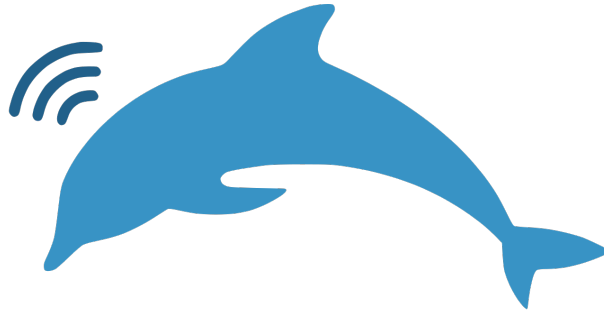




PopotoModem

S-Series Modem Interface Control Document

delResearch LLC

Document Versions

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1 S-Series Modem Interface

This document applies to the following Popoto Modem products:

- **S1000LI-ETH-01:** PMM4511, ETHERNET, AND INTERNAL BATTERY
- **S1000LI-RS232-01:** PMM4511, RS-232, AND INTERNAL BATTERY
- **S1000LI-RS422-01:** PMM4511, RS-422, AND INTERNAL BATTERY
- **S1000RP-ETH-01:** PMM4511, ETHERNET, AND REMOTE POWER
- **S1000RP-RS232-01:** PMM4511, RS-232, AND REMOTE POWER
- **S1000RP-RS422-01:** PMM4511, RS-422, AND REMOTE POWER
- **S1000LI-ETH-00:** PMM3511, ETHERNET, AND INTERNAL BATTERY
- **S1000LI-RS232-00:** PMM3511, RS-232, AND INTERNAL BATTERY
- **S1000LI-RS422-00:** PMM3511, RS-422, AND INTERNAL BATTERY
- **S1000RP-ETH-00:** PMM3511, ETHERNET, AND REMOTE POWER
- **S1000RP-F-ETH-00:** PMM3511, ETHERNET, AND REMOTE POWER (FEMALE SUBCONN)
- **S1000RP-RS232-00:** PMM3511, RS-232, AND REMOTE POWER
- **S1000RP-RS422-00:** PMM3511, RS-422, AND REMOTE POWER



Figure 1.1: **S1000LI-XXX-XX:** S1000 WITH INTERNAL BATTERY



Figure 1.2: **S1000RP-F-XXX-XX:** S1000 WITH REMOTE POWER (FEMALE SUB-CONN)

1.1 Power & Communications Interface

1.1.1 Overview

The S-Series Modem Power & Communications Interface consists of a single wet-mate bulkhead connector available to provide power, communicate via Ethernet (10/100 Mbps), RS-232, or RS-422 (full-duplex). The pinout of this Interface will depend on which modem communication interface was ordered: Ethernet, RS-232, or RS-422.

1.1.2 Electrical Connections

Figure 1.3 shows the electrical connections for the the Power & Communications Interface. All signal directions are relative to the S-Series Modem.

NOTE: this is the face view of the male connector. S1000LI (internal battery) and S1000RP-F variations have a female connector, and the pinout will appear mirror-imaged. S1000RP (remote-powered) variations have a male connector.

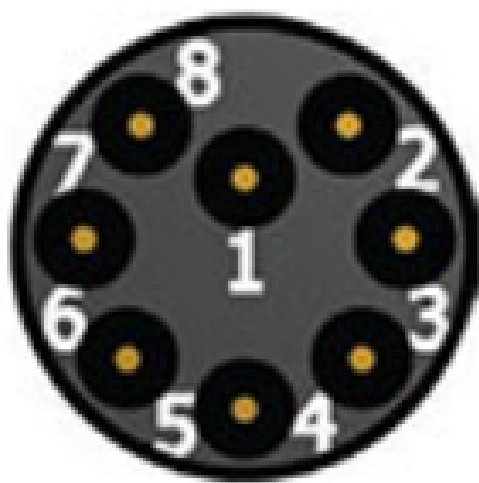


Figure 1.3: Connector Pinout - Male Pins, Face View

Table 1.1: Power & Communications Interface Electrical Pinout: Ethernet Variation

Pin Number	I/O	Pin Name	Notes
1	O	ENET_DP0_P	T568A: Green & White T568B: Orange & White
2	O	ENET_DP0_N	T568A: Green T568B: Orange
3	I	ENET_DP1_P	T568A: Orange & White T568B: Green & White
4	I	ENET_DP1_N	T568A: Orange T568B: Green
5	P	VIN	S1000LI: Charger Input (LIC-77WH-00: 25.5 V) S1000RP: Power Input (12-38 V, nominal 24 V)
6	P	LED Power	+3.3V out when unit is powered up
7	P	GND	Modem Ground
8	I	Power Switch	Short to GND to power down unit. Leave open for normal operation.

NOTE: For RS-232 variations, the position of TX and RX are different for -01 (PMM4511) and -00 (PMM3511) modems. Please refer to the correct table below.

Table 1.2: Power & Communications Interface Electrical Pinout: -01 (PMM4511) RS-232 Variation

Pin Number	I/O	Pin Name	Notes
1	I	RS-232 RX	RS-232 Receive
2	O	RS-232 TX	RS-232 Transmit
3	I	1PPS Input	Used for 1PPS or general purpose digital input. +1.8V to +5V logic-level.
4	-	NC	No connection
5	P	VIN	S1000LI: Charger Input (LIC-77WH-00: 25.5 V) S1000RP: Power Input (12-38 V, nominal 24 V)
6	P	LED Power	+3.3V out when unit is powered up
7	P	GND	Modem Ground
8	I	Power Switch	Short to GND to power down unit. Leave open for normal operation.

Table 1.3: Power & Communications Interface Electrical Pinout: -00 (PMM3511)
RS-232 Variation

Pin Number	I/O	Pin Name	Notes
1	O	RS-232 TX	RS-232 Transmit
2	I	RS-232 RX	RS-232 Receive
3	I	1PPS Input	Used for 1PPS or general purpose digital input. +1.8V to +5V logic-level.
4	-	NC	No connection
5	P	VIN	S1000LI: Charger Input (LIC-77WH-00: 25.5 V) S1000RP: Power Input (12-38 V, nominal 24 V)
6	P	LED Power	+3.3V out when unit is powered up
7	P	GND	Modem Ground
8	I	Power Switch	Short to GND to power down unit. Leave open for normal operation.

Table 1.4: Power & Communications Interface Electrical Pinout: RS-422 Variation

Pin Number	I/O	Pin Name	Notes
1	O	RS-422 TX+	RS-422 Transmit Positive
2	O	RS-422 TX-	RS-422 Transmit Negative
3	I	RS-422 RX+	RS-422 Receive Positive
4	I	RS-422 RX-	RS-422 Receive Negative
5	P	VIN	S1000LI: Charger Input (LIC-77WH-00: 25.5 V) S1000RP: Power Input (12-38 V, nominal 24 V)
6	P	LED Power	+3.3V out when unit is powered up
7	P	GND	Modem Ground
8	I	Power Switch	Short to GND to power down unit. Leave open for normal operation.

1.1.3 S1000LI/S1000RP-F Connector Hardware Components

The S1000LI/S1000RP-F Power & Communications Interface connector is a MacArtney SubConn Micro Circular 8-pin **female** aluminum bulkhead connector (P/N MCBH8FAS) with integral male locking sleeve threads.

The Power & Communications Interface is connected to using a MacArtney SubConn Micro Circular 8-pin **male** inline cable (P/N MCIL8M) and **female** locking sleeve (P/N MCDLS-F BLUE). The S1000LI comes with a power-down plug mounted, which keeps pins 7 & 8 shorted and the modem powered down. The install kit for S1000LI also includes inline cable adapter, Popoto PDI board, battery charger and dummy plug for easy interfacing with the modem.

1.1.4 S100RP Connector Hardware Components

The S100RP & Communications Interface connector is a MacArtney SubConn Micro Circular 8-pin **male** aluminum bulkhead connector (P/N MCBH8MAS) with integral male locking sleeve threads.

The Power & Communications Interface is connected to using a SubConn Micro Circular 8-pin **female** inline cable (P/N MCIL8F) and **female** locking sleeve (P/N MCDLS-F BLUE), both of which are included in the S1000RP Install Kit.

1.1.5 Mating Cable Notes

- **NOTE:** Connectors must be greased with MOLYKOTE® 44 Medium before every mating.
- **NOTE:** Disconnect by pulling straight out, not at an angle.
- **NOTE:** Do not pull on the cable and avoid sharp bends at cable entry.
- **NOTE:** Ensure that there are no angular loads on the bulkhead connector.
- **NOTE:** SubConn connectors should not be exposed to extended periods of heat or direct sunlight. If a connector becomes very dry, it should be soaked in fresh water before use.
- **NOTE:** The locking sleeve must be hand-tightened only.
- **NOTE:** If using RS-422 interface, it is important that any mating cables utilize twisted-pair wiring for pins 1/2 and 3/4.
- **NOTE:** If using Ethernet interface, it is important that any mating cables utilize twisted-pair wiring (100 ohm differential impedance ideally) for pins 1/2 and 3/4.
- **NOTE:** Color-codes may differ for unterminated inline cables depending on vendor. Refer to [1.3](#) for pin/signal location and verify with digital multi-meter before terminating.

Table 1.5: Popoto SubConn Inline Cable Color Code

Pin Number	Wire Color
1	Red
2	Black
3	Yellow
4	Blue
5	Orange
6	Brown
7	Purple
8	Green

Table 1.6: MacArtney SubConn Inline Cable Color Code

Pin Number	Wire Color
1	Black
2	White
3	Red
4	Green
5	Orange
6	Blue
7	White/Black
8	Red/Black