LadyBug® TECHNOLOGIES LLC

LAN Programming Guide

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

Contents

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 HiSLIP 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 un-interrupted. 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" cab 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] <numberic_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:ADDRess?

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 5025
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>

LAN Interface Reset

In the event that the sensor becomes un-accessible, the LAN interface can be reset.

To reset the LAN interface, disconnect the sensor from power, insert the supplied “SD” size card as shown at right, then power up the sensor using a PoE enabled device. The sensor will revert to DHCP mode with self-assign static address if no DHCP server is connected within 1 minute.

Change Guide

FW Version 01.066 and later

SYST:COMM:TCP:CONT?

Change: RETURNS Port Number 5025 - Previous Port Number was 4880