|---------------|---------------|--------------|
| Decimal Point & Unit | Ch1 | 30021 | BIT15-8 | 0: ppm |
| | | | | 1: ppb |
| | | | | 2: %VOL |
| | | | | 3: %LEL |
| | | | BIT7-0 | 4: mA |
| | | | | 0: 0 Point |
| | | | | 1: 1 Point |
| | | | | 2: 2 Points |
| | Ch2 | 30022 | BIT15-8 | 3: 3 Points |
| | | | | 0: ppm |
| | | | | 1: ppb |
| | | | | 2: %VOL |
| | | | BIT7-0 | 3: %LEL |
| | | | | 4: mA |
| | | | | 0: 0 Point |
| | | | | 1: 1 Point |
| | Ch3 | 30023 | BIT15-8 | 2: 2 Points |
| | | | | 3: %LEL |
| | | | | 4: mA |
| | | | | 0: ppm |
| | | | BIT7-0 | 1: ppb |
| | | | | 2: %VOL |
| | | | | 3: 3 Points |
| | | | | 0: 0 Point |
| Ch4 | 30024 | BIT15-8 | 1: 1 Point | |
| | | | 2: 2 Points | |
| | | | 3: 3 Points | |
| | | | 0: ppm | |
| | | BIT7-0 | 1: ppb | |
| | | | 2: %VOL | |
| | | | 3: %LEL | |
| | | | 4: mA | |
| ... | ... | Same as above | Same as above | |
| Ch20 | 30040 | BIT15-8 | 0: 0 Point | |
| | | | 1: 1 Point | |
| | | | 2: 2 Points | |
| | | | 3: 3 Points | |
| | | BIT7-0 | 0: ppm | |
| | | | 1: ppb | |
| | | | 2: %VOL | |
| | | | 3: %LEL | |
| Real-number Gas | Ch1 | 30041 | BIT31-0 | Float(32BIT) |
| | Ch2 | 30043 | BIT31-0 | |

Instruction

| | | | | |
|--------------------|------|--------------------|---------------|--------------------------|
| Measurements Value | Ch3 | 30045 | BIT31-0 | |
| | Ch4 | 30047 | BIT31-0 | |
| | ... | ... | Same as above | |
| | Ch20 | 30079 | BIT31-0 | |
| Alarm Status | Ch1 | 30081.0 | BIT0 | Alarm1 |
| | | 30081.1 | BIT1 | Alarm2 |
| | | 30081.2 | BIT2 | FAULT |
| | | 30081.3 | BIT3 | Maintenance |
| | | 30081.4 | BIT4 | Standby |
| | | 30081.5 - 30081.15 | BIT15-4 | Preliminary data |
| | Ch2 | 30082.0 | BIT0 | Alarm1 |
| | | 30082.1 | BIT1 | Alarm2 |
| | | 30082.2 | BIT2 | FAULT |
| | | 30082.3 | BIT3 | Maintenance |
| | | 30082.4 | BIT4 | Standby |
| | | 30082.5 - 30082.15 | BIT15-4 | Preliminary data |
| | Ch3 | 30083.0 | BIT0 | Alarm1 |
| | | 30083.1 | BIT1 | Alarm2 |
| | | 30083.2 | BIT2 | FAULT |
| | | 30083.3 | BIT3 | Maintenance |
| | | 30083.4 | BIT4 | Standby |
| | | 30083.5 - 30083.15 | BIT15-4 | Preliminary data |
| | Ch4 | 30084.0 | BIT0 | Alarm1 |
| | | 30084.1 | BIT1 | Alarm2 |
| | | 30084.2 | BIT2 | FAULT |
| | | 30084.3 | BIT3 | Maintenance |
| | | 30084.4 | BIT4 | Standby |
| | | 30084.5 - 30084.15 | BIT15-4 | Preliminary data |
| | ... | ... | Same as above | Same as above |
| | Ch20 | 30100.0 | BIT0 | Alarm1 |
| | | 30100.1 | BIT1 | Alarm2 |
| | | 30100.2 | BIT2 | FAULT |
| | | 30100.3 | BIT3 | Maintenance |
| | | 30100.4 | BIT4 | Standby |
| | | 30100.5 - 30100.15 | BIT15-4 | Preliminary data |
| Battery Low | - | 30101.0 | 0BIT | - |
| Heart Beat | - | 30102 | BIT15-0 | 1-100 sec. infinite loop |

[Table 53. RS-485 Address (Function 2) Configuration]

| Category | Ch. | Address | Bits | Description |
|--------------|-----|---------------|---------|------------------|
| Alarm Status | Ch1 | 10001 | BIT15-0 | Alarm1 |
| | | 10002 | | Alarm2 |
| | | 10003 | | FAULT |
| | | 10004 | | Maintenance |
| | | 10005 | | Standby |
| | | 10006 - 10008 | | Preliminary data |
| | Ch2 | 10009 | BIT15-0 | Alarm1 |
| | | 10010 | | Alarm2 |
| | | 10011 | | FAULT |
| | | 10012 | | Maintenance |
| | | 10013 | | Standby |
| | | 10014 - 10016 | | Preliminary data |
| | Ch3 | 10017 | BIT15-0 | Alarm1 |
| | | 10018 | | Alarm2 |
| | | 10019 | | FAULT |
| | | 10020 | | Maintenance |
| | | 10021 | | Standby |
| | | 10022 - 10024 | | Preliminary data |
| | Ch4 | 10025 | BIT15-0 | Alarm1 |
| | | 10026 | | Alarm2 |
| | | 10027 | | FAULT |

Instruction

| | | | | | |
|--|------|---------------|---------------|------------------|------------------|
| | | 10028 | | Maintenance | |
| | | 10029 | | Standby | |
| | | 10030 - 10032 | | Preliminary data | |
| | ... | ... | ... | Same as above | |
| | Ch20 | | 10153 | BIT15-0 | Alarm1 |
| | | | 10154 | | Alarm2 |
| | | | 10155 | | FAULT |
| | | | 10156 | | Maintenance |
| | | | 10157 | | Standby |
| | | | 10158 - 10160 | | Preliminary data |

[Table 54. RS-485 Address (Function 3) Configuration]

| Category | Ch. | Address | Bits | Description |
|-------------------------------|------|---------|---------------|---------------|
| 1 st Alarm Setting | Ch1 | 40001 | BIT31-0 | Float(32BIT) |
| | Ch2 | 40003 | BIT31-0 | Float(32BIT) |
| | Ch3 | 40005 | BIT31-0 | Float(32BIT) |
| | Ch4 | 40007 | BIT31-0 | Float(32BIT) |
| | ... | ... | Same as above | Same as above |
| | Ch20 | 40039 | Same as above | Same as above |
| 2 nd Alarm Setting | Ch1 | 40041 | BIT31-0 | Float(32BIT) |
| | Ch2 | 40043 | BIT31-0 | Float(32BIT) |
| | Ch3 | 40045 | BIT31-0 | Float(32BIT) |
| | Ch4 | 40047 | BIT31-0 | Float(32BIT) |
| | ... | ... | Same as above | Same as above |
| | Ch20 | 40079 | Same as above | Same as above |

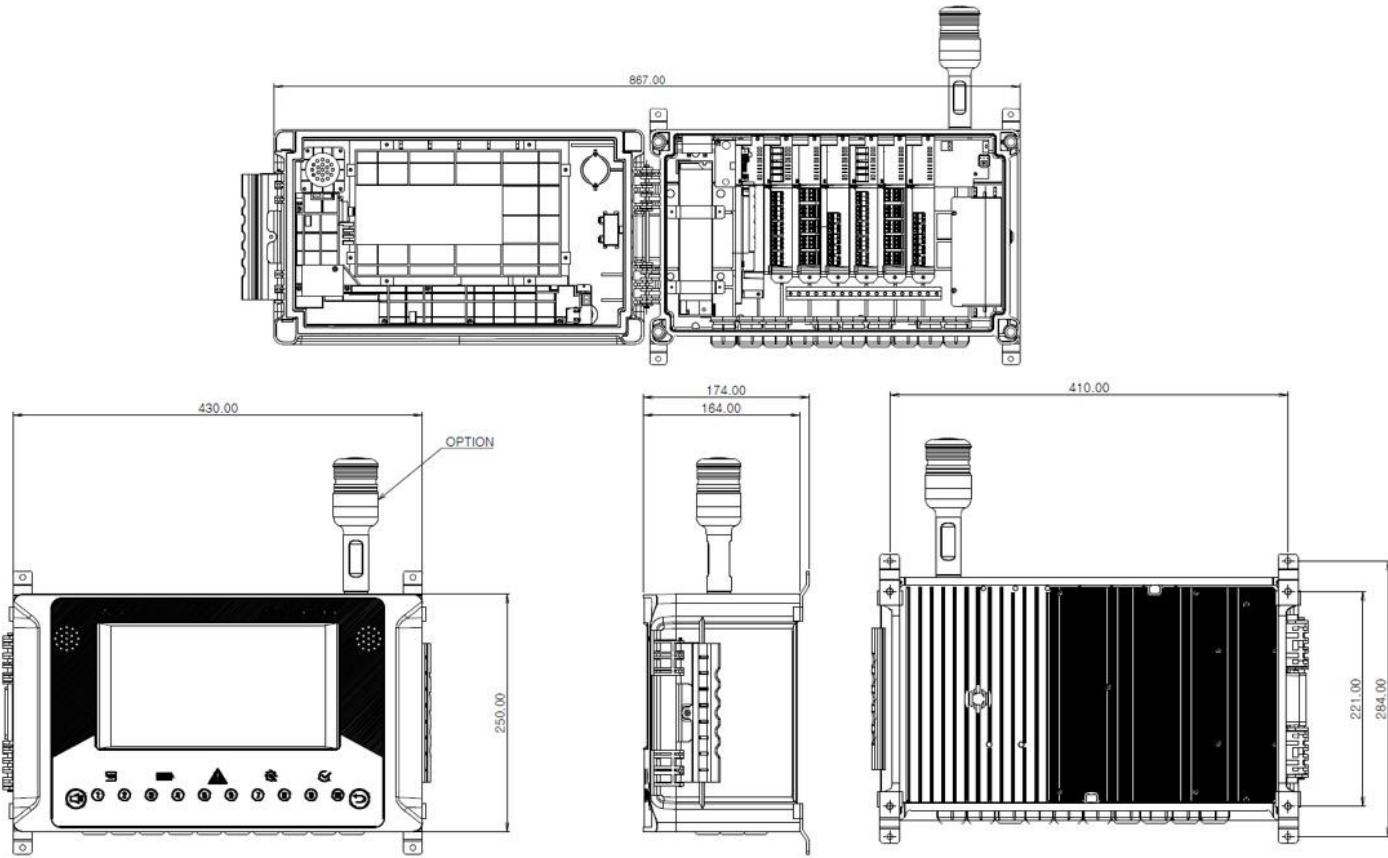
[Table 55. RS-485 Address (Function 1) Configuration]

| Category | Address | Bits |
|-------------|---------|------|
| Buzzer Stop | 1 | BIT1 |
| Reset | 2 | BIT1 |

Instruction

10. Outline Drawings and Dimensions

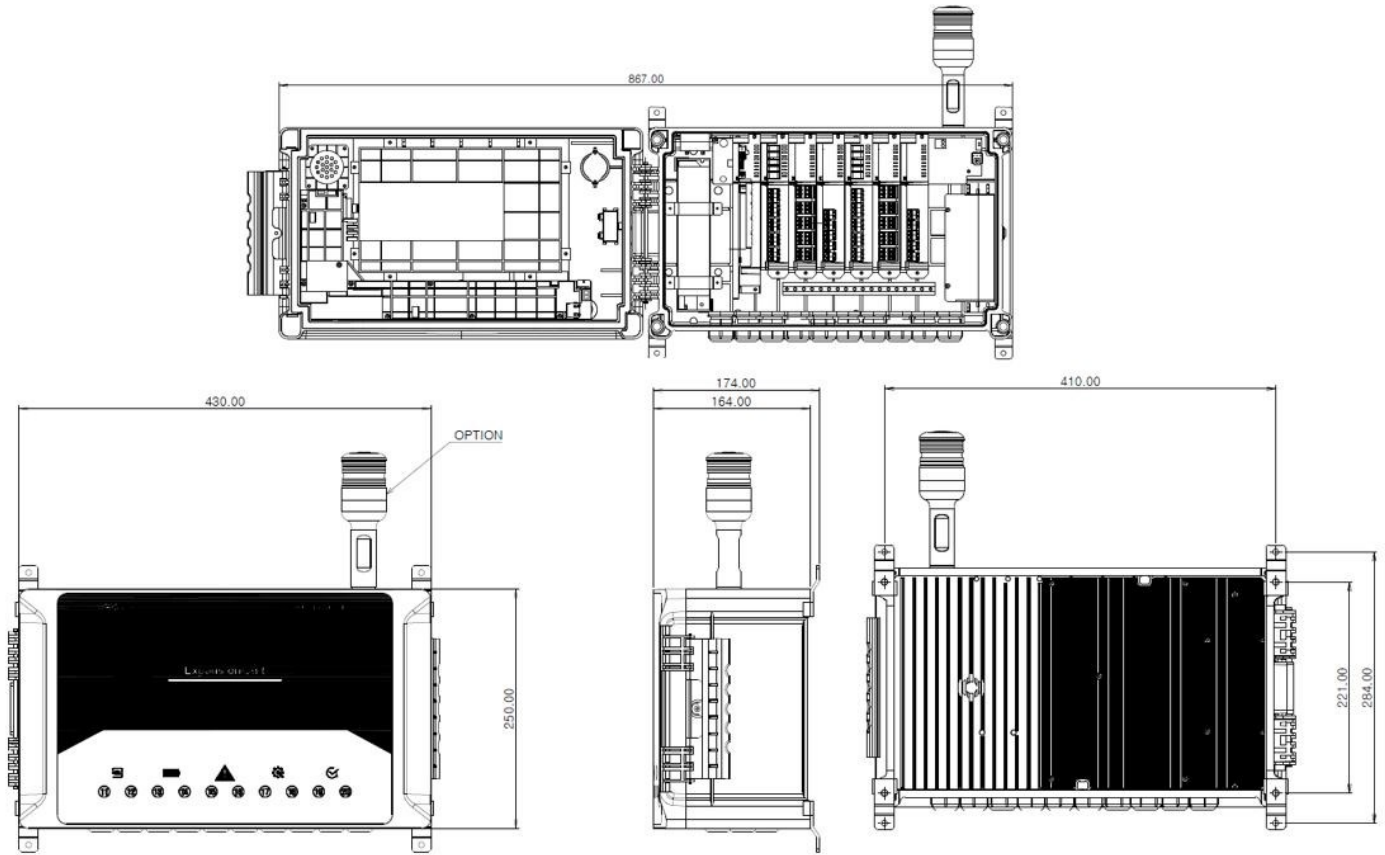
10.1. ASC-100 (Main)



[Figure 50. ASC-100 (Main Unit)]

Instruction

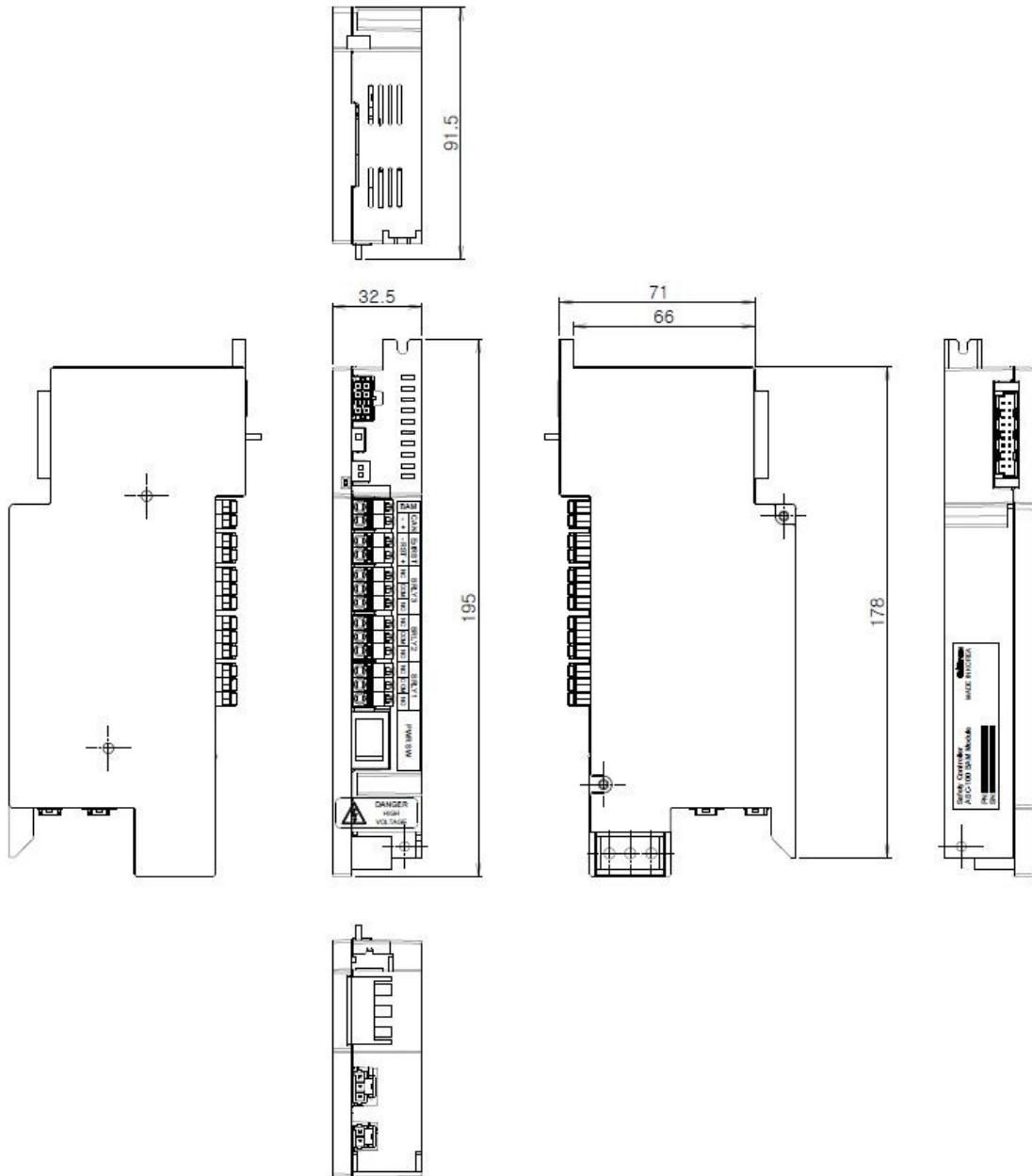
10.2. ASC-100 (Expansion)



[Figure 51. ASC-100 (Expansion)]

Instruction

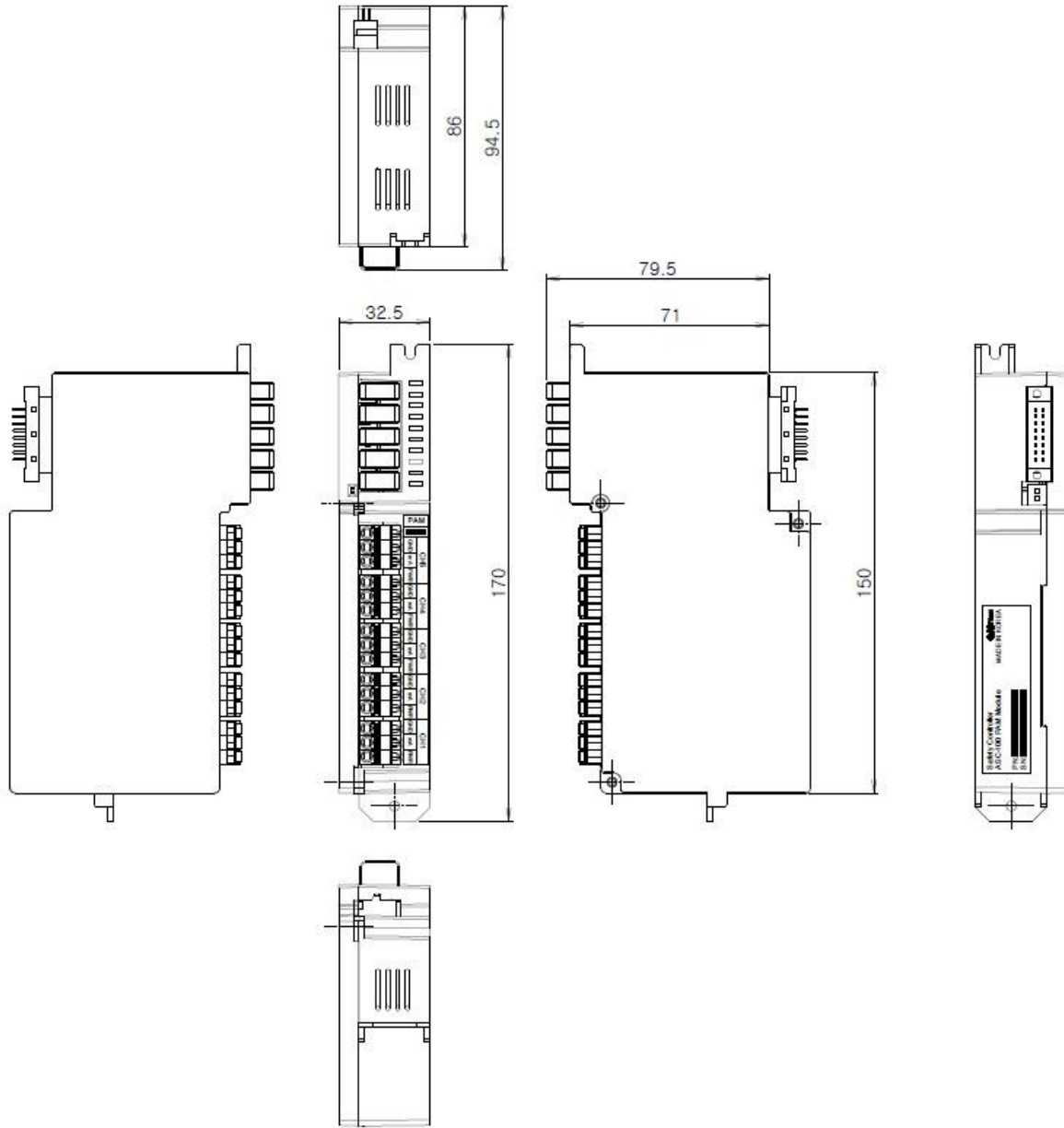
10.3. I/O Module (BAM)



[Figure 52. BAM]

Instruction

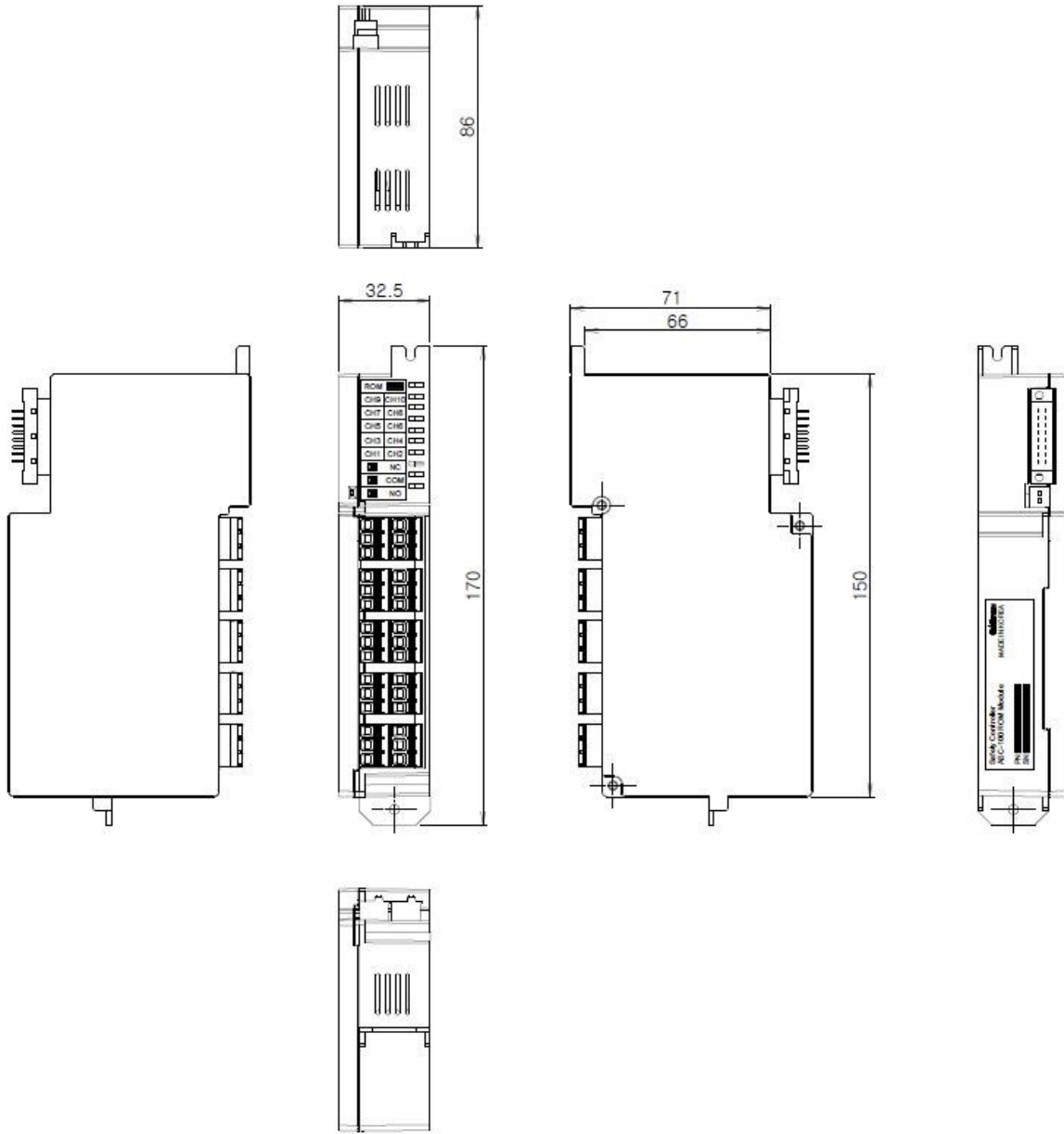
10.4. I/O Module (PAM)



[Figure 53. PAM]

Instruction

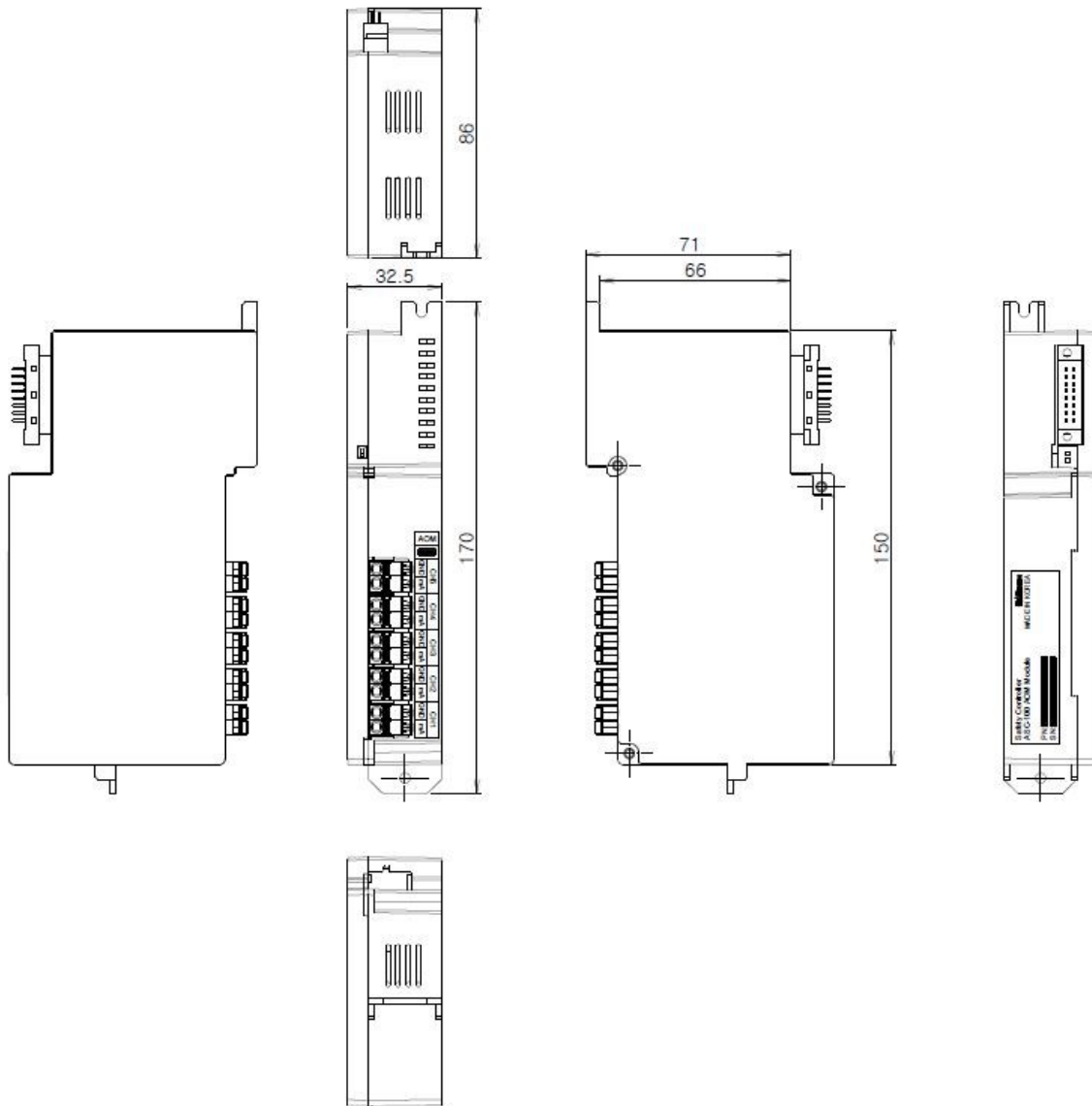
10.5. I/O Module (ROM)



[Figure 54. ROM]

Instruction

10.6. I/O Module (AOM)



[Figure 55. AOM]

11. Revision History

| Version | Contents | Date |
|---------|----------|------|
|---------|----------|------|

Instruction

| | | |
|-----|---------------------------------------|---------------|
| 0.0 | Manual issued | Apr. 19, 2019 |
| 0.1 | Function(s) added | Oct. 29, 2019 |
| 0.2 | Function(s) added | Nov. 14, 2019 |
| 0.3 | Function(s) added; self-test (multi) | Nov. 22, 2019 |
| 0.4 | Function(s) added; STANDBY Mode, etc. | Dec. 6, 2019 |