ModuSense

Controller Gateway Overview

The ModuSense Controller Gateway is a universal data collection and transmission device. It is equipped with industry leading satellite and cellular technologies providing global connectivity and reliability without compromising battery life.

When using the embedded Swarm Satellite modem, the Controller Gateway can be used anywhere on earth, switching between cellular and satellite automatically based on network availability. Cellular and Swarm Satellite fees are included in the annual controller gateway data platform subscription cost. Simply deploy the unit and data will flow.

Swarm provides affordable satellite connectivity for IoT applications, particularly in remote regions that lack reliable access to the Internet. The geographic range of satellite is much greater than traditional terrestrial networks. Satellite is also a highly reliable method of data transfer since - unlike terrestrial networks - it cannot be knocked out by weather events or man-made accidents. For IoT devices operating in rural or remote areas, Swarm cuts satellite data costs by up to 20x, while ensuring that devices will stay connected everywhere at all times.

Highly Durable
304 Stainless Steel

5W Solar Panel

IP67 Enclosure

Hermetically sealed
membrane keypad
with status indicators
(brandable)

SWARM

Certified Product

ref: 20210525

Controller Gateway Specifications

MODELS	CG-S2-2.2.x	CM-S2-1.3.x
Model Reference	Controller Gateway Satellite	Controller Mini Satellite
Cellular Communications	Global LTE-M (CAT-M1/NB1) U-BLOX SARA-R410M-02B Bands: 1*, 2, 3, 4, 5, 8, 12, 13, 18, 19, 20, 25, 26*, 28 (* roaming bands)	n/a
Satellite Communications	SWARM TILE01 137-138MHz Downlink / 148-150MHz Uplink	
Processors & Memory	Arm® Cortex®-M4 + ARM® Cortex®-M3 NOR Memory IC 32Mb, SPI - Quad I/O	Arm® Cortex®-M4 NOR Memory IC 32Mb, SPI - Quad I/O
Onboard Sensors	GPS, Temperature, Humidity, Accelerometer	GPS Only
GPS Module	U-BLOX SAM-M8Q, TCXO, Galileo, GLONASS, GPS / QZSS, AEC-Q100 qualified GNSS chip	Sierra Wireless XM1210, TCXO GPS+Glonass, GPS+BeiDou, GPS+Galileo
Temperature Module	High Accuracy Temperature Sensor ±0.4 ℃ (max), −10 to 85℃, Factory-calibrated	n/a
Humidity Module	Humidity Sensor 0 ~ 100% RH ±3%, Integrated on-chip heater, Factory-calibrated	n/a
Accelerometer Module	Digital Accelerometer X,Y,Z Axis. ±2g, 4g, 8g, 16g	n/a
External RS485 Sensor Inputs	Fault-protected Half duplex RS422, RS485 Transceiver 12VDC Supply, 2kV Isolation, 470µF Max Capacitive Load	
	Single Channel. Max Current (total): 80mA	Dual Channel. Max Current (per port): 80mA
Bluetooth Host	U-BLOX NINA B3, v5.0 (Bluetooth low energy) nRF52840	
Power Supply	6000mAH Li-polymer Battery Charging Voltage: 4.2V, Rated Voltage: 3.7V	
DC Input & Charging	18~30VDC, 2A Max Current, MPPT Charger (17.4Vmp)	18~30VDC, 2A Max Current, MPPT Charger (17.4Vmp), Optional 12v DC Battery Input
CONNECTORS		
Antenna - Cellular	Female SMA, Multiband Whip Antenna	n/a
Antenna - Satellite	Female SMA, Swarm Antenna	
Antenna - Bluetooth	Female SMA, Bluetooth Whip Antenna Supplied	
RS485 Sensor Input	2 x Circular Connector Plug, Male Pins, 4-Position	
DC Input	Circular Connector Plug, Male Pins, 3-Position	
PHYSICAL DESCRIPTION		
Dimensions (L x W x H)	Controller Enclosure: 150x110x40mm, Solar Assembly: 250x210x80mm	
Weight (full assembly + antenna)	425 grams (2.1kg)	395 grams (2.0kg)
ENVIRONMENTAL		
Operating / Storage Temperature	-20℃ to 60℃ / -40℃ to 85℃	