Interface Definitions

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| Interface | Properties |
| outside\_to\_sytem\_acpwr | * Vnominal: 120VAC via a NEMA 5-15R connector * Ipeak: 15A * Inominal: 500mA |
| fused\_acpwr | * Vnominal: 120VAC * Ipeak: 5A * Inominal: 500mA * Disconnects system from input when 5A draw is exceeded |
| mcu\_dcpwr | * Vnominal: 3.3VDC * Vmax: 3.6VDC * Vmin: 2.3 VDC * Inominal: 500mA * Powers ESP32 Microcontroller |
| node\_dcpwr\_(n)\* | * Vnominal: 4.5VDC * Inominal: 500mA * Powers Relays |
| sensor\_to\_mcu\_dsig\_(n)\* | * Vnominal: <1VDC * Reports current on output channels * Inominal: <5A * Utilizes I2C serial protocol * Fmax: 400 kHz |
| sensor\_to\_mcu\_asig | * VHighMin: 0.75\*mcu\_dcpwr VDC * VHighMax: VDD + 0.3 VDC * VLowMin: -0.3VDC * VLowMax: 0.25\*mcu\_dcpwr VDC |
| mcu\_to\_node\_dsig\_(n)\* | * Imax: 70mA * Imin: 0A * Disables output after a time of upto 1 hour ± 1 minute when enabled * Operate output channels independently |
| user\_bluetooth\_in | * Enable/disable relays * Set a timer up to 60 min. ± 1 min. * Can give commands from over 20 ft * Interface via a mobile phone (Android) |
| user\_bluetooth\_out | * Reports on current/voltage draw * Able to report data to phone from over 20 ft away * Confirms length of timers * Disables channels if timer is up |
| user\_wifi\_in | * Enable/disable relays * Set a timer up to 60 min. ± 1 min. * Can give commands from over 20 ft * Interface via a mobile phone (Android) |
| user\_wifi\_out | * Reports on current/voltage draw * Able to report data to phone from over 20 ft away * Confirms length of timers * Disables channels if timer is up |
| system\_to\_outside\_usrout | * Display current of outputs - 0-5 A * Able to update output statuses from 20 feet away * Confirms timers if set |
| outside \_to\_system\_usrin | * User interacts with system via Smartphone App * 9/10 users able to operate switches in <10 seconds without any previous training or knowledge of the interface * Enable/Disable each channel * Set delay on each output * Accepts inputs from 20 feet away * Disables output after a time of upto 1 hour ± 1 minute when enabled |
| system\_to\_outside\_acpwr\_(n)\* | * Turn off and on at least 2 independent household lamps with up to 100W incandescent bulbs and report current watts delivered by each channel * Vnominal: 120VAC via a NEMA 5-15R connector * Ipeak: 5A * Inominal: 500mA * Outputs will turn off after times of up to 60 minutes when selected |

\*note: n represents the nth redundant node