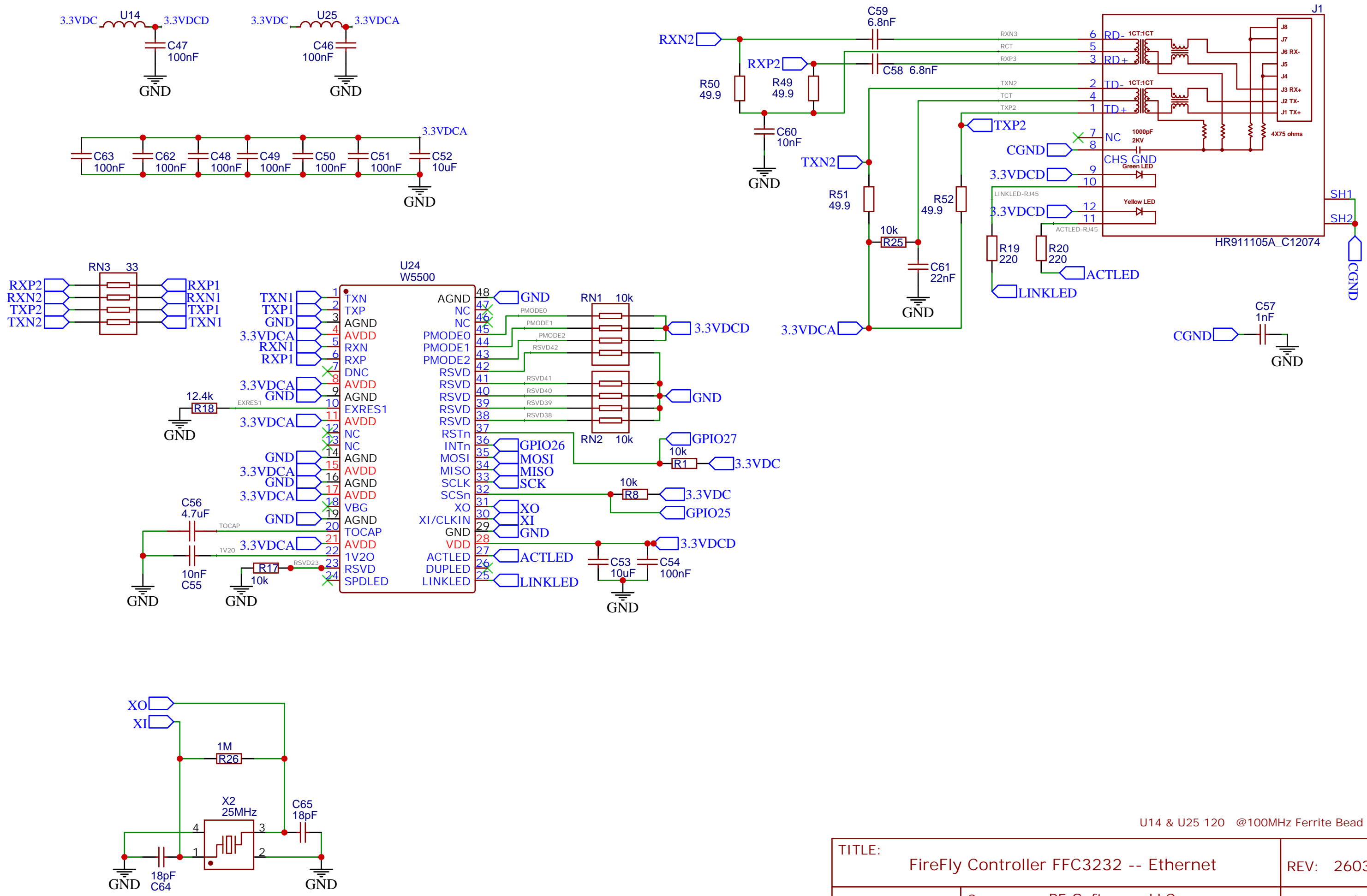
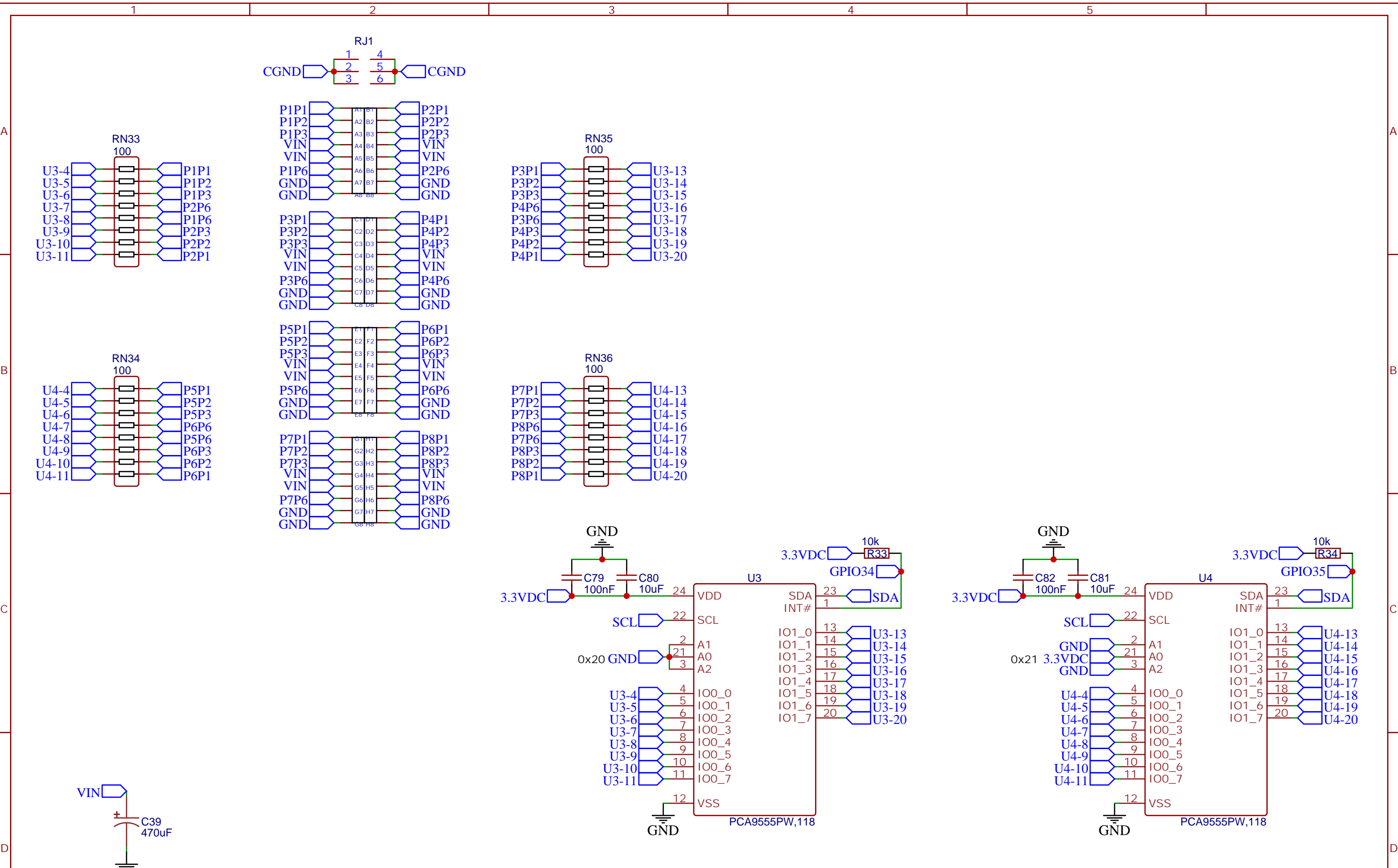


TITLE: FireFly Controller FFC3232 -- MCU		REV: 2603
P5 Software	Company: P5 Software, LLC	Sheet: 1/9
	Date: 2026-02-21	Drawn By: B.A. Hendricks

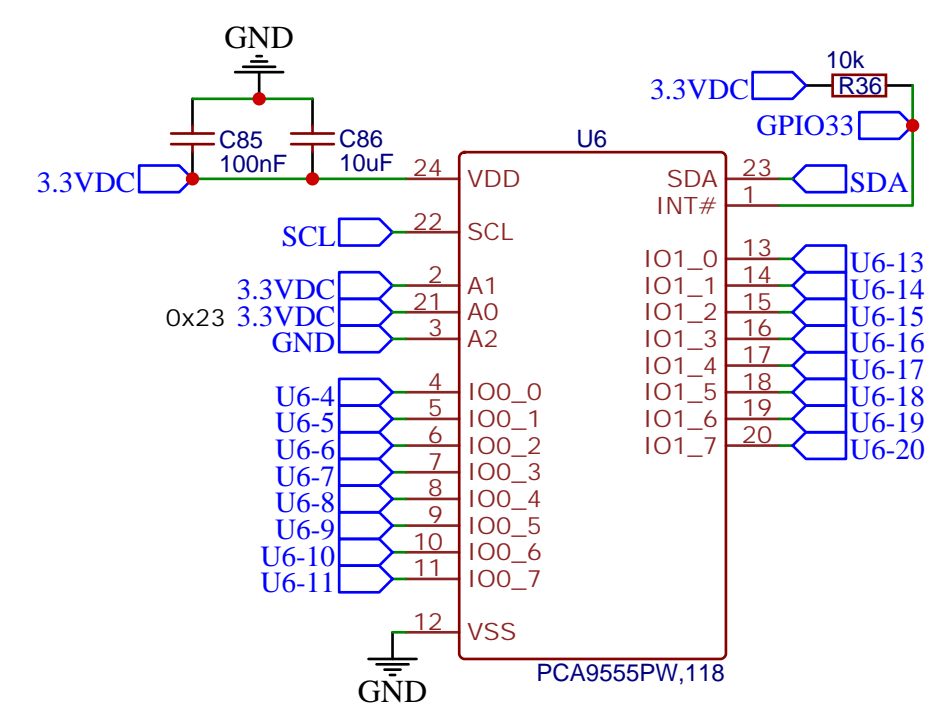
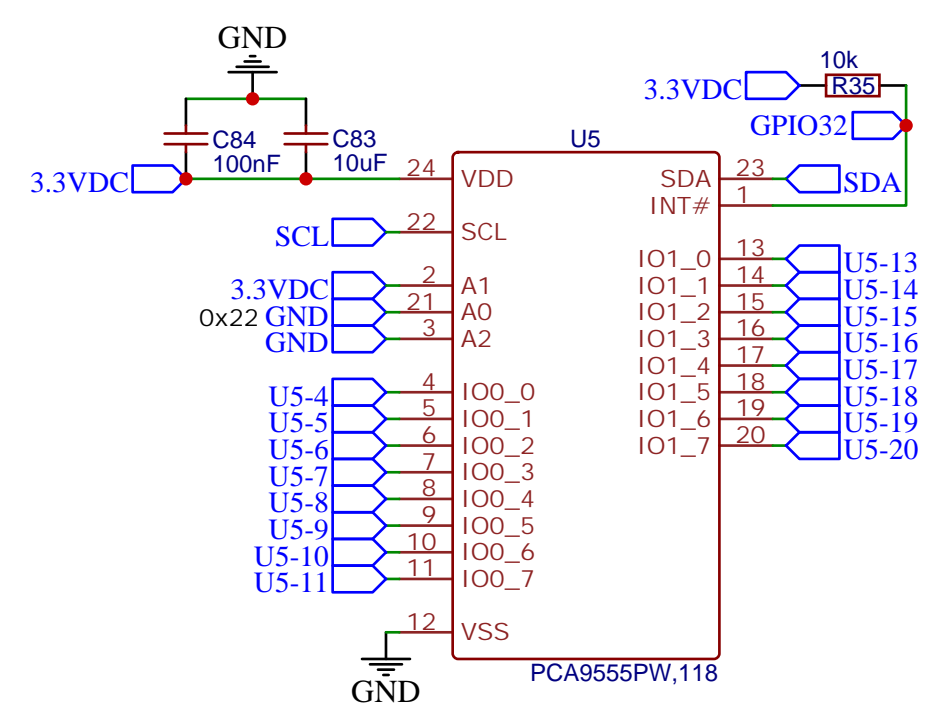
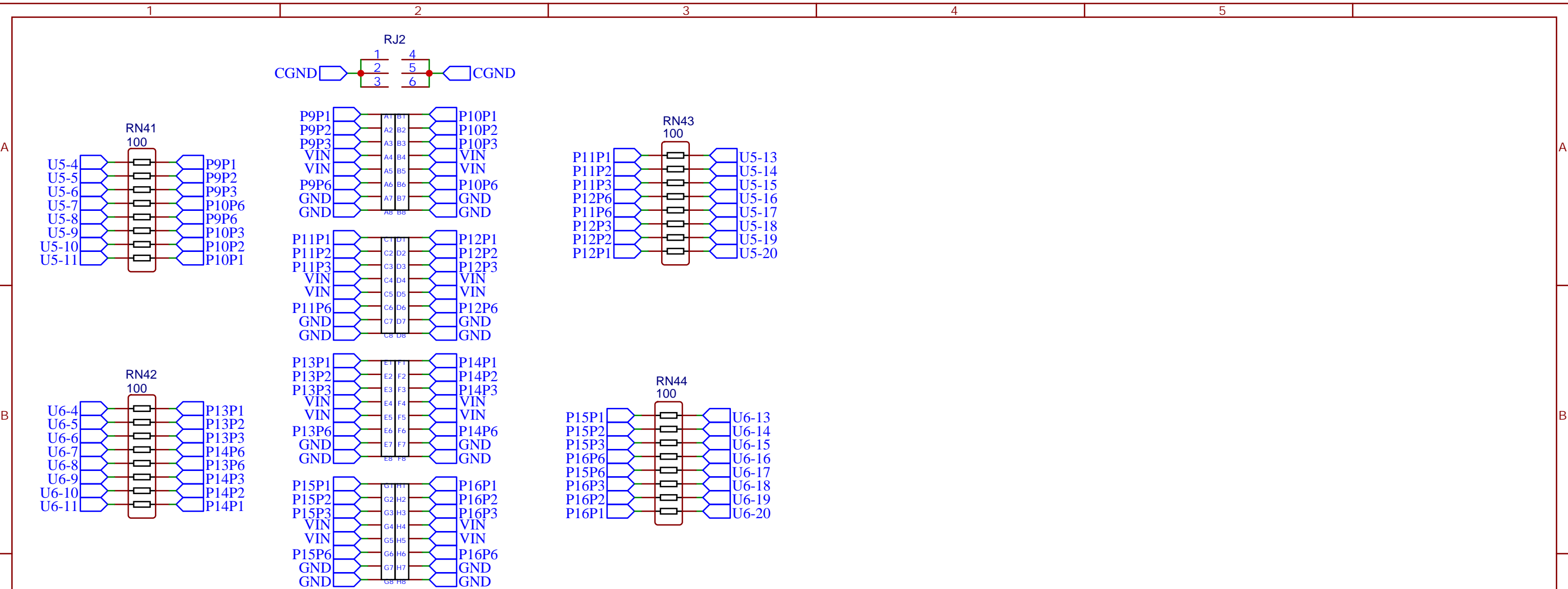


U14 & U25 120 @100MHz Ferrite Bead

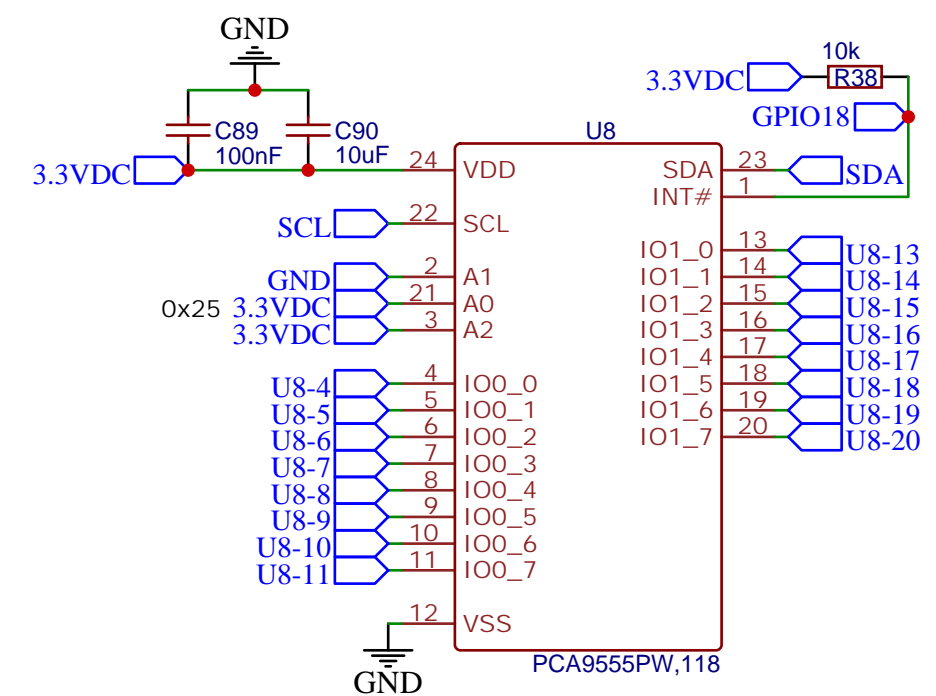
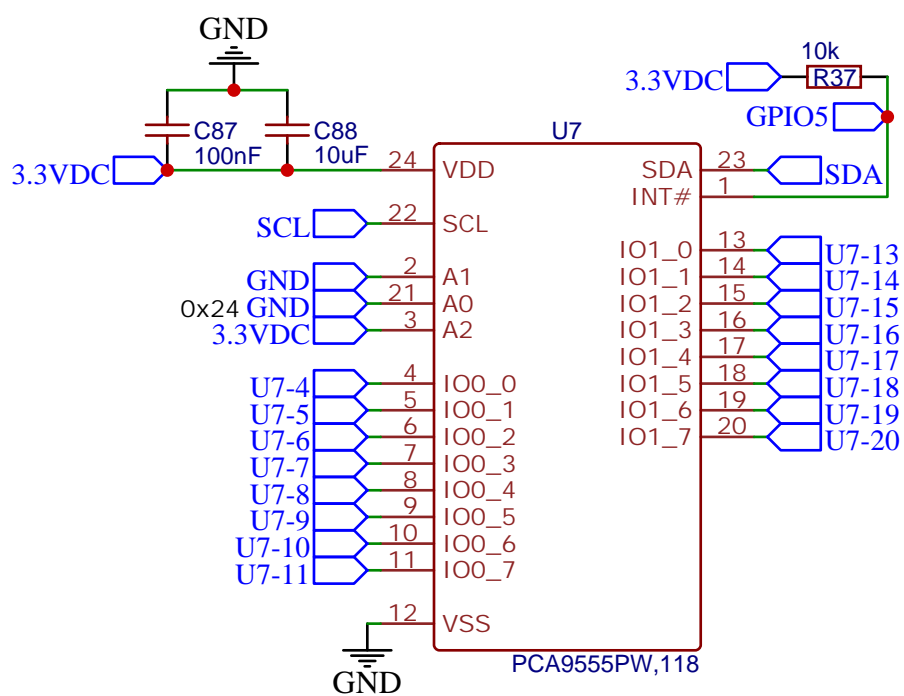
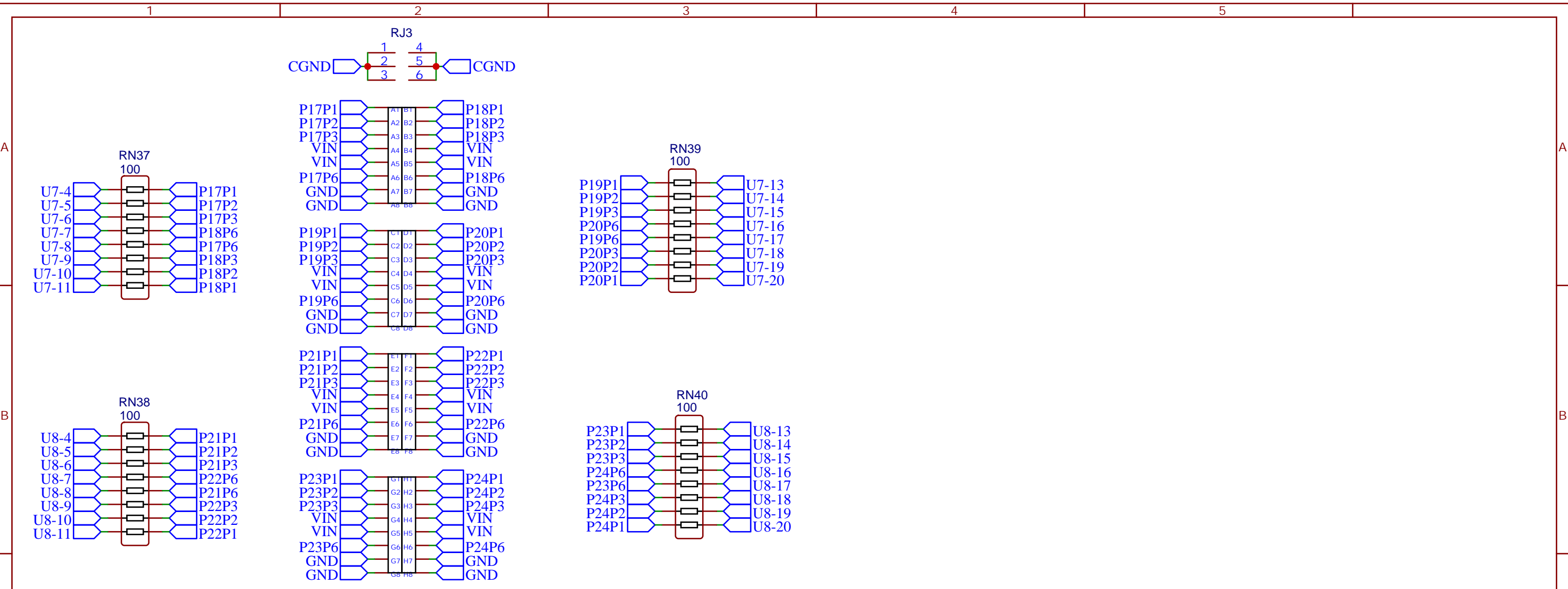
TITLE: FireFly Controller FFC3232 -- Ethernet		REV: 2603
P5 Software	Company: P5 Software, LLC	Sheet: 2/9
	Date: 2026-02-21	Drawn By: B.A. Hendricks



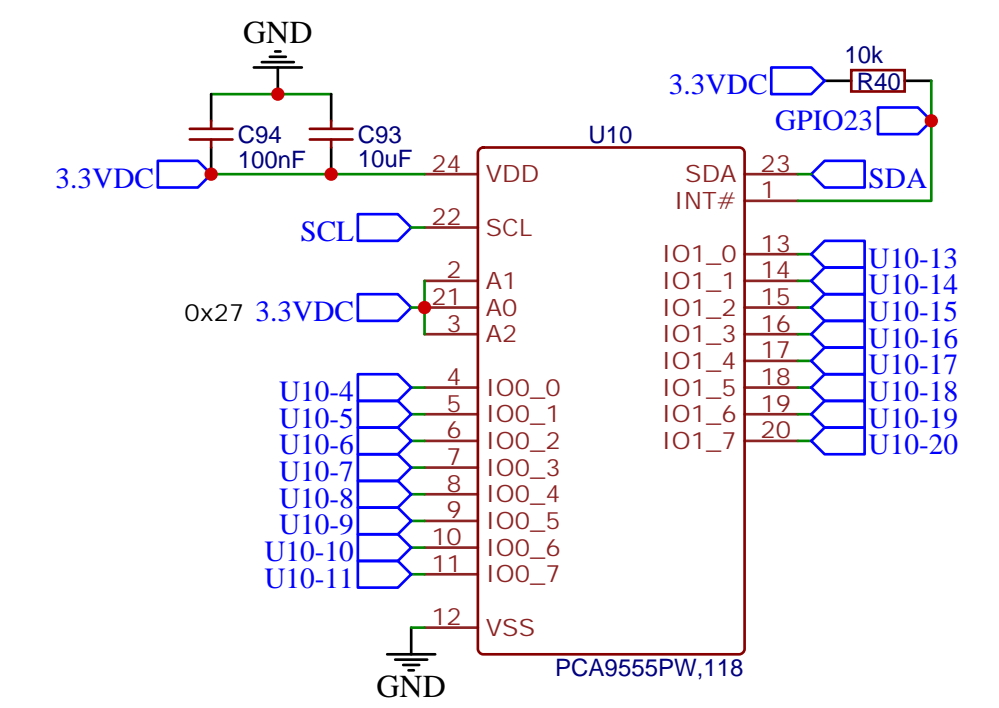
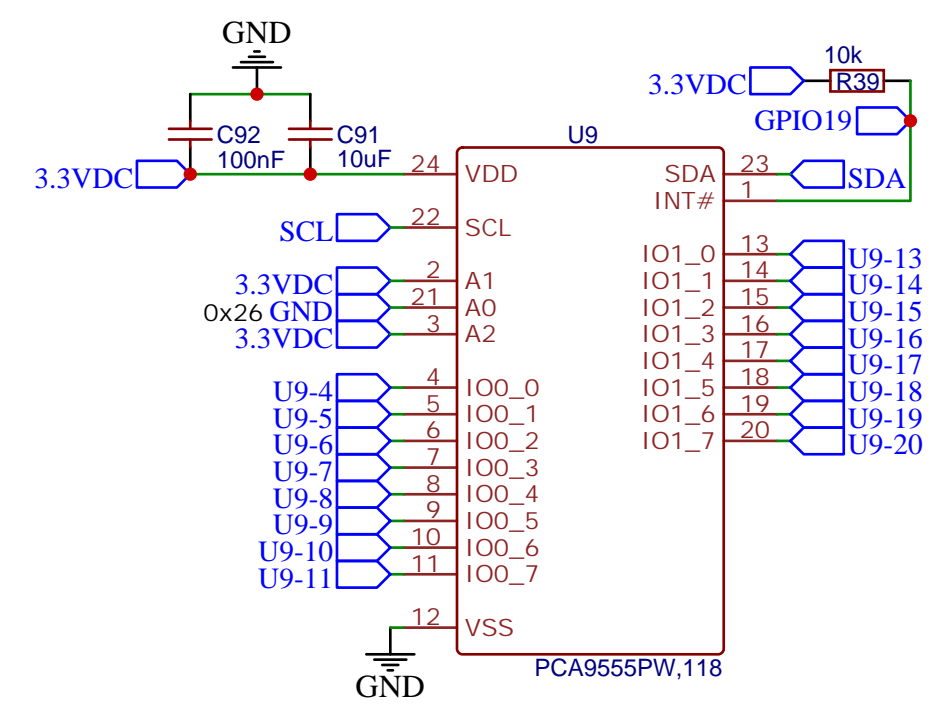
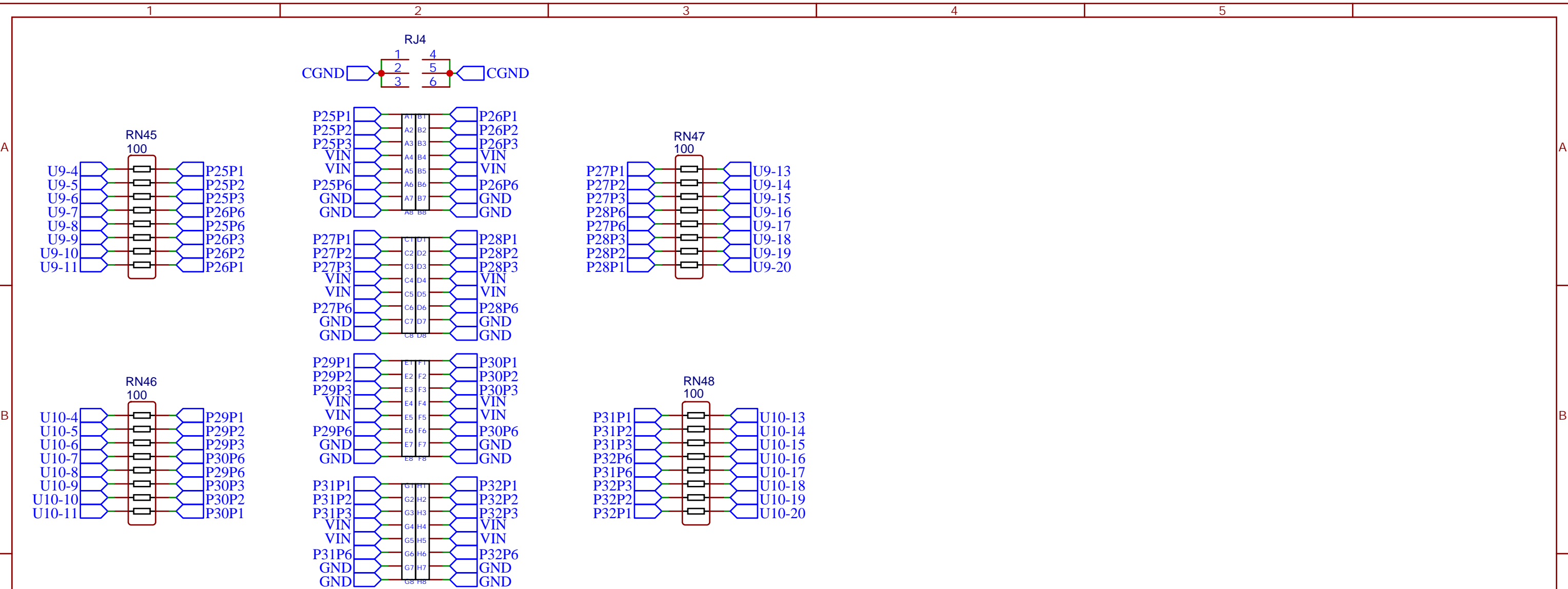
TITLE: FireFly Controller FFC3232 -- Inputs 1-8		REV: 2603
P5 Software	Company: P5 Software, LLC	Sheet: 3/9
	Date: 2026-02-21	Drawn By: B.A. Hendricks



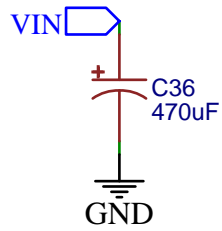
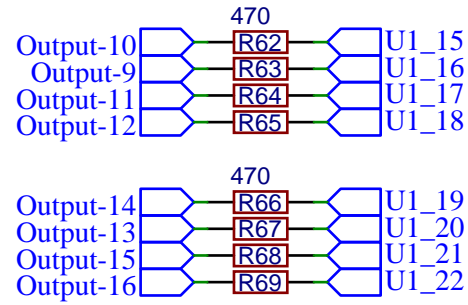
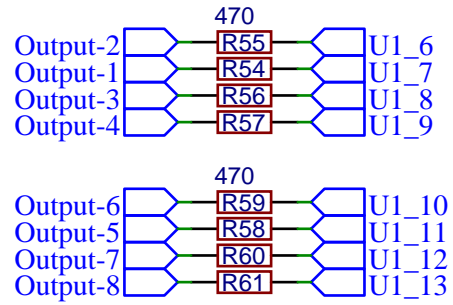
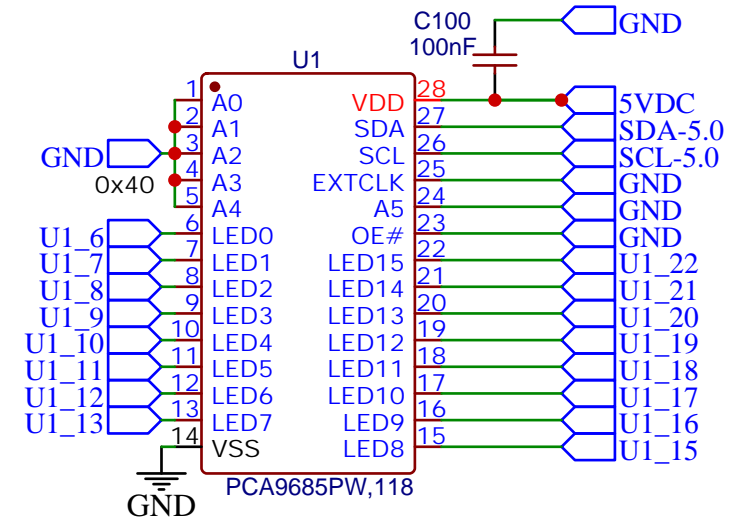
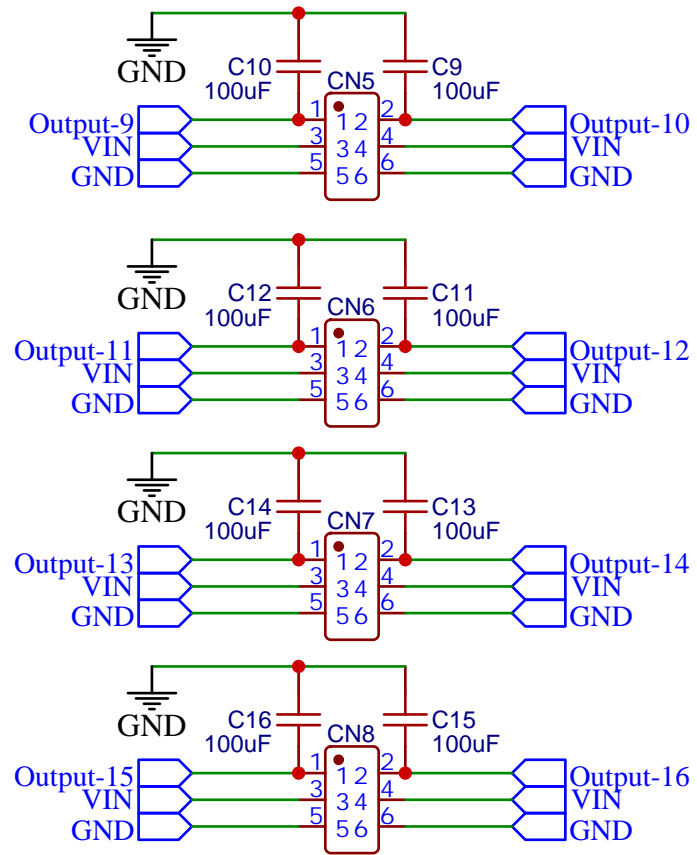
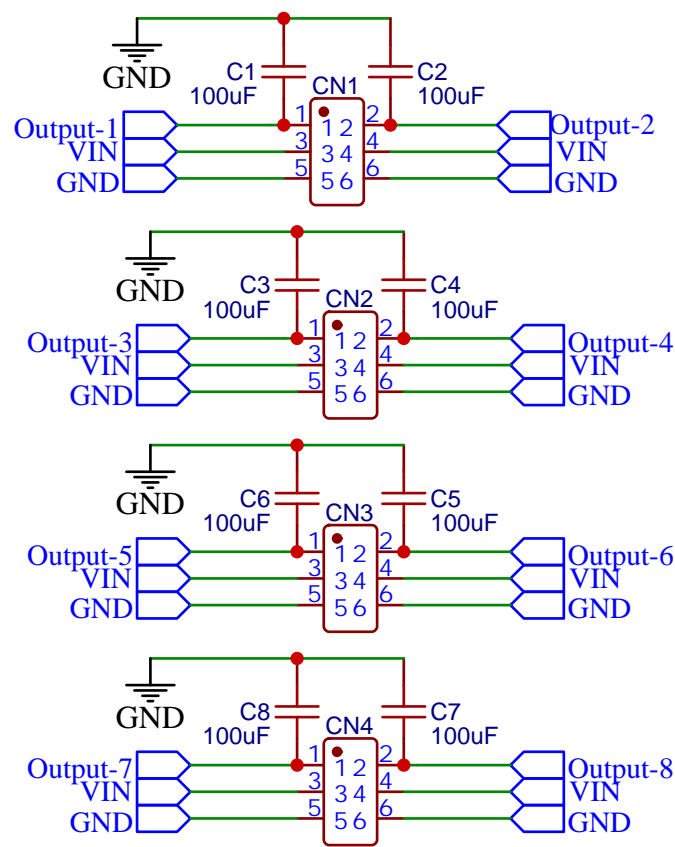
TITLE: FireFly Controller FFC3232 -- Inputs 9-16		REV: 2603
P5 Software	Company: P5 Software, LLC	Sheet: 4/9
	Date: 2026-02-21	Drawn By: B.A. Hendricks



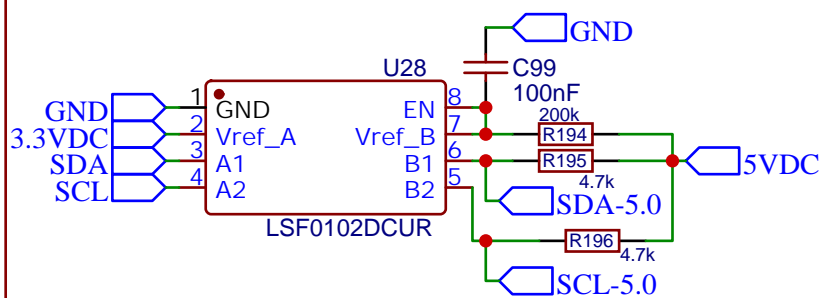
TITLE: FireFly Controller FFC3232 -- Inputs 17-24		REV: 2603
P5 Software	Company: P5 Software, LLC	Sheet: 5/9
	Date: 2026-02-21	Drawn By: B.A. Hendricks



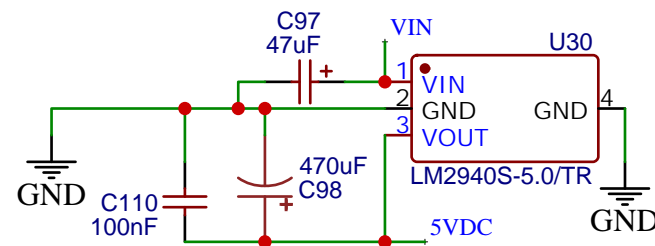
TITLE: FireFly Controller FFC3232 -- Inputs 25-32		REV: 2603
P5 Software	Company: P5 Software, LLC	Sheet: 6/9
	Date: 2026-02-21	Drawn By: B.A. Hendricks



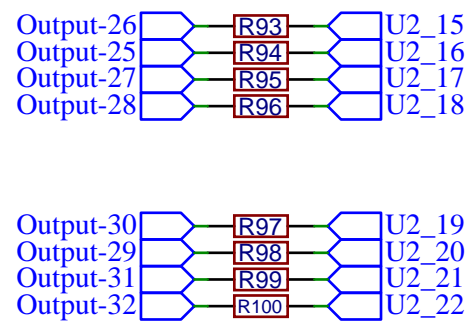
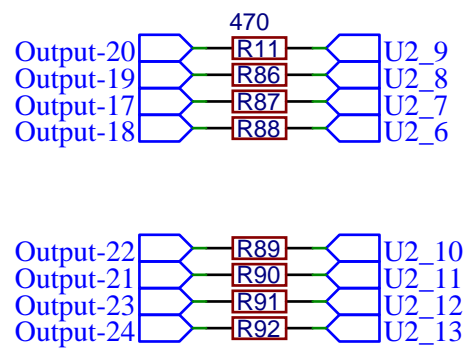
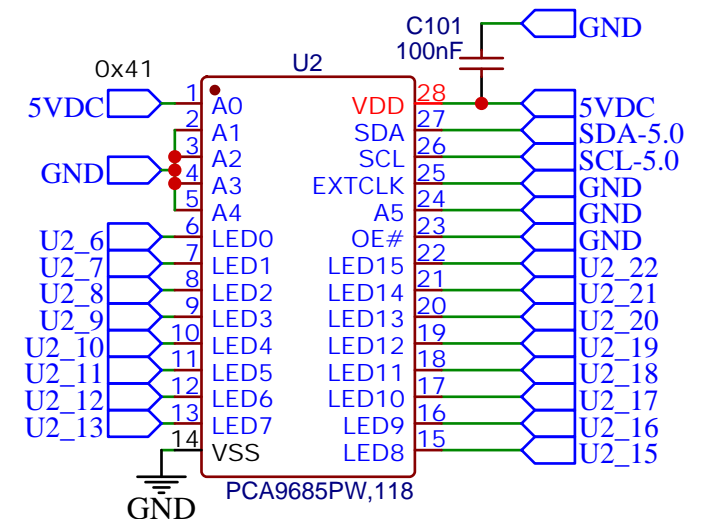
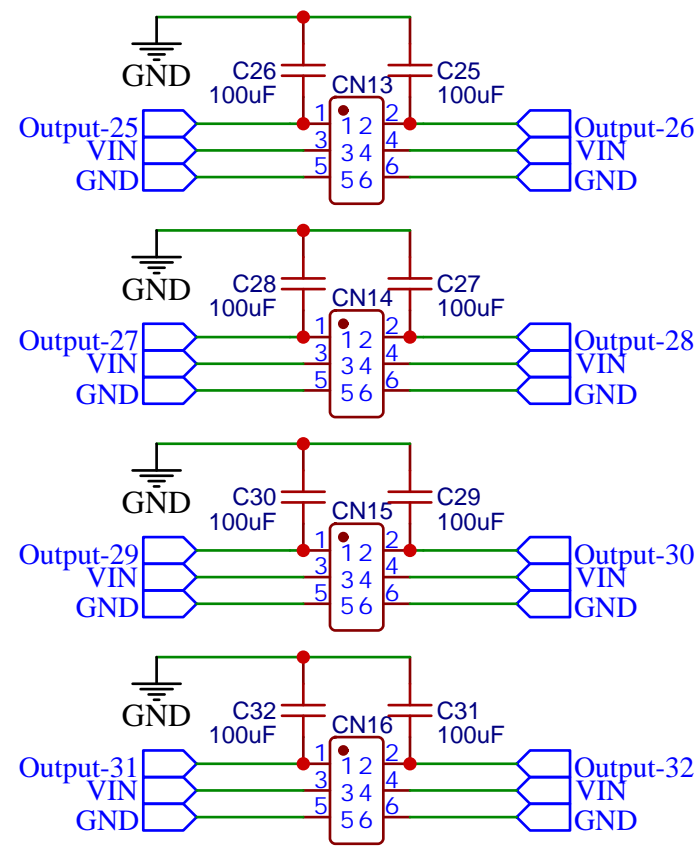
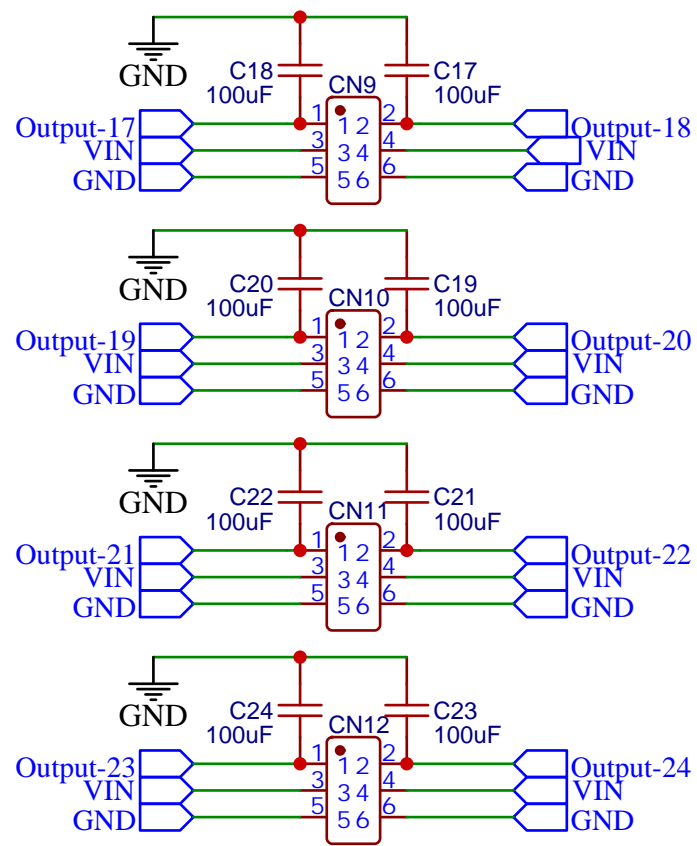
i2C Logic Shifter



5VDC Power Supply



TITLE: FireFly Controller FFC3232 -- Outputs 1-16		REV: 2603
P5 Software	Company: P5 Software, LLC	Sheet: 7/9
	Date: 2026-02-21	Drawn By: B.A. Hendricks



TITLE: FireFly Controller FFC3232 -- Outputs 17-32		REV: 2603
P5 Software	Company: P5 Software, LLC	Sheet: 8/9
	Date: 2026-02-21	Drawn By: B.A. Hendricks

Changes made since rev 2211

1. Removed external EEPROM; will be migrated to ESP32's NVS
2. Removed in-line interrupt resistors between PCA9555PW's and GPIO; INTs are now direct drive
3. U3 (input ports 1-4) interrupt moved from GPIO35 to GPIO34
4. U4 (input ports 5-8) interrupt moved from GPIO25 to GPIO35
5. U6 moved from GPIO27 to GPIO33
6. U5 (input ports 9-12) interrupt moved from GPIO26 to GPIO32
7. U7 (input ports 17-20) interrupt moved from GPIO4 to GPIO5
8. U8 (input ports 21-24) interrupt moved from GPIO5 to GPIO18
9. U9 (input ports 25-28) interrupt moved from GPIO18 to GPIO19
10. U10 (input ports 29-32) interrupt moved from GPIO19 to GPIO23
11. Removed output power supply 510 array (C183868)
12. Added individual 470 resistors on 5V PCA9685 outputs (no longer direct drive)
13. Corrected U2 address to 0x41
14. Changed RJ1-RJ4 to use case ground instead of digital ground on the shield
15. GPIO4 no longer used for PCA9555 interrupt (U7); now unassigned/available
16. Moved front panel button from GPIO32 to GPIO15
17. Moved front panel button LED from GPIO33 to GPIO2
18. Changed U24 (W5500) RSTn from being constantly pulled high to being pulled high with 10k resistor and connected to GPIO27
19. Changed U24 (W5500) INTn from being disconnected to being connected to GPIO26
20. Changed U24 (W5500) SCSn from being connected to GND to being pulled high with 10k resistor and connected to GPIO25
21. Improved power conditioning for Ethernet: added LC filter and bulk/decoupling caps on W5500 3.3V analog rail
22. Corrected MCU (U11) from ESP32-WROVER-E-N4R8 (C967023) to ESP32-WROVER-E-N16R8 (C529589)
23. Removed 9VDC power system; System will use 12VDC for all client and relay outputs directly from the external power supply

I2C Addresses

0x20	Inputs Ports 1-4
0x21	Inputs Ports 5-8
0x22	Inputs Ports 9-12
0x23	Inputs Ports 13-16
0x24	Inputs Ports 17-20
0x25	Inputs Ports 21-24
0x26	Inputs Ports 25-28
0x27	Inputs Ports 29-32
0x40	Output Ports 1-16
0x41	Output Ports 17-32
0x70	Output All-Call
0x48	Temperature
0x3C	OLED Display Header (Check Display Pinout)

TITLE: FireFly Controller FFC3232 -- Notes		REV: 2603
P5 Software	Company: P5 Software, LLC	Sheet: 9/9
	Date: 2026-02-21	Drawn By: B.A. Hendricks