Teensy

U40
MICROMOD-Teensy4

MicroMod Teensy 4.x

+3.3V
C42 100nF 16V
C41 1uF 6V3
M1_ENCX

2 3.3V
4 (28)
6 ON/OFF
8 (27)
10 (4)
12 I2C_SDA (18)
14 I2C_SCL (19)
16 (X)
18 (29)
20 (5)
22

PPS
RX_GPS
TX_GPS

GND 1
USB_D+ 3
USB_D- 5
GND 7
USB_VIN 9
/Program 11
(X) 13
(X) 15
(X) 17
TX1 (1) 19
RX1 (0) 21
(X) 23

D+ / D-
VUSB_IN +3.3V
R45 10k
R41 21R5 TX REMOTE
R42 21R5 RX REMOTE

M41 Plot M.2

M2_ENCX 32
34 TX3 (14)
36 GND
38 RX3 (15)
40 (40)
M2_STEP 42 (41)
M2_DIR 44 (42)
M2_ENA 46 (43)
M2_CS 48 (44)
50 (40)
52 RX5(21)
54 TX5(20)
TX_DEBUG 56 TX4 (8)
RX_DEBUG 58 RX4 (7)
RST_ESP 60 (23)
PRG_ESP 62 (36)
LED 64 (37)
66 (35)
68 (34)
+3.3V 70 (39)
C43 100nF 16V 72 (38)
VBAT 74 RTC_3V
3.3V

GND 33
(X) 35
(X) 37
GND 39
CAN-RX (30) 41
CAN-TX (31) 43
GND 45
(2) 47
(22) 49
I2C_SDA1 (25) 51
I2C_SCL1 (24) 53
SPI_/CS (10) 55
SPI_SCK (13) 57
SPI_SDO (11) 59
SPI_SDI (12) 61
(33) 63
(32) 65
(26) 67
(9) 69
(6) 71
(45) 73
GND 75

M1_ENCB
M2_ENCB
GND
M1_ENCA
M1_STEP
M1_DIR
M1_ENA
M1_CS
SCK
MOSI
MISO
M2_ENCA

GPS

U41
ATGM336H-5N31
BWGNSCNX20-20W4

RX_GPS
TX_GPS
PPS
+3.3V
C94 10uF 50V
VBAT

1 GND
2 TXD
3 RXD
4 1PPS
5 ON/OFF
6 VBAT
7 NC
8 VCC
9 NRESET

Reserved 18
SCL 17
SDA 16
Reserved 15
VCC_RF 14
NC 13
GND 12
RF_IN 11
GND 10

L41 47nH
ANT1

Encoders

M1_ENCA_IN
R63 1.5k
R62 3k
M1_ENCA

M1_ENCB_IN
R65 1.5k
R64 3k
M1_ENCB

M2_ENCA_IN
R67 1.5k
R66 3k
M2_ENCA

M2_ENCB_IN
R69 1.5k
R68 3k
M2_ENCB

H1
M1_ENCA_IN
M1_ENCB_IN
M2_ENCA_IN
M2_ENCB_IN
+5V   +5V

SHC remote

CN42
TX_REMOTE
+3.3V
RX_REMOTE

LEDs

+3.3V
LED
LED1 power
LED2 KT-0603R
R58 1K
GND

USB

CN41
USB_C

B1 GND
B2 TX2+
B3 TX2-
B4 VBUS
B5 CC2
B6 D+
B7 D-
B8 SBU2
B9 VBUS
B10 RX1-
B11 RX1+
B12 GND

A12 GND
A11 RX2+
A10 RX2-
A9 VBUS
A8 SBU1
A7 D-
A6 D+
A5 CC1
A4 VBUS
A3 TX1-
A2 TX1+
A1 GND

VUSB_IN
R43 5.1k
D+ / D-
VUSB_IN
D- / D+
R44 5.1k
VUSB_IN

Debug / Wifi

ESP-01S
U52
+3.3V
PRG_ESP
RST_ESP
+3.3V
R59 1K
R61 1K
R60 1K

1 GND   VCC 8
2 IO2   RST 7
3 IO0   EN 6
4 RXD   TXD 5

TX_DEBUG   Debug   RX_DEBUG

ESD protection

BAV99S,115 D40
VUSB_IN
D-
VUSB_IN
D+

BAV99S,115 D41
+3.3V
RX_REMOTE
TX_REMOTE
+3.3V

Schematic	Redux v2.6.3		Update Date	2023-11-28
			Create Date	2023-11-21
Page	Logic		Part Number	Main Board
Drawed	lordzurp			
Reviewed	lordzurp		TeenAstro Redux	
		VER	SIZE	PAGE 1 OF 2
	EasyEDA	V2.6.2	A4	zUrp Industries

Motor 1 (RA/ AZ)

100nF 50V — C11
10uF 50V — C12
10uF 50V — C13
220nF 50V — C17

VCC
+3.3V
C14 — 100nF 16V
C15 — 1uF 6V3
C16 — 470nF 25V

VCC
C1 — 100uF

M1_STEP — 42 STEP
M1_DIR — 41 DIR

MOT1
1
2
3
4

M1_BMA1
M1_BMA2
M1_BMB2
M1_BMB1

RA/AZ

M1_CS — 18 CS
SCK — 16 SCK
MOSI — 15 SDI
MISO — 14 SDO

OA1 — 2
OA2 — 5
M1_BMA1
M1_BMA2

M1 — TMC2660-PA

BRA — 9
SRA — 12
R12
10R — R11
0.075

M1_ENA — 19 EN
21 CLK

OB1 — 26
OB2 — 23
M1_BMB1
M1_BMB2

BRB — 25
SRB — 22
R14
10R — R13
0.075

38 SG_TST
37 TST_ANA
43 TST_MODE

17 GND
39 GND
44 GND

VCC1
1
20 NC
33 NC
34 NC

VHS 35
VS 36
VSA 4
VSB 30
VCC_IO 40
5VOUT 13

Motor 2 (DEC / ALT)

100nF 50V — C21
10uF 50V — C22
10uF 50V — C23
220nF 50V — C27

VCC
+3.3V
C24 — 100nF 16V
C25 — 1uF 6V3
C26 — 470nF 25V

VCC
C2 — 100uF

M2_STEP — 42 STEP
M2_DIR — 41 DIR

MOT2
1
2
3
4

M2_BMA1
M2_BMA2
M2_BMB2
M2_BMB1

DEC/ALT

M2_CS — 18 CS
SCK — 16 SCK
MOSI — 15 SDI
MISO — 14 SDO

OA1 — 2
OA2 — 5
M2_BMA1
M2_BMA2

M2 — TMC2660-PA

BRA — 9
SRA — 12
R22
10R — R21
0.075

M2_ENA — 19 EN
21 CLK

OB1 — 26
OB2 — 23
M2_BMB1
M2_BMB2

BRB — 25
SRB — 22
R24
10R — R23
0.075

38 SG_TST
37 TST_ANA
43 TST_MODE

17 GND
39 GND
44 GND

VCC1
1
20 NC
33 NC
34 NC

VHS 35
VS 36
VSA 4
VSB 30
VCC_IO 40
5VOUT 13

Battery

+3.3V

D53 — RB751V40T1G

R57 — 1K

VBAT

B51 — ML1220

Power reverse protection (25V max)

IN1
HEAD2
1
2

VIN VIN3

Q51 — DMP3013SFV-7
8 D
7 D
6 D
5 D
1 S
2 S
3 S
4 G

DC1
F51
DC005-T25

D51
DSSCD12315
D52

R51 — 10k
330k — R52
100k — R53

VIN2

Q52
4 G
3 S
2 S
1 S
8 D
7 D
6 D
5 D
DMP3013SFV-7

C51 — VCC
1uF 35V

10k — R54

AUX1
1
2

VCC

PS1

40V -> 3V3 Step Down

U55
1 FB
2 EN
3 VIN

6 BST
5 SW
4 GND

ISTSOT2601

VCC
C99 — 10uF 50V
C100 — 100nF 50V

C95 — 100nF 50V

L42 — 4.7uH

R71 — 56k

C98 — 100pF
C96 — 22uF
C97 — 22uF

+3.3V

R70 — 18k

28V -> 5V LDO

VCC
U56
3 VIN
VOUT 1
VSS

+5V

C101 — 10uF

XC6701D502PR-G