

AEGIS IMU / POWER CARRIER

FPGA mezzanine harness – not an ASIC. Board current is not ASIC mW.

USB 5V or 15 LiPo (discharge only, no charger) -> Schottky OR -> AP2112K-3.3 -> 10mOhm -> +3V3 load.

#FLG1 PWR_FLAG #FLG2 PWR_FLAGS #FLG3 PWR_FLAGS #FLG4 PWR_FLAGS

JUSB USB Micro-B SH ID

GND 5V AUX

VBUS

D2 SS14

VSYS

D3 SS14

VBAT

J3 LiPo JST-PH (discharge only)

GND VBAT

U1 AP2112K-3.3 EN NC

VSYS VIN VOUT

+3V3_REG

U2 INA219AID SCL SDA GND VIN+ VS

SCL SDA GND GND

+3V3 +3V3_REG +3V3

J1 PMOD 18

GND SDA SCL UART

J2 BJ2 GY-521

GND SDA SCL GND +3V3

D1 GREEN

LED_A

100n

PMOD JA: pin1 UART (Y18), pin2 SCL (Y19), pin3 SDA (Y16), pin5/11 GND. Pins 6/12 FPGA 3V3 left open (no supply fight).

GY-521: VCC GND SCL SDA XDA XCL AD0 INT, AD0 grounded => MPU-6050 0x68, INA219 A0=A1=GND => 0x40.

Bring-up: 5V in, 3.3V at TP1, I2C scan 0x68 / 0x40. Load mtstdp_fpga_top. Do not quote INA219 as ASIC energy.

PMOD JA to PYNQ-Z2 / Arty; GY-521; AP2112K-3.3; INA219 FPGA sensor/power harness – not an ASIC package Aegis MT-STDP		
Sheet: / File: aegis_imu_carrier.kicad_sch		
Title: Aegis IMU / power carrier		
Size: A3	Date: 2026-09-09	Rev: 1.0
KiCad E.D.A. 10.0.6		Id: 1/1

USB 5V or 15 LiPo (discharge only, no charger) -> Schottky OR -> AP2112K-3.3 -> 10mOhm -> +3V3 load.

FPGA mezzanine harness – not an ASIC. Board current is not ASIC mW.

PMOD JA: pin1 UART (Y18), pin2 SCL (Y19), pin3 SDA (Y16), pin5/11 GND. Pins 6/12 FPGA 3V3 left open (no supply fight).

GY-521: VCC GND SCL SDA XDA XCL AD0 INT, AD0 grounded => MPU-6050 0x68. INA219 A0=A1=GND => 0x40.

Bring-up: 5V in, 3.3V at TP1. I2C scan 0x68 / 0x40. Load mtstdp_fpga_top. Do not quote INA219 as ASIC energy.

USB 5V or 15 LiPo (discharge only, no charger) -> Schottky OR -> AP2112K-3.3 -> 10mOhm -> +3V3 load.

FPGA mezzanine harness – not an ASIC. Board current is not ASIC mW.

PMOD JA: pin1 UART (Y18), pin2 SCL (Y19), pin3 SDA (Y16), pin5/11 GND. Pins 6/12 FPGA 3V3 left open (no supply fight).

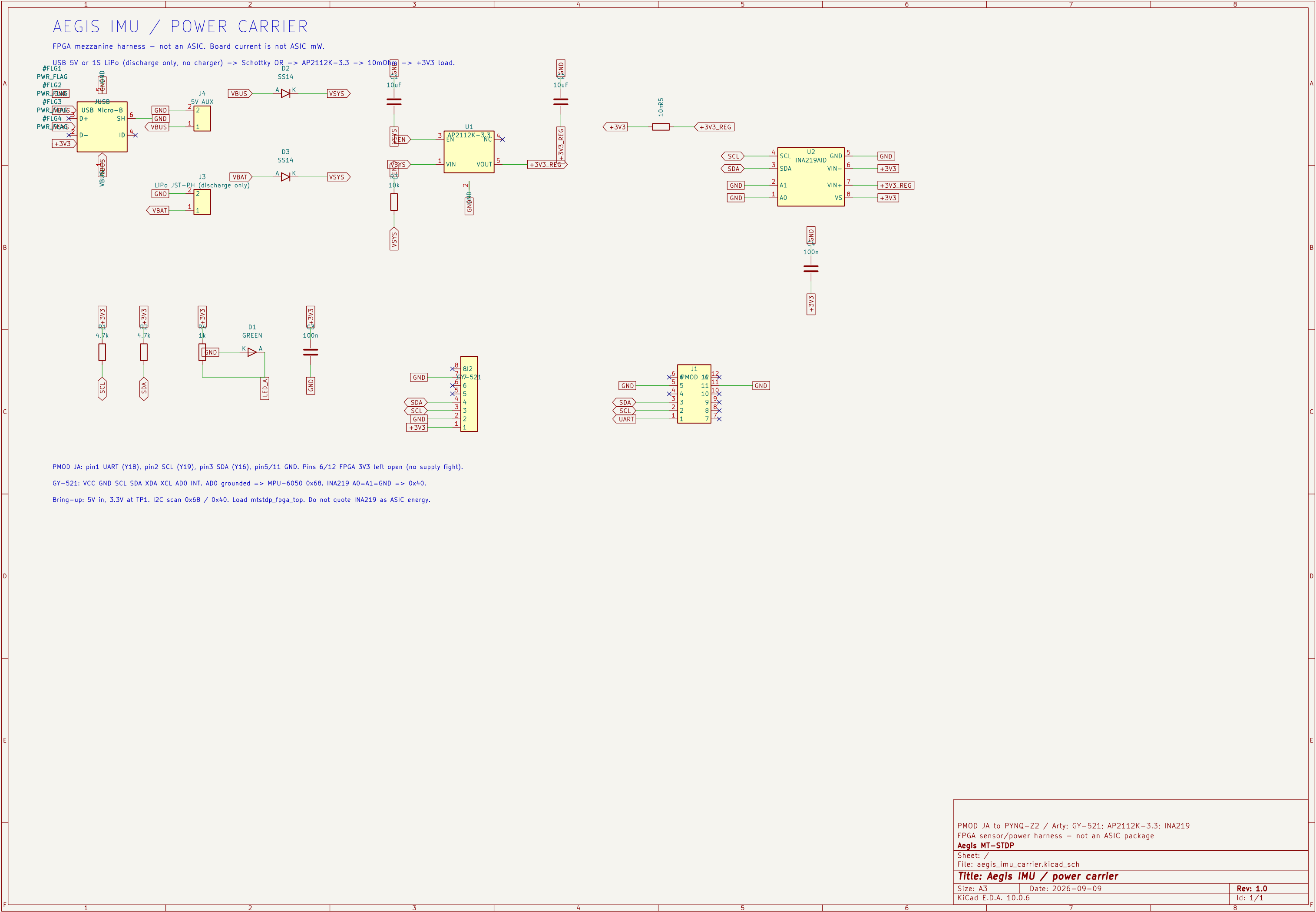
GY-521: VCC GND SCL SDA XDA XCL AD0 INT, AD0 grounded => MPU-6050 0x68. INA219 A0=A1=GND => 0x40.

Bring-up: 5V in, 3.3V at TP1. I2C scan 0x68 / 0x40. Load mtstdp_fpga_top. Do not quote INA219 as ASIC energy.

Sheet: /
File: aegis_imu_carrier.kicad_sch

Title: Aegis IMU / power carrier

Size: A3	Date: 2026-09-09	Rev: 1.0
KiCad E.D.A. 10.0.6		Id: 1/1



USB 5V or 15 LiPo (discharge only, no charger) -> Schottky OR -> AP2112K-3.3 -> 10mOhm -> +3V3 load.

FPGA mezzanine harness – not an ASIC. Board current is not ASIC mW.

PMOD JA: pin1 UART (Y18), pin2 SCL (Y19), pin3 SDA (Y16), pin5/11 GND. Pins 6/12 FPGA 3V3 left open (no supply fight).

GY-521: VCC GND SCL SDA XDA XCL AD0 INT, AD0 grounded => MPU-6050 0x68. INA219 A0=A1=GND => 0x40.

Bring-up: 5V in, 3.3V at TP1. I2C scan 0x68 / 0x40. Load mtstdp_fpga_top. Do not quote INA219 as ASIC energy.

Sheet: /
File: aegis_imu_carrier.kicad_sch

Title: Aegis IMU / power carrier

Size: A3	Date: 2026-09-09	Rev: 1.0
KiCad E.D.A. 10.0.6		Id: 1/1

USB 5V or 15 LiPo (discharge only, no charger) -> Schottky OR -> AP2112K-3.3 -> 10mOhm -> +3V3 load.

FPGA mezzanine harness – not an ASIC. Board current is not ASIC mW.

PMOD JA: pin1 UART (Y18), pin2 SCL (Y19), pin3 SDA (Y16), pin5/11 GND. Pins 6/12 FPGA 3V3 left open (no supply fight).

GY-521: VCC GND SCL SDA XDA XCL AD0 INT, AD0 grounded => MPU-6050 0x68. INA219 A0=A1=GND => 0x40.

Bring-up: 5V in, 3.3V at TP1. I2C scan 0x68 / 0x40. Load mtstdp_fpga_top. Do not quote INA219 as ASIC energy.

Sheet: /
File: aegis_imu_carrier.kicad_sch

Title: Aegis IMU / power carrier

Size: A3	Date: 2026-09-09	Rev: 1.0
KiCad E.D.A. 10.0.6		Id: 1/1

USB 5V or 15 LiPo (discharge only, no charger) -> Schottky OR -> AP2112K-3.3 -> 10mOhm -> +3V3 load.

FPGA mezzanine harness – not an ASIC. Board current is not ASIC mW.

PMOD JA: pin1 UART (Y18), pin2 SCL (Y19), pin3 SDA (Y16), pin5/11 GND. Pins 6/12 FPGA 3V3 left open (no supply fight).

GY-521: VCC GND SCL SDA XDA XCL AD0 INT. AD0 grounded => MPU-6050 0x68. INA219 A0=A1=GND => 0x40.

Bring-up: 5V in, 3.3V at TP1. I2C scan 0x68 / 0x40. Load mtstdp_fpga_top. Do not quote INA219 as ASIC energy.

Sheet: /
File: aegis_imu_carrier.kicad_sch

Title: Aegis IMU / power carrier

Size: A3	Date: 2026-09-09	Rev: 1.0
KiCad E.D.A. 10.0.6		Id: 1/1