



**PW3390 Power Analyzer  
Driver Function  
User's Manual**

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## Revision History

Edition	Contents	Reviser	Date
1.00	First Edition	HIOKI	2017/05/11

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## 1. Overview

This program can change the settings and query the power analyzer (hereinafter, measurement device) from the computer using the TCP/IP or RS-232C.

The program is divided into multiple Vi according to the functions.

## 2. Precondition






The following requirement needs to be met when using this program.

- Experience in program development using LabVIEW



### 3. Driver Explanation

#### 3.1 Driver Common Input & Output

##### 3.1.1 Input Items

Name	Data Type	Explanation
VISA Resource		TCP/IP, RS-232C Connection ID
Set/Query		Specify whether to set the program operating mode to the set mode for the device, or to query the settings of the device. Input Range: False (Set: Default), True (Query)
Error Out		After sending the driver command, send the *ESR? Command automatically and acquires error information. When an error occurs, input to error out. Input Range: False (Off: Default), True (On)
error in		Please refer the LabVIEW online reference's section on error report for a detailed explanation on error input. Default Value: no error
OPC query		After sending the driver command at the set mode for the device, send the *OPC? Command automatically and wait the processing of the previous commands. Input Range: True (ON: Default), False (OFF)

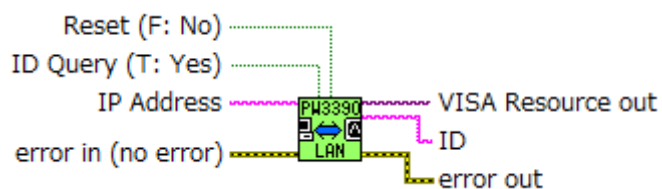
##### 3.1.2 Output Items

Name	Data Type	Explanation
VISA Resource out		Copied TCP/IP, RS-232C Connection ID
error out		Please refer the LabVIEW online reference's section on error report for a detailed explanation on error output.  When PW3390 cannot be set properly, output error code (1300). Errors may be caused by <ul style="list-style-type: none"> <li>Integration or HOLD/PEAK HOLD mode</li> <li>Restrictions imposed by wiring mode</li> <li>Restrictions imposed by the availability of options</li> <li>affected by other settings for others</li> </ul> Please confirm with the PW3390 instruction manual.

## 3.2 Common VI

### 3.2.1 HIOKI PW3390 Initialize LAN.vi

Starts the communication with the PW3390 device. This instance can select from the “HIOKI PW3390 Initialize.vi (Polymorphic VI)”.



#### Input

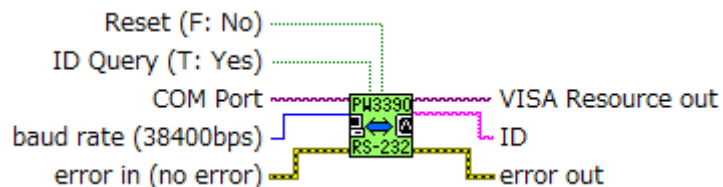
Name	Data Type	Explanation
Address		Specify the PW3390 IP Address. The default setting is 192.168.1.1.
ID Query		Output the connection device's ID.
Reset		Send the *RST command to the connection device and reset the settings.

#### Output

Name	Data Type	Explanation
ID		Return the device's ID. Valid when the ID Query is True.

### 3.2.2 HIOKI PW3390 Initialize RS-232C.vi

Starts the communication with the PW3390 device. This instance can select from the “HIOKI PW3390 Initialize.vi (Polymorphic VI)”.



#### Input

Name	Data Type	Explanation
COM Port		Specify the PW3390 COM Port. The default setting is COM1.
baud rate		Specify the communication speed of RS-232C.
ID Query		Output the connection device's ID.
Reset		Send the *RST command to the connection device and reset the settings.

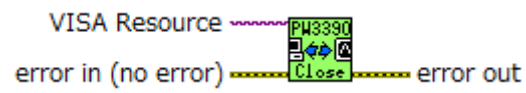
#### Output

Name	Data Type	Explanation
ID		Return the device's ID. Valid when the ID Query is True.



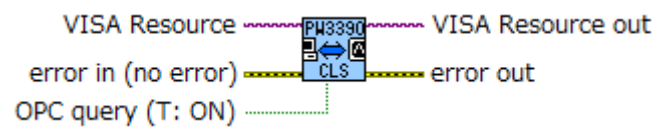
### 3.2.3 HIOKI PW3390 Close.vi

Disconnects the communication with the PW3390 device.



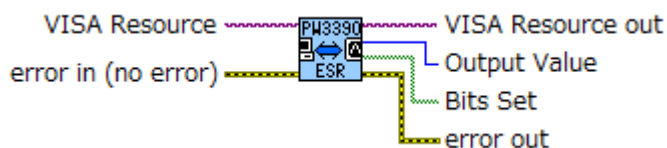
### 3.2.4 HIOKI PW3390 CLS.vi

Clears the event register.



### 3.2.5 HIOKI PW3390 ESR.vi

Returns and clears the contents of the event register.



#### Output

Name	Data Type	Explanation
Output Value		Outputs the query results of the event register as numerical values.
Bits Set		<p>Outputs the query results of the event register in Boolean Array.</p> <p>bit7(PON): Power On Flag Turns to 1 when power is switched on or when power is returned after a blackout.</p> <p>bit6(URQ): User Request Not available in the PW3390.</p> <p>bit5(CME): Command Error (Ignores commands up to the message terminator) Turns to 1 when there are syntactical and command errors in the received commands.</p> <ul style="list-style-type: none"> <li>• When there is an error in the program header</li> <li>• When the data value is different from the specified value</li> <li>• When the data type is different from the specified type</li> </ul> <p>bit4(EXE): Execution error Turns to 1 when the command cannot be executed for whatever reason.</p> <ul style="list-style-type: none"> <li>• When the specified data is outside the set range</li> <li>• When the specified data cannot be set</li> <li>• When another function is in operation and the command cannot be executed (holding, integrating, etc.)</li> </ul> <p>bit3(DDE): Device-dependent error Turns to 1 when the command cannot be executed due to causes other than a command error, query error or execution error.</p> <ul style="list-style-type: none"> <li>• When there is an internal problem and the command could not be executed</li> </ul> <p>bit2(QYE): Query error Turns to 1 when the error is detected by the output cue control part.</p> <ul style="list-style-type: none"> <li>• When the data inundated the output cue</li> </ul> <p>bit1(RQC): Request for controller right Not available in the PW3390.</p> <p>bit0(OPC): Operation completed Not available in the PW3390.</p>

### 3.2.6 HIOKI PW3390 IDN.vi

Queries the Device ID.

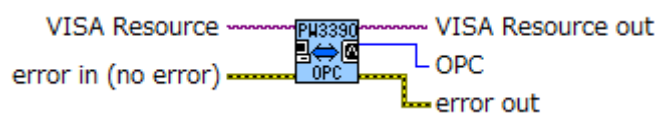


#### Output

Name	Data Type	Explanation
IDN		Outputs the query results. Output Items: <Maker>, <Model>, <Serial Number>, <Software Version>

### 3.2.7 HIOKI PW3390 OPC.vi

outputs 1 after processing the commands before the “HIOKI PW3390 OPC.vi”.



#### Output


Name	Data Type	Explanation
OPC	I32	Returns 1.

### 3.2.8 HIOKI PW3390 OPT.vi

Queries the option types attached to the PW3390.



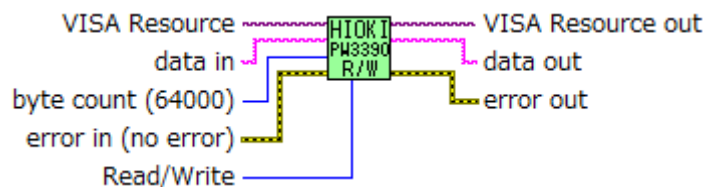
#### Output

Name	Data Type	Explanation
OPT		Outputs the query results of the options. Output Items: <CH1 Sensor>, <CH2 Sensor>, <CH3 Sensor>, <CH4 Sensor>

### 3.2.9 HIOKI PW3390 Read\_Write.vi

Transmit the commands (reading and writing the data) to the PW3390.

No commands after \*WAI are processed until the next measuring update completes.



#### Input

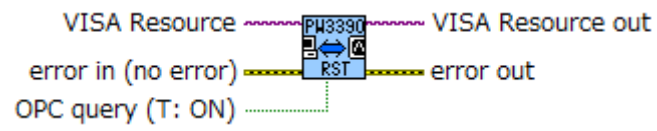
Name	Data Type	Explanation
Read/Write		Set the mode. Input Range: 0 (Read: Default), 1 (Write) Read: Receiving the data. Write: Sending the data.
Byte count		Specify the amounts of receiving bytes at the Read mode. The default setting is 64000.
Data in		Specify the sending commands to the PW3390 at the Write mode. Any commands can be sent. Please refer to the Communication Command Instruction Manual at the HIOKI home page.

#### Output

Name	Data Type	Explanation
Data out		Output the data received from the PW3390 at the Read mode.

### 3.2.10 HIOKI PW3390 RST.vi

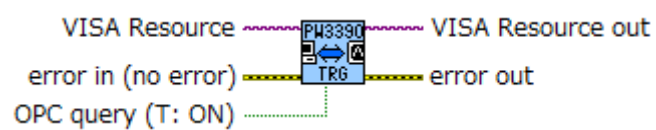
Sets the various device settings, except for language and command settings, to factory defaults.





### 3.2.11 HIOKI PW3390 TRG.vi

Measures once in Hold and Peak Hold status.



### 3.2.12 HIOKI PW3390 WAI.vi

Waits until the next refresh is completed.



#### Note

In Hold status, the display data will not change even when this command is executed.

### 3.3 Configure VI

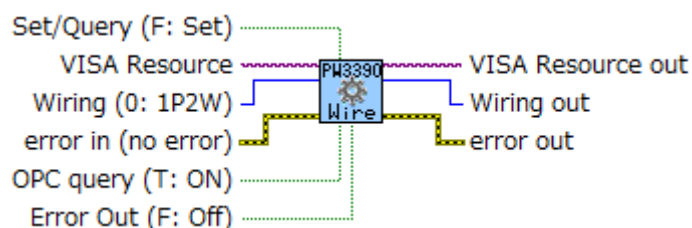
#### 3.3.1 For the Wiring

Note:


The setting for the wiring mode affects many other settings. Please set this first before starting other settings if possible.

##### 3.3.1.1 HIOKI PW3390 Conf Wiring.vi


Sets and reads the wiring mode.



#### Input

Name	Data Type	Explanation
Wiring		<p>Sets the wiring mode.</p> <p>Input Range: 0 (1P2W: Default), 1 (1P3W, 1P2W), 2 (3P3W2M, 1P2W), 3 (1P3W, 1P3W), 4 (3P3W2M, 1P3W), 5 (3P3W2M, 3P3W2M), 6 (3P3W3M, 1P2W), 7 (3P4W, 1P2W)</p> <p>Note: To set a combination mode for multiple channels, the current sensors for the combination channels must be the same.</p>

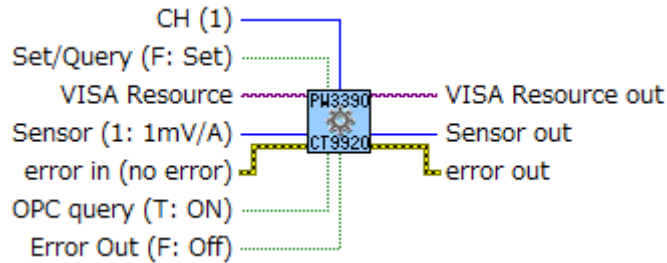
#### Output

Name	Data Type	Explanation
Wiring out		<p>Outputs the query results of the wiring mode.</p> <p>Output Range: 0 (1P2W), 1 (1P3W, 1P2W), 2 (3P3W2M, 1P2W), 3 (1P3W, 1P3W), 4 (3P3W, 1P3W), 5 (3P3W2M, 3P3W2M), 6 (3P3W3M, 1P2W), 7 (3P4W, 1P2W)</p>



### 3.3.2 For the Sensor

#### 3.3.2.1 HIOKI PW3390 Conf CT9920.vi


Sets and reads the setting of current sensor for CT9920.



#### Input

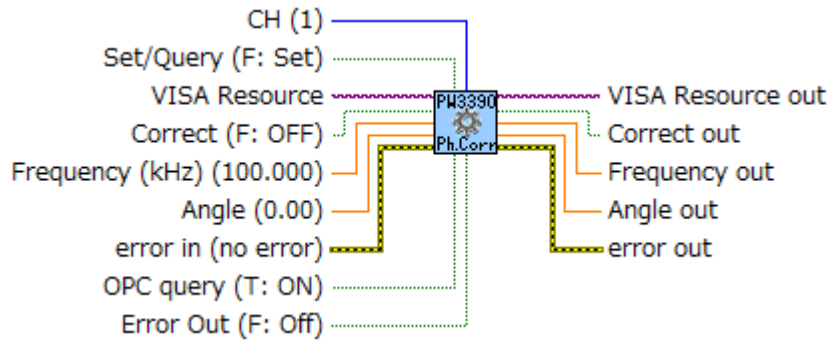
Name	Data Type	Explanation
CH		Sets the Input unit. Input Range: 1 (Default) – 4
Sensor		Sets the current sensor setting for CT9920. Input Range: 0 (100uV/A), 1 (1mV/A: Default), 2 (10mV/A), 3 (100mV/A), 4 (CT7642), 5 (CT7742), 6 (CT7044), 7 (CT7045), 8 (CT7046)

#### Output

Name	Data Type	Explanation
Sensor out		Outputs the query results of the current sensor setting for CT9920 of the designated unit. Output range: 0 (100uV/A), 1 (1mV/A), 2 (10mV/A), 3 (100mV/A), 4 (CT7642), 5 (CT7742), 6 (CT7044), 7 (CT7045), 8 (CT7046)

### 3.3.2.2 HIOKI PW3390 Conf Phase Correct.vi

Sets and reads the phase correction formulas for current sensors.



#### Input

Name	Data Type	Explanation
CH		Sets the Input unit. Input Range: 1 (Default) – 4
Correct		Sets phase correction formulas for current sensors. Input Range: False (OFF: Default), True (ON)
Frequency		Sets phase correction frequency. This is valid when the Correct is ON. Input Range: 000.001 – 999.999 (kHz) (100.000: Default)
Angle		Sets phase correction angle. This is valid when the Correct is ON. Input Range: -90.00 - +90.00 (0.00: Default)

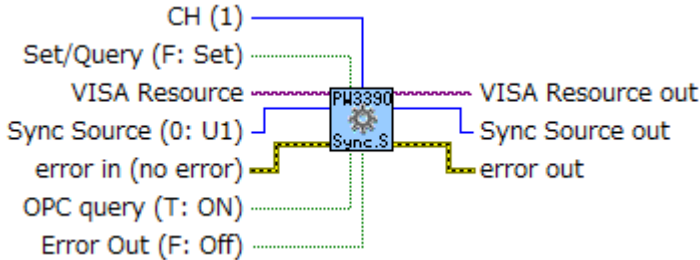
#### Output

Name	Data Type	Explanation
Correct out		Outputs the query results of phase correction at the designated unit. Output Range: False (OFF), True (ON)
Frequency out		Outputs the query results of phase correction frequency at the designated unit. Output Range: 000.001 – 999.999 (kHz)
Angle out		Outputs the query results of phase correction angle at the designated unit. Output Range: -90.00 - +90.00



### 3.3.3 For the Input

#### 3.3.3.1 HIOKI PW3390 Conf Sync Source.vi


Sets and reads the Synchronized Source.



#### Input

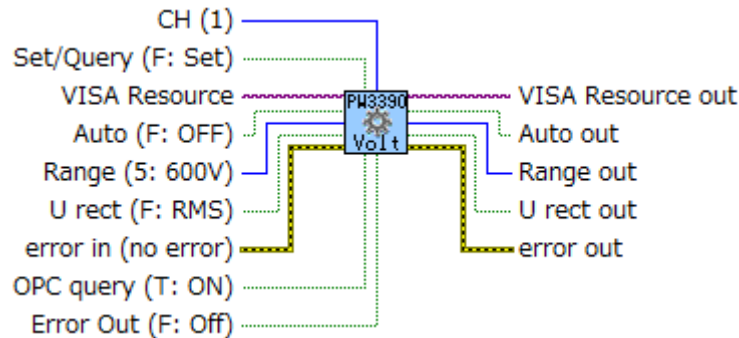
Name	Data Type	Explanation
CH		Sets the Input unit. Input Range: 1 (Default) - 4
Sync Source		Sets the Synchronized Source of the specified channel. Input Range: 0 (U1: Default), 1 (U2), 2 (U3), 3(U4), 4 (I1), 5 (I2), 6 (I3), 7 (I4), 8 (Ext), 9 (DC50ms), 10 (DC 100ms)  Note: The settings for other channels in the measurement line combination will be changed. Ext can be set only when the Motor Analysis Option is implemented and when CH B is set to Pulse.

#### Output

Name	Data Type	Explanation
Sync Source out		Outputs the query results of the Synchronized Source of the specified channel. Output Range: 0 (U1), 1 (U2), 2 (U3), 3(U4), 4 (I1), 5 (I2), 6 (I3), 7 (I4), 8 (Ext), 9 (DC50ms), 10 (DC 100ms)

### 3.3.3.2 HIOKI PW3390 Conf Voltage.vi

Sets and reads the functions related to voltage.



#### Input

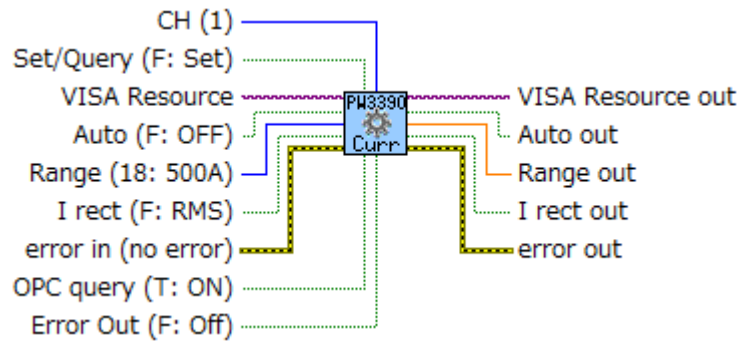
Name	Data Type	Explanation
CH		Sets the input unit. Input Range: 1 (Default) - 4
Auto		Sets the voltage range to AutoRange. Input Range: False (OFF: Default), True (ON)  Note: Depending on the measurement line combination (for 1P3W and above), the voltage AutoRange settings of other channels in the combination may be changed too.
Range		Sets the voltage range. Valid when the AutoRange is OFF. Input Range: 0(15), 1(30), 2(60), 3(150), 4(300), 5(600: Default), 6(1500)  Note: When the range is changed, please wait until the internal circuit is stabilized before reading the measured value. Depending on the measurement line combination (for 1P3W and above), the voltage range settings of other channels in the combination may be changed too.
U rect		Sets the Voltage Rectification Method to RMS/MEAN. Input Range: False (RMS: Default), True (MEAN)

#### Output

Name	Data Type	Explanation
Auto out		Outputs the query results of AutoRange. Output Range: False (OFF), True (ON)
Range out		Outputs the query results of the range. Output Range: 15 - 1500
U rect out		Outputs the query results of the Rectification Method (MEAN). Output Range: False (RMS), True (MEAN)

### 3.3.3.3 HIOKI PW3390 Conf Current.vi

Sets and reads the functions related to current.



#### Input

Name	Data Type	Explanation
CH		Sets the Input unit. Input Range: 1 (Default) – 4
Auto		Sets the current range to AutoRange. Input Range: False (OFF: Default), True (ON)  Note: Depending on the measurement line combination (for 1P3W and above), the current AutoRange settings of other channels in the combination may be changed too.
Range		Sets the current range. Valid when the AutoRange is OFF. Input Range: 0(0.1), 1(0.2), 2(0.4), 3(0.5), 4(0.8), 5(1), 6(2), 7(4), 8(5), 9(8), 10(10), 11(20), 12(40), 13(50), 14(80), 15(100), 16(200), 17(400), 18(500: Default), 19(800), 20(1000), 21(2000), 22(4000), 23(8000), 24(20000)  Note: When the range is changed, please wait until the internal circuit is stabilized before reading the measured value. Depending on the measurement line combination (for 1P3W and above), the current range settings of other channels in the combination may be changed too.
I rect		Sets the Current Rectification Method to RMS/MEAN. Input Range: False (RMS: Default), True (MEAN)

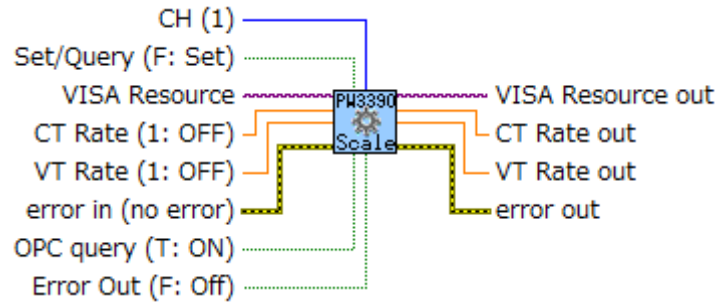
#### Output

Name	Data Type	Explanation
Auto out		Outputs the query results of AutoRange at the designated unit.. Output Range: False (OFF), True (ON)
Range out		Outputs the query results of the range. Output Range: 0.1 - 20000
I rect out		Outputs the query results of the Rectification Method. Output Range: False (RMS), True (MEAN)



### 3.3.3.4 HIOKI PW3390 Conf Scale.vi

Sets and reads the CT, VT rate.



#### Input

Name	Data Type	Explanation
CH		Sets the Input unit. Input Range: 1 (Default) - 4
CT Rate		Sets the CT ratio of the specified channel. Input Range: 0. 01-9999.99 (1.00: Default)  Note: The setting for CT ratio OFF is 1. The query response for OFF is 1. The settings for other channels in the measurement line combination will be changed. Specify the starting channel in the channel combination.
VT Rate		Sets the VT ratio for the specified channel. Input Range: 0. 01-9999.99 (1.00: Default)  Note: The setting for VT ratio OFF is 1. The query response for OFF is 1. The settings for other channels in the measurement line combination will be changed. Specify the starting channel in the channel combination.

#### Output

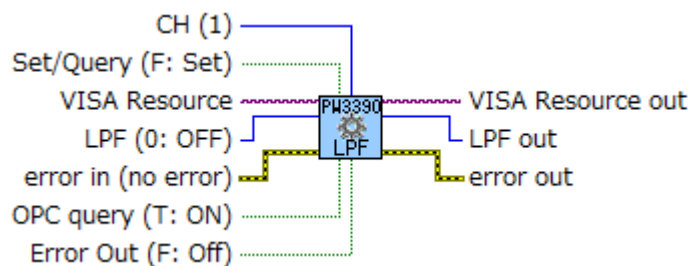
Name	Data Type	Explanation
CT Rate out		Outputs the query results of the CT ratio of the specified channel. Output Range: 0.01 – 9999.99
VT Rate out		Outputs the query results of the VT ratio of the specified channel. Output Range: 0.01 – 9999.99

Note:

It is limited at  $VT * CT \leq 1.0E+06$ .

### 3.3.3.5 HIOKI PW3390 Conf LPF.vi

Sets and reads the Low Pass Filter (LPF).



#### Input

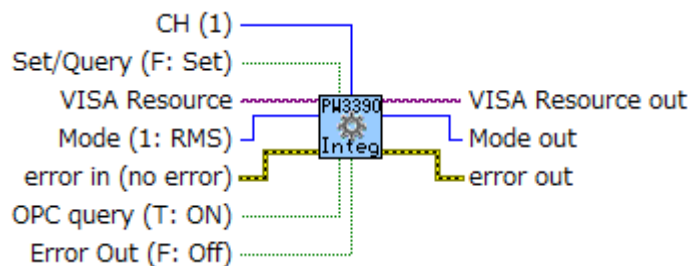
Name	Data Type	Explanation
CH		Sets the Input unit. Input Range: 1 (Default) – 4
LPF		Sets the cutoff frequency for the Low Pass Filter (LPF). Input Range: 0 (OFF: Default), 1 (500 Hz), 2 (5kHz), 3 (100kHz)  Note: Depending on the measurement line combination (for 1P3W and above), the LPF settings of other channels in the combination may be changed too.

#### Output



Name	Data Type	Explanation
LPF out		Outputs the query results of the cutoff frequency for the Low Pass Filter (LPF). Output Range: 0 (OFF), 1 (500 Hz), 2 (5kHz), 3 (100kHz)

### 3.3.3.6 HIOKI PW3390 Conf Integ mode.vi


Sets and reads the functions related to the Integration Mode.



#### Input

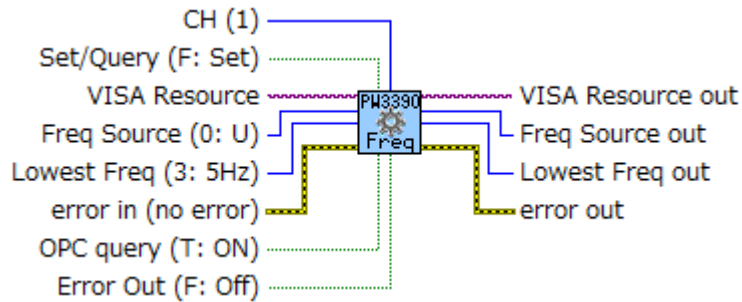
Name	Data Type	Explanation
CH		Sets the Input unit. Input Range: 1 (Default) – 4
Mode		Sets the Integration Mode. Input Range: 0 (DC), 1 (RMS: Default)

#### Output

Name	Data Type	Explanation
Mode out		Outputs the query results of the integration mode. Output Range: 0 (DC), 1 (RMS)

### 3.3.3.7 HIOKI PW3390 Conf Frequency.vi

Sets and reads the functions related to frequency measurement.



#### Input

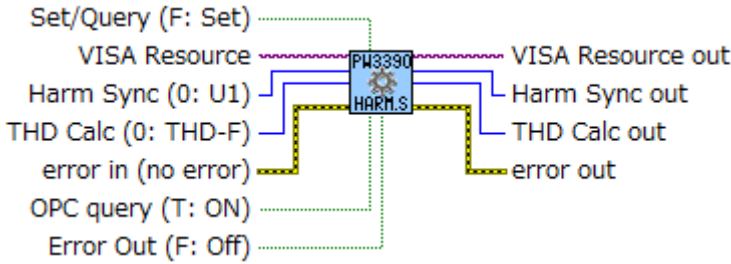
Name	Data Type	Explanation
CH		Specifies the input unit to set the Source. Input Range: 1 (Default) – 4
Freq Source		Sets the frequency measurement source of the specified channel. Input Range: 0 (U: Default), 1 (I)
Lowest Freq		Sets the measurement lowest frequency. Input Range: 0 (0.5 Hz), 1 (1 Hz), 2 (2 Hz), 3 (5 Hz: Default), 4 (10 Hz), 5 (20 Hz)

#### Output

Name	Data Type	Explanation
Freq Source out		Outputs the query results of the frequency measurement source of the specified channel. Output Range: 0 (U), 1 (I)
Lowest Freq out		Outputs the query results of the measurement lowest frequency. Output Range: 0 (0.5 Hz), 1 (1 Hz), 2 (2 Hz), 3 (5 Hz), 4 (10 Hz), 5 (20 Hz)

### 3.3.3.8 HIOKI PW3390 Conf Harmonic.vi

Sets and reads the functions related to the Harmonic Synchronization.



#### Input

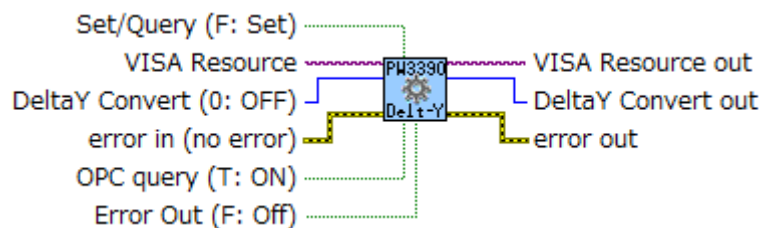
Name	Data Type	Explanation
Harm Sync		Sets the Harmonic Synchronized Source. Input Range: 0 (U1: Default), 1 (U2), 2 (U3), 3(U4), 4 (I1), 5 (I2), 6 (I3), 7 (I4), 8 (Ext), 9 (DC50ms), 10 (DC 100ms)  Note: Ext can be set only when the Motor Analysis Option is implemented and when CH B is set to Pulse.
THD Calc		Sets the THD Calculation Formula. Input Range: 0 (THD-F: Default), 1 (THD-R)

#### Output


Name	Data Type	Explanation
Harm Sync out		Outputs the query results of the Harmonic Synchronized Source. Output Range: 0 (U1), 1 (U2), 2 (U3), 3(U4), 4 (I1), 5 (I2), 6 (I3), 7 (I4), 8 (Ext), 9 (DC50ms), 10 (DC 100ms)
THD Calc out		Outputs the query results of the THD Calculation Formula. Output Range: 0 (THD-F), 1 (THD-R)

### 3.3.3.9 HIOKI PW3390 Conf DeltaY convert.vi


Sets and reads the delta-Y conversion formula.



#### Input

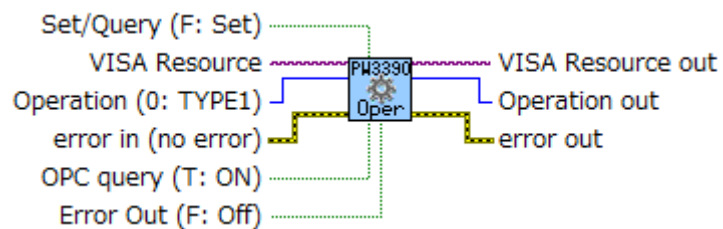
Name	Data Type	Explanation
DeltaY Convert		Sets the delta-Y conversion formula. Input Range: 0 (Off: Default), 1 (On)  Note: This is valid only when the wiring is "3P3W3M, 1P2W".

#### Output


Name	Data Type	Explanation
DeltaY Convert out		Outputs the query results of the delta-Y conversion formula. Output Range: 0 (Off), 1 (On)

### 3.3.3.10 HIOKI PW3390 Conf Operation.vi


Sets and reads the formulas of three-phase power.



#### Input

Name	Data Type	Explanation
Operation		<p>Sets the formulas of three-phase power. Input Range: 0 (TYPE1: Default), 1 (TYPE2)</p> <p>Note: This is valid only when the wiring is “3P3W3M, 1P2W”.</p>

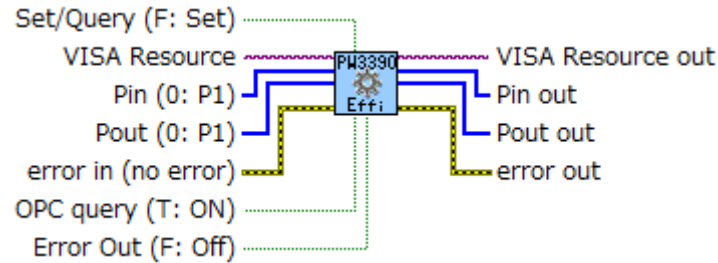
#### Output

Name	Data Type	Explanation
Operation out		<p>Outputs the query results of the formulas of three-phase power.</p> <p>Output Range: 0 (TYPE1), 1 (TYPE2)</p>

### 3.3.4 For the Calculation

#### 3.3.4.1 HIOKI PW3390 Conf Efficiency.vi

Sets and reads the Efficiency/Loss Calculation Formula.



#### Input

Name	Data Type	Explanation
Pin		<p>Sets the Pin items of the Efficiency/Loss Calculation Formula for CH1 – CH3 in array.  Input Range: 0 (P1: Default), 1 (P2), 2 (P3), 3 (P4), 4 (P12), 5 (P34), 6 (P123), 7 (Pm)</p> <p>Note:  P12/P34/P123 cannot be specified when they cannot be selected because of the wiring setting. Pm can only be specified during the implementation of the Motor Analysis Option and when Pm is selectable.</p>
Pout		<p>Sets the Pout items of the Efficiency/Loss Calculation Formula for CH1 – CH3 in array.  Input Range: 0 (P1: Default), 1 (P2), 2 (P3), 3 (P4), 4 (P12), 5 (P34), 6 (P123), 7 (Pm)</p> <p>Note:  P12/P34/P123 cannot be specified when they cannot be selected because of the wiring setting. Pm can only be specified during the implementation of the Motor Analysis Option and when Pm is selectable.</p>

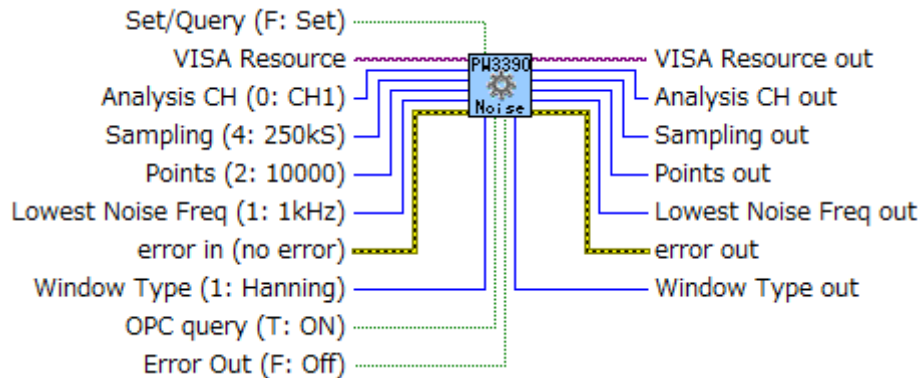
#### Output

Name	Data Type	Explanation
Pin out		<p>Outputs the query results of the Efficiency/Loss Calculation Formula Pin Items for CH1 – CH3 in array.  Output Range: 0 (P1), 1 (P2), 2 (P3), 3 (P4), 4 (P12), 5 (P34), 6 (P123), 7 (Pm)</p>
Pout out		<p>Outputs the query results of the Efficiency/Loss Calculation Formula Pout Items for CH1 – CH3 in array.  Output Range: 0 (P1), 1 (P2), 2 (P3), 3 (P4), 4 (P12), 5 (P34), 6 (P123), 7 (Pm)</p>



### 3.3.4.2 HIOKI PW3390 Conf Noise analysis.vi

Sets and reads functions related to Noise Analysis.



#### Input

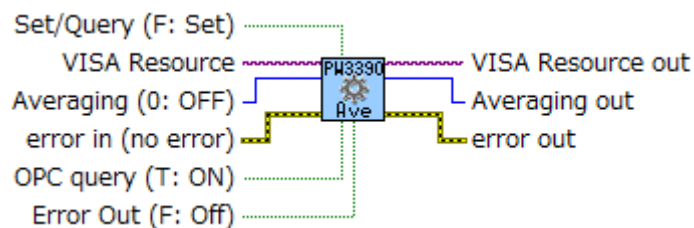
Name	Data Type	Explanation
Analysis CH		Sets the measurement channels for Noise Analysis. Input Range: 0 (CH1: Default), 1 (CH2), 2 (CH3), 3 (CH4)
Sampling		Sets the sampling speed for Noise Analysis. Input Range: 0 (10 kHz), 1 (25 kHz), 2 (50 kHz), 3 (100 kHz), 4 (250 kHz: Default), 5 (500 kHz)  Note: The lowest noise frequency may be restricted depending on the setting of the noise analysis sampling speed.
Points		Sets the point value for Noise Analysis. Input Range: 0 (1000), 1 (5000), 2 (10000: Default), 3 (50000)
Lowest Noise Freq		Sets the lowest noise frequency. Input Range: 0 (OFF), 1 (1kHz: Default), 2 (2kHz), 3 (3kHz), 4 (4kHz), 5 (5 kHz), 6 (6kHz), 7 (7kHz), 8 (8 kHz), 9 (9 kHz), 10 (10 kHz)
Window Type		Sets the Noise Analysis Window Function. Input Range: 0 (Rectangular), 1 (Hanning: Default), 2 (Flatop)

#### Output


Name	Data Type	Explanation
Analysis CH out		Outputs the query results of the measurement channel for Noise Analysis. Output Range: 0 (CH1), 1 (CH2), 2 (CH3), 3 (CH4)
Sampling out		Outputs the query results of the Noise Analysis Sampling Speed. Output Range: 0 (10 kHz), 1 (25 kHz), 2 (50 kHz), 3 (100 kHz), 4 (250 kHz), 5 (500 kHz)
Points out		Outputs the query results of the Noise Analysis Point Values. Output Range: 0 (1000), 1 (5000), 2 (10000), 3 (50000)
Lowest Noise Freq out		Outputs the query results of the Lowest Noise Frequency. Output Range: 0 (OFF), 1 (1kHz), 2 (2kHz), 3 (3kHz), 4 (4kHz), 5 (5 kHz), 6 (6kHz), 7 (7kHz), 8 (8 kHz), 9 (9 kHz), 10 (10 kHz)
Window Type out		Outputs the query results of the Noise Analysis Window Function. Output Range: 0 (Rectangular), 1 (Hanning), 2 (Flatop)

### 3.3.4.3 HIOKI PW3390 Conf Averaging.vi


Sets and reads the averaging setting.



#### Input

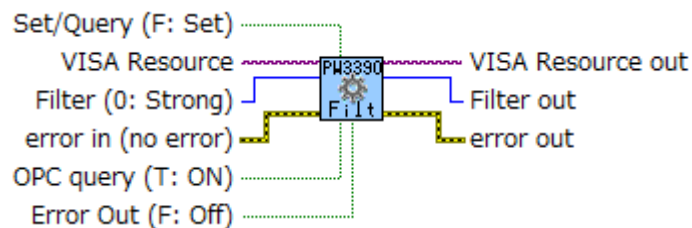
Name	Data Type	Explanation
Averaging		<p>Sets the averaging setting.</p> <p>Input Range: 0 (OFF: Default), 1 (FAST), 2 (MID), 3 (SLOW), 4 (SLOW2), 5 (SLOW3)</p> <p>Note: The averaging process will start again when the average setting is changed.</p>

#### Output

Name	Data Type	Explanation
Average out		<p>Outputs the query results of the averaging setting.</p> <p>Output Range: 0 (OFF), 1 (FAST), 2 (MID), 3 (SLOW), 4 (SLOW2), 5 (SLOW3)</p>

### 3.3.4.4 HIOKI PW3390 Conf ZeroCross filter.vi

Sets and reads the zero cross filter.



#### Input

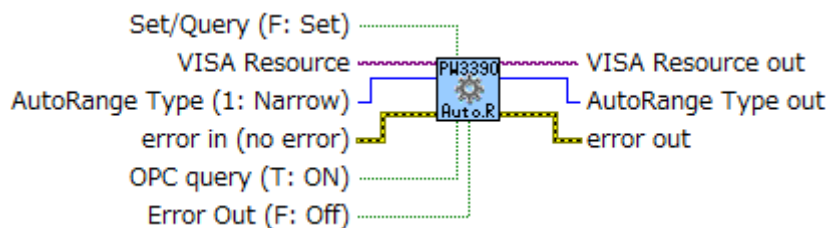
Name	Data Type	Explanation
Filter		Sets the zero cross filter. Input Range: 0 (STRONG: Default), 1 (WEAK), 2 (OFF)

#### Output

Name	Data Type	Explanation
Filter out		Outputs the query results of the zero cross filter. Output Range: 0 (STRONG), 1 (WEAK), 2 (OFF)

### 3.3.4.5 HIOKI PW3390 Conf AutoRange type.vi

Sets and reads the AutoRange type.



#### Input

Name	Data Type	Explanation
AutoRange Type		Sets the AutoRange pattern. Input Range: 0 (WIDTH), 1 (NARROW: Default)

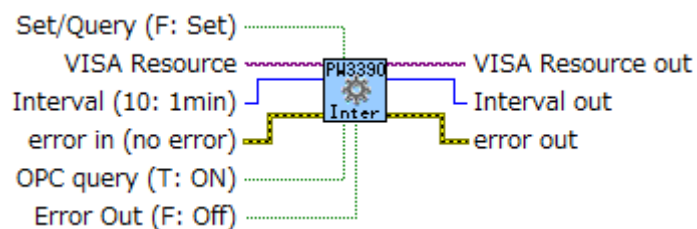
#### Output

Name	Data Type	Explanation
AutoRange Type out		Outputs the query results of the AutoRange type. Output Range: 0 (WIDTH), 1 (NARROW)


### 3.3.5 For the Time

#### 3.3.5.1 HIOKI PW3390 Conf Interval.vi


Sets and reads interval functions.



#### Input

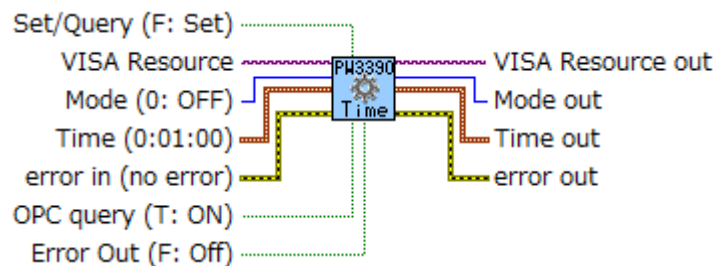
Name	Data Type	Explanation
Interval		Sets the Interval Time. Input Range: 0 (OFF), 1 (50ms), 2 (100ms), 3 (200ms), 4 (500ms), 5 (1s), 6 (5s), 7 (10s), 8 (15s), 9 (30s), 10 (1min: Default), 11 (5 min), 12 (10min), 13 (15min), 14 (30min), 15 (60min)

#### Output



Name	Data Type	Explanation
Interval out		Outputs the query results of the Interval Time. Output Range: 0 (OFF), 1 (50ms), 2 (100ms), 3 (200ms), 4 (500ms), 5 (1s), 6 (5s), 7 (10s), 8 (15s), 9 (30s), 10 (1min), 11 (5 min), 12 (10min), 13 (15min), 14 (30min), 15 (60min)

### 3.3.5.2 HIOKI PW3390 Conf Timer.vi



Sets and reads the functions related to the Timer Control.



#### Input

Name	Data Type	Explanation
Mode		Sets the ON/OFF of the Timer Control. Input Range: 0 (OFF: Default), 1 (ON)
Time		Sets the Timer Control in hours, minutes and seconds. (1min: Default)  Note: The timer range setting is from 10 seconds to 9999 hours 59 minutes 59 seconds.

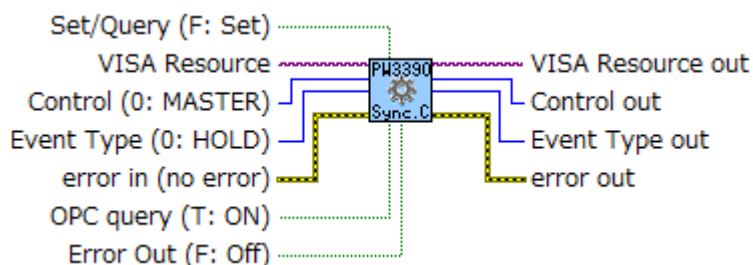
#### Output

Name	Data Type	Explanation
Mode out		Outputs the query results of the timer control as ON/OFF.
Time out		Outputs the query results of the timer control as hours, minutes and seconds.

### 3.3.6 For the Interface

#### 3.3.6.1 HIOKI PW3390 Conf Sync control.vi

Sets and reads the functions related to the Synchronized Control.



#### Input

Name	Data Type	Explanation
Control		Sets the Master/Slave of the Synchronized Control. Input Range: 0 (MASTER: Default), 1 (SLAVE)
Event Type		Sets the Synchronized Events of the Synchronized Control. Input Range: 0 (HOLD: Default), 1 (SAVE), 2 (COPY)

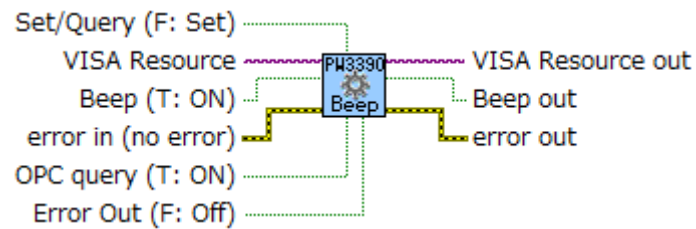
#### Output

Name	Data Type	Explanation
Control out		Outputs the query results of the Master/Slave of the Synchronized Control. Input Range: 0 (MASTER), 1 (SLAVE)
Event Type out		Outputs the query results Synchronized Events of the Synchronized Control. Input Range: 0 (HOLD), 1 (SAVE), 2 (COPY)

### 3.3.7 For the System

#### 3.3.7.1 HIOKI PW3390 Conf Beep.vi

Sets and reads the beep setting.



#### Input

Name	Data Type	Explanation
Beep	<b>TF</b>	Sets the beep setting. Input Range: True (ON: Default), False (OFF)

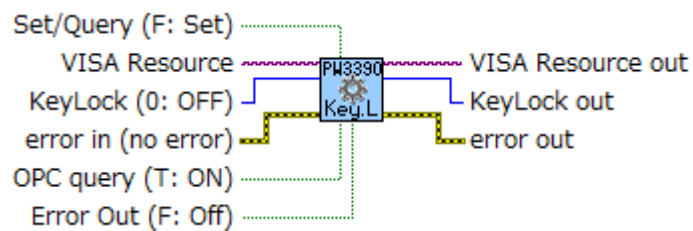
#### Output

Name	Data Type	Explanation
Beep out	<b>TF</b>	Outputs the query results of the beep setting. Output Range: True (ON), False (OFF)




### 3.3.7.2 HIOKI PW3390 Conf KeyLock.vi


Sets and reads Key Lock.



#### Input

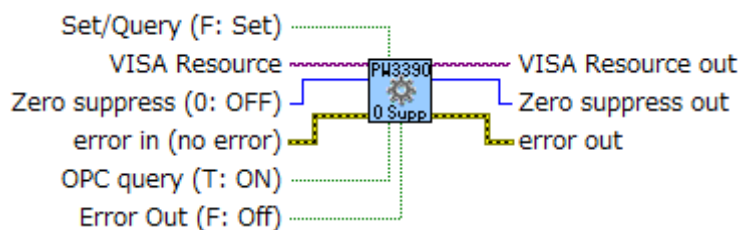
Name	Data Type	Explanation
KeyLock		Sets the Key Lock ON/OFF. Input Range: 0 (Off: Default), 1 (On)

#### Output


Name	Data Type	Explanation
KeyLock out		Outputs the query results of Key Lock. Output Range: 0 (Off), 1 (On)

### 3.3.7.3 HIOKI PW3390 Conf ZeroSp.vi


Sets and reads Zero Suppress.



#### Input

Name	Data Type	Explanation
Zero Suppress		Sets the Zero Suppress. Input Range: 0 (OFF: Default), 1 (0.1% f.s.), 2 (0.5% f.s.)

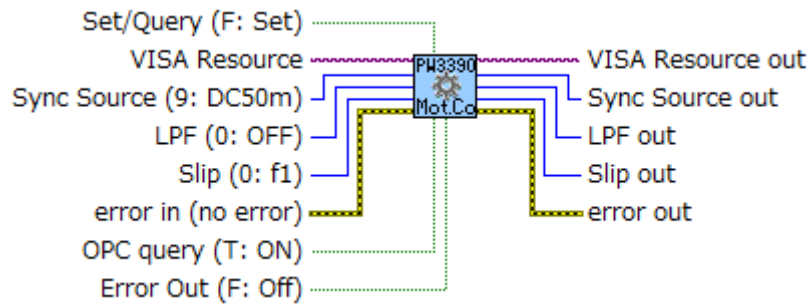
#### Output

Name	Data Type	Explanation
Zero Suppress out		Outputs the query results of the Zero Suppress. Output Range: 0 (OFF), 1 (0.1% f.s.), 2 (0.5% f.s.)

### 3.3.8 For the Motor

#### 3.3.8.1 HIOKI PW3390 Conf Motor Common.vi

Sets and reads the functions related to the Motor Analysis Option's both Channel A and B



#### Input

Name	Data Type	Explanation
Sync Source		Sets the motor synchronized source. Input Range: 0 (U1), 1 (U2), 2 (U3), 3 (U4), 4 (I1), 5 (I2), 6 (I3), 7 (I4), 8 (Ext), 9 (DC50ms: Default), 10 (DC100ms)  Note Ext can be set only when CH B is set as the Pulse.
LPF		Sets the low pass filter for the motor analysis. Input Range: 0 (OFF: Default), 1 (ON)
Slip		Sets the frequency source for the slip calculation. Input Range: 0 (f1: Default), 1 (f2), 2 (f3), 3 (f4)

#### Output

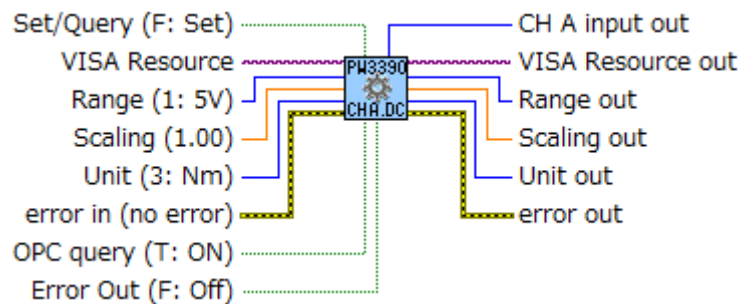
Name	Data Type	Explanation
Sync Source out		Outputs the query results of the motor synchronized source. Output Range: 0 (U1), 1 (U2), 2 (U3), 3 (U4), 4 (I1), 5 (I2), 6 (I3), 7 (I4), 8 (Ext), 9 (DC50ms), 10 (DC100ms)
LPF out		Outputs the query results of LPF. Output Range: 0 (OFF), 1 (ON)
Slip out		Outputs the query results of the frequency source for slip calculation. Output Range: 0 (f1), 1 (f2), 2 (f3), 3 (f4)

#### Note

The motor synchronized source and low pass filter for the motor analysis and frequency source for slip calculation were selectable at the "HIOKI3390 Conf External A DC.vi" of the 3390LabVIEW driver. These setting can specify at the "HIOKI PW3390 Conf Motor Common.vi".

### 3.3.8.2 HIOKI PW3390 Conf CH A DC.vi

Sets and reads the function related to the Motor Analysis Option's Channel A voltage. This instance can select from the "HIOKI PW3390 Conf CH A (Polymorphic VI)".



#### Input

Name	Data Type	Explanation
Range		Sets the voltage range of Channel A. Input Range: 0 (1), 1 (5: Default), 2 (10)
Scaling		Sets the scaling of Channel A. Input Range: 0.01 – 9999.99 (1.00: Default)
Unit		Sets the Channel A unit. Input Range: 0 (V), 1 (Hz), 2 (mNm), 3 (Nm: Default), 4 (kNm)  Note: When Channel A is in the Analog DC setting and "Hz" is set, the Channel A input setting changes to frequency, and when the Channel A is in the frequency setting and "V" is set, the Channel A input setting changes to Analog DC.

#### Output

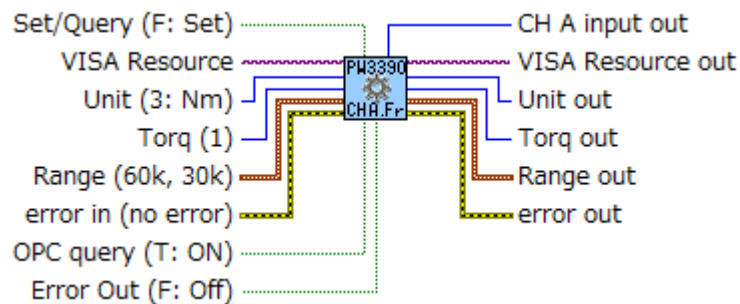
Name	Data Type	Explanation
CH A input out		Outputs the query results of the Channel A input. Output Range: 0 (Frequency), 1 (AnalogDC)
Range out		Outputs the query results of the Channel A voltage range. Output Range: 0 (1), 1 (5), 2 (10)
Scaling out		Outputs the query results of Channel A scaling. Output Range: 0.01 – 9999.99
Unit out		Outputs the query results of Channel A unit. Output Range: 0 (V), 1 (Hz), 2 (mNm), 3 (Nm), 4 (kNm)

#### Note

The motor synchronized source and low pass filter for the motor analysis and frequency source for slip calculation were selectable at the "HIOKI3390 Conf External A DC.vi" of the 3390LabVIEW driver. These setting can specify at the "HIOKI PW3390 Conf Motor Common.vi".

### 3.3.8.3 HIOKI PW3390 Conf CH A Frequency.vi

Sets and reads the functions related to the Motor Analysis Option's Channel A input frequency. This instance can select from the "HIOKI PW3390 Conf CH A (Polymorphic VI)".



#### Input

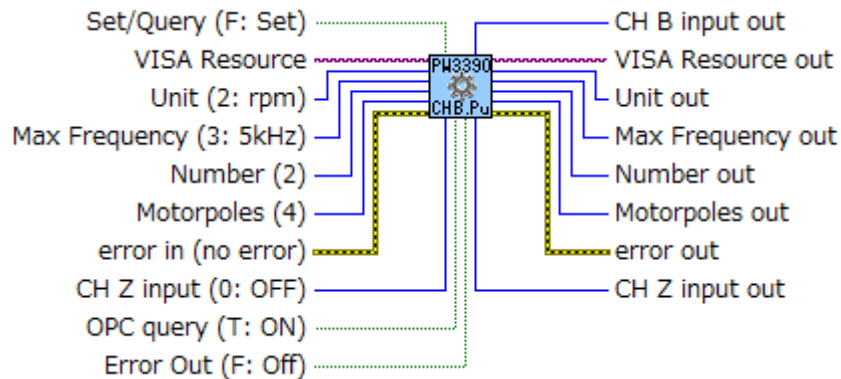
Name	Data Type	Explanation
Range		Sets the Channel A's frequency ranges fc and fd. Input Range fc: 3000 – 98000 (60000: Default) Input Range fd: 1000 – 48000 (30000: Default)  Note: Can be set when it is $fc + fd < 100\text{kHz}$ and $fc - fd > 1\text{kHz}$ . Always set fc and fd in multiples of 1000.
Torq		Sets the torque value of Channel A. Input Range: 1 – 999 (1: Default)  Note: The values set here will be used in combination with the units set in UNIT.
Unit		Sets the Channel A unit. Input Range: 0 (V), 1 (Hz), 2 (mNm), 3 (Nm: Default), 4 (kNm)  Note: When Channel A is in the Analog DC setting and "Hz" is set, the Channel A input setting changes to frequency, and when the Channel A is in the frequency setting and "V" is set, the Channel A input setting changes to Analog DC.

#### Output

Name	Data Type	Explanation
CH A input out		Outputs the query results of the Channel A input. Output Range: 0 (Frequency), 1 (AnalogDC)
Range out		Outputs the query results of the frequency ranges fc and fd of Channel A. Output Range fc: 3000 – 98000 Output Range fd: 1000 – 48000
Torq out		Outputs the query results of the torque value of Channel A. Output Range: 1 - 999
Unit out		Outputs the query results of the Channel A unit. Output Range: 0 (V), 1 (Hz), 2 (mNm), 3 (Nm), 4 (kNm)

### 3.3.8.4 HIOKI PW3390 Conf CH B Pulse.vi

Sets and reads the functions related to the Motor Analysis Option's Channel B pulse. This instance can select from the "HIOKI PW3390 Conf CH B (Polymorphic VI)".



#### Input

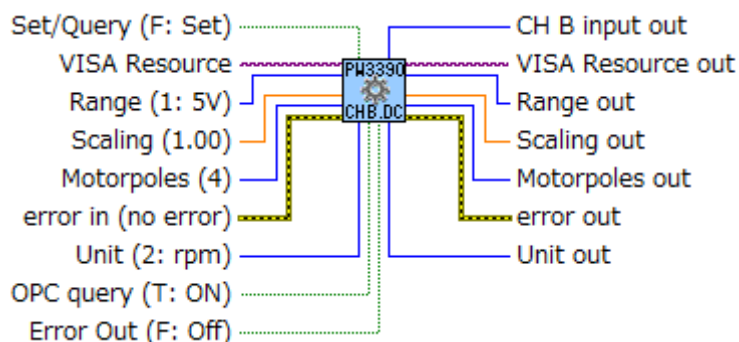
Name	Data Type	Explanation
Max Frequency		Sets the measured maximum frequency of Channel B. Input Range: 0 (100Hz), 1 (500Hz), 2 (1kHz), 3 (5kHz: Default)
Number		Sets the pulse value of Channel B. Input Range: 1 – 60000 (2: Default) Note: Only half multiples of the motor poles that are set can be set.
Motorpoles		Sets the motor poles. Input Range: even values of 2 – 98 (4: Default) Note: When an odd number is set, an even number smaller than the set value will be set.
Unit		Sets the unit of Channel B. Input Range: 0 (V), 1 (Hz), 2 (rpm: Default) Note: When Channel B is in the Pulse setting and "V" is set, Channel B's input setting changes to Analog DC.
CH Z input		Sets the Channel Z Input. Input Range: 0 (OFF: Default), 1 (Z phase), 2 (B phase)

#### Output

Name	Data Type	Explanation
CH B input out		Outputs the query results of Channel B input. Output Range: 0 (Pulses), 1 (AnalogDC)
Max Frequency out		Outputs the measured maximum frequency of Channel B. Output Range: 0 (100Hz), 1 (500Hz), 2 (1kHz), 3 (5kHz)
Number out		Outputs the query results of the pulse value of Channel B. Output Range: 1 – 60000
Motorpoles out		Outputs query results of the motor poles. Output Range: even values of 2 – 98
Unit out		Outputs the query results of Channel B unit. Output Range: 0 (V), 1 (Hz), 2 (rpm)
CH Z input out		Outputs the query results of Channel Z input. Output Range: 0 (OFF), 1 (Z phase), 2 (B phase)

### 3.3.8.5 HIOKI PW3390 Conf CH B DC.vi

Sets and reads the functions related to the Motor Analysis Option's Channel B voltage. This instance can select from the "HIOKI PW3390 Conf CH B (Polymorphic VI)".



#### Input

Name	Data Type	Explanation
Range		Sets the voltage range of Channel B. Input Range: 0 (1), 1 (5: Default), 2 (10)
Scaling		Sets the Scaling of Channel B. Input Range: 0. 01 – 9999.99 (1.00: Default)
Motorpoles		Sets the Motor Poles. Input Range: even values of 2 – 98 (4: Default)  Note: When an odd number is set, an even number smaller than the set value will be set.
Unit		Sets the unit of Channel B. Input Range: 0 (V), 1 (Hz), 2 (rpm: Default)  Note: When Channel B is in the Pulse setting and "V" is set, Channel B's input setting changes to Analog DC.

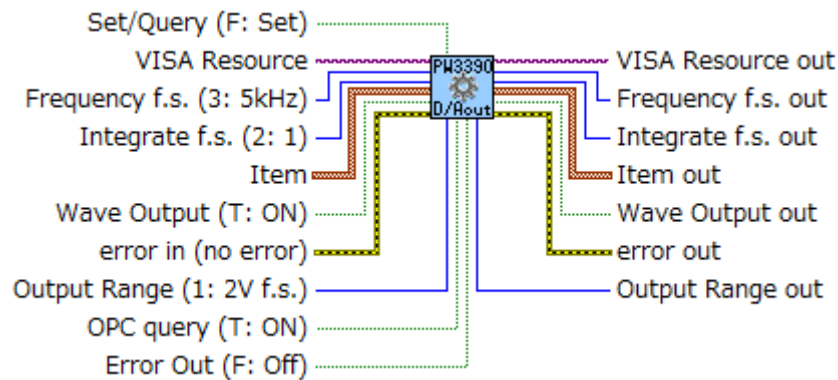
#### Output

Name	Data Type	Explanation
CH B input out		Outputs the query results of Channel B input. Output Range: 0 (Pulses), 1 (AnalogDC)
Range out		Outputs the query results of Channel B's voltage range. Output Range: 0 (1), 1 (5), 2 (10)
Scaling out		Outputs the query results of Channel B's scaling. Output Range: 0. 01 – 9999.99
Motorpoles out		Outputs the query results of the Motor Poles. Output Range: even values of 2 – 98
Unit out		Outputs the query results of Channel B unit. Output Range: 0 (V), 1 (Hz), 2 (rpm)

### 3.3.9 For the D/A Output

#### 3.3.9.1 HIOKI PW3390 Conf Aout.vi

Sets and reads the functions related to D/A Output.








#### Input

Name	Data Type	Explanation
Frequency f.s.		Sets the frequency full scale and the motor's maximum frequency. Input Range: 0 (100 Hz), 1 (500 Hz), 2 (1kHz), 3 (5kHz: Default)  Note The settings for the frequency full scale of D/A Output and the settings for the motor's measured maximum frequency are the same.
Integrate f.s.		Sets the Integration full scale coefficients. Input Range: 0(1/10), 1(1/2), 2(1: Default), 3(5), 4(10), 5(50), 6(100), 7(500), 8(1000), 9(5000), 10(10000)
Item		Sets the D/A Output Items (Item, CH). Specifies the output items between 1 and 16. Item Input Range: 0(OFF), 1(Urms: Default), 2(Umn), 3(Uac), 4(Udc), 5(Ufnd), 6(Upk+), 7(Upk-), 8(Uthd), 9(Urf), 10(Uunb), 11(Irms), 12(lmn), 13(lac), 14(ldc), 15(lfnd), 16(lpk+), 17(lpk-), 18(lthd), 19(lrf), 20(lunb), 21(P), 22(S), 23(Q), 24(PF), 25(DEG U), 26(DEG I), 27(DEG P), 28(f), 29(EFFI), 30(LOSS), 31(IH+), 32(IH-), 33(IH), 34(WP+), 35(WP-), 36(WP), 37(CH A), 38(CH B), 39(Pm), 40(Slip)  Ch Input Range: 0(1: Default), 1(2), 2(3), 3(4), 4(12), 5(34), 6(123)
Wave Output		Sets the ON/OFF of the waveform output. Input Range: FALSE (OFF), True (ON: Default)
Output Range		Sets the full scale of the waveform output. Input Range: 0 (1), 1 (2: Default)



## Output

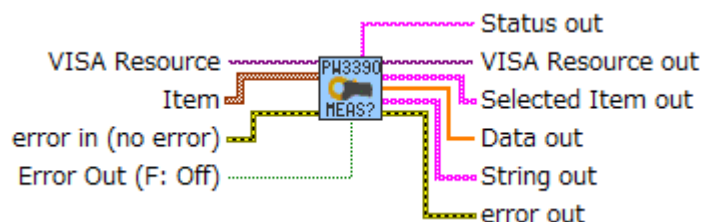
Name	Data Type	Explanation
Frequency f.s. out		Outputs the query results of the frequency full scale and the maximum frequency. Output Range: 0(100Hz), 1(500Hz), 2(1kHz), 3(5kHz)
Integrate f.s. out		Outputs the query results of the integration full scale. Output Range: 0(1/10), 1(1/2), 2(1), 3(5), 4(10), 5(50), 6(100), 7(500), 8(1000), 9(5000), 10(10000)
Item out		Outputs the query results of the D/A Output Items. Item Output Range: 0(OFF), 1(Urms), 2(Umn), 3(Uac), 4(Udc), 5(Ufnd), 6(Upk+), 7(Upk-), 8(Uthd), 9(Urf), 10(Uunb), 11(Irms), 12(lmn), 13(lac), 14(ldc), 15(lfnd), 16(lpk+), 17(lpk-), 18(lthd), 19(lrf), 20(lunb), 21(P), 22(S), 23(Q), 24(PF), 25(DEG U), 26(DEG I), 27(DEG P), 28(f), 29(EFFI), 30(LOSS), 31(IH+), 32(IH-), 33(IH), 34(WP+), 35(WP-), 36(WP), 37(CH A), 38(CH B), 39(Pm), 40(Slip)  Ch Output Range: 0(1), 1(2), 2(3), 3(4), 4(12), 5(34), 6(123)
Wave Output out		Outputs the query results of the waveform output. Output Range: False (OFF), True (ON)
Output Range out		Outputs the query results of the waveform output full scale. Output Range: 0 (1), 1 (2)

### 3.4 Measure VI


#### 3.4.1 For the Measurement

##### 3.4.1.1 HIOKI PW3390 Measure.vi





Reads the measurement data.



#### Input

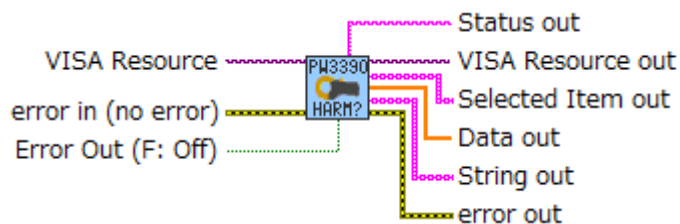
Name	Data Type	Explanation
Item		<p>When the item number is more than 0 Creates measurement data specified by the Item. Up to a maximum of 64 items. Items are arranged arbitrarily, and data is created in the order specified. Ch configuration of the Item after CH A is unnecessary.</p> <p>When the item number is 0 Creates measurement data specified by “HIOKI PW3390 Conf Measure Item.vi”. In this case, the measurement data's order is fixed. (Refer to output items and order)</p>

#### Output





Name	Data Type	Explanation
Status out		Returns the Status data.
Selected Item out		Returns the measurement item specified by Item or “HIOKI PW3390 Conf Measure Item.vi”.
Data out		Returns the measurement data.
String out		Returns the measurement data as string.

### 3.4.1.2 HIOKI PW3390 Meas Harmonic.vi

Reads the Harmonic Measurement Data.

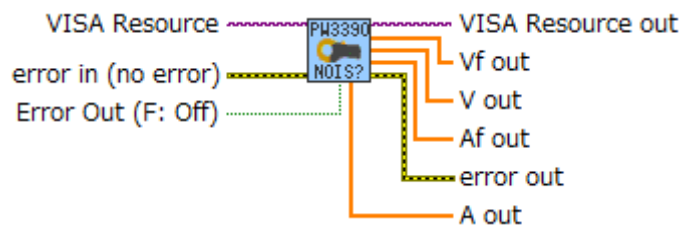


#### Output

Name	Data Type	Explanation
Status out		Returns the Status data.
Selected Item out		Returns the measurement item specified by "HIOKI PW3390 Conf Measure Item Harmonic.vi".
Data out		Returns the measurement data specified by "HIOKI PW3390 Conf Measure Item Harmonic.vi". In this case, the measurement data's order is fixed. (Refer to output items and order)
String out		Returns the measurement data as string.

### 3.4.1.3 HIOKI PW3390 Meas NoisePeak.vi

Reads the Noise Measurement Data.

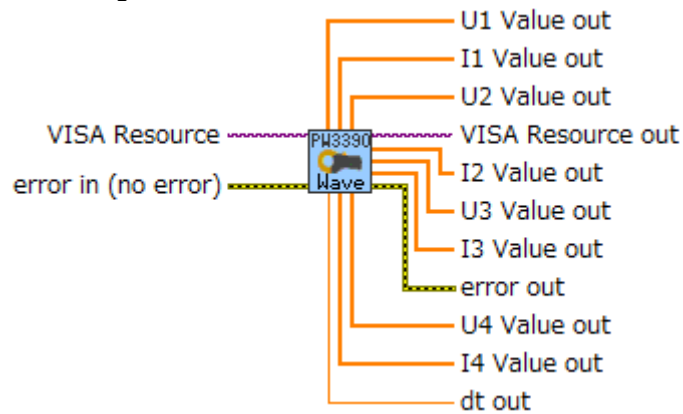


#### Output










Name	Data Type	Explanation
Vf out	[DBL]	Returns the frequencies of the top ten highest Noise Measurement voltage peak values.
V out	[DBL]	Returns the levels of the top ten highest Noise Measurement voltage peak values.
Af out	[DBL]	Returns the frequencies of the top ten highest Noise Measurement current peak values.
A out	[DBL]	Returns the levels of the top ten highest Noise Measurement current peak values.

### 3.4.1.4 HIOKI PW3390 Meas Wave.vi

Reads the wave data of the voltage and current.



#### Output

Name	Data Type	Explanation
U1 Value out		Outputs the CH1 voltage values array. The number of elements in this array is determined by the number of points for the noise analysis.
I1 Value out		Outputs the CH1 current values array.
U2 Value out		Outputs the CH2 voltage values array.
I2 Value out		Outputs the CH2 current values array.
U3 Value out		Outputs the CH3 voltage values array.
I3 Value out		Outputs the CH3 current values array.
U4 Value out		Outputs the CH4 voltage values array.
I4 Value out		Outputs the CH4 current values array.
dt out		Outputs the differential time (millisecond) between the points of the above array.

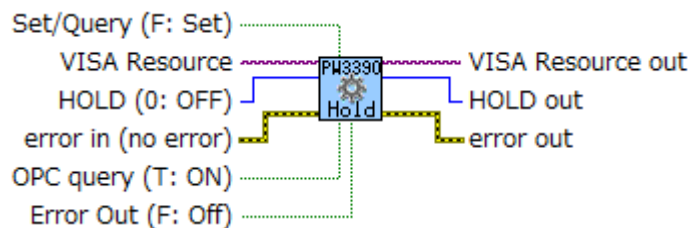
#### Note:

This VI's block diagram is locked because of using the undisclosed command.

The dt value is determined by the sampling speed and the number of points for the noise analysis.

### 3.4.1.5 HIOKI PW3390 Hold.vi

Sets and reads the Hold Status.



#### Input

Name	Data Type	Explanation
HOLD		<p>Sets the HOLD status. Input Range: 0 (OFF: Default), 1 (ON), 2 (PEAK)</p> <p>Note: Uses the "HIOKI PW3390 TRG.vi" to renew data during HOLD or PEAK HOLD status.</p>

#### Output

Name	Data Type	Explanation
HOLD out		<p>Outputs the query results of the Hold Status. Output Range: 0 (OFF), 1 (ON), 2 (PEAK)</p>


### 3.4.2 For the Integration

#### 3.4.2.1 HIOKI PW3390 Meas Integ State.vi

Reads the integration (time control) status.

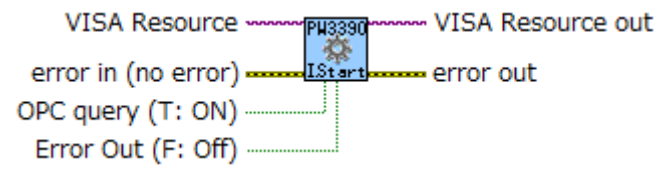


#### Output

Name	Data Type	Explanation
State out		Outputs the query results of the device's integration status. Output Range: 0 (RESET), 1 (STOP), 2 (WAIT), 3 (RUN)

### 3.4.2.2 HIOKI PW3390 Meas Integ Start.vi

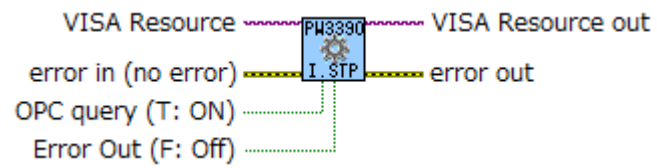
Starts Integration (time control).





### 3.4.2.3 HIOKI PW3390 Meas Integ Stop.vi

Stops Integration (time control).

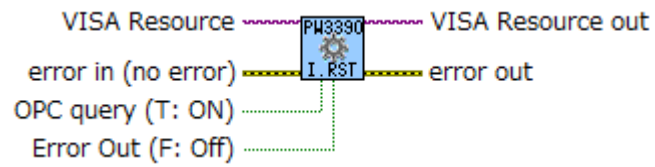


Note:

This command is valid only when Integration Status is in RUN/WAIT.

#### 3.4.2.4 HIOKI PW3390 Meas Integ Reset.vi

Resets the Integration data. Same operation as the DATA RESET key on the main device.



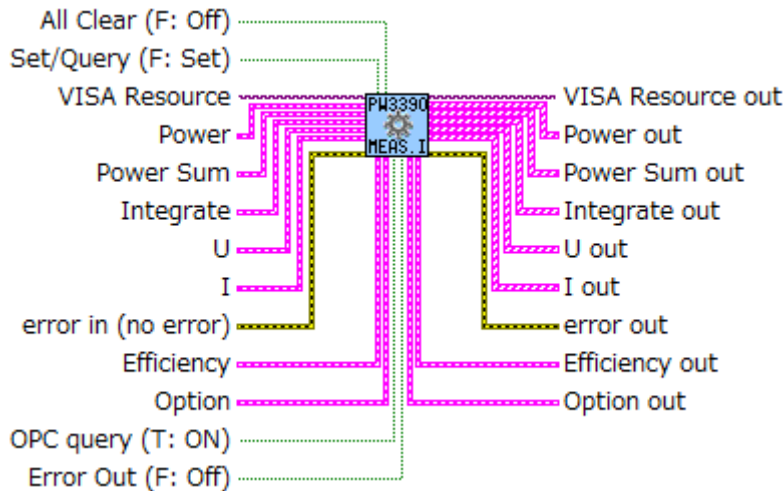
Note:

This command is valid only when Integration status is in STOP.

### 3.4.3 For the Measurement Items

#### 3.4.3.1 HIOKI PW3390 Conf Measure Item.vi

Sets and reads the functions related to Measurement Data. This instance specifies the measuring data in case the item number is 0 at the “HIOKI PW3390 Measure.vi”.



#### Input

Name	Data Type	Explanation
Power		Sets the normal measurement output items of the various channels to Boolean's ON/OFF.
Power Sum		Sets the normal measurement output items of SUM channels to Boolean's ON/OFF.
U		Sets the voltage data output items to Boolean's ON/OFF.
I		Sets the current data output items to Boolean's ON/OFF.
Integrate		Sets the integration data output items to Boolean's ON/OFF.
Efficiency		Sets the output items of the efficiency/loss calculation formula to Boolean's ON/OFF.
Option		Sets the output items of Option to Boolean's ON/OFF.
All Clear		Initializes the Output data items. All output data items become OFF.

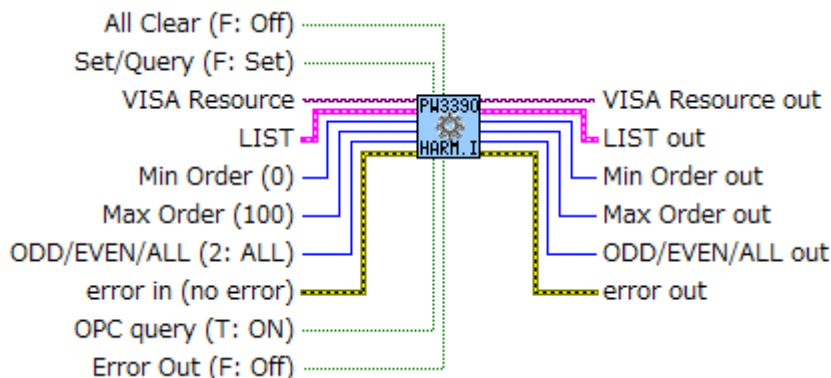
#### Output

Name	Data Type	Explanation
Power out		Outputs the query results of the normal measurement output items of the various channels.
Power Sum out		Outputs the query results of the normal measurement output items of SUM channels.
U out		Outputs the query results of the voltage data output items.
I out		Outputs the query results of the current data output items.
Integrate out		Outputs the query results of the integration data output items.
Efficiency out		Outputs the query results of the output items of the efficiency/loss calculation formula.
Option out		Outputs the query results of the output items of Option.

Note:  
All defaults are OFF.

### 3.4.3.2 HIOKI PW3390 Conf Measure Item Harmonic.vi

Sets and reads the functions related to the Harmonic Measurement Data.



#### Input

Name	Data Type	Explanation
LIST		Sets the data responding as “HIOKI PW3390 Meas Harmonic.vi” to Boolean’s ON/OFF. Specify the Harmonic List (Level, Content, Phase Angle) here.
Min Order		Sets the lower order value. Input Range: 0 – 100 (0: Default)
Max Order		Sets the upper order value. Input Range: 0 – 100 (100: Default)
ODD/EVEN/ALL		Sets the harmonic order to output. Odd, even or all orders is selectable. Input Range: 0 (ODD), 1 (EVEN), 2 (ALL: Default)
All Clear		Initializes the harmonic communication output data items. All harmonic communication output data items become OFF.

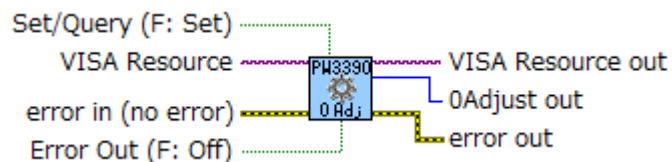
#### Output

Name	Data Type	Explanation
LIST out		Outputs the query results of the sent items.
Min Order out		Outputs the query results of the lower order value. Output Range: 0 – 100
Max Order out		Outputs the query results of the upper order value. Output Range: 0 - 100
ODD/EVEN/ALL out		Outputs the query results of the harmonic order to output. Output Range: 0 (ODD), 1 (EVEN), 2 (ALL)


### 3.4.4 For the Preparation

#### 3.4.4.1 HIOKI PW3390 0Adjust.vi

Executes the Zero Adjust.

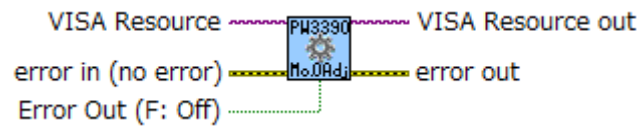


#### Output

Name	Data Type	Explanation
0Adjust out		<p>Outputs the query results of the zero adjust.</p> <p>Output Range:</p> <ul style="list-style-type: none"> <li>0 (OK): Normal completion</li> <li>1 (BUSY): Executing Zero Adjust</li> <li>2 (ERROR): Zero Adjust Failed</li> </ul> <p>Note:</p> <p>The zero adjust takes more than 30 seconds to execute and in that period, you may get an execution command error. Please combine with the "HIOKI PW3390 OPC.vi" and wait for the OPC response before sending the next command. The OPC response indicates the completion of zero adjust.</p>

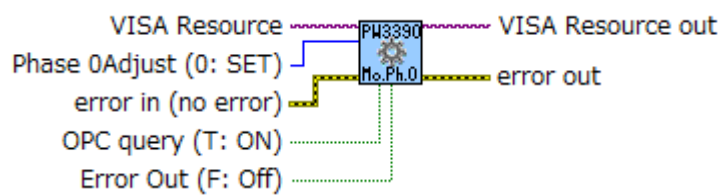
### 3.4.4.2 HIOKI PW3390 Motor 0Adjust.vi

Executes zero adjust of Motor Analysis Option.




### 3.4.4.3 HIOKI PW3390 Motor Phase 0Adjust.vi

Executes and clears the Motor Analysis Option Phase Zero Adjust.



#### Input

Name	Data Type	Explanation
Phase 0Adjust		Executes the Phase Zero Adjust. Phase Zero Adjust is available only when CH B is set for pulse input and [Harm sync src] is set to [Ext]. Input Range: 0 (SET: Default), 1 (CLEAR)

## 4. DATA Structure

### 4.1 Output Items of “HIOKI PW3390 Conf Measure Item.vi” and its sequential order

Output Item		Output Item and the order				
Status		Status				
Elapsed time		Laptime				
Elapsed time in ms		Laptime(ms)				
Voltage	RMS	Urms1 to Urms4	Urms12	Urms34	Urms123	
	Rectified Average	Umn1 to Umn4	Umn12	Umn34	Umn123	
	AC Component	Uac1 to Uac4				
	Simple Average	Udc1 to Udc4				
	Fundamental Wave Component	Ufnd1 to Ufnd4				
	Waveform peak +	PUpk1 to PUpk4				
	Waveform peak –	MUpk1 to MUpk4				
	THD/Ripple Rate	Uthd1 to Uthd4 / Urf1 to Urf4				
	Unbalance factor	Uunb123				
Current	RMS	Irms1 to Irms4	Irms12	Irms34	Irms123	
	Rectified Average	Imn1 to Imn4	Imn12	Imn34	Imn123	
	AC Component	Iac1 to Iac4				
	Simple Average	Idc1 to Idc4				
	Fundamental Wave Component	Ifnd1 to Ifnd4				
	Waveform peak +	PIpk1 to PIpk4				
	Waveform peak –	MIpk1 to MIpk4				
	THD/Ripple Rate	Ithd1 to Ithd4 / Irf1 to Irf4				
	Unbalance factor	Iunb123				
Effective power		P1 to P4	P12	P34	P123	
Apparent Power		S1 to S4	S12	S34	S123	
Reactive power		Q1 to Q4	Q12	Q34	Q123	
Power factor		PF1 to PF4	PF12	PF34	PF123	
Phase angle		DEG1 to DEG4	DEG12	DEG34	DEG123	
frequency		FREQ1 to FREQ4				
Integration	Integ. current in positive direction	PIH1 to PIH4				
	Integ. current in negative direction	MIH1 to MIH4				
	Sum of integ. current	IH1 to IH4				
	Energy in positive direction	PWP1 to PWP4	PWP12	PWP34	PWP123	
	Energy in negative direction	MWP1 to MWP4	MWP12	MWP34	MWP123	
	Sum of Energy	WP1 to WP4	WP12	WP34	WP123	
Efficiency		Eff1 to Eff3				
Loss		Loss1 to Loss3				
Motor		ExtA	ExtB	Pm	Slip	



## 4.2 Output Items of “HIOKI PW3390 Conf Measure Item Harmonic.vi and its sequential order

Harmonic Measurement Items				
Status			Status	
Harmonic Frequency			HFREQ	
(n=0)	nth order voltage	Level	HU1Ln	(n: order)
		Content	HU1Dn	
		Phase angle	HU1Pn	
		...	to	
		Level	HU4Ln	
		Content	HU4Dn	
		Phase angle	HU4Pn	
	nth order current	Level	HI1Ln	
		Content	HI1Dn	
		Phase angle	HI1Pn	
		...	to	
		Level	HI4Ln	
		Content	HI4Dn	
		Phase angle	HI4Pn	
	nth order power	Level	HP1Ln	
		Content	HP1Dn	
		Phase angle	HP1Pn	
		...	to	
		Level	HP4Ln	
		Content	HP4Dn	
		Phase angle	HP4Pn	
		Level	HP12Ln	
		Content	HP12Dn	
		Phase angle	HP12Pn	
		Level	HP34Ln	
		Content	HP34Dn	
		Phase angle	HP34Pn	
		Level	HP123Ln	
		Content	HP123Dn	
		Phase angle	HP123Pn	
(n=1 to 100)	...	...	...	(n: order)

### 4.3 Status Data

Status information displays the measurement status during measurement data saving and is expressed as a hexadecimal value of 32bit.

bit 31	bit 30	bit 29	bit 28	bit 27	bit 26	bit 25	bit 24
HM4	HM3	HM2	HM1	MRB	MRA	MPB	MPA
bit 23	bit 22	bit 21	bit 20	bit 19	bit 18	bit 17	bit 16
ULM	UDP	UCU	HUL	UL4	UL3	UL2	UL1
bit 15	bit 14	bit 13	bit 12	bit 11	bit 10	bit 9	bit 8
RI4	RI3	RI2	RI1	RU4	RU3	RU2	RU1
bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
PI4	PI3	PI2	PI1	PU4	PU3	PU2	PU1

HMx : Harmonic parameter invalid (when the Harmonic synchronization is off, etc.)

MRx : Motor analysis function A, B range over

MPx : Motor analysis function A, B peak over

ULM : Motor analysis function A, B synchronization unlock

UDP : Undisplayable (when the measurement data becomes significantly invalid immediately after a range change, etc.)

UCU : Uncalculable (when the measurement data becomes invalid immediately after a range change, etc.)

HUL : Harmonic synchronization unlock

ULx : Respective channels synchronization unlock

RIx : Respective channels current range over

RUx : Respective channels voltage range over

PIx : Respective channels current peak over

PUx : Respective channels voltage peak over

(x is the channel number)