



MR6000 MEMORY HiCORDER
Driver Function
User's Manual

Revision History

Edition	Contents	Reviser	Date
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1. Overview

This program can change the settings and query the MEMORY HiCORDER (hereinafter, measurement device) from the computer using the TCP/IP.

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

2. Precondition




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

- Experience in program development using LabVIEW



3. Driver Explanation

3.1 Driver Common Input & Output

3.1.1 Input Items

Name	Data Type	Explanation
VISA Resource		TCP/IP Connection ID
Set/Query		Specify whether to set the program operating mode to the set mode for the device, or to query the settings of the device. Input Range: False (Set: Default), True (Query)
error in		Please refer the LabVIEW online reference's section on error report for a detailed explanation on error input. Default Value: no error

3.1.2 Output Items

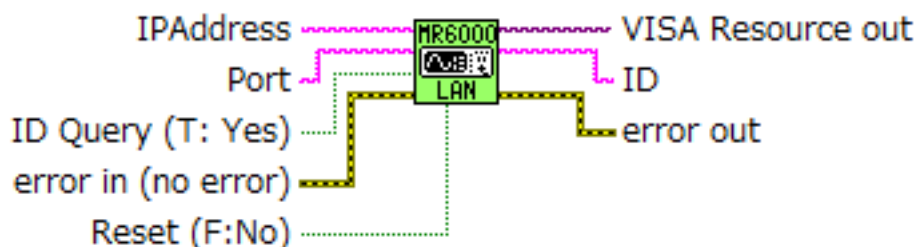
Name	Data Type	Explanation
VISA Resource out		TCP/IP Connection ID
error out		Please refer the LabVIEW online reference's section on error report for a detailed explanation on error output. When MR6000 cannot be set properly, output error code (1300). Errors may be caused by: <ul style="list-style-type: none"> • During starting waveform sampling. • Restrictions imposed by the availability of options • Affected by other settings for others Please confirm with the MR6000 instruction manual.

3.2 Common VI





Contains VIs for common commands.

3.2.1 HIOKI MR6000 Initialize LAN.vi


Starts the communication with the MR6000 device.



Input

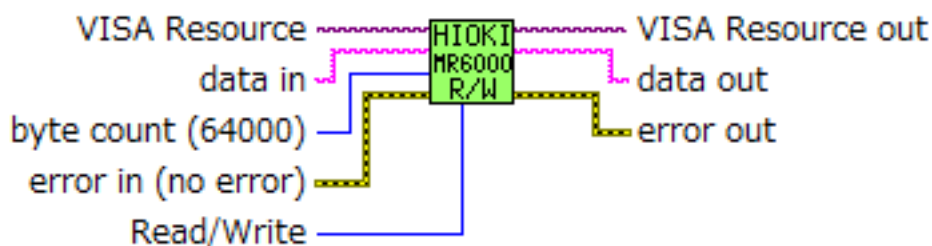
Name	Data Type	Explanation
IP Address		Specify the MR6000 IP Address. The default setting is 192.168.1.1.
Port		Specify the MR6000 Port. The default setting is 8802.
ID Query		Output the connection device's ID.
Reset		Send the *RST command to the connection device and reset the settings. The default setting is False (NO).

Output

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

3.2.2 HIOKI MR6000 Read_Write.vi

Transmit the commands (reading and writing the data) to the MR6000.



Input

Name	Data Type	Explanation
Read/Write		Set the mode. Input Range: 0 (Read: Default), 1 (Write) Read: Receiving the data. Write: Sending the data.
byte count		Specify the amounts of receiving bytes at the Read mode. The default setting is 64000.
Data in		Specify the sending commands to the MR6000 at the Write mode. Any commands can be sent. Please refer to the Communication commands manual at the HIOKI home page.

Output

Name	Data Type	Explanation
Data out		Output the data received from the MR6000 at the Read mode.

3.2.3 HIOKI MR6000 Close.vi

Disconnects the communication with the MR6000 device.



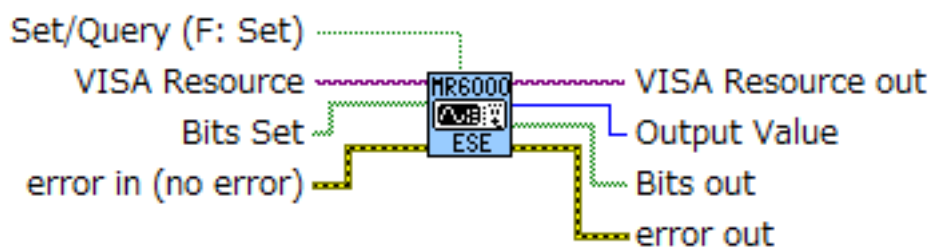
3.2.4 HIOKI MR6000 CLS.vi

Clears the event register.



3.2.5 HIOKI MR6000 ESE.vi

Sets and reads the mask pattern of Standard Event Status Enable Register (SESER).



Input

Name	Data Type	Explanation
Bits Set	[TF]	Set the enable bit pattern for SESER.

Output

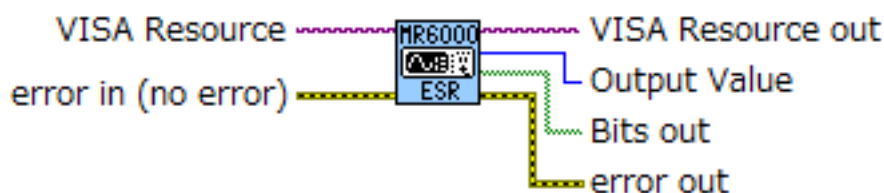
Name	Data Type	Explanation
Output Value	U8	Output the value from the enable bit of SESER
Bits out	[TF]	Output the enable bit pattern of SESER.

Note:

- The initial (power-on) value is 0.
- SESER doesn't affect Standard Event Status Register (SESR), but affect status byte.

3.2.6 HIOKI MR6000 ESR.vi

Returns and clears the contents of the Standard Event Status Register (SESR).



Output

Name	Data Type	Explanation
Output Value		Outputs the query results of the SESR as numerical values.
Bits out		<p>Outputs the query results of the SESR in Boolean Array.</p> <p>bit7(PON): Power On Flag Turns to 1 when power is switched on or when power is returned after a blackout.</p> <p>bit6(URQ): User Request Not available in the MR6000.</p> <p>bit5(CME): Command Error (Ignores commands up to the message terminator) Turns to 1 when there are syntactical and command errors in the received commands.</p> <ul style="list-style-type: none"> • When there is an error in the program header • When the number of data is different from specified. • When the data type is different from the specified type <p>bit4(EXE): Execution error Turns to 1 when the command cannot be executed for whatever reason.</p> <ul style="list-style-type: none"> • When the specified data is outside the set range • When the specified data cannot be set <p>bit3(DDE): Device-dependent error Turns to 1 when the command cannot be executed due to causes other than a command error, query error or execution error.</p> <ul style="list-style-type: none"> • When there is an internal problem and the command could not be executed <p>bit2(QYE): Query error Turns to 1 when the error is detected by the output cue control part.</p> <ul style="list-style-type: none"> • When the data inundated the output cue <p>bit1(RQC): Request for controller right Not available in the MR6000.</p> <p>bit0(OPC): Operation completed Only set for the *OPC command.</p>

3.2.7 HIOKI MR6000 IDN.vi

Queries the Device ID.



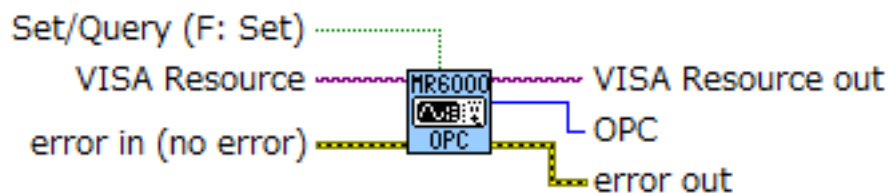
Output

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

3.2.8 HIOKI MR6000 OPC.vi

At the set mode, this VI sets the LSB (bit 0) of the Standard Event Status Register (SESR) after all commands processing.

At the query mode, this VI outputs 1 after processing all commands before this VI.



Output

Name	Data Type	Explanation
OPC	I32	Returns 1.

3.2.9 HIOKI MR6000 OPT.vi

Queries the option types attached to the MR6000.



Output

Name	Data Type	Explanation
OPT		Outputs the query results of the options. Output Items: <Unit 1>, <Unit 2>,<Unit 3>,<Unit 4>,<Unit 5>,<Unit 6>,<Unit 7>,<Unit 8>

Note

- "NONE" is returned when no input module is present.

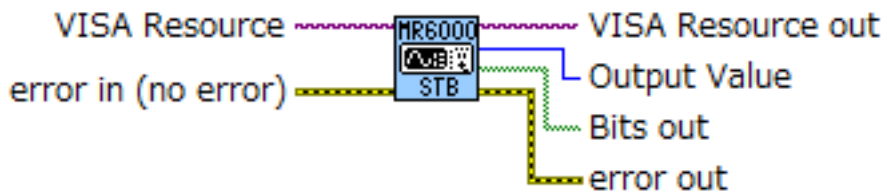
3.2.10 HIOKI MR6000 RST.vi

Sets the various device settings to factory defaults.





3.2.11 HIOKI MR6000 STB.vi

Reads the status byte. Each bit of the status byte is a summary (logical OR) of the event register corresponding to that bit.

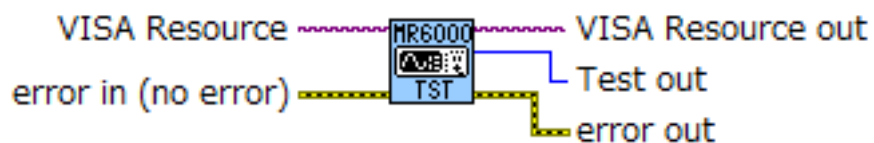


Output


Name	Data Type	Explanation
Output Value		Outputs the query results of the status byte as numerical values.
Bits out		<p>Outputs the query results of the status byte in Boolean array.</p> <p>bit 7 Unused: 0</p> <p>bit 6 (RQS, MSS) Reserved</p> <p>bit 5 (ESB) Event summary bit. This bit shows a summary of the Standard Event Status Register.</p> <p>bit 4 (MAV) Message available. This bit shows that a message is present in the output queue.</p> <p>bit 3 bit 2 bit 1 Unused: 0</p> <p>bit 0 (ESB0) Event summary bit 0. This bit shows a summary of Event Status Register 0.</p>

3.2.12 HIOKI MR6000 TST.vi

Reads the result of a memory check.



Output

Name	Data Type	Explanation
Test out		Outputs the query results of a memory check as numerical values. Output range: 0(Normal), 1(Abnormal)

Note:

- It takes about several minutes for the response result to be returned.

3.2.13 HIOKI MR6000 WAI.vi

Waits until the previous processing is completed.



3.3 General VI

Contains VIs related to execution processing.

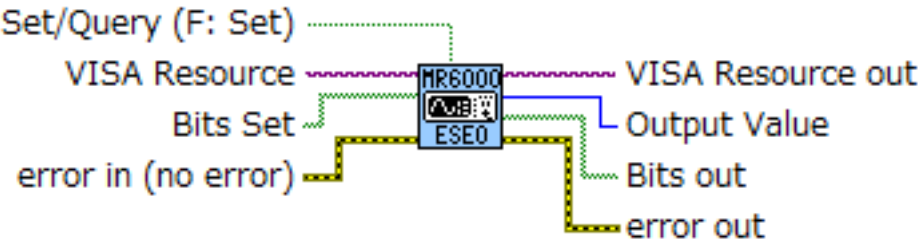
3.3.1 HIOKI MR6000 ABORT.vi

Halts operation even if waveform sampling has not yet finished.



3.3.2 HIOKI MR6000 ESE0.vi

Sets and reads the Event Status Enable Register 0 (ESER0).



Input

Name	Data Type	Explanation
Bits Set	[TF]	Sets the mask pattern of ESER0.

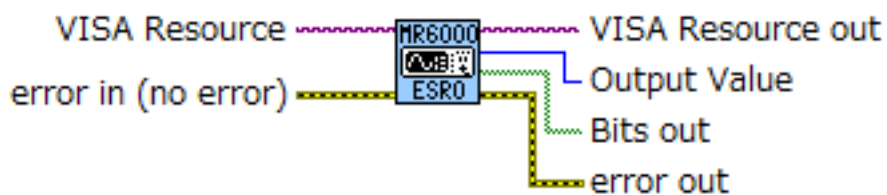
Output

Name	Data Type	Explanation
Output Value	U8	Outputs the query results of the ESER0 as numerical values.
Bits out	[TF]	Outputs the query results of the ESER0 in Boolean array.

- Note:
- The initial (power-on) value is 0.
 - ESER0 doesn't affect Event Status Register 0 (ESR0), but affect the status byte.

3.3.3 HIOKI MR6000 ESR0.vi

Reads and clears the Event Status Register 0 (ESR0).



Output

Name	Data Type	Explanation
Output Value	U8	Outputs the query results of the ESR0 as numerical values.
Bits out	TF	<p>Outputs the query results of the ESR0 in Boolean array.</p> <p>bit 7 Reserved.</p> <p>bit 6 FAIL parameter decision occurred.</p> <p>bit 5 Parameter calculation finished.</p> <p>bit 4 Waveform processing calculation finished.</p> <p>bit 3 Reserved.</p> <p>bit 2 Trigger wait finished. (Set when a trigger event occurs.)</p> <p>bit 1 Measurement operation concluded. (Set by STOP.)</p> <p>bit 0 Error not related to communication.</p>

3.3.4 HIOKI MR6000 START.vi

Starts the waveform sampling.

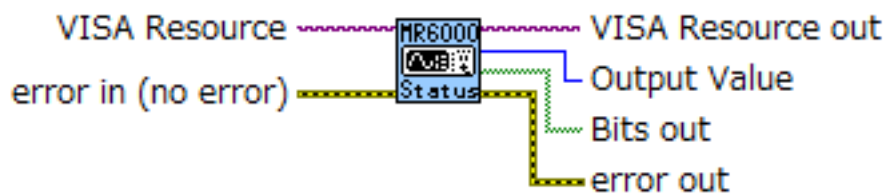


Note:



·Use the STOP.vi and wait for measurement to stop, and then use other VIs.

3.3.5 HIOKI MR6000 Status.vi

Reads the current storage status of the measurement device.



Output

Name	Data Type	Explanation
Output Value		Outputs the query results of the storage status as numerical values.
Bits out		<p>Outputs the query results of the storage status in Boolean array.</p> <p>bit 5: File accessing.</p> <p>bit 4: Reserved.</p> <p>bit 3: Pre-trigger wait period.</p> <p>bit 2: Awaiting trigger.</p> <p>bit 1: Storing.</p> <p>bit 0: Starting.</p>

3.3.6 HIOKI MR6000 STOP.vi

Terminates measurement as soon as the current waveform sampling operation has finished. This VI has the same function as the STOP key on the measurement device.

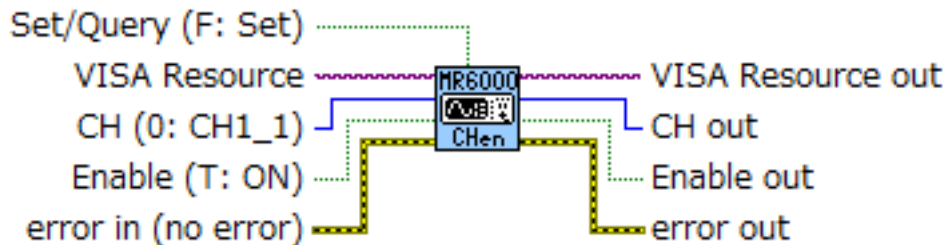


3.4 Configure VI



Contains VIs related to the device setting.

3.4.1 HIOKI MR6000 Conf CHenable.vi



Sets and reads the ON/OFF of the measurement channels.



Input

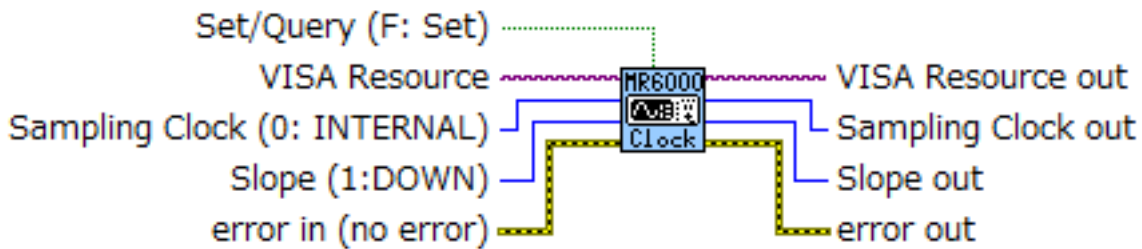
Name	Data Type	Explanation
CH		Specifies the measurement channel. Input Range: 0 – 31 (CH1_1 – CH8_4), 32 – 39 (L1 – L8), 40 – 55 (W1 – W16)
Enable		Sets the ON/OFF. Input Range: True (ON: Default), False (OFF)

Output

Name	Data Type	Explanation
CH out		Outputs the query results of the measurement channel specified by CH.
Enable out		Outputs the query results of the ON/OFF of the specified CH.

3.4.2 HIOKI MR6000 Conf Clock.vi

Sets and reads the sampling clock.



Input

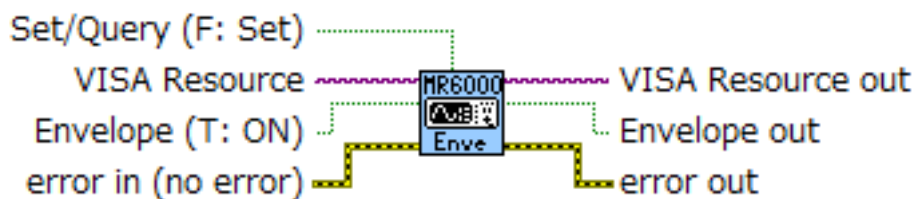
Name	Data Type	Explanation
Sampling Clock		Sets the sampling clock. Input Range: 0 (INTERNAL: Default), 1 (EXTERNAL)
Slope		Sets the slope direction for the EXTERNAL sampling. Input Range: 0 (UP), 1 (DOWN: Default)

Output

Name	Data Type	Explanation
Sampling Clock out		Outputs the query results of the sampling clock.
Slope out		Outputs the query results of the slope direction for the EXTERNAL sampling.

3.4.3 HIOKI MR6000 Conf Envelope.vi

Sets and reads the ON/OFF status of envelope measurement function.



Input

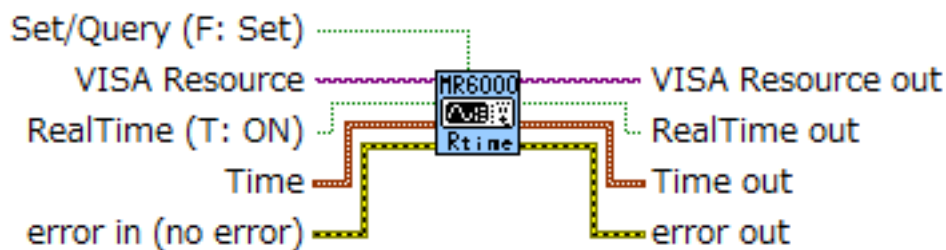
Name	Data Type	Explanation
Envelope		Sets the envelope measurement function. Input range: True (ON: Default), False (OFF)

Output

Name	Data Type	Explanation
Envelope out		Outputs the query results of the envelope measurement function

3.4.4 HIOKI MR6000 Conf Rtime.vi

Sets and reads the real-time save.



Input

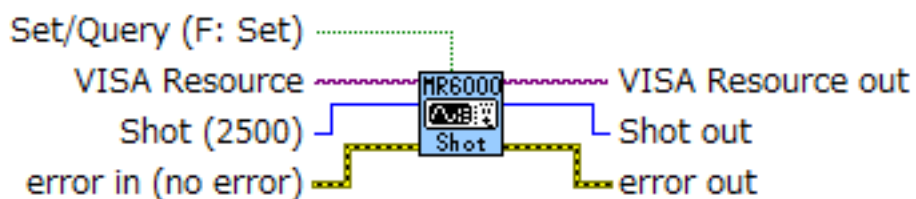
Name	Data Type	Explanation
RealTime		Sets the real-time save. Input range: True (ON: Default), False (OFF)
Time		Sets the length of time for real-time save. Input range: day: 0 – 10000 hour: 0 – 23 min: 0 – 59 sec: 0 - 59

Output

Name	Data Type	Explanation
RealTime out		Outputs the query results of the real-time save.
Time out		Outputs the query results of the length of time for real-time save.

3.4.5 HIOKI MR6000 Conf Shot.vi

Sets and reads the size of the recording length.



Input

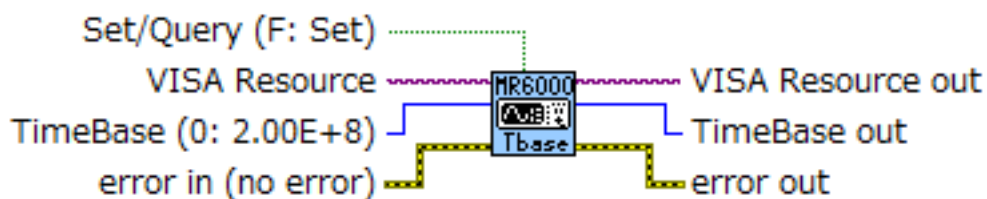
Name	Data Type	Explanation
Shot	I32	Sets the size of the recording length. Input range: 100 – 1073741800 (2500: Default)

Output

Name	Data Type	Explanation
Shot out	I32	Outputs the query results of the size of the recording length.

3.4.6 HIOKI MR6000 Conf Tbase.vi

Sets and reads the time base.



Input

Name	Data Type	Explanation
TimeBase		Sets the time base. Input range: 1.67E-2 – 2.00E+8 (2.00E+8: Default)

Output

Name	Data Type	Explanation
TimeBase out		Outputs the query results of the time base.

Note:

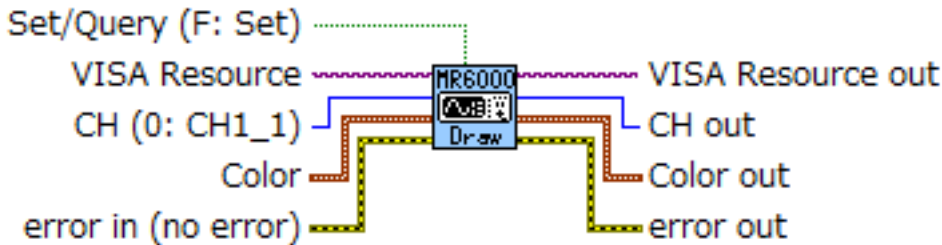
- Attempting to set an invalid value sets the next larger valid value, if available.
- When real-time save or envelope mode is set to ON, the settable range is limited.

3.5 Display VI



Contains VIs related to the display setting.

3.5.1 HIOKI MR6000 Disp Drawing.vi



Sets and reads the waveform display color.



Input

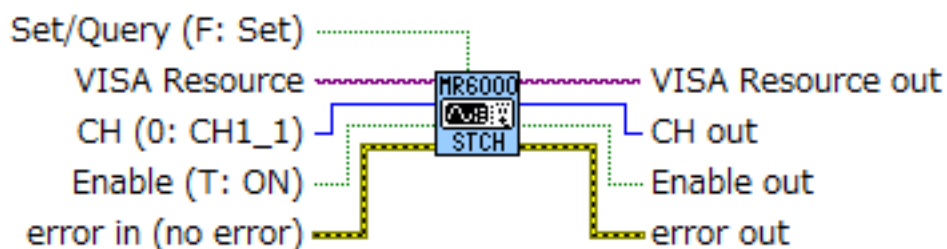
Name	Data Type	Explanation
CH		Specifies the channel for setting the waveform display color. Input Range: 0 – 31 (CH1_1 – CH8_4), 32 – 159 (L1A1 – L8D4), 160 – 175 (W1 – W16), 176 – 183 (XY1 – XY8)
Color		Sets the waveform display color. Input Range: R: 0 – 255 G: 0 – 255 B: 0 – 255

Output



Name	Data Type	Explanation
CH out		Outputs the query results of the channel specified by CH.
Color out		Outputs the query results of the waveform display color specified by CH.

3.5.2 HIOKI MR6000 Disp STCH.vi



Sets and reads the channel to be displayed.



Input

Name	Data Type	Explanation
CH		Specifies the channel to be displayed. Input Range: 0 – 31 (CH1_1 – CH8_4), 32 – 159 (L1A1 – L8D4), 160 – 175 (W1 – W16)
Enable		Sets the setting to be displayed. Input Range: True (ON: Default), False (OFF)

Output

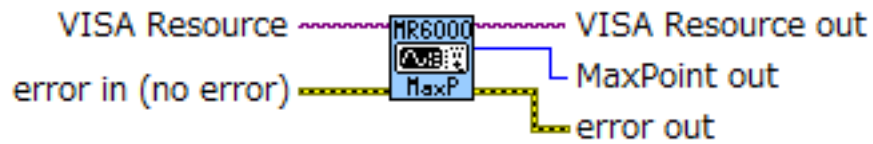
Name	Data Type	Explanation
CH out		Outputs the query results of the channel specified by CH.
Enable out		Outputs the query results of the setting to be displayed.

3.6 Memory VI


Contains VIs related to memorize data.

3.6.1 HIOKI MR6000 Mem MaxPoint.vi

Reads the number of data stored in memory.

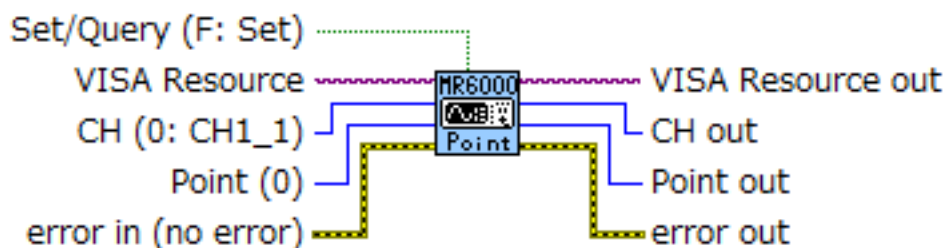


Output

Name	Data Type	Explanation
MaxPoint out		Outputs the number of data stored in memory.

3.6.2 HIOKI MR6000 Mem Point.vi

Sets and reads the pointer in instrument memory.



Input

Name	Data Type	Explanation
CH		Specifies the channel for outputting the storage data. Input Range: 0 – 31 (CH1_1 – CH8_4), 32 – 39 (L1 – L8), 40 – 55 (W1 – W16)
Point		Sets the current memory read pointer. Input Range: 0 – (Number of stored data -1) (0: Default)

Output

Name	Data Type	Explanation
CH out		Outputs the query results of the channel specified by CH.
Point out		Outputs the query results of the current memory read pointer.

Note:


- If there is no stored data, the read pointer cannot be set.
- When measuring with the real-time, valid Point depend on the current waveform display.

3.6.3 HIOKI MR6000 Mem WaveData_Analog.vi


Reads the storage data from the channel and read pointer specified by “Mem Point.vi”. This VI can output only analog data. This VI is selectable from the “Mem WaveData.vi”.



Input

Name	Data Type	Explanation
Number		Sets the number for outputting the storage data. Input range: 1 – 8000 (10: Default)

Output

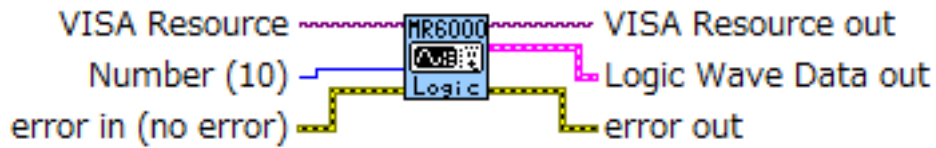
Name	Data Type	Explanation
Analog Wave Data out		Outputs the storage data.

Note:

- Not starting storage.
- the memory read pointer is below the address of the stored data.
- “Mem Point.vi” specifies the channel. Wave data is output from the channel specified by the “Mem Point.vi”.

3.6.4 HIOKI MR6000 Mem WaveData_Logic.vi

Reads the storage data from the channel and read pointer specified by “Mem Point.vi”. This VI can output only logic data. This VI is selectable from the “Mem WaveData.vi”.



Input

Name	Data Type	Explanation
Number		Sets the number for outputting the storage data. Input range: 1 – 8000 (10: Default)

Output

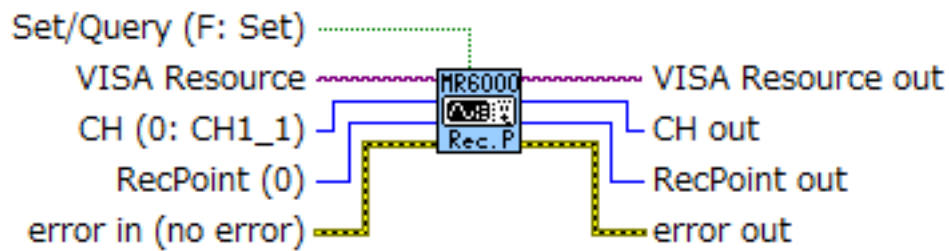
Name	Data Type	Explanation
Logic Wave Data out		Following indicators are included.
CHA Logic Wave Data out		Outputs the storage data.
CHB Logic Wave Data out		Outputs the storage data.
CHC Logic Wave Data out		Outputs the storage data.
CHD Logic Wave Data out		Outputs the storage data.

Note:



- Not starting storage.
- the memory read pointer is below the address of the stored data.
- “Mem Point.vi” specifies the channel. Wave data is output from the channel specified by the “Mem Point.vi”.

3.6.5 HIOKI MR6000 Mem RecPoint.vi



Sets and reads the pointer in instrument memory. Valid only when envelope measurement is selected.



Input

Name	Data Type	Explanation
CH		Specifies the channel for outputting the storage data. Input Range: 0 – 31 (CH1_1 – CH8_4), 32 – 39 (L1 – L8), 40 – 55 (W1 – W16)
RecPoint		Sets the current memory read pointer. Input Range: 0 – (Number of stored data -1) (0: Default)

Output

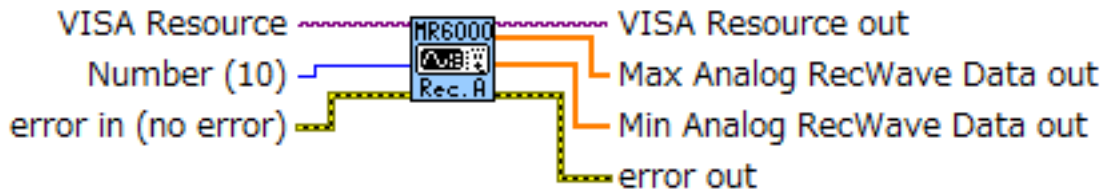
Name	Data Type	Explanation
CH out		Outputs the query results of the channel specified by CH.
RecPoint out		Outputs the query results of the current memory read pointer.

Note:


·If there is no stored data, the read pointer cannot be set.

3.6.6 HIOKI MR6000 Mem RecWaveData_Analog.vi



Reads the storage data from the channel and read pointer specified by "Mem RecPoint.vi". This VI can output only analog data. This VI is selectable from the "Mem RecWaveData.vi".



Input

Name	Data Type	Explanation
Number		Sets the number for outputting the storage data. Input range: 1 – 4000 (10: Default)

Output

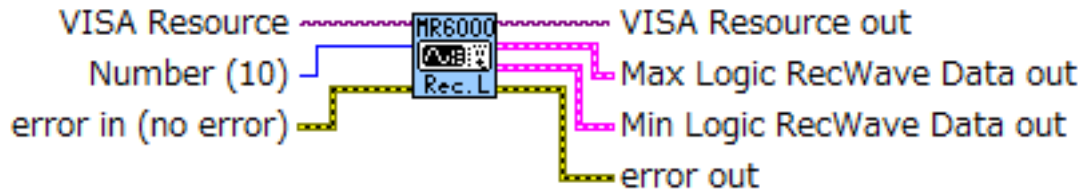
Name	Data Type	Explanation
Max Analog RecWave Data out		Outputs the storage data. Max value is output from 1 point data.
Min Analog RecWave Data out		Outputs the storage data. Min value is output from 1 point data.

Note:


- Not starting storage.
- the memory read pointer is below the address of the stored data.
- "Mem RecPoint.vi" specifies the channel. Wave data is output from the channel specified by the "Mem RecPoint.vi".

3.6.7 HIOKI MR6000 Mem RecWaveData_Logic.vi











Reads the storage data from the channel and read pointer specified by “Mem RecPoint.vi”. This VI can output only logic data. This VI is selectable from the “Mem RecWaveData.vi”.



Input

Name	Data Type	Explanation
Number		Sets the number for outputting the storage data. Input range: 1 – 4000 (10: Default)

Output

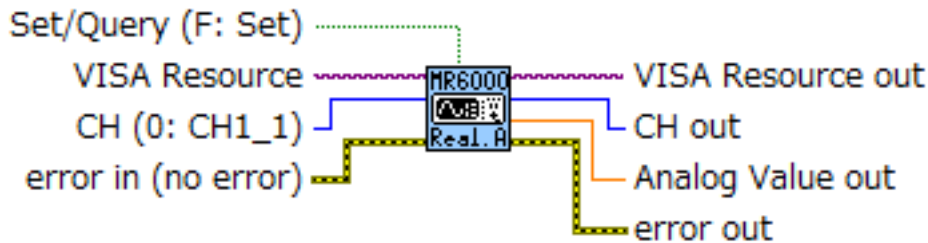
Name	Data Type	Explanation
Max Logic RecWave Data out		Following indicators are included.
CHA Max Logic RecWave Data out		Outputs the storage data. Max data is output from 1 point data.
CHB Max Logic RecWave Data out		Outputs the storage data.
CHC Max Logic RecWave Data out		Outputs the storage data.
CHD Max Logic RecWave Data out		Outputs the storage data.
Min Logic RecWave Data out		Following indicators are included.
CHA Min Logic RecWave Data out		Outputs the storage data. Min data is output from 1 point data.
CHB Min Logic RecWave Data out		Outputs the storage data.
CHC Min Logic RecWave Data out		Outputs the storage data.
CHD Min Logic RecWave Data out		Outputs the storage data.

Note:

- Not starting storage.
- the memory read pointer is below the address of the stored data.
- “Mem RecPoint.vi” specifies the channel. Wave data is output from the channel specified by the “Mem RecPoint.vi”.

3.6.8 HIOKI MR6000 Mem Real_Analog.vi

Acquires and reads the real-time measurement value on all channels. When reading the real-time data before acquiring data, returned values are undetermined. This VI can output only analog data.




Set mode



Acquires the real-time measurement values on all channels.

Query mode

Input

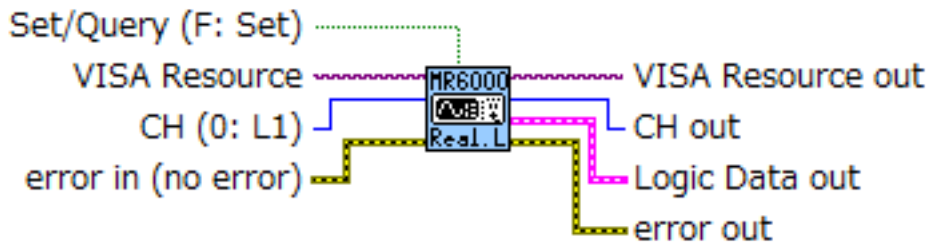
Name	Data Type	Explanation
CH		Specifies the channel for outputting the real-time data acquired at the set mode. Input range: 0 – 31 (CH1_1 – CH8_4)

Output

Name	Data Type	Explanation
CH out		Outputs the channel specified by CH.
Analog Value out		Outputs the real-time data.

3.6.9 HIOKI MR6000 Mem Real_Logic.vi

Acquires and reads the real-time measurement value on all channels. When reading the real-time data before acquiring data, returned values are undetermined. This VI can output only logic data.



Set mode

Acquires the real-time measurement values on all channels.

Query mode

Input

Name	Data Type	Explanation
CH		Specifies the channel for outputting the real-time data acquired at the set mode. Input range: 0 – 7 (L1 – L8)

Output

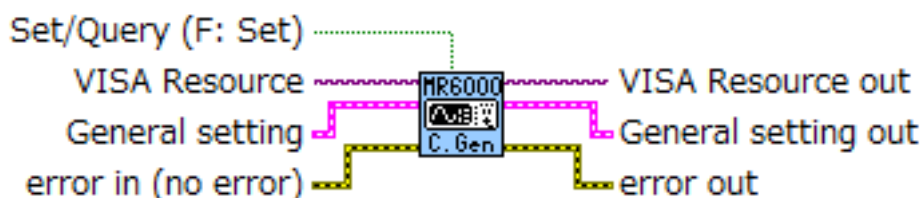
Name	Data Type	Explanation
CH out		Outputs the channel specified by CH.
Logic Data out		Following indicators are included.
CHA Logic Data out		Outputs the real-time data.
CHB Logic Data out		Outputs the real-time data.
CHC Logic Data out		Outputs the real-time data.
CHD Logic Data out		Outputs the real-time data.

3.7 Trigger VI

Contains VIs related to trigger setting.

3.7.1 HIOKI MR6000 Trig Common_General.vi

Sets and reads the trigger group, pre-trigger, trigger priority mode, post-trigger and AND/OR logical operator. When this is used by set mode, the trigger function is turned on. This VI is selectable from the "Trig Common.vi".



Input

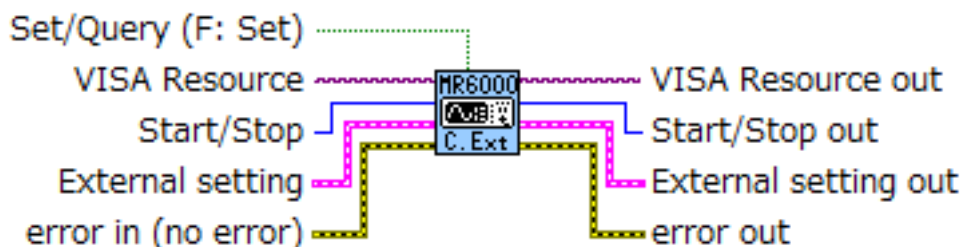
Name	Data Type	Explanation
General setting		Following controllers are included.
Group		Sets the trigger group. Input range: 0 (START: Default), 1 (STOP), 2 (S_S)
PreTrigger		Sets the pre-trigger interval. Valid only when the trigger group is "START" or "S_S". Input range: 0 - 100 (%)
Priority		Sets the trigger priority mode. Valid only when the trigger group is "START" or "S_S". Input range: True (ON), False (OFF: Default)
PostTrigger		Sets the post-trigger interval. Valid only when the trigger group is "STOP" or "S_S". Input range: 0 - 40 (%)
Trigger AND/OR		Sets the AND/OR logical operator for combining trigger source of START trigger or STOP trigger. Input range: 0 (START,OR: Default), 1 (START,AND), 2 (STOP,OR), 3 (STOP,AND)

Output

Name	Data Type	Explanation
General setting out		Following indicators are included.
Group out		Outputs the query results of the trigger group.
PreTrigger out		Outputs the query results of the pre-trigger interval.
Priority out		Outputs the query results of the trigger priority mode.
PostTrigger out		Outputs the query results of the post-trigger interval.
StartTrigger AND/OR out		Outputs the query results of the AND/OR logical operator of START trigger.
StopTrigger AND/OR out		Outputs the query results of the AND/OR logical operator of STOP trigger.

3.7.2 HIOKI MR6000 Trig Common_External.vi

Sets and reads the external trigger, filter and input terminal. When this is used by set mode, the trigger function is turned on. This VI is selectable from the “Trig Common.vi”.



Input

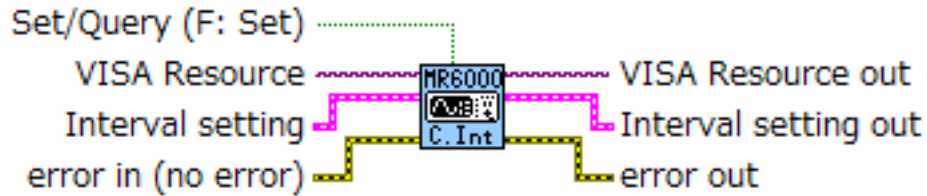
Name	Data Type	Explanation
Start/Stop		Specifies the trigger group for external trigger. Input range: 0 (START: Default), 1 (STOP)
External setting		Following controllers are included.
Enable		Sets the ON/OFF. Input range: True (ON: Default), False (OFF)
Slope		Sets the external trigger input terminal. Input range: 0 (UP), 1 (DOWN: Default)
Filter		Sets the external trigger filter. Input range: True (ON), False (OFF: Default)

Output

Name	Data Type	Explanation
Start/Stop out		Outputs the trigger group specified by Start/Stop.
External setting out		Following indicators are included. This outputs the setting for trigger group specified by Start/Stop.
Enable out		Outputs the query results of the external trigger function.
Slope out		Outputs the query results of the external trigger input terminal.
Filter out		Outputs the query results of the external trigger filter.

3.7.3 HIOKI MR6000 Trig Common_Interval.vi

Sets and reads the interval trigger, time interval, combination of interval trigger and other trigger. When this is used by set mode, the trigger function is turned on. This VI is selectable from the "Trig Common.vi".



Input

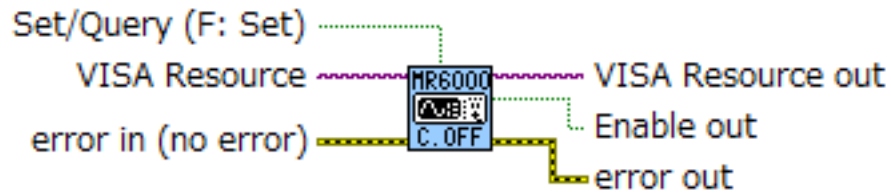
Name	Data Type	Explanation
Interval setting		Following controllers are included.
Enable		Sets the ON/OFF. Input range: True (ON: Default), False (OFF)
Time		Sets the time interval of the interval trigger. Input range: hour: 0 - 23 minute: 0 - 59 second: 0 - 59
Interval AND/OR		Sets the combination of interval trigger and other trigger. Input range: 0 (OR: Default), 1 (AND)

Output


Name	Data Type	Explanation
Interval setting out		Following indicators are included.
Enable out		Outputs the query results of the interval trigger function.
Time out		Outputs the query results of the time interval.
Interval AND/OR out		Outputs the query results of the combination of interval trigger and other trigger.

3.7.4 HIOKI MR6000 Trig Common_OFF.vi

When this is used by set mode, the trigger function is turned off. When this is used by query mode, this reads the trigger function. This VI is selectable from the “Trig Common.vi”.

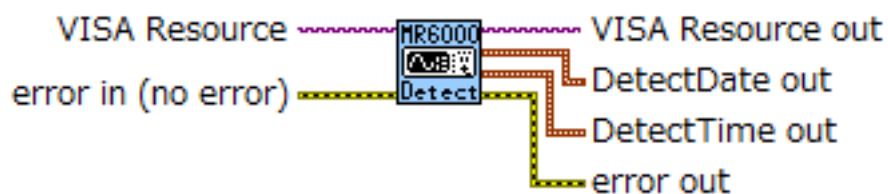


Output



Name	Data Type	Explanation
Enable out		Outputs the query results of the trigger function.

3.7.5 HIOKI MR6000 Trig Detect.vi

Reads the trigger detection date and time.

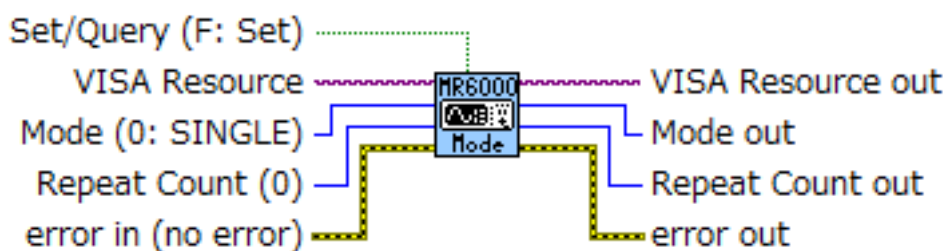


Output

Name	Data Type	Explanation
DetectDate out		Outputs the query results of the trigger detection date. Output range: Year: 2000 - 2080 Month: 1 - 12 Day: 1 – 31
DetectTime out		Outputs the query results of the trigger detection time. Output range: Hour: 0 - 23 Minute: 0 - 59 Second: 0 – 59.999

3.7.6 HIOKI MR6000 Trig Mode.vi

Sets and reads the trigger mode.



Input

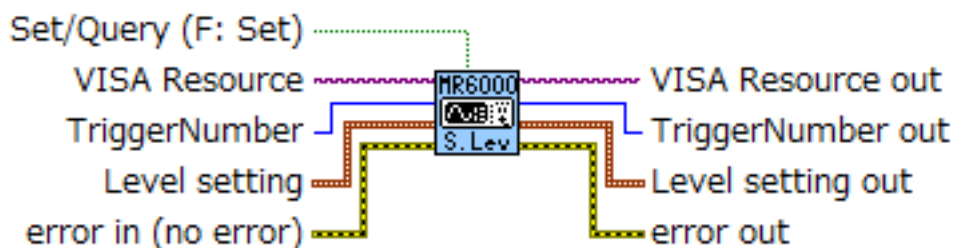
Name	Data Type	Explanation
Mode		Sets the trigger mode. Input range: 0 (SINGLE: Default), 1 (REPEAT)
Repeat Count		When the trigger mode is "REPEAT", set the repeat count. Input range: 0 – 10000 (0: Default)

Output

Name	Data Type	Explanation
Mode out		Outputs the query results of the trigger mode.
Repeat Count out		When the trigger mode is "REPEAT", output the query results of the repeat count.

3.7.7 HIOKI MR6000 Trig Source_Level.vi

Sets and reads the Level trigger. This VI is selectable from the “Trig Source.vi”.



Input

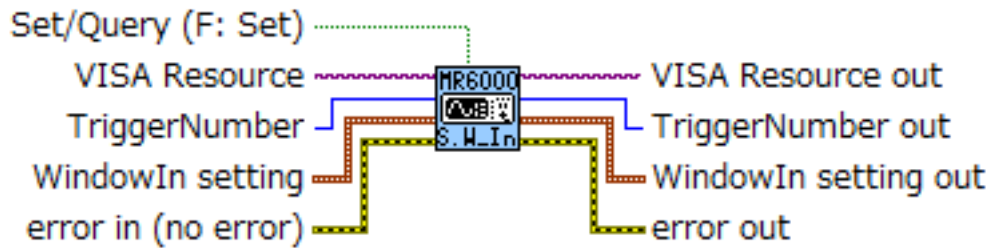
Name	Data Type	Explanation
TriggerNumber		Specifies the trigger number. Input range: 0 - 31 (UNIT1-T1 - UNIT8-T4)
Level setting		Following controllers are included.
UNIT/DSP		Sets the trigger input signal. Input range: 0 (UNIT: Default), 1 (DSP)
CH		Sets the channels to apply the triggers. Valid only when UNIT/DSP sets UNIT. Input range: 0 - 3 (1 - 4)
Level		Sets the trigger level.
Slope		Sets the trigger slope direction of channel. Input range: 0 (UP: Default), 1 (DOWN)
Event		Sets the trigger event count. Input range: 1 - 4000 (1: Default)
Filter		Sets the trigger filter. Input range: When not envelope measurement: 0 (0: Default), 1 (10), 2 (20), 3 (50), 4 (100), 5 (150), 6 (200), 7 (250), 8 (500), 9 (1000), 10 (2000), 11 (5000), 12 (10000) When envelope measurement: 0 (0: Default), 13 (0.001), 14 (0.01)

Output

Name	Data Type	Explanation
TriggerNumber out		Outputs the trigger number.
Level setting out		Following indicators are included. It is output about setting of trigger number specified by TriggerNumber.
UNIT/DSP out		Outputs the query results of the trigger input signal.
CH out		Outputs the query results of the channel to apply the trigger.
Level out		Outputs the query results of the trigger level.
Slope out		Outputs the query results of the trigger slope direction of channel.
Event out		Outputs the query results of the trigger event count.
Filter out		Outputs the query results of the trigger filter.

3.7.8 HIOKI MR6000 Trig Source_WindowIn.vi

Sets and reads the Window-In trigger. This VI is selectable from the “Trig Source.vi”.



Input

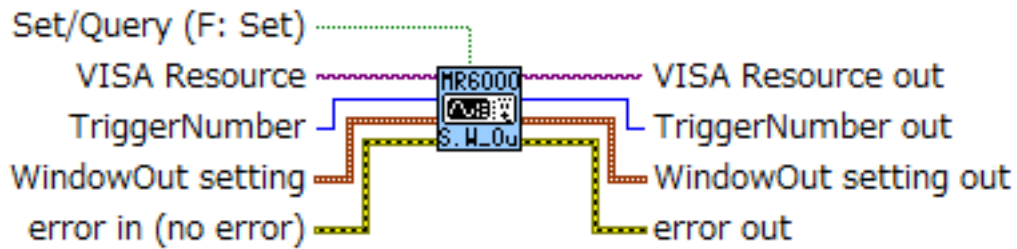
Name	Data Type	Explanation
TriggerNumber		Specifies the trigger number. Input range: 0 - 31 (UNIT1-T1 - UNIT8-T4)
WindowIn setting		Following controllers are included.
UNIT/DSP		Sets the trigger input signal. Input range: 0 (UNIT: Default), 1 (DSP)
CH		Sets the channels to apply the triggers. Valid only when UNIT/DSP sets UNIT. Input range: 0 - 3 (1 - 4)
Upper Level		Sets the upper limit of window trigger.
Lower Level		Sets the lower limit of window trigger.
Event		Sets the trigger event count. Input range: 1 - 4000 (1: Default)
Filter		Sets the trigger filter. Input range: When not envelope measurement: 0 (0: Default), 1 (10), 2 (20), 3 (50), 4 (100), 5 (150), 6 (200), 7 (250), 8 (500), 9 (1000), 10 (2000), 11 (5000), 12 (10000) When envelope measurement: 0 (0: Default), 13 (0.001), 14 (0.01)

Output

Name	Data Type	Explanation
TriggerNumber out		Outputs the trigger number.
WindowIn setting out		Following indicators are included. It is output about setting of trigger number specified by TriggerNumber.
UNIT/DSP out		Outputs the query results of the trigger input signal.
CH out		Outputs the query results of the channel to apply the trigger.
Upper Level out		Outputs the query results of the upper limit of window trigger.
Lower Level out		Outputs the query results of the lower limit of window trigger.
Event out		Outputs the query results of the trigger event count.
Filter out		Outputs the query results of the trigger filter.

3.7.9 HIOKI MR6000 Trig Source_WindowOut.vi

Sets and reads the Window-Out trigger. This VI is selectable from the “Trig Source.vi”.



Input

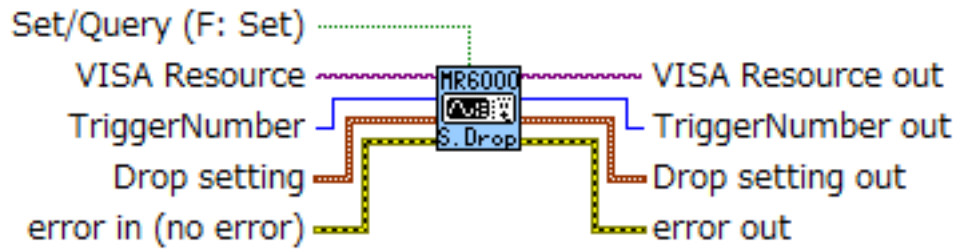
Name	Data Type	Explanation
TriggerNumber		Specifies the trigger number. Input range: 0 - 31 (UNIT1-T1 - UNIT8-T4)
WindowOut setting		Following controllers are included.
UNIT/DSP		Sets the trigger input signal. Input range: 0 (UNIT: Default), 1 (DSP)
CH		Sets the channels to apply the triggers. Valid only when UNIT/DSP sets UNIT. Input range: 0 - 3 (1 - 4)
Upper Level		Sets the upper limit of window trigger.
Lower Level		Sets the lower limit of window trigger.
Event		Sets the trigger event count. Input range: 1 - 4000 (1: Default)
Filter		Sets the trigger filter. Input range: When not envelope measurement: 0 (0: Default), 1 (10), 2 (20), 3 (50), 4 (100), 5 (150), 6 (200), 7 (250), 8 (500), 9 (1000), 10 (2000), 11 (5000), 12 (10000) When envelope measurement: 0 (0: Default), 13 (0.001), 14 (0.01)

Output

Name	Data Type	Explanation
TriggerNumber out		Outputs the trigger number.
WindowOut setting out		Following indicators are included. It is output about setting of trigger number specified by TriggerNumber.
UNIT/DSP out		Outputs the query results of the trigger input signal.
CH out		Outputs the query results of the channel to apply the trigger.
Upper Level out		Outputs the query results of the upper limit of window trigger.
Lower Level out		Outputs the query results of the lower limit of window trigger.
Event out		Outputs the query results of the trigger event count.
Filter out		Outputs the query results of the trigger filter.

3.7.10 HIOKI MR6000 Trig Source_VoltageDrop.vi

Sets and reads the Voltage drop trigger. This VI is selectable from the “Trig Source.vi”.



Input

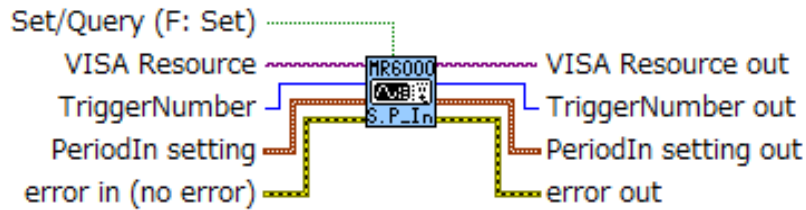
Name	Data Type	Explanation
TriggerNumber		Specifies the trigger number. Input range: 0 - 31 (UNIT1-T1 - UNIT8-T4)
Drop setting		Following controllers are included.
UNIT/DSP		Sets the trigger input signal. Input range: 0 (UNIT: Default), 1 (DSP)
CH		Sets the channels to apply the triggers. Valid only when UNIT/DSP sets UNIT. Input range: 0 - 3 (1 - 4)
Level		Sets the trigger level.
Frequency		Sets the measurement frequency. Input range: 0 (50: Default), 1 (60)
Event		Sets the trigger event count. Input range: 1 - 4000 (1: Default)

Output

Name	Data Type	Explanation
TriggerNumber out		Outputs the trigger number.
Drop setting out		Following indicators are included. It is output about setting of trigger number specified by TriggerNumber.
UNIT/DSP out		Outputs the query results of the trigger input signal.
CH out		Outputs the query results of the channel to apply the trigger.
Level out		Outputs the query results of the trigger level.
Frequency out		Outputs the query results of the measurement frequency.
Event out		Outputs the query results of the trigger event count.

3.7.11 HIOKI MR6000 Trig Source_PeriodIn.vi

Sets and reads the Period-In trigger. This VI is selectable from the “Trig Source.vi”.



Input

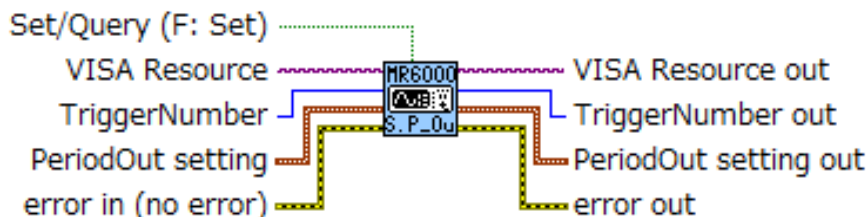
Name	Data Type	Explanation
TriggerNumber		Specifies the trigger number. Input range: 0 - 31 (UNIT1-T1 - UNIT8-T4)
PeriodIn setting		Following controllers are included.
UNIT/DSP		Sets the trigger input signal. Input range: 0 (UNIT: Default), 1 (DSP)
CH		Sets the channels to apply the triggers. Valid only when UNIT/DSP sets UNIT. Input range: 0 - 3 (1 - 4)
Level		Sets the trigger level.
Slope		Sets the trigger slope direction of channel. Input range: 0 (UP: Default), 1 (DOWN)
Upper period		Sets the upper limit of the period trigger.
Lower period		Sets the lower limit of the period trigger.
Event		Sets the trigger event count. Input range: 1 - 4000 (1: Default)
Filter		Sets the trigger filter. Input range: When not envelope measurement: 0 (0: Default), 1 (10), 2 (20), 3 (50), 4 (100), 5 (150), 6 (200), 7 (250), 8 (500), 9 (1000), 10 (2000), 11 (5000), 12 (10000) When envelope measurement: 0 (0: Default), 13 (0.001), 14 (0.01)

Output

Name	Data Type	Explanation
TriggerNumber out		Outputs the trigger number.
PeriodIn setting out		Following indicators are included. It is output about setting of trigger number specified by TriggerNumber.
UNIT/DSP out		Outputs the query results of the trigger input signal.
CH out		Outputs the query results of the channel to apply the trigger.
Level out		Outputs the query results of the trigger level.
Slope out		Outputs the query results of the trigger slope direction of channel.
Upper period out		Outputs the query results of the upper limit of the period trigger.
Lower period out		Outputs the query results of the lower limit of the period trigger.
Event out		Outputs the query results of the trigger event count.
Filter out		Outputs the query results of the trigger filter.

3.7.12 HIOKI MR6000 Trig Source_PeriodOut.vi

Sets and reads the Period-Out trigger. This VI is selectable from the “Trig Source.vi”.



Input

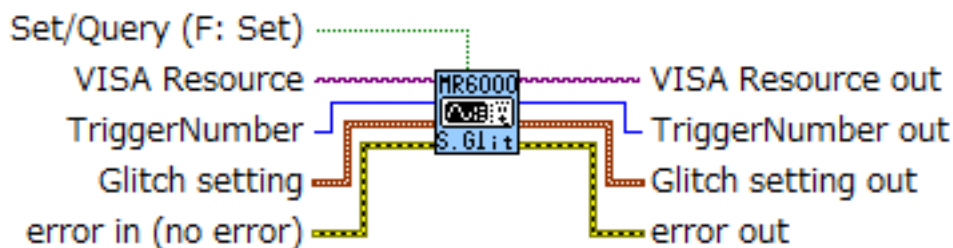
Name	Data Type	Explanation
TriggerNumber		Specifies the trigger number. Input range: 0 - 31 (UNIT1-T1 - UNIT8-T4)
PeriodOut setting		Following controllers are included.
UNIT/DSP		Sets the trigger input signal. Input range: 0 (UNIT: Default), 1 (DSP)
CH		Sets the channels to apply the triggers. Valid only when UNIT/DSP sets UNIT. Input range: 0 - 3 (1 - 4)
Level		Sets the trigger level.
Slope		Sets the trigger slope direction of channel. Input range: 0 (UP: Default), 1 (DOWN)
Upper period		Sets the upper limit of the period trigger.
Lower period		Sets the lower limit of the period trigger.
Event		Sets the trigger event count. Input range: 1 - 4000 (1: Default)
Filter		Sets the trigger filter. Input range: When not envelope measurement: 0 (0: Default), 1 (10), 2 (20), 3 (50), 4 (100), 5 (150), 6 (200), 7 (250), 8 (500), 9 (1000), 10 (2000), 11 (5000), 12 (10000) When envelope measurement: 0 (0: Default), 13 (0.001), 14 (0.01)

Output

Name	Data Type	Explanation
TriggerNumber out		Outputs the trigger number.
PeriodOut setting out		Following indicators are included. It is output about setting of trigger number specified by TriggerNumber.
UNIT/DSP out		Outputs the query results of the trigger input signal.
CH out		Outputs the query results of the channel to apply the trigger.
Level out		Outputs the query results of the trigger level.
Slope out		Outputs the query results of the trigger slope direction of channel.
Upper period out		Outputs the query results of the upper limit of the period trigger.
Lower period out		Outputs the query results of the lower limit of the period trigger.
Event out		Outputs the query results of the trigger event count.
Filter out		Outputs the query results of the trigger filter.

3.7.13 HIOKI MR6000 Trig Source_Glitch.vi

Sets and reads the Glitch trigger. This VI is selectable from the “Trig Source.vi”.



Input

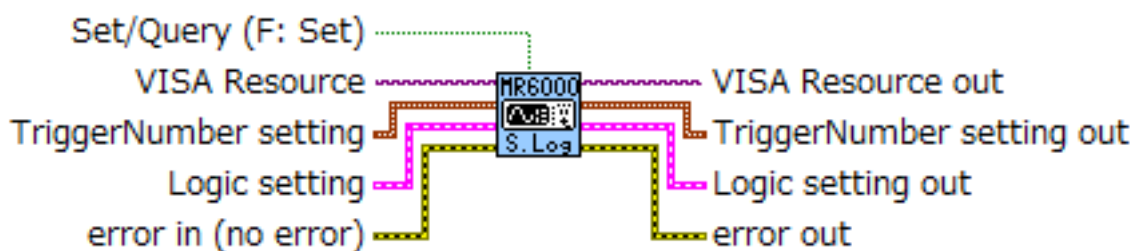
Name	Data Type	Explanation
TriggerNumber		Specifies the trigger number. Input range: 0 - 31 (UNIT1-T1 - UNIT8-T4)
Glitch setting		Following controllers are included.
UNIT/DSP		Sets the trigger input signal. Input range: 0 (UNIT: Default), 1 (DSP)
CH		Sets the channels to apply the triggers. Valid only when UNIT/DSP sets UNIT. Input range: 0 - 3 (1 - 4)
Level		Sets the trigger level.
Slope		Sets the trigger slope direction of channel. Input range: 0 (UP: Default), 1 (DOWN)
Width		Sets the glitch width. Input range: 2 - 4000 (2: Default)
Event		Sets the trigger event count. Input range: 1 - 4000 (1: Default)

Output

Name	Data Type	Explanation
TriggerNumber out		Outputs the trigger number.
Glitch setting out		Following indicators are included. It is output about setting of trigger number specified by TriggerNumber.
UNIT/DSP out		Outputs the query results of the trigger input signal.
CH out		Outputs the query results of the channel to apply the trigger.
Level out		Outputs the query results of the trigger level.
Slope out		Outputs the query results of the trigger slope direction of channel.
Width out		Outputs the query results of the glitch width.
Event out		Outputs the query results of the trigger event count.

3.7.14 HIOKI MR6000 Trig Source_Logic.vi

Sets and reads the Logic trigger. This VI is selectable from the “Trig Source.vi”.



Input

Name	Data Type	Explanation
TriggerNumber setting		Following controllers are included.
TriggerNumber		Specifies the trigger number. Input range: 0 - 31 (UNIT1-T1 - UNIT8-T4)
CH		Sets the channels to apply the triggers. Input range: 0 - 3 (A - D)
Logic setting		Following controllers are included.
EstablishmentCondition		Sets the AND/OR logical operator for the logic trigger. Input range: 0 (OFF: Default), 1 (OR), 2 (AND)
Filter		Sets the logic trigger filter width. Input range: When not envelope measurement: 0 (0: Default), 1 (10), 2 (20), 3 (50), 4 (100), 5 (150), 6 (200), 7 (250), 8 (500), 9 (1000), 10 (2000), 11 (5000), 12 (10000) When envelope measurement: 0 (0: Default), 13 (0.001), 14 (0.01)
LogicPattern		Sets the trigger pattern (4 bits) of the logic trigger. Input range: 0 (X (Ignore signal): Default), 1 (0 (Trigger at low level)), 2 (1 (Trigger at high level))

Output

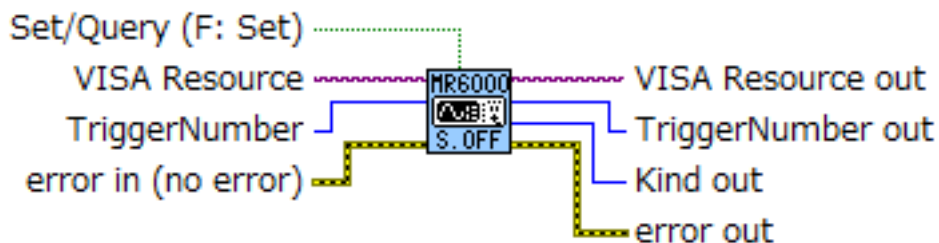
Name	Data Type	Explanation
TriggerNumber setting out		Following indicators are included.
TriggerNumber out		Outputs the trigger number.
CH out		Outputs the query results of the channel to apply the trigger.
Logic setting out		Following indicators are included. It is output about setting of trigger number specified by TriggerNumber.
EstablishmentCondition out		Outputs the query results of the AND/OR logical operator for the logic trigger.
Filter out		Outputs the query results of the logic trigger filter width.
LogicPattern out		Outputs the query results of the trigger pattern of the logic trigger.

Note:

·Valid only for logic units.

3.7.15 HIOKI MR6000 Trig Source_OFF.vi

When this is used by set mode, the trigger type of the specified trigger number is turned off. When this is used by query mode, this reads the trigger type of the specified trigger number. This VI is selectable from the "Trig Source.vi".



Input

Name	Data Type	Explanation
TriggerNumber		Specifies the trigger number. Input range: 0 - 31 (UNIT1-T1 - UNIT8-T4)

Output

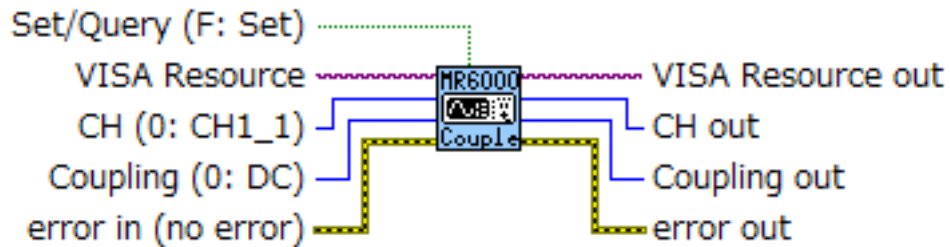
Name	Data Type	Explanation
TriggerNumber out		Outputs the trigger number.
Kind out		Outputs the query results of the type of the trigger specified by TriggerNumber. Output range: 0 (OFF), 1 (LEVEL), 2 (IN), 3 (OUT), 4 (DROP), 5 (PERIIN), 6 (PERIOUT), 7 (GLITCH)

3.8 Unit VI

Contains VIs related to unit setting.

3.8.1 HIOKI MR6000 Unit Coupling.vi

Sets and reads the type of input coupling for channel.



Input

Name	Data Type	Explanation
CH		Specifies the channel for setting the type of input coupling. Input Range: 0 – 31 (CH1_1 – CH8_4)
Coupling		Sets the type of input coupling. Input Range: 0 (DC: Default), 1 (AC), 2 (GND)

Output

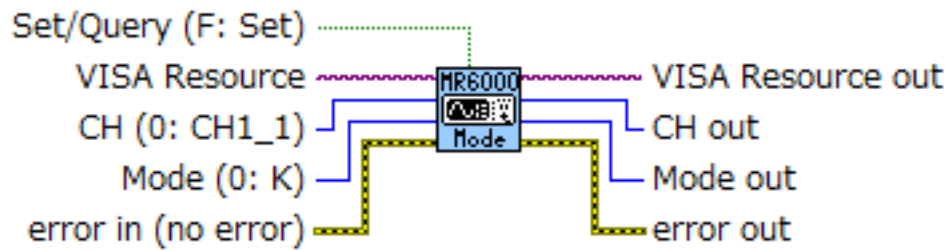
Name	Data Type	Explanation
CH out		Outputs the query results of the channel specified by CH.
Coupling out		Outputs the query results of the type of input coupling.

Note:

- The setting depends on the type of module.

3.8.2 HIOKI MR6000 Unit Mode.vi

Sets and reads the measurement mode of the channel.



Input

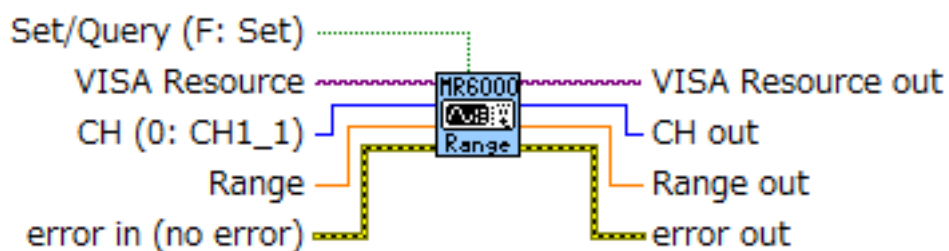
Name	Data Type	Explanation
CH		Specifies the channel for setting the measurement mode. Input Range: 0 – 31 (CH1_1 – CH8_4)
Mode		Sets the measurement mode. Input Range: [Module 8967 (Temperature)] 0 (K), 1 (J), 2 (E), 3 (T), 4 (N), 5 (R), 6 (S), 7 (B), 8 (W) [Module 8970 (Frequency)] 9 (FREQ), 10 (RPM), 11 (POWER), 12 (COUNT), 13 (DUTY), 14 (PULSE) [Module 8972 (DC / RMS), U8974 (High voltage)] 15 (DC), 16 (RMS)

Output

Name	Data Type	Explanation
CH out		Outputs the query results of the channel specified by CH.
Mode out		Outputs the query results of the measurement type.

3.8.3 HIOKI MR6000 Unit Range.vi

Sets and reads the measurement range for channel.



Input

Name	Data Type	Explanation
CH		Specifies the channel for setting the measurement range. Input Range: 0 – 31 (CH1_1 – CH8_4)
Range		Sets the measurement range.

Output

Name	Data Type	Explanation
CH out		Outputs the query results of the channel specified by CH.
Range out		Outputs the query results of the measurement range.

Note:

- The range depends on the type of module or the input mode.

3.9 Other VI

3.9.1 HIOKI MR6000 ErrorCheck.vi

Sends the “*ESR?” command. If an error is found, update the error information.

