

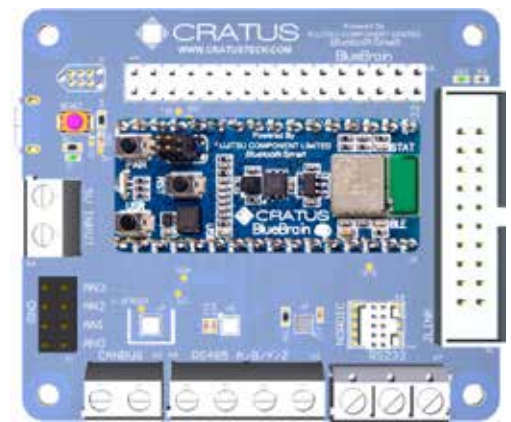
FUJITSU Component Sensor-Based System

BlueBrain® Interface Board

Overview

The Sensor Bluetooth System (SBS) combines BlueBrain and additional interface hardware deliver wireless monitoring solutions. The system brings data collection for environmental monitoring telemetry applications at your fingertips. The system features a powerful Cortex-M4 microcontroller and Fujitsu Components' Bluetooth smart wireless module that allow users to view collected data on any Bluetooth ready device such as a smartphone or a tablet. Whether it is monitoring indoor or outdoor environmental parameters, collecting data from a sensor with embedded interfaces or for telemetry purposes, SBS featuring the IB is the efficient solution. The system features multiple embedded communication protocols such as UART, SPI & I2C as well as industrial system interfaces, which are RS-232, RS485 and CAN Bus. The on board sensors offer Ambient Light Sensing (ALS), Temperature, Humidity, Barometric Pressure and Volatile Organic Compound (VOC) measurements. For easy integration with existing or add-on sensors and systems, the system features uncommitted embedded interfaces & GPIO.

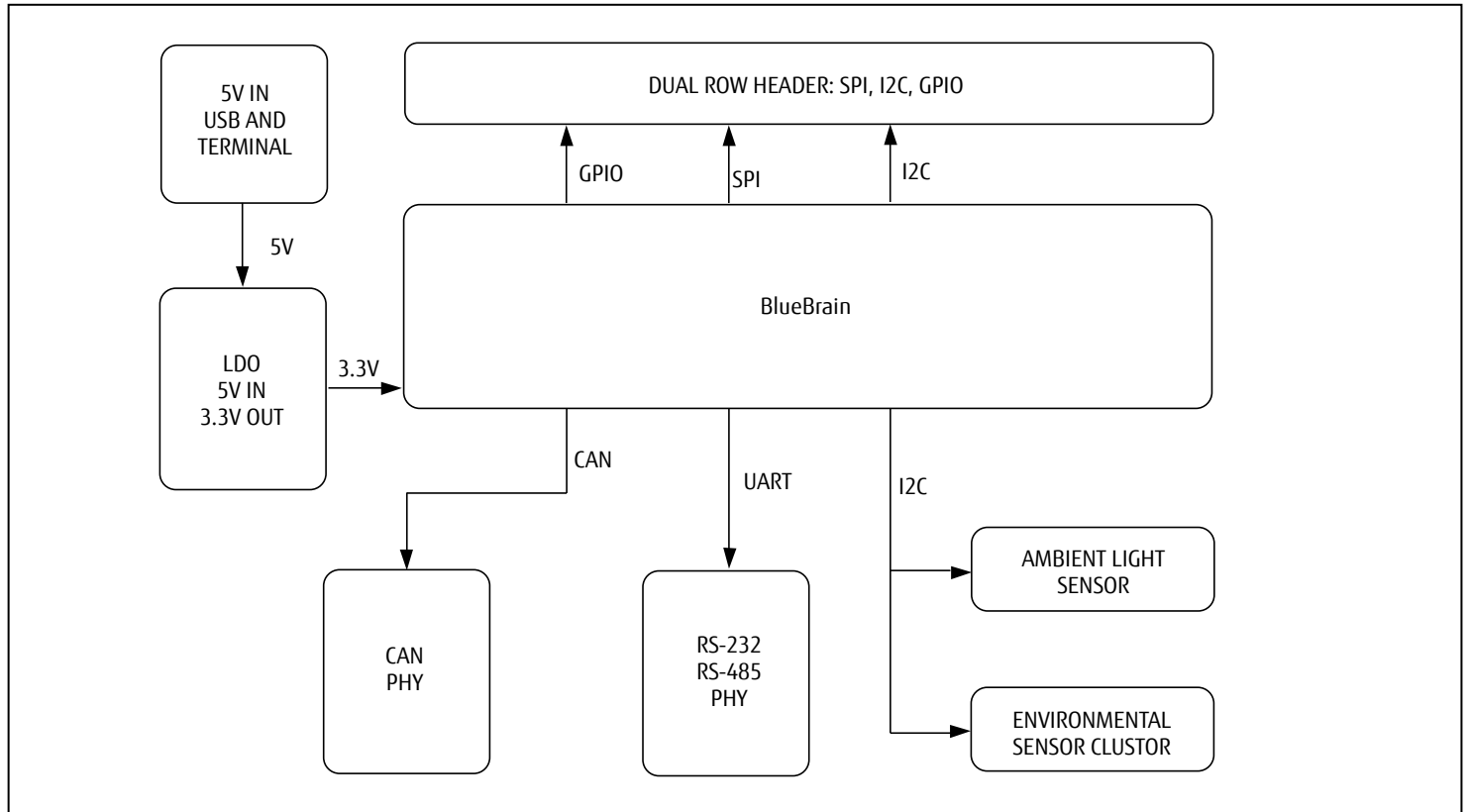
BlueBrain is designed and developed in partnership with CRATUS Technology. www.cratustech.com



Features

- **Environmental Sensor Cluster**
 - Temperature
 - Humidity
 - VOC (Volatile Organic Compound) Sensor
 - Barometric pressure
- **Ambient Light Sensor**
- **SPI & I2C Embedded Interfaces**
 - USB for ease of serial communication
 - Programmable GPIOs
 - Industrial Interfaces
- **Analog Inputs: 0-3.3V**
- **MEMS Accelerometer, Temperature, VOC (Gas), Humidity, Pressure, Ambient Light**

■ Block Diagram



■ Part Number

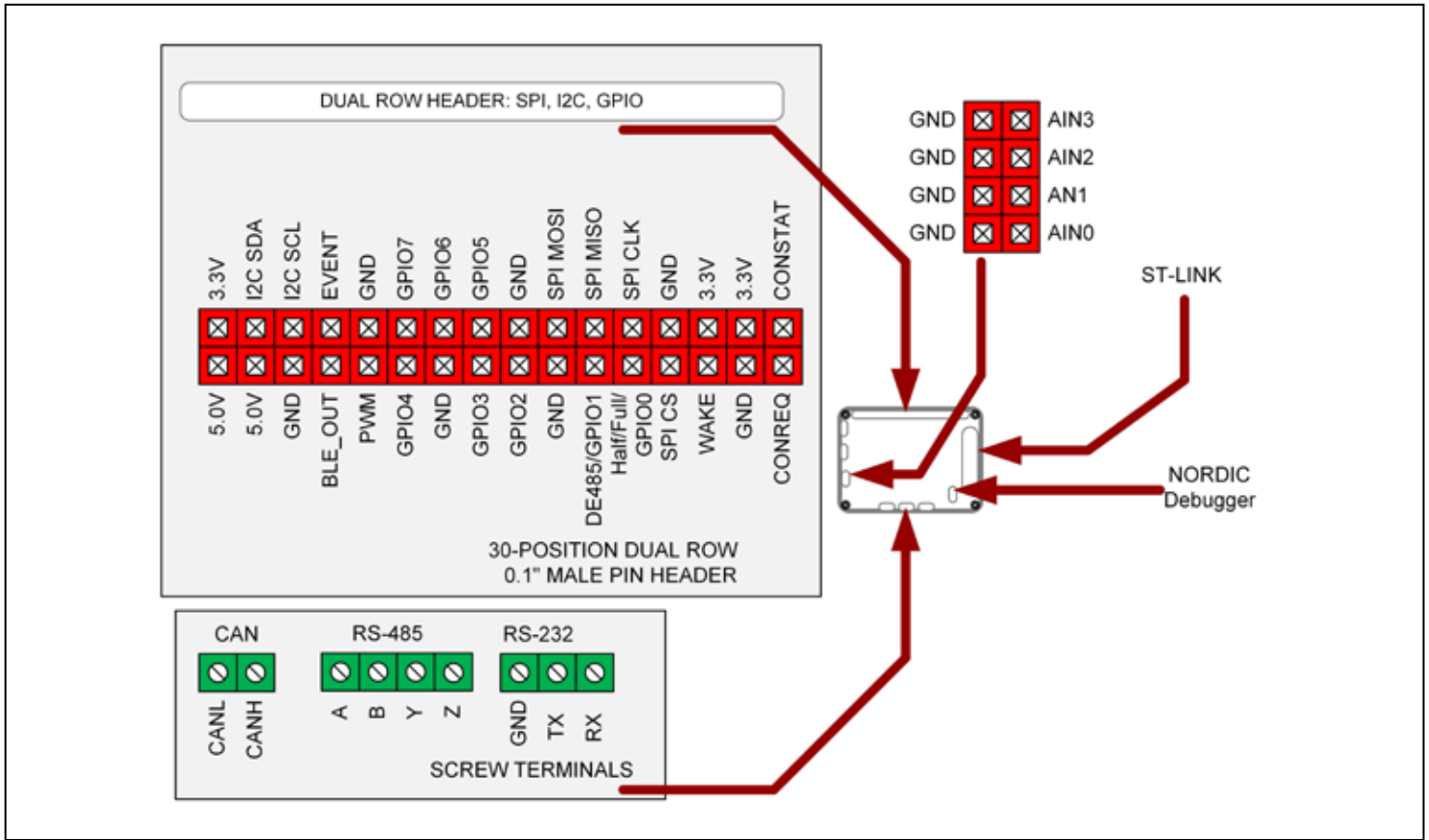
Part number	Dimensions (mm)	Operating temperature	Power supply
MBH-CRFXLM-V1	65 x 56	-20 to +50°C	5 VDC

■ Hardware Details

Absolute Maximum Ratings

Maximum Supply Voltage	5V
Maximum Input Current	500mA
Maximum Analog Input Voltage	3.6V
Maximum IO Voltage (except CANH, CANL)	3.6V
Maximum IO Voltage (CANH, CANL)	±25V
Operating Temperature range	-20°C to 50°C (TBD pending characterization)

■ PORT ALLOCATIONS



■ ELECTRICAL CHARACTERISTICS & RECOMMENDED OPERATING CONDITIONS

- Interface Characteristics

Parameter	Min.	Typical	Max.	Notes
GPIO Ports				
VOUT		0-3.3V		GPO
VIL			0.3V	GPI
VIH	3V			GPI
I _{out}			2mA	Sourcing/Sinking
VCC		3.3V		
ICC			10mA	Sourcing
I2C Interface				
VIO		0V to VCC		SCL and SDA
f _{SCL}			400kHz	
R _{PU}		4.7kOhm		SCL and SDA to VCC
VCC		3.3V		
ICC			10mA	Sourcing

Parameter	Min.	Typical	Max.	Notes
SPI Interface				
VIO		0V to VCC		All SPI pins
f_{SCLK}			10MHz	
VCC		3.3V		
ICC			10mA	Sourcing
CAN Bus				
VIO		5.0V		
IDD			100mA	Sourcing
$V_{CANH, CANL}$	0.4 x VDD		0.6V x VDD	Recessive Output
V_{CANL}			2V	Dominant Output
V_{CANH}	2.8V			Dominant Output
$V_{CANH} - V_{CANL}$	1.8V		3V	Dominant Output
Common mode range	-20V		25V	VDD=5V
Ambient Light Sensor				
Sensor responsivity		0.45 microlux		
Dynamic range	3 lux		220,000 lux	Typical range
Temperature Sensor				
Range	-20°C		70°C	
Accuracy		1°C		
Pressure Sensor				
Range	300		1,100	hPa
Accuracy		2		hPa, absolute
Humidity Sensor				
Range	10		90	%RH, Accuracy
Response time		5		s
Air Quality Sensor				
Range	0		500	IAQ
Accuracy		±15		IAQ
RS-232 Interface Receiver Input				
Input range voltage	-25		25	V
Input low threshold	0.8			V
Input high threshold			2.4	V
Input resistance		5		kOhm
RS-232 Interface Transmitter Output				
Output voltage swing range	±5V (RL=3k)			V
Short circuit current		±30		mA
RS-485 Interface Receiver Input				
Input resistance		96		kOhm
Output current	-0.275 VCM=-7V		0.125 VCM=12V	mA

Parameter	Min.	Typical	Max.	Notes
RS-485 Interface Transmitter Output				
Differential output voltage	1.5			V
Common mode			3	V
Output short circuit current			±25	V
Cortex-M4 microcontroller programming interface				
GPIO voltage		0-3.3V		CMOS

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