INTERSTACKS

Technical Specifications

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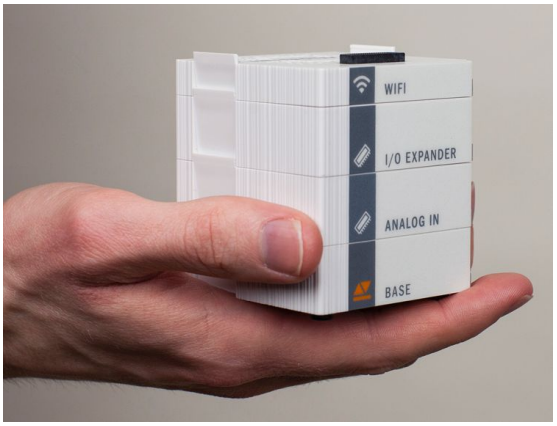
Interstacks hardware blocks

All stacks require one Superbase block.
Any number of additional blocks may be snapped onto an individual stack in any order.
A typical stack might include a Superbase, Analog In (for sensors), and Wifi.
All stacks include the FREE Stackbuilder drag-and-drop software authoring tool.
Stacks can send data directly to the Interstacks MyStacks cloud visualization, storage, and alerting (text/email) platform or to any commercial IoT platform, on-premise or cloud.



Environmental & Other	
Operating Temperature	-22F (-30C) to 185F (85C)
Humidity	95% at 40C non-condensing
Dimensions	For individual blocks 2.375” x 2.375” x 0.709” high. Stack as many as needed. Wifi and Bluetooth BLE blocks 2.375 “ x 2.375“ x 0.35” high.
Weight	1.4 oz per hardware block
ESD	Contact +/-4 KV, Air +/-8KV
Power	5VDC. Typically 350mA with 3 blocks. Contact us for detailed breakdown.
Wall Transformer	100-240VAC in; 5V DC 3A max out
Warranty	2 years on hardware blocks; Software: As-Is software license
Weatherproof Enclosure	
Ratings	NEMA 4X. IP66. (Waterproof)
Dimensions	Inside: 7.0 x 5.5 x 3.1in. Max outside: 8 x 8 x 3.75 in. Two rubber grommeted portals for cables on bottom. Rugged PVC.
Superbase	
Processor	ARM Cortex A8, 1GHz
Memory	512MB Ram, 8GB Flash
Connectors	Barrel connector for Power. Size N; OD 5.5mm ID 2.5mm 9.5mm length; mini-USB for download of software from laptop
Software	Runs Python virtual machine. All message and communication protocols handled via software blocks e.g. HTTPS REST APIs, Websockets, MODBUS, MT Connect, MQTT etc. Contact us for details.
Analog In Universal	
Connector	10 position terminal block; screw clamp; Wire Gauge 16-26 AWG (0.5-1.5mm)
Processor	ARM Cortex microcontroller. 120MHz 512k Flash 256K Ram
Inputs	Eight individually configurable analog inputs. Configurable for: 0-20 mA, 0-5V, 0-10V, +/- 5V, +/- 10V, 0-2.5V, 0-1.28V, +/- 2.5V, +/- 1.28V, +/- 0.64V
A-D Resolution	16 bits
Modes	Sample on demand, send on compare above below change, send on change based on configurable hysteresis value, sample at fixed rate (max 1KHz).
Power Output	Software selectable 3.3V or 5V (500 mA)
I/O Expander	
Connector	10 position terminal block; screw clamp; Wire Gauge 16-26 AWG (0.5-1.5mm)
Processor	ARM Cortex microcontroller. 80MHz 128k Flash 32K Ram
I/O	Eight individually configurable IOs for: Analog In 0-3.3V, Digital In 0-5V; Digital Out 3.3v; Pulse counting; Pullups on inputs;
A-D resolution	10 bits
Modes	Sample on demand, send on compare above below change, send on change based on configurable hysteresis value, sample at fixed rate (max 1KHz). Digital input send on change; Digital input sample at fixed rate, sample on demand.
Power Output	Software selectable 3.3V or 5V (500 mA)

Analog In 0-20 mA	
Connector	10 position terminal block; screw clamp; Wire Gauge 16-26 AWG (0.5-1.5mm)
Processor	ARM Cortex microcontroller. 80MHz 128k Flash 32K Ram
I/O	Eight 0-20mA analog inputs
A-D resolution	10 bits
Modes	Sample on demand, send on compare above below change, send on change based on configurable hysteresis value, sample at fixed rate (max 1KHz).
Power Output	Software selectable 3.3V or 5V (500 mA)
I/O pH ORP	
Connector	10 position terminal block; screw clamp; Wire Gauge 16-26 AWG (0.5-1.5mm)
Processor	ARM Cortex microcontroller. 80MHz 128k Flash 32K Ram
I/O	pH+, pH-, ORP+, ORP-, Digital input (5V), 2 switched relay outputs (60V Max)
A-D resolution	10 bits
Modes	Sample on demand, send on compare above below change, send on change based on configurable hysteresis value, sample at fixed rate (max 1KHz).
Power Output	Software selectable 3.3V or 5V (500 mA)
Wifi	
Processor	ARM Cortex microcontroller. 120MHz 512k Flash 256K Ram
Radio	802.11 b/g/n 2.4 GHz. (n - 2.4GHz up to 150Mbps); Automatic beacon monitoring (hardware TSF); 20 dBm transmit power; Antenna built-in;
Protocols	Of course all standard web protocols. DNS, DHCP, TCP, UDP, TLS. Client or AP access point (server).
Ethernet	
Connector	RJ-45 (8 position)
Processor	ARM Cortex microcontroller. 120MHz 512k Flash 256K Ram
Protocols	10 and 100Mbps; IEEE-802.3-2008 compliant MAC; Of course all standard web protocols. DNS, DHCP, TCP, UDP, TLS
Bluetooth BLE	
Processor	ARM Cortex microcontroller. 120MHz 512k Flash 256K Ram
Radio	2.4 GHz Bluetooth; +12 dBm transmit power;
Protocols	Bluetooth BLE only; Bluetooth 4; does not include Bluetooth audio or older Bluetooth; Multiple connections; Advertising; Scanning;
Cell Data 4G LTE CAT 1	
Connector	SMA; external antenna included
Processor	ARM Cortex microcontroller. 120MHz 512k Flash 256K Ram
Radio	4G LTE CAT 1; Verizon Bands LTE B4, B13; Specify carrier - Verizon, AT&T, T-Mobile; For AT&T Bands LTE B2, B4, B12; Call for international options; 10Mbps download, 5Mbps upload. No fallback.
SIM	Built-in 3FF micro SIM card
Power	Active power 616mA Peak. 156mA average; Idle 48mA. low power 8.6mA.
Antenna Requirements	If not using included antenna. Bandwidth: LTE B4(1700): 445MHz, LTE B13(700): 41MHz; Impedance 50 ohm

RS-232	
Connector	DB 9 Male
Processor	ARM Cortex microcontroller. 80MHz 128k Flash 32K Ram
Baud Rate	Software selectable
RS-485	
Connector	10 position terminal block; screw clamp; Wire Gauge 16-26 AWG (0.5-1.5mm) 3 used (D+ D- Shield)
Processor	ARM Cortex microcontroller. 80MHz 128k Flash 32K Ram
Baud Rate	Software selectable to 115200
Terminating Resistor	Software selectable in or out.
Protocols	Numerous protocols including proprietary ones handled via software blocks. MODBUS;
Serial	
Connector	10 position terminal block; screw clamp; Wire Gauge 16-26 AWG (0.5-1.5mm)
Processor	ARM Cortex microcontroller. 80MHz 128k Flash 32K Ram
Protocols	UART (3.3V), I2C, SPI. Can operate simultaneously
UART Baud Rate	Software selectable to 115200
SPI speed	Software selectable
I2C speed	40KHz or 400KHz
Power Output	Software selectable 3.3V or 5V (500 mA)
USB Keyboard	
Connector	USB A
Processor	ARM Cortex microcontroller. 80MHz 128k Flash 32K Ram
Protocols	USB HID Keyboard or Mouse
USB Barcode	
Connector	USB A
Processor	ARM Cortex microcontroller. 80MHz 128k Flash 32K Ram
Protocols	USB Barcode scanner (Interface is USB HID keyboard)
USB Host	
Connector	USB A
Processor	ARM Cortex microcontroller. 80MHz 128k Flash 32K Ram
Protocols	USB Serial FTDI
Motors	
Connector	10 position terminal block; screw clamp; Wire Gauge 16-26 AWG (0.5-1.5mm)
Processor	ARM Cortex microcontroller. 80MHz 128k Flash 32K Ram
Interface	Can drive two 4 wire DC stepper motors (4-12V DC, 1A) or four 2 wire DC motors (4-12VDC, 1A). Can drive external motor drivers for higher current. Motor power supplied externally via DC power input.

Servo Motor	
Connector	3 post x 12 standard low voltage servo. 6 independent channels output. 4.8-6VDC. Servo power supplied externally via DC power input.
Processor	ARM Cortex microcontroller. 80MHz 128k Flash 32K Ram
Interface	Six independent pulse width modulated outputs. Can drive external drivers.
Audio	
Connector	2 mini phono jacks for external speaker and external microphone. Also has built-in microphone and speaker.
Processor	ARM Cortex microcontroller. 80MHz 128k Flash 32K Ram
Audio	Has built-in MIDI music note synthesizer. Can play audio files.
Infrared Remote	
Connector	3 mini phono jacks for two external IR transmitters and one external receiver. Also has built-in IR receiver and transmitter.
Processor	ARM Cortex microcontroller. 80MHz 128k Flash 32K Ram
Infrared	Receives and transmits consumer infrared remote control codes.