Leaptronix®

IWT-Series RS232 Command Manual

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1-1. Connection Interface

RS-232

1-2. Connection Parameters

Baud rate: 57,600, No parity, 8 bits, 1 stop bit

1-3. Commands

1-3-1 Ask for the tester model, firmware version & date.

From PC: ***Idn?**
Abbr.: ***I**

From IWT: *'IWT-5000L Version: x.xx' Data:xx/xx/xx* <0DH> <0AH>

IWT should respond in 1~3 seconds after receiving commands if everything goes well.

Example: *IDN?
Valid Format: *IDN? *idn? *I
Invalid Format: *IDN ?
*Note: No space between *IDN and ?.*

1-3-2 Reset system.

From PC: ***Rst**
Abbr.: ***R**
From IWT: *Set Success!<0AH>*

IWT should respond 'Set Success!*<0AH>*' if the system reset is successful.

Example: *rst
Valid Format: *RST ; *rst ; *R
Invalid Format: * RST ; RST

1-3-3 Enter or exit Remote Control Mode.

From PC: **:Sys:Rm** *on|off*
Abbr.: **:SR** *on|off*
From IWT: *Set Success!<0AH>*

Valid Format: :sys:rm on ; :sys:rm off
Invalid Format: :sys:rm o n ; : sys:rm on

1-3-4 Lock or unlock the panel buttons.

From PC: **:Sys:Kl** *on*
Lock the keypad on the tester for all the commands to be sent from PC only.
Abbr.: **:SK** *on|off*
From IWT: *Set Success!<0AH>*
From PC: **:sys:kl** *off*
Unlock the keypad on the tester.
From IWT: *Set Success!<0AH>*

Valid Format: :sys:kl on ; :sys:kl off
Invalid Format: :sys :kl on ; :sys:kl o ff

1-3-5 Enable or disable Beep.

From PC: **:Set:Beep** *on|off*
Abbr.: **:SB** *on|off*
From IWT: *Set Success!<0AH>*

Valid Format: :Set:Beep on ; :Set:Beep off
Invalid Format: :Set :Beep on ; :Set:Beep o ff
Note: There should be a space between Set:Beep and the parameter.

1-3-6 Set the test voltage, DIV, AVG.

From PC: **:Set:Sample** *vvvv,tttt,nn*
Abbr.: **:SS** *vvvv,tttt,nn*

vvvv: *Test voltage*
Range: 500V, 600V, 1000V, ...5000V

tttt : *Time/DIV。*
Range:

IWT-5000A:
250nS, 500nS, 1uS, 2.5uS, 5uS, 10uS, 25uS, 50uS, 100uS, 250uS

IWT-1000L:
125nS, 250nS, 500nS, 1uS, 2.5uS, 5uS, 10uS, 25uS, 50uS, 100uS, 250uS, 500uS, 1mS

nn: *AVG*
Range: 1–15

From IWT: *Set Success! <0AH>* *setting completed.*
Invalid parameter! <0AH> *invalid paramters*

Example: :Set:Sample 500V, 125nS, 1
Valid Format: :Set:Sample 1000V, 500nS, 10
Invalid Format: : Sample 2000V, 500nS, 10

1-3-7 Ask for the current test voltage, sampling rate, DIV, and AVG.

From PC: **:Ask:Sample**
Abbr.: **:AS**
From IWT: Volt:*vvvv, Div:tttt, Avg:nn<0AH>*

vvvv: *Test voltage*
Range: 500V, 600V, 1000V, ...5000V

tttt : *Time/DIV。*
Range:

IWT-5000A:
250nS, 500nS, 1uS, 2.5uS, 5uS, 10uS, 25uS, 50uS, 100uS, 250uS

IWT-1000L:
125nS, 250nS, 500nS, 1uS, 2.5uS, 5uS, 10uS, 25uS, 50uS, 100uS, 250uS, 500uS, 1mS

nn: *AVG*
Range: 1–15

Valid Format: :Ask:Sample
Invalid Format: :Ask :Sample

1-3-8 Set the comparison parameters.

Note: IWT-5000A CursorR Range: 0-249
IWT-1000L CursorR Range: 1-249

AREA SIZE Comparison

From PC: **:Set:Compare** AREA,*on/off,CursorL,CursorR,MAX Percent*
Abbr.: **:SC** *AREA,on|off,CursorL,CursorR,MAX Percent*

on | off: Enable or disable
Range: ON, OFF
CursorL: Start location of selected range.
Range: 0-249
CursorR: End location of selected range.
Range: 0-249 (CursorR>CursorL)
MAX Percent: Allowance(Step:0.1%)
Range: 0.1-99.9 (0.1%-99.9%)

DIFFERENTIAL AREA Comparison

From PC: **:Set:Compare** D_AREA,*on|off,CursorL,CursorR,MAX Percent*
Abbr.: **:SC** *D_AREA,on|off,CursorL,CursorR,MAX Percent*

on | off: Enable or disable
Range: ON, OFF
CursorL: Start location of selected range.
Range: 0-249
CursorR: End location of selected range.
Range: 0-249 (CursorR>CursorL)
MAX Percent: Allowance(Step:0.1%)
Range: 0.1-99.9 (0.1%-99.9%)

CoroN Comparison

From PC: **:Set:Compare** CoroN,*on|off*,CursorL,CursorR,MAX number
Abbr.: **:SC** CoroN,*on|off*,CursorL,CursorR,MAX number

on | off: Enable or disable
Range: ON, OFF
CursorL: Start location of selected range.
Range: 0-249
CursorR: End location of selected range.
Range: 0-249 (CursorR>CursorL)
MAX Number: Allowance of corona numbers
Range: 1-999

CoroS Comparison

From PC: **:Set:Compare** CoroS,*on|off*,CursorL,CursorR,MAX number
Abbr.: **:SC** CoroS,*on|off*,CursorL,CursorR,MAX number

on | off: Enable or disable
Range: ON, OFF
CursorL: Start location of selected range.
Range: 0-249
CursorR: End location of selected range.
Range: 0-249 (CursorR>CursorL)
MAX Number: Allowance of corona amount
Range: 1-999

From IWT: *Set Success!<0AH>*
Invalid parameter!<0AH> wrong parameter
Command Error! Please retry! wrong command

Example: :Set:Compare *AREA,on,10,200,10*
Valid Format: :Set:Compare *D_AREA,on,5,180,15*
:Set:Compare *CoroN,on,15,210,25*
Invalid Format: :Compare D*AREA,on,10,200,10*
Note: Four comparison methods can be run simultaneously and user can find the best allowance in stand-alone mode before using RS232 commands.

1-3-9 Ask for the current comparison parameters.

From PC: **:Ask:Compare** *AREA|D_AREA|CoroN|CoroS*
Abbr.: **:AC** *AREA|D_AREA|CoroN|CoroS*
From IWT: ***The responses will be based on the parameter.***
AREA,on|off,CursorL,CursorR,MAX Percent<0AH>
D_AREA,on|off,CursorL,CursorR,MAX Percent<0AH>
CoroN,on|off,CursorL,CursorR,MAX number<0AH>
CoroS,on|off,CursorL,CursorR,MAX number<0AH>

Example: :Ask:Compare *AREA*
Invalid Format: :Ask :Compare CoroS

1-3-10 Load Master waveforms to Cache0~5

Load the saved waveform data from internal storage memory to Cache for fast switching different master waveform data to test several sets of coils. For example, if there are 3 types of coils to be tested, please make 3 master waveform data and save them in the internal memory and then follow below instructions to load them to CacheX for running tests.

Load the waveform data file from memory to CacheX; refer to ***1-3-16****.*
From PC: **:Load:Memory** *nn,Cache0|Cache1|Cache2|Cache3|Cache4|Cache5*
Abbr.: **:LM** *nn,Cache0|Cache1|Cache2|Cache3|Cache4|Cache5*

Load the waveform data file from memory as Master waveform.
From PC: **:Load:Memory** *nn,Master*
Abbr.: **:LM** *nn,Master*
nn: Filename(1~10 chars)

From IWT: *Busy<0AH>* *in process*
Set Success!<0AH>
File name doesn't exist!<0AH>

Example: :Load:Memory *12,Cache0*
Valid Format: :Load:Memory *85,Master* ; :Load:Memory *ABC,Cache5*
Invalid Format: :Load:Memory *Master,85*
Note: Loading takes around 3-4 seconds, and please wait until 'Set Success!' before doing the next step.

1-3-11 Run sampling procedures and save the data as Master.

From PC: **:Sample:Master**
Abbr.: **:SM**
Run the sampling procedures based on the configured voltage, sampling rate, AVG
From IWT: *Busy<0AH>* *in process*
Sample Success!<0AH> *process completed*

Example: :Sample:Master
Valid Format: :SAMPLE:MASTER
Invalid Format: :Sample :Master ; :Sample: Master
Note: The procedures take several seconds, and please wait until PC responds '*Sample Success!*' before doing the next step.

1-3-12 Ask for the comparison results

From PC: **:Ask:Report**
Abbr.: **:AR**
From IWT: The responses will be based on the comparison parameters
AREA%-25.2% Difa% 21.0% CoroN/ 3 CoroS/ off<0AH>

Example: **:Ask:Report**
Invalid Format: **:Ask :Report**
Note: The report is based on the last comparing result.

1-3-13 Run comparing tests

Run the normal test according to the comparison parameters. A result of PASS or FAIL will show after comparing the waveform of the DUT and the Master.

From PC: **:Compare:Slave**
Abbr.: **:CS**
From IWT: *Busy<0AH>* *Comparing*
PASS<0AH> *Result = PASS*
FAIL<0AH> *Result = FAIL*
Get sample waveform first!<0AH> *no waveform data*

Example: :Compare:Slave
Invalid Format: :Compare :Slave
Note: The procedures take several seconds, and please wait until PC responds before doing the next step.

1-3-14 Save the Master data to memory.

From PC: **:saVe:Master** *nn*
Abbr.: **:VM** *nn*
nn: Filename to be saved(1~10 chars)

From IWT: *Busy<0AH>* in process
Set Success!<0AH> *process completed*
Invalid parameter!<0AH> *wrong filename format*

Example: :Save:Master 12
Valid Format: :Save:Master 1 ; :Save:Master ABCDEFGHIJ
Invalid Format: :Save:Master ; :Save:Master 12345678900

1-3-15 Delete file in the memory.

From PC: **:dEl:Memory** *nn*
Abbr.: **:EM** *nn*
nn: Filename to be deleted(1~10 chars)

From IWT: *Set Success!<0AH>*
File name doesn't exist!<0AH>

Example: :DEL:MEMORY 12
Valid Format: :del:memory 1 ; :EM 99; :EM ABC
Invalid Format: :del:memory

1-3-16 Move the Master data from or to Cache0~5

From PC: **:Move** *Master, Cache0|Cache1|Cache2|Cache3|Cache4|Cache5*
Abbr.: **:M** *Master, Cache0|Cache1|Cache2|Cache3|Cache4|Cache5*
Load the master waveform data to CacheX.

From PC: **:Move** *Cache0|Cache1|Cache2|Cache3|Cache4|Cache5, Master*
Abbr.: **:M** *Cache0|Cache1|Cache2|Cache3|Cache4|Cache5, Master*
Set the waveform data in CacheX as Master.

From IWT: *Set Success!<0AH>*
value Overflow!<0AH> *out of range*
ERROR<0AH> *wrong command format*

Example: :Move Master,Cache#0 ; :Move Cache#3,Master
Invalid Format: :Move Master,Cache#9 ; :Move Slave,Cache#0

1-3-17 Upload the Master sample data to PC.

From PC: **:Upload:Master**
Abbr.: **:UM**
From IWT: *Set Success!<0AH>*
ERROR<0AH>

Example: :Upload:Master
Invalid Format: :Upload :Master
Note: If you are uploading the file in the memory to PC, use ***':Load:Memory*** *nn, Master'* command, and then send ***':Upload:Master'***

1-3-18 Download the Master sample data from PC to IWT.

From PC: **:Download:Master**
Abbr.: **:DM**
From IWT: *Set Success!*<0AH>
ERROR<0AH>

Example: :Download:Master
Invalid Format: :Download :Master
Note: If you are saving the PC waveform data to IWT internal memory or Cache, use '**:Download:Master**' command, and then send '**:Save:Master** *Memory,nn*' or '**:Move** *Master,Cache#1|...|Cache#5*'

1-4 Overall Procedure Examples

Example 1. Set the comparison parameters, run sampling and then run the comparison tests.

***rst** //System reset
:sys:rm on //Enter remote control mode
:Set:Sample 1000V,500nS,1
:Set:Compare AREA,on,10,200,10.5 //Enable AREA comparing, waveform range: 10-200, allowance: 10.5%.
:Set:Compare D_AREA,on,5,180,15.1 //Enable D_AREA comparing, waveform range: 5-180, allowance: 15.1%
:Set:Compare CoroN,on,15,210,25 //Enable CoroN comparing, waveform range: 15-210, allowance: 25
:Set:Compare CoroS,on,15,210,15 //Enable CoroS comparing, waveform range: 15-210, allowance: 15
:Sample:Master //Run master sampling
//Test loop
:Compare:Slave //Run tests and get Pass/Fail results
:Ask:Report //Ask for results

Example 2. Load the master data from memory and run comparison tests.

:sys:rm on //Enter remote control mode
:Load:Memory 12,Master //Load File[12] as Master sample data.
:Compare:Slave //Run tests and get Pass/Fail results
:Ask:Report //Ask for results

Example 3. Load the master data to 3 Caches for testing 3 different types of coils.

:sys:rm on //Enter remote control mode
:Load:Memory 10,Cache0 //Load File[10] from memory to Cache0.
:Load:Memory 11,Cache1 //Load File[11] from memory to Cache1.
:Load:Memory 12,Cache2 //Load File[12] from memory to Cache2.
//Test Loop
:Move Cache0,Master //Load Cache0 as Master sample data.
:Compare:Slave //Run tests and get Pass/Fail results
//Testing the first coil.
:Move Cache1,Master //Load Cache1 as Master sample data.
:Compare:Slave //Run tests and get Pass/Fail results
//Testing the second coil.
:Move Cache2,Master //Load Cache2 as Master sample data.
:Compare:Slave //Run tests and get Pass/Fail results
//Testing the third coil.
//Loop