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**User's  
Manual**

**FG410/FG420  
LabVIEW Driver  
SOFTWARE**

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## Preface

Thank you for purchasing the FG410/FG420. The FG410/FG420 LabVIEW Driver is a dedicated LabVIEW measuring instrument driver for the FG410/FG420.

- **To read this manual**

This operation manual is a PDF file. Acrobat Reader Ver. 5 or higher of Adobe Systems, Inc. is required to read this manual.

- **This manual has the following chapter organization.**

### 1. OVERVIEW

Presents an overview of the **FG410/FG420 LabVIEW Driver**.

### 2. OPERATION VI

Describes each operation VI.

## ————Disclaimer————

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# 1. OVERVIEW

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## 1.1 General

The YKFG400 is a LabVIEW measuring instrument driver for the YOKOGAWA FG410/FG420.

This driver allows application configuration without bothering with details of the FG410/FG420 program messages.

\* During creation of this driver, operation under the following environments was confirmed:

- LabVIEW: Ver. 2010
- VISA: Ver. 4.6.2 or higher

With some versions of LabVIEW, VI may automatically be changed for inter-version consistency. In such a case, follow the instructions shown on the computer screen.

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## 2.1 About VI

Error input and output are provided in every FG410/FG420 operation VI. Error cluster chains are generated by connecting an error output to the error input of the next VI. This allows a natural error I/O for the LabVIEW data flow architecture to be obtained. An application can monitor the intermediate error status as required.

FG410/FG420 operation VI, except for Close, has a VISA session input and a duplicated VISA session output. Use chain connections for these as well. Close has a VISA session input only, so the application forms a chain from Initialize to Close.

VI, of which input items contain Read, can output the contents set in the FG410/FG420. When outputting, set the bool controller to ON (True). The default setting is OFF (False).

Moreover, almost all VIs include the "Ch(Ch1)" input item, because the FG420 has two channel outputs. Therefore, if the measuring instrument that is used is the FG410, the channel settings are ignored. Two channel-specific VIs cannot be used simultaneously in the case of the FG410.

Parentheses ( ) at the end of an item name indicate default setting. For example, "Read(F)" indicates that the default setting is "False".

See the sample application for actual connections.

The following sections describe error I/O, VISA session and I/O terminals except Read.

## 2.2 VI Tree



### *YKFG400 VI Tree.vi*

The VI included in this driver is allocated in a diagram.

## 2.3 Sample



### *YKFG400 sample output.vi*

Output-related items can be set.

<Setting items>

- Channel
- Waveform
- Frequency (unit)
- Amplitude (unit)



### *YKFG400 sample seq\_data.vi*

Used when creating sequence data. This sample cannot be used as sub-VI.



### <Usage Procedure>

- <1> After selecting MODEL, input the [Version] and [Sequence information] items.
- <2> Press the VI execution button.
- <3> The [Step information] step No. is automatically input, to set the various items.
- <4> Set the [Ch1 information] items.
- <5> Set the [Ch2 information] items. (In the case of the FG410, this step is not required.)
- <6> To continue with [Parameter(Cont)], select [Continue], and to stop, select [Stop].
- <7> Click [NEXT?]. (Note that auto repeat occurs if the click time is long.)
- <8> If [Continue] was selected in step <5>, repeat the procedure from step <3>. If [Stop] was selected, the file saving dialog box is displayed, so follow the directions.
- <9> The file is saved to the specified path and VI stops.

- \* If a step is skipped or an error is noticed during data generation, the data can be edited with a text editor, etc., after it has been saved following data creation.
- \* For the details of the various settings, refer to “2.4 Sequence I/O Data Specifications” in the FG400 Arbitrary/Function Generator Communication Interface User’s Manual.

---

## 2.4 VISA Initialization



### *YKFG400 Initialize.vi*

Performs initialization. Internally executes YKFG400 RST to return the various settings to those at memory initialization.

<Input>

IDCheck (T)

Specify whether to check the ID.

Reset (T)

Specify whether to execute resetting.

## 2.5 VISA Close



### *YKFG400 Close.vi*

Stops using FG410/FG420 operation VI and closes the VISA session.

## 2.6 SOURCE Subsystem



### ***YKFG400 AM Freq.vi***

Sets and queries the internal modulation frequency of AM modulation.

<Input>

Set Frequency (Input)

- Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Frequency (1)

Setting range: 0.1 mHz to 100 kHz

Resolution: 5 digits or 0.1 mHz

When “Input” is selected in the above item, the value input for this item is sent as the setting value for internal modulation frequency.

Units (Hz)

Unit of the input frequency when “input” is selected in the above item.

<Output>

Query Frequency

When Read = True, the value of the internal modulation frequency corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.



### ***YKFG400 AM Func.vi***

Selects and queries the internal modulation frequency of AM modulation.

<Input>

Function type (Sin)

Selects the internal modulation waveform to be set. The following items can be selected.

SINusoid/SQUare/TRIangle/PRAMp/NRAMp/NOISe/USER

Memory No. (1)

Sets the waveform number when USER is selected for waveform selection.

The selection range is from 0 to 128. (Memory number 0 is used for edit memory.)

## &lt;Output&gt;

## Query Function

When Read = True, the currently set internal modulation waveform is returned. The part in “Function type” above written in uppercase is displayed as the name of the waveform.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 AM Sour.vi**

Selects and queries the modulation source of AM modulation.

## &lt;Input&gt;

## Source type (Internal)

INTernal: Sets the modulation source type to internal.

EXTernal: Sets the modulation source type to external.

## &lt;Output&gt;

## Query source

When Read = True, the set internal modulation waveform is returned. If USER is selected as “Function type”, only the selected memory number is returned.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 AM Stat.vi**

Switches the oscillation mode between continuous oscillation and AM modulation, or queries whether the oscillation mode is AM modulation.

## &lt;Input&gt;

## State (OFF)

When ON, the AM modulation mode is selected.

## &lt;Output&gt;

## Query state

When Read = True, the current oscillation mode is returned as 0 or 1.

0: Continuous oscillation (AM modulation OFF)

1: Modulation (AM modulation ON)

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 AM.vi**

Sets and queries the modulation depth of AM modulation.

## &lt;Input&gt;

## Set Depth (Input)

- Input:** During setting, the value input in “Depth” below is enabled. During query, the currently set value is returned.
- Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Depth (0)

Setting range: 0.0% to 100%

Resolution: 0.1%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for modulation depth.

## &lt;Output&gt;

## Query Depth

When Read = True, the value of modulation depth corresponding to the content of “Set Depth” is returned.

When Read = False, this item is invalid and “999” is always returned.

***YKFG400 AMSC Freq.vi***

Sets and queries the internal modulation frequency of AM (DSB-SC) modulation.

## &lt;Input&gt;

## Set Frequency (Input)

- Input:** During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.
- Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Frequency (1)

Setting range: 0.1 mHz to 100 kHz

Resolution: 5 digits or 0.1 mHz

When “Input” is selected in the above item, the value input for this item is sent as the setting value for internal modulation frequency.

## Units (Hz)

When “Input” is selected in the above item, this is the unit for the input frequency.

## &lt;Output&gt;

## Query Frequency

When Read = True, the value of the internal modulation frequency corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 AMSC Func.vi**

Selects and queries the internal modulation waveform of AM(DSB-SC) modulation.

## &lt;Input&gt;

## Function type (Sin)

Selects the internal modulation waveform to be set. The following items can be selected.

SINusoid/SQUare/TRIangle/PRAMp/NRAMp/NOISe/USER

## Memory No. (1)

Sets the waveform number when USER is selected for waveform selection.

The selection range is from 0 to 128. (Memory number 0 is used for edit memory.)

## &lt;Output&gt;

## Query Function

When Read = True, the set internal modulation waveform is returned. If USER is selected as “Function type”, only the selected memory number is returned.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 AMSC Sour.vi**

Selects and queries the modulation source of AM (DSB-SC) modulation.

## &lt;Input&gt;

## Source type (Internal)

INTernal: Sets the modulation source type to internal.

EXTernal: Sets the modulation source type to external.

## &lt;Output&gt;

## Query source

When Read = True, the currently set modulation source is returned. The part in “Source type” above written in uppercase is displayed as the name of the modulation source.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 AMSC Stat.vi**

Switches the oscillation mode between continuous oscillation and AM (DSB-SC) modulation, or queries whether the oscillation mode is AM (DSB-SC) modulation.

<Input>

State (OFF)

When ON, AM (DSB-SC) modulation mode is selected.

<Output>

Query state

When Read = True, the current oscillation mode is returned as 0 or 1.

0: Continuous oscillation (AM (DSB-SC) modulation OFF)

1: Modulation (AM (DSB-SC) modulation ON)

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 AMSC.vi**

Sets and queries the modulation depth of AM (DSB-SC) modulation.

<Input>

Set Depth (Input)

Input: During setting, the value input in “Depth” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Depth (0)

Setting range: 0.0% to 100%

Resolution: 0.1%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for modulation depth.

<Output>

Query Depth

When Read = True, the value of modulation depth corresponding to the content of “Set Depth” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 BURST Mode.vi**

Sets and queries the burst mode setting.

<Input>

Mode (Auto)

- AUTO: Auto burst
- TRIGger: Trigger burst
- GATE: Gate
- TGATE: Triggered gate

<Output>

Query Mode

When Read = True, the currently set burst mode is returned. The part in “Mode” above written in uppercase is displayed as the name of the burst mode.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 BURST Ncyc.vi**

Sets and queries the mark wave number.

<Input>

Set Mark (Input)

- Input: During setting, the value input in “Mark” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Set (Auto)

- Auto: Sets/queries the mark wave number during auto burst.
- Trigger: Sets/queries the mark wave number during trigger burst.

Mark (1)

Setting range: 0.5 waves to 999999.5 waves

Resolution: 0.5 waves

When “Input” is selected in the above item, the value input for this item is sent as the mark wave number.

<Output>

Query Mark



When Read = True, the mark wave number corresponding to the content of “Set Mark” is returned.

When Read = False, this item is invalid and “0” is always returned.



### ***YKFG400 BURST Slev.vi***

Sets and queries the stop level value during burst.

<Input>

Set Level (Input)

Input: During setting, the value input in “Level” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Level (0)

Setting range: –100.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for stop level.

<Output>

Query Level

When Read = True, the stop level value corresponding to the content of “Set Level” is returned.

When Read = False, this item is invalid and “999” is always returned.



### ***YKFG400 BURST Slev Stat.vi***

Sets and queries the stop level during burst oscillation.

<Input>

State (OFF)

When ON, the stop level for burst oscillation is enabled.

<Output>

Query state

When Read = True, the current oscillation mode is returned as 0 or 1.

0: Stop level is disabled.

1: Stop level is enabled.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 BURS Spac.vi**

Sets and queries the space wave number.

<Input>

Set Space (Input)

- Input: During setting, the value input in “Space” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Space (1)

Setting range: 0.5 waves to 999999.5 waves

Resolution: 0.5 waves

When “Input” is selected in the above item, the value input for this item is sent as the space wave number.

<Output>

Query Space

When Read = True, the space wave number corresponding to the content of “Set Space” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 BURS Stat.vi**

Switches the oscillation mode between continuous oscillation and burst oscillation, or queries whether the oscillation mode is burst oscillation.

<Input>

State (OFF)

When ON, the burst oscillation mode is selected.

<Output>

Query state

When Read = True, the current oscillation mode is returned as 0 or 1.

0: Continuous oscillation (burst oscillation OFF)

1: Burst oscillation: (burst oscillation ON)

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 BURS Tdel.vi**

Sets and queries the trigger delay time for trigger burst.

<Input>

Set Delay (Input)

- Input: During setting, the value input in “Delay” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Delay (0)

Setting range: 0.0  $\mu$ s to 100s

Resolution: 5 digits or 0.1  $\mu$ s

When “Input” is selected in the above item, the value input for this item is sent as the setting value for delay time.

Units (s)

When “Input” is selected in the above item, this is the unit for the delay time.

<Output>

Query Delay

When Read = True, the setting value of delay time corresponding to the content of “Set Delay” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 BURS Ost.vi**

Sets and Queries the oscillation stop unit during gate or triggered gate.

<Input>

Mode (Gate)

- Gate: Sets and Queries the oscillation stop unit during gate or triggered gate.
- Trigger Gate: Sets/queries the oscillation stop unit during triggered gate.

Type (Half)

- Half: Sets the oscillation stop unit to a half cycle.
- Cycle: Sets the oscillation stop unit to one cycle.

<Output>

Query Mode

When Read = True, the status of the oscillation stop unit currently set.



***YKFG400 COMB Feed.vi***

Sets and queries external addition.

<Input>

Combine (OFF)

OFF: External addition not authorized

X2: [External input × 2] added

X10: [External input × 10] added

<Output>

Query State

When Read = True, the currently set external addition state is returned.



***YKFG400 CONT Stat.vi***

Queries whether the oscillation mode is continuous oscillation.

<Output>

Query State

0: Continuous oscillation OFF

1: Continuous oscillation ON



***YKFG400 CONT.vi***

Sets the oscillation mode to continuous oscillation.



***YKFG400 FM Freq.vi***

Sets and queries the internal modulation frequency of FM modulation.

<Input>

Set Frequency (Input)

Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query,

the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Frequency (1)

Setting range: 0.1 mHz to 100 kHz

Resolution: 5 digits or 0.1 mHz

When “Input” is selected in the above item, the value input for this item is sent as the setting value for internal modulation frequency.

Units (Hz)

When “Input” is selected in the above item, this is the unit for the input frequency.

<Output>

Query Frequency

When Read = True, the value of the internal modulation frequency corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.



#### ***YKFG400 FM Func.vi***

Selects and queries the internal modulation waveform of FM modulation.

<Input>

Function type (Sin)

Selects the internal modulation waveform to be set. The following items can be selected.

SINusoid/SQUare/TRIangle/PRAMp/NRAMp/NOISe/USER

Memory No. (1)

Sets the waveform number when USER is selected for waveform selection.

The selection range is from 0 to 128. (Memory number 0 is used for edit memory.)

<Output>

Query Function

When Read = True, the set internal modulation waveform is returned. If USER is selected as “Function type”, only the selected memory number is returned.

When Read = False, this item is invalid and “ ” (blank) is always returned.



#### ***YKFG400 FM Sour.vi***

Selects and queries the modulation source of FM modulation.

## &lt;Input&gt;

## Source type (Internal)

INTernal: Sets the modulation source type to internal.

EXTernal: Sets the modulation source type to external.

## &lt;Output&gt;

## Query source

When Read = True, the currently set modulation source is returned. The part in “Source type” above written in uppercase is displayed as the name of the modulation source.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 FM Stat.vi**

Switches the oscillation mode between continuous oscillation and FM modulation, or queries whether the oscillation mode is FM modulation.

## &lt;Input&gt;

## State (OFF)

When ON, the FM modulation mode is selected.

## &lt;Output&gt;

## Query state

When Read = True, the current oscillation mode is returned as 0 or 1.

0: Continuous oscillation (FM modulation OFF)

1: Modulation (FM modulation ON)

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 FM.vi**

Sets and queries the peak deviation of FM modulation.

## &lt;Input&gt;

## Set Frequency (Input)

Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Frequency (1)

Setting range: 0.01  $\mu$ Hz to 15MHz

Resolution: 0.01  $\mu$ Hz

When “Input” is selected in the above item, the value input for this item is sent as the setting value for peak deviation.

<Output>

Query Frequency

When Read = True, the value of peak deviation corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.



***YKFG400 FREQ Cent.vi***

Sets and queries the center value of frequency sweep.

<Input>

Set Frequency (Input)

Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Frequency (1)

Setting range: 0.01  $\mu$ Hz to 30MHz

Resolution: 0.01  $\mu$ Hz

When “Input” is selected in the above item, the value input for this item is sent as the center value.

Units (Hz)

When “Input” is selected in the above item, this is the unit for the input center value.

<Output>

Query Frequency

When Read = True, the center value corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.



***YKFG400 FREQ Mode.vi***

Sets and queries the continuous/frequency sweep setting of the oscillation mode.

## &lt;Input&gt;

## Mode (CX)

- CX: Continuous oscillation
- FIXed: Continuous oscillation
- SWEep: Frequency sweep

## &lt;Output&gt;

## Query Mode

When Read = True, the currently set oscillation mode is returned. The part in “Mode” above written in uppercase is displayed as the name of the oscillation mode.

When Read = False, this item is invalid and “ ” (blank) is always returned.

***YKFG400 FREQ Span.vi***

Sets and queries the span value setting of frequency sweep.

## &lt;Input&gt;

## Set Frequency (Input)

- Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Frequency (1)

Setting range: 0.00000000 Hz to 29999999.99999999 Hz

\*The setting range differs corresponding to the waveform and oscillation mode.

Resolution: 0.01  $\mu$ Hz

When “Input” is selected in the above item, the value input for this item is sent as the span value.

## Units (Hz)

When “Input” is selected in the above item, this is the unit for the input span value.

## &lt;Output&gt;

## Query Frequency

When Read = True, the span value corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.



**YKFG400 FREQ Star.vi**

Sets and queries the start value setting of frequency sweep.

<Input>

Set Frequency (Input)

- Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Frequency (1)

Setting range: 0.01  $\mu$ Hz to 30 MHz

Resolution: 0.01  $\mu$ Hz

When “Input” is selected in the above item, the value input for this item is sent as the start value.

Units (Hz)

When “Input” is selected for the above item, this is the unit for the start value.

<Output>

Query Frequency

When Read = True, the start value corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 FREQ Stop.vi**

Sets and queries the stop value setting of frequency sweep.

<Input>

Set Frequency (Input)

- Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Frequency (1)

Setting range: 0.01  $\mu$ Hz to 30 MHz

Resolution: 0.01  $\mu$ Hz

When “Input” is selected in the above item, the value input for this item is sent as the stop value.

Units (Hz)

When “Input” is selected in the above item, this is the unit for the input stop value.

<Output>

Query Frequency

When Read = True, the stop value corresponding to the “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.



***YKFG400 FREQ Stat.vi***

Switches the frequency sweep state.

<Input>

State (Start)

START: Switches output to the start value.

STOP: Switches output to the stop value.



***YKFG400 FREQ Swap.vi***

Swaps the start value and stop value of frequency sweep.



***YKFG400 FREQ Unit.vi***

Selects and queries the frequency unit.

<Input>

Unit (Hz)

Selects the unit. Either HZ or USER can be selected.

<Output>

Query Unit

When Read = True, the currently set unit is returned. The part in “Unit” above written in uppercase is displayed as the name of the unit.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 FREQ User.vi**

Sets and queries the user unit of frequency.

<Input>

Unit Name (DEFA)

Specifies the name of the user unit. The user unit name can consist of up to 4 characters.

Type (Lin)

Specifies the form used for this user unit. Either Linear or Logarithmic can be specified.

Scale (0)

Sets the scale value.

Offset (0)

Sets the offset value.

<Output>

Query Unit

The content of the set user unit is returned. The data is displayed in the following order:

User unit name, form, scale, offset.

**YKFG400 FREQ.vi**

Sets and queries the frequency of the oscillator.

<Input>

Set Frequency (Input)

Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Frequency (1)

Setting range: 0.01  $\mu$ Hz to 30 MHz

Resolution: 0.01  $\mu$ Hz

When “Input” is selected in the above item, the value input for this item is sent as the setting value for frequency.

Units (Hz)

When “Input” is selected in the above item, this is the unit for the input frequency.

<Output>

Query Frequency

When Read = True, the value of frequency corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.



### ***YKFG400 FSK Int Freq.vi***

Sets and queries the internal modulation frequency of FSK modulation.

<Input>

Set Frequency (Input)

Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Frequency (1)

Setting range: 0.1 mHz to 1 MHz

Resolution: 5 digits or 0.1 mHz

When “Input” is selected in the above item, the value input for this item is sent as the setting value for frequency.

Units (Hz)

When “Input” is selected in the above item, this is the unit for the input frequency.

<Output>

Query Frequency

When Read = True, the value of frequency corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.



### ***YKFG400 FSK Sour.vi***

Selects and queries the modulation source of FSK modulation.

<Input>

Source type (Internal)

INTernal: Sets the modulation source type to internal.

EXTernal: Sets the modulation source type to external.

CH1: Sets the external modulation source of CH1. (Can be set only for CH2.)

<Output>

Query source

When Read = True, the currently set modulation source is returned. The part in “Source type” above written in uppercase is displayed as the name of the modulation source.

When Read = False, this item is invalid and “ ” (blank) is always returned.



**YKFG400 FSK Stat.vi**

Switches the oscillation mode between continuous oscillation and FSK modulation, or queries whether the oscillation mode is FSK modulation.

<Input>

State (OFF)

When ON, the FSK modulation mode is selected.

<Output>

Query state

When Read = True, the current oscillation mode is returned as 0 or 1.

0: Continuous modulation (FSK modulation OFF)

1: Modulation (FSK modulation ON)

When Read = False, this item is invalid and “ ” (blank) is always returned.



**YKFG400 FSK Freq.vi**

Sets and queries the hop frequency of FSK modulation.

<Input>

Set Frequency (Input)

Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Frequency (1)

Setting range: Depends on the allowable frequency setting range for the carrier waveform.

When “Input” is selected in the above item, the value input for this item is sent as the setting value for frequency.

## Units (Hz)

When “Input” is selected in the above item, this is the unit for the input frequency.

## &lt;Output&gt;

## Query Frequency

When Read = True, the value of frequency corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 ACS Angl.vi**

Sets and queries the conduction angle of conduction angle controlled sine wave.

## &lt;Input&gt;

## Set Angle (Input)

**Input:** During setting, the value input in “Angle” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Angle (0)

Setting range:  $-180.00^\circ$  to  $180.00^\circ$

Resolution:  $0.01^\circ$

When “Input” is selected in the above item, the value input for this item is sent as the setting value for conduction angle.

## &lt;Output&gt;

## Query Angle

When Read = True, the value of the conduction angle corresponding to the content of “Set Angle” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 BRR Symm.vi**

Sets and queries the bottom referenced ramp wave symmetry.

## &lt;Input&gt;

## Set Symmetry (Input)

**Input:** During setting, the value input in “Symmetry” below is enabled. During query, the

currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Symmetry (0)

Setting range: 0.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for symmetry.

<Output>

Query Symmetry

When Read = True, the value of symmetry corresponding to the content of “Set Symmetry” is returned.

When Read = False, this item is invalid and “999” is always returned.



***YKFG400 CFCS Cfac.vi***

Sets and queries the crest factor of CF controlled sine wave.

<Input>

Set Cfactor (Input)

Input: During setting, the value input in “Cfactor” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Cfactor (1.41)

Setting range: 1.41 to 10.00

Resolution: 0.01

When “Input” is selected in the above item, the value input for this item is sent as the setting value for crest factor.

<Output>

Query Cfactor

When Read = True, the value of crest factor corresponding to the content of “Set Cfactor” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 COFS Nch.vi**

Sets and queries the number of chattering of chattering-off sine wave.

<Input>

**Set NChattering (Input)**

- Input: During setting, the value input in “NChattering” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

**NChattering (1)**

Setting range: 0 to 3

When “Input” is selected in the above item, the value input for this item is sent as the setting value for number of chattering.

<Output>

**Query NChattering**

- When Read = True, the value of number of chattering corresponding to the content of “Set NChattering” is returned.
- When Read = False, this item is invalid and “9” is always returned.

**YKFG400 COFS Ofph.vi**

Sets and queries the off-phase setting of chattering-off sine wave.

<Input>

**Set Phase (Input)**

- Input: During setting, the value input in “Phase” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

**Phase (0)**

Setting range: 0.00° to 360.00°

Resolution: 0.01°

When “Input” is selected in the above item, the value input for this item is sent as the setting value for off-phase.



## &lt;Output&gt;

## Query Phase

When Read = True, the value of off-phase corresponding to the content of “Set Phase” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 COFS Toff.vi**

Sets and queries the off-state time setting of chattering-off sine wave.

## &lt;Input&gt;

## Set Time (Input)

**Input:** During setting, the value input in “Time” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Time (0)

Setting range: 0.00% to 20.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for off-state time.

## &lt;Output&gt;

## Query Time

When Read = True, the value of off-state time corresponding to the content of “Set Time” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 COFS Ton.vi**

Sets and queries the on-state time of chattering-off sine wave.

## &lt;Input&gt;

## Set Time (Input)

**Input:** During setting, the value input in “Time” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Time (0)

Setting range: 0.00% to 20.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for on-state time.

<Output>

Query Time

When Read = True, the value of on-state time corresponding to the content of “Set Time” is returned.

When Read = False, this item is invalid and “999” is always returned.



***YKFG400 CONS Nch.vi***

Sets and queries the number of chattering of chattering-on sine wave.

<Input>

Set Chattering (Input)

Input: During setting, the value input in “Chattering” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Chattering (0)

Setting range: 0 to 3

When “Input” is selected in the above item, the value input for this item is sent as the setting value for number of chattering.

<Output>

Query Chattering

When Read = True, the value of number of chattering corresponding to the content of “Set Chattering” is returned.

When Read = False, this item is invalid and “9” is always returned.



### ***YKFG400 CONS Onph.vi***

Sets and queries the on-phase setting of chattering-on sine wave.

<Input>

Set Phase (Input)

Selects the target value at time of setting or query.

- Input: During setting, the value input in “Phase” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Phase (0)

Setting range: 0.00° to 360.00°

Resolution: 0.01°

When “Input” is selected in the above item, the value input for this item is sent as the setting value for on-phase.

<Output>

Query Phase

When Read = True, the value of on-phase corresponding to the content of “Set Phase” is returned.

When Read = False, this item is invalid and “999” is always returned.



### ***YKFG400 CONS Toff.vi***

Sets and queries the off-state time of chattering-on sine wave.

<Input>

Set Time (Input)

- Input: During setting, the value input in “Time” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Time (0)

Setting range: 0.00% to 20.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for off-state time.

<Output>

Query Time

When Read = True, the value of off-state time corresponding to the content of “Set Time” is returned.

When Read = False, this item is invalid and “999” is always returned.



***YKFG400 CONS Ton.vi***

Sets and queries the on-state time of chattering-on sine wave.

<Input>

Set Time (Input)

Input: During setting, the value input in “Time” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Time (0)

Setting range: 0.00% to 20.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for on-state time.

<Output>

Query Time

When Read = True, the value of on-state time corresponding to the content of “Set Time” is returned.

When Read = False, this item is invalid and “999” is always returned.



***YKFG400 CSIN Clip.vi***

Sets and queries the clip rate of clipped sine wave.

<Input>

Set Clip (Input)

Input: During setting, the value input in “Clip” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

#### Clip (0)

Setting range: 0.00% to 99.99%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for clip rate.

#### <Output>

##### Query Clip

When Read = True, the value of clip rate corresponding to the content of “Set Clip” is returned.

When Read = False, this item is invalid and “999” is always returned.



#### ***YKFG400 DOSC Dtc.vi***

Sets and queries the damping time constant of damped oscillation.

#### <Input>

##### Set TC (Input)

Input: During setting, the value input in “TC” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

#### TC (1)

Setting range: -100.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the damping time constant.

#### <Output>

##### Query TC

When Read = True, the value of damping time constant corresponding to the content of “Set TC” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 DOSC Ofr.vi**

Sets and queries the oscillation frequency of damped oscillation.

<Input>

## Set Frequency (Input)

- Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Frequency (1)

Setting range: 0.01 to 50.00

Resolution: 0.01

When “Input” is selected in the above item, the value input for this item is sent as the setting value for oscillation frequency.

<Output>

## Query Frequency

When Read = True, the value of oscillation frequency corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 EFAL Tcon.vi**

Sets and queries the time constant of exponential fall.

<Input>

## Set TC (Input)

- Input: During setting, the value input in “TC” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## TC (1)

Setting range: 0.01% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the time

constant.

<Output>

Query TC

When Read = True, the time constant corresponding to the content of “Set TC” is returned.

When Read = False, this item is invalid and “0” is always returned.



**YKFG400 ERIS Tcon.vi**

Sets and queries the time constant of exponential rise.

<Input>

Set TC (Input)

Input: During setting, the value input in “TC” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

TC (1)

Setting range: 0.01% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the time constant.

<Output>

Query TC

When Read = True, the time constant corresponding to the content of “Set TC” is returned.

When Read = False, this item is invalid and “0” is always returned.



**YKFG400 GAUS Sigm.vi**

Sets and queries the standard deviation of Gaussian pulse.

<Input>

Set Sigma (Input)

Input: During setting, the value input in “Sigma” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query,

the maximum value among the settable values is returned.

#### Sigma (1)

Setting range: 0.01% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the standard deviation.

#### <Output>

##### Query Sigma

When Read = True, the standard deviation corresponding to the content of “Set Sigma” is returned.

When Read = False, this item is invalid and “0” is always returned.



#### ***YKFG400 HAV Widt.vi***

Sets and queries the width of haversine.

#### <Input>

##### Set Width (Input)

Input: During setting, the value input in “Width” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

#### Width (1)

Setting range: 0.01% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for haversine width.

#### <Output>

##### Query Width

When Read = True, the setting value of haversine width corresponding to the content of “Set Width” is returned.

When Read = False, this item is invalid and “0” is always returned.



**YKFG400 HSEP Dcyc.vi**

Sets and queries the half-sine edge pulse duty.

<Input>

Set Duty (Input)

- Input: During setting, the value input in “Duty” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Duty (0)

Setting range: 0.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for duty.

<Output>

Query Duty

When Read = True, the setting value of duty corresponding to the content of “Set Duty” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 HSEP Le.vi**

Sets and queries the leading edge time of half-sine edge pulse.

<Input>

Set Time (Input)

- Input: During setting, the value input in “Time” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Time (0)

Setting range: 0.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting

value for leading edge time.

<Output>

Query Time

When Read = True, the value of leading edge time corresponding to the content of “Set Time” is returned.

When Read = False, this item is invalid and “999” is always returned.



#### ***YKFG400 HSEP Te.vi***

Sets and queries the trailing edge time of half-sine edge pulse.

<Input>

Set Time (Input)

Input: During setting, the value input in “Time” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Time (0)

Setting range: 0.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for trailing edge time.

<Output>

Query Time

When Read = True, the value of trailing edge time corresponding to the content of “Set Time” is returned.

When Read = False, this item is invalid and “999” is always returned.



#### ***YKFG400 HSP Wid.vi***

Sets and queries the half-sine pulse width.

<Input>

Set Width (Input)

Input: During setting, the value input in “Width” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query,

the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Width (1)

Setting range: 0.01% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for half-sine pulse width.

<Output>

Query Width

When Read = True, the value of half-sine pulse width corresponding to the content of “Set Width” is returned.

When Read = False, this item is invalid and “0” is always returned.



#### ***YKFG400 LOR Hwid.vi***

Sets and queries the half value of width of Lorentz pulse.

<Input>

Set Width (Input)

**Input:** During setting, the value input in “Width” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Width (1)

Setting range: 0.01% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for half value of width.

<Output>

Query Width

When Read = True, the value of half value of width corresponding to the content of “Set Width” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 MCS Cycl.vi**

Sets and queries the frequency of multi-cycle sine wave.

<Input>

Set Cycles (Input)

- Input: During setting, the value input in “Cycles” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Cycles (1)

Setting range: 0.01 to 50.00

Resolution: 0.01

When “Input” is selected in the above item, the value input for this item is sent as the frequency.

<Output>

Query Cycles

When Read = True, the number of cycles corresponding to the content of “Set Cycles” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 MCS Phas.vi**

Sets and queries the start phase of multi-cycle sine wave.

<Input>

Set Phase (Input)

- Input: During setting, the value input in “Phase” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Phase (0)

Setting range:  $-360.00^\circ$  to  $360.00^\circ$

Resolution:  $0.01^\circ$

When “Input” is selected in the above item, the value input for this item is sent as the setting value for start phase.

<Output>

Query Phase

When Read = True, the setting value of start phase corresponding to the content of “Set Phase” is returned.

When Read = False, this item is invalid and “999” is always returned.



**YKFG400 OFPS Offph.vi**

Sets and queries the off-phase of off-phase controlled sine wave.

<Input>

Set Phase (Input)

Input: During setting, the value input in “Phase” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Phase (0)

Setting range: 0.00° to 360.00°

Resolution: 0.01°

When “Input” is selected in the above item, the value input for this item is sent as the setting value for off-phase.

<Output>

Query Phase

When Read = True, the setting value of off-phase corresponding to the content of “Set Phase” is returned.

When Read = False, this item is invalid and “999” is always returned.



**YKFG400 OFPS Stim.vi**

Sets and queries the off-slope time of off-phase controlled sine wave.

<Input>

Set Time (Input)

Input: During setting, the value input in “Time” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query,

the maximum value among the settable values is returned.

Time (0)

Setting range: 0.00% to 50.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for off-slope time.

<Output>

Query Time

When Read = True, the value of off-slope time corresponding to the content of “Set Phase” is returned.

When Read = False, this item is invalid and “999” is always returned.



### ***YKFG400 ONPS Onph.vi***

Sets and queries the complete-on phase of on-phase controlled sine wave.

<Input>

Set Phase (Input)

Input: During setting, the value input in “Phase” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Phase (0)

Setting range: 0.00° to 360.00°

Resolution: 0.01°

When “Input” is selected in the above item, the value input for this item is sent as the setting value for complete-on phase.

<Output>

Query Phase

When Read = True, the value of oscillation frequency corresponding to the content of “Set Phase” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 ONPS Stim.vi**

Sets and queries the on-slope time of on-phase controlled sine wave.

<Input>

Set Time (Input)

- Input: During setting, the value input in “Time” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Time (0)

Setting range: 0.00% to 50.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value of on-slope time.

<Output>

Query Time

When Read = True, the value of on-slope time constant corresponding to the content of “Set Phase” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 OSUR Dtc.vi**

Sets and queries the damping time constant of oscillation surge.

<Input>

Set TC (Input)

- Input: During setting, the value input in “TC” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

TC (1)

Setting range: 0.01% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the damping

time constant.

<Output>

Query TC

When Read = True, the value of damping time constant corresponding to the content of “Set TC” is returned.

When Read = False, this item is invalid and “0” is always returned.



### ***YKFG400 OSUR Ofr.vi***

Sets and queries the oscillation frequency of oscillation surge.

<Input>

Set Frequency (Input)

Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Frequency (1)

Setting range: 0.01% to 50.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for oscillation frequency.

<Output>

Query Frequency

When Read = True, the value of oscillation frequency corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.



### ***YKFG400 OSUR Ttc.vi***

Sets and queries the trailing edge time constant of oscillation surge.

<Input>

Set TC (Input)

Input: During setting, the value input in “TC” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query,



the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

#### TC (1)

Setting range: 0.01% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the trailing edge time constant.

#### <Output>

##### Query TC

When Read = True, the trailing edge time constant corresponding to the content of “Set TC” is returned.

When Read = False, this item is invalid and “0” is always returned.



#### ***YKFG400 PSUR Td.vi***

Sets and queries the duration time of pulse surge.

#### <Input>

##### Set Time (Input)

**Input:** During setting, the value input in “Time” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

#### Time (1)

Setting range: 0.01% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for duration time.

#### <Output>

##### Query Time

When Read = True, the setting value of duration time corresponding to the content of “Set Time” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 PSUR Tr.vi**

Sets and queries the leading edge time of pulse surge.

<Input>

Set Time (Input)

- Input: During setting, the value input in “Time” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Time (1)

Setting range: 0.01% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for leading edge time.

<Output>

Query Time

When Read = True, the setting value of leading edge time corresponding to the content of “Set Time” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 RAMP Symm.vi**

Sets and queries the ramp wave symmetry.

<Input>

Set Symmetry (Input)

- Input: During setting, the value input in “Symmetry” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Symmetry (0)

Setting range: 0.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting

value for symmetry.

<Output>

Query Symmetry

When Read = True, the value of symmetry corresponding to the content of “Set Symmetry” is returned.

When Read = False, this item is invalid and “999” is always returned.



### ***YKFG400 SINC Zcr.vi***

Sets and queries the number of zero crossing of  $\text{Sin}(x)/x$ .

<Input>

Set Number (Input)

Input: During setting, the value input in “Number” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Number (1)

Setting range: 1 to 50

When “Input” is selected in the above item, the value input for this item is sent as the setting value for number of zero crossing.

<Output>

Query Number

When Read = True, the setting value of zero crossing corresponding to the content of “Set Number” is returned.

When Read = False, this item is invalid and “0” is always returned.



### ***YKFG400 SOLS Nfr.vi***

Sets and queries the natural frequency of 2nd order LPF step response LPF.

<Input>

Set Frequency (Input)

Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Frequency (1)

Setting range: 1.00 to 50.00

Resolution: 0.01

When “Input” is selected in the above item, the value input for this item is sent as the setting value for frequency.

<Output>

Query Frequency

When Read = True, the setting value of frequency corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.



***YKFG400 SOLS Q.vi***

Sets and queries Q of 2nd order LPF step response.

<Input>

Set Q (Input)

Input: During setting, the value input in “Q” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Q (1)

Setting range: 0.50 to 50.00

Resolution: 0.01

When “Input” is selected in the above item, the value input for this item is sent as the setting value for Q.

<Output>

Query Q

When Read = True, the setting value of Q corresponding to the content of “Set Q” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 SQU Dcyc.vi**

Sets and queries the duty (square wave).

<Input>

Set Duty (Input)

- Input: During setting, the value input in “Duty” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Duty (1)

Setting range: 0.0100 to 99.9900% (without expansion)/0.0000 to 100.0000% (with expansion)

Resolution: 0.0001%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for duty (square wave).

Units (PCT)

When “Input” is selected in the above item, this is the unit for the input duty (square wave).

<Output>

Query Duty

When Read = True, the value of duty (square wave) corresponding to the content of “Set Duty” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 SQU Ext.vi**

Selects and queries square wave extension.

<Input>

Extend (OFF)

When ON, square wave extension is enabled.

<Output>

Query State

When Read = True, the square wave extension state is returned as 0 or 1.

- 0: Square wave extension disabled
- 1: Square wave extension enabled

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 SSIN Step.vi**

Sets and queries the number of steps of staircase sine wave.

<Input>

Set Steps (Input)

- Input: During setting, the value input in “Steps” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Steps (2)

Setting range: 2 to 100

When “Input” is selected in the above item, the value input for this item is sent as the number of steps.

<Output>

Query Steps

- When Read = True, the number of steps corresponding to the content of “Set Steps” is returned.
- When Read = False, this item is invalid and “0” is always returned.

**YKFG400 TOFF Del.vi**

Sets and queries the leading delay of trapezoid wave with offset.

<Input>

Set Delay (Input)

- Input: During setting, the value input in “Delay” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Delay (0)

Setting range: 0.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for leading delay.

## &lt;Output&gt;

## Query Delay

When Read = True, the setting value of leading delay corresponding to the content of “Set Delay” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 TOFF Fall.vi**

Sets and queries the falling-slope width of trapezoid wave with offset.

## &lt;Input&gt;

## Set Width (Input)

**Input:** During setting, the value input in “Width” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Width (0)

Setting range: 0.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for falling-slope width.

## &lt;Output&gt;

## Query Width

When Read = True, the setting value of falling-slope width corresponding to the content of “Set Width” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 TOFF Offs.vi**

Sets and queries the offset of trapezoid wave with offset.

## &lt;Input&gt;

## Set Offset (Input)

**Input:** During setting, the value input in “Offset” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query,

the maximum value among the settable values is returned.

#### Offset (0)

Setting range: 0.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for offset.

#### <Output>

##### Query Offset

When Read = True, the setting value of offset corresponding to the content of “Set Offset” is returned.

When Read = False, this item is invalid and “999” is always returned.



#### ***YKFG400 TOFF Ris.vi***

Sets and queries the rising-slope width of trapezoid wave with offset.

#### <Input>

##### Set Width (Input)

**Input:** During setting, the value input in “Width” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

#### Width (0)

Setting range: 0.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for slope width.

#### <Output>

##### Query Width

When Read = True, the value of slope width corresponding to the content of “Set Width” is returned.

When Read = False, this item is invalid and “999” is always returned.



**YKFG400 TOFF Ubas.vi**

Sets and queries the upper base width of trapezoid wave with offset.

<Input>

Set Width (Input)

- Input: During setting, the value input in “Width” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Width (0)

Setting range: 0.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for upper base width.

<Output>

Query Width

When Read = True, the setting value of upper base width corresponding to the content of “Set Width” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 TPUL Rfal.vi**

Sets and queries the slope width of trapezoid pulse.

<Input>

Set Width (Input)

- Input: During setting, the value input in “Width” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Width (1)

Setting range: 0.00% to 50.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting

value for slope width.

<Output>

Query Width

When Read = True, the setting value of slope width corresponding to the content of “Set Width” is returned.

When Read = False, this item is invalid and “999” is always returned.



### ***YKFG400 TPUL Ubas.vi***

Sets and queries the upper base width of trapezoid pulse.

<Input>

Set Width (Input)

**Input:** During setting, the value input in “Width” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Width (1)

Setting range: 0.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for upper base width.

<Output>

Query Width

When Read = True, the setting value of upper base width corresponding to the content of “Set Width” is returned.

When Read = False, this item is invalid and “999” is always returned.



### ***YKFG400 FUNC User.vi***

Selects and queries the arbitrary waveform.

<Input>

Memory (1)

Setting range: 0 to 128

Specifies the memory number of the arbitrary waveform.

<Output>

Query Memory

When Read = True, the selected memory number is returned.

When Read = False, this item is invalid and “999” is always returned.



**YKFG400 USIN Ampl.vi**

Sets and queries the amplitude of unbalanced sine wave.

<Input>

AMP (AMP1)

Selects whether to set the former amplitude or latter amplitude of the unbalanced sine wave.

AMP1: Sets the former amplitude.

AMP2: Sets the latter amplitude.

Set Amplitude (Input)

Input: During setting, the value input in “Amplitude” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Amplitude (0)

Setting range: -100.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for amplitude.

<Output>

Query Amplitude

When Read = True, the value of amplitude corresponding to the content of “Set Amplitude” is returned.

When Read = False, this item is invalid and “999” is always returned.



**YKFG400 FUNC.vi**

Sets and queries the waveform.

<Input>

Select Function (Sine)

Selects the output waveform. The following parameters can be set.

DC/NOISe/SINusoid/SQUare/PULSe/RAMP  
 /USINe/CSINe/CFCSine/ACSine/SSINe/MCSine  
 /ONPSine/OFPSine/CONSine/COFSine  
 /GAUSSian/LORentz/HAVersine/HSPulse/TPULse/SINC  
 /ERISe/EFALI/SOLStep/DOSCillation/OSURge/PSURge  
 /TOFFset/HSEPulse/BRRamp/USER

<Output>

Query Function

When Read = True, the currently set waveform is returned. The part in “Select Function” above written in uppercase is displayed as the name of the waveform.

When Read = False, this item is invalid and “ ” (blank) is always returned.



### ***YKFG400 MARK Freq.vi***

Sets and queries the marker value of frequency sweep.

<Input>

Set Frequency (Input)

- Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.
- Center: During setting, the settable center value is set. During query, the center value that is currently set is returned.

Frequency (1)

Setting range: 0.01  $\mu$ Hz to 30 MHz

Resolution: 0.01  $\mu$ Hz

When “Input” is selected in the above item, the value input for this item is sent as the marker value.

Units (Hz)

When “Input” is selected in the above item, this is the unit for the input marker value.

<Output>

Query Frequency

When Read = True, the marker value corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 MARK Phas.vi**

Sets and queries the marker value of phase sweep.

<Input>

**Set Phase (Input)**

- Input:** During setting, the value input in “Phase” below is enabled. During query, the currently set value is returned.
- Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.
- Center:** During setting, the settable center value is set. During query, the marker value of phase sweep that is currently set is returned.

**Phase (0)**

Setting range:  $-1800.000^{\circ}$  to  $1800.000^{\circ}$

Resolution:  $0.001^{\circ}$

When “Input” is selected in the above item, the value input for this item is sent as the marker value.

**Units (deg)**

When “Input” is selected in the above item, this is the unit for the input marker value.

<Output>

**Query Phase**

When Read = True, the marker value corresponding to the content of “Set Phase” is returned.

When Read = False, this item is invalid and “9999” is always returned.

**YKFG400 MARK Dcyc.vi**

Sets and queries the marker value of duty sweep.

<Input>

**Set Duty (Input)**

- Input:** During setting, the value input in “Duty” below is enabled. During query, the currently set value is returned.
- Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.
- Center:** During setting, the center value of duty sweep is set. During query, the center value

of duty sweep is returned.

#### Duty (0)

Setting range: 0.0100% to 99.9900% (Square wave: normal)

0.0000% to 100.0000% (Square wave: extended)

0.0170% to 99.9830% (Pulse wave)

Resolution: 0.0001%

When “Input” is selected in the above item, the value input for this item is sent as the marker value.

#### Units (%)

When “Input” is selected in the above item, this is the unit for the input marker value.

#### <Output>

##### Query Duty

When Read = True, the marker value corresponding to the content of “Set duty” is returned.

When Read = False, this item is invalid and “999” is always returned.



#### ***YKFG400 MARK Offs.vi***

Sets and queries the marker value of DC offset sweep.

#### <Input>

##### Set Offset (Input)

**Input:** During setting, the value input in “Offset” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

**Center:** During setting, the center value of DC offset is set. During query, the center value of DC offset is returned.

#### Offset (0)

Setting range:  $\pm 10$  V (open)/ $\pm 5$  V (50  $\Omega$ )

Resolution: 4 digits or 0.1 mV ( $\pm 499.9$  mV or lower)

5 digits or 1 mV ( $\pm 0.5$  V or higher)

When “Input” is selected in the above item, the value input for this item is sent as the marker value.

#### Units (V)

When “Input” is selected in the above item, this is the unit for the input marker value.

<Output>

Query Offset

When Read = True, the marker value corresponding to the content of “Set Offset” is returned.

When Read = False, this item is invalid and “0” is always returned.



#### ***YKFG400 MARK Ampl.vi***

Sets and queries the marker value of amplitude sweep.

<Input>

Set Amplitude (Input)

- Input: During setting, the value input in “Amplitude” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.
- Center: During setting, the center value of amplitude sweep is set. During query, the center value of amplitude sweep is returned.

Amplitude (1)

Setting range: 0 Vp-p to 20 Vp-p (open)/0 Vp-p to 10 Vp-p (50 Ω)

Resolution: 4 digits or 0.1 mVp-p (999.9 mVp-p or lower)  
5 digits or 1 mVp-p (1 Vp-p or higher)

When “Input” is selected in the above item, the value input for this item is sent as the setting value.

Units (Vpp)

When “Input” is selected in the above item, this is the unit for the input amplitude sweep marker value.

<Output>

Query Amplitude

When Read = True, the amplitude sweep marker value corresponding to the content of “Set Amplitude” is returned.

When Read = False, this item is invalid and “0” is always returned.



#### ***YKFG400 OFSM Freq.vi***

Sets and queries the internal modulation frequency of DC offset modulation.

## &lt;Input&gt;

## Set Frequency (Input)

- Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Frequency (1)

Setting range: 0.1 mHz to 100 kHz

Resolution: 5 digits or 0.1 mHz

When “Input” is selected in the above item, the value input for this item is sent as the setting value for frequency.

## Units (Hz)

When “Input” is selected in the above item, this is the unit for the input frequency.

## &lt;Output&gt;

## Query Frequency

When Read = True, the value of frequency corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 OFSM Func.vi**

Selects and queries the internal modulation waveform of DC offset modulation.

## &lt;Input&gt;

## Select Function (SIN)

Selects the internal modulation waveform to be set. The following items can be selected.

SINusoid/SQUare/TRIangle/PRAMp/NRAMp/NOISe/USER

## Memory No. (1)

Sets the waveform number when USER is selected for waveform selection.

The selection range is from 0 to 128. (Memory number 0 is used for edit memory.)

## &lt;Output&gt;

## Query Function

When Read = True, the set internal modulation waveform is returned. If USER is selected as “Function type”, only the selected memory number is returned.

When Read = False, this item is invalid and “ ” (blank) is always returned.



**YKFG400 OFSM Sour.vi**

Selects and queries the modulation source of DC offset modulation.

<Input>

Source type (Internal)

INTernal: Sets the modulation source type to internal.

EXTernal: Sets the modulation source type to external.

<Output>

Query Source

When Read = True, the currently set modulation source is returned. The part in “Source type” above written in uppercase is displayed as the name of the modulation source.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 OFSM Stat.vi**

Switches the oscillation mode between continuous oscillation and DC offset modulation, or queries whether the oscillation mode is DC offset modulation.

<Input>

State (OFF)

When ON, the DC offset modulation mode is selected.

<Output>

Query State

When Read = True, the current oscillation mode is returned as 0 or 1.

0: Continuous modulation (DC offset modulation OFF)

1: Modulation (DC offset modulation ON)

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 OFSM.vi**

Sets and queries the peak deviation of DC offset modulation.

<Input>

Set Deviation (Input)

Input: During setting, the value input in “Deviation” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query,

the maximum value among the settable values is returned.

Deviation (0)

Setting range: 0 V to 10 V/open

Resolution: 4 digits or 0.1 mV (499.9 mV or lower)

5 digits or 1 mV (0.5 V or higher)

When “Input” is selected in the above item, the value input for this item is sent as the setting value for deviation.

Units (V)

When “Input” is selected in the above item, this is the unit for the input peak deviation.

<Output>

Query Deviation

When Read = True, the value of deviation corresponding to the content of “Set Deviation” is returned.

When Read = False, this item is invalid and “9999” is always returned.



***YKFG400 PHAS Cent.vi***

Sets and queries the center value of phase sweep.

<Input>

Set Phase (Input)

Input: During setting, the value input in “Phase” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Phase (0)

Setting range:  $-1800.000^\circ$  to  $1800.000^\circ$

Resolution:  $0.001^\circ$

When “Input” is selected in the above item, the value input for this item is sent as the center value.

Units (deg)

When “Input” is selected in the above item, this is the unit for the input center value.

<Output>

Query Phase

When Read = True, the center value corresponding to the content of “Set Phase” is returned.

When Read = False, this item is invalid and “9999” is always returned.



**YKFG400 PHAS Init.vi**

Executes phase synchronization.



**YKFG400 PHAS Mode.vi**

Sets and queries the oscillation mode’s continuous/phase sweep.

<Input>

Mode Type (Fixed)

FIXed: Continuous oscillation

SWEep: Phase sweep

<Output>

Query Mode

When Read = True, the currently set oscillation mode is returned. The part in “Mode” above written in uppercase is displayed as the name of the oscillation mode.

When Read = False, this item is invalid and “ ” (blank) is always returned.



**YKFG400 PHAS Span.vi**

Sets and queries the span value of phase sweep.

<Input>

Set Phase (Input)

Input: During setting, the value input in “Phase” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Phase (0)

Setting range: 0.000° to 3600.000°

Resolution: 0.001°

When “Input” is selected in the above item, the value input for this item is sent as the span value.

## Units (deg)

When “Input” is selected in the above item, this is the unit for the input span value.

## &lt;Output&gt;

## Query Phase

When Read = True, the span value corresponding to the content of “Set Phase” is returned.

When Read = False, this item is invalid and “9999” is always returned.

**YKFG400 PHAS Star.vi**

Sets and queries the start value of phase sweep.

## &lt;Input&gt;

## Set Phase (Input)

**Input:** During setting, the value input in “Phase” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Phase (0)

Setting range:  $-1800.000^\circ$  to  $1800.000^\circ$

Resolution:  $0.001^\circ$

When “Input” is selected in the above item, the value input for this item is sent as the start value.

## Units (deg)

When “Input” is selected for the above item, this is the unit for the start value.

## &lt;Output&gt;

## Query Phase

When Read = True, the start value corresponding to the content of “Set Phase” is returned.

When Read = False, this item is invalid and “9999” is always returned.

**YKFG400 PHAS Stop.vi**

Sets and queries the stop value of phase sweep.

## &lt;Input&gt;

## Set Phase (Input)

**Input:** During setting, the value input in “Phase” below is enabled. During query, the

currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Phase (0)

Setting range:  $-1800.000^{\circ}$  to  $1800.000^{\circ}$

Resolution:  $0.001^{\circ}$

When “Input” is selected in the above item, the value input for this item is sent as the stop value.

Units (deg)

When “Input” is selected in the above item, this is the unit for the input stop value.

<Output>

Query Phase

When Read = True, the stop value corresponding to the content of “Set Phase” is returned.

When Read = False, this item is invalid and “9999” is always returned.



***YKFG400 PHAS Stat.vi***

Switches the phase sweep state.

<Input>

State (Start)

START: Switches output to the start value.

STOP: Switches output to the stop value.



***YKFG400 PHAS Swap.vi***

Swaps the start value and stop value of phase sweep.



***YKFG400 PHAS Unit.vi***

Selects and queries the phase unit.

<Input>

Unit (deg)

Selects the unit. Either DEG or USER can be selected.

<Output>

**Query Unit**

When Read = True, the currently set unit is returned. The part in “Unit” above written in uppercase is displayed as the name of the unit.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 PHAS User.vi**

Sets and queries the user unit of phase.

<Input>

Unit Name (DEFA)

Specifies name of user unit. Up to 4 characters can be set.

Type (Lin)

Specifies the form for this user unit. Either Linear or Logarithmic can be specified.

Scale (0)

Sets the scale value.

Offset (0)

Sets the offset value.

<Output>

Query Unit

The content of the setting user unit is returned. Data is shown in the following order.

Name of user unit, form, scale, offset

**YKFG400 PHAS.vi**

Sets and queries the phase.

<Input>

Set Phase (Input)

Input: During setting, the value input in “Phase” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Phase (0)

Setting range:  $-1800.0^\circ$  to  $1800.0^\circ$

Resolution: 0.001°

When “Input” is selected in the above item, the value input for this item is sent as the setting value for phase.

Units (deg)

When “Input” is selected in the above item, this is the unit for the input phase.

<Output>

Query Phase

When Read = True, the value of phase corresponding to the content of “Set Phase” is returned.

When Read = False, this item is invalid and “0” is always returned.



### ***YKFG400 PM Freq.vi***

Sets and queries the internal modulation frequency of PM modulation.

<Input>

Set Frequency (Input)

Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Frequency (1)

Setting range: 0.1 mHz to 100 kHz

Resolution: 5 digits or 0.1 mHz

When “Input” is selected in the above item, the value input for this item is sent as the setting value for frequency.

Units (Hz)

When “Input” is selected in the above item, this is the unit for the input frequency.

<Output>

Query Frequency

When Read = True, the value of frequency corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 PM Func.vi**

Selects and queries the internal modulation waveform of PM modulation.

<Input>

Select Function (SIN)

Selects the internal modulation waveform to be set. The following items can be selected.

SINusoid/SQUare/TRIangle/PRAMp/NRAMp/NOISe/USER

Memory No. (1)

Sets the waveform number when USER is selected for waveform selection.

The selection range is from 0 to 128. (Memory number 0 is used for edit memory.)

<Output>

Query Function

When Read = True, the set internal modulation waveform is returned. If USER is selected as “Function type”, only the selected memory number is returned.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 PM Sour.vi**

Selects and queries the modulation source of PM modulation.

<Input>

Source type (Internal)

INTernal: Sets the modulation source type to internal.

EXTernal: Sets the modulation source type to external.

<Output>

Query Source

When Read = True, the currently set modulation source is returned. The part in “Source type” above written in uppercase is displayed as the name of the modulation source.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 PM Stat.vi**

Switches the oscillation mode between continuous oscillation and PM modulation, or queries whether the oscillation mode is PM modulation.

<Input>

State (OFF)

When ON, the PM modulation mode is selected.



<Output>

Query State

When Read = True, the current oscillation mode is returned as 0 or 1.

0: Continuous modulation (PM modulation OFF)

1: Modulation (PM modulation ON)

When Read = False, this item is invalid and “ ” (blank) is always returned.



### **YKFG400 PM.vi**

Sets and queries the peak deviation of PM modulation.

<Input>

Set Deviation (Input)

Input: During setting, the value input in “Deviation” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Deviation (0)

Setting range: 0.000° to 180.000°

Resolution: 0.001°

When “Input” is selected in the above item, the value input for this item is sent as the setting value for deviation.

<Output>

Query Deviation

When Read = True, the value of deviation corresponding to the content of “Set Deviation” is returned.

When Read = False, this item is invalid and “999” is always returned.



### **YKFG400 PSK Freq.vi**

Sets and queries the internal modulation frequency of PSK modulation.

<Input>

Set Frequency (Input)

Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query,

the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Frequency (1)

Setting range: 0.1 mHz to 1 MHz

Resolution: 5 digits or 0.1 mHz

When “Input” is selected in the above item, the value input for this item is sent as the setting value for frequency.

Units (Hz)

When “Input” is selected in the above item, this is the unit for the input frequency.

<Output>

Query Frequency

When Read = True, the value of frequency corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.



#### ***YKFG400 PSK Sour.vi***

Selects and queries the modulation source of PSK modulation.

<Input>

Source type (Internal)

INTernal: Sets the modulation source type to internal.

EXTernal: Sets the modulation source type to external.

CH1: Sets the external modulation source of CH1. (Can be set only for CH2.)

<Output>

Query source

When Read = True, the currently set modulation source is returned. The part in “Source type” above written in uppercase is displayed as the name of the modulation source.

When Read = False, this item is invalid and “ ” (blank) is always returned.



#### ***YKFG400 PSK Stat.vi***

Switches the oscillation mode between continuous oscillation and PSK modulation, or queries whether the oscillation mode is PSK modulation.

<Input>

State (OFF)

When ON, the PSK modulation mode is selected.

<Output>

Query state

When Read = True, the current oscillation mode is returned as 0 or 1.

0: Continuous oscillation (PSK modulation OFF)

1: Modulation (PSK modulation ON)

When Read = False, this item is invalid and “ ” (blank) is always returned.



**YKFG400 PSK.vi**

Sets and queries the deviation of PSK modulation.

<Input>

Set Deviation (Input)

Input: During setting, the value input in “Deviation” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Deviation (0)

Setting range:  $-1800.00^\circ$  to  $1800.00^\circ$

Resolution:  $0.001^\circ$

When “Input” is selected in the above item, the value input for this item is sent as the setting value for deviation.

<Output>

Query Deviation

When Read = True, the value of deviation corresponding to the content of “Set Deviation” is returned.

When Read = False, this item is invalid and “9999” is always returned.



**YKFG400 PULS Dcyc.vi**

Sets and queries the duty (pulse wave).

<Input>

Set Duty (Input)

Input: During setting, the value input in “Duty” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Duty (1)

Setting range: 0.0170% to 99.9830%

Resolution: 0.0001%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for duty (pulse wave).

Units (PCT)

When “Input” is selected in the above item, this becomes the unit for the input duty (pulse wave).

<Output>

Query Duty

When Read = True, the value of duty (pulse wave) corresponding to the content of “Set Duty” is returned.

When Read = False, this item is invalid and “0” is always returned.



**YKFG400 PULS Cent.vi**

Sets and queries the center value of duty sweep.

<Input>

Set Duty (Input)

Input: During setting, the value input in “Duty” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Duty (0)

Setting range: 0.0100% to 99.9900% (Square wave: normal)

0.0000% to 100.0000% (Square wave: extended)

0.0170% to 99.9830% (Pulse wave)

Resolution: 0.0001%

When “Input” is selected in the above item, the value input for this item is sent as the center value.

## Units (%)

When “Input” is selected in the above item, this is the unit for the input center value.

## &lt;Output&gt;

## Query Duty

When Read = True, the center value corresponding to the content of “Set Duty” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 PULS Mode.vi**

Sets and queries the oscillation mode’s continuous/duty sweep.

## &lt;Input&gt;

## Mode (Fixed)

FIXed: Continuous oscillation

SWEep: Duty sweep

## &lt;Output&gt;

## Query Mode

When Read = True, the currently set oscillation mode is returned. The part in “Mode” above written in uppercase is displayed as the name of the oscillation mode.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 PULS Span.vi**

Sets and queries the span value setting of duty sweep.

## &lt;Input&gt;

## Set Duty (Input)

Input: During setting, the value input in “Duty” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Duty (0)

Setting range: 0.0000% to 99.9800% (Square wave: normal)

0.0000% to 100.0000% (Square wave: extended)

0.0000% to 99.9660% (Pulse wave)

Resolution: 0.0001%

When “Input” is selected in the above item, the value input for this item is sent as the span

value.

#### Units (%)

When “Input” is selected in the above item, this is the unit for the input span value.

#### <Output>

##### Query Duty

When Read = True, the span value corresponding to the content of “Set Duty” is returned.

When Read = False, this item is invalid and “999” is always returned.



#### ***YKFG400 PULS Star.vi***

Sets and queries the start value of duty sweep.

#### <Input>

##### Set Duty (Input)

**Input:** During setting, the value input in “Duty” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

#### Duty (0)

Setting range: 0.0100% to 99.9900% (Square wave: normal)

0.0000% to 100.0000% (Square wave: extended)

0.0170% to 99.9830% (Pulse wave)

Resolution: 0.0001%

When “Input” is selected in the above item, the value input for this item is sent as the start value.

#### Units (%)

When “Input” is selected for the above item, this is the unit for the start value.

#### <Output>

##### Query Duty

When Read = True, the start value corresponding to the content of “Set Duty” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 PULS Stop.vi**

Sets and queries the stop value of duty sweep.

<Input>

Set Duty (Input)

- Input: During setting, the value input in “Duty” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Duty (0)

Setting range: 0.0100% to 99.9900% (Square wave: normal)  
 0.0000% to 100.0000% (Square wave: extended)  
 0.0170% to 99.9830% (Pulse wave)

Resolution: 0.0001%

When “Input” is selected in the above item, the value input for this item is sent as the stop value.

Units (%)

When “Input” is selected in the above item, this is the unit for the input stop value.

<Output>

Query Duty

- When Read = True, the stop value corresponding to the content of “Set Duty” is returned.
- When Read = False, this item is invalid and “999” is always returned.

**YKFG400 PULS Stat.vi**

Switches the duty sweep state.

<Input>

State (Start)

- START: Sweep start
- STOP: Sweep stop

**YKFG400 PULS Swap.vi**

Swaps the start value and stop value of duty sweep.

**YKFG400 PULS Unit.vi**

Selects and queries the duty unit.

<Input>

Unit (%)

Selects the unit. Either PCT(%) or USER can be selected.

<Output>

Query Unit

When Read = True, the currently set unit is returned. The part in “Unit” above written in uppercase is displayed as the name of the unit.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 PULS User.vi**

Specifies and queries the name of user unit.

<Input>

Unit Name (DEFA)

Specifies name of user unit. Up to 4 characters can be set.

Type (Lin)

Specifies the form for this user unit. Either Linear or Logarithmic can be specified.

Scale (0)

Sets the scale value.

Offset (0)

Sets the offset value.

<Output>

Query Unit

The content of the setting user unit is returned. Data is shown in the following order.

Name of user unit, form, scale, offset

**YKFG400 PULS Per.vi**

Sets and queries the period.

<Input>

Set Period (Input)



- Input: During setting, the value input in “Period” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Period (1)

Setting range: 33.33 ns to 100.00 Ms (The setting range differs corresponding to the waveform and mode.)

When “Input” is selected in the above item, the value input for this item is sent as the setting value for period.

Units(S)

When “Input” is selected in the above item, this becomes the unit for the input period.

<Output>

Query Period

When Read = True, the period value corresponding to the content of “Set Period” is returned.

When Read = False, this item is invalid and “0” is always returned.



***YKFG400 PULS Per Unit.vi***

Selects and queries the period unit.

<Input>

Unit (Second)

Selects the unit. Either Second or USER can be selected.

<Output>

Query Unit

When Read = True, the currently set unit is returned. The part in “Unit” above written in uppercase is displayed as the name of the unit.

When Read = False, this item is invalid and “ ” (blank) is always returned.



***YKFG400 PULS Per User.vi***

Sets and queries the user unit of period.

<Input>

Unit Name (DEFA)

Specifies name of user unit. Up to 4 characters can be set.

**Type (Lin)**

Specifies the form for this user unit. Either Linear or Logarithmic can be specified.

**Scale (0)**

Sets the scale value.

**Offset (0)**

Sets the offset value.

**<Output>****Query Unit**

The content of the setting user unit is returned. Data is shown in the following order.

Name of user unit, form, scale, offset

***YKFG400 PULS Tra.vi***

Sets and queries the falling time of pulse width.

**<Input>****Set Seconds (Input)**

**Input:** During setting, the value input in “Seconds” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

**Seconds (1)**

Setting range: 15.0 ns to 58.8 Ms

Resolution: 3 digits or 0.1 ns

When “Input” is selected in the above item, the value input for this item is sent as the setting value for trailing edge time.

**Units (S)**

When “Input” is selected in the above item, this becomes the unit for the input falling time.

**<Output>****Query Seconds**

When Read = True, the value of falling time corresponding to the content of “Set Seconds” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 PULS Tran.vi**

Sets and queries the rising time of pulse width.

<Input>

Set Seconds (Input)

- Input: During setting, the value input in “Seconds” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Seconds (1)

Setting range: 15.0 ns to 58.8 Ms

Resolution: 3 digits or 0.1 ns

When “Input” is selected in the above item, the value input for this item is sent as the setting value for leading edge time.

Units (S)

When “Input” is selected in the above item, this is the unit for the input rising time.

<Output>

Query Seconds

When Read = True, the value of rising time corresponding to the content of “Set Seconds” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 PULS Wid.vi**

Sets and queries the pulse width.

<Input>

Set Width (Input)

- Input: During setting, the value input in “Width” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Width (1)

Setting range: 25.50 ns to 99.9830 Ms

Resolution: 6 digits or 0.01 ns

When “Input” is selected in the above item, the value input for this item is sent as the setting value for pulse width.

Units (S)

When “Input” is selected in the above item, this is the unit for the input pulse width.

<Output>

Query Width

When Read = True, the value of pulse width corresponding to the content of “Set Width” is returned.

When Read = False, this item is invalid and “0” is always returned.



### ***YKFG400 PWM Freq.vi***

Sets and queries the internal modulation frequency of PWM modulation.

<Input>

Set Frequency (Input)

Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Frequency (1)

Setting range: 0.1 mHz to 100 kHz

Resolution: 5 digits or 0.1 mHz

When “Input” is selected in the above item, the value input for this item is sent as the setting value for frequency.

Units (Hz)

When “Input” is selected in the above item, this is the unit for the input frequency.

<Output>

Query Frequency

When Read = True, the value of frequency corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 PWM Func.vi**

Select and queries the internal modulation waveform of PWM modulation.

<Input>

Select Function (SIN)

Selects the internal modulation waveform to be set. The following items can be selected.

SINusoid/SQUare/TRIangle/PRAMp/NRAMp/NOISe/USER

Memory No. (1)

Sets the waveform number when USER is selected for waveform selection.

The selection range is from 0 to 128. (Memory number 0 is used for edit memory.)

<Output>

Query Function

When Read = True, the set internal modulation waveform is returned. If USER is selected as “Function type”, only the selected memory number is returned.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 PWM Sour.vi**

Selects and queries the modulation source of PWM modulation.

<Input>

Source type (Internal)

INTernal: Sets the modulation source type to internal.

EXTernal: Sets the modulation source type to external.

<Output>

Query source

When Read = True, the currently set modulation source is returned. The part in “Source type” above written in uppercase is displayed as the name of the modulation source.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 PWM Stat.vi**

Switches the oscillation mode between continuous oscillation and PWM modulation, or queries whether the oscillation mode is PWM modulation.

<Input>

State (OFF)

When ON, the PWM modulation mode is selected.

<Output>

Query state

When Read = True, the current oscillation mode is returned as 0 or 1.

0: Continuous modulation (PSK modulation OFF)

1: Modulation (PSK modulation ON)

When Read = False, this item is invalid and “ ” (blank) is always returned.



### ***YKFG400 PWM Dcyc.vi***

Sets and queries the peak deviation of PWM modulation.

<Input>

Set Deviation (Input)

Input: During setting, the value input in “Deviation” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Deviation (0)

Setting range: 0.0000% to 49.9900% (Square wave: without expansion)

0.0000% to 50.0000% (Square wave: with expansion)

0.0000% to 49.9900% (Pulse wave)

Resolution: 0.0001%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for deviation.

<Output>

Query Deviation

When Read = True, the value of deviation corresponding to the content of “Set Deviation” is returned.

When Read = False, this item is invalid and “99” is always returned.



### ***YKFG400 ROsc Sour.vi***

Sets and queries the reference frequency source.

<Input>

Source (Internal)

INternal: Sets the reference frequency source to internal clock.

EXTernal: Sets the reference frequency source to external reference frequency input.

<Output>

Query source

When Read = True, the currently set modulation source is returned. The part in “Source” above written in uppercase is displayed as the name of the modulation source.

When Read = False, this item is invalid and “ ” (blank) is always returned.



***YKFG400 SEQ Cst.vi***

Queries the current step of the sequence.

<Output>

Query Step

Returns the current step number.



***YKFG400 SEQ Stat.vi***

Switches the oscillation mode between continuous oscillation and sequence, or queries whether the oscillation mode is sequence.

<Input>

State (OFF)

When ON, the sequence mode is selected.

<Output>

Query state

When Read = True, the current oscillation mode is returned as 0 or 1.

0: Continuous oscillation (Sequence OFF)

1: Sequence (Sequence ON).

When Read = False, this item is invalid and “ ” (blank) is always returned.



***YKFG400 SWE Func.vi***

Selects and queries the sweep direction.

<Input>

Function type (Ramp)

RAMP: Sets the sweep direction to one way.

TRIangle: Set the sweep direction to shuttle.

<Output>

## Query Function

When Read = True, the currently set sweep direction is returned. The part in “Function type” above written in uppercase is displayed as the name of the sweep direction.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 SWE Mcon Stat.vi**

Sets and queries multiconnector control enable/disable.

<Input>

State (OFF)

When ON, multiconnector control is enabled.

<Output>

Query state

When Read = True, the current oscillation mode is returned as 0 or 1.

0: Multiconnector control disabled

1: Multiconnector control enabled

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 SWE Mode.vi**

Selects and queries the sweep mode.

<Input>

Mode (Single)

SINGLE: Single-shot mode

CONTInuous: Continuous mode

GATed: Gated single-shot mode

<Output>

Query Mode

When Read = True, the currently set sweep mode is returned. The part in “Mode” above written in uppercase is displayed as the name of the sweep mode.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 SWE Slev.vi**

Sets and queries the stop level value when the oscillation is stopped during single-shot sweep and gated single-shot sweep.

<Input>



## Set Level (Input)

- Input: During setting, the value input in “Level” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Level (0)

Setting range: -100.00% to 100.00%

Resolution: 0.01%

When “Input” is selected in the above item, the value input for this item is sent as the setting value for stop level.

## &lt;Output&gt;

## Query SLevel

When Read = True, the value of stop level corresponding to the content of “Set Level” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 SWE Slev Stat.vi**

Sets and queries the step level when the oscillation is stopped during single-shot sweep and gated single-shot sweep.

## &lt;Input&gt;

## State (OFF)

When ON, the step level is enabled.

## &lt;Output&gt;

## Query state

When Read = True, the current step level state is returned as 0 or 1.

0: Step level disabled

1: Step level enabled

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 SWE Spac.vi**

Selects and queries the sweep slope.

## &lt;Input&gt;

## Spacing (Liner)

LINer: Sets the slope linearly.  
 LOGarithmic: Sets the slope logarithmically.

<Output>

Query Spacing

When Read = True, the currently set slope is returned. The part in “Spacing” above written in uppercase is displayed as the name of the slope.

When Read = False, this item is invalid and “ ” (blank) is always returned.



***YKFG400 SWE Time.vi***

Sets and queries the sweep time.

<Input>

Set Time (Input)

Input: During setting, the value input in “Time” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Time (1)

Setting range: 0.1 ms to 10000 s

Resolution: 4 digits or 0.1 ms

When “Input” is selected in the above item, the value input for this item is sent as the setting value for sweep time.

Units (S)

When “Input” is selected in the above item, this becomes the unit for the input sweep time.

<Output>

Query Time

When Read = True, the value of sweep time corresponding to the content of “Set Time” is returned.

When Read = False, this item is invalid and “0” is always returned.



***YKFG400 VOLT Rang.vi***

Sets and queries auto range.

<Input>

**Auto Range (ON)**

When ON, auto range is enabled.

**<Output>****Query Auto Range**

When Read = True, the current auto range state is returned as 0 or 1.

0: Auto range disabled

1: Auto range enabled

***YKFG400 VOLT High.vi***

Sets and queries the high voltage level.

**<Input>****Set High\_V (Input)**

**Input:** During setting, the value input in “High\_V” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

**High\_V (0)**

**Setting range:** Depends on the state during setting.

**Resolution:** Depends on the state during setting.

When “Input” is selected in the above item, the value input for this item is sent as the setting value for high voltage level.

**Units (V)**

When “Input” is selected in the above item, this is the unit for the input high voltage level.

**<Output>****Query High\_V**

When Read = True, the value of high voltage level corresponding to the content of “Set High\_V” is returned.

When Read = False, this item is invalid and “0” is always returned.

***YKFG400 VOLT High Unit.vi***

Selects and queries the high level unit.

**<Input>**

## Unit (V)

Selects the unit. Either V or USER can be selected.

## &lt;Output&gt;

## Query Unit

When Read = True, the currently set unit is returned. The part in “Unit” above written in uppercase is displayed as the name of the unit.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 VOLT Low.vi**

Sets and queries the low voltage level.

## &lt;Input&gt;

## Set Low\_V (Input)

Input: During setting, the value input in “Low\_V” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Low\_V (0)

Setting range: Depends on the state during setting.

Resolution: Depends on the state during setting.

When “Input” is selected in the above item, the value input for this item is sent as the setting value for low voltage level.

## Units (V)

When “Input” is selected in the above item, this is the unit for the input low voltage level.

## &lt;Output&gt;

## Query Low\_V

When Read = True, the value of low voltage level corresponding to the content of “Set Low\_V” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 VOLT Low Unit.vi**

Selects and queries the low level unit.

## &lt;Input&gt;

## Unit (V)

Selects the unit. Either V or USER can be selected.

## &lt;Output&gt;

## Query Unit

When Read = True, the currently set unit is returned. The part in “Unit” above written in uppercase is displayed as the name of the unit.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 VOLT Offs.vi**

Sets and queries DC offset.

## &lt;Input&gt;

## Set Offset (Input)

Input: During setting, the value input in “Offset” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Offset (0)

Setting range:  $\pm 10$  V (open)/ $\pm 5$  V (50  $\Omega$ )

Resolution: 4 digits or 0.1 mV ( $\pm 499.9$  mV or lower)  
5 digits or 1 mV ( $\pm 0.5$  V or higher)

When “Input” is selected in the above item, the value input for this item is sent as the setting value for DC offset.

## Units (S)

When “Input” is selected in the above item, this is the unit for the input DC offset.

## &lt;Output&gt;

## Query Offset

When Read = True, the value of DC offset corresponding to the content of “Set Offset” is returned.

When Read = False, this item is invalid and “99” is always returned.

**YKFG400 OFFS Cent.vi**

Sets and queries the center value of DC offset sweep.

## &lt;Input&gt;

## Set Offset (Input)

Input: During setting, the value input in “Offset” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Offset (0)

Setting range:  $\pm 10$  V (open)/ $\pm 5$  V (50  $\Omega$ )

Resolution: 4 digits or 0.1 mV ( $\pm 499.9$  mV or lower)  
5 digits or 1 mV ( $\pm 0.5$  V or higher)

When “Input” is selected in the above item, the value input for this item is sent as the center value.

## Units (V)

When “Input” is selected in the above item, this is the unit for the input center value.

## &lt;Output&gt;

## Query Offset

When Read = True, the value of center value corresponding to the content of “Set Offset” is returned.

When Read = False, this item is invalid and “0” is always returned.

***YKFG400 OFFS Mode.vi***

Sets and queries the oscillation mode’s continuous/DC offset sweep.

## &lt;Input&gt;

## Mode (Fixed)

FIXed: Continuous oscillation

SWEep: DC offset sweep

## &lt;Output&gt;

## Query Mode

When Read = True, the currently set oscillation mode is returned. The part in “Mode” above written in uppercase is displayed as the name of the oscillation mode.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 OFFS Span.vi**

Sets and queries the span value of DC offset sweep.

<Input>

**Set Offset (Input)**

- Input: During setting, the value input in “Offset” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

**Offset (0)**

Setting range: 0 V to 20 V (open)/0 V to 10 V (50  $\Omega$ )

Resolution: 4 digits or 0.1 mV ( $\pm 499.9$  mV or lower)  
5 digits or 1 mV ( $\pm 0.5$  V or higher)

When “Input” is selected in the above item, the value input for this item is sent as the span value.

**Units (V)**

When “Input” is selected in the above item, this is the unit for the input span value.

<Output>

**Query Offset**

When Read = True, the span value corresponding to the content of “Set Offset” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 OFFS Star.vi**

Sets and queries the start value of DC offset sweep.

<Input>

**Set Offset (Input)**

- Input: During setting, the value input in “Offset” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

**Offset (0)**

Setting range:  $\pm 10$  V (open)/ $\pm 5$  V (50  $\Omega$ )

Resolution: 4 digits or 0.1 mV ( $\pm 499.9$  mV or lower)  
5 digits or 1 mV ( $\pm 0.5$  V or higher)

When “Input” is selected in the above item, the value input for this item is sent as the start value.

Units (V)

When “Input” is selected for the above item, this is the unit for the input start value.

<Output>

Query Offset

When Read = True, the start value corresponding to the content of “Set Offset” is returned.

When Read = False, this item is invalid and “0” is always returned.



### ***YKFG400 OFFS Stop.vi***

Sets and queries the stop value of DC offset sweep.

<Input>

Set Offset (Input)

Input: During setting, the value input in “Offset” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Offset (0)

Setting range:  $\pm 10$  V (open)/ $\pm 5$  V (50  $\Omega$ )

Resolution: 4 digits or 0.1 mV ( $\pm 499.9$  mV or lower)  
5 digits or 1 mV ( $\pm 0.5$  V or higher)

When “Input” is selected in the above item, the value input for this item is sent as the stop value.

Units (V)

When “Input” is selected in the above item, this is the unit for the input stop value.

<Output>

Query Offset

When Read = True, the stop value corresponding to the content of “Set Offset” is returned.

When Read = False, this item is invalid and “0” is always returned.



**YKFG400 OFFS Stat.vi**

Switches the DC offset sweep state.

<Input>

State (Start)

START: Switches output to the start value.

STOP: Switches output to the stop value.

**YKFG400 OFFS Swap.vi**

Swaps the start value and stop value of DC offset sweep.

**YKFG400 OFFS Unit.vi**

Selects and queries the DC offset unit.

<Input>

Unit (V)

Selects the unit. Either V or USER can be selected.

<Output>

Query Unit

When Read = True, the currently set unit is returned. The part in “Unit” above written in uppercase is displayed as the name of the unit.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 OFFS User.vi**

Sets and queries the user unit of DC offset.

<Input>

Unit Name (DEFA)

Specifies the name of user unit. Up to 4 characters can be set.

Type (Lin)

Specifies the form for this user unit. Either Linear or Logarithmic can be specified.

Scale (0)

Sets the scale value.

## Offset (0)

Sets the offset value.

## &lt;Output&gt;

## Query Unit

The content of the setting user unit is returned. Data is shown in the following order.

Name of user unit, form, scale, offset

**YKFG400 VOLT.vi**

Sets and queries the amplitude of the oscillator.

## &lt;Input&gt;

## Set Amplitude (Input)

- Input: During setting, the value input in “Amplitude” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Amplitude (1)

Setting range: 0 Vp-p to 20 Vp-p (open)/0 Vp-p to 10 Vp-p (50  $\Omega$ )

Resolution: 4 digits or 0.1 mVp-p (999.9 mVp-p or lower)  
5 digits or 1 mVp-p (1 Vp-p or higher)

When “Input” is selected in the above item, the value input for this item is sent as the setting value for amplitude.

## Units (S)

When “Input” is selected in the above item, this is the unit for the input amplitude.

## &lt;Output&gt;

## Query Amplitude

When Read = True, the value of amplitude corresponding to the content of “Set Amplitude” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 AMPL Cent.vi**

Sets and queries the center value of amplitude sweep.

## &lt;Input&gt;

**Set Amplitude (Input)**

- Input:** During setting, the value input in “Amplitude” below is enabled. During query, the currently set value is returned.
- Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

**Amplitude (1)**

Setting range: 0 Vp-p to 20 Vp-p (open)/0 Vp-p to 10 Vp-p (50 Ω)

Resolution: 4 digits or 0.1 mVp-p (999.9 mVp-p or lower)  
5 digits or 1 mVp-p (1 Vp-p or higher)

When “Input” is selected in the above item, the value input for this item is sent as the setting value.

**Units (Vpp)**

When “Input” is selected in the above item, this is the unit for the input value.

**<Output>****Query Amplitude**

When Read = True, the value of amplitude sweep center value corresponding to the content of “Set Amplitude” is returned.

When Read = False, this item is invalid and “0” is always returned.

***YKFG400 AMPL Mode.vi***

Switches and queries continuous oscillation mode/amplitude sweep.

**<Input>****Mode (Fixed)**

Selects the mode.

**FIXed:** Sets the mode to continuous oscillation mode.

**SWEep:** Sets the mode to amplitude sweep.

**<Output>****Query Mode**

When Read = True, the currently set mode is returned. The part in “Mode” above written in uppercase is displayed as the name of the mode.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 AMPL Span.vi**

Sets and queries the span value of amplitude sweep.

<Input>

**Set Amplitude (Input)**

- Input: During setting, the value input in “Amplitude” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

**Amplitude (1)**

Setting range: 0 Vp-p to 20 Vp-p (open)/0 Vp-p to 10 Vp-p (50  $\Omega$ )

Resolution: 4 digits or 0.1 mVp-p (999.9 mVp-p or lower)  
5 digits or 1 mVp-p (1 Vp-p or higher)

When “Input” is selected in the above item, the value input for this item is sent as the setting value.

**Units (Vpp)**

When “Input” is selected in the above item, this is the unit for the input value.

<Output>

**Query Amplitude**

When Read = True, the amplitude sweep span value corresponding to the content of “Set Amplitude” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 AMPL Star.vi**

Sets and queries the start value of amplitude sweep.

<Input>

**Set Amplitude (Input)**

- Input: During setting, the value input in “Amplitude” below is enabled. During query, the currently set value is returned.
- Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.
- Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Amplitude (1)

Setting range: 0 Vp-p to 20 Vp-p (open)/0 Vp-p to 10 Vp-p (50  $\Omega$ )

Resolution: 4 digits or 0.1 mVp-p (999.9 mVp-p or lower)  
5 digits or 1 mVp-p (1 Vp-p or higher)

When “Input” is selected in the above item, the value input for this item is sent as the setting value.

## Units (Vpp)

When “Input” is selected in the above item, this is the unit for the input value.

## &lt;Output&gt;

## Query Amplitude

When Read = True, the amplitude sweep start value corresponding to the content of “Set Amplitude” is returned.

When Read = False, this item is invalid and “0” is always returned.

**YKFG400 AMPL Stop.vi**

Sets and queries the stop value of amplitude sweep.

## &lt;Input&gt;

## Set Amplitude (Input)

Input: During setting, the value input in “Amplitude” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

## Amplitude (1)

Setting range: 0 Vp-p to 20 Vp-p (open)/0 Vp-p to 10 Vp-p (50  $\Omega$ )

Resolution: 4 digits or 0.1 mVp-p (999.9 mVp-p or lower)  
5 digits or 1 mVp-p (1 Vp-p or higher)

When “Input” is selected in the above item, the value input for this item is sent as the setting value.

## Units (Vpp)

When “Input” is selected in the above item, this is the unit for the input value.

## &lt;Output&gt;

## Query Amplitude

When Read = True, the amplitude sweep stop value corresponding to the content of “Set

Amplitude” is returned.

When Read = False, this item is invalid and “0” is always returned.



#### ***YKFG400 AMPL Swap.vi***

Swaps the start value and stop value of amplitude sweep.



#### ***YKFG400 AMPL Stat.vi***

Switches the amplitude sweep state.

<Input>

State (Start)

START: Switches output to the start value.

STOP: Switches output to the stop value.



#### ***YKFG400 AMPL Unit.vi***

Selects and queries the amplitude unit.

<Input>

Unit (Vpp)

Selects the unit. One of the following units can be selected.

VPP: Vpp

VPK: Vpk

VRMS: Vrms

DBV: dBV

DBM: dBm

USER: User unit

<Output>

Query Unit

When Read = True, the currently set unit is returned. The part in “Unit” above written in uppercase is displayed as the name of the unit.

When Read = False, this item is invalid and “ ” (blank) is always returned.



#### ***YKFG400 AMPL User.vi***

Sets and queries the user unit of amplitude.

<Input>

Unit Name (DEFA)

Specifies the name of user unit. Up to 4 characters can be set.

Type (Lin)

Specifies the form for this user unit. Either Linear or Logarithmic can be specified.

Scale (0)

Sets the scale value.

Offset (0)

Sets the offset value.

<Output>

Query Unit

The content of the setting user unit is returned. Data is shown in the following order.

Name of user unit, form, scale, offset

## 2.7 CHANNEL Subsystem



### *YKFG400 CHAN Mode.vi*

Selects and queries the channel mode.

<Input>

Channel Mode (Independent)

Selects the channel mode. One of the following settings can be selected.

INDEpendent: Sets the channel mode to 2-channel independent mode.

PHASe: Sets the channel mode to 2-phase mode.

TONE: Sets the channel mode to constant frequency difference mode.

RATio: Sets the channel mode to constant frequency ratio mode.

DIFFerential: Sets the channel mode to differential output.

<Output>

Query Mode

When Read = True, the currently set mode is returned. The part in “Channel Mode” above written in uppercase is displayed as the name of the mode.

When Read = False, this item is invalid and “ ” (blank) is always returned.



### *YKFG400 CHAN Delt.vi*

Sets and queries the frequency difference during the constant frequency difference mode.

<Input>

Set Frequency (Input)

Input: During setting, the value input in “Frequency” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Frequency (0)

Setting range: Ch2 frequency - Ch1 frequency

Resolution: 0.01  $\mu$ Hz

When “Input” is selected in the above item, the value input for this item is sent as the setting value for frequency difference.

Units (Hz)



When “Input” is selected in the above item, this is the unit for the input frequency difference.

<Output>

Query Frequency

When Read = True, the setting value of frequency difference corresponding to the content of “Set Frequency” is returned.

When Read = False, this item is invalid and “0” is always returned.



### ***YKFG400 CHAN Rat.vi***

Sets and queries the frequency ratio during constant frequency ratio mode.

<Input>

Set Ch1 Ratio (Input)

**Input:** During setting, the value input in “Ch1” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Set Ch2 Ratio (Input)

**Input:** During setting, the value input in “Ch2” below is enabled. During query, the currently set value is returned.

**Minimum:** During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

**Maximum:** During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Ch1 (1)

Setting range: 1 to 9999999

When “Input” is selected in the above item, the value input for this item is sent as the setting value for frequency ratio.

Ch2 (1)

Setting range: 1 to 9999999

When “Input” is selected in the above item, the value input for this item is sent as the setting value for frequency ratio.

<Output>

Query Ratio

When Read = True, the setting value of frequency ratio is returned. The display format is as

follows.

Ch1 setting value, Ch2 setting value

When Read = False, this item is invalid and “ ” (blank) is always returned.

## 2.8 OUTPUT Subsystem



### ***YKFG400 OUTP.vi***

Selects and queries output ON/OFF.

<Input>

Output (OFF)

ON: Sets output to ON.

OFF: Sets output to OFF.

<Output>

Query State

When Read = True, the current output state is returned as 0 or 1.

0: Output is OFF.

1: Output is ON.

When Read = False, this item is invalid and “9” is always returned.



### ***YKFG400 OUTP Pol.vi***

Selects and queries the polarity of the waveform.

<Input>

Select Function (Sin)

Selects the set waveform. The following parameters can be set.

SINusoid/SQUare/PULSe/RAMP

/USINe/CSINe/CFCSine/ACSine/SSINe/MCSine

/ONPSine/OFPSine/CONSine/COFSine

/GAUSSian/LORentz/HAVersine/HSPulse/TPULse/SINC

/ERISe/EFALI/SOLStep/DOSCillation/OSURge/PSURge

/TOFFset/HSEPulse/BRRamp/USER

Polarity (Normal)

NORMal: Sets the polarity to normal mode.

INVerted: Sets the polarity to inverted mode.

<Output>

Query Polarity

When Read = True, the set mode is returned. The part in “Polarity” above written in uppercase is displayed as the name of the polarity.

When Read = False, this item is invalid and “ ” (blank) is always returned.



**YKFG400 OUTP Scal.vi**

Selects and queries the amplitude range.

<Input>

Select Function (Sin)

Selects the set waveform. The following parameters can be set.

SINusoid/SQUare/PULSe/RAMP

/USINe/CSINe/CFCSine/ACSine/SSINe/MCSine

/ONPSine/OFPSine/CONSine/COFSine

/GAUSSian/LORentz/HAVersine/HSPulse/TPULse/SINC

/ERISe/EFALI/SOLStep/DOSCillation/OSURge/PSURge

/TOFFset/HSEPulse/BRRamp/USER

Scale (FS)

PFS: Sets 0 to +FS.

FS: Sets ±FS.

MFS: Sets -FS to 0.

<Output>

Query Scale

When Read = True, the currently set amplitude range is returned. The part in “Scale” above written in uppercase is displayed as the name of the amplitude range.

When Read = False, this item is invalid and “ ” (blank) is always returned.



**YKFG400 OUTP Fsk.vi**

Sets and queries the sync output during FSK modulation.

<Input>

Fskey type (Sync)

SYNC: Sets waveform synchronization.

MSYNc: Sets internal modulation synchronization.

<Output>

Query Fskey type

When Read = True, the currently set sync output is returned. The part in “Fskey type” above written in uppercase is displayed as the name of sync output.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 OUTP Psk.vi**

Sets and queries the sync output during PSK modulation.

<Input>

Pskey type (Sync)

SYNC: Sets waveform synchronization.

MSYNc: Sets internal modulation synchronization.

<Output>

Query Pskey type

When Read = True, the currently set sync output is returned. The part in “Pskey type” above written in uppercase is displayed as the name of sync output.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 OUTP Fm.vi**

Sets and queries the sync output during FM modulation.

<Input>

FM type (Sync)

SYNC: Sets waveform synchronization.

MSYNc: Sets internal modulation synchronization.

MFCTn: Internal modulation signal

<Output>

Query FM type

When Read = True, the currently set sync output is returned. The part in “FM type” above written in uppercase is displayed as the name of sync output.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 OUTP Pm.vi**

Sets and queries the sync output during PM modulation

<Input>

PM type (Sync)

SYNC: Sets waveform synchronization.

MSYNc: Sets internal modulation synchronization.

MFCTn: Internal modulation signal

<Output>

Query PM type

When Read = True, the currently set sync output is returned. The part in the above “PM type” above written in uppercase is displayed as the name of sync output.

When Read = False, this item is invalid and “ ” (blank) is always returned.



**YKFG400 OUTP Am.vi**

Sets and queries the sync output during AM modulation.

<Input>

AM type (Sync)

SYNC: Sets waveform synchronization.

MSYNc: Sets internal modulation synchronization.

MFCTn: Internal modulation signal

<Output>

Query AM type

When Read = True, the currently set sync output is returned. The part in “AM Type” above written in uppercase is displayed as the name of sync output.

When Read = False, this item is invalid and “ ” (blank) is always returned.



**YKFG400 OUTP Amsc.vi**

Sets and queries the sync output during AM (DSB-SC) modulation.

<Input>

AMSC type (Sync)

SYNC: Sets waveform synchronization.

MSYNc: Sets internal modulation synchronization.

MFCTn: Internal modulation signal

<Output>

Query AMSC type

When Read = True, the set sync output is returned. The part in “AMSC type” above written in uppercase is displayed.

When Read = False, this item is invalid and “ ” (blank) is always returned.



**YKFG400 OUTP Ofsm.vi**

Sets and queries the sync output during DC offset modulation.

<Input>

OFSM type (Sync)

- SYNC: Sets waveform synchronization.
- MSYNc: Sets internal modulation synchronization.
- MFCTn: Internal modulation signal

<Output>

Query OFSM type

When Read = True, the set sync output is returned. The part in “OFSM type” above written in uppercase is displayed.

When Read = False, this item is invalid and “ ” (blank) is always returned.



**YKFG400 OUTP Pwm.vi**

Sets and queries the sync output during PWM modulation.

<Input>

PWM type (Sync)

- SYNC: Sets waveform synchronization.
- MSYNc: Sets internal modulation synchronization.
- MFCTn: Internal modulation signal

<Output>

Query PWM type

When Read = True, the set sync output is returned. The part in “PWM type” above written in uppercase is displayed.

When Read = False, this item is invalid and “ ” (blank) is always returned.



**YKFG400 OUTP Swe.vi**

Sets and queries the sweep sync output.

<Input>

Sweep type (Sync)

- SYNC: Sets reference phase synchronization.
- SSYNc: Sets sweep synchronization.
- XDRive: Sets sweep X drive.
- MARKer: Sets marker.

<Output>

Query Sweep type

When Read = True, the set sync output is returned. The part in “Sweep type” above written in uppercase is displayed.

When Read = False, this item is invalid and “ ” (blank) is always returned.



**YKFG400 OUTP Burs.vi**

Sets and queries the burst sync output.

<Input>

Burst type (Sync)

SYNC: Sets reference phase synchronization.

BSYNc: Sets burst synchronization.

<Output>

Query Burst type

When Read = True, the set sync output is returned. The part in “Burst type” above written in uppercase is displayed.

When Read = False, this item is invalid and “ ” (blank) is always returned.



**YKFG400 OUTP Load.vi**

Sets and queries the load impedance.

<Input>

Set Load (Input)

Input: During setting, the value input in “Load” below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

INFINITY: Sets high impedance. No query.

Load (1)

Setting range: 1  $\Omega$  to 10 k $\Omega$

Resolution: 1  $\Omega$

When “Input” is selected in the above item, the value input for this item is sent as the setting value for load impedance.

Units (OHM)

When “Input” is selected in the above item, this is the unit for the input load impedance.

<Output>

Query Load



When Read = True, the value of load impedance corresponding to the content of “Set Load” is returned.

When Read = False, this item is invalid and “0” is always returned.



### ***YKFG400 OUTP POn.vi***

Sets and queries output ON/OFF when the power supply is turned on.

<Input>

Mode (OFF)

OFF: Does not output at power-on.

ON: Outputs at power-on.

LAST: Makes the same setting as the previous results.

<Output>

Query Mode

When Read = True, the currently set mode is returned.

When Read = False, this item is invalid and “ ” (blank) is always returned.

## 2.9 TRACE Subsystem



### ***YKFG400 TRAC Copy.vi***

Copies embedded waveform to arbitrary waveform memory.

<Input>

Memory No. (0)

Setting range: 0 to 128

Specifies the memory number to be copied.

Name (USERNAME)

Specifies the name to be set to the copied waveform. The number of characters is up to 20 one-byte alphabetic characters.

(If the name is less than 20 characters, the unfilled digits are filled out with spaces.)

Select Function (Sine)

Selects the waveform to be copied.



### ***YKFG400 TRAC Del.vi***

Deletes arbitrary waveform of specified memory number.

<Input>

Memory No. (0)

Setting range: 0 to 128

Specifies memory number to be deleted.



### ***YKFG400 TRAC Inf.vi***

Gets information of arbitrary waveform in specified memory number.

<Input>

Memory No. (0)

Setting range: 0 to 128

Specifies memory number whose information is to be acquired.

<Output>

Information

Displays the information of the acquired arbitrary waveform. The display format is as follows:

<name>,<data format>,<number of data points>

Name: Returns arbitrary waveform name (20 characters)  
 Data format: Returns 0 (array format)/1(control point format).  
 Number of data points: Returns number of data points.



#### ***YKFG400 TRAC Rec.vi***

Reads in contents of arbitrary wave file to edit memory.

<Input>

Memory No. (1)

Setting range: 1 to 128

Specifies memory number to be called.



#### ***YKFG400 SEQ Rec.vi***

Reads in contents of sequence file to current memory.

<Input>

Set No. (Input)

Input: During setting, the value input in “File No.” below is enabled.

Minimum: During setting, the minimum value among the settable values is set.

Maximum: During setting, the maximum value among the settable values is set.

File No. (1)

Setting range: 1 to 10

Specifies file number to be called.



#### ***YKFG400 TRAC Stor.vi***

Saves contents of edit memory to arbitrary waveform memory.

<Input>

Memory No. (1)

Setting range: 1 to 128

Specifies memory number to be saved.

Name (USERNAME)

Specifies name to be set to waveform. The number of characters is up to 20 one-byte alphabetic characters.

(If the name is less than 20 characters, the unfilled digits are filled out with spaces.)

**YKFG400 SEQ Stor.vi**

Saves the contents of current memory to sequence file.

<Input>

File No. (1)

Setting range: 1 to 10

Specifies file number to be saved.

Name (USERNAME)

Specifies name to be set to sequence file. The number of characters is up to 20 one-byte alphabetic characters.

(If the name is less than 20 characters, the unfilled digits are filled out with spaces.)

**YKFG400 TRAC Plot.vi**

Generates arbitrary waveform data in array format, transfers it to measuring instrument and saves generated data.

<Input>

Memory No. (0)

Specifies memory number to be transferred. The selection range is 0 to 128. The specified memory number is read out when queried.

Name (USER)

Specifies name of generated arbitrary waveform. Up to 20 characters can be input.

Function (Sin)

Specifies reference waveform used when generating arbitrary waveform. Sin, Sin(x)/x, and Clear can be specified.

When Clear is specified, 0 is recorded.

Level

Specifies amplitude of arbitrary waveform.

n (12)

Specifies number of arbitrary waveform points as a power of two. The number of points ranges from  $2^{12}$  (4096) to  $2^{19}$  (5242988).

<Output>

When Read = True, the arbitrary waveform data specified in "Memory No." above is read out. However, it is not displayed on VI and is saved to an arbitrary location on the PC.

**YKFG400 TRAC XY.vi**

Generates arbitrary waveform data in control point format, transfers it to measuring instrument, and saves generated data.

<Input>

Memory No. (0)

Specifies memory number to be transferred. The selection range is 0 to 128. The specified memory number is read out when queried.

Name (USER)

Specifies name of generated arbitrary waveform. Up to 20 characters can be input.

Function (Sin)

Specifies reference waveform used when generating arbitrary waveform. Sin, Sin(x)/x, and Clear can be specified.

When Clear is specified, 0 is recorded.

Level

Specifies amplitude of arbitrary waveform.

Point (4096)

Specifies number of arbitrary waveform points. The setting range is 2 to 10000.

<Output>

When Read = True, the arbitrary waveform data specified in "Memory No." above is read out. However, it is not displayed on VI and is saved to an arbitrary location on the PC.

**YKFG400 SEQ Cle.vi**

Initializes sequence data.

**YKFG400 SEQ.vi**

Transfers generated sequence data from PC to measuring instrument.

<Input>

MemoryNo. (0)

Specifies memory number to be set. Specifies memory number to be read out when queried.

The setting range is 1 to 10.

### Name (USER)

Specifies name of data to be sent. Up to 12 characters can be set.

### <Output>

When Read = True, the arbitrary waveform data specified in “Memory No.” above is read out. However, it is not displayed on VI and is saved to an arbitrary location on the PC.

## 2.10 TRIGGER Subsystem



### ***YKFG400 TRIG Sel.vi***

Controls the oscillation modes.

<Input>

Mode (Start)

The commands that can be selected differ according to the oscillation mode that is set.

START: Starts. Can be selected in all the modes.

STOP: Stops. Can be selected in all the modes.

HOLD: Holds. Can be selected in the sweep and sequence modes.

RESume: Resumes. Can be selected in the sweep and sequence modes.

EBRranch: Sets event branch. Can be selected in the sequence mode.

SBRranch: Sets state branch. Can be selected in the sequence mode.

ISTop: Forcibly stops. Can be selected in the sequence mode.



### ***YKFG400 TRIG.vi***

Performs the same operation as the trigger button.



### ***YKFG400 TRIG Slop.vi***

Sets and queries the external trigger polarity.

<Input>

Set (Sweep)

Sweep: Sets the trigger polarity during sweep.

Burst Sets the trigger polarity during burst.

Slope (Positive)

POSitive: Sets leading edge.

NEGative: Sets burst synchronization.

OFF: Prohibits.

<Output>

Query Slope

When Read = True, the set external trigger polarity is returned. The part in “Slope” above written in uppercase is displayed.

When Read = False, this item is invalid and “ ” (blank) is always returned.

**YKFG400 TRIG Sour.vi**

Sets and queries the trigger source.

<Input>

Set (Sweep)

Sweep: Sets the trigger polarity during sweep.

Burst Sets the trigger polarity during burst.

Source (Timer)

TIMER: Sets the trigger with the internal trigger period.

EXTERNAL: Sets the trigger with the external trigger.

CH1: Sets the trigger with the CH1 external trigger. (Can be set only for CH2.)

<Output>

Query Source

When Read = True, the set trigger source is returned. The part in "Source" above written in uppercase is displayed.

When Read = False, this item is invalid and " " (blank) is always returned.

**YKFG400 TRIG Tim.vi**

Sets and queries the internal trigger period.

<Input>

Set (Sweep)

Sweep: Sets the trigger polarity during sweep.

Burst Sets the trigger polarity during burst.

Trigger Period (Input)

Input: During setting, the value input in "Period" below is enabled. During query, the currently set value is returned.

Minimum: During setting, the minimum value among the settable values is set. During query, the minimum value among the settable values is returned.

Maximum: During setting, the maximum value among the settable values is set. During query, the maximum value among the settable values is returned.

Period (1)

Setting range: 100  $\mu$ s to 10000 s (Sweep)/1  $\mu$ s to 1000s (Burst)

Resolution: 5 digits or 0.1  $\mu$ s

When "Input" is selected in the above item, the value input for this item is sent as the setting value for internal trigger period.



Units (s)

When “Input” is selected in the above item, this is the unit for the input internal trigger period.

<Output>

Query Period

When Read = True, the setting value of internal trigger period corresponding to the content of “Trigger Period” is returned.

When Read = False, this item is invalid and “0” is always returned.



***YKFG400 TRIG Comp.vi***

Compiles the sequence data.

## 2.11 SYSTEM Subsystem



### *YKFG400 SYST Err.vi*

Queries error.

<Output>

Error Number

Returns error information.

The error information is returned in the order of error code followed by a message.

## 2.12 INSTRUMENT Subsystem



### *YKFG400 INST Coup.vi*

Selects and queries coupling.

<Input>

Couple (None)

ALL: Enables coupling.

NONE: Disables coupling.

<Output>

Query Mode

When Read = True, the set mode is returned.

When Read = False, this item is invalid and “ ” (blank) is always returned.

## 2.13 MEMORY Subsystem



### *YKFG400 MEM Del.vi*

Clears the setting memory.

<Input>

Memory No (1)

Specifies memory number to be deleted.

## 2.14 STATUS Subsystem



### ***YKFG400 OPER Cond.vi***

Queries the operation status condition register.

<Input>

Channel (Unavailable)

Specifies the query destination.

Unavailable: Does not specify the query destination.

Ch1: Queries the contents of Ch1.

Ch2: Queries the contents of Ch2.

<Output>

Query Condition

Returns the value of the specified status.



### ***YKFG400 OPER Ntr.vi***

Sets and queries the operation status transition filter (negative).

<Input>

Channel (Unavailable)

Specifies the query destination.

Unavailable: Does not specify the query destination.

Ch1: Queries the contents of Ch1.

Ch2: Queries the contents of Ch2.

NTR (0)

Setting range: 0 to 65535

Sets the operation status transition filter (negative).

<Output>

Query NTR

When Read = True, the specified status value is returned.

When Read = False, this item is invalid and "99999" is always returned.



### ***YKFG400 OPER Ptr.vi***

Sets and queries the operation status transition filter (positive).

<Input>

Channel (Unavailable)

Specifies the query destination.

Unavailable: Does not specify the query destination.

Ch1: Queries the contents of Ch1.

Ch2: Queries the contents of Ch2.

PTR(0)

Setting range: 0 to 65535

Sets the operation status transition filter (positive).

<Output>

Query PTR

When Read = True, the specified status value is returned.

When Read = False, this item is invalid and “99999” is always returned.



***YKFG400 OPER Even.vi***

Queries the operation status event register.

<Input>

Channel (Unavailable)

Specifies the query destination.

Unavailable: Does not specify the query destination.

Ch1: Queries the contents of Ch1.

Ch2: Queries the contents of Ch2.

<Output>

Query Event

The specified status value is returned.



***YKFG400 OPER Enab.vi***

Sets and queries the operation status event enable register.

<Input>

Channel (Unavailable)

Specifies the query destination.

Unavailable: Does not specify the query destination.

Ch1: Queries the contents of Ch1.

Ch2: Queries the contents of Ch2.

Event Enable (0)

Setting range: 0 to 65535

Sets the operation status event enable register.

<Output>

Query Event Enable

When Read = True, the specified status value is returned.

When Read = False, this item is invalid and “99999” is always returned.



***YKFG400 QUES Cond.vi***

Queries the questionable data status condition register.

<Output>

Query Q\_Condition

The specified status value is returned.



***YKFG400 QUES Ntr.vi***

Sets and queries the questionable data status transition filter (negative).

<Input>

Q\_NTR (0)

Setting range: 0 to 65535

Sets the questionable data status transaction filter (negative).

<Output>

Query Q\_NTR

When Read = True, the specified status value is returned.

When Read = False, this item is invalid and “99999” is always returned.



***YKFG400 QUES Ptr.vi***

Sets and queries the questionable data status transition filter (positive).

<Input>

Q\_PTR (0)

Setting range: 0 to 65535

Sets the questionable data status transition filter (positive).

<Output>

Query Q\_PTR

When Read = True, the specified status value is returned.

When Read = False, this item is invalid and “99999” is always returned.



**YKFG400 QUES Even.vi**

Queries the questionable data status event register.

<Output>

Query Q\_Event

The specified status value is returned.



**YKFG400 QUES Enab.vi**

Sets and queries the questionable data status event enable register.

<Input>

Q\_Event Enable (0)

Setting range: 0 to 65535

Sets the questionable data status event enable register.

<Output>

Query Q\_Event Enable

When Read = True, the specified status value is returned.

When Read = False, this item is invalid and “99999” is always returned.



**YKFG400 WARN Even.vi**

Queries the warning event register.

<Input>

Channel (Unavailable)

Specifies the query destination.

Unavailable: Does not specify the query destination.

Ch1: Queries the contents of Ch1.

Ch2: Queries the contents of Ch2.

<Output>

Query W\_Event

The specified status value is returned.

**YKFG400 WARN Enab.vi**

Sets and queries the warning event enable register.

<Input>

Channel (Unavailable)

Specifies the query destination.

Unavailable: Does not specify the query destination.

Ch1: Queries the contents of Ch1.

Ch2: Queries the contents of Ch2.

W\_Event Enable (0)

Setting range: 0 to 65535

Sets the warning event enable register.

<Output>

Query W\_Event Enable

When Read = True, the specified status value is returned.

When Read = False, this item is invalid and "999" is always returned.

**YKFG400 STAT Pres.vi**

Clears the status of each register.



## 2.15 Common Commands



### ***YKFG400 CLS.vi***

Clears the following registers.

- Status byte register
- Standard event status register
- Operation status event register
- Questionable data status event register
- Warning event register
- Error queue



### ***YKFG400 ESE.vi***

Sets and queries the standard event status enable register.

<Input>

ESE (0)

Setting range: 0 to 255

Sets the standard event status enable register.

<Output>

Query ESE

When Read = True, the specified status value is returned.

When Read = False, this item is invalid and “999” is always returned.



### ***YKFG400 ESR.vi***

Queries the standard event status register.

<Output>

Query ESR

The specified status value is returned.



### ***YKFG400 IDN.vi***

Reads out the equipment ID.

<Output>

Query IDN

The read out ID is displayed as follows.

YOKOGAWA FG4\*\*,serial number,firmware version



### ***YKFG400 PSC.vi***

Sets and queries the power-on status clear flag.

<Input>

Clear? (NO)

When ON, enables automatic clear at power-on.

<Output>

Query PSC

When Read = True, the value of the power-on status clear flag is returned.

0: The automatic clear setting is disabled.

1: The automatic clear setting is enabled.

When Read = False, this item is invalid and “9” is always returned.



### ***YKFG400 RCL.vi***

Executes recall from the setting memory.

<Input>

RCL (1)

Setting range: 1 to 10

Sets the memory number to be recalled.



### ***YKFG400 RST.vi***

Initializes the setting.



### ***YKFG400 SAV.vi***

Executes store to the setting memory.

<Input>

SAV (1)

Setting range: 1 to 10

Sets the memory number to be stored.

**YKFG400 OPC.vi**

When all the operations under execution are completed, sets the OPC bit of the standard event status register to “1”.

<Output>

Query OPC

When Read = True, “1” is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 SRE.vi**

Sets and queries the service request enable register.

<Input>

SRE (0)

Setting range: 0 to 255

Sets the service request enable register.

<Output>

Query SRE

When Read = True, the specified status value is returned.

When Read = False, this item is invalid and “999” is always returned.

**YKFG400 STB.vi**

Queries the status byte register.

<Output>

Query STB

Returns the value of the specified status.

**YKFG400 TRG.vi**

Sets a trigger during sweep or burst. This has the same effect as the :Trigger command.

**YKFG400 TST.vi**

Returns the self-check result at power-on.

<Output>

Query TST

Returns the value of the specified status.



***YKFG400 WAI.vi***

After all the operations under execution have ended, executes the next command.

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When contacting Yokogawa Test & Measurement Corporation or an Yokogawa Test & Measurement Corporation sales representative, provide the model name (or product name), version number, and information as detailed as possible about the nature of the problem, conditions of use, etc.



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**FG410/FG420 LabVIEW Driver SOFTWARE User's Manual**

**Yokogawa Test & Measurement Corporation**

<https://www.yokogawa.com/yimi/>

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