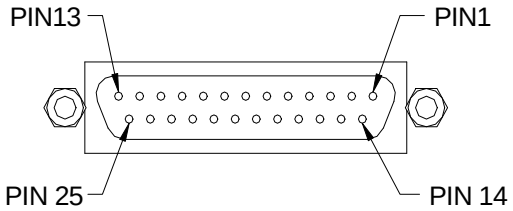
M-Series RF Power Supply (Generator) Analog Interface Connections

The analog interface connector is located on the rear panel of the Radio Frequency Power Supply. Control and status signals for the RF Power Supply are available on this connector. See the tables below for descriptions of the interface connector signals.

The 25-pin M-Series Analog Interface is pin-compatible with the 25-pin Analog Interface used on the Seren IPS R/LX01-Series and HR-Series RF power supplies, however not all features and functions of the R/LX01-Series or HR-Series RF power supplies are supported.

Analog Interface Connector Pin List – 25-Pin Female Analog Interface



Pin Locations, 25-Pin Analog Interface Connector

PIN LIST: M-SERIES 25-PIN FEMALE ANALOG INTERFACE CONNECTOR		
PIN	**SIGNAL NAME**	**DESCRIPTION**
1	(No Connection)	No connection / Not used.
2	INTERLOCK	External Interlock. TTL – compatible input, active low, with an internal pull-up resistor. A contact closure between pin 2 and pin 15 or a TTL "low" signal applied to pin 2 is required before the RF output can be enabled. An open circuit or a TTL "high" signal applied to pin 2 while the RF output is enabled, will cause the RF output to turn off. An open circuit or a TTL "high" signal applied to pin 2 while the RF output is off, will prevent the RF output from being enabled. This signal is active in all control modes.
3	RFON*	RF Output Enable/Disable. TTL – compatible input, active low, edge triggered, with an internal pull-up resistor. A contact closure between pin 3 and pin 16 or a TTL signal transition from "high" to "low" applied to pin 3 enables the RF output, provided Pin 2 is at TTL "low" state. An open circuit between pin 3 and pin 16 or a TTL signal transition from "low" to "high" applied to pin 3 disables the RF output. This signal is active only in "Analog" control mode.

PIN LIST: M-SERIES 25-PIN FEMALE ANALOG INTERFACE CONNECTOR		
PIN	**SIGNAL NAME**	**DESCRIPTION**
4	PWR/VLT*	Power or Voltage leveling mode select. TTL – compatible input with internal pull-up resistor. An open circuit or TTL "high" signal applied to pin 4 selects the power supply's internal power sensor for power regulation. A contact closure between pin 4 and pin 16 or a TTL "low" signal applied to pin 4 selects forward power regulation based on an external feedback signal (FEEDBACK signal – Pin 12). Refer to the controls section of the operator's manual for detailed instructions on how to configure and use this mode.
5	(No Connection)	No connection / Not used.
6	(No Connection)	No connection / Not used.
7	(No Connection)	No connection / Not used.
8	RFENABLED*	RF output status signal. Active low, open collector output. 24VDC maximum, 15mA maximum current sink, 150mW maximum power dissipation. Internally pulled-up to +5VDC via a 10K-Ohm resistor. Signal output is 0V ("low") for an RF on condition; signal output is "open" (or "high", with +5V pull-up enabled) for an RF off condition. The RFENABLED* signal can also indicate the presence of excessive reflected power by changing from a "low" state to a "high" state when the RF output is enabled. Refer to "Reflected Power Alarm ON/OFF" and "Reflected Alarm Threshold" in the Programmable Parameters section for details. The RFENABLED* output signal may also be used to pre-position Seren IPS Inc. AT-Series Matching Networks. Refer to "Matching Network Preset Mode", "Tune Capacitor Preset Position", and "Load Capacitor Preset Position" in the Programmable Parameters section. Requires +5VDC pull-up enabled. **Note:** This pin may be configured as internally pulled up to +5VDC (factory default configuration) or without a +5VDC pull-up. (OEM custom configurations). Configuration is set at the factory. Use pin 18 for a reference return.

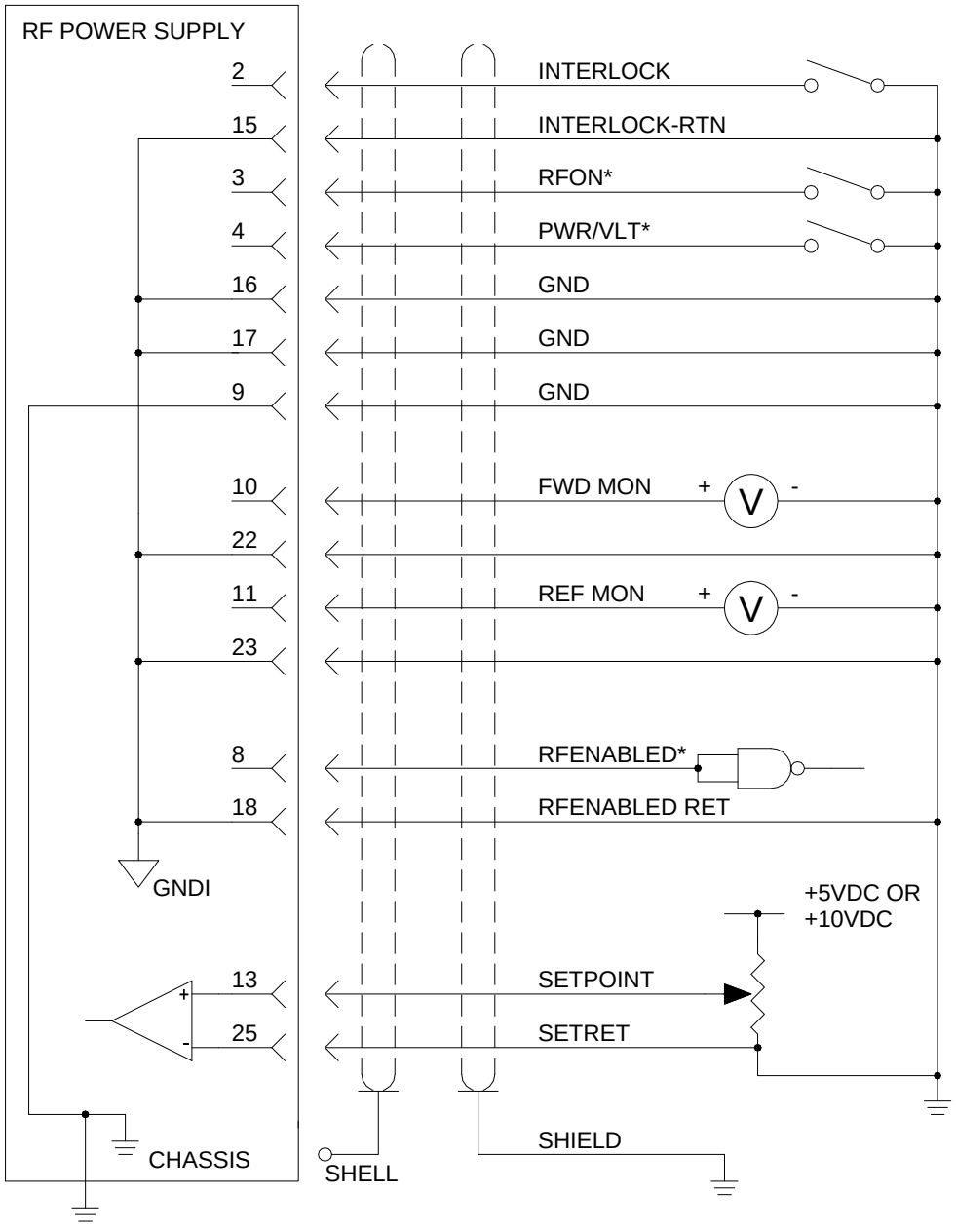
PIN LIST: M-SERIES 25-PIN FEMALE ANALOG INTERFACE CONNECTOR		
PIN	**SIGNAL NAME**	**DESCRIPTION**
9	GND	Internally connected to chassis ground. Connect to system controller common or ground reference. Return reference for Forward Power Monitor output signal (pin 10) and Reflected Power Monitor output signal (pin 11).
10	FWD MON	Forward power monitor output signal. Analog output, selectable 0 to +5VDC or 0 to +10VDC range. High Power Range: Output is linearly proportional to 0 to 100% of rated forward power. Low Power Range: Output is linearly proportional to 0 to 10% of rated forward power. (standard configurations - see Output Power Range Select parameter detail). Refer to the Power Monitor Scaling subsection in the appropriate model specification for forward power monitor scaling details. The forward power monitor output signal may also be used to pre-position Seren IPS Inc. AT-Series and ATS-Series Matching Networks. Refer to “Matching Network Preset Mode”, “Tune Capacitor Preset Position”, and “Load Capacitor Preset Position” in the Programmable Parameters section of the operator's manual. Measure monitor voltage with respect to pin 9 (GND)
11	REFP MON	Reflected power monitor output signal. Analog output, selectable 0 to +5VDC or 0 to +10VDC range. High Power Range: Output is linearly proportional to 0 to 100% of rated reflected power. Low Power Range: Output is linearly proportional to 0 to 10% of rated reflected power. (standard configurations - see Output Power Range Select parameter detail). Refer to the Power Monitor Scaling subsection in the appropriate model specification for reflected power monitor scaling details. The reflected power monitor output signal may also be used to pre-position Seren IPS Inc. AT-Series and ATS-Series Matching Networks. Refer to “Matching Network Preset Mode”, “Tune Capacitor Preset Position”, and “Load Capacitor Preset Position” in the Programmable Parameters section of the operator's manual. Measure monitor voltage with respect to pin 9 (GND).

PIN LIST: M-SERIES 25-PIN FEMALE ANALOG INTERFACE CONNECTOR		
PIN	**SIGNAL NAME**	**DESCRIPTION**
12	FEEDBACK	External feedback voltage signal. Analog input, 0 to +10.0VDC . Use pin 16 or 17 or (GNDI) for return reference. The RF Power Supply will automatically adjust its output power to maintain the FEEDBACK signal's magnitude at the same level as the SETPOINT signal magnitude. The PROBE voltage can be displayed on the optional Display Panel or retrieved via the communications interface (Serial, Ethernet). The PROBE attenuation factor can be configured from the optional Display Panel or through the communications interface (Serial, Ethernet). The external feedback signal is derived from a voltage probe (RF or DC) located elsewhere in the plasma or process system. Refer to the controls section for detailed instructions on how to configure and use this mode. Note: The feedback voltage polarity must be Positive (+). The RF Power Supply's external feedback circuitry is not designed to function with Negative (-) polarity signals applied to this pin.
13	SETPOINT	Power or Voltage setpoint input. Analog, high-impedance, differential input with selectable 0 to +5.0VDC or 0 to +10.0VDC range. High Power Range: Input is linearly proportional to 0 to 100% of rated forward power. Low Power Range: Input is linearly proportional to 0 to 10% of rated forward power. (standard configurations - see Output Power Range Select parameter detail). Refer to the controls section of the operator's manual for detailed instructions on how to configure and use this mode. Note: SETRET (pin 25) *MUST* be referenced to common or ground at the setpoint voltage source (system controller) or the RF output power will behave erratically. Refer to the Analog Setpoint Sensitivity subsection of the appropriate model specification for setpoint sensitivity details. Note: Feedback voltage range and polarity must match setpoint voltage range and polarity for proper operation in voltage control mode. **Active only in ANALOG control mode.**
14	(No Connection)	No connection / Not used.
15	INTERLOCK-RTN (GNDI)	Ground return for External Interlock (pin 2). Internally connected to isolated ground.
16	GNDI	Ground return for pins 3 and 4. Internally connected to isolated ground. Connect to system controller common or ground reference

PIN LIST: M-SERIES 25-PIN FEMALE ANALOG INTERFACE CONNECTOR		
PIN	**SIGNAL NAME**	**DESCRIPTION**
17	GNDI	Ground return for pins 3 and 4. Internally connected to isolated ground. Connect to system controller common or ground reference.
18	RFENABLED RET (GNDI)	Ground return for pin 8 (RFENABLED* signal). Internally connected to isolated ground. Connect to system controller common or ground reference.
19	(No Connection)	No connection / Not used.
20	(No Connection)	No connection / Not used.
21	(No Connection)	No connection / Not used.
22	GNDI	Isolated Ground. Connect to system controller common or ground reference
23	GNDI	Isolated Ground. Connect to system controller common or ground reference
24	GNDI	Isolated Ground. Connect to system controller common or ground reference.
25	SETRET (GNDI)	Setpoint Return. Internally connected to isolated ground. Note: This pin ***must*** be connected to a ground reference or the unit's output will behave erratically.

Typical Analog Interface Connections (Analog Control)

There are many possible analog interface wiring schemes. Basic analog interface connections are diagrammed below. Refer to the Analog Interface Connector pin list in the Rear Panel Controls and Connections section of the operator's manual for signal details. Use shielded cable for all interconnections.



Typical Analog Interface Connections

Notes:

- The information in this document is provided as a convenience. For detailed information, consult the product's Operator's Manual.
- For assistance with technical matters, contact your local Seren IPS Inc. representative or the factory.
- All features or functions may not be supported on OEM and custom-configured products.
- In the event of a discrepancy between this document and the product Operator's Manual, the Operator's Manual is the prevailing authority.
- Specifications and information in this document subject to change without notice.