Variable ISI
Channel

# CLE1500

# Remote Command Manual

for

**CLE1500-T1**

**for firmware version 1.0**

**Rev 1.0** | **May 2025**

**ARTEK INC.**

# 1. Setup

This manual explains how to build a code to control CLE1500 series remotely.



## 1-1 Remote Interface

CLE1500 has two types of remote interface

- Ethernet
- USB 2.0

IMPORTANT:

> When both Ethernet and USB are connected to CLE1500, the ethernet I/F will be disabled and only USB becomes available.

## 1-2 Ethernet

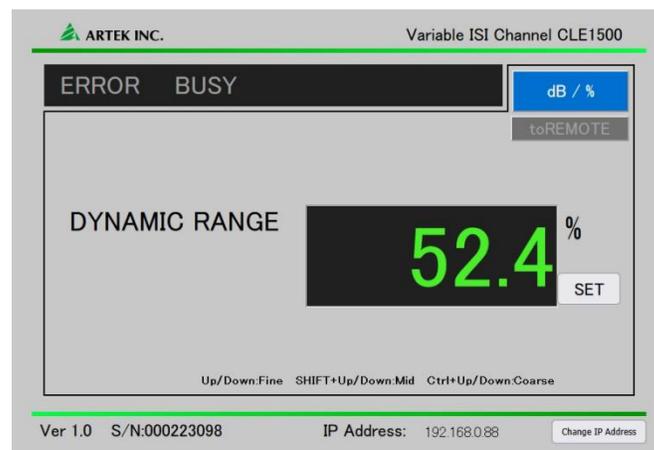## System requirement & Interfaces

- 10Base-T, 100Base-TX
- TCP/IP Socket protocol

## Default IP address

Default IP address:    192.168.0.88

Subnet Mask:    255.255.255.0

## Changing IP address

- Start a "internet browser"
- Type in the current IP address in the address bar
- A diagram starts up and click "Change IP Address" at the bottom-right section.



- Enter desired IP address and click "Apply"
- Restart CLE1500 by turning off and on

## 1-3 USB

### System Requirement

- Windows 10, 11
- USB2.0 Interface (USBCDC Class)
- Artek USB driver (downloadable from our official website)

### Installing the Driver

- Download the software package
- Unzip the package
- Execute CleSetup.exe

❖ The CLE1500 is installed as one of the COM ports. Control is done by sending (or reading) IEEE compatible ANSI text to (and from) the COM port.

❖ When the driver is installed correctly, you will find it at Device Manager, under Ports(COM & LTP) as "Variable ISI Channel".
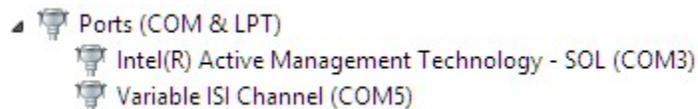


❖ If the driver does not install correctly, do the followings.

- Start "Device Manger" from Control Panel of MS-Windows

- Look for "unknown device" or "CLE1500"

- Select and double click the device, then you will see the following diagram.

- Update the driver specifying the CD drive or the unzipped folder.

# Designating COM Port Number

The COM Port number for CLE1500 is automatically assigned by the system. You can always designate your desired number at property setting of the driver.

- Start Device Manager and double click the "Variable ISI Channel" under Ports(COM & LTP)
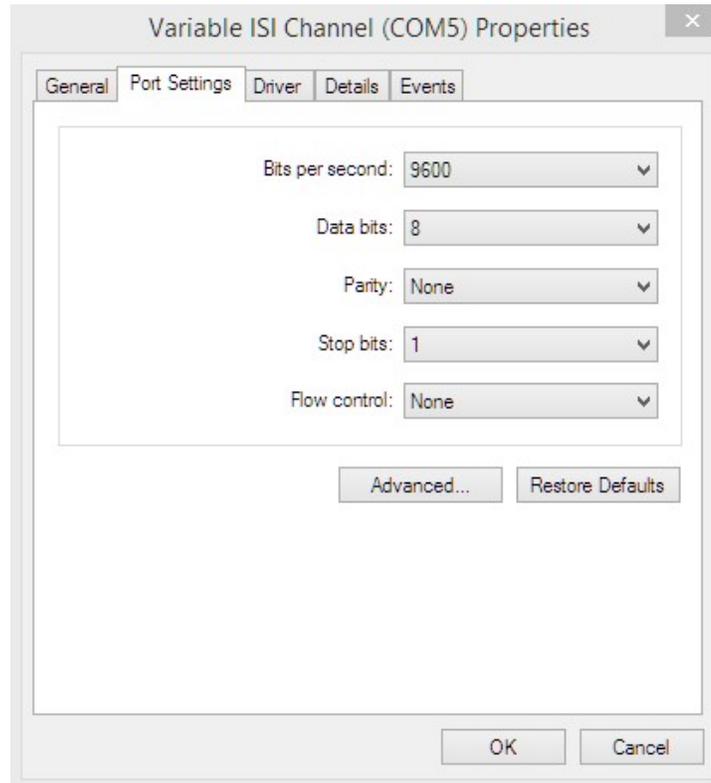


- Go to "Port Setting" Tab and click "Advanced".
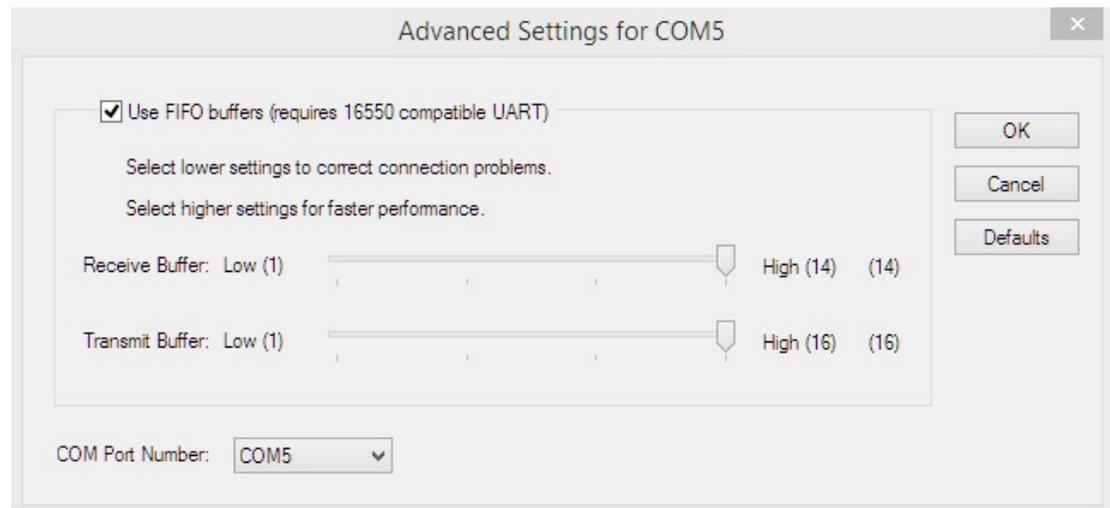


- Change the COM Port Number.

# Control from Other Operating System

The operation under the operating system rather than MS-Windows 10 and 11 is not guaranteed, however the following information is disclosed for user convenience.

The CLE1500 communicates with a remote host via USB interface. USBCDC Class is applied and handled as RS232C serial interface. CLE1500 constructs USB I/F without FTDI part, but it complies the standard USB Communications Device Class. The Communications Device Class is not OS dependent and other operation system such as Linux has drivers comply to it.

# 2. Sample Code

Listed here are Python sample code both Ethernet and USB

## 2-1 Python Sample Code for Ethernet I/F

```
# Sapmle program for CLE1500
#!/usr/bin/python

import socket

def SocketOpen():
 print "OPEN"
 host = "192.168.0.88"
 port = 10001
 s = socket.socket()
 s.connect((host, port))
 s.settimeout(40)        #time out 40sec
 return s

def SocketSend(sckt,cmd):
 print "SEND[ "+ cmd +" ]"
 cmd+="¥n"
 sendlen=sckt.send(cmd)
 return sendlen

def RecvLine(sckt):
 readstr=""
 while True:
  readchar=sckt.recv(1)
  if (readchar=="¥n"):
   break
  else:
   readstr+=readchar
 print "RECV[ "+readstr+" ]"
 return readstr

def SocketClose(sckt):
 print "CLOSE"
 sckt.close()
 return
```

```
s=SocketOpen()
SocketSend(s,"*IDN?")
recvstr=RecvLine(s)
if (recvstr.find("CLE1500")==-1):
  print "Not CLE1500"
else:
  # read all error message
  while True:
    SocketSend(s,":SYST:ERR?")
    recvstr=RecvLine(s)
    if (recvstr.find("NO ERROR")>=0):
      break
    else:
      print recvstr

# to remote mode
SocketSend(s,":SYST:REM;*OPC?")
recvstr=RecvLine(s)

# IL mode
SocketSend(s,":ISI:MODE I;*OPC?")
recvstr=RecvLine(s)

# Question range & set frequency 28.4GHz
SocketSend(s,":ISI:RANG? 2840")
recvstr=RecvLine(s)
rang=recvstr.split(",")
print "Min:"+rang[0]
print "Max:"+rang[1]

# set 6.2dB (rang[0] <= 6.2 <= rang[1])
SocketSend(s,":ISI:IL 62;*OPC?")
recvstr=RecvLine(s)

# to local mode
SocketSend(s,":SYST:LOC;*OPC?")
recvstr=RecvLine(s)

SocketClose(s)
```

## 2-2 Python Sample Code for USB I/F

```
# Sapmle program for CLE1500

import serial
import time

ser = serial.Serial()
ser.port = 'COM20'
ser.timeout = 10

ser.open()
print "ser.open is ",ser.isOpen()

ser.write("*IDN?¥n")
model=ser.readline()
print "*IDN? >> ",model

if (model.find("CLE1500")==-1):
  print "Not CLE1500"

# read all error message
while True:
 ser.write("SYSTem:ERRor?¥n")
 errresult=ser.readline()
 print "SYSTem:ERRor? >> ",errresult
 if (errresult[0]=="0"):
  break

# set the remote control
ser.write(":SYST:REM;*OPC?¥n")
print ":SYST:REM; >> ",ser.readline()

# to IL mode
ser.write(":ISI:MODE I;*OPC?¥n")
print ":ISI:MODE I >> ",ser.readline()

# Question range & set frequency 28.4GHz
ser.write(":ISI:RANG? 2840¥n")
print ":ISI:RANG? 2840"
recvstr=ser.readline()
rang=recvstr.split(",")
print "Min:"+rang[0]
print "Max:"+rang[1]
```

```
# set 6.2dB (rang[0] <= 6.2 <= rang[1])
ISI=ser.write(":ISI:IL 62;*OPC?¥n")
print ":ISI:IL 62 >> ",ser.readline()

# set the local control
ser.write(":SYST:LOC;*OPC?¥n")
print ":SYST:LOC; >> ",ser.readline()

ser.close()
```

# 3. Commands

## 3-1 Conformity

With some unique command dedicated for CLE1500, most of the commands are conformity with IEEEStd488-2 and SCPI-1990.

**LF(0x0A) is always (and only) required at the end of the command.**

## 3-2 Dedicated Commands

### ISI:MODE

Change and Query Operation Mode (dB mode and % mode)

Syntax

ISI:MODE<String>

ISI:MODE?

Example

ISI:MODE P

Arguments

I       Sets the mode to dB mode

P      Sets the mode to % mode

Response

I      current mode - dB mode

P      current mode - % demo

## ISI:IL

In dB mode, this command sets the target insertion loss in dB
(0.0 – 99.9dB) and Frequency in GHz (0.10 – 65.00GHz).

The maximum and minimum values are limited by designated
frequency. Query them by ISI:RANG?. ISI:RANG? Is mandatory
before ISI:IL when changing the frequency.

Syntax

ISI:IL<NR1>,<NR1>

ISI:IL<NR1>

ISI:IL?

Example

ISI:IL 200, 6500

ISI:IL 500

Arguments

<NR1>          0 – 999  (0.1dB step)

<NR1>          10 – 6500 (0.01GHz  step)

Response

<NR1>,<NR1>

Insertion Loss Value, Frequency

0.0 – 999 (0.1dB), 10 – 6500 (0.01GHz)

## ISI:RANGe?

Queries available max and min insertion loss value at the
designated frequency.

Syntax

ISI:RANGe?<NR1>

Example

ISI:RANG? 2000

Arguments

<NR1>          10 ~ 65000

               Target Frequency , 0.01GHz step

Response

<NR1>,<NR1>

Minmum value, Maximum value

0 – 999 (0.1dB step)

### ISI:LEVEl

In % mode, this command sets or queries insertion value by % in its dynamic range

Syntax

ISI:LEVE<NR2>

ISI:LEVE?

Example

ISI:LEVE 50.0

Arguments

| | |
|---|---|
| <NR2> | 0.0 – 100.0 |
| Unit | % |

Response

| | |
|---|---|
| <NR2> | 0.0 – 100.0 |

### OUTPut:ISI[:LEVEl]

This command is only for compatibility purpose with CLE1500 series.

### SYSTem:BEEPer:STATe

Turns on/off the touch tone of LCD panel.

Syntax

SYST:BEEPer:STATe<string>

SYST:BEEP:STAT?

Example

SYST:BEEP:STATE ON

Arguments

| | |
|---|---|
| OFF | no tone, factory default |
| ON | touch tone on |

Response

OFF

ON

Remarks

This setting is not initialized by turning off/on nor RST. This is done only by this command.

## SYSTem:COMMunicate:SOCKet:ADDRess

Sets and queries IP address

Syntax

SYSTem:COMMunicate:SOCKet:ADDRess<string>

SYST:COMM:SOCK:ADDR?

Example

SYST:COMM:SOCK:ADDR 192.168.0.88

Arguments

<string>　　　　***.***.***.***　　　　IP address

Response

<string>　　　　***.***.***.***　　　　IP address

Remarks

This setting is not initialized by turning off/on nor RST. This is done only by this command

## :SYSTem:DELImiter

Queries command delimiter

Default: LF(0Ah)

Syntax

:SYST:DELI<NR1>

:SYST:DELI?

Example

:SYST:DELI 0

Arguments

0　　　　LF(0Ah)　　　factory default

1　　　　CR(0Dh)

Response

0 or 1

Remarks

This setting is not initialized by turning off/on nor RST. This is done only by this command.

## :SYSTem:SRQ

Sets and queries SRQ function. Only effective for USB connection.

Syntax

:SYST:SRQ<NR1>

:SYST:SRQ?

Example

:SYST:SRQ 1

Arguments

| 0 | SRQ off | factory default |
|---|---------|-----------------|
| 1 | SRQ on | CD signal |
| 2 | SRQ on | DSR signal |
| 3 | SRQ on | RI signal |

Response

0 - 3

Remarks

This setting is not initialized by turning off/on nor RST. This is done only by this command.

## DISPlay:BRIGhtness

Sets and queries the brightness of LCD display

Syntax

DISPlay:BRIGhtness<NR1>

DISP:BRIG?

Example

DISP:BRIG 100

Arguments

0 – 100          Factory default: 80

Response

0 – 100

Remarks

This setting is not initialized by turning off/on nor RST. This is done only by this command.

## DISPlay:AUTOoff

Sets and queries the time duration for automatic turning off of the LCD display

Syntax

DISPlay:AUTOoff<NR1>

DISP:AUTO?

Example

DISP:AUTO 5

Arguments

0 – 120          in minutes,  0 for no turning off

Response

0 – 120

Remarks

This setting is not initialized by turning off/on nor RST. This is done only by this command.

## 3-3 IEEE Std488-2 Command

### *CLS

Clear Status - Clears up entire status

Syntax

*CLS

### *ESE

Event Status Enable – Specifies (or queries) the register bit value of Event Status Enable.

Syntax

*ESE <NR1>

*ESE?

Arguments

<NR1> 0 ~ 255

Response

<NR1> 0 ~ 255

### *ESR?

Event Status Register – Queries and clears Standard Event Status Register (SESR).

Syntax

*ESR?

Response

<NR1> 0 ~ 255

### *IDN?

ID Query – Queries the device's ID code

Response

(example)  ARTEK,CLE1500,000112179,1.00

### *OPC

Operation Complete – Returns "1" when all operations complete and sets OPC bit (bit0) at SESR register.

### Syntax

*OPC

*OPC?

### Response

1  for *OPC?

## *PSC

Specifies whether it clears the registers for ESER and SRER at system boot.

### Syntax

*PSC <NR1>

*PSC?

### Arguments

<NR1>  0          Do not clear the register

<NR1>  1          Clears the register

### Response

0 or 1

## *RST

Reset – Halts all the process and  initiate the device to the minimum value setting.

### Syntax

*RST

## *SRE

Service Request Enable – Specifies (or queries) the register value of Service Request Enable (SRER)

### Syntax

*SRE <NR1>

*SRE?

### Response

<NR1> 0 ~ 255

## *STB?

Read Status Byte – Queries the Read Status Byte Register. Upon this command, the bit6 of STB becomes MSS.

### Syntax

*STB?

### Response

<NR1> 0 ~ 255

## *TRG

Triger – This product does not support this function.

## *TST?

Selftest – This product does not support this function.

### Syntax

*TST?

### Response

<NR1> 0

## *WAI

Wait – Halts the followed command until the current command completes.

### Syntax

*WAI

## 3-4 SCPI Command

### SYSTem:ERRor[:NEXT]?

Returns the oldest error information and clears the error.

Response

-200,"Execution error"

### SYSTem:VERSion?

Returns SCPIversion

Response

"1990.0"

## Remote / Local

### SYSTem:LOCal

Sets this device LOCAL.

Syntax

SYST:LOC

### SYSTem:REMote

Sets this device REMOTE mode. Disables the controls at local device except "Local switch".

Syntax

SYST:REM

### SYSTem:LLOut

Disables "Local switch" at local device.

Syntax

SYST:LLO

# 3-5 Tips: Initial Status

## 1) Difference between Start-up and *RST

When System Start-up

ISI Value: as the front panel dial specifies

When *RST executed

ISI Value becomes minimum

## 2) No Trigger supported

## 3) Multiple commands can be received up to 127 letters

Command Example

:SYS:REM

*Sets Remote operation*

:SYST:LLO

Disables the front panel operation

*RST;*OPC?

Initializes the output setting.  Returns 1 once done.

ISI:RANG? 3000

Gets available minimum and maximum insertion loss value at 30.00GHz

ISI:IL 123;*OPC?

Sets insertion loss value 12.3dB at 30.00GHz (0.1dB step).

:SYST:LOC;*OPC?

Sets Local operation. Returns 1 once done.

# 4 Error Code

**0**

  0,"No error"

**-102**

  -102, "Syntax error"

**-103**

  -103, "Invalid separator"

**-108**

  -108, "Parameter not allowed"

**-110**

  -110, "Command header error"

**-113**

  -113, "Undefined header"

**-200**

  -200,"Execution error"

**-201**

  -201,"Invalid while in local"

**-220**

  -220, "Parameter error"

**-222**

  -222, "Data out of range"

**-223**

  -223, "Receiving data overflow"

**-230**

  -230, "Internal Data Error"

**-240**

  -240, "Hardware error"

**-310**

  -310, "System error"

**-311**

  -311, "Memory error"

**-315**

-315, "Lost Configuration Memory"

**-350**

-350,"Queue overflow"

**-365**

-365, "Time Out error"

**-500**

-500,"Power ON"

**-800**

-800,"Operation complete"

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