Bill of Materials & Schematics

Ver 1.0.0

All part numbers refer to Jaycar Part Numbers in Australia; more info: jaycar.com.au

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BILL OF MATERIALS

QTY	Part#	Description	Notes
1	XC4411	Uno with Wi-Fi	You can substitute this part with a standard Arduino Uno if you don't want the web portal and remote monitoring
1	XC4424	Buzzer Module	
1	XC4520	Temperature and Humidity Sensor Module	
1	XC4419	5V Relay Module	
1	SY4040	Heavy Duty Chassis Mount 10A /250VAC Relay	https://www.jaycar.com.au/heavy-duty-chassis-mount-relays-30a/p/SY4040
1	RP7504	1k Ohm Linear (B) Single Gang 16mm Potentiometer	
1	RN3440	10k NTC Thermistor	
1	PS0524	Bulkhead Male DC Power Connector	
1	XC4514	DC Voltage Regulator	Set to 5v for 5v relay & arduino supply (when Arduino isn't connected to a PC)
10	HM5172	2 Way PCB Screw Terminal	Get spares, they're useful for interfacing all the bits together

Extras & Notes

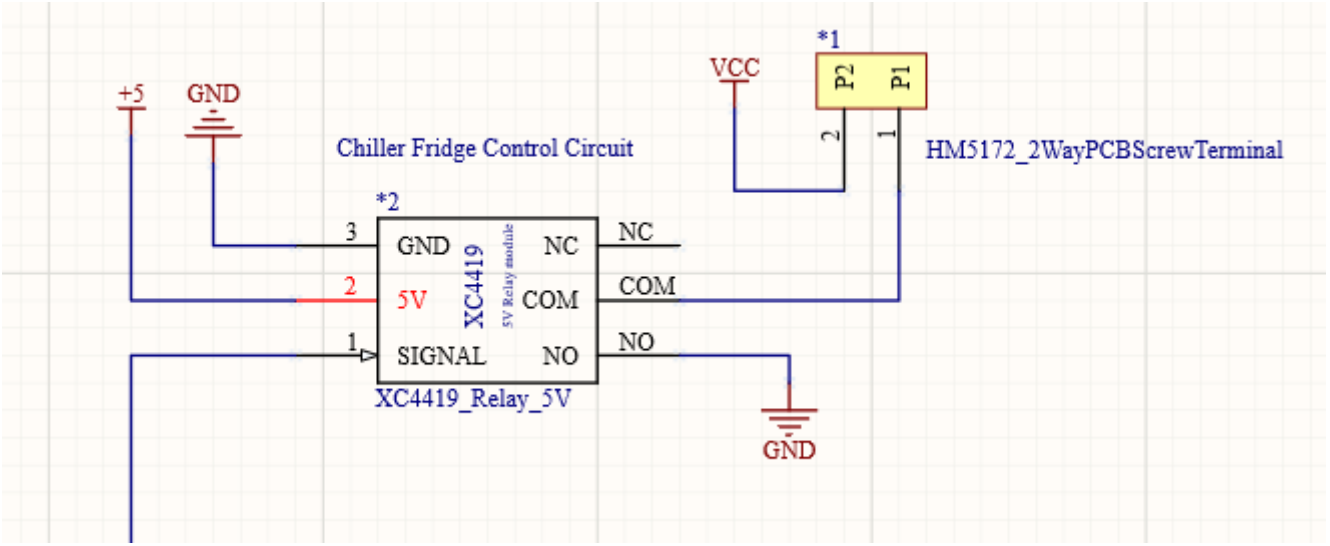
Heat shrink & silicone or some other method of waterproofing the 10k NTC Thermistor (it will sit in the chiller water reservoir to measure the chiller's water temperature). I used some 2mm thick foam and cyanoacrylate (super glue) to make a small envelope around the wiring and thermistor.

The goal is to create a PCB layout and upload so that you can get one made, or make it yourself. This is in the process now, as I've now got the schematic and footprints into Altium designer.

The current firmware doesn't yet utilise the wifi chip on the Uno board – but it will VERY soon. The firmware component for that chip is almost ready to release an alpha version.

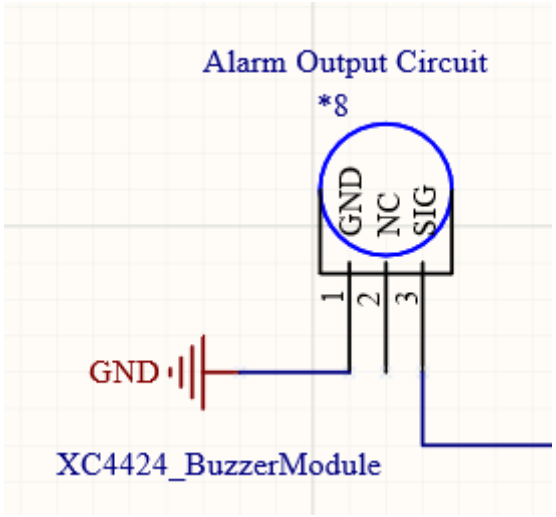
Fridge Control Circuit

This is designed to replace the existing thermostat in the water chiller. On the water chillers I've looked at, they're just a two wire thermostat module with two spade terminals. I recommend you getting an electrician to install the main relay (NOT the 5v relay) into the fridge to replace the thermostat – this is important for various reasons and **I take absolutely no responsibility whatsoever for any injury, death, damage, or other liability, damage or outcome. You should consult a licenced and qualified electrician for any high voltage side modifications.**



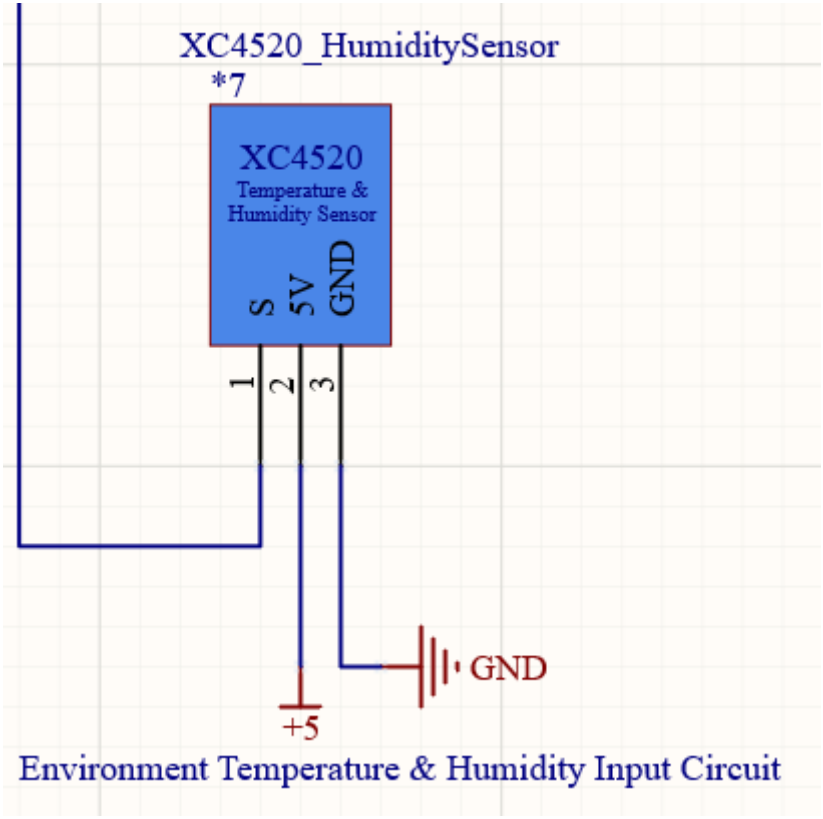
Signal wire above connects to Digital Pin 8 on the XC4411 Uno with Wi-Fi
P1 and P2 need to go to the Fridge Main Relay (250v/10a relay) COIL terminals

Alarm Output Circuit



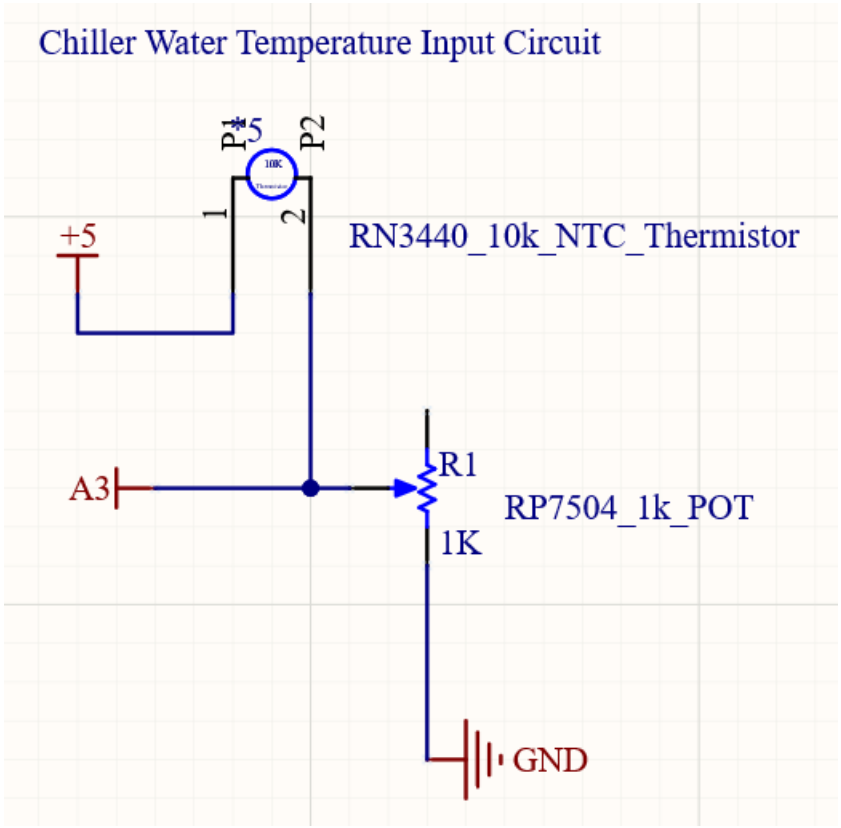
Pin 3 Signal wire connects to Digital Pin 10 on the XC4411 Uno with Wi-Fi

Environment Temperature & Humidity Input Circuit



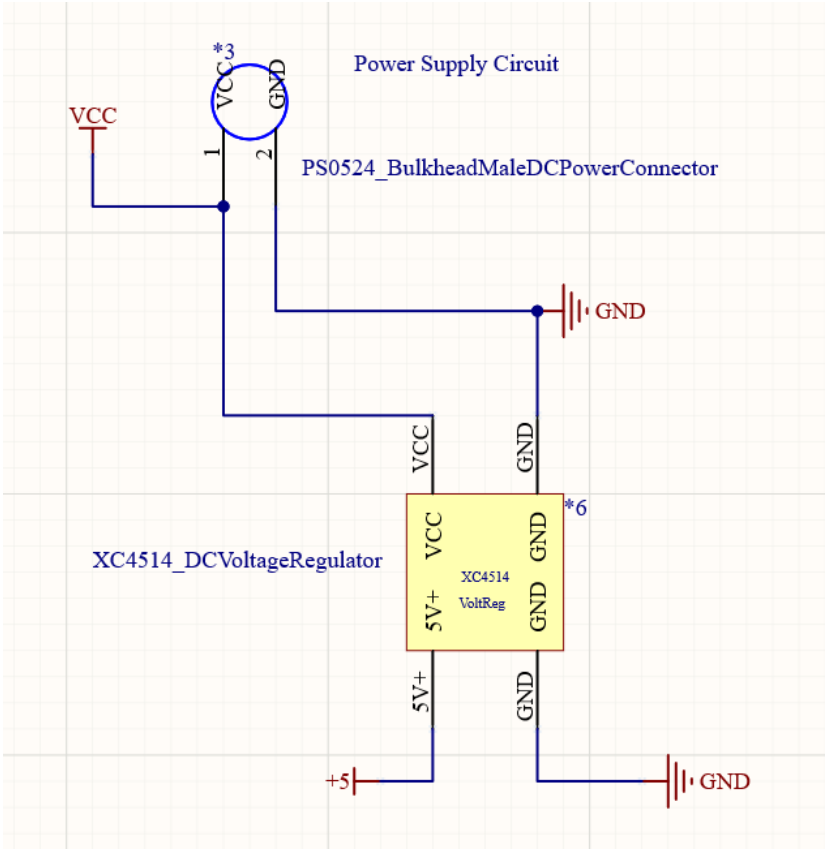
Pin 1 Signal wire connects to Digital Pin 9 on the XC4411 Uno with Wi-Fi

Chiller Water Temperature Input Circuit



A3 wire connects to A3 (Analog Pin 3) on the XC4411 Uno with Wi-Fi

Power Supply Circuit



+5v can go to Arduino VIN to power the Arduino Uno. Make sure GND here is tied to Arduino GND as well. +5v also powers the 5v relay module, and again ensure GND is tied together with ALL grounds in the schematic.