# KSTAR AC Charger

# User Manual

# Contents

# Preface

Thank you for using our products. We are committed to providing customers with excellent charging facilities and comprehensive installation services.

The EV chargers developed and produced by us feature advanced functions, stable performance, wide applicability, and strong practicality.

# Safety Precautions

- Do not place any combustible or explosive materials, chemicals, vapor and other dangerous items near the charger.
- Keep the charging connector clean and dry. If it is dirty, please wipe it with a clean dry cloth. It is strictly forbidden to touch the charging connector core with your hands when charged.
- It is strictly prohibited to use the charger if the charging connector or charging cable is defective, cracked, worn, broken, or exposed. Please contact our customer service crew in time once you spot such failure.
- Please do not attempt to disassemble, repair, or modify the charger. If you have such needs, please contact us. Improper operation may cause equipment damage, water leakage, electric leakage, etc.
- If there is any abnormality during use, you can immediately press the emergency stop button to cut off all input and output power.
- In case of rain or thunder, please charge with caution.

- Children should not approach or use the charger during charging process.
- When being charged, the vehicle is prohibited from driving. Charging process can only be operated when the vehicle is powered off. Please shut down the engine before charging the electric vehicle.
- When discarding products/parts, please contact the nearest hazardous waste disposal station.

# Chapter 1 Product Introduction

## 1.1 Product introduction

This product is a single-phase AC charger that provides charging services for various electric vehicles. It has functions such as card swiping charging, code scanning charging, plug-in charging, scheduled charging, and charging protection. The whole machine reaches a protection level of IP 65, meaning it has good dustproof and waterproof ability. This charger can be operated safely in parking lots, charging stations, garages and other places.


Figure 1-1 External Appearance

## 1.2 Working Principle

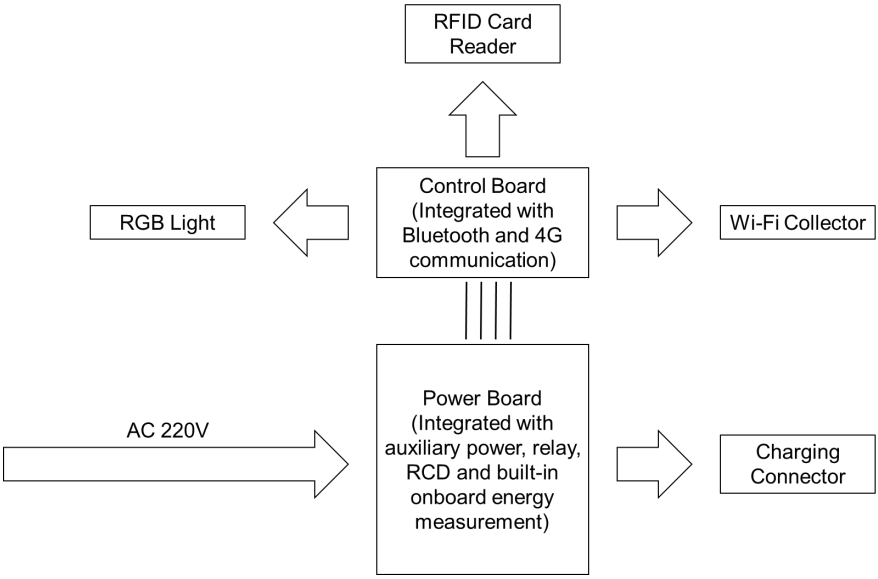


Figure 1-2 Product Working Principle

## 1.3 Main Parameters

| Specifications | Series | CAS7 |
|---|---|---|
| Appearance & Structure | Product Name | AC Charger |
| | Housing Material | Engineering plastics |
| | Human-Computer Interaction | RGB light<br>Card reader |
| | Dimensions | 216*106*268 mm ( W *D *H ) |
| | Installation Method | Wall-mounted<br>Column-standing |

| | | |
|---|---|---|
| | Wiring Method | In and out from the bottom |
| | Weight | ≤7kg |
| | Cable Length | ≤5m |
| Electrical parameters | Input Voltage | 230V AC ± 15% |
| | Input Frequency | 50Hz |
| | Rated Power | 7kW |
| | The Output Voltage | 230V AC ± 15% |
| | Output Current | ≤32A |
| | Standby Power Consumption | < 10 W |
| Environment parameters | Applicable Environment | Indoor/Outdoor |
| | Operating Temperature | -25℃ ~ +50℃ |
| | Working Humidity | 5% ~ 95% without condensation |
| | Working Altitude | <2000m |
| | Protection Level | IP 65 |
| | Cooling Method | Natural cooling |
| | MTBF | 100,000 hours |
| | Special | Anti-UV design |

| | | |
|---|---|---|
| | Protection | Flame retardant materials |
| Safety design | Standard | EN IEC 61851-1:2019<br>IEC61851-1:2017<br>IEC61851-21-2:2021<br>EN 18031-1 |
| | Protect Design | Overvoltage protection, under voltage protection, over current protection, leakage protection, grounding protection, over temperature protection, lightning protection |
| Feature design | Charging Method | Card swiping<br>Bluetooth App<br>Plug and Charge |
| | Leakage Protection | 6mA DC + 30mA Type A |
| | Upgrade Method | Bluetooth<br>Wi-Fi |
| | IoT Method | 4G |

Table 1-1 Main Parameter list

## 1.4 Product Performance and Features

### 1.4.1 Performance

- Standardized design: designed and manufactured according to IEC61851-1 standard. It's stable, reliable and highly compatible.
- Comprehensive protection and safe operation: Overvoltage protection, under voltage protection, over current protection, leakage protection, grounding protection, over temperature protection, lightning protection help to realize a stable and safe operation
- Status indicator light: with red, green, blue and white indicator lights, status of the chargers will be presented through different colors in constant light or flashing effects.
- Diversified charging methods to meet various needs: card swiping, code scanning, Bluetooth App, Plug and Charge.
- Multiple upgrade methods make it easy to facilitate daily operation and maintenance: software upgrades can be implemented locally or remotely through Wi-Fi, Bluetooth or 4G without disassembling the charger.

### 1.4.2 Features

- High protection level: IP65 supports installing in outdoor harsh environment.

- Low power consumption: The standby power consumption is as low as 10W that could help to save energy.

### 1. 5 Standards Involved

The single-phase AC charger is designed according to the latest IEC standards and meets industry standards in terms of function and performance. The technical standards used are shown in the table below.

| No. | Standard | Name |
|---|---|---|
| 1 | IEC61851-1 2017 | Electric vehicle conductive charging system Part 1: General requirements |
| 2 | IEC 61851-21-2 :2018 | Electric vehicle conductive charging system Part 21-2:Electric vehicle requirements for conductive connection to an AC/DC supply -EMC requirements for off-board electric vehicle charging systems |
| 3 | EN 62196-2 : 2017 | Conductive charging of electric vehicles: Dimensional compatibility and interchangeability requirements for ac pin and contact-tube accessories |

| | | |
|---|---|---|
| 4 | EN 18031-1 | Common security requirements for radio equipment — Part 1: Internet connected radio equipment |

Table 1-2 Technical standards and regulations

## 1.6 Product Structure

### 1.6.1 Overall Appearance

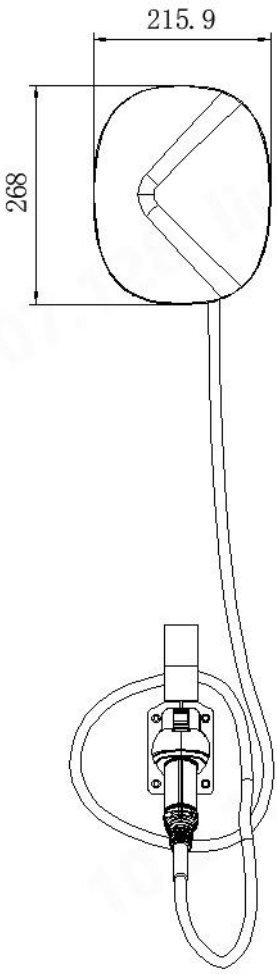


Figure 1-3 Charger Appearance

## 1.6.2 Back Panel Structure of Wall-mounted Type

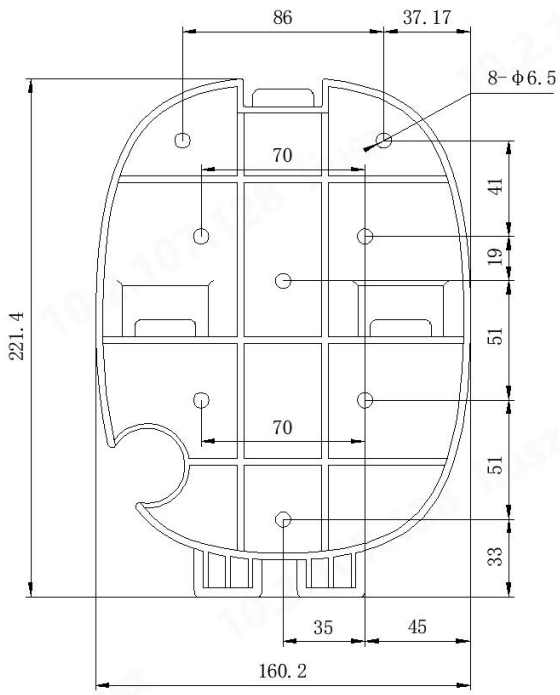


Figure 1-4 Wall-mounted Type Back Panel

### 1.6.3 Base Structure of Column-standing Type

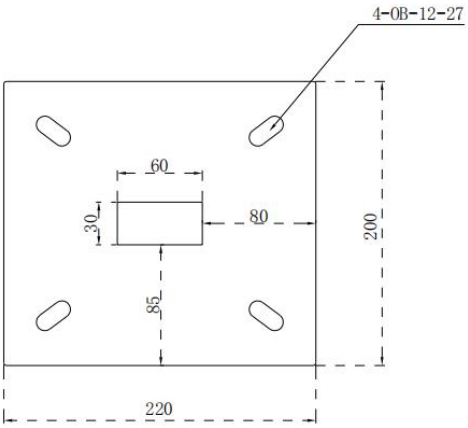


Figure 1-5 Base Structure of Column-standing Type

# Chapter 2 Operation Instructions

## 2.1 Product Installation

### 2.1.1 Unpacking and Inspection

When the product is arrived, disassemble the package and check the following items:

- Inspect the appearance to check whether the AC charger is damaged during transportation. If there is any damage, please notify the dealer immediately.
- Check whether the accessories against the shipping packing list to ensure that the models are complete and correct. If any accessories are found missing or in a wrong model, make a timely on-site record and immediately contact the distributor.

### 2.1.2 Installation Preparation

#### 2.1.2.1 Installation Tools

| Tool Name | Picture | Function |
|---|---|---|
| Insulated Torque Wrench |  | Fastening bolts |
| Adjustable Wrench |  | Fastening bolts |

| | | |
|---|---|---|
| Hydraulic Clamp |  | Press OT terminal |
| Diagonal Pliers |  | Cut the cable |
| Multimeter |  | Check electrical connections and parameters |
| Phillips Screwdriver (PH2*150mm, PH3*200mm ) |  | Fastening bolts |
| Insulated Adjustable Wrench |  | Fastening bolts |

Table 2-1 Installation Tools

### 2.1.2.2 Material Preparation

The recommended cables for charger power supply are as follows:

| Material Name | Specification | Quantity |
|---|---|---|
| Electric power cable | YJV-0.6/1KV 3×6 | Subject to specific construction length |

Table 2-2 Recommended Cable

### 2.1.3 On-site Installation Process

An overview of the installation process is as follows:

a) Installation precautions;

b) Wiring;

c) Install wall-mounted back panel or column;

d) Incoming wire installation;

e) Fix the device;

f) Cable management;

g) On-site cleanup.

### (1) Overall Rendering

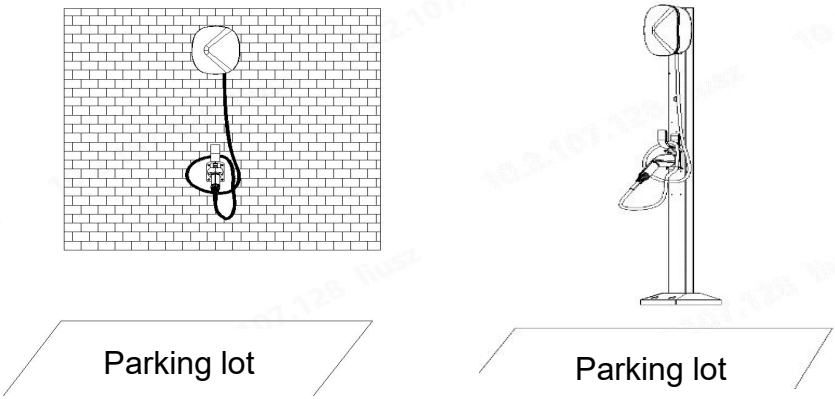


Figure 2-1 Overall Rendering

### (2) Installation Precautions

- When installing the Column-standing charger indoors or in other elevated and dry locations, it may not require a foundation. However, it is necessary to ensure that the ground flatness error does not exceed ±1.5mm per square meter. The concrete thickness at the installation position of the equipment should be ≥200mm, and

the cement mortar strength grade should reach M10~M15. For drilling installation, M10 expansion bolts should be used.

- When installing Column-standing charger in outdoor low terrain areas that are prone to water accumulation, it is necessary to add a cement or channel steel base with a height of 200mm. The installation surface should use four embedded M10 stainless steel bolts, with the threaded portion extending 30±3mm above the ground.
- The charger should be installed at a position corresponding to the center line of the parking space.
- The recommended distance between the fixing screw holes on the back panel of the wall-mounted charger is 130 cm from the ground.

### (3) Wiring

**Wall-mounted installation:**

The power cord should be fixed in a wire duct;

The wire duct should be located on the left side of the center line of the parking space;

The power cord should protrude from the duct for more than 50 cm.

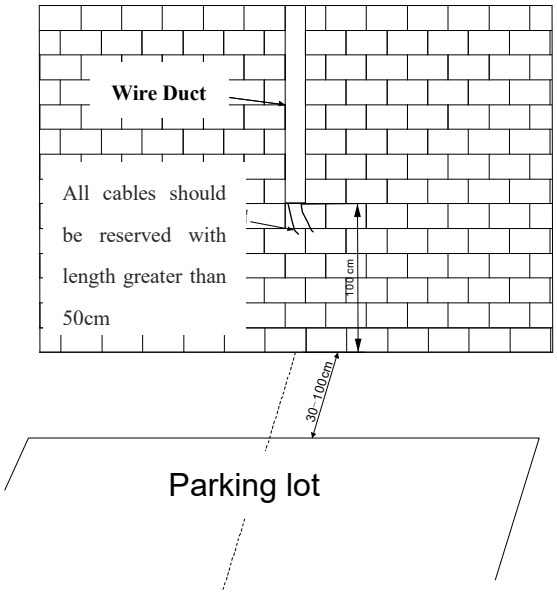


Figure 2-2 Wall-mounted installation Diagram

**Column-standing installation:**

The power cord should be buried underground and pass through the column;

The column should be installed in the position corresponding to the center line of the parking space;

The power cord should protrude from the ground for more than 150 cm.

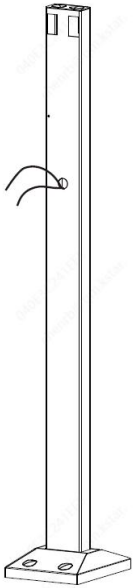

Figure 2-3 Column-standing installation Diagram

### (4) Install Components

Follow the steps shown in the figure to remove the back panel.

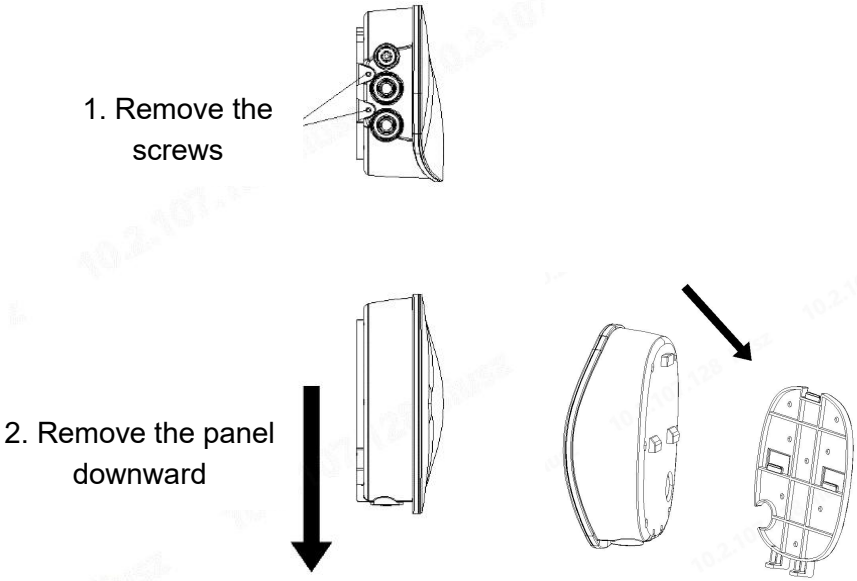


Figure 2-4 Back Panel Removal Instruction

**Wall-mounted installation:**

The screw hole on the upper part of the back panel should be kept 130cm above the ground and fixed on the right side of the wire duct.

The back panel should be placed at the center line of the parking space.

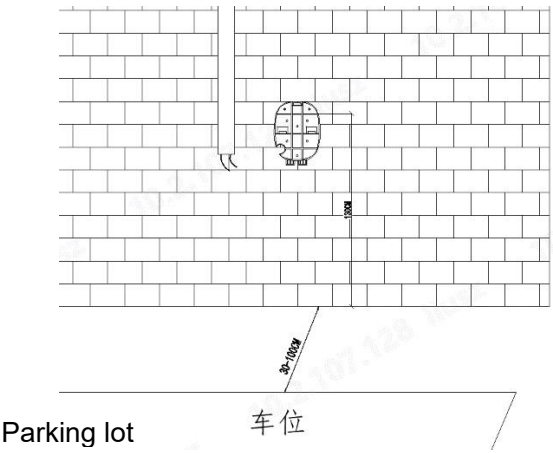


Figure 2-5 Wall-mounted Component Mounting Diagram

**Column-standing installation:**

Fasten the panel to the column with screws.

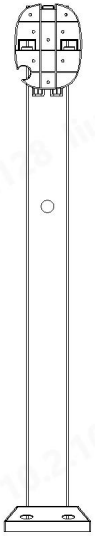

Figure 2-6 Column-standing Component Mounting Diagram

## (5) Wiring

Measure the reserved power cable to the appropriate length, crimp the terminals properly, and then connect them to the input terminals (L/N/PE) inside the charger. Then, secure the screws.

### (6) Fixing

Align the charger with the back panel and lock it downward into the buckle. Re-lock the screws on the bottom side of it.

### (7) Cable Management

Organize the cables by winding them onto the cable storage hook provided on the charger, and then insert the charging connector into the socket.

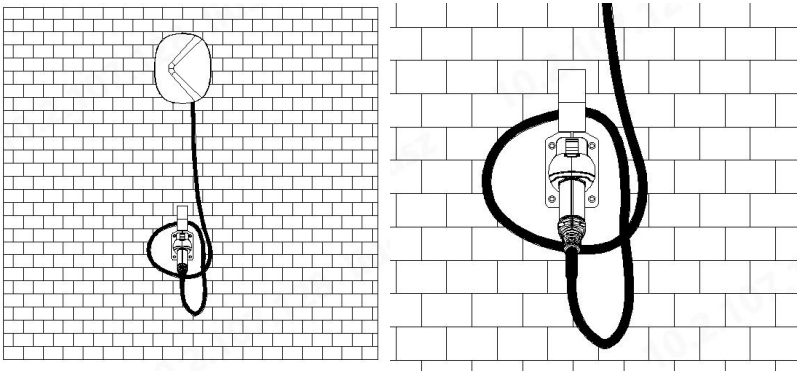

Figure 2-7 Cable Management Diagram

## 2.2 Device Power-on Inspection and Debugging

### 2.2.1 Pre-operation Inspection

Before operating, please carefully check and ensure the following items:

- The installation position of AC charger is easy for operation and maintenance;
- AC chargers and accessories are correctly connected and installed securely;
- The RCD switch at the AC incoming terminal is properly selected;
- There are no external objects or parts left atop the AC charger.

### 2.2.2 Power-on the Device

- Make sure that the above pre-operation inspection items meet the requirements;
- Close the RCD in the distribution box;
- Power-on the AC charger;
- Observe the indicator status.

## 2.3 Indicator light status instructions

| Indicator | Name | Status | Description |
|---|---|---|---|
| Blue | Running Indicator | Constant | Standby normally |
| | | Flashing | Charging connector is not started |
| White | Schedule Charging | Flashing | Schedule charging in progress |
| Green | Charging Indicator | Constant | Charging connector is not plugged out when finished |
| | | Flashing | Charging in progress |
| Red-White | Abnormal | Red and white flashing | Abnormality in the charger |

Table 2-3 Indicator Light Status List

## 2.4 Charging Operation

### 2.4.1 Charging Connection

After parking the car, you may take off the charging connector from the charger and plug in the charging socket on the car. Please make sure that the connection is fastened tightly.

### 2.4.2 Charging Control

(1) Swipe the Card

Connect the charging connector correctly and use the configured RFID card to swipe and start the charging process.

(2) Plug and Charge

Charging will be started when the charging connector is recognized.

(3) App

Start charging through mobile phone App.

### 2.4.3 Charging Ends

You may end the charging through the following way during the charging process:

(1) Swipe the card to stop charging, and then pull out the charging connector after the green light is displayed;

(2) End from the vehicle side and pull out the charging connector after the green light is displayed.

**Note: When pulling out the charging connector, press the unlock button on the top of the connector and pull it out backwards. It is strictly prohibited to forcibly pull the connector out while charging.**

# Chapter 3 Troubleshooting

## 3.1 Common Problems and Suggestions

| Phenomenon | Cause of Issue | Troubleshooting Suggestions |
|---|---|---|
| Red and white light flashing | Emergency button is pressed | Check if the emergency button has been pressed, and rotate the button cap in the direction of the arrow on the button to make it pop up. |
| Red and white light flashing | Power grounding fault | Check if the equipment is properly grounded. |
| Red and white light flashing | Power supply failure | Check if the power supply is over voltage, under voltage or abnormal in frequency. The charger will automatically resume after the power supply returns to normal. |
| Red and white light flashing | Non-above fault | Please call the customer service for assistance. |
| No light, no response | Power switch tripped | Check if the power switch has tripped. If the issue cannot be resolved, please call customer |

| | | |
|---|---|---|
| | | service for assistance. |
| No response when inserting the charging connector | The charging connector is not connected properly | Check if the charging connector is connected in place and try inserting it again. If the issue cannot be resolved, please call customer service for assistance. |
| Indicator lights and card reader do not work | Device failure | Please call customer service for assistance. |
| Other faults | | Please call customer service for assistance. |

Table 3-1 Common Problems and Suggestions

### 3.2 Fault Indicator Light Description:

After the charger indicator light keeps constantly in red for 5 seconds, it will flash in red and white alternately 5 times where red means 1 and white means 0. Combining the 5-digit flash codes in order can get the fault code corresponding to the current alarm. Please check the cause of the fault in the following table.

| No. | Cause of Issue | Alarm | Error Code |
|---|---|---|---|

| | | Code | |
|---|---|---|---|
| 1 | AC over voltage | 0 | 00000 |
| 2 | AC under voltage | 1 | 00001 |
| 3 | AC over current | 2 | 00010 |
| 4 | System over temperature | 3 | 00011 |
| 5 | Output short circuit | 4 | 00100 |
| 6 | Relay sticking | 5 | 00101 |
| 7 | Emergency stop failure | 6 | 00110 |
| 8 | Electric leakage fault | 7 | 00111 |
| 9 | Card reader communication failure | 8 | 01000 |
| 10 | Grounding fault | 9 | 01001 |
| 11 | Server communication failure | 10 | 01010 |
| 12 | Meter communication failure | 11 | 01011 |

Table 3-2 Fault Indicator Light Description

### 3.3 Explanation of Termination Reasons:

| No. | Cause of Issue | Ending Code |
|---|---|---|
| 1 | The charging connector is removed | 66 |

| | | |
|---|---|---|
| 2 | The vehicle automatically disconnects | 67 |
| 3 | Online card swiping stops | 203 |
| 4 | Offline card swiping stops | 204 |
| 5 | Reaching the pre-set time | 205 |
| 6 | Reaching the pre-set amount | 206 |
| 7 | Reaching the pre-set battery level | 207 |
| 8 | Insufficient balance | 208 |
| 9 | Server delivery stops | 209 |
| 10 | Abnormal fault | 210 |
| 11 | Power outage | 254 |
| 12 | Other | other |

Table 3-3 Explanation of Termination Reasons

# Chapter 4 Open Port and Purpose Description

Port: 80

Protocol: HTTP

Purpose: Embedded web interface for parameter configuration and local firmware upgrades.