APOGEE LABS
210 South Third Street • North Wales, PA USA 19454
(T) 215-699-2060 • (F) 215-699-2061
www.apogeelabs.com

INSTRUCTION MANUAL

FOR

MODEL AI2175
AL2175-SPV & AL2175-UA

SPV-UA FIBER OPTIC MULTIPLEXER

TO THE CUSTOMER

Thank you for purchasing this equipment from APOGEE LABS, Inc. Our intention is that the equipment meets your requirements and exceeds your expectations and you find our documentation adequately describes its operation and use. We continue to strive for higher levels of quality in our products, services and customer support and look forward to hearing from you if you have any comments or questions regarding these areas. We sincerely believe that the customer comes first.

WARRANTY

APOGEE LABS, Inc. warrants its products to be free from defects in materials and workmanship for a period of 18 months from the date of shipment to the original purchaser. APOGEE LABS Inc. obligation for any defect shall be limited to repair or replacement at our discretion of defective equipment. APOGEE LABS, Inc. assumes no liability if defects result from improper use, repairs not made by APOGEE LABS, Inc., negligence, accident, mishandling or misapplication of the equipment. No other warranty is expressed or implied and APOGEE LABS, Inc. assumes no liability for consequential damages. Should a warranty repair be required, please contact APOGEE LABS, Inc. for a Return Authorization Number.

EXTENDED WARRANTY

APOGEE LABS, Inc. offers an extended warranty plan to cover equipment beyond the normal Eighteen (18) month warranty plan. Under the extended warranty, APOGEE LABS will repair or replace equipment and/or components which have failed under normal use at its sole discretion. This extended warranty does not cover repair or replacement of equipment or components that failed because of improper use, repairs not made by APOGEE LABS, Inc., negligence, accident, misapplication of the equipment, or mishandling. A one-year or multi-year Extended Warranty may be purchased. Please contact our sales department for a price quotation.

Table of Contents

FEATURES

- AL2175 chassis
  - 2U chassis standard 19 rack form factor
  - Dual redundant power supplies with front panel LED status
  - Slots for two AL2175 modules
- AL2175-UA—connects to the “UA” UHF DATCOM/LOS RADIO equipment
- AL2175-SPV—connects to the “SPV” UHF DATCOM/LOS RADIO equipment
- Supports multiple data types
  - Discrete signals (UA to SPV)
  - RS-485 (DS-101) signals (bi-directional) at 64 kbps
  - RS-422 signals (UA to SPV and SPV to UA) at 57.6 kbps
  - Line level Audio (UA to SPV and SPV to UA) at 24 ksps
  - Microphone Level Audio (UA to SPV) at 24 ksps
  - Auxiliary line level audio line provided on RJ-45 connector
- Fiber optic connection
  - Provided electrical isolation and long distance communications
  - LC connectors
  - Multimode fiber
  - 850 nm center wavelength
  - 500 Meter maximum cable length supported

OVERVIEW

The AL2175 is a fiber-optic multiplexer/demultiplexer that provided an isolated fiber-optic link between two UHF datacom radios. The system in comprised of AL2175 chassis, an AL2175-UA module, and an AL2175-SPV module. Each module resides in an AL2175 chassis.

The AL2175-UA and AL2175-SPV modules each reside in their own chassis. The chassis provides power and status for the internal power supplies. The AL2175-UA module then provides all the connections to hook up to the end users UA radio. Likewise the AL2175-SPV module provides all the connections to hook up to the end users SPV radio. The modules are connected using a pair of multi-mode fiber optic cable. Once powered on the signals on the connectors are then transported across the fiber optic link to the other module to enable communication.

CONFIGURATION

The AL2175 chassis, AL2175-UA module, and AL2175-SPV module are all deigned to function without user configuration being needed.

210 South Third Street, North Wales, PA 19454
Ph. 215-699-2060

AL2175 CHASSIS

The AL2175 chassis is a 2U 19" wide rack mountable chassis that houses either the AL2175-UA module or the AL2175-SPV module.

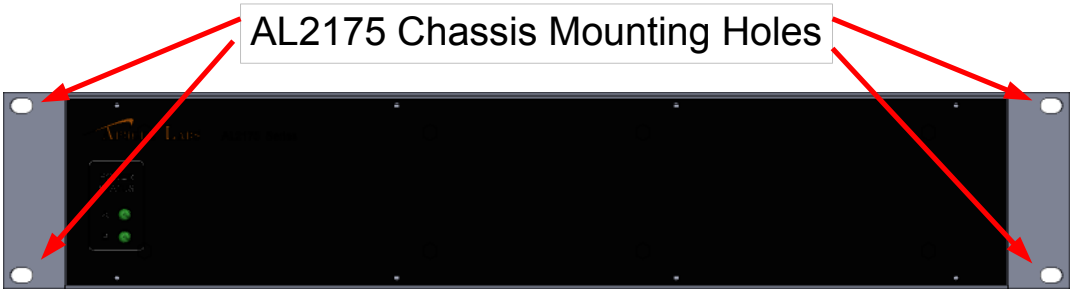
The chassis provides two main functions:

- Housing the AL2175-UA or AL2175-SPV module
- Providing power to the AL2175-UA or AL2175-SPV modules

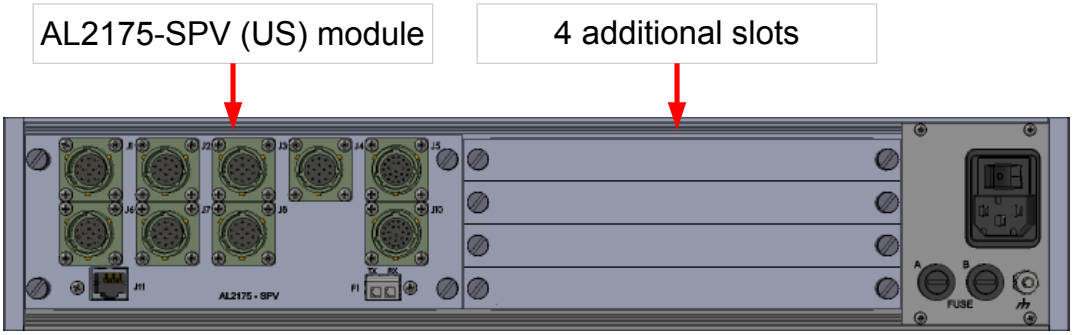
AL2175 CHASSIS HOUSING

The AL2175 chassis is a standard 19" wide 2U chassis. This chassis can be mounted in a standard 19" rack that has at least 2U of rack space available.

There are four mounting holes on the front of the chassis that are part of the handles. The provided chassis mounting hardware can be used to secure the AL2175 chassis to an equipment rack.



The rear of the chassis provides eight slots for modules to be placed. The AL2175-UA and Al2175-SPV each take up four slots because of the number of connecters needed. The modules are fastened with thumb screws to ensure a secure installation. Always be sure to verify that power is OFF when removing or adding modules to the AL2175 chassis unless the module is explicitly defined as hot swappable.

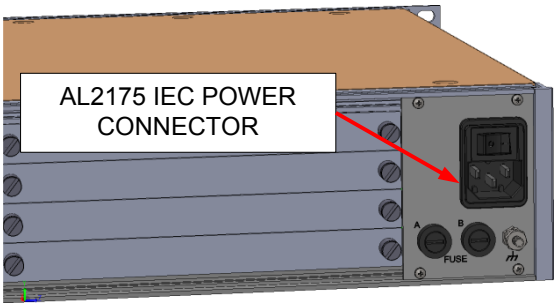


AL2175 CHASSIS POWER

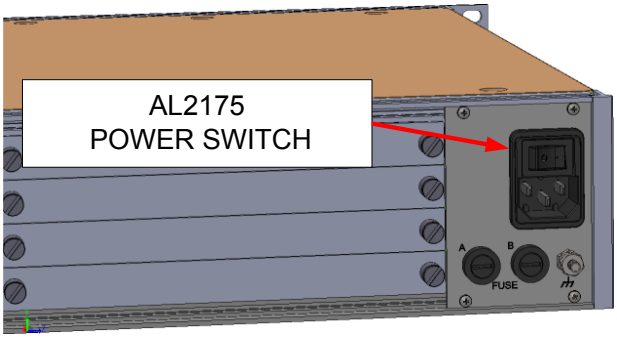
The chassis accepts AC power, provides a power switch, and provides two user accusable fuses. Always very that power is off before servicing power on the AL2175 chassis.

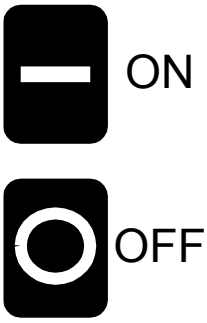
Once the chassis has been mounted, the desired modules are installed, and the modules are connected up, most users will only need to plug in the AC power and turn on the chassis. The chassis has two internal redundant power supplies to maximize up time.

To connect power, first plug the supplied AC power cord into the AL2175 IEC connector.

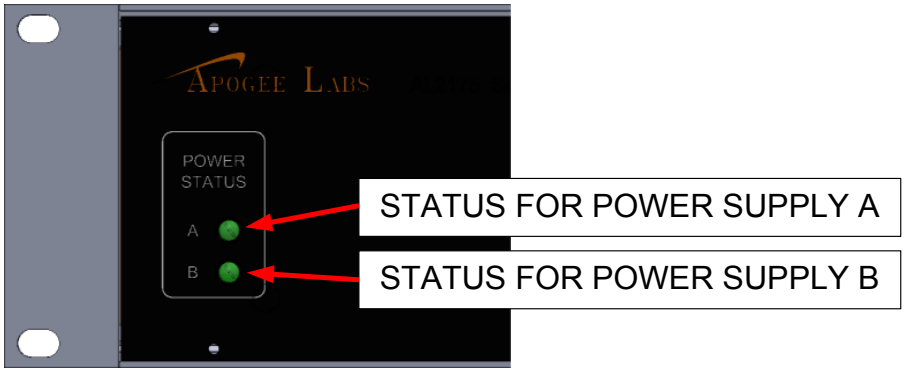


Once plugged in, the power switch needs to be pressed to the “ON” position. The “ON” position is designated with the dash and the “OFF” position is designated by the circle.



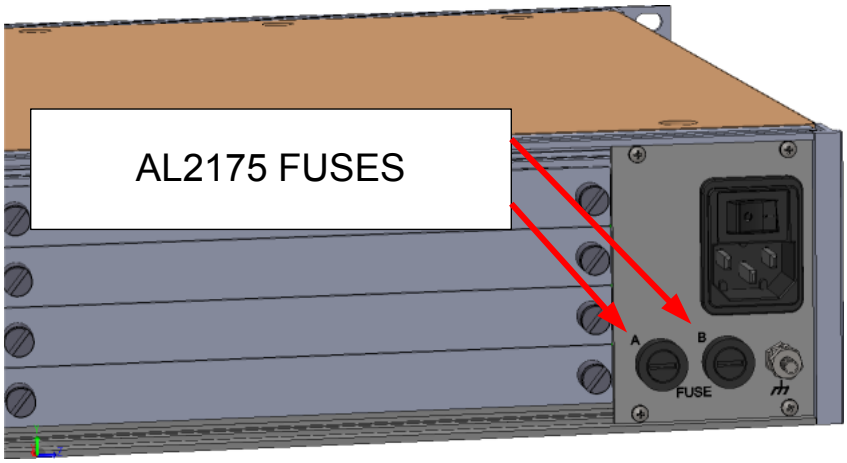


Once powered on, the front panel has two LEDs that display the status of the two internal power supply supplies. The two supplies are designated as power supply A and B. Green indicated that the power supply is operating properly.



AL2175 CHASSIS POWER (CONTINUED)

If one of the chassis power supply LEDs go out, that indicated that one of the power supplies has failed. It is recommended to contact the factory in the event of a failure. The one field replaceable part of the power supply is the fuse.



If the user believes that one of the fuses have blown, there are a few steps that can be done to verify the fuse condition and if needed replace the fuse.

ALWAYS POWER OFF THE CHASSIS AND REMOVE THE POWER CORD BEFORE SERVICING THE POWER ON THE AL2175 CHASSIS.

Once the chassis has been power off and the plug has been removed, The fuse for the power supply that has failed can be removed by unscrewing the fuse holder (counter-clockwise). Once the fuse pops out, use a multimeter to measure the resistance across the fuse. A properly operating fuse should be very low impedance (less than 0.2 Ohms). A blown fuse should measure high impedance. If the fuse is blown, it can be replaced with an equivalent fuse.

If the fuse appears to be functioning properly, contact your Apogee Labs representative to determine fixing or replacing the unit.

AL2175-UA

The AL2175-UA is a Al2175 chassis compatible module. The module connects to the users UA UHFSATCOM/ LOS Radio. This module functions as a multiplexer/demultiplexer with a number of signals.

The signals that the AL2175-UA multiplexes are:

- Discrete signals
- RS-485 signals (bi-directional)
- RS-422
- Audio (line and microphone level)

The signals that the AL2175-UA demultiplexes are:

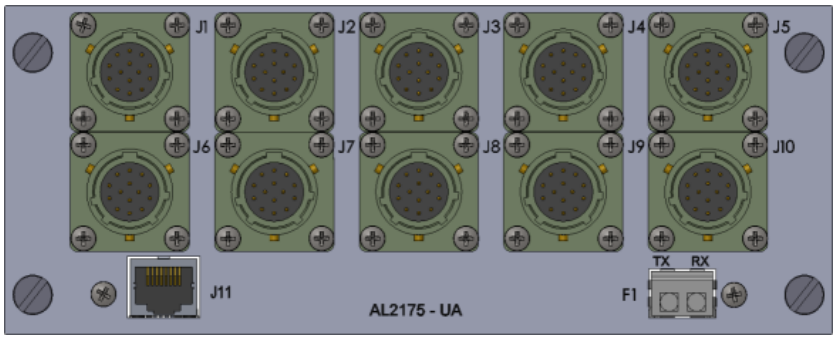
- RS-485 signals (bi-directional)
- RS-422
- Audio (line level)

These signals are split among multiple connectors, which will be defined in following sections.

AL2175-UA CONNECTORS

The AL2175-UA has three types of connectors:

- Ten 14-pin connectors (Amphenol 71-570123-14P) - J1 - J10
- One 8-pin RJ45 connector
- One duplex fiber-optic transceiver with LC connectors



The Connectors and pinouts are all designed to match with documentation provided. The following sections with define the pin-out of all of the connectors and correlate them to the provided CABLE LIST UPDATED document provided by the end user.

AL2175-UA J1 — Correlates to W26 from CABLE LIST UPDATED document

This connector routes to/from J1 of the AL2175-SPV module

J1 (W26) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	GSM TX AUDIO (+)	SPV → UA	Audio (line level)
2	GSM TX AUDIO (-)	SPV → UA	Audio (line level)
3	RED MIC AUDIO IN (HI)	UA → SPV	Audio (mic level)
4	RED MIC AUDIO IN (LO)	UA → SPV	Audio (mic level)
5	RED MIC AUDIO PTT	UA → SPV	Discrete

AL2175-UA J2 — Correlates to W27 from CABLE LIST UPDATED document

This connector routes to/from J2 of the AL2175-SPV module

J2 (W27) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	GSM RX AUDIO B(+)	SPV → UA	Audio (line level)
2	GSM RX AUDIO B(-)	SPV → UA	Audio (line level)

AL2175-UA J3 — Correlates to W30 from CABLE LIST UPDATED document

This connector routes to/from J3 of the AL2175-SPV module

J3 (W10) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	HPA ENABLE/DISABLE	UA → SPV	Discrete
2	ZEROIZE	UA → SPV	Discrete
3	BLACK DS-101 LOGIC REF	COMMON	GROUND
4	BLACK DS-101 DATA (+)	BI-DIRECTIONAL	RS-485
5	BLACK DS-101 DATA (-)	BI-DIRECTIONAL	RS-485
6	BLACK DS-101 WAKEUP	UA → SPV	Discrete

210 South Third Street, North Wales, PA 19454
Ph. 215-699-2060

AL2175-UA J4 — Correlates to W23 from CABLE LIST UPDATED document.

This connector routes to/from J4 of the AL2175-SPV module

J4 (W23) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	RT CONTROL DATA HI	UA → SPV	RS-422
2	RT CONTROL DATA LOW	UA → SPV	RS-422
3	RT3 DATA HI	SPV → UA	RS-422
4	RT3 DATA LOW	SPV → UA	RS-422
5	RT3 ON/OFF	UA → SPV	Discrete
6	TAKE CONTROL RT3	UA → SPV	Discrete
7	RT4 DATA HI	SPV → UA	RS-422
8	RT4 DATA LOW	SPV → UA	RS-422
9	RT4 ON/OFF	UA → SPV	Discrete
10	TAKE CONTROL RT4	UA → SPV	Discrete
11	SYS ON/OFF*	UA → SPV	Discrete

* Note: AL2175-UA J4 SYS ON/OFF signal is internally connected to AL2175 J8 SYS ON/OFF

AL2175-UA J5 — Correlates to W25 from CABLE LIST UPDATED document..

This connector routes to/from J5 of the AL2175-SPV module

J4 (W23) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	LSM SEND DATA (+)	UA → SPV	RS-422
2	LSM SEND DATA (-)	UA → SPV	RS-422
3	LSM SEND TIMING (+)	SPV → UA	RS-422
4	LSM SEND TIMING (-)	SPV → UA	RS-422
5	LSM CLEAR TO SEND (+)	SPV → UA	RS-422
6	LSM CLEAR TO SEND (-)	SPV → UA	RS-422
7	LSM REQUEST TO SEND (+)	UA → SPV	RS-422
8	LSM REQUEST TO SEND (-)	UA → SPV	RS-422
9	LSM RECEIVE DATA (+)	SPV → UA	RS-422
10	LSM RECEIVE DATA (-)	SPV → UA	RS-422
11	LSM RECEIVE TIMING (+)	SPV → UA	RS-422
12	LSM RECEIVE TIMING (-)	SPV → UA	RS-422

AL2175-UA J6 — Correlates to W28 from CABLE LIST UPDATED document.

This connector routes to/from J6 of the AL2175-SPV module

J6 (W28) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	GSM RX AUDIO C(+)	SPV → UA	Audio (line level)
2	GSM RX AUDIO C(-)	SPV → UA	Audio (line level)

AL2175-UA J7 — Correlates to W29 from CABLE LIST UPDATED document..

This connector routes to/from J7 of the AL2175-SPV module

J7 (W29) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	GSM RX AUDIO D(+)	SPV → UA	Audio (line level)
2	GSM RX AUDIO D(-)	SPV → UA	Audio (line level)

AL2175-UA J8 — Correlates to W22 from CABLE LIST UPDATED document..

This connector routes to/from J8 of the AL2175-SPV module

J8 (W22) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	RT CONTROL DATA HI	UA → SPV	RS-422
2	RT CONTROL DATA LOW	UA → SPV	RS-422
3	RT1 DATA HI	SPV → UA	RS-422
4	RT1 DATA LOW	SPV → UA	RS-422
5	RT1 ON/OFF	UA → SPV	Discrete
6	TAKE CONTROL RT1	UA → SPV	Discrete
7	RT2 DATA HI	SPV → UA	RS-422
8	RT2 DATA LOW	SPV → UA	RS-422
9	RT2 ON/OFF	UA → SPV	Discrete
10	TAKE CONTROL RT2	UA → SPV	Discrete
11	SYS ON/OFF*	UA → SPV	Discrete

* Note: AL2175-UA J8 SYS ON/OFF signal is internally connected to AL2175 J4 SYS ON/OFF

AL2175-UA J9 — Correlates to W31 from CABLE LIST UPDATED document.

This connector routes to/from J9 of the AL2175-SPV module

J9 (W31) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	HPA ENABLE/DISABLE	UA → SPV	Discrete
2	R/T ZEROIZE	UA → SPV	Discrete
3	RED DS-101 LOGIC REF	COMMON	GROUND
4	RED DS-101 DATA (+)	BI-DIRECTIONAL	RS-485
5	RED DS-101 DATA (-)	BI-DIRECTIONAL	RS-485
6	RED DS-101 WAKEUP	UA → SPV	Discrete

AL2175-UA J10 — Correlates to W24 from CABLE LIST UPDATED document..

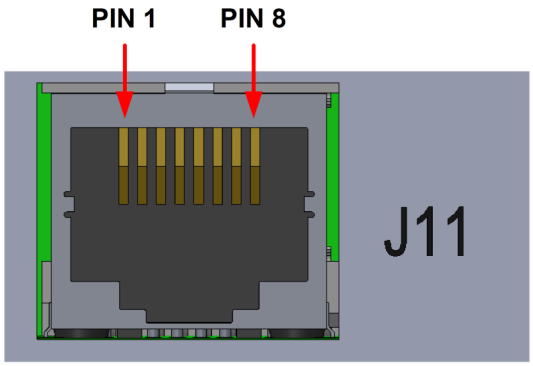
This connector routes to/from J10 of the AL2175-SPV module

J10 (W24) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	GSM SEND DATA (+)	UA → SPV	RS-422
2	GSM SEND DATA (-)	UA → SPV	RS-422
3	GSM SEND TIMING (+)	SPV → UA	RS-422
4	GSM SEND TIMING (-)	SPV → UA	RS-422
5	GSM CLEAR TO SEND (+)	SPV → UA	RS-422
6	GSM CLEAR TO SEND (-)	SPV → UA	RS-422
7	GSM REQUEST TO SEND (+)	UA → SPV	RS-422
8	GSM REQUEST TO SEND (-)	UA → SPV	RS-422
9	GSM RECEIVE DATA (+)	SPV → UA	RS-422
10	GSM RECEIVE DATA (-)	SPV → UA	RS-422
11	GSM RECEIVE TIMING (+)	SPV → UA	RS-422
12	GSM RECEIVE TIMING (-)	SPV → UA	RS-422

AL2175-UA J11 — Auxiliary RJ45 audio port

This connector routes to J11 of the AL2175-SPV module

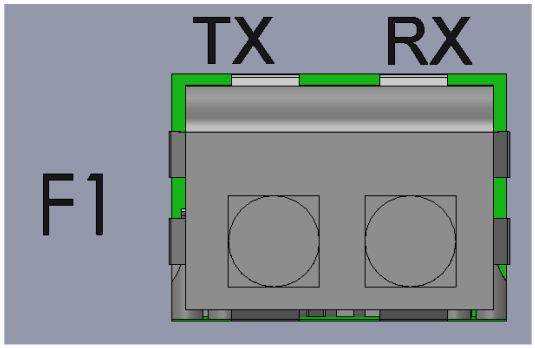
J11 pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	RJ45 AUDIO IN (+)	UA → SPV	Audio (line level)
2	RJ45 AUDIO IN (-)	UA → SPV	Audio (line level)
5	RJ45 AUDIO OUT (+)	SPV → UA	Audio (line level)
6	RJ45 AUDIO PTT	UA → SPV	Discrete
7	RJ45 AUDIO OUT (-)	SPV → UA	Audio (line level)



AL2175-UA F1 — Fiber Optic transmit/receive interface for AL2175-UA module

This connector connects to F1 of the AL2175-SPV module

F1 pin-out			
Pin Number	Signal Name	Direction	Signal Type
TX	Fiber Output	AL2175-UA → AL2175-SPV	850nm fiber optic
RX	Fiber Input	AL2175-SPV → AL2175-UA	850nm fiber optic



AL2175-SPV

The AL2175-SPV is a Al2175 chassis compatible module. The module connects to the users SPV UHFSATCOM/ LOS Radio. This module functions as a multiplexer/demultiplexer with a number of signals.

The signals that the AL2175-SPV multiplexes are:

- RS-485 signals (bi-directional)
- RS-422
- Audio (line and microphone level)

The signals that the AL2175-SPV demultiplexes are:

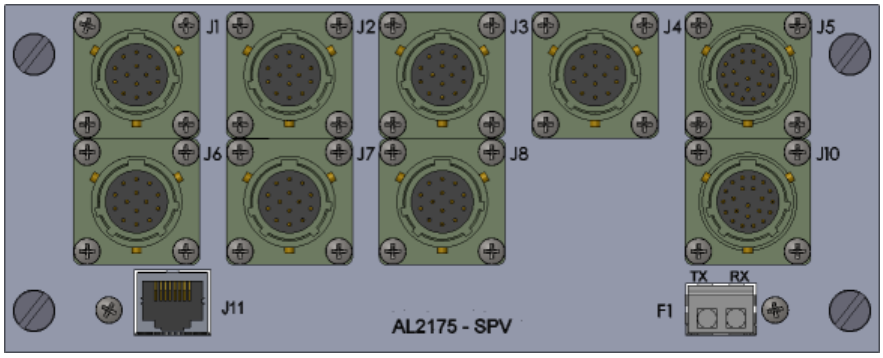
- Discrete signals
- RS-485 signals (bi-directional)
- RS-422
- Audio (line level)

These signals are split among multiple connectors, which will be defined in following sections.

AL2175-SPV CONNECTORS

The AL2175-UA has three types of connectors:

- Seven 14-pin connectors (Amphenol 71-570123-14P) - J1, J2, J3, J4, J6, J7, J8
- Two 22-pin connectors (Amphenol 88-569743-35P) - J5, J10
- One 8-pin RJ45 connector
- One duplex fiber-optic transceiver with LC connectors



The Connectors and pin-outs are all designed to match with documentation provided. The following sections with define the pin-out of all of the connectors and correlate them to the provided CABLE LIST UPDATED document provided by the end user.

AL2175-SPV J1 — Correlates to W13 from CABLE LIST UPDATED document

This connector routes to/from J1 of the AL2175-UA module

J1 (W13) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	GSM TX AUDIO (+)	SPV → UA	Audio (line level)
2	GSM TX AUDIO (-)	SPV → UA	Audio (line level)
3	RED MIC AUDIO IN (HI)	UA → SPV	Audio (mic level)
4	RED MIC AUDIO IN (LO)	UA → SPV	Audio (mic level)
5	RED MIC AUDIO PTT	UA → SPV	Discrete

AL2175-SPV J2 — Correlates to W14 from CABLE LIST UPDATED document

This connector routes to/from J2 of the AL2175-UA module

J2 (W27) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	GSM RX AUDIO B(+)	SPV → UA	Audio (line level)
2	GSM RX AUDIO B(-)	SPV → UA	Audio (line level)

AL2175-SPV J3 — Correlates to W10 from CABLE LIST UPDATED document

This connector routes to/from J3 of the AL2175-UA module

J3 (W10) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	HPA ENABLE/DISABLE	UA → SPV	Discrete
2	ZEROIZE	UA → SPV	Discrete
3	BLACK DS-101 LOGIC REF	COMMON	GROUND
4	BLACK DS-101 DATA (+)	BI-DIRECTIONAL	RS-485
5	BLACK DS-101 DATA (-)	BI-DIRECTIONAL	RS-485
6	BLACK DS-101 WAKEUP	UA → SPV	Discrete

210 South Third Street, North Wales, PA 19454
Ph. 215-699-2060

AL2175-SPV J4 — Correlates to W12 from CABLE LIST UPDATED document.

This connector routes to/from J4 of the AL2175-UA module

J4 (W23) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	RT CONTROL DATA HI	UA → SPV	RS-422
2	RT CONTROL DATA LOW	UA → SPV	RS-422
3	RT3 DATA HI	SPV → UA	RS-422
4	RT3 DATA LOW	SPV → UA	RS-422
5	RT3 ON/OFF	UA → SPV	Discrete
6	TAKE CONTROL RT3	UA → SPV	Discrete
7	RT4 DATA HI	SPV → UA	RS-422
8	RT4 DATA LOW	SPV → UA	RS-422
9	RT4 ON/OFF	UA → SPV	Discrete
10	TAKE CONTROL RT4	UA → SPV	Discrete

AL2175-SPV J5 — Correlates to W17 from CABLE LIST UPDATED document..

This connector routes to/from J5 of the AL2175-UA module

J5 (W17) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	LSM SEND DATA (+)	UA → SPV	RS-422
2	LSM SEND DATA (-)	UA → SPV	RS-422
3	LSM SEND TIMING (+)	SPV → UA	RS-422
4	LSM SEND TIMING (-)	SPV → UA	RS-422
5	LSM CLEAR TO SEND (+)	SPV → UA	RS-422
6	LSM CLEAR TO SEND (-)	SPV → UA	RS-422
7	LSM REQUEST TO SEND (+)	UA → SPV	RS-422
8	LSM REQUEST TO SEND (-)	UA → SPV	RS-422
9	LSM RECEIVE DATA (+)	SPV → UA	RS-422
10	LSM RECEIVE DATA (-)	SPV → UA	RS-422
11	LSM RECEIVE TIMING (+)	SPV → UA	RS-422
12	LSM RECEIVE TIMING (-)	SPV → UA	RS-422
13	RED DS-101 LOGIC REF	COMMON	Ground
14	RED DS-101 DATA (+)	BI-DIRECTIONAL	RS-485
15	RED DS-101 DATA (-)	BI-DIRECTIONAL	RS-485
16	RED DS-101 WAKEUP	UA → SPV	Discrete

210 South Third Street, North Wales, PA 19454
Ph. 215-699-2060

AL2175-SPV J6 — Correlates to W15 from CABLE LIST UPDATED document.

This connector routes to/from J6 of the AL2175-UA module

J6 (W15) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	GSM RX AUDIO C(+)	SPV → UA	Audio (line level)
2	GSM RX AUDIO C(-)	SPV → UA	Audio (line level)

AL2175-UA J7 — Correlates to W16 from CABLE LIST UPDATED document..

This connector routes to/from J7 of the AL2175-UA module

J7 (W16) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	GSM RX AUDIO D(+)	SPV → UA	Audio (line level)
2	GSM RX AUDIO D(-)	SPV → UA	Audio (line level)

AL2175-UA J8 — Correlates to W11 from CABLE LIST UPDATED document..

This connector routes to/from J8 of the AL2175-UA module

J8 (W11) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	RT CONTROL DATA HI	UA → SPV	RS-422
2	RT CONTROL DATA LOW	UA → SPV	RS-422
3	RT1 DATA HI	SPV → UA	RS-422
4	RT1 DATA LOW	SPV → UA	RS-422
5	RT1 ON/OFF	UA → SPV	Discrete
6	TAKE CONTROL RT1	UA → SPV	Discrete
7	RT2 DATA HI	SPV → UA	RS-422
8	RT2 DATA LOW	SPV → UA	RS-422
9	RT2 ON/OFF	UA → SPV	Discrete
10	TAKE CONTROL RT2	UA → SPV	Discrete

210 South Third Street, North Wales, PA 19454
Ph. 215-699-2060

AL2175-SPV J10 — Correlates to W33 from CABLE LIST UPDATED document..

This connector routes to/from J9 and J10 of the AL2175-UA module

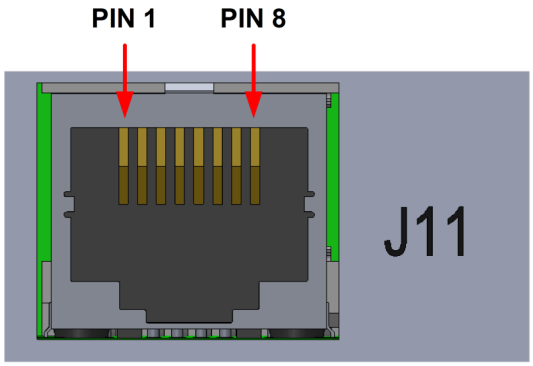
J10 (W24) pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	GSM SEND DATA (+)	UA → SPV	RS-422
2	GSM SEND DATA (-)	UA → SPV	RS-422
3	GSM SEND TIMING (+)	SPV → UA	RS-422
4	GSM SEND TIMING (-)	SPV → UA	RS-422
5	GSM CLEAR TO SEND (+)	SPV → UA	RS-422
6	GSM CLEAR TO SEND (-)	SPV → UA	RS-422
7	GSM REQUEST TO SEND (+)	UA → SPV	RS-422
8	GSM REQUEST TO SEND (-)	UA → SPV	RS-422
9	GSM RECEIVE DATA (+)	SPV → UA	RS-422
10	GSM RECEIVE DATA (-)	SPV → UA	RS-422
11	GSM RECEIVE TIMING (+)	SPV → UA	RS-422
12	GSM RECEIVE TIMING (-)	SPV → UA	RS-422
13	RED DS-101 LOGIC REF	COMMON	Ground
14	RED DS-101 DATA(+)	BI-DIRECTIONAL	RS-485
15	RED DS_101 DATA (-)	BI_DIRECTIONAL	RS-485
16	RED DS-101 WAKEUP	UA → SPV	Discrete

210 South Third Street, North Wales, PA 19454
Ph. 215-699-2060

AL2175-SPV J11 — Auxiliary RJ45 audio port

This connector routes to J11 of the AL2175-UA module

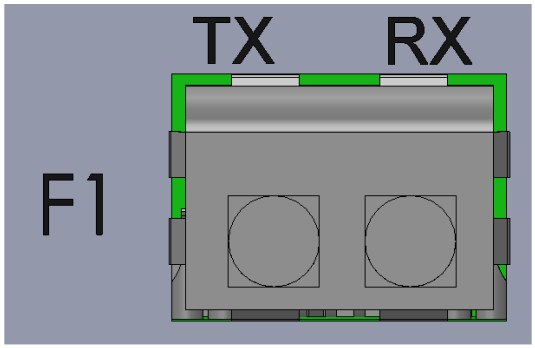
J11 pin-out			
Pin Number	Signal Name	Direction	Signal Type
1	RJ45 AUDIO IN (+)	SPV → UA	Audio (line level)
2	RJ45 AUDIO IN (-)	SPV → UA	Audio (line level)
5	RJ45 AUDIO OUT (+)	UA → SPV	Audio (line level)
6	RJ45 AUDIO PTT	SPV → UA	Discrete
7	RJ45 AUDIO OUT (-)	UA → SPV	Audio (line level)



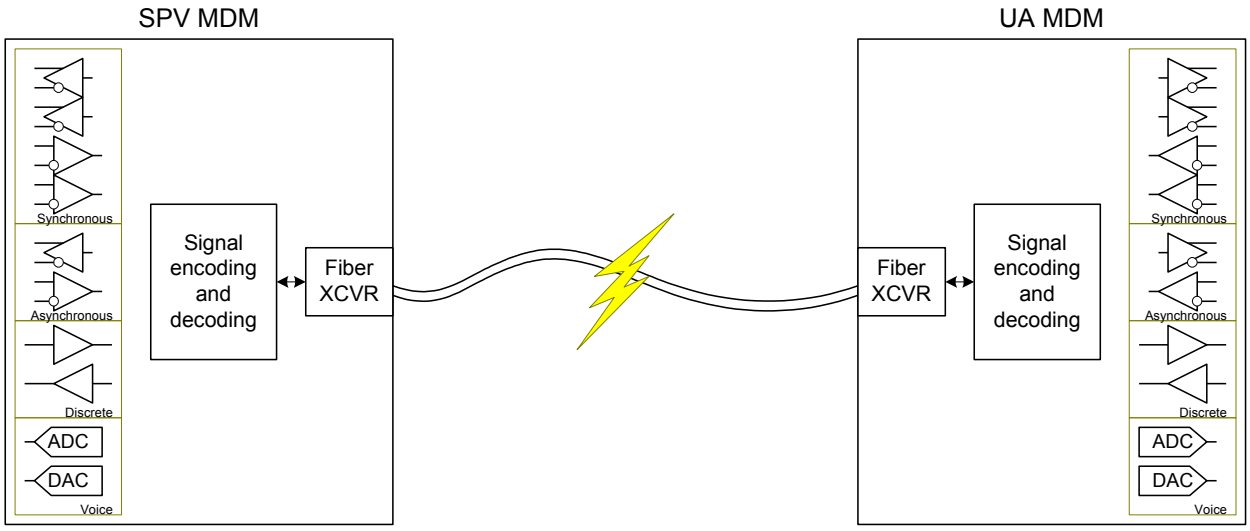
AL2175-SPV F1 — Fiber Optic transmit/receive interface for AL2175-SPV module

This connector connects to F1 of the AL2175-UA module

F1 pin-out			
Pin Number	Signal Name	Direction	Signal Type
TX	Fiber Output	AL2175-SPV → AL2175-UA	850nm fiber optic
RX	Fiber Input	AL2175-UA → AL2175-SPV	850nm fiber optic



OPERATION



The AL2175 system is designed to operate in a manner that allows for simple operation.

MODULE CONNECTION

Once the chassis has been installed. The appropriates signals need to be connected to the connectors according to the tables on the previous pages. The connector pin-out is designed to match the Cable LIST UPDATED document provided by the customer.

CHASSIS CONNECTION

The two chassis need to connected to each other to allow the systems to operate. This is simply done by connecting a multi-mode fiber with LC connectors between the modules TX and RX ports.

The AL2157-UA [F1 TX] port connects to the AL2175-SPV [F1 RX] port

The AL2175-SPV [F1 TX] port connects to the AL2175-UA [F1 RX] port

DATA FLOW

Once the modules are connected to their signals and the modules fiber optic links art connected together, the systems need to be powered on and data will flow between the modules.

210 South Third Street, North Wales, PA 19454
Ph. 215-699-2060

CHASSIS SPECIFICATIONS

CHASSIS DIMENSIONS

- 3.5” high x 19” wide x 16” deep
- Rack mount (standard EIA rack) or stand alone

WEIGHT

- 15 lbs without modules
- Approximately 8-16 oz per module

POWER

- Dual redundant supplies
- 90 VAC to 240 VAC, single phase, auto select
- 47 Hz to 63 Hz
- 150 watts
- Rear panel power switch

CHASSIS STATUS

- Front Panel LEDs for status of each power supply

ENVIRONMENTAL

- 0°C to 40°C operating temperature
- -20°C to 70°C storage temperature
- 15% to 95% relative humidity; non-condensing
- 10,000 feet altitude

ADDITIONAL APPLICATION MODULES

- Available upon request

MODULE SPECIFICATIONS

MODULE INTERFACES

- RS-422 (simplex differential)
- RS-485 (bi-directional differential)
- Discrete (open collector style outputs)
- Audio (line level and mic level signals)

PHYSICAL

- Data Interface:
  - Amphenol 71-570123-14P
  - Amphenol 88-569743-35P
- Auxiliary Audio/PTT: RJ-45
- Fiber Interface: Dual LC connectors

SIGNAL SPCIFICATIONS

RS-422/RS-485

- RS-485/RS-422 input
  - Data high: HI(+) > LOW (-) by 50mV or greater
  - Data low: LOW(-) > HI(+) by 200 mV or greater
  - 120Ω (±5%) impedance from HI(+) to LOW(-)
- RS-485/RS-422 output
  - Data high:
    - HI(+) > LOW(-) by 2V or greater into 60Ω
  - Data low:
    - LOW(-) > HIGH(+) by 2V or greater into 60Ω
- RS-485/RS-422 Timing
  - Signal path delay: < 5.2 uS (input to output)
  - Signal jitter: < 50nS (input to output)
- RS-485/RS-422 Timing
  - Signal path delay: < 5.2 uS (input to output)

FIBER INTERFACE

- LC Connectors
- Multi-mode fiber
- 850nm Center frequency
- Transmitter
  - Optical power output: -9.5bD min; -4dB max
  - Center Wavelength: 830nm min; 860nm max
- Receiver
  - Receiver sensitivity: -17dB max
  - Receiver Saturation: -3dB min

DISCRETES

- Discrete input
  - Pull-up 4.75K (±5%) to 12V
  - Data high: > 2V reference to ground
  - Data low: < 0.8V reference to ground
- Discrete output
  - Open collector output
    - Low drives to GND
    - High: Hi impedance
- Discrete Timing
  - Signal path delay: < 5.2 uS (input to output)
  - Signal jitter: < 5.2 uS (input to output)

AUDIO

- Audio input
  - Capacitively coupled inputs:10uF
  - Line level: 9.5K (±5%) to GND
  - Line level: 2.5V pk-pk input before saturation
  - MIC level: 10K to 8V BIAS circuit
- Audio output
  - Capacitively coupled outputs:10uF
  - Load: Drives loads $\geq 600\Omega$
  - output level: 2.5V pk-pk max
- Audio Timing
  - Signal path delay: < 20 uS (input to output)