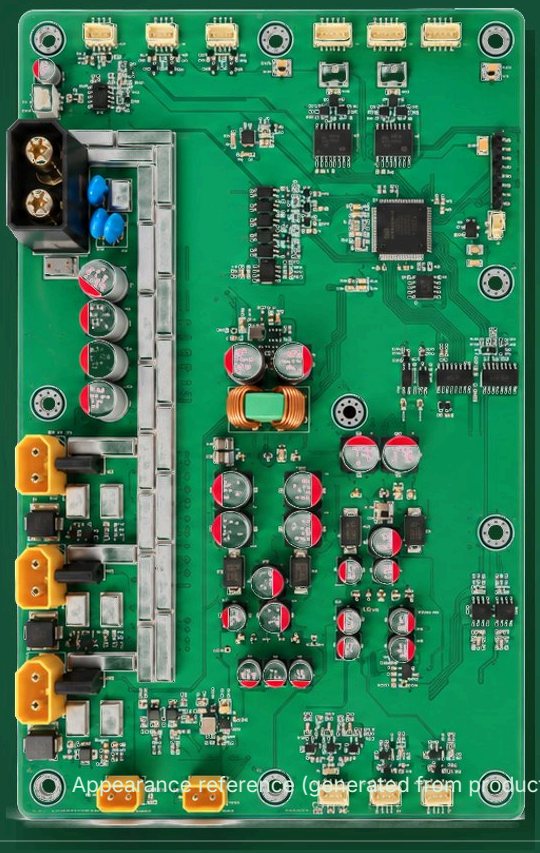
EQIO

ERB-UPWR-U02

PRODUCT MANUAL

48 V Upper-Body Power-Management Board

Power-management board · Robot upper bod...



Appearance reference (generated from product photos); shipped units may differ.

Measurement and control, made easy.

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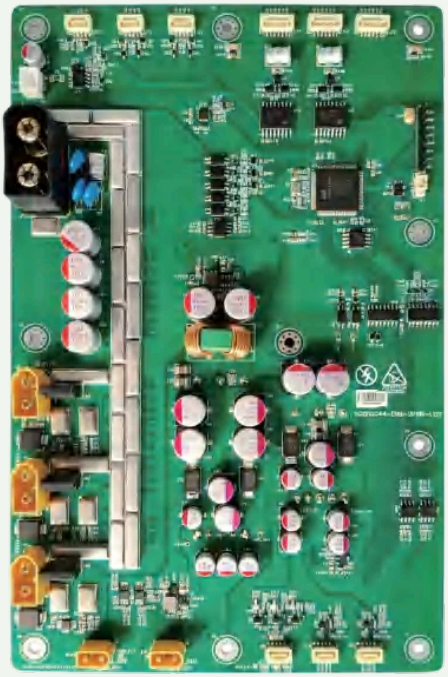
Easy · Quick · Input · Output

01 OVERVIEW

48 V Upper-Body Power-Management Board

Power-management board · Robot upper body power distribution · Power timing control · Status management

ERB-UPWR-U02 mCU management multi-channel power enable and voltage, current, temperature status, provides 48V, 24V and 12V output, supports three-position switch, dual button and e-stop signal attach, used for robot upper body power distribution.
Main power and always-on power input respectively connect, management unit read switch and e-stop signal, and via isolated RS-485 and other equipment HMI. Board suited to upper body powertrain, control and sensing equipment centralized power, multi voltage assign and status management layout the same module in.



Product appearance reference; shipped units may differ.

Key features

- 48V main input and 3.3V always-on power input
- 48V, 24V and 12V output
- 3-ch 12V isolated power
- Dual isolated RS-485
- Three-position switch, dual button and e-stop I/O

02 FUNCTIONS

Functions and engineering value

Main power and always-on power management

ERB-UPWR-U02 48V main power and 3.3V always-on power input separate connect, from MCU and power enable and voltage, current, temperature status management. Always-on power and main power independent I/O facilitates organize management procedure, actual on electrical timing, keep conditions and fault status should per system firmware definition.

Multi voltage power group

Board provides 48V output, 24V isolated output and 3-ch 12V isolated output, can respectively arrangement powertrain and auxiliary equipment load. Website gives main input capability requirements, but not complete list has output rated value, selection when check each group load and at the same time operation conditions, not can per input total power average assign.

Operation switch and e-stop HMI

Three-position switch, normally closed dual button and e-stop I/O external operation provides connect, isolated RS-485 used for equipment management communications. E-stop via MOS enable path shut-off motor 48V and provides detection signal, related management unit name and detection path required combined with implements confirm, avoid misstate already verification safety function.

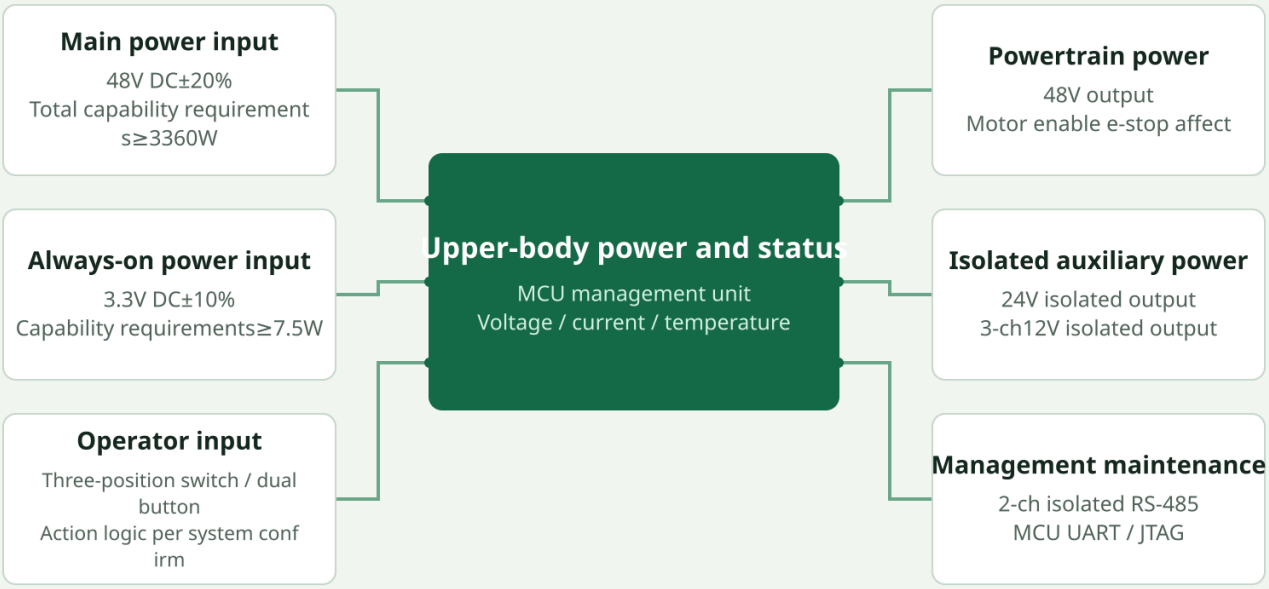
The functional notes explain the product’s role from published configuration. Optional functions, software and peripherals follow the project definition. Chip capability is not the same as implemented I/O.

03 ARCHITECTURE

Functional blocks and system connections

FUNCTIONAL BLOCK DIAGRAM

ERB-UPWR-U02



Functional relationships · lines do not show internal circuits, pins or dedicated bus topology

Function relationship illustration, based on website I/O and configured with compiled; not indicates actual on-board circuit, independent bandwidth or not published chip interconnect implements.

Platform and I/O

This board MCU and multi-channel power management function forms upper body power distribution platform, website only gives MCU clock and storage lower limit, not can invent specific processor model. Main input total power, always-on power capability and each output channel capability should separate listed, switch and e-stop I/O system logic requires combined with delivery firmware confirm.

> **Reading the diagram**
>
> Solid lines show published functional relationships, not on-board buses, bridge chips or connector pins. Optional controllers, radios, storage and software follow the configuration and interface files.

04 SPECIFICATIONS

Technical specifications

Compiled from published product data. Batch, I/O and environmental ratings follow the order confirmation.

Core system

MCU	Clock≥72MHz, Flash≥128KB, SRAM≥32KB, add-on FLASH≥128Mb
Main power input	48V±20% DC, total input power≥3360W
3.3V always-on power input	3.3V±10% DC, power≥7.5W
Core power output	48V output, 24V isolated output, 3-ch12V isolated output (1 I/O)

Environmental conditions

Operating temperature	-20°C~55°C (temperature-rise limit 95°C, 85°Calarm threshold), storage temperature: -40°C~+70°C

I/O and expansion

Interface with switch	Three-position switch: normally open three-position switch, switch signal to MCU dual button switch: normally closed dual button, switch signal to MCU e-stop button: normally closed knob, via MOS manage enable motor 48V power shut-off, and enable signal can be BMC detection
Debug interface	MCU debug UART/JTAG I/O
Other external port	2-ch isolated RS-485, rate at least 0.5Mbps

Mechanical specifications and system requirements

Specification	138 × 218 × 39mm (±2mm), weight≤0.35kg (not including pack fitted, allowed deviation±10g), board thickness 2.0mm
System requirements	FreeRTOS V10.3.1+

05 APPLICATIONS

From product capability to applications

Robot upper body power distribution

Can around upper body powertrain, control and sensing equipment organize 48V, 24V and 12V power group, via MCU management power status and other unit communications. Design when establish load, channel and wiring harness should relationship, check continuous power consumption and boot shock, not cannot only used main input capability instead of single channel selection.

Equipment operation and timing control

Suited to requires three-position switch, dual button and e-stop signal together and operation equipment, used user input and power enable procedure centralized management. Switch meaning, action priority and recovery logic requires application program in stated, and via normal operation, power-off and fault reset etc.scenario verification.

Centralized run status management

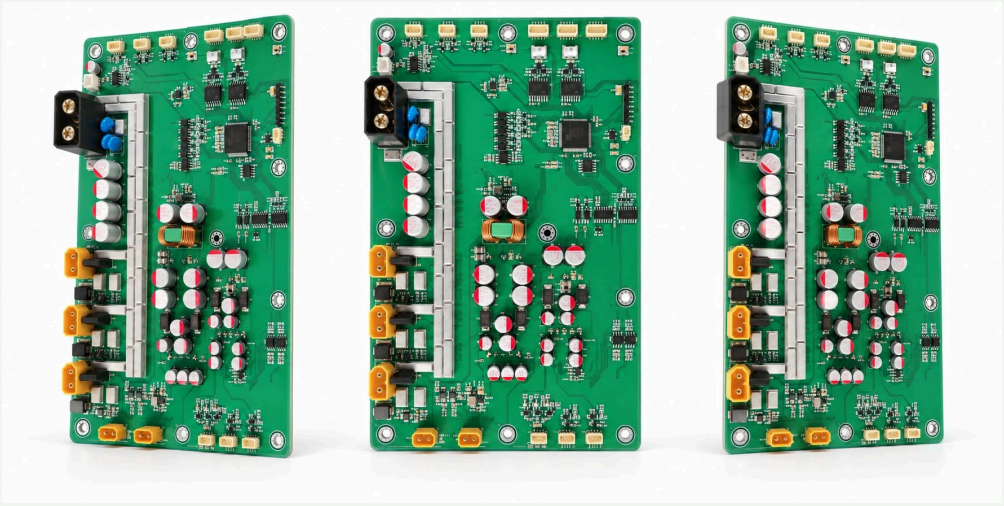
Can uses MCU and 2-ch isolated RS-485 and system switch voltage, current, temperature and run status, auxiliary peripheral equipment management. Monitoring sampling method, status packet and temperature processing policy not website complete published, integrates when actual firmware protocol based on arrangement diagnostics and operations procedure.

Integration checks

Input conditions	Main input 48V±20%, total capability≥3360W; always-on power 3.3V±10%, capability≥7.5W, respectively check.
Output load	48V, 24V isolated and 3-ch12V isolated output; specific single channel rated and at the same time load capability required configured with confirm.
E-stop detection	Website controller write MCU, e-stop detection write BMC, management unit should relationship and detection path must follow delivery implements confirm.
Software and environment	FreeRTOS10.3.1+, 2-ch isolated RS-485≥0.5Mbps; operation−20–55°C, 138 × 218 × 39mm.

06 CONFIGURATION

Appearance, configuration and selection



Multi-angle reference (generated from product photos); shipped units may differ.

Configuration

Main input 48V±20%, provides MCU debug UART and JTAG I/O, run FreeRTOS management environment.

Selection guide

Order confirmation	Batch, I/O and environmental ratings follow the order confirmation
Published data	Compiled from published product data; EQIO provides selection and system integration
Configuration talk	Share the application, I/O count, environment and software so a configuration can be proposed

Request a quotation and selection support

Email lyping@eqio.com Phone +86 182 8191 2988
Web eqio.com

EQIO

Easy · Quick · Input · Output

BRAND

Measurement and control, made easy.



EQIO product family · concept rendering

Brand story

EQIO builds measurement and control products and systems. The name stands for Easy Quick Input Output: Easy is a clear structure that is quick to learn, Quick is a direct path to efficient delivery, and Input / Output is every link between the device under test and the control system.
The soft single-cycle wave inside the Q links the brand to signals, acquisition and I/O. “Measurement and control, made easy” is our promise for every selection, integration and delivery.

What we do

Products

Data acquisition, test instruments, control and I/O, modular platforms, software, cables

Systems

Configured to the measurand, channels, accuracy and software, from design to commissioning

Support

Selection advice, training, maintenance and calibration

How we deliver

01
Requirements

02
Solution design

03
Build & integration

04
Factory test

05
Delivery & training

06
Ongoing support

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