

LAN Programming Guide



Programming Reference Guide for LadyBug Power Sensors with PoE
Connectivity Compliant Options Added



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Overview

This manual is intended to describe supported SCPI commands specifics for LadyBug power sensors with a PoE interface. Please note that the details of the hi-slip driver, PoE Standards, Recommended Visa, and basic connectivity are covered in other supporting documents, please visit <https://www.ladybug-tech.com/product/lan-options> for details (link in QR code).



Instrument Operational Theory

LadyBug Lan instruments are built from a sensor upgraded with a non-detachable Lan module. The majority of commands sent to the LAN module are passed from the LAN module to the sensor uninterrupted. The LAN Module itself intercepts a set of SYSTEM commands that are NOT sent to the sensor. Please note, that the SCPI commands covered in this document are only the commands specific to the LAN module-So, only a subset of all SYSTEM commands are covered. For the complete set of Sensor SCPI commands, please consult the relevant power sensor product manual. Please Visit <https://www.ladybug-tech.com/resources/#lb59-support>



Introduction to the SCPI Language

Standard Commands for Programmable Instruments (SCPI) is an ASCII-based instrument command language designed for test and measurement instruments. SCPI commands are based on a hierarchical structure. Syntax, allowable characters etc. are described below:

Allowable characters:

* ? . , + - :

“ ” or space

A-Z, a-z, 0-9

Please note, SCPI are case insensitive, and consecutive spaces are treated as one single space

Command structure:

All communication (or commands) sent to the sensor are composed of one or two parts. These parts are the command and the parameters. Commands are separated from parameters by a single space. So, the headers “SENS” and “FREQ” can be combined with Parameter “10.0e6” to create the complete command “SENS:FREQ 10.0e6”

Command

Commands are composed of one or more headers. A header is 3-12 characters in length. Headers can be concatenated using a colon.

- A single header – FREQ?
- Concatenated headers – SENS:FREQ:CW

Parameters

Parameters are limited to floating point numbers, integers, Boolean and text. The number and types of parameters are specific to each command. Parameters are concatenated by commas

- A single parameter 10
- Multiple parameters 10, 3
- Another example of multiple parameters 10.0e6, 3.0

The following command will set the frequency to 1.02GHz. Note that the command is FREQ and the parameter is 1.02E+9 and they are separated by a space.

```
FREQ 1.02E+9
```

Command Conventions

This manual uses the most common conventions for expressing SPCI commands, The conventions are:

- Brackets [] identify optional headers of a command. Brackets may be nested. Any header designated as optional may be omitted. Consider the following definition of a command:

[SENSe[1]:]FREQuency[:CW]:FIXed] <numeric_value>

Given this definition the following commands are equivalent:

FREQUENCY 100MHZ	omitting all optional headers
SENSE1:FREQUENCY 100MHZ	including the SENSE[1] header

- A vertical line | is used in the definitions to delineate mutually exclusive portions. All of the following are acceptable and equivalent. In these examples the focus is on the **[:CW]:FIXed]** portion of the command:

[SENSe[1]:]FREQuency[:CW]:FIXed]

FREQ:CW	selecting the [:CW] option
FREQ:FIXED	selecting the [:FIXed] option

- Upper and lower case letters in a definition delineates the short form (or abbreviation) and the long form of a header. The upper case letters indicate the short or abbreviated form of a header. The entire header (upper and lower case) represents the long form of the header. Consider the following command definition:

[SENSe[1]:]FREQuency[:CW]:FIXed]

Given the previous command definition, the following are equivalent:

FREQUENCY 100.0E+6	uses a long header, excludes all options
SENSE1:FREQUENCY 100MHZ	includes the optional [1]

- In some cases units may be appended to a numeric value. However, this is always specific to the command. For instance:

FREQ 1.3MHZ	includes the units
FREQ 1.3E+6	does not include the units

Commands, System Communication

SYSTem:COMMunicate:LAN:AIP[:STATe]

Command:

SYST:COMM:LAN:AIP [0|1|ON|OFF]

Sets state of AutoIP (Self assigned IP addresses protocol)
Saved to permanent memory, applied after reboot.

Query:

SYST:COMM:LAN:AIP?

Gets state of AutoIP?

Default state is enabled.

SYSTem:COMMunicate:LAN:DHCP[:STATe]

Command:

SYST:COMM:LAN:DHCP [0|1|ON|OFF]

Sets state of DHCP (Dynamic Host Configuration Protocol)
Saved to permanent memory, applied after reboot.

Query:

SYST:COMM:LAN:DHCP?

Gets state of DHCP

Default state is enabled.

SYSTem:COMMunicate:LAN:ADDRess

Command:

SYST:COMM:LAN:ADDR <0-255>,<0-255>,<0-255>,<0-255>

Sets the fixed LAN IP address.
Saved to permanent memory, applied after reboot.

Query:

SYST:COMM:LAN:ADDR? RETURNS <0-255>.<0-255>.<0-255>.<0-255>

Gets the saved fixed LAN IP address.

SYSTem:COMMunicate:LAN:DGATeway

Command:

SYST:COMM:LAN:DGAT <0-255>,<0-255>,<0-255>,<0-255>

Sets the fixed gateway address.

Saved to permanent memory, applied after reboot.

Query:

SYST:COMM:LAN:DGAT? RETURNS <0-255>.<0-255>.<0-255>.<0-255>

Gets the saved fixed gateway address.

SYSTem:COMMunicate:LAN:DNAMe

Command:

SYST:COMM:LAN:DNAM "yoursite.com"

Sets the fixed domain name.

Saved to permanent memory, applied after reboot. 16 character max

Query:

SYST:COMM:LAN:DNAM? RETURNS yoursite.com

Gets the saved domain name.

SYSTem:COMMunicate:LAN:HNAME

Command:

SYST:COMM:LAN:HNAM "Your-Host-Name"

Sets the fixed host name.

Saved to permanent memory, applied after reboot. 15 character max

Query:

SYST:COMM:LAN:HNAM? RETURNS Your-Host-Name

Gets the saved host name.

Factory format for LB sensors = LB-MODEL-SERIAL (LB-5908A-123456)

SYSTem:COMMunicate:LAN:MAC?

Query Only:

SYST:COMM:LAN:MAC? RETURNS 00:80:E1:00:00:00

Gets the current MAC address.

SYSTem:COMMunicate:LAN:SMASk

Command:

SYST:COMM:LAN:SMAS <0-255>,<0-255>,<0-255>,<0-255>

Sets the fixed subnet mask

Saved to permanent memory, applied after reboot.

Query:

SYST:COMM:LAN:SMAS? RETURNS 255.255.255.0

Gets the saved fixed sub net mask.

SYSTem:COMMunicate:LAN:REStart

Command only:

SYST:COMM:LAN:REST

Reboots the ethernet module.

SYSTem:COMMunicate:LAN:CURRent:ADDRes?

Query only:

SYST:COMM:LAN:CURR:ADDR? RETURNS <0-255>.<0-255>.<0-255>.<0-255>

Gets the current lan address.

SYSTem:COMMunicate:LAN:CURRent:DGATeway?

Query only:

SYST:COMM:LAN:CURR:DGAT? RETURNS <0-255>.<0-255>.<0-255>.<0-255>

Gets the current Gateway address.

SYSTEM:COMMunicate:LAN:CURRENT:DNAMe?

Query only:

SYST:COMM:LAN:CURR:DNAM? RETURNS currentDomainName

Gets the current domain name.

SYSTEM:COMMunicate:LAN:CURRENT:SMASk?

Query only:

SYST:COMM:LAN:CURR:SMAS? RETURNS <0-255>.<0-255>.<0-255>.<0-255>

Gets the current subnet mask.

SYSTEM:COMMunicate:LAN:KEEPalive

Command:

SYST:COMM:LAN:KEEP <0-7200>

Sets the keep alive value in seconds.
Saved to permanent memory, applied after reboot.

Query:

SYST:COMM:LAN:KEEP? RETURNS 45

Gets the saved keep alive value.

Default value is 45.

SYSTEM:COMMunicate:TCPip:CONTROL?

Query only:

SYST:COMM:TCP:CONT? RETURNS 4880

Gets the tcp control port number.

SYSTem:COMMunicate:LAN:HELP:HEADer?

Query only:

SYST:COMM:LAN:HELP:HEAD? RETURNS <list of all ethernet module commands>