

The Cloud Network Module provides multiple communication channels that can be used by controllers or other devices. Add a cloud network Wi-Fi, Ethernet or cellular channel to your BaseStation irrigation controller, SubStation or FlowStation to enable reliable remote connectivity. Baseline's Cloud Network Module has the following technical specifications.

4G LTE Cellular Modem

WWAN LTE	Supported frequency bands	S700/800/850/900/1800/1900/2100/2600/AWS (B1, 2, 3, 4, 5, 7, 8, 13, 17, 18, 19, 20)
	Maximum connectivity speed	100 Mbps down, 50 Mbps up (Cat 3) Theoretical LTE data rates
WWAN 3G/2G	Supported 3G frequency bands	UMTS/HSDPA/HSUPA/HSPA+: 850/900/1900/2100 MHz and AWS band (1700/2100 MHz) (B 1, 2, 4, 5, 8)
	Supported 2G frequency bands	GSM/GPRS/EDGE: 850/900/1800/1900 MHz
	Maximum connectivity speed	DC-HSPA+: 42 Mbps (Cat 24) down and 5.76 Mbps (Cat 6) up
	RX diversity	Simultaneous Equalization and Rx Diversity on all bands
WWAN Antenna	Antenna connectors	1 x SMA: WWAN Main 1 x SMA: WWAN Div/GPS
Ethernet (IEEE 802.3)		10/100Mb/s RJ45 Connector
Visual Indicators		Seven 3 color LEDs showing system status and signal strength
SIM		USIM/SIM class B and class C

Case	Dimensions	6.5" L x 3.8" W x 0.25" D 165mm W x 96.5mm L x 6.3mm D (excluding antenna connectors)
	Mounting	Plastic mounting plate with 3 mounting holes
Environmentals	Operating temperature:	-22° to +158° F -30° to +70°C
	Storage temperature:	-40° to +185° F -40° to +85°C
	Humidity operational:	5% - 95% non condensing
Standards Compliance		ROHS, Reach

Power & Communication

Power is supplied to the Cloud Network Module using the Comm2 serial port on the BaseStation 3200, BaseStation 1000, or SubStation control board.

The controller and Cloud Network Module communicate over a 5-pin serial cable.

The Cloud Network Module is configured through the irrigation controller's interface.

DC Power In: 9-33 V DC

Current Consumption: 341mA (measured at 12V DC)

Network

Cell modems operate on a wireless carrier's network. Baseline provides the SIM card from the wireless carrier.

Security

The cell modem uses one of the following ciphers for encryption

- 128-EEA2 AES based algorithm

If the cell modem is on Baseline's private network, there is additional encryption (AES 128-GCM) between the wireless carrier's network and the Baseline server.

Compatible BaseStation Firmware

The following firmware versions have integrated support for 3G cell modem communication:

BaseStation 1000:	Version 1.25 and higher
BaseStation 3200:	Version 17.12 and higher
FlowStation:	Version 3.5 and higher
SubStation:	Version 2.3 and higher

Compatible BaseStation Hardware

BaseStation 1000:	All controllers in X cabinets and pedestal (P) enclosures
BaseStation 3200:	Controllers in X cabinets and pedestal (P) enclosures shipped after April 16, 2014

2.4GHz Wi-Fi

Add a Wi-Fi communication module to your Baseline controller to enable reliable wireless connectivity. The Wi-Fi module sends and receives data over an existing Wi-Fi network at your site. Baseline's Wi-Fi modules for the Cloud Network Module have the following technical specifications.

Module Description

2.4 GHz IEEE 802.11b/g™

Security

Supports 802.1x, 802.1i security
WEP
WPA-PSK
WPA-2-PSK

Network Interface

IEEE 802.11 - compliant RF transceiver
Compatible with IEEE 802.11b/g/n networks

RF/Analog Features

ISM Band 2.400 to 2.484 GHz operation
Channels 1-11
DSSS/OFDM modulation
Application throughput: approximately 1125 kbps
Integrated low phase noise VCO, RF frequency synthesizer, PLL loop filter, and PA
Integrated RSSI ADC and I/Q DACs, RSSI readings available to host

Current Consumption

-95 dBm Typical sensitivity at 1 Mbps
+18 dBm Typical 802.11b TX power with control
+16 dBm Typical 802.11g TX power with control

Power Requirements

Single operating voltage: 2.8V to 3.6V (3.3V typical)

Environment

Operating: -40° C to +85° C (-40° F to +185° F)
Storage: -40° C to +125° C (-40° F to +257° F)

General Information

Dimensions (LxW): 6.4 x 3.8 in (163 x 97 mm)
Antenna Connector: Ultra-miniature coaxial (U.FL)
Certifications: Radio regulation certification for United States (FCC), Canada (IC), and Europe (ETSI)

How to Specify

4G LTE CELL MODEM

BL-CLOUD-LTE-AT-X
BL-CLOUD-LTE-VZ-X
BL-CLOUD-LTE-AT-P
BL-CLOUD-LTE-VZ-P
BL-CLOUD-LTE-AT-PSS
BL-CLOUD-LTE-VZ-PSS

2.4 GHz WI-FI

BL-CLOUD-WFE-X
BL-CLOUD-WFE-P
BL-CLOUD-WFE-PSS

ETHERNET RADIO

BL-ER-X
BL-ER--P