REXGEAR

Your Power Solution Expert

87330 High Precision Three-Phase Power Meter

Programming Manual (V1.0)

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I、DISPlay

1. :DISPlay<x>:ELEMent

（1）Function

Setting display channels/querying current settings.

（2）Command Format

:DISPlay<x>:ELEMent {<NRf>|SIGMa}

:DISPlay<x>:ELEMent?

（3）Parameter Description

<x>= 1 to 3

1:Display A

2:Display B

3:Display C

{<NRf>}=1 (Single-phase mode)

1, 3 (Three-phase, three-wire system)

1 to 3 (Three-phase four-wire system)

（4）Sample

:DISPLAY1:ELEMENT 1

:DISPLAY1:ELEMENT? -> :DISPLAY1:ELEMENT 1

2. :DISPlay<x>:FUNCtion

（1）Function Description

Setting the display function/querying the current setting

（2）Command Format

:DISPlay<x>:FUNCtion {<display function>}

:DISPlay<x>: FUNCtion?

（3）Parameter Description

<x>= 1 to 3

1:Display A

2:Display B

3:Display C

In case of normal measurement:

<displayfunction>={V|A|W|VA|VAR|PF|DEGRee|VHZ|AHZ|WH|WHP|WHM|AH|AHP|AHM|MATH|VPK|APK|TIME}

In case of harmonic measurement:

<displayfunction>={V|A|W|PF|VHZ|AHZ|VTHD|ATHD|VCON|ACON|WCON|VDEG|ADEG|ORDer}

（4）Sample

:DISPLAY1: function V

:DISPLAY1: function?

-> :DISPLAY1:function V

II、:HARMonics

1. :HARMonics:STATe

（1）Function

Set harmonic test on/off, query current setting.

（2）Command Format

:HARMonics[:STATe] {<Boolean>}

:HARMonics[:STATe]?

（4）Sample

:HARMONICS:STATE ON

:HARMONICS:STATE?

-> :HARMONICS:STATE 1

2. :HARMonics:ELEMent<x>

（1）Function

Setting the harmonic test channel/querying the current setting.

（2）Command Format

:HARMonics:ELEMent<x> {NRf}

:HARMonics:ELEMent<x>?

（3）Parameter Description

<x>=1~6(Uni number)

NRf=1~2(Harmonic PLL source group number)

（4）Sample

:HARMONICS:ELEMENT 1

:HARMONICS:ELEMENT?

-> :HARMONICS:ELEMENT 1

3. :HARMonics:SYNChronize

（1）Function

Setting the harmonic synchronization source and querying the current setting.

（2）Command Format

:HARMonics:SYNChronize

{(V|A),(<NRf>|ELEMent<1-3>)}

:HARMonics:SYNChronize?

（3）Sample

:HARMONICS:SYNCHRONIZE V,1

:HARMONICS:SYNCHRONIZE?

-> :HARMONICS:SYNCHRONIZE V,1

4. :HARMonics:THD

（1）Function

Set or query the THD formula for a specified harmonic PLL source group in harmonic mode.

（2）Command Format

:HARMonics:THD {IEC|CSA}

:HARMonics:THD?

（3）Sample

:HARMONICS:THD IEC

:HARMONICS:THD? -> HARMONICS:THD IEC

III、:CONFigure

1. :CONFigure:WIRing

（1）Function

Setting/querying the wiring method

（2）Command Format

:CONFigure:WIRing {P1W2|P1W3|P3W3|P3W4|V3A3}

:CONFigure:WIRing?

（3）Sample

:CONFIGURE:WIRING P1W3

:CONFIGURE:WIRING?

-> :CONFIGURE:WIRING P1W3

2. :CONFigure:MODE

（1）Function

Setting/querying the measurement mode.

（2）Command Format

:CONFigure:MODE {RMS|VMEan|DC}

:CONFigure:MODE?

（3）Sample

:CONFIGURE:MODE RMS

:CONFIGURE:MODE?

-> :CONFIGURE: MODE RMS

3. :CONFigure:SYNChronize

（1）Function

Setting/querying the measurement synchronization source.

（2）Command Format

:CONFigure:SYNChronize {VOLTage| CURRent}

:CONFigure:SYNChronize?

（3）Sample

:CONFIGURE:SYNCHRONIZE VOLTAGE?

:CONFIGURE:SYNCHRONIZE?

-> :CONFIGURE:SYNCHRONIZE VOLTAGE

4. :CONFigure:CFAC

（1）Function

Setting/querying the measurement peak factor.

（2）Command Format

:CONFigure:CFAC {3|6}

:CONFigure:CFAC?

（3）Sample

:CONFIGURE:CFAC6

:CONFIGURE:CFAC?

->:CONFIGURE:CFAC6

5. :CONFigure:VOLTage:RANGe

（1）Function

Setting the voltage range and querying the current setting.

（2）Command Format

:CONFigure:VOLTage:RANGe {<voltage>}

:CONFigure:VOLTage:RANGe?

（3）Parameter Description

<voltage>=15V to 600V (15, 30, 60,150, 300, 600V)

（4）Sample

:CONFIGURE:VOLTAGE:RANGE 600V

:CONFIGURE]:VOLTAGE:RANGE?

-> :CONFIGURE:VOLTAGE:RANGE 600.0E+00

6. :CONFigure:VOLTage:AUTO

（1）Function

Set voltage auto range on/off, query current setting.

（2）Command Format

:CONFigure:VOLTage:AUTO {<Boolean>}

:CONFigure:VOLTage:AUTO?

（3）Sample

:CONFigure:VOLTage:AUTO ON

:CONFIGURE:VOLTAGE:AUTO?

-> :CONFIGURE:VOLTAGE:AUTO 1

7. :CONFigure:CURRent:RANGe

（1）Function

Setting the current range (transformer input range), querying the current setting。

（2）Command Format

:CONFigure:CURRent:RANGe {<current>|(EXTernal,<voltage>)}

:CONFigure:CURRent:RANGe?

（3）Parameter Description

50AInput unit

<Current> = 500mA,1A,2A,5A,10A,20A,40A,50A

20AInput unit

<Current> = 100mA,200mA,500mA,1A,2A,5A,10A,20A

5AInput unit

<Current> = 20mA,50mA,100mA,200mA,500mA,1A,2A,5A

1AInput unit

<Current> = 5mA,10mA,20mA,50mA,100mA,200mA,500mA,1A

（4）Sample

Setting/querying current range

:CONFIGURE:CURRENT:RANGE 20A

:CONFIGURE:CURRENT:RANGE?

-> :CONFIGURE:CURRENT:RANGE 20.0E+00

Setting/querying the transformer input range

:CONFIGURE:CURRENT:RANGE EXTERNAL,50MV

:CONFIGURE:CURRENT:RANGE?

-> :CONFIGURE:CURRENT:RANGE EXTERNAL,50.0E-03

8. :CONFigure:CURRent:AUTO

（1）Function

Set current auto range on/off, query current setting.

（2）Command Format

:CONFigure:CURRent:AUTO {<Boolean>}

:CONFigure]:CURRent:AUTO?

（3）Sample

:[CONFIGURE]:CURRENT:AUTO ON

:[CONFIGURE]:CURRENT:AUTO?

-> :CONFIGURE:CURRENT:AUTO 1

9. :CONFigure:CURRent:ESCaling?

（1）Function

Query all external sensor ratios.

（2）Command Format

:CONFigure:CURRent:ESCaling?

（3）Sample

:CONFIGURE:CURRENT:ESCALING?

-> :CONFIGURE:CURRENT:ESCALING:

ELEMENT1 50.00E+00;

ELEMENT2 50.00E+00;

ELEMENT3 50.00E+00

10. :CONFigure:CURRent:ESCaling :ALL

（1）Function

Set all transformer ratio parameters at once.

（2）Command Format

:CONFigure:CURRent:ESCaling:ALL {<NRf>}

（3）Parameter Description

{<NRf>}= 0.001 to 9999

（4）Sample

:CONFIGURE:CURRENT:ESCALING:ALL 50.00

Explanation: BNC gear/input, for example, when the current block is in the minimum block, at this time the BNC block is at 50mV, and input 100.0 means 50mV/100A, which is 0.5mV/A after conversion.

11. :CONFigure:SCALing?

（1）Function

Query the setting parameters of all ratios.

（2）Command Format

:CONFigure:SCALing?

（3）Sample

:CONFIGURE:SCALING?

-> :CONFIGURE:SCALING:STATE 0;PT:

ELEMENT1 1.000E+00;

ELEMENT2 1.000E+00;

ELEMENT3 1.000E+00;

:CONFIGURE:SCALING:CT:

ELEMENT1 1.000E+00;

ELEMENT2 1.000E+00;

ELEMENT3 1.000E+00;

:CONFIGURE:SCALING:SFACTOR:

ELEMENT1 1.000E+00;

ELEMENT2 1.000E+00;

ELEMENT3 1.000E+00

12. :CONFigure:SCALing:{PT|CT|SFACtor}[:ALL]

（1）Function

Setting ratio parameters for all channels (voltage/current/power).

（2）Command Format

:CONFigure:SCALing:{PT|CT|SFACtor}[:ALL] {<NRf>}

（3）Parameter Description

{<NRf>}=0.001 to 9999

（4）Sample

:CONFIGURE:SCALING:PT:ALL 1.000

13. :CONFigure:FILTer

（1）Function

Setting/querying frequency filtering on/off.

（2）Command Format

:CONFigure:FILTer {<Boolean>}

:CONFigure:FILTer?

（3）Sample

:CONFIGURE:FILTER OFF

:CONFIGURE:FILTER?

-> :CONFIGURE:FILTER 0

14. :CONFigure:LFILter

（1）Function

Setting/querying line filtering on/off.

（2）Command Format

:CONFigure:LFILter {<Boolean>}

:CONFigure:LFILter?

（3）Sample

:CONFIGURE:LFILTER OFF

:CONFIGURE:LFILTER?

-> :CONFIGURE:LFILTER 0

15. :CONFigure:AVERaging?

（1）Function

Query average setting.

（2）Command Format

:CONFigure:AVERaging?

（3）Sample

:CONFIGURE:AVERAGING?

-> :CONFIGURE:AVERAGING:STATE 0;TYPE LINEAR,8

16. :CONFigure:AVERaging[:STATe]

（1）Function

Setting/querying average function on/of.

（2）Command Format

:CONFigure:AVERaging[:STATe] {<Boolean>}

:CONFigure:AVERaging:STATe?

（3）Sample

:CONFIGURE:AVERAGING:STATE OFF

:CONFIGURE:AVERAGING:STATE?

-> :CONFIGURE:AVERAGING:STATE 0

17. :CONFigure:AVERaging:TYPE

（1）Function

Setting/querying average types and coefficients.

（2）Command Format

:CONFigure:AVERaging:TYPE {(LINear/EXPonrnt),<NRf>}

:CONFigure:AVERaging:TYPE?

（3）Parameter Description

{<NRf>}=8 (averagingcoefficient x)

（4）Sample

:CONFIGURE:AVERAGING:TYPE LINEAR,8

:CONFIGURE:AVERAGING:TYPE?

-> :CONFIGURE:AVERAGING:TYPE LINEAR,8

IV、INTEGrate

1. :INTEGrate?

（1）Function Description

Check all INTEGrate settings.

（2）Command Format

:INTEGrate?

（3）Sample

:INTEGRATE?

-> :INTEGRATE:MODE NORMAL;TIMER 0,0,0

2. :INTEGrate:MODE

（1）Function Description

Set integration mode or query current settings.

（2）Command Format

:INTEGrate:MODE{NORMal|CONTinuous}

:INTEGrate:MODE?

（3）Parameter Description

NORMal is normal integration mode；CONTinuous。

（4）Sample

:INTEGRATE:MODE NORMAL

:INTEGRATE:MODE?

-> :INTEGRATE:MODE NORMAL

3. :INTEGrate:RESet

（1）Function Description

Reset integration value。

（2）Command Format

:INTEGrate:RESet

（3）Sample

:INTEGRATE:RESET （reset all units integral）

4. :INTEGrate:STARt

（1）Function Description

Turn on integration function。

（2）Command Format

:INTEGrate:STARt

（3）Sample

:INTEGrate:STARt（Start all units integral）

5. :INTEGrate:STOP

（1）Function Description

Stop reset integral。

（2）Command Format

:INTEGrate:STOP

（3）Sample

:INTEGRATE: STOP（Stop all unit integral）

7. :INTEGrate: TIMer

（1）Function Description

Set parameters for all unit integral timers。

（2）Command Format

:INTEGrate:TIMer {<NRf>,<NRf>,<NRf>}

（3）Parameter Description

{<NRf>,<NRf>,<NRf>}=0,0,0 to 48,0,0

{<String>}=HHHHH:MM:SS HHHHH hour MMminute SS second

（4）Sample

:INTEGRATE:TIMER 10,0,0

:INTEGRATE:TIMER? ->

:INTEGRATE:TIMER 10,0,0

V、MEASure

1. :MEASure:NORMal:VALue?

（1）Function

Queries the value of the entry set by ":MEASure[:NORMal]:ITEM"。

（2）Command Format

:MEASure[:NORMal]:VALue?

（3）Sample

:MEASURE:NORMAL:VALUE?

-> 10.04E+00,10.02E+00,10.03E+00,49.41E+00,...

2. :MEASure:NORMal:ITEM?

（1）Function

Query all measured/calculated value settings.

（2）Command Format

:MEASure[:NORMal]:ITEM?

（4）Sample

:MEASURE:NORMAL:ITEM?

Three-phase four-wire system as an example

:MEASURE:NORMAL?

-> :MEASURE:NORMAL:ITEM:V:ELEMENT1 1;ELEMENT2 1;ELEMENT3 1;SIGMA 1;

:MEASURE:NORMAL:ITEM:A:ELEMENT1 1;ELEMENT2 1;ELEMENT3 1;SIGMA 1;

:MEASURE:NORMAL:ITEM:W:ELEMENT1 1;ELEMENT2 1;ELEMENT3 1;SIGMA 1;

:MEASURE:NORMAL:ITEM:VA:ELEMENT1 0;ELEMENT2 0;ELEMENT3 0;SIGMA 0;

:MEASURE:NORMAL:ITEM:VAR:ELEMENT1 0;ELEMENT2 0;ELEMENT3 0;SIGMA 0;

:MEASURE:NORMAL:ITEM:PF:ELEMENT1 0;ELEMENT2 0;ELEMENT3 0;SIGMA 0;

:MEASURE:NORMAL:ITEM:DEGREE:ELEMENT1 0;ELEMENT2 0;ELEMENT3 0;SIGMA 0;

:MEASURE:NORMAL:ITEM:VHZ:ELEMENT1 0;ELEMENT2 0;ELEMENT3 0;SIGMA 0;

:MEASURE:NORMAL:ITEM:AHZ:ELEMENT1 0;ELEMENT2 0;ELEMENT3 0;SIGMA 0;

:MEASURE:NORMAL:ITEM:WH:ELEMENT1 0;ELEMENT2 0;ELEMENT3 0;SIGMA 0;

:MEASURE:NORMAL:ITEM:AH:ELEMENT1 0;ELEMENT2 0;ELEMENT3 0;SIGMA 0;

:MEASURE:NORMAL:ITEM:VPK:ELEMENT1 0;ELEMENT2 0;ELEMENT3 0;SIGMA 0;

:MEASURE:NORMAL:ITEM:APK:ELEMENT1 0;ELEMENT2 0;ELEMENT3 0;SIGMA 0;

:MEASURE:NORMAL:ITEM:TIME 0;MATH 0

3. :MEASure:NORMal:ITEM:PRESet

（1）Function

Setting up a routine measurement preset sequence.

（2）Command Format

:MEASure[:NORMal]:ITEM:PRESet {NORMal|INTEGrate|CLEar}

（3）Sample

:MEASURE:NORMAL:ITEM:PRESET NORMAL

[NORMal]: V/A/W -> ON, others -> OFF

[INTEGrate]: W/WH/AH/TIME -> ON, others ->OFF

[CLEar]: all items -> OFF

4. : MEASure:NORMal:ITEM:<normal measurement function>[:ALL]

（1）Function

Setting communication on/off for three-channel and three-phase testing of routine test items.

（2）Command Format

:MEASure[:NORMal]:ITEM:<normalmeasurementfunction>[:ALL] {<Boolean>}

（3）Sample

:MEASURE:NORMAL:ITEM:V:ALL ON

5. :MEASure:NORMal:ITEM:<normal measurement function：>:ELEMent<x>

（1）Function

Setting/querying the communication on/off of the three channels during routine test items.

（2）Command Format

:MEASure[:NORMal]:ITEM:<normal measurement function>:ELEMent<x> {<Boolean>}

:MEASure[:NORMal]:ITEM:<normal measurement function>:ELEMent<x>?

（3）Parameter Description

<x>= 1 (Single-phase mode)

1, 3 (Three-phase, three-wire system)

1 to 3 (Three-phase four-wire system)

（4）Sample

:MEASURE:NORMAL:ITEM:V:ELEMENT1 ON

6. :MEASure:NORMal:ITEM:<normal measurement function>:SIGMa

（1）Function

Setting/querying three-phase data communication on/off for routine test items.

（2）Command Format

:MEASure[:NORMal]:ITEM:<normal measurement function>:SIGMa {<Boolean>}

:MEASure[:NORMal]:ITEM:<normal measurement functionality：>:SIGMa?

（3）Sample

:MEASURE:NORMAL:ITEM:V:SIGMA ON

7 :MEASure:HARMonics:VALue?

（1）Function

Query harmonic test data other than MEASure:HARMonics:ITEM” (ASCII format).

（2）Command Format

:MEASure:HARMonics:VALue?

（3）Sample

:MEASURE:HARMONICS:VALUE? ->

60.00E+00,12.01E+00,49.98E+00,

49.62E+00,0.03E+00,5.50E+00,.....

8 :MEASure:HARMonics:ITEM:PRESet

（1）Function

Setting the harmonic measurement communication output on/off.

（2）Command Format

:MEASure:HARMonics:ITEM:PRESet {VPATtern|APATtern|WPATtern|CLEar}

（3）Sample

VPATtern:SYNChronize/VTHD/V/VCON -> ON, others ->OFF

APATtern:SYNChronize/ATHD/A/ACON -> ON, others ->OFF

WPATtern:SYNChronize/PF/W -> ON, others ->OFF

CLEar: all items -> OFF

9 :MEASure:HARMonics:ITEM:{SYNChronize|<harmonicmeasurementfunction>}

（1）Function

Setting/querying harmonic measurement communication on/off.

（2）Command Format

:MEASure:HARMonics:ITEM:{SYNChronize|<harmonic measurement function>}{<Boolean>}

:MEASure:HARMonics:ITEM:{SYNChronize|<harmonic measurement function>}?

（3）Parameter Description

SYNChronize=PLL source

<harmonic measurement function>

={VTHD|V|VCON|ATHD|A|ACON|PF|W|WCON|VDEG|ADEG}

（3）Sample

:MEASURE:HARMONICS:ITEM:VTHD ON

:MEASURE:HARMONICS:ITEM:VTHD?

-> :MEASURE:HARMONICS:ITEM:VTHD 1

VI、SAMPle

1. :SAMPle:HOLD?

（1）Function Description

Query all sampling settings.

（2）Command Format

:SAMPle:HOLD?

（3）Sample

:SAMPLE:HOLD?

-> :SAMPLE:HOLD 0

2. :SAMPle:HOLD

（1）Function Description

Setting/querying screen lock (display/communication).

（2）Command Format

:SAMPle:HOLD {<Boolean>}

:SAMPle:HOLD?

（3）Sample

:SAMPLE:HOLD ON

:SAMPLE:HOLD?

-> :SAMPLE:HOLD 1

3. :SAMPle:RATE

（1）Function Description

Setting/querying the display update rate.

（2）Command Format

:SAMPle:RATE {<time>}

（3）Parameter Description

<time> = 0.1 to 5 s (0.1, 0.25, 0.5,1, 2, 5)

（3）Sample

:SAMPLE:RATE 0.25S

VII、Extra

1. *IDN?

（1）Function Description

Identification query, returns the instrument's identification string.。

（2）Command Format

*IDN?

（3）Sample

*IDN? -> YOKOGAWA,760503,0,F1.01

REGEAR,87330,01,19G8.12

2. *RST

（1）Function Description

Restore the instrument configuration to factory settings（while keeping remote control configurations unchanged）.

（2）Command Format

*RST

（3）Sample

*RST