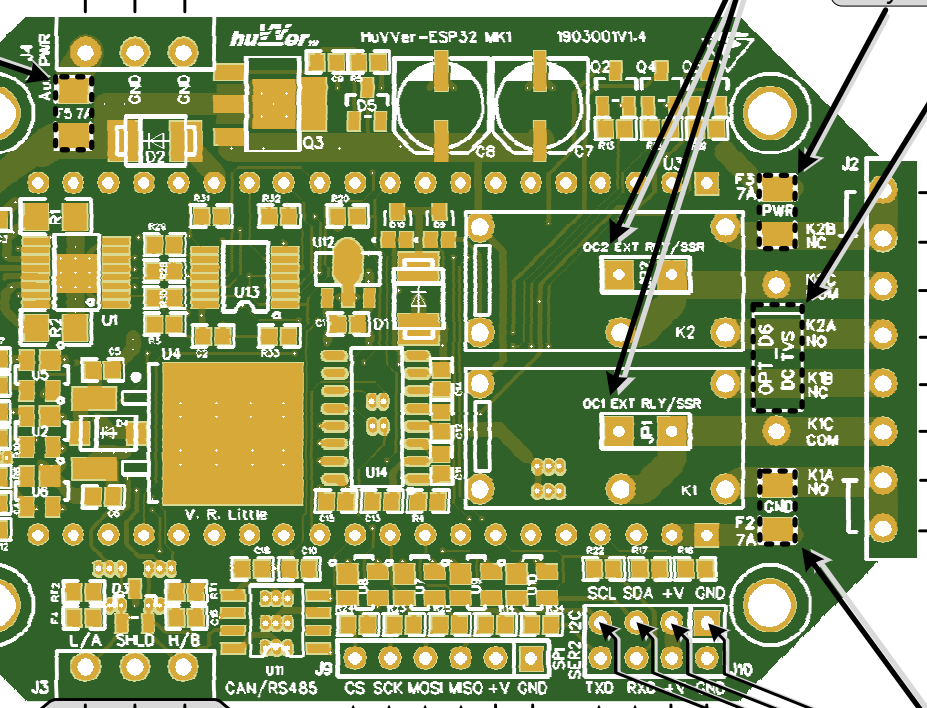
huVVer ESP32-MK1 Reference (Top)



PWR Inputs: 8 – 16 volts, 5A.
Surge protected to +/- 60V

F1, F5 7A PWR Fuses

[1]**OC2** (J1-2) may be used as an input to control the K2 relay coil.

Name	ESP32	J1
PWR		1
OC2[1]	IO2	2
BM2	IO12	3
AM2	IO27	4
BX2	IO35	5
AX2	I39	6
OC3-TXD	[2]Note	7
GND	GND	8
LED1	IO15	

[2]*J1-7 can be configured as **OC3 (IO15), RS232 TXD (IO17), CAN L, or RS485 A.***

Name	PWR	GND	GND
J4	1	2	3

JP1, JP2 optional external relay or Solid State Relay (SSR).
-Remove K1 or K2,
-Install JP1 or JP2 jumper(s),
-Install F3 fuse-jumper (power to K2B),
-Connect external devices to K2B (14Vdc) and K1C or K2C (active low signals).

F3, optional fuse-jumper
-Install to bridge **PWR** to J2-7&8.
-Only for DC applications.

***OPT_D6, optional TVS* Snubber.**
-For DC motor applications.
-User supplied.

J2	ESP32	Name
8		
7	IO2=0	K2B
6		K2C
5	IO2=1	K2A
4	IO4=0	K1B
3		K1C
2	IO4=1	K1A
1		

Relay Contacts
C — B Normally Closed
Common — A Normally Open

F2, optional fuse-jumper
-Install to bridge **GND** to J2-1&2.
-Only for DC applications.

J3	L/A-3	SHLD-2	H/B-1

CAN (H&L) Option

CANRX	IO32
CANTX	IO33
n_RTS	IO13

RS485 (A&B) Option

RS485TX	IO33
RS485RX	IO32
RTS	IO13

J9	6	5	4	3	2	1
ESP32	IO5	IO18	IO23	IO19		
Name	CS	SCK	MOSI	MISO	5V or 3.3V	GND

J10	8	6	4	2	7	5	3	1
ESP32	IO17	IO16			IO22	IO21		
Name	TXD	RXD	5V or 3.3V	GND	SCL	SDA	5V or 3.3V	GND

PINOUT LEGEND

- Open Collector Relay Driver I/O
- 14 V Motor Driver Output
- Fixed Series Resistor 560 ohms
- Fixed Series Resistor 100 ohms
- Fixed pullup Resistor 10.2 kohms
- Fixed pullup Resistor 3.3 kohms
- Fused Power (8-16 volt)
- Normally open relay contact
- Normally closed relay contact
- RS232 Buffer

COLOR LEGEND

- Physical Pin
- ESP32 Function — ADC
- HuVVer-ESP32 Function
- TTL Level Serial
- SPI and I2C
- Power
- Ground

huVVer ESP32-MK1 Reference (Bottom)

Arduino IDE COMPATIBLE
ESPRESSIF IDF

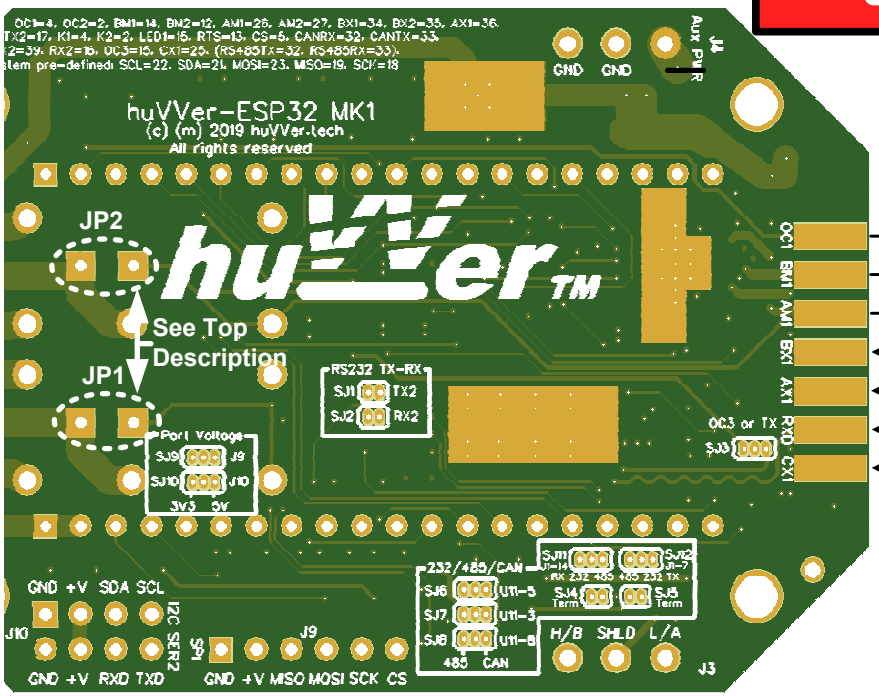
STANDARD PIN DEFINITIONS

```
const uint8_t OC1=4, OC2=2, BM1=14,
BM2=12, AM1=26, AM2=27, BX1=34,
BX2=35, AX1=36, AX2=39;

const uint8_t  RX2=16, OC3=15,
CX1=25, TX2=17, K1=4, K2=2, LED1=15,

const uint8_t RTS=13, CS=5,
CANRX=32, CANTX=33, RS485TX=32,
RS485RX=33;

System Predefined: const uint8_t
SCL=22, SDA=21, MOSI=23, MISO=19,
SCK=18;
```

AM1&2, BM1&2 Motor Driver Outputs
Continuous Current: 1A each.
Peak Current: 2A each (internally limited).

PINOUT LEGEND

- Open Collector Relay Driver Output
- 14 V Motor Driver Output
- Fixed Series Resistor 560 ohms
- Fixed Series Resistor 100 ohms
- Fixed pullup Resistor 10.2 kohms
- Fixed pullup Resistor 3.3 kohms
- Fused Power (8-16 volt)
- Normally open relay contact
- Normally closed relay contact
- RS232 Buffer



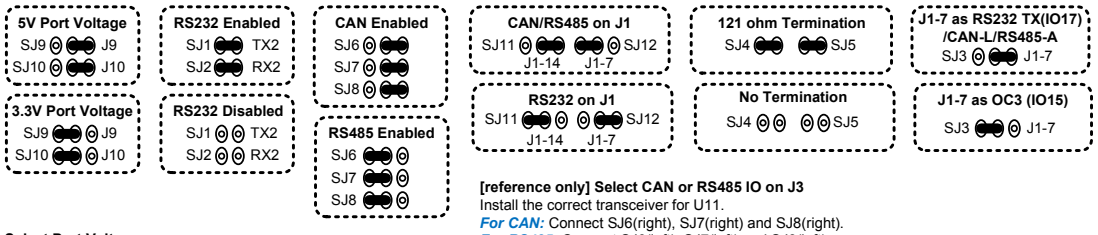
[1]**OC1** (J1-9) may be driven as an input to control the K1 relay coil.

J1	ESP32	Name
9	IO4	OC1[1]
10	IO14	BM1
11	IO26	AM1
12	IO34	BX1
13	I36	AX1
14	Note[2]	RXD
15	IO254	CX1[3]

[2]*J1-14 may be configured as **RS232 RXD (IO16)**, **CAN H**, or **RS485 B**.*

[3]**CX1** may be configured as an analog (D/A) output.

JUMPER OPTIONS



Select Port Voltage
5 volt on J9: Install SJ9(right). *3.3 volt on J9:* Install SJ9(left).
5 volt on J10: Install SJ10(right). *3.3 volt on J10:* Install SJ10(left).
J9 & J10 Port voltages may be set independently. All IO signals are 5V tolerant.

Select Bipolar Drive RS232 on J1
TXD output on J1-7: Install SJ1, SJ12(right), SJ3(right).
RXD input on J1-14: Install SJ2, SJ11(left).

Select TTL Drive Serial or GPIO on J10
TXD output or IO17 on J10-8: Omit SJ1.
RXD input or IO16 on J10-6: Omit SJ2.
J1 RS232 is disabled in this mode.

[reference only] Select CAN or RS485 IO on J3
Install the correct transceiver for U11.
For CAN: Connect SJ6(right), SJ7(right) and SJ8(right).
For RS485: Connect SJ6(left), SJ7(left) and SJ8(left).
Manufacturing option only, not for field configuration.

Select CAN or RS485 IO on J1
Confirm either *CAN or RS485 IO on J3* is configured (manufacturing option, see above).
If so, install SJ11(right) and SJ12(left) to also connect the signals to pins J1-7&14.

Select Open Collector Driver OC3 (IO15) on J1-7
Select *Bipolar Drive RS232 on J1* (see above left).
Install SJ3(left).
Allows receive-only RS232 on J1-14.

Select Line Termination for CAN or RS485
Install SJ4 and SJ5 for 121 ohm termination at endpoints. Leave unconnected for nodes.

VERSIONS

Mode	Version A	B	C
RS232	●	●	●
RS485		●	
CAN			●
WiFi	●	●	●
BT	●	●	●
USB	●	●	●
Motor	●	●	●
Relay	○	●	●
SSR	○	○	○
SPI	●	●	●
I2C	●	●	●
Serial	●	●	●
Aux PWR	○	○	○

● Included
○ Field Upgradable