SUPCON

# APL Field Switch

# AEF6512-2T-S

# User Manual

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| Symbol Definition | |
| --- | --- |
|  | **WARNING:** Indicates information that a potentially hazardous situation which, if not avoided, could result in serious injury or death. |
|  | **RISK OF ELECTRICAL SHOCK:** Indicates information that Potential shock hazard where HAZARDOUS LIVE voltages greater than 30V RMS, 42.4V peak, or 60V DC may be accessible. |
|  | **ESD HAZARD:** Indicates information that Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatic sensitive devices |
|  | **ATTENTION:** Identifies information that requires special consideration. |
|  | **TIP:** Identifies advice or hints for the user. |

# Safety& Caution Symbols

The following table lists Safety& Caution symbols used on equipment.

| No. | Symbol | Description |
|---|---|---|
| 1 |  | Direct current (DC) |
| 2 |  | Alternating current (AC) |
| 3 |  | Ground (Earth) terminal |
| 4 |  | Protective earth (ground) terminal |
| 5 |  | Reference ground (Earth) terminal |
| 6 |  | Frame or chassis |
| 7 |  | Equipotentiality |
| 8 |  | On (power) |
| 9 |  | Off (power) |
| 10 |  | Caution, risk of electric shock |
| 11 |  | Caution, hot surface |
| 12 |  | Caution, risk of danger |
| 13 |  | Electrostatic sensitive devices (ESD) |

# Table of Contents

# APL Field Switch AEF6512-2T-S

## Section 1 Overview

AEF6512-2T-S (hereinafter referred to as "AEF6512") is an APL field switch that provides 2 APL Trunk ports and 12 APL Spur ports. The IP66-rated AEF6512 can be directly installed outdoors, no additional junction box is required.

AEF6512 and APL devices are connected with two-wire cables, which allows AEF6512 to feed power to the APL devices while communicating with them. Each spur offers overcurrent, overvoltage, undervoltage, and short circuit protection.

The AEF6512 and its devices are all powered by APL Trunk, and no extra power supply is required.

The AEF6512 is suitable for direct deployment in harsh environments and hazardous Zone 2.

**Typical Network Diagram**

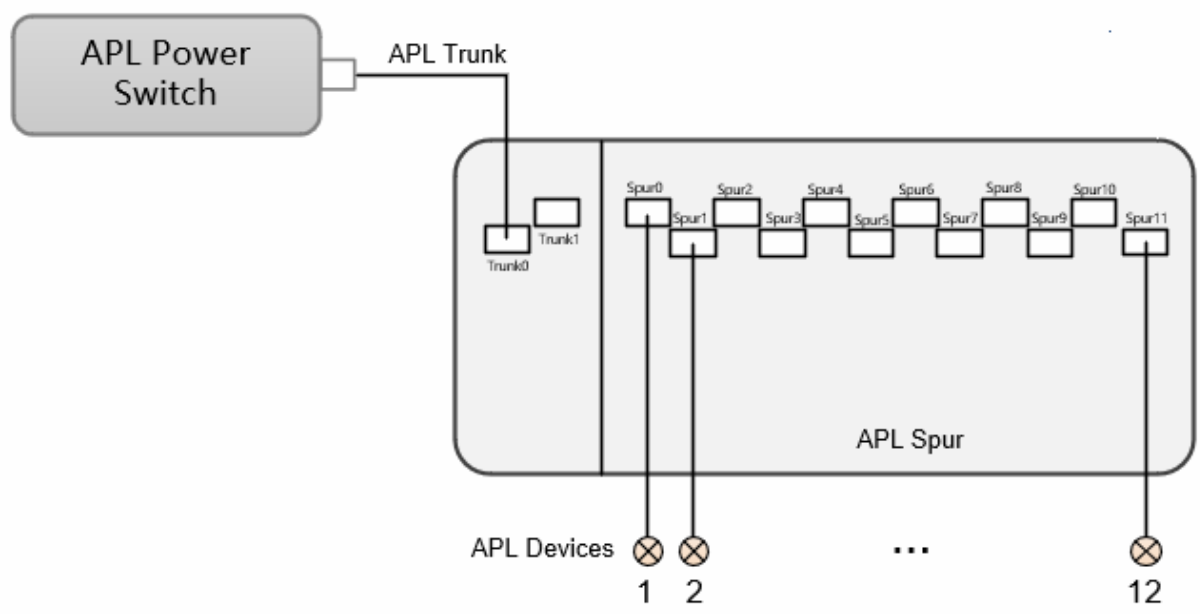


***Figure 1-1 Typical network diagram***

# Section 2 Technical Specifications

***Table 2-1 Technical specifications***

| Item | | Description |
|---|---|---|
| Static power consumption | | < 7.5 W |
| Ports | | 2 × APL Trunk<br>12 × APL Spur |
| Trunk | Port class | TL3X (2-wire power load, 50 V/57.5 W) |
| | Redundant inputs | Yes |
| | Transfer rate | 10 Mbps |
| | Max. distance | 1,000 m (3,280.84 ft) |
| Spur | Port class | SPAA (2-wire IS power source, 0.54 W) |
| | Output voltage | 12 V |
| | Output power capacity | 0.54 W/channel |
| | Transfer rate | 10 Mbps |
| | Max. distance | 200 m (656.17 ft) |
| Ambient temperature | | –40 to +70 °C |
| Relative humidity | | 5%–95%, non-condensing |
| IP rating | | IP66 |
| Ex marking | | Ex ec [ia Ga] IIC T4 Gc |
| Anti-corrosion | | G3 (ANSI/ISA S71.04) |
| Mounting | | Wall-mounted |
| Dimensions (W × H × D) | | 360 mm × 160 mm × 91 mm (14.17" × 6.30" × 3.52") (Cable glands and brackets excluded) |

# Section 3 Hardware Structure

The structure of AEF6512 is shown in below.

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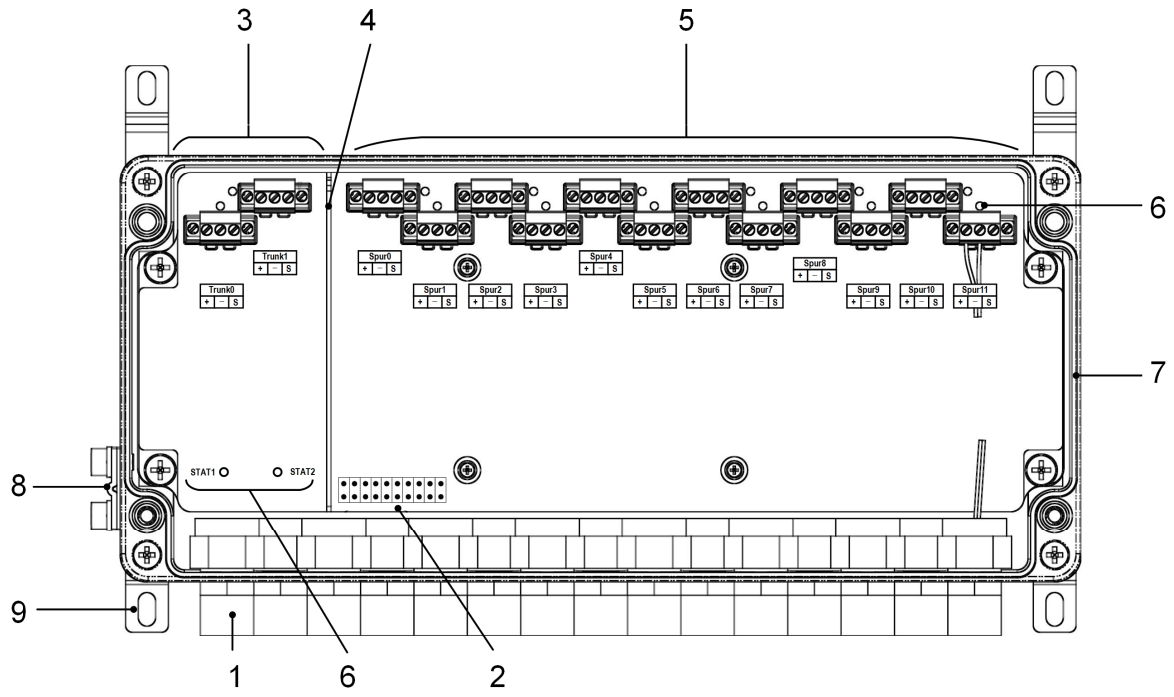


1-Cable gland, 2-Address jumpers, 3-Trunk0/Trunk1, 4-Separation board (Separates Ex ic section and Ex e section), 5-Spur0 to Spur11, 6-LED indicators, 7-Housing, 8-Grounding screws, 9-mounting brackets

***Figure 3-1 Structure diagram***

# Section 4 Setting Jumpers

AEF6512 offers 10-bit jumpers for setting its mode, IP and slot.

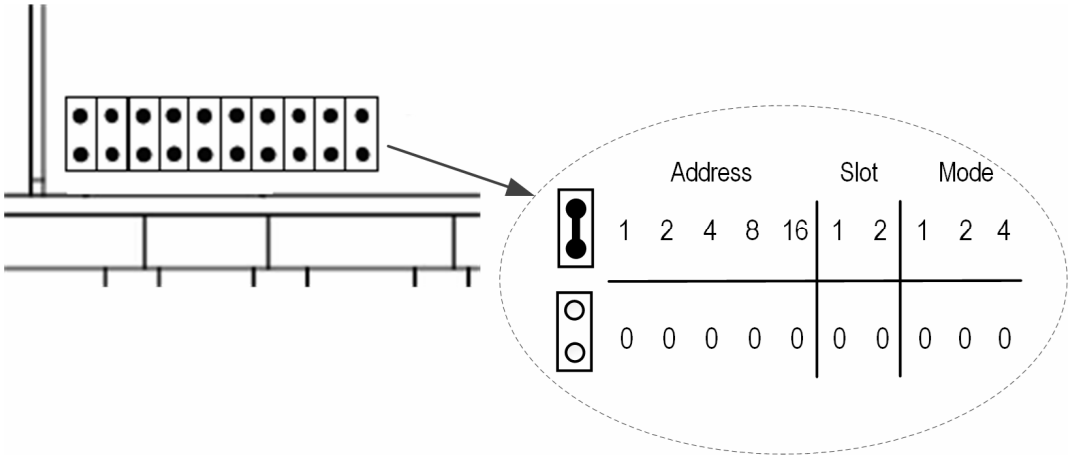


***Figure 4-1 Jumpers***

Set the jumpers according to the rules below:

***Table 4-1 Rules for setting jumpers***

| Mode (Bit 8 to 10) | Address (Bit 1 to 5) | Slot (Bit 6 to 7) |
|---|---|---|
| 0: E-Bus node mode | No need to set the jumpers. | The slot address (0/1/2/3) of the AEF6512 on an APL Trunk.<br>Note: when only one AEF6512 is connected to the Trunk, set its slot address to 0. |
| 1: Common Ethernet switch mode | The 4th section of the AEF6512 IP.<br>0–31 are available. | No need to set the jumpers. |
| Others (2–7): reserved | — | — |

**Tips:**

- **The jumper set value is the sum of all bits that have been shorted.**
- **Power off AEF6512 before setting the jumpers. After setting, power on the AEF6512 again to make the changes take effect.**

# Section 5 E-Bus Node Mode

This section introduces how to set the jumpers, IP, and topology of AEF6512 in E-Bus node mode.

## 5.1 Setting Jumpers

Refer to Table 4-1.

## 5.2 Setting IP Address

When the Trunk port of AEF6512 connects with an APL power switch, its Trunk IP address is automatically assigned by the APL power switch.

The relationship between AEF6512 Trunk IP and jumpers is shown in the table below.

***Table 5-1 Relationship between AEF6512 IP (Trunk) and jumpers***

| Jumpers | Trunk0/Trunk1 IP Address |
|---|---|
| B: slot address | ● IP address: 172.27.(N+4).(A×4+B)<br>● Subnet mask: 255.255.0.0<br>It is noted that:<br>● N = E-Bus node address (1–31) of the connected APL power switch<br>● A = Trunk port (0–15) of the connected APL power switch<br>● B = Slot address (0–3) of AEF6512 |

## 5.3 Topology

AEF6512 supports star, bus, or ring topology. When using bus or ring topology, one APL Trunk can cascade up to 4 AEF6512 whose slot addresses should be set as 0, 1, 2, and 3 respectively.

**Attention**:

**When the AEF6512 connects with an APL power switch, its Trunk IP address is automatically assigned by the APL power switch.**

### Star Topology

In a star topology, the APL power switch and APL Trunk are both redundant to maximize the reliability.

**Attention:**

- **The two APL power switches should connect to E-Bus A and E-Bus B respectively. For the DIP switch settings, please refer to *AEP6101-1E-S User Manual* and *AEP6208-2E2F-S User Manual*.**
- **While connecting the AEF6512 with APL power switch, connect the redundant APL Trunk ports of APL power switches with the same AEF6512.**

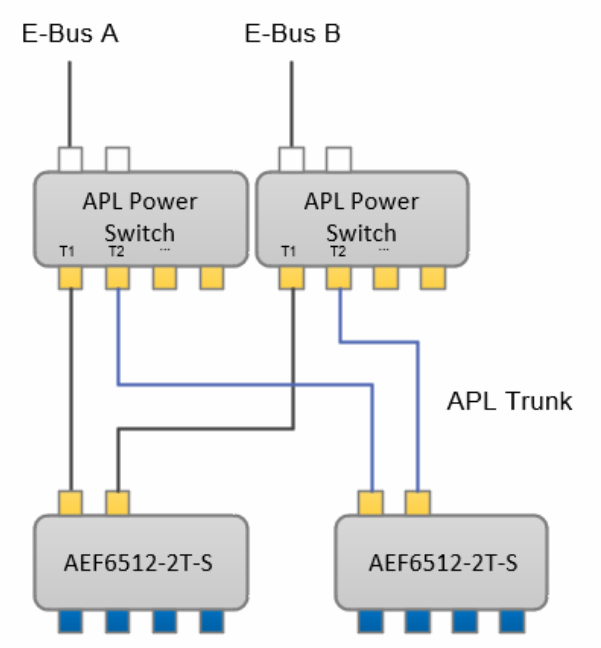


***Figure 5-1 Star topology***

## Ring Topology

In a ring topology, the APL power switches connect to E-Bus A and E-Bus B respectively as redundant. One APL Trunk can cascade up to 4 AEF6512 whose slot addresses should be set as 0, 1, 2, and 3 respectively. All AEF6512 share the same redundant APL Trunk, which is a both cost-effective and highly-reliable option.

**Attention:**

**For details on DIP switch settings, please refer to *AEP6101-1E-S User Manual* and *AEP6208-2E2F-S User Manual*.**

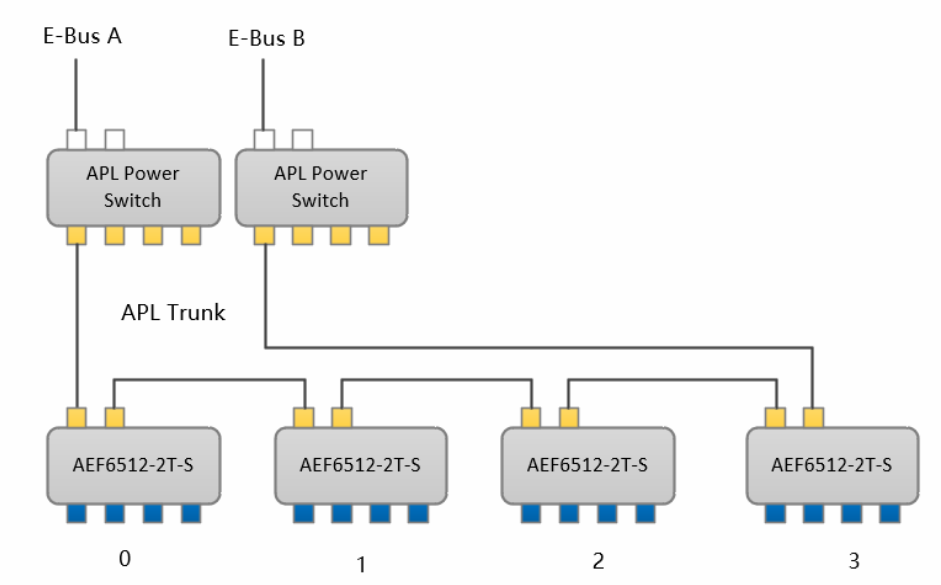


***Figure 5-2 Ring topology***

## Bus Topology

In a bus topology, neither APL power switch or APL Trunk are redundant. One APL Trunk can cascade up to 4 AEF6512 whose slot addresses should be set as 0, 1, 2, and 3 respectively. The APL power switch connects with E-Bus A and E-Bus B simultaneously, which is a more budget-friendly solution.

**Attention:**

**For details on DIP switch settings, please refer to *AEP6208-2E2F-S User Manual*.**

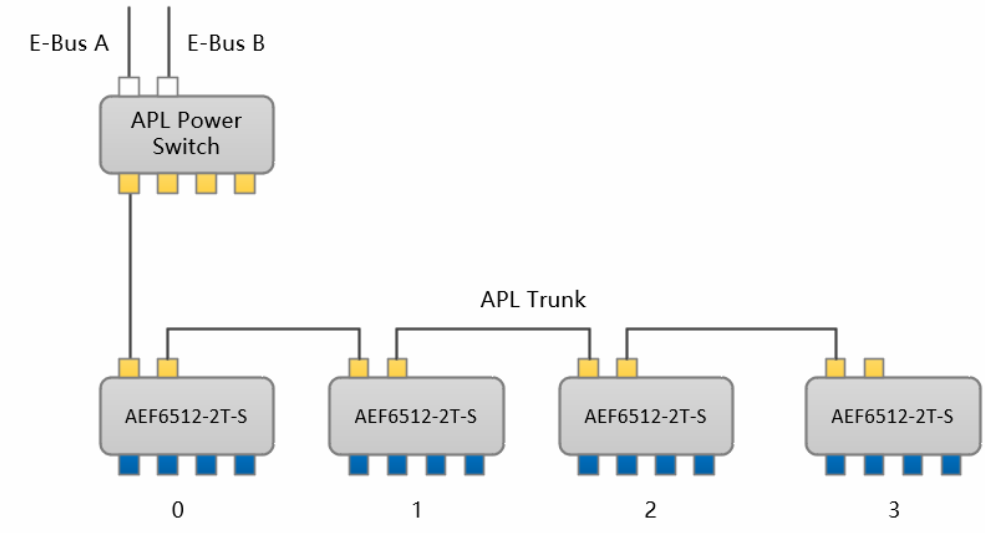


***Figure 5-3 Bus topology***

# Section 6 Common Ethernet Switch Mode

In the common Ethernet switch mode, AEF6512 serves as a common switch to communicate among the ports.

## 6.1 Setting Jumpers

Refer to Table 4-1.

## 6.2 Setting IP address

In the common Ethernet switch mode, the management IP of AEF6512 is "192.168.1.Y" (Y ranges from 0 to 31 and is set by bit 1 to 5 of the jumpers).

# Section 7 Wiring

## 7.1 Terminal Wiring

AEF6512 includes two groups of terminals.

- Trunk0/Trunk1 connect with APL Trunk cables. Redundancy is supported.
- Spur 0–Spur11 support the connection of up to 12 APL devices.

***Table 7-1 Terminal wiring***

| Terminals | Marks | Description |
|---|---|---|
| Trunk0/Trunk1, Spur0–Spur11 | + | APL signal (+) |
| | - | APL signal (-) |
| | S | Shield |

## 7.2 Grounding

The figure below shows an example of grounding AEF6512.

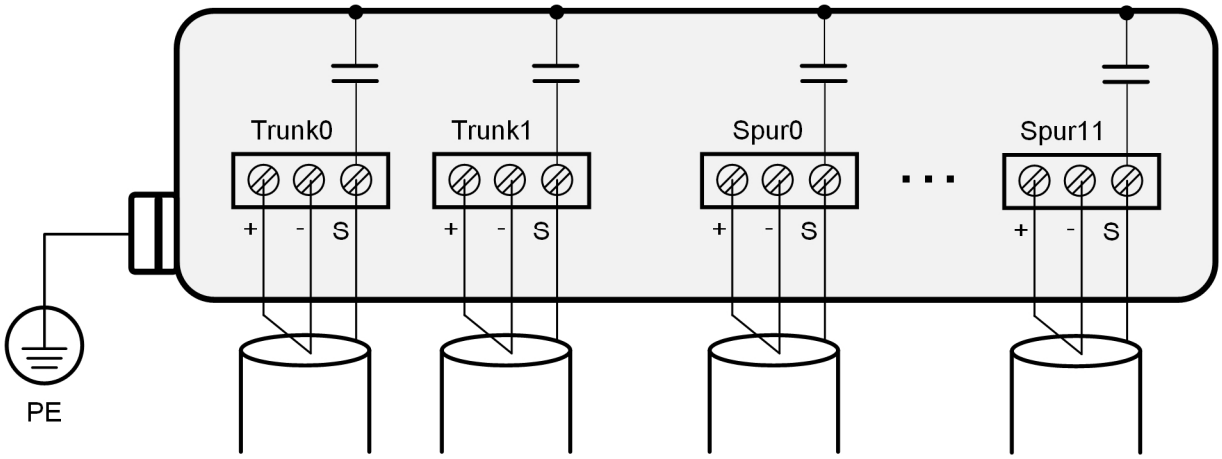


***Figure 7-1 Grounding example***

# Section 8 LED Indicators

AEF6512 offers 2 groups of 8 LEDs (16 in total). The LEDs on the left corner indicate the system operation status. And the others near the wiring terminals show the status of 14 ports.

***Table 8-1 Indicator description***

| Indicators | Status | Meaning | Troubleshooting |
|---|---|---|---|
| STA1/Sys | On | Normal | — |
| | Off | Hardware failure | 1. Check whether the power supply is good.<br>2. If the fault still persists, contact local representatives. |
| | Flashing | Pending | 1. Check whether the links of Trunk ports are good.<br>2. Check whether the Trunk port communication is normal, such as whether the APL power switch is communicating with the Trunk port.<br>3. Check whether the software configuration is downloaded.<br>4. Check whether the cascading slots have address conflict. |
| STA2/Mode | On | In E-Bus node mode | — |
| | Off | In common Ethernet switch mode | — |
| Trunk0/Trunk1, Spur0–Spur11 | On | Link established | — |
| | Off | No link established | — |
| | Flashing | Link activity | — |

# Section 9 Dimensions and Mounting

## 9.1 Dimensions

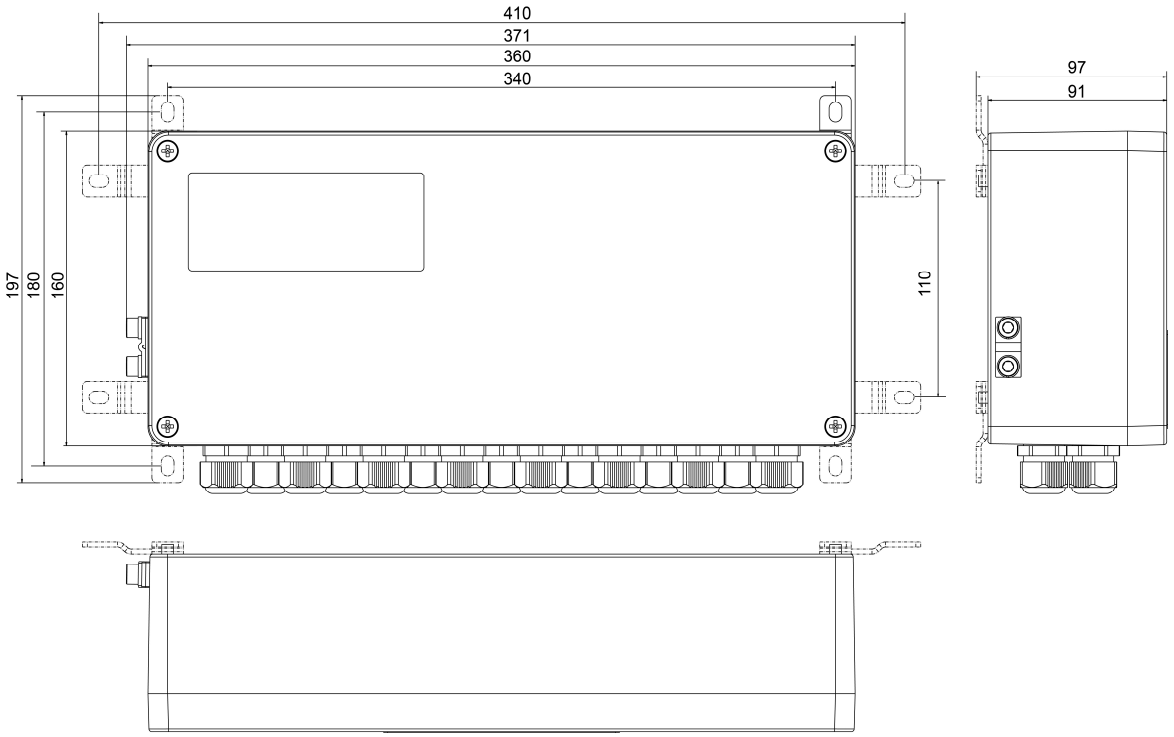


*Figure 9-1 Dimensions (unit: mm)*

## 9.2 Mounting

AEF6512 can be installed to a wall or a surface with four M5×28 screws. Figure 9-1 and Figure 9-2 show the mounting hole dimensions and mounting diagram. The recommended tightening torque is 5 N·m. The direction of the four mounting brackets can be adjusted.

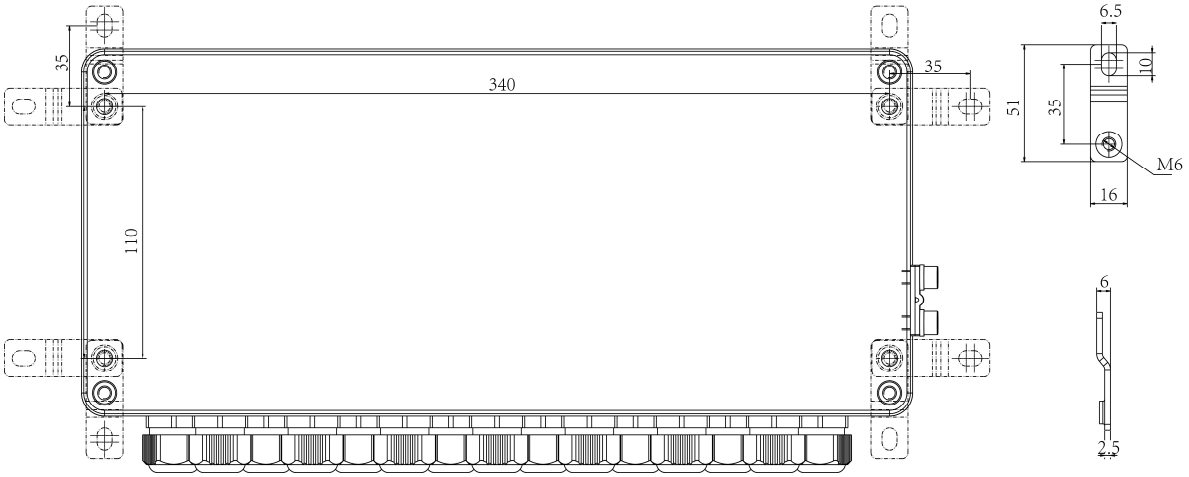


*Figure 9-2 Mounting diagram (unit: mm)*

# Section 10 Revision History

***Table 10-1 Revision history***

| Version | Applicable product model | Remarks |
|---|---|---|
| V1.0 (20230704) | AEF6512-2T-S V10.10.00 | First release. |
| V1.1 (20240823) | AEF6512-2T-S V10.10.00 and later | ● Modified port class for Spur.<br>● Updated dimensions. |
| V1.2 (20250114) | AEF6512-2T-S V10.10.00 and later | Modified ex marking. |