



**PW3390 Power Analyzer
Sample Program
Instruction**

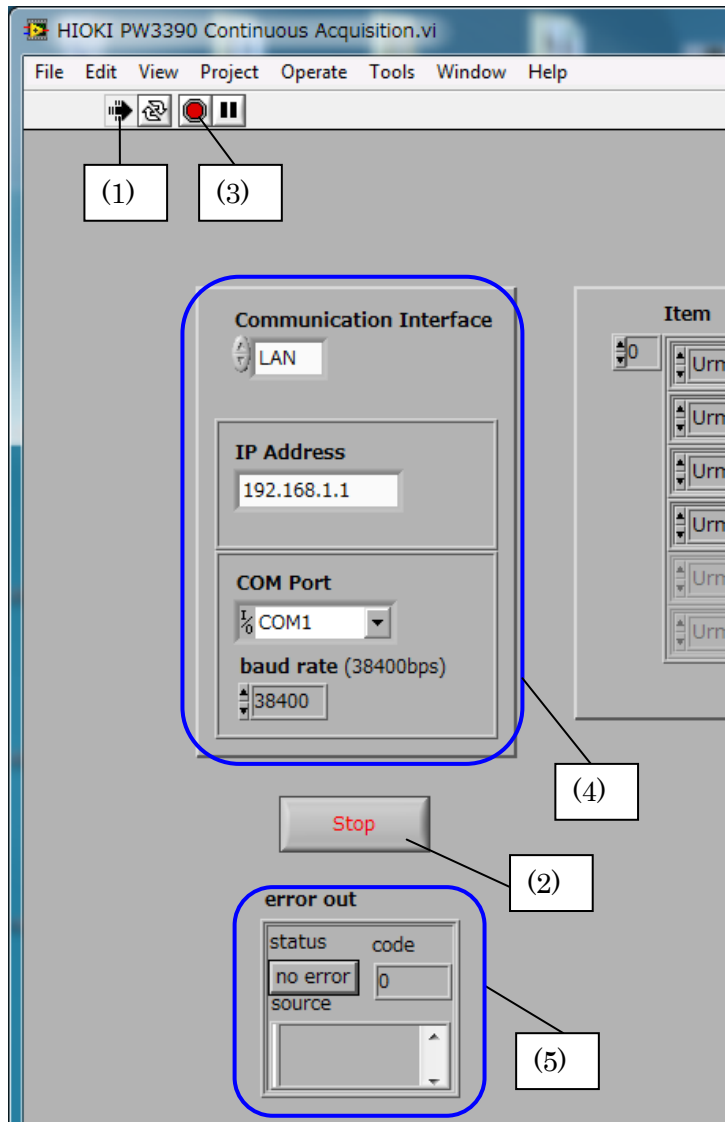
Revision History

| Edition | Contents | Reviser | Date |
|---------|---------------|---------|------------|
| 1.00 | First Edition | HIOKI | 2017/06/12 |
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Contents

| | |
|-------------------------------------------------------------|----|
| 1. Common Input & Output | 4 |
| 2. HIOKI PW3390 Configuration Simple Setting.vi | 5 |
| 3. HIOKI PW3390 Configuration Phase Correct.vi..... | 7 |
| 4. HIOKI PW3390 Configure Motor Analysis.vi..... | 9 |
| 5. HIOKI PW3390 Simple Acquisition.vi | 11 |
| 6. HIOKI PW3390 Continuous Acquisition.vi..... | 13 |
| 7. HIOKI PW3390 Continuous Acquisition Plot.vi..... | 15 |
| 8. HIOKI PW3390 Continuous Acquisition Integration.vi | 17 |
| 9. HIOKI PW3390 Acquisition Software Trigger.vi..... | 19 |
| 10. HIOKI PW3390 Acquisition Harmonic.vi | 21 |
| 11. HIOKI PW3390 Acquisition Waveform.vi | 23 |
| 12. HIOKI PW3390 Acquisition Wave+Noise.vi | 25 |
| 13. HIOKI PW3390 Acquisition Efficiency.vi..... | 27 |

1. Common Input & Output



(1) VI start button

(2) VI stop button

(3) VI forced termination button

(4) Window that specifies and configures the communication interface.

(5) Error message display

2. HIOKI PW3390 Configuration Simple Setting.vi

2.1 Front Panel

Sets the wiring mode and functions related to voltage and current.

Communication Interface

LAN

IP Address
192.168.1.1

COM Port
COM1

baud rate (38400bps)
38400

error out

status code
no error 0

source

Wiring (0: 1P2W)
1P2W 0

Voltage

CH1: Auto OFF, Range 600, U rect RMS

CH2: Auto OFF, Range 600, U rect RMS

CH3: Auto OFF, Range 600, U rect RMS

CH4: Auto OFF, Range 600, U rect RMS

Current

CH1: Auto OFF, Range 500, I rect RMS

CH2: Auto OFF, Range 500, I rect RMS

CH3: Auto OFF, Range 500, I rect RMS

CH4: Auto OFF, Range 500, I rect RMS

Not using CT9920

| Sensor | Selectable Current Range | | | | | |
|---------------|--------------------------|-------|-------|-------|-------|-------|
| 9272-05 (20A) | 2 A | 4 A | 8 A | 20 A | | |
| CT6841-05 | 0.4 A | 0.8 A | 2 A | 4 A | 8 A | 20 A |
| 5A | 0.1 A | 0.2 A | 0.5 A | 1 A | 2 A | 5 A |
| 50A | 1 A | 2 A | 5 A | 10 A | 20 A | 50 A |
| 200A | 4 A | 8 A | 20 A | 40 A | 80 A | 200 A |
| 500A | 10 A | 20 A | 50 A | 100 A | 200 A | 500 A |
| 1000A | 20 A | 40 A | 100 A | 200 A | 400 A | 1 kA |
| 2000A | 40 A | 80 A | 200 A | 400 A | 800 A | 2 kA |

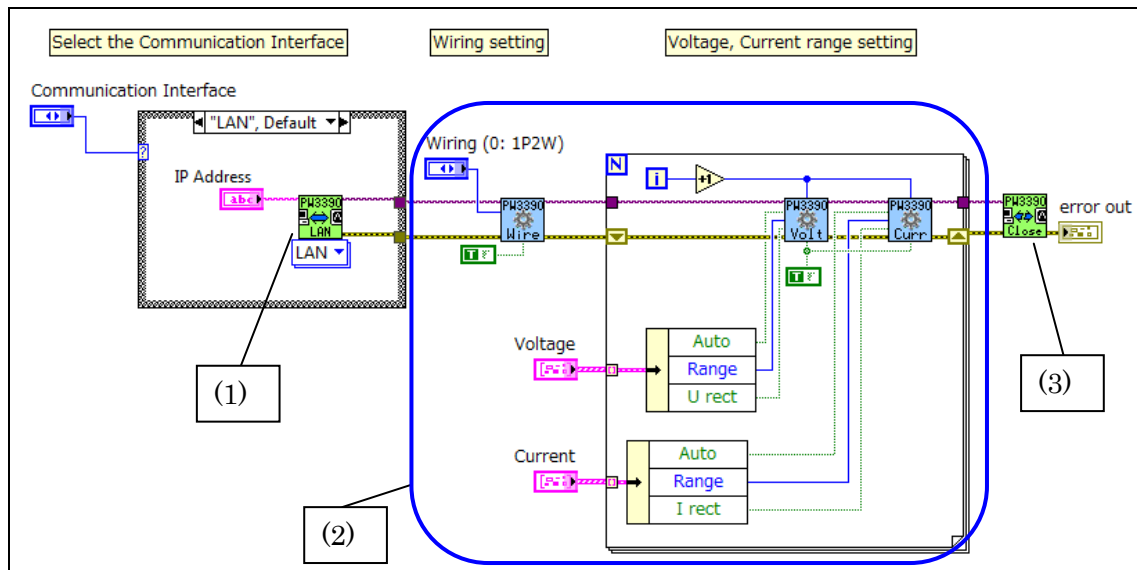
Using CT9920

| Sensor | Selectable Current Range | | | | | |
|------------------------|--------------------------|-------|-------|-------|-------|-------|
| 100uV/A | 400 A | 800 A | 2 kA | 4 kA | 8 kA | 20 kA |
| 1mV/A | 40 A | 80 A | 200 A | 400 A | 800 A | 2 kA |
| 10mV/A | 4 A | 8 A | 20 A | 40 A | 80 A | 200 A |
| 100mV/A | 0.4 A | 0.8 A | 2 A | 4 A | 8 A | 20 A |
| CT7642, CT7742 | 400 A | 800 A | 2 kA | | | |
| CT7044, CT7045, CT7046 | 400 A | 800 A | 2 kA | 4 kA | 8 kA | |

(1) Sets the Wiring mode.

(2) Sets the voltage and current ranges and rectification methods for the each channel.

2.2 Block Diagram



(1) Connects to PW3390 with the specified communication interface.

(2) The following steps are executed.

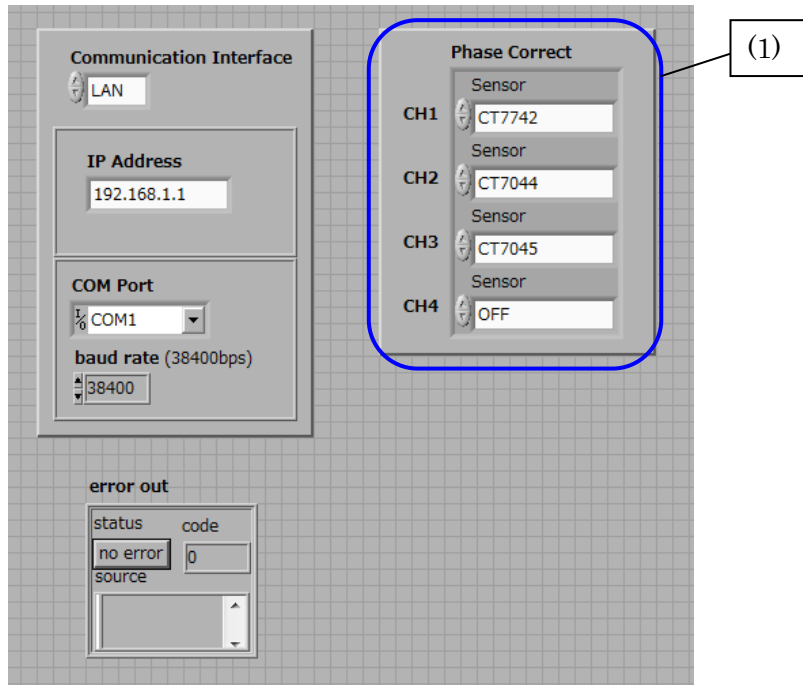
Set wiring mode -> Set voltage configuration -> Set current configuration

(3) Terminates the connection with PW3390.

3. HIOKI PW3390 Configuration Phase Correct.vi

3.1 Front Panel

Sets the phase correction for current sensors.

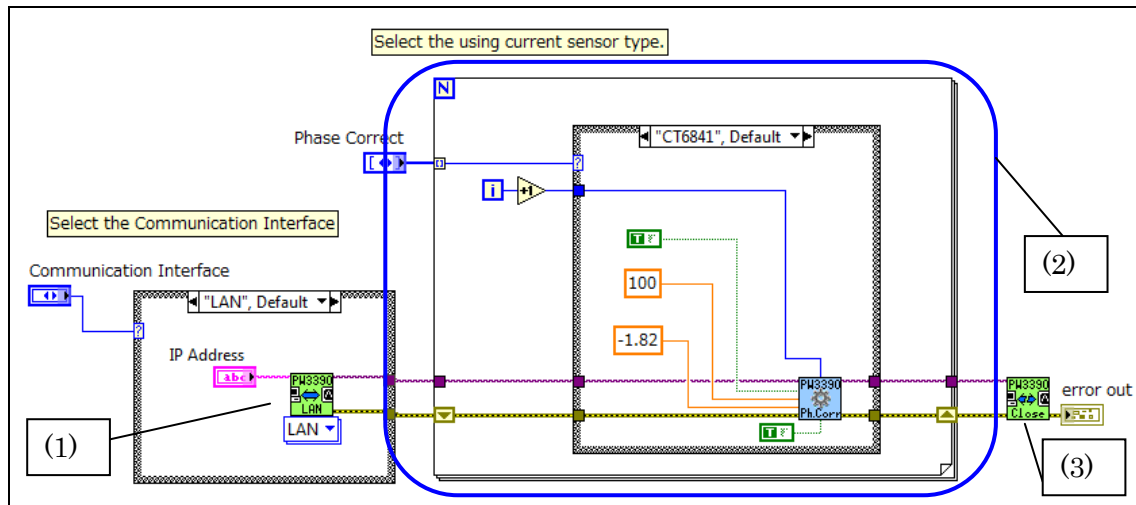


(1) Selects the using current sensor name. Phase correction frequency and angle are input according to the specified current sensor.

Note:

In the future, there is a possibility of revision about the phase correction frequency and angle. Please check the latest information from HIOKI homepage.

3.2 Block Diagram



- (1) Connects to PW3390 with the specified communication interface.
- (2) Sets the phase correct configuration. The subdiagram is selected according to the specified current sensor.
- (3) Terminates the connection with PW3390.

4. HIOKI PW3390 Configure Motor Analysis.vi

4.1 Front Panel

Sets the configuration and outputs the measurement data about the motor analysis.

(1)

(2)

CH A input

Range (1: 5V)

5 1

Scaling (1.00)

1.00

Unit (3: Nm)

Nm 3

CH B input

Max Frequency (3: 5kHz)

5kHz 3

Number (2)

2

Motorpoles (4)

4

Unit (2: rpm)

rpm 2

CH Z input (0: OFF)

OFF 0

Motor Common input

Sync source (9: DC50m)

DC50ms 9

LPF (0: OFF)

OFF 0

Slip (0: f1)

f1 0

Item

| Item | CH A | CH B | Pm | Slip |
|------|------|------|----|------|
| CH A | 3E | 1 | 0 | |
| CH B | 37 | 1 | 0 | |
| Pm | 3E | 1 | 0 | |
| Slip | 3E | 1 | 0 | |

Data out

0.2954

420

13

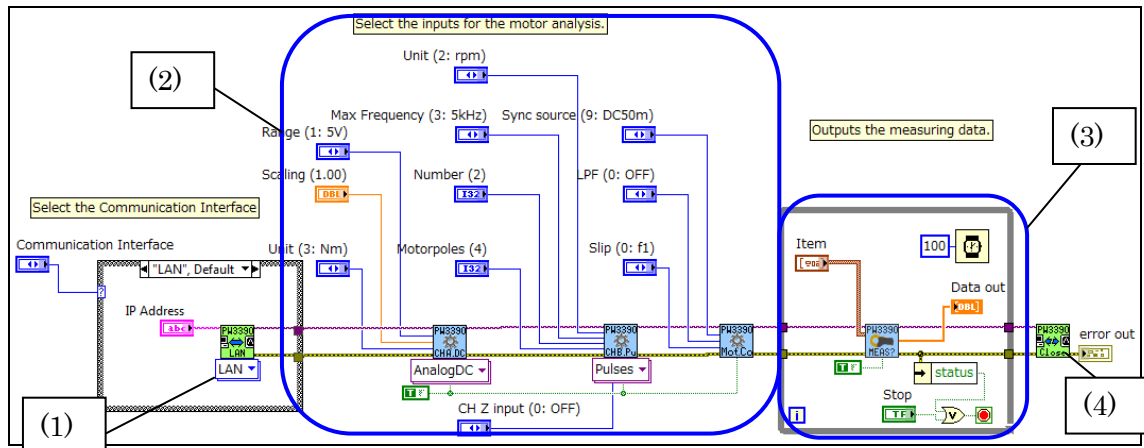
0.52

Note:
Please set configuration before starting the program.
Changing configuration during running the program is invalid.

(1) Sets the configuration for the motor analysis.

(2) Outputs the measurement data about the motor analysis in 100ms cycle.

4.2 Block Diagram



(1) Connects to PW3390 with the specified communication interface.

(2) The following steps are executed.

Set CH A configuration -> Set CH B configuration -> Set motor common configuration

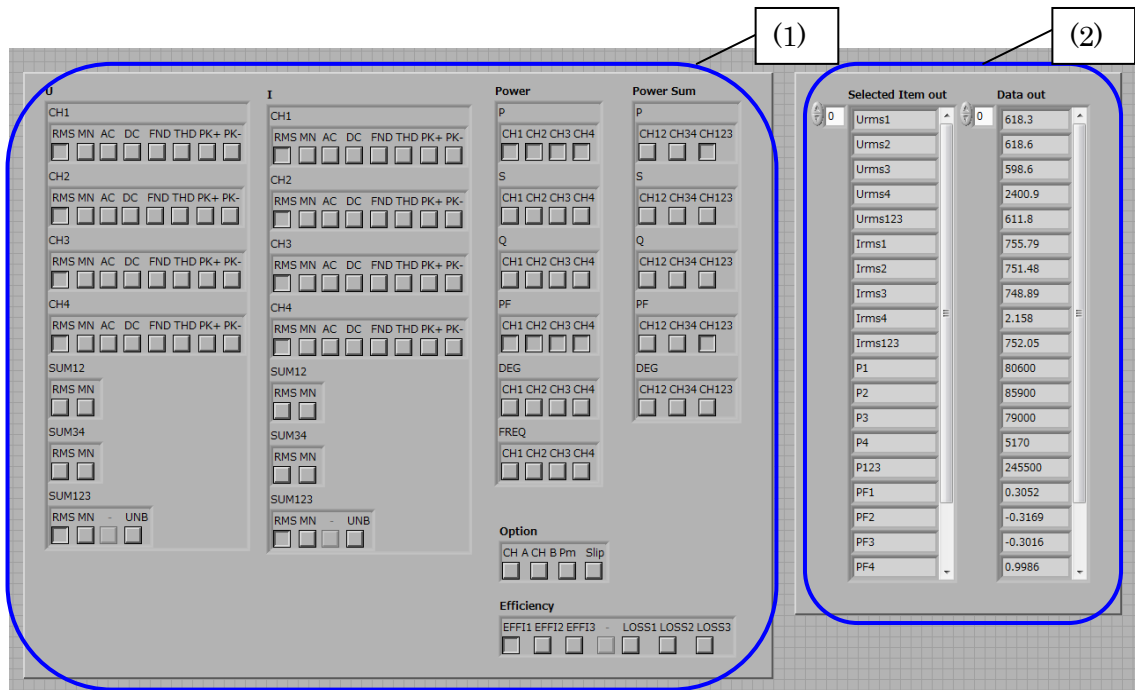
(3) Sets the output items and outputs the measurement data in 100ms cycle.

(4) Terminates the connection with PW3390.

5. HIOKI PW3390 Simple Acquisition.vi

5.1 Front Panel

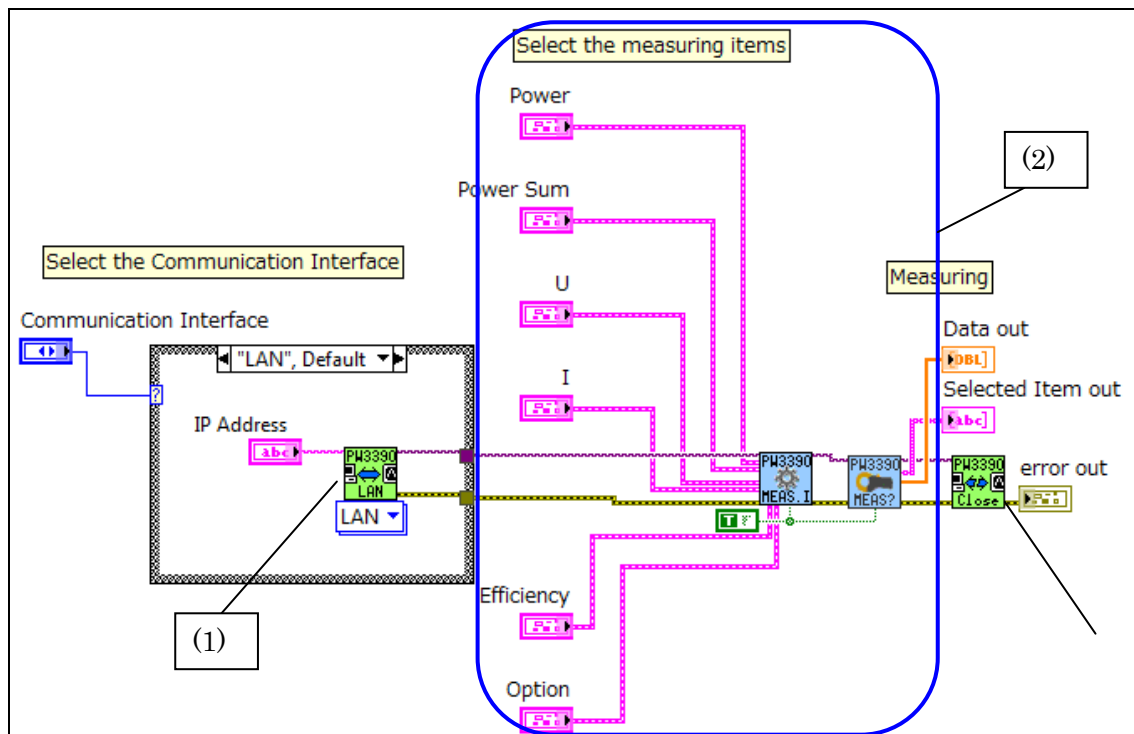
Sets the output items except for the integration items and outputs the specified measurement data.



(1) Sets the output items.

(2) Outputs the measurement data only once.

5.2 Block Diagram

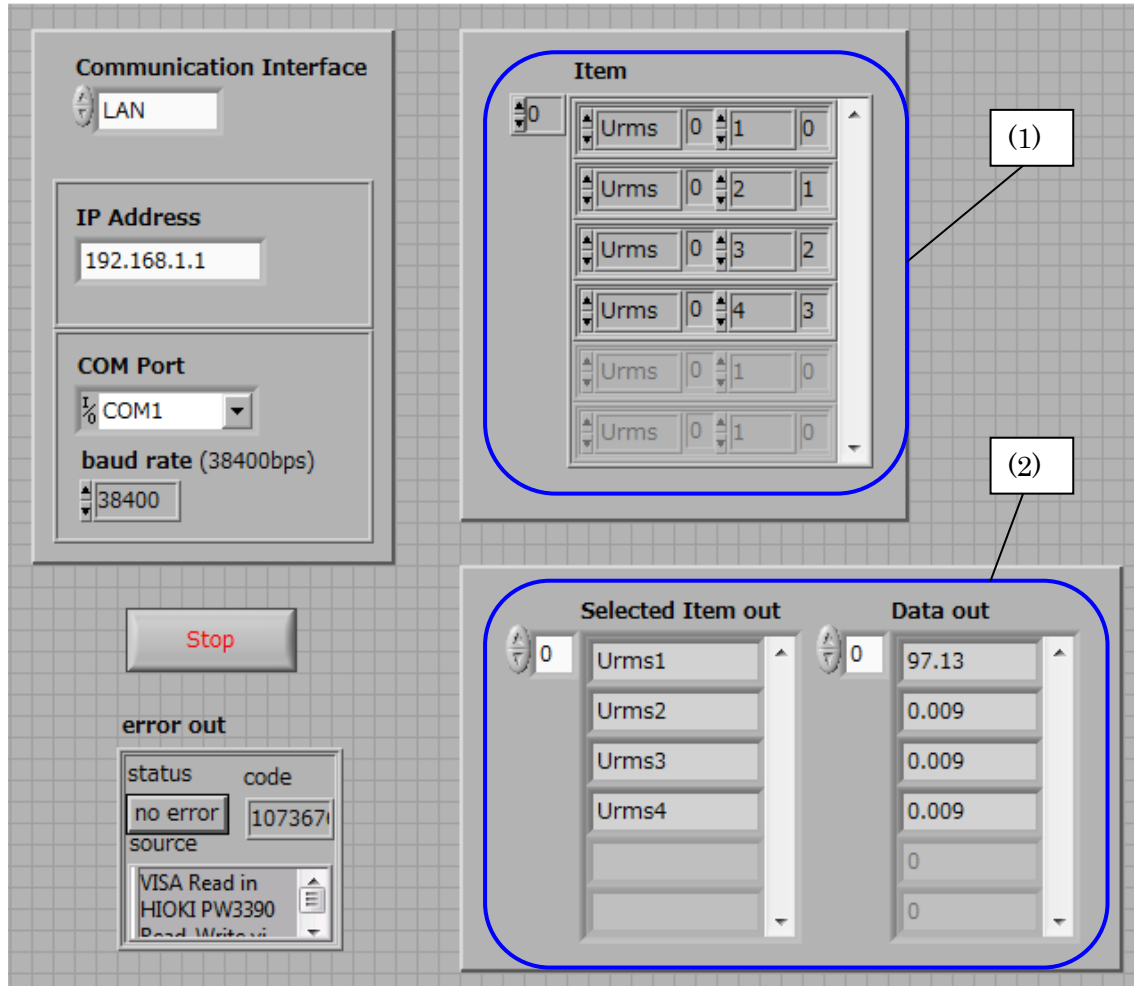


- (1) Connects to PW3390 with the specified communication interface.
- (2) Sets the output items and output the measurement data.
- (3) Terminates the connection with PW3390.

6. HIOKI PW3390 Continuous Acquisition.vi

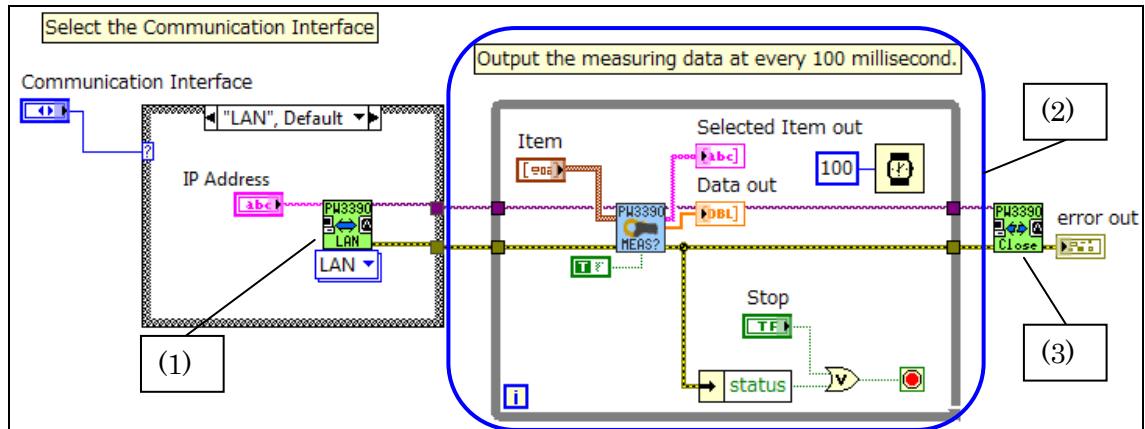
6.1 Front Panel

Continues to output the specified measurement data in 100ms cycle.



- (1) Sets the outputs items. Up to 64 items can be selected.
- (2) Outputs the specified measurement items and data.

6.2 Block Diagram

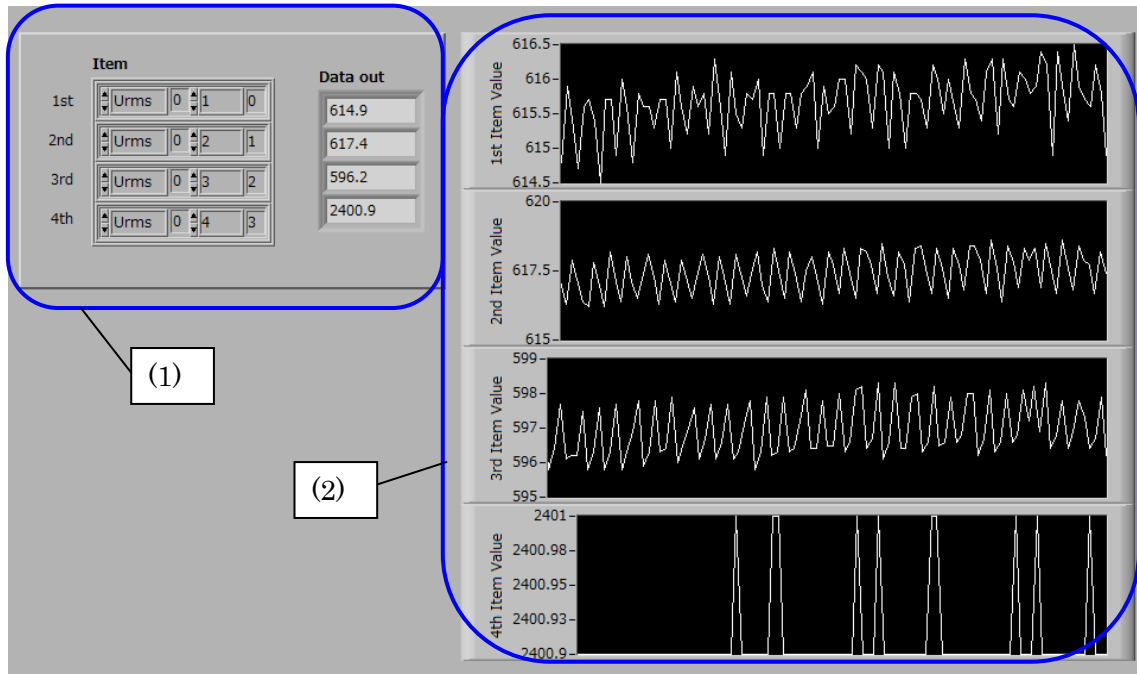


- (1) Connects to PW3390 with the specified communication interface.
- (2) Sets the output items and outputs the measurement data in 100ms cycle.
- (3) Terminates the connection with PW3390.

7. HIOKI PW3390 Continuous Acquisition Plot.vi

7.1 Front Panel

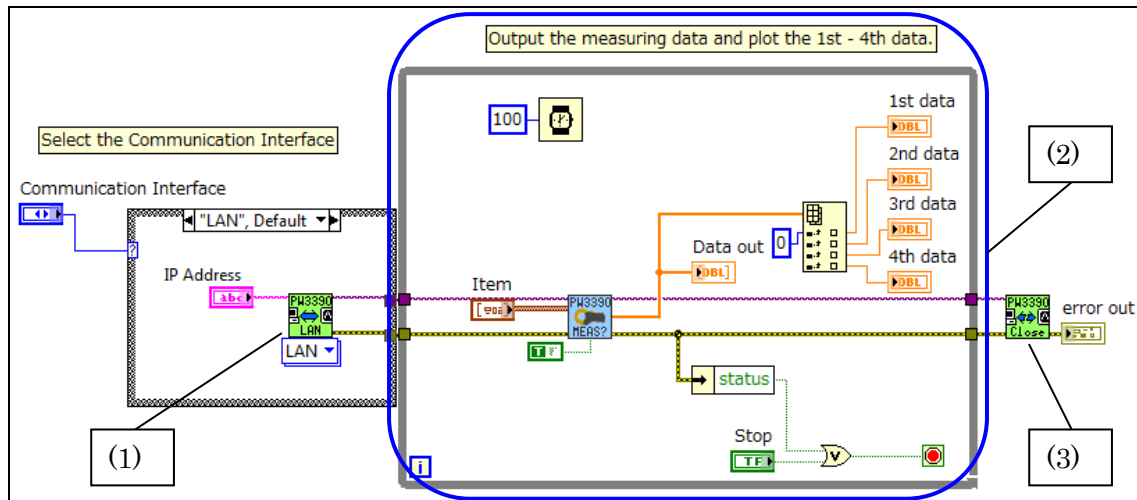
Continues to output and plot the specified measurement data in 100ms cycle.



(1) Sets the output items. Up to 4 items can be selected.

(2) Plots the specified measurement data.

7.2 Block Diagram

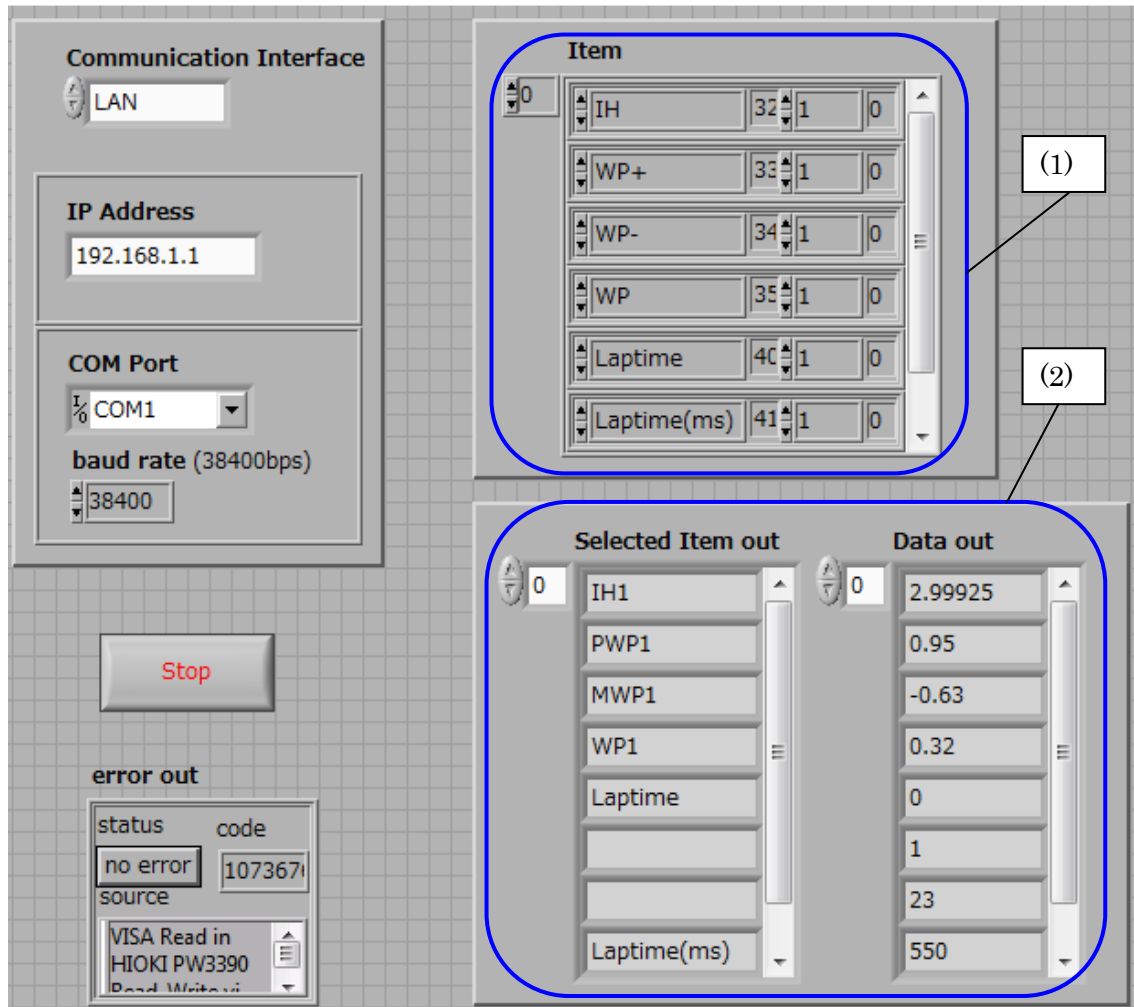


- (1) Connects to PW3390 with the specified communication interface.
- (2) Sets the output items, outputs and plots the measurement data in 100ms cycle.
- (3) Terminates the connection with PW3390.

8. HIOKI PW3390 Continuous Acquisition Integration.vi

8.1 Front Panel

Starting this program starts integration, and stopping this program stops integration. During running, the specified measurement data are output in 100ms cycle. Restarting this program leads reset and restart integration.

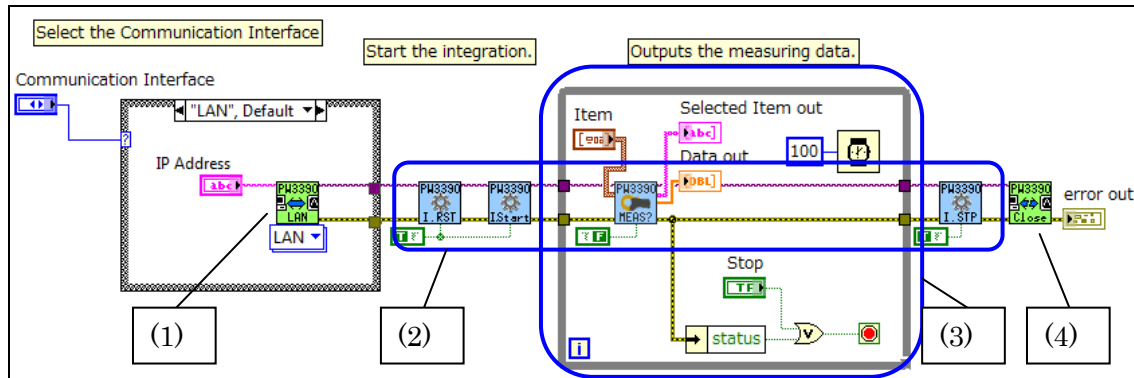


- (1) Sets the outputs items.
- (2) Outputs the specified measurement items and data.

Note:

When starting this program, set PW3390 display to the measurement screen. In the case of other screen, integration can't start.

8.2 Block Diagram



(1) Connects to PW3390 with the specified communication interface.

(2) The following steps are executed.

Integration reset -> Integration start -> Measurement in 100ms cycle ->
-> (VI Stop button) -> Integration stop

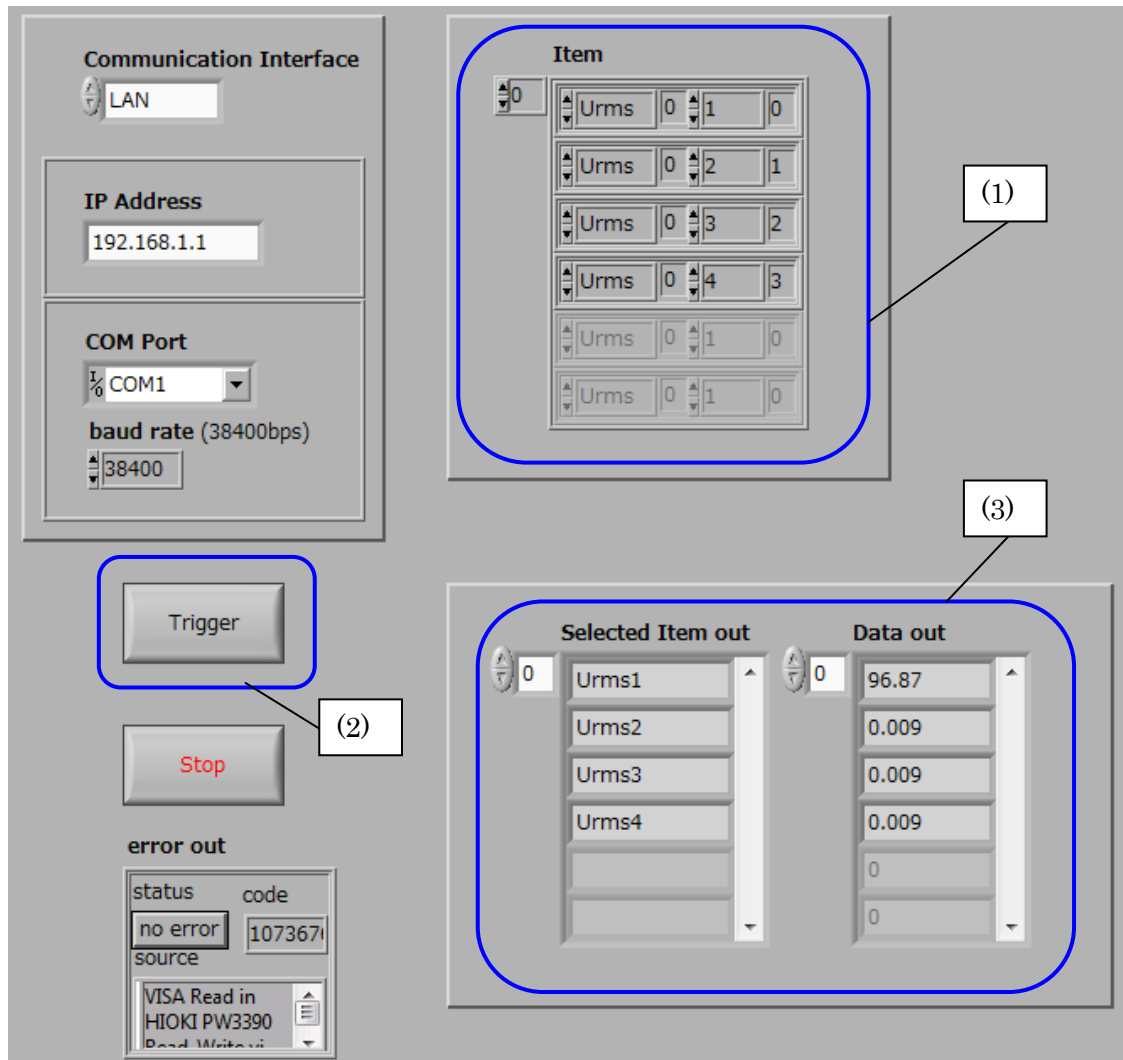
(3) Sets the output items and outputs the measurement data in 100ms cycle.

(4) Terminates the connection with PW3390.

9. HIOKI PW3390 Acquisition Software Trigger.vi

9.1 Front Panel

When each time pushing the trigger button, outputs the specified measurement data.

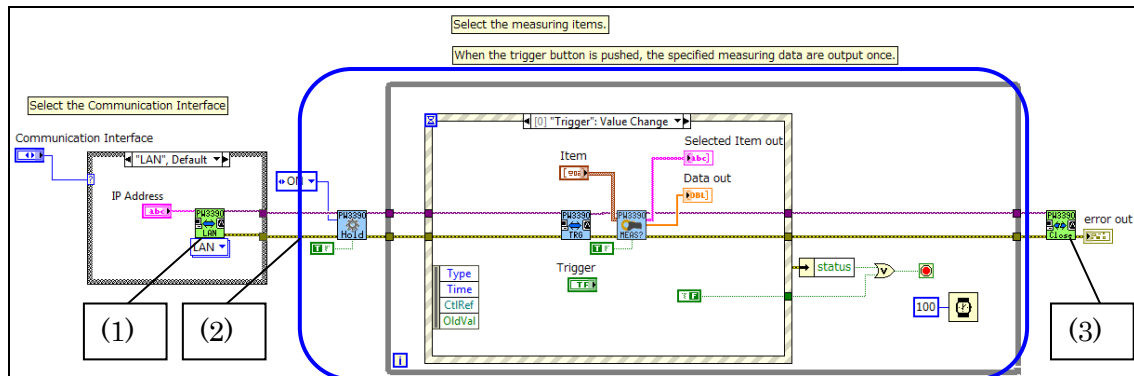


- (1) Sets the outputs items.
- (2) Trigger button
- (3) Outputs the specified measurement items and data.

Note:

During running this program, PW3390 turns to HOLD state.

9.2 Block Diagram



(1) Connects to PW3390 with the specified communication interface.

(2) The following steps are executed.

HOLD state -> (When each time pushing the trigger button) Measurement ->

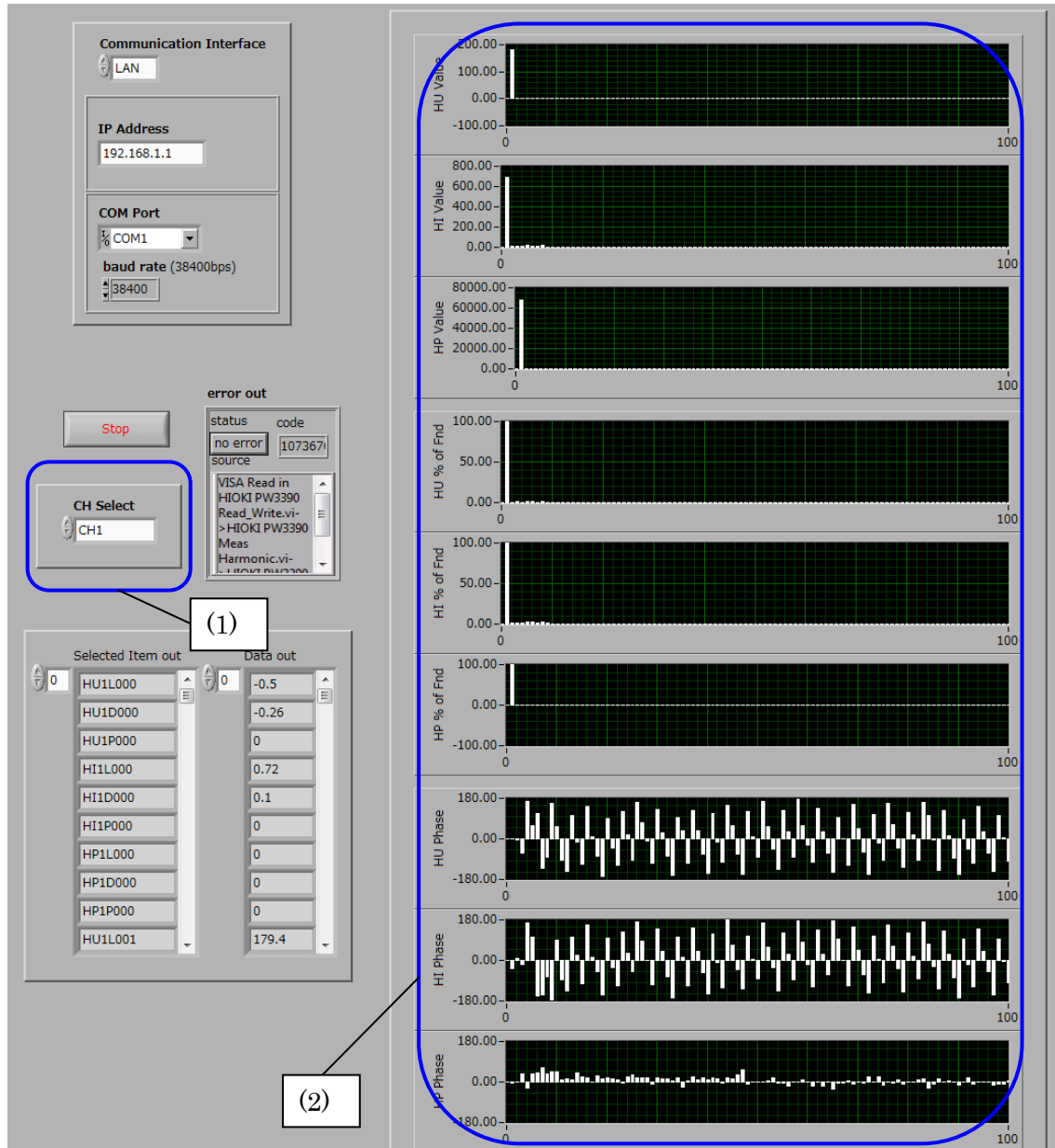
-> (VI stop button) -> Terminate the connection

(3) Terminates the connection with PW3390.

10. HIOKI PW3390 Acquisition Harmonic.vi

10.1 Front Panel

Outputs the harmonic measurement data and plots on a bar graph in 100ms cycle.



- (1) Specifies the channel to output the harmonic measurement data.
- (2) The bar graph represents the harmonic measurement data (Amplitude, Content, and Phase Angle) of the specified channel.

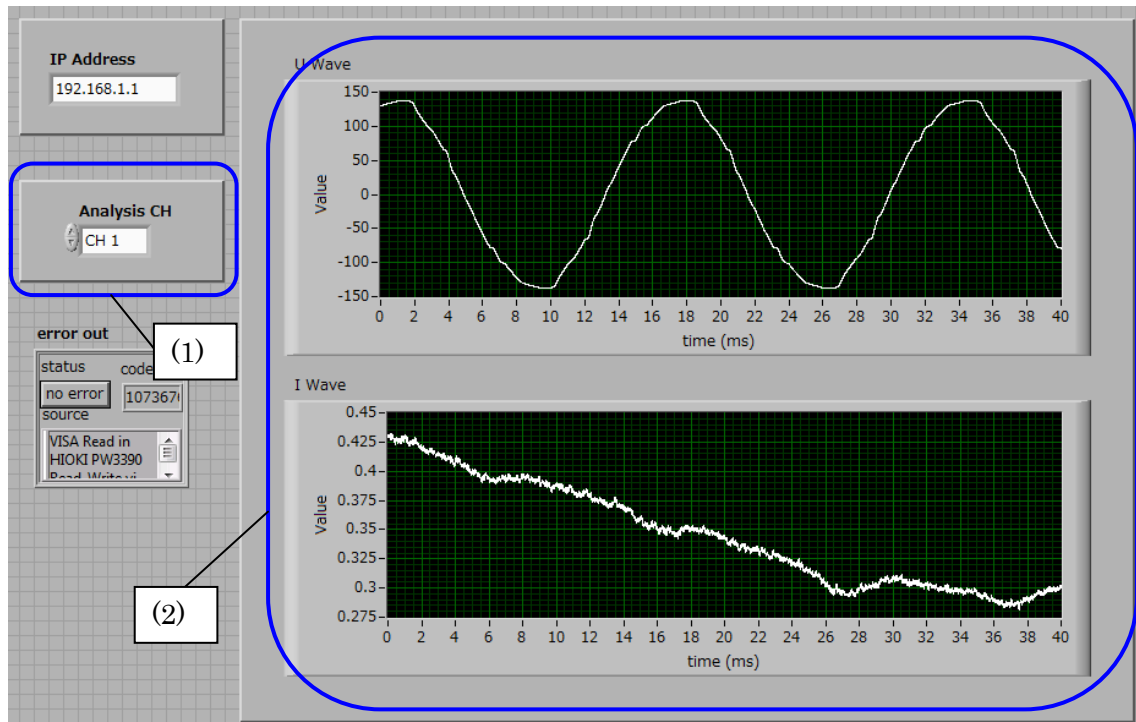
[illegible]

- (1) Connects to PW3390 with the specified communication interface.
- (2) Sets the harmonic output items. The subdiagram is selected according to the specified channel.
- (3) Outputs the harmonic measurement data. They are divided into Amplitude, Content, and Phase Angle of voltage, current and power. The measurement data update in 100ms cycle.
- (4) Terminates the connection with PW3390.

11. HIOKI PW3390 Acquisition Waveform.vi

11.1 Front Panel

Outputs the voltage and current waveforms of the specified channel.



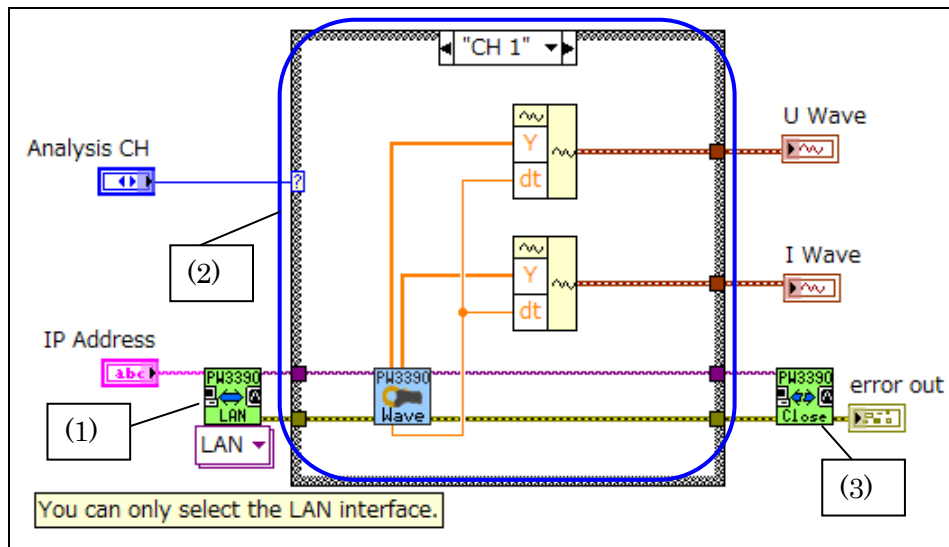
(1) Specifies the channel to output the voltage and current waveform.

(2) Outputs the voltage and current waveforms of the specified channel.

Note:

The time axis is determined by the sampling speed and points for the noise analysis.

11.2 Block Diagram



(1) Connects to PW3390 with the specified communication interface. Only LAN interface can use this program.

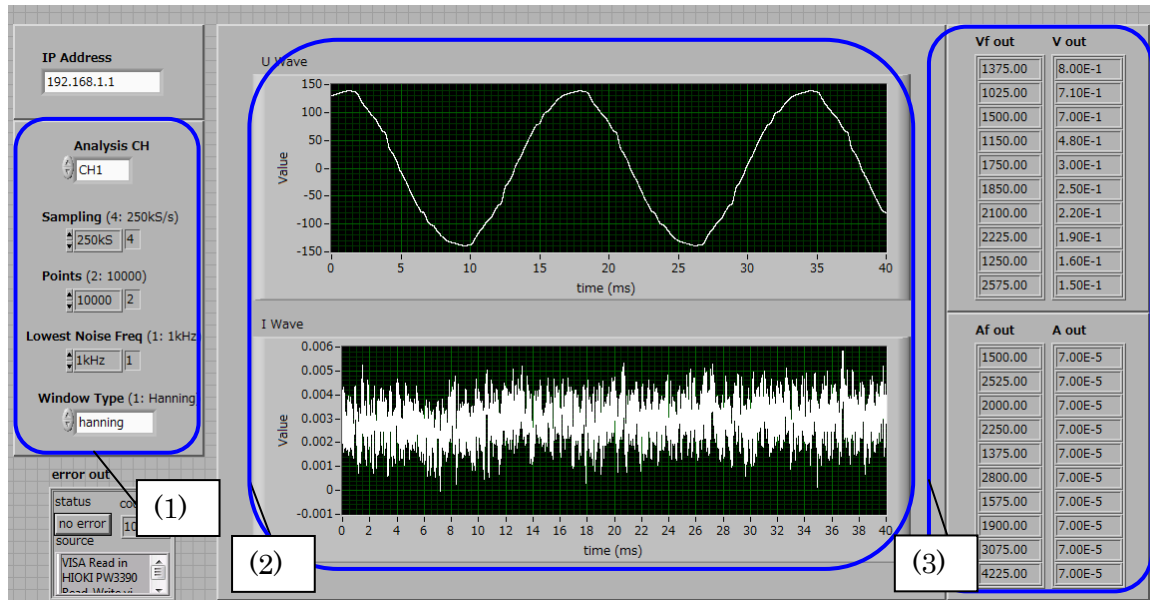
(2) Outputs the voltage and current values of the specified channel and the differential time between the measurement points. The waveform graphs are made based on them.

(3) Terminates the connection with PW3390.

12. HIOKI PW3390 Acquisition Wave+Noise.vi

12.1 Front Panel

Outputs the voltage and current waveforms of the specified channel and noise measurement data.



- (1) Specifies the channel to output the voltage and current waveform and configuration for the noise analysis.
- (2) Outputs the voltage and current waveforms of the specified channel.
- (3) Outputs the noise measurement data of the specified channel.

[illegible]

- (1) Connects to PW3390 with the specified communication interface. Only LAN interface can use this program.
- (2) Sets the configuration for the noise analysis.
- (3) Outputs the voltage and current waveforms of the specified channel and noise measurement data. After setting PW3390 configuration, it takes a time to make the sending data because of recollecting the waveform and noise analysis. Therefore, the waveform and noise measurement data are queried in 1000ms cycle.
- (4) Terminates the connection with PW3390.

13. HIOKI PW3390 Acquisition Efficiency.vi

13.1 Front Panel

Outputs the results of Efficiency/Loss calculation in 100ms cycle.

Communication Interface

LAN

IP Address
192.168.1.1

COM Port
COM1

baud rate (38400bps)
38400

Pin (0: P1)

Pin1 Pin2 Pin3

P1 0 P1 0 P1 0

Pout (0: P1)

Pout1 Pout2 Pout3

P1 0 P1 0 P1 0

Item

| Item | Value |
|------|--------|
| EFFI | 25 1 0 |
| EFFI | 25 2 1 |
| EFFI | 25 3 2 |
| LOSS | 25 1 0 |
| LOSS | 25 2 1 |
| LOSS | 25 3 2 |

Data out

| Data out | Value |
|----------|-------|
| 100 | |
| 100 | |
| 100 | |
| 0 | |
| 0 | |
| 0 | |

Note:
Please set configuration before starting the program.
Changing configuration during running the program is invalid.

Stop

error out

| status | code |
|----------|------|
| no error | 0 |

Diagram:

$$EFFI\ n = 100 * |Pout\ n / Pin\ n|$$

Pin n → Pout n

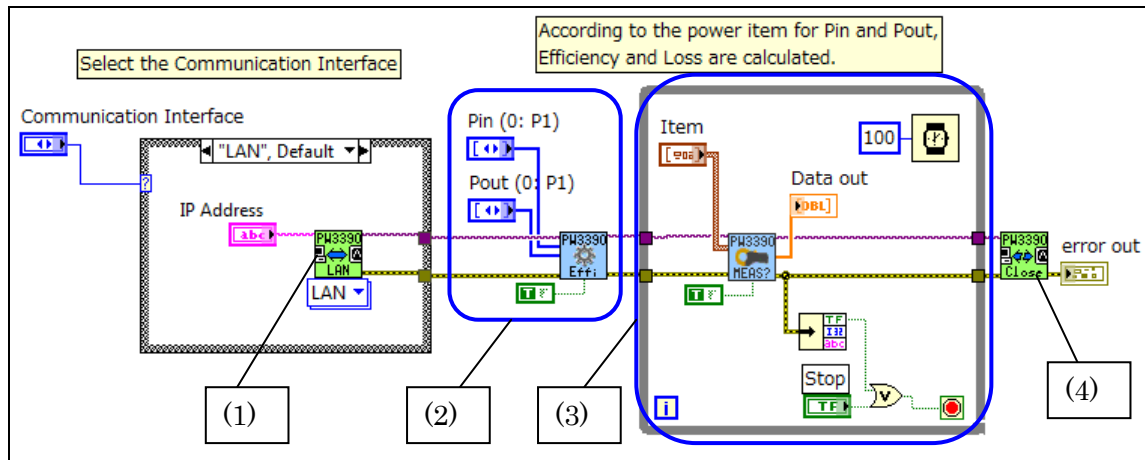
Loss n

n = 1, 2, 3

(1) Sets the power item for each Efficiency/Loss calculation.

(2) Outputs the results of Efficiency/Loss calculation.

13.2 Block Diagram



- (1) Connects to PW3390 with the specified communication interface.
- (2) Sets the configuration for the Efficiency/Loss calculation formulas.
- (3) Outputs the results of the Efficiency/Loss calculation.
- (4) Terminates the connection with PW3390.