Vibration Control System

K2+

TCP Communication Server
Instruction Manual

IMV CORPORATION

Type of Document :   Instruction Manual

System Applied :   K2+

Application Software   later than Version 20.0.0

English Edition

Version	Date	Contents
1.0.0	2021.03.18	First issue

.

CONTENTS

Chapter 1   Overview

This software is a TCP server software for supporting the software controlling K2+ applications (hereinafter referred to as the Client) by transmitting/receiving commands via TCP/IP.

1.1   Configuration

The system configuration for using this software (hereinafter referred to as the Server) is shown below.

```
                    ┌─────────────────────────┐
                    │       Client PC         │
                    │   ┌ ─ ─ ─ ─ ─ ─ ─ ─ ┐   │
                    │   │      Client     │   │
                    │   └ ─ ─ ─ ─ ─ ─ ─ ─ ┘   │
                    └─────────────┬───────────┘
          LAN                     │
   ●───────────────┬──────────────┴─────────────────●
                   │
        ┌──────────┴────────────────────────┐
        │   ┌ ─ ─ ─ ─ ─ ─ ─ ─ ┐             │
        │   │      Server     │             │
        │   └ ─ ─ ─ ─ ─ ─ ─ ─ ┘             │
        │   ┌ ─ ─ ─ ─ ─ ─ ─ ─ ┐     ┌──────────────┐
        │   │  K2+ application │─────│ K2+ hardware │
        │   └ ─ ─ ─ ─ ─ ─ ─ ─ ┘     └──────────────┘
        │          PC for K2+                │
        └────────────────────────────────────┘
```
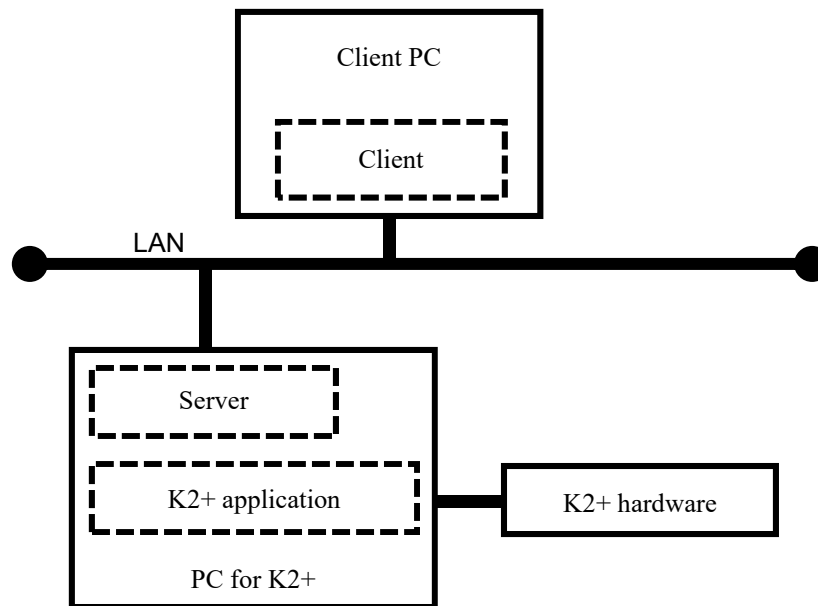
※ Only one client software can connect to the Server.

1.2　Client Process Flow

To control K2+ applications, the Client connects to the Server via TCP/IP and performs communication using messages stated in the XML format.

Shown below is an overview of the process flow for the Client.

```
            ┌─────────────────────────┐
           (      Start the Client     )
            └─────────────────────────┘
                        │
                        ▼
            ┌─────────────────────────┐
            │ TCP/IP connection to the│
            │          Server         │
            └─────────────────────────┘
                        │
        ┌───────────────┼
        │               ▼
        │   ┌─────────────────────────┐
        │   │    Transmit a message   │
        │   └─────────────────────────┘
        │               │
        │               ▼
        │   ┌─────────────────────────┐
        │   │ Receive a response message │
        │   └─────────────────────────┘
        │               │
        │               ▼
        │          ◇ Communication
        └── NO       completion? ◇
                        │ YES
                        ▼
            ┌─────────────────────────┐
            │ Shut down the connection │
            │    to the Server         │
            └─────────────────────────┘
                        │
                        ▼
            ┌─────────────────────────┐
           (    Terminate the Client   )
            └─────────────────────────┘
```
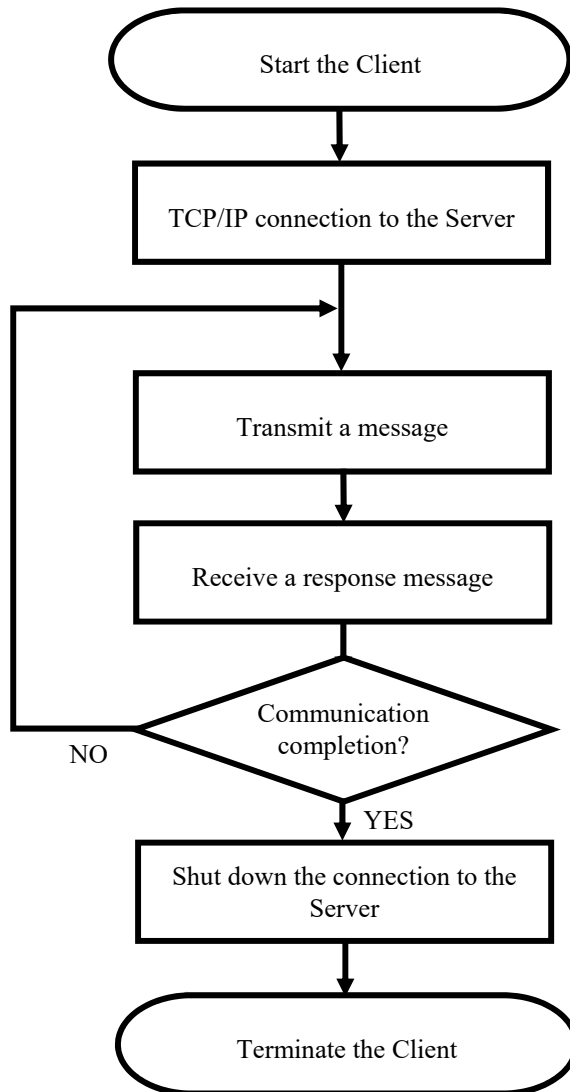
1.3　Applicable Applications

K2+ applications supported by the Server are as follows.

Applicable Applications		
SINE	RANDOM	SHOCK
Multi-SWEEP SINE	Multi-SINE	Multi-RANDOM
NON GAUSSIAN		

Chapter 2   Message Structure

This chapter explains the structure for the messages transmitted by the Client to control K2+ applications and that of response messages sent by the Server.

2.1   Messages configuration

The Client and the Server send and receive the message described at text of XML form, added STX(0x02) and ETX(0x03) as the following figure;

STX	Message (XML)	ETX
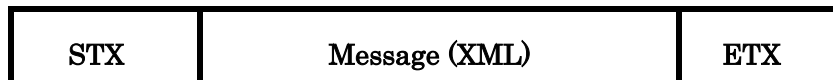
2.2   Transmitted messages

To control a K2+ application, the Client needs to transmit a message with the following structure to the Server.

```
<?xml version="1.0" encoding="UTF-8"?>
<message>
<command>XXXXXXXX</command>
…
</message>
```

Here, the expression **"XXXXXXXX"** represents a command.

The statement after </command> depends on the command and further information is provided later.

2.3   Response messages

Upon processing the message sent from the Client properly, the Server sends a message with the following structure to the Client.

```
<?xml version="1.0" encoding="UTF-8"?>
<response>
<command>XXXXXXXX</command>
<result>True</result>
…
</response>
```

Here, the expression **"XXXXXXXX"** represents the command that has been received by the Server.

Also, the processing result "**True**" is stated in the <result> field.

The statement after </result> depends on the command and further information is provided in the next chapter onward.

Given below is a command responding to an error.

```
<?xml version="1.0" encoding="UTF-8"?>
<response>
<command>XXXXXXXX</command>
<result>False</result>
<error id="%%">*********</error>
</response>
```

Here, the expression **"XXXXXXXX"** also represents the command that has been received by the Server.

The processing result "**False**" is stated in the <result> field.

In addition, the error ID ("%%" in above example) and the error message ("*********" in above example) are stated in the <error> field.

Chapter 3   Command Specifications

This chapter explains the commands supported by the Server.

3.1   Common commands for all applications

The commands common for all K2+ applications supported by the Server are given in the table below.

Commands	Function
GetDeviceInfo	Obtain information on the K2+ application, such as the version number.
OpenDevice	Start the K2+ application and load the designated test definition file.
GetInputSensitivity	Obtain the sensitivity of preset input channel.
SetInputSensitivity	Set the sensitivity of input channel.
PrepareTest	Initialize the hardware and make a transition to the standby state for starting excitation.
StartTest	Start the excitation. If the K2+ application was in the excitation complete state, reset it to the standby state for excitation before starting the excitation.
PauseTest	Suspend the excitation momentarily.
ContinueTest	Cancel the suspension to resume the excitation.
StopTest	Stop the excitation.
CloseTest	Close the K2+ application. If the K2+ application was performing the excitation, stop the excitation before closing the application.
GetStatus	Obtain the status of K2+ application.
GetInfo	Obtain information on the K2+ application, such as the excitation data.
RetryTest	Reset the application from the excitation complete state to the standby state for excitation.

3.2 Application specific commands

Applications specific commands supported by the Server are listed in the table below.

Commands	Function
LevelUp	Increase the excitation level.
LevelDown	Decrease the excitation level.
GoToHeadFreqency	Return to the head frequency.
TurnSweep	Turn back the sweeping.
GoToNextSpot	Make a transition to the next spot.
HoldFrequency	Hold the excitation frequency.
RelaseFrequency	Cancel the hold on the excitation frequency.
FrequencyUp	Increase the excitation frequency of SINE MANUAL test.
FrequencyDown	Decrease the excitation frequency of SINE MANUAL test.
SetManualReference	Set the excitation frequency and the excitation level of SINE MANUAL test.
StartLevelSchedule	Start the level schedule test of SHOCK test.
UpdateXfrData	Update the XFR data in the SHOCK test.
UpdateDriveData	Update the drive data in the SHOCK test.

Chapter 4　Common Commands for All Applications

This chapter explains the commands supported commonly by all applications in details.

4.1　GetDeviceInfo command

This command is used to obtain information on the K2+ application, such as the version number.

Available state for communication
ANY STATE
State transition after transmission
NONE

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message> 　　<command>**GetDeviceInfo**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response> 　　<command>**GetDeviceInfo**</command> 　　<result>**True**</result> 　　<device> 　　　　<manufacture>**IMV Corporation**</manufacture> 　　　　<product>**K2+**</product> 　　　　<type>**K2+ TCP/IP Server**</type> 　　　　<version>**14.5.0.0**</version> 　　</device> </response>

device	
Tag	**Meaning**
manufacture	Manufacturer name (always "IMV Corporation")
product	Product name (always "K2+")
type	Software name (always "K2+ TCP Server")
version	The version number of K2+ application

4.2 GetStatus command

This command is used to obtain the K2+ application status.

Available state for communication
ANY STATE
State transition after transmission
NONE

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**GetStatus**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**GetStatus**</command>   <result>**True**</result>   <status id="**3**" end_id="">**RUN**</status> </response>

Tag		Meaning
status		The K2+ application status is described here. The statuses supported are listed in the table below.

Status	Condition
IDLE	Standby for the start of application launch
STANDBY	Standby for the start of hardware initialization
READY	Standby for the start of excitation
RUN	Excitation in progress
STOP	Excitation stopped
PAUSE	Excitation suspended
FIXED_FREQ	Fixing frequeney
BUSY	Executing functions other than the above

Attribute	id	The status code of K2+ application is stated. (See Chapter 6 for further information.)
	end_id	The completion status code of K2+ application is stated. (A value is set only if the status was STOP. See "Chapter 6" for further information.)

4.3 OpenDevice command

This command is used to start the K2+ application and load designate test definition file.

Remember to state the path to the PC, on which the K2+ application is installed, for the designated test definition file.

Available state for communication
IDLE
State transition after transmission
STANDBY

Transferred command example

`<?xml version="1.0" encoding="UTF-8"?>`
`<message>`
    `<command>`**OpenDevice**`</command>`
    `<testpath>`**C:¥K2Data¥SINE¥Test01.swp2**`</testpath>`
`</message>`

Tag	Meaning
testpath	The path to the test definition file on the PC, on which the K2+ application is installed.

Response command example

`<?xml version="1.0" encoding="UTF-8"?>`
`<response>`
    `<command>`**OpenDevice**`</command>`
    `<result>`**True**`</result>`
`</response>`

4.4 GetInputSensitivity command

This command is used to obtain the sensitivity of input channel set in the test definition.

Available state for communication
ANY STATE except IDLE
State transition after transmission
NONE

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**GetInputSensitivity**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**GetInputSensitivity**</command>   <result>**True**</result>   <sensitivity>   <channel module="**000**" ch="**Ch1**">**10.5**</channel>   <channel module="**000**" ch="**Ch2**">**10.1**</channel>   <channel module="**000**" ch="**Ch4**">**5.6**</channel>   </sensitivity> </response>

sensitivity		
Tag		**Meaning**
channel		Sensitivity of each input channel
Attribute	module	Module ID
	ch	Channel number

4.5　SetInputSensitivity command

This command is used to set the input channel sensitivity in the test definition.

It is also possible to specify if the test definition should be overwritten.

Available state for communication
STANDBY

State transition after transmission
NONE

Transferred command example

```<?xml version="1.0" encoding="UTF-8"?>```
`<message>`
　　`<command>`**SetInputSensitivity**`</command>`
　　`<overwrite>`**True**`</overwrite>`
　　`<sensitivity>`
　　　　`<channel module="`**000**`" ch="`**Ch1**`">`**10.8**`</channel>`
　　　　`<channel module="`**000**`" ch="`**Ch4**`">`**5.1**`</channel>`
　　`</sensitivity>`
`</message>`

Tag	Meaning	
overwrite	Specify if the test definition file should be overwritten. (False if not specified)	
	True	To be overwritten
	False	Not overwritten
sensitivity		
Tag	**Meaning**	
channel	Sensitivity of each input channel	
Attribute　module	Module ID	
Attribute　ch	Channel number	

Response command example

```<?xml version="1.0" encoding="UTF-8"?>```
`<response>`
　　`<command>`**SetInputSensitivity**`</command>`
　　`<result>`**True**`</result>`
`</response>`

4.6 PrepareTest command

This command is used to initialize the hardware and put it in the standby state for the start of excitation.

Available state for communication
STANDBY
State transition after transmission
READY

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**PrepareTest**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**PrepareTest**</command>   <result>**True**</result> </response>

4.7 StartTest command

This command is used to start the excitation.

If the K2+ application was in the excitation complete state, it is reset to the standby state for excitation before starting the excitation.

Available state for communication
READY, STOP
State transition after transmission
RUN

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**StartTest**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**StartTest**</command>   <result>**True**</result> </response>

4.8　StopTest command

This command is used to stop the excitation.

Available state for communication
RUN, PAUSE, BUSY
State transition after transmission
STOP

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message> 　　<command>**StopTest**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response> 　　<command>**StopTest**</command> 　　<result>**True**</result> </response>

4.9   CloseTest command

This command is used to close the K2+ application.

If the K2+ application was in the process of excitation, it stops the excitation before closing the application.

Available state for communication
ANY STATE except IDLE
State transition after transmission
IDLE

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**CloseTest**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**CloseTest**</command>   <result>**True**</result> </response>

4.10   GetInfo command

This command is used to obtain the excitation data when the K2+ application is in the process of excitation.

Available state for communication
ANY STATE
State transition after transmission
NONE

Transferred command example

```<?xml version="1.0" encoding="UTF-8"?>```
`<message>`
`    <command>`**GetInfo**`</command>`
`</message>`

Response command example

```<?xml version="1.0" encoding="UTF-8"?>```
`<response>`
`    <command>`**GetInfo**`</command>`
`    <result>`**True**`</result>`
`    <k2status>`
`        …`
`    </k2status>`
`</response>`

Tag	Meaning
k2status	The status and data of K2+ application are stated. The contents depend on the application. (See "Chapter 7" for further information.)

4.11 RetryTest command

This command is used to reset the application from the excitation complete state to the standby state for excitation.

Available state for communication
STOP
State transition after transmission
READY

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**RetryTest**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**RetryTest**</command>   <result>**True**</result> </response>

Chapter 5　Application Specific Commands

This chapter explains the details of commands specific to K2+ application.

The server supports the commands of the applications written in black shown below.

5.1　PauseTest command

This command is used to suspend the excitation momentarily.

Applicable applications		
SINE	**RANDOM**	SHOCK
Multi-SWEEP SINE	**Multi-SINE**	**Multi-RANDOM**
NON GAUSSIAN		

Available state for communication
RUN
State transition after transmission
PAUSE

Transferred command example
<?xml version="1.0" encoding="UTF-8"?>
<message>
<command>**PauseTest**</command>
</message>

Response command example
<?xml version="1.0" encoding="UTF-8"?>
<response>
<command>**PauseTest**</command>
<result>**True**</result>
</response>

5.2 ContinueTest command

This command is used to cancel the suspension and resume the excitation.

Applicable applications		
SINE	**RANDOM**	SHOCK
Multi-SWEEP SINE	**Multi-SINE**	**Multi-RANDOM**
NON GAUSSIAN		

Available state for communication
PAUSE
State transition after transmission
RUN

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**ContinueTest**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**ContinueTest**</command>   <result>**True**</result> </response>

5.3　LevelUp command

This command is used to increase the level of excitation in accordance with the specified value for the increment.

The operation is same as the one performed by pressing the "up arrow" button on the manual operation panel of K2+ application.

Applicable applications		
SINE	RANDOM	SHOCK
Multi-SWEEP SINE	Multi-SINE	Multi-RANDOM
NON GAUSSIAN		

Available state for communication
RUN
State transition after transmission
NONE

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message> 　　<command>**LevelUp**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response> 　　<command>**LevelUp**</command> 　　<result>**True**</result> </response>

5.4 LevelDown command

This command is used to decrease the excitation level in accordance with the specified value for the decrement.

The operation is same as the one performed by pressing the "down arrow" button on the manual operation panel of K2+ application.

Applicable applications		
SINE	**RANDOM**	SHOCK
Multi-SWEEP SINE	**Multi-SINE**	**Multi-RANDOM**
NON GAUSSIAN		

Available state for communication
RUN
State transition after transmission
NONE

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**LevelDown**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**LevelDown**</command>   <result>**True**</result> </response>

5.5 GoToHeadFreqency command

This command is used to return to the head frequency.

Applicable applications		
SINE *1	**RANDOM** *2	SHOCK
Multi-SWEEP SINE *3	**Multi-SINE** *1	Multi-RANDOM
NON GAUSSIAN		

*1 Effective only for the back-and-forth sweeping in the SWEEP test.

*2 Effective only for the sweeping in the SOR or ROR test.

*3 Effective only for the multiple frequency sweep test.

Available state for communication
RUN
State transition after transmission
NONE

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**GoToHeadFreqency**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**GoToHeadFreqency**</command>   <result>**True**</result> </response>

5.6 TurnSweep command

This command is used to turn the sweep backward.

Applicable applications		
SINE *1	**RANDOM** *2	SHOCK
Multi-SWEEP SINE *3	**Multi-SINE** *1	Multi-RANDOM
NON GAUSSIAN		

*1   Effective only for the back-and-forth sweeping in the SWEEP test.

*2   Effective only for the back-and-forth sweeping in SOR or ROR test.

*3   Effective only for the multiple frequency sweep test.

Available state for communication
RUN
State transition after transmission
NONE

Transferred command example

`<?xml version="1.0" encoding="UTF-8"?>`
`<message>`
    `<command>`**TurnSweep**`</command>`
`</message>`

Response command example

`<?xml version="1.0" encoding="UTF-8"?>`
`<response>`
    `<command>`**TurnSweep**`</command>`
    `<result>`**True**`</result>`
`</response>`

5.7 GoToNextSpot command

This command is used to move to the next spot.

Applicable applications		
SINE *1	RANDOM	SHOCK
Multi-SWEEP SINE	**Multi-SINE** *1	Multi-RANDOM
NON GAUSSIAN		

*1   Effective only in the SPOT test.

Available state for communication
RUN
State transition after transmission
NONE

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**GoToNextSpot**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**GoToNextSpot**</command>   <result>**True**</result> </response>

5.8 HoldFrequency command

This command is used to hold the excitation frequency.

Applicable applications		
SINE *1	**RANDOM** *2	SHOCK
Multi-SWEEP SINE *3	**Multi-SINE** *1	Multi-RANDOM
NON GAUSSIAN		

*1   Effective only in the SWEEP or SPOT test.

*2   Effective only for sweeping in the SOR or ROR test.

*3   Effective only in the multiple frequency sweep test or delayed sweep test.

Available state for communication
RUN
State transition after transmission
FIXED_FREQ

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**HoldFrequency**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**HoldFrequency**</command>   <result>**True**</result> </response>

5.9 RelaseFrequency command

This command is used to cancel the hold in the excitation frequency.

Applicable applications		
SINE *1	**RANDOM** *2	SHOCK
Multi-SWEEP SINE *3	**Multi-SINE** *1	Multi-RANDOM
NON GAUSSIAN		

*1 Effective only in the SWEEP or SPOT test.

*2 Effective only for sweeping in the SOR or ROR test.

*3 Effective only in the multiple frequency sweep test or delayed sweep test.

Available state for communication
FIXED_FREQ
State transition after transmission
RUN

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**RelaseFrequency**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**RelaseFrequency**</command>   <result>**True**</result> </response>

5.10 FrequencyUp command

This command is used to increase the excitation frequency in the SINE MANUAL test by the specified value of increment.

The operation is same as the one performed by pressing the "right arrow" button on the manual operation panel of K2+ application.

Applicable applications		
SINE *1	RANDOM	SHOCK
Multi-SWEEP SINE	Multi-SINE	Multi-RANDOM
NON GAUSSIAN		

*1   Effective only in the MANUAL test.

Available state for communication
RUN
State transition after transmission
NONE

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**FrequencyUp**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**FrequencyUp**</command>   <result>**True**</result> </response>

5.11 FrequencyDown command

This command is used to decrease the excitation frequency in the SINE MANUAL test by the specified value of decrement.

The operation is same as the one performed by pressing the "left arrow" button on the manual operation panel of K2+ application.

Applicable applications		
SINE *1	RANDOM	SHOCK
Multi-SWEEP SINE	Multi-SINE	Multi-RANDOM
NON GAUSSIAN		

*1　Effective only in the MANUAL test.

Available state for communication
RUN
State transition after transmission
NONE

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message> 　　<command>**FrequencyDown**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response> 　　<command>**FrequencyDown**</command> 　　<result>**True**</result> </response>

5.12   SetManualReference command

This command is used to set the excitation frequency and the excitation level directly in the SINE MANUAL test.

It is impossible to change physical quantity of the excitation level

(Physical quantity of test definition is used.)

Applicable applications		
SINE *1	RANDOM	SHOCK
Multi-SWEEP SINE	Multi-SINE	Multi-RANDOM
NON GAUSSIAN		

*1   Effective only in the MANUAL test.

Available state for communication
READY, RUN
State transition after transmission
NONE

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command> **SetManualReference**</command>   <frequency>**101.0**</frequency>   <reference>**12.3**</reference> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command> **SetManualReference**</command>   <result>**True**</result> </response>

Tag	Meaning
frequency	Excitation frequency
reference	Excitation level

5.13   StartLevelSchedule command

This command is used to start the level schedule test of SHOCK test.

Applicable applications		
SINE	RANDOM	**SHOCK**
Multi-SWEEP SINE	Multi-SINE	Multi-RANDOM
NON GAUSSIAN		

Available state for communication
READY
State transition after transmission
RUN

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**StartLevelSchedule**</command> </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**StartLevelSchedule**</command>   <result>**True**</result> </response>

5.14 UpdateXfrData command

This command is used to update the XFR data in the SHOCK test.

Applicable applications		
SINE	RANDOM	**SHOCK**
Multi-SWEEP SINE	Multi-SINE	Multi-RANDOM
NON GAUSSIAN		

Available state for communication
STOP
State transition after transmission
READY

Transferred command example
<?xml version="1.0" encoding="UTF-8"?> <message>   <command>**UpdateXfrData**</command>   <remakedrive>**True**</remakedrive> </message>

Tag	Meaning	
remakedrive	Specify if the drive data shall be recreated. (True if not specified)	
	True	To be recreated
	False	Not recreated

Response command example
<?xml version="1.0" encoding="UTF-8"?> <response>   <command>**UpdateXfrData**</command>   <result>**True**</result> </response>

5.15   UpadateDriveData command

This command is used to update the drive data in the SHOCK test.

Applicable applications		
SINE	RANDOM	**SHOCK**
Multi-SWEEP SINE	Multi-SINE	Multi-RANDOM
NON GAUSSIAN		

Available state for communication
STOP
State transition after transmission
READY

Transferred command example
<?xml version="1.0" encoding="UTF-8"?>   <message>   <command>**UpdateDriveData**</command>   </message>

Response command example
<?xml version="1.0" encoding="UTF-8"?>   <response>   <command>**UpdateDriveData**</command>   <result>**True**</result>   </response>

Chapter 6　Status Response Message

This chapter explains the status code stated in the "id" field of <status> and the completion status code stated in the "end_id" field of GetStatus command.

6.1　SINE

Status code	Condition	Status
1	Before the start of test	STANDBY
2	Initialization in progress	STANDBY
3	Standby for the start of excitation	READY
4	Excitation in progress	RUN
5	Excitation complete	END
6	Excitation suspended	PAUSE
3001	Initial loop check in progress	INICHK
3002	Initial measurement in progress	INIMEA
3003	Initial equalization in progress	INIEQ
999	Other than the above	BUSY

Completion status code	Condition
0	Completed normally
1	Stop by the user command
2	Stop by the command from a contact
3	Stop because of not being ready for the test (contact)
4	Stop due to an abort check
5	Stop due to a loop check
6	Suspension due to a detection of timeout by the Client
7	A hardware error has been issued
8	An error detected in the initial loop check
9	The excitation system is not ready for operation
10	Suspension due to a CPU overload
11	Suspension due to a shortage in memory capacity
12	An error detected in the XFR measurement
13	Suspension by the emergency stop contact
14	Suspension by the shutdown command
99	Stop due to a reason other than the above

6.2 RANDOM

Status code	Condition	Status
1	Before the start of test	STANDBY
2	Initialization in progress	STANDBY
3	Standby for the start of excitation	READY
4	Excitation in progress	RUN
5	Excitation complete	END
6	Excitation suspended	PAUSE
2001	Initial loop check in progress	INICHK
2002	Initial measurement in progress	INIMEA
2003	Initial equalization in progress	INIEQ
999	Other than the above	BUSY

Completion status code	Condition
0	Completed normally
1	Stop by the user command
2	Stop by the command from a contact
3	Stop because of not being ready for the test (contact)
4	Stop due to an abort check
5	Stop due to a loop check
6	Suspension due to a detection of timeout by the Client
7	A hardware error has been issued
8	An error detected in the initial loop check
9	The excitation system is not ready for operation
10	Suspension due to a CPU overload
11	Suspension due to a shortage in memory capacity
12	An error detected in the XFR measurement
13	Suspension by the emergency stop contact
14	Suspension by the shutdown command
99	Stop due to a reason other than the above

6.3   SHOCK

Status code	Condition	Status
1	Before the start of test	STANDBY
2	Initialization in progress	STANDBY
3	Standby for the start of excitation	READY
4	Excitation in progress	RUN
5	Excitation complete	END
6	Excitation suspended	PAUSE
1001	Standby for the start of XFR measurement	WXFR
1002	XFR measurement in progress	MXFR
1003	Standby for the start of drive generation	WDRV
1004	Drive generation in progress	MDRV
1005	XFR renewal in progress	UXFR
1006	Iteration in progress	UDRV
999	Other than the above	BUSY

Completion status code	Condition
0	Completed normally
1	Stop by the user command
2	Stop by the command from a contact
3	Stop because of not being ready for the test (contact)
4	Stop due to an abort check
5	Stop due to a loop check
6	Suspension due to a detection of timeout by the Client
7	A hardware error has been issued
8	An error detected in the initial loop check
9	The excitation system is not ready for operation
10	Suspension due to a CPU overload
11	Suspension due to a shortage in memory capacity
12	An error detected in the XFR measurement
13	Suspension by the emergency stop contact
14	Suspension by the shutdown command
99	Stop due to a reason other than the above

6.4 Multi-SWEEP SINE

Status code	Condition	Status
1	Before the start of test	STANDBY
2	Initialization in progress	STANDBY
3	Standby for the start of excitation	READY
4	Excitation in progress	RUN
5	Excitation complete	END
6	Excitation suspended	PAUSE
3001	Initial loop check in progress	INICHK
3002	Initial measurement in progress	INIMEA
3003	Initial equalization in progress	INIEQ
999	Other than the above	BUSY

Completion status code	Condition
0	Completed normally
1	Stop by the user command
2	Stop by the command from a contact
3	Stop because of not being ready for the test (contact)
4	Stop due to an abort check
5	Stop due to a loop check
6	Suspension due to a detection of timeout by the Client
7	A hardware error has been issued
8	An error detected in the initial loop check
9	The excitation system is not ready for operation
10	Suspension due to a CPU overload
11	Suspension due to a shortage in memory capacity
12	An error detected in the XFR measurement
13	Suspension by the emergency stop contact
14	Suspension by the shutdown command
99	Stop due to a reason other than the above

6.5 Multi-SINE, Multi-RANDOM, NON GAUSSIAN

Status code	Condition	Status
1	Before the start of test	STANDBY
2	Initialization in progress	STANDBY
3	Standby for the start of excitation	READY
4	Excitation in progress	RUN
5	Excitation complete	END
6	Excitation suspended	PAUSE
4001	Standby for the start of XFR measurement	WXFR
4002	XFR measurement in progress	MXFR
4003	Initial loop check in progress	INICHK
4004	Initial measurement in progress	INIMEA
4005	Initial equalization in progress	INIEQ
999	Other than the above	BUSY

Completion status code	Condition
0	Completed normally
1	Stop by the user command
2	Stop by the command from a contact
3	Stop because of not being ready for the test (contact)
4	Stop due to an abort check
5	Stop due to a loop check
6	Suspension due to a detection of timeout by the Client
7	A hardware error has been issued
8	An error detected in the initial loop check
9	The excitation system is not ready for operation
10	Suspension due to a CPU overload
11	Suspension due to a shortage in memory capacity
12	An error detected in the XFR measurement
13	Suspension by the emergency stop contact
14	Suspension by the shutdown command
99	Stop due to a reason other than the above

Chapter 7   Excitation Data Response Commands

This chapter explains the information to be given in the <k2status> fields of response command to the GetInfo command.

7.1   Commands common to all applications (waiting for application startup)

IDLE
<k2status>   <status id="**0**" end_id="""">**IDLE**</status> </k2status>

タグ	意味
status	Same as GetStatus command

7.2   Commands common to all applications (waiting for hardware initialization)

STANDBY
<k2status>   <status id="**1**" end_id="""">**STANDBY**</status>   <test_path>**C:¥K2Data¥SINE¥Test01.swp2**</test_path> </k2status>

タグ	意味
status	Same as GetStatus command
test_path	Test definition file path name being executed

7.3 SINE SWEEP test

Sweep

```xml
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:¥K2Data¥SINE¥Test01.swp2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <frequency>100.0</frequency>
    <reference unit="m/s2">123.4</reference>
    <response unit="m/s2">123.5</response>
    <drive>890.0</drive>
    <elapsed_time>0:23:45</elapsed_time>
    <cycle>10000</cycle>
    <level>0.0</level>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <sweep>
        <direction>Forward</direction>
        <sweep_count>11</sweep_count>
        <test_time>100 doble-sweep</test_time>
        <pause_time>0:00:00</pause_time>
        <fixed_time>0:00:00</fixed_time>
    </sweep>
    <dwell>
        <status>Dwelling</status>
        <segment>1</segment>
        <phase>91.2</phase>
        <elapsed_time>0:23:45</elapsed_time>
        <test_time>1:23:45</test_time>
        <cycle>10000</cycle>
    </dwell>
    <input>
        <channel module="000" ch="Ch1" name="Acc1">
            <response unit="m/s2">123.5</response>
            <phase>1.2</phase>
            <distortion>1.5</distortion>
            <error>NoError</error>
            <abort>False</abort>
            <alarm>False</alarm>
```

```
              <limit>False</limit>
          </channel>
          <channel module="000" ch="Ch2" name="Acc2">
              <response unit="m/s2">124.8</response>
              <phase>1.0</phase>
              <distortion>1.1</distortion>
              <error>NoError</error>
          </channel>
          <channel module="000" ch="Ch4" name="Force">
              <response unit="N">56.7</response>
              <phase>2.1</phase>
              <distortion>2.1</distortion>
              <error>NoError</error>
          </channel>
      </input>
</k2status>
```

Tag		Meaning
status		Same as GetStatus command
test_path		Test definition file path name being executed
timestamp		Current date and time on the PC, on which the K2+ application is installed
		If the K2+ application was in the STOP state, the date and time of completing the excitation
frequency		The excitation frequency (in the unit of Hz)
reference		Target control level
Attribute	unit	The unit for the target control level
response		Response level
Attribute	unit	The unit for the response level
drive		Drive level (in the unit of mV)
elapsed_time		Elapsed time
cycle		Number of cycles (in the unit of cycles)
level		Excitation level (in the unit of dB)
abort		Abort check result
	True	Abort check error

	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit	Limit check result	
	True	Limit effective
	False	No limit

sweep		
Tag	**Meaning**	
direction	Sweep direction	
	Forward	Forward
	Backward	Reverse
	Pause	Paused for turning the sweep backward
	Fixed	Sweep being fixed
sweep_count	Number of sweeps	
test_time	Test time (followings are examples of the setting of test definition)	

Type	Display example
Infinite	Infinite
By single sweep counts	3 single-sweep
By double sweep counts	2 double-sweep
By time	12:34:56
By the vibration cycle	123 cycle
By the vibration kcycle	456 kcycle

pause_time	The duration of pause for turning the sweep backward
fixed_time	The time of fixed sweep at the maximum frequency

dwell *1		
Tag	**Meaning**	
status	Dwelling at the resonance point	
	OutOfSegment	Out of the segment
	Dwelling	Dwelling at the resonance point
	Searching	Searching for the resonance point
segment	Dwelling segment number	
phase	Phase difference (in the unit of degrees)	
elapsed_time	Elapsed time	
test_time	Defined dwell time	
cycle	Number of cycles (in the unit of cycles)	

input	
Tag	**Meaning**
channel	Input channel response
module	Module ID
ch	Channel number
name	Channel name

(Attribute applies to module, ch, name)

channel		
Tag	**Meaning**	
response	Input response level	
unit	The unit of input response level	
phase	Phase (in the unit of degrees)	
distortion	Distortion factor (in the unit of %)	
error	Type of error	
	NoError	Normal (no error)
	IniLoopOpen	An open loop detected in the initial measurement
	IniExceed	An excessive response detected in the initial measurement
	LoopOpen	An open loop detected
	RespExceed	An excessive response detected
	OverLoad	An overload detected
	AmbExceed	An excessive ambient noise detected
abort *2	Abort check result	
	True	Abort check error
	False	No error
alarm *2	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit *3	Limit check result	
	True	Limit effective
	False	No limit

(unit is an Attribute of response)

*1　Effective only if the dwelling at resonance point was defined.

*2　Effective only on the channel, for which the target relative tolerance or the monitoring profile is defined.

*3　Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.4 SINE SPOT test

Spot

```
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:¥K2Data¥SINE¥Test01.spt2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <frequency>100.0</frequency>
    <reference unit="m/s2">123.4</reference>
    <response unit="m/s2">123.5</response>
    <drive>890.0</drive>
    <elapsed_time>0:23:45</elapsed_time>
    <cycle>10000</cycle>
    <level>0.0</level>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <spot>
        <repeat_count>3</repeat_count>
        <test_repeat_count>5</test_repeat_count>
        <spot_number>1</spot_number>
        <test_spot_count>3</test_spot_count>
        <elapsed_time>0:23:45</elapsed_time>
        <test_time>1:23:45</test_time>
        <cycle>10000</cycle>
        <repeat_pause>False</repeat_pause>
        <pause_time>0:00:00</pause_time>
    </spot>
    <input>
        <channel module="000" ch="Ch1" name="Acc1">
            <response unit="m/s2">123.5</response>
            <phase>1.2</phase>
            <distortion>1.5</distortion>
            <error>NoError</error>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
        </channel>
        <channel module="000" ch="Ch2" name="Acc2">
```

```xml
                <response unit="m/s2">124.8</response>
                <phase>1.0</phase>
                <distortion>1.1</distortion>
                <error>NoError</error>
                <abort>False</abort>
                <alarm>False</alarm>
                <limit>False</limit>
            </channel>
            <channel module="000" ch="Ch4" name="Force">
                <response unit="N">56.7</response>
                <phase>2.1</phase>
                <distortion>2.1</distortion>
                <error>NoError</error>
                <abort>False</abort>
                <alarm>False</alarm>
                <limit>False</limit>
            </channel>
        </input>
</k2status>
```

Tag		Meaning
status		Same as GetStatus command
test_path		Test definition file path name being executed
timestamp		Current date and time on the PC, on which the K2+ application is installed. If the K2+ application was in the STOP state, the date and time of completing the excitation
frequency		The excitation frequency (in the unit of Hz)
reference		Target control level
Attribute	unit	The unit for the target control level
response		Response level
Attribute	unit	The unit for the response level
drive		Drive level (in the unit of mV)
elapsed_time		Elapsed time
cycle		Number of cycles (in the unit of cycles)
level		Excitation level (in the unit of dB)

abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit	Limit check result	
	True	Limit effective
	False	No limit

spot	
Tag	**Meaning**
repeat_count	Number of repetitions

test_repeat_count	Defined repeat times (followings are defined according to the type)	
	Type	**Display example**
	Once	1
	By repeat times	100
	Infinite	Infinite

Tag	Meaning
spot_number	Spot number
test_spot_count	Defined number of spots
elapsed_time	Elapsed time
test_time	Defined stay time
cycle	Number of cycles (in the unit of cycles)

repeat_pause	Paused for turning backward	
	True	Paused for turning backward
	False	Other than the above
pause_time	The duration of pause for turning backward	

input		
Tag	**Meaning**	
channel	Input channel response	
Attribute	module	Module ID
	ch	Channel number
	name	Channel name

channel		
Tag	**Meaning**	
response	Input response level	
Attribute	unit	The unit of input response level
phase		Phase (in the unit of degrees)

	distortion	Distortion factor (in the unit of %)	
	error	Type of error	
		NoError	Normal (no error)
		IniLoopOpen	An open loop detected in the initial measurement
		IniExceed	An excessive response detected in the initial measurement
		LoopOpen	An open loop detected
		RespExceed	An excessive response detected
		OverLoad	An overload detected
		AmbExceed	An excessive ambient noise detected
	abort *2	Abort check result	
		True	Abort check error
		False	No error
	alarm *2	Alarm check result	
		True	Alarm being issued
		False	No alarm
	limit *3	Limit check result	
		True	Limit effective
		False	No limit

*1   Effective only on the channel, for which the target relative tolerance or the monitoring profile is defined.

*2   Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.5 SINE MANUAL test

Manual

```
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:¥K2Data¥SINE¥Test01.mnl2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <frequency>100.0</frequency>
    <reference unit="m/s2">123.4</reference>
    <response unit="m/s2">123.5</response>
    <drive>890.0</drive>
    <elapsed_time>0:23:45</elapsed_time>
    <cycle>10000</cycle>
    <level>0.0</level>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <input>
        <channel module="000" ch="Ch1" name="Acc1">
            <response unit="m/s2">123.5</response>
            <phase>1.2</phase>
            <distortion>1.5</distortion>
            <error>NoError</error>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
        </channel>
        <channel module="000" ch="Ch2" name="Acc2">
            <response unit="m/s2">124.8</response>
            <phase>1.0</phase>
            <distortion>1.1</distortion>
            <error>NoError</error>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
        </channel>
        <channel module="000" ch="Ch4" name="Force">
            <response unit="N">56.7</response>
            <phase>2.1</phase>
            <distortion>2.1</distortion>
```

```
            <error>NoError</error>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
        </channel>
    </input>
</k2status>
```

Tag		Meaning
status		Same as GetStatus command
test_path		Test definition file path name being executed
timestamp		Current date and time on the PC, on which the K2+ application is installed If the K2+ application was in the STOP state, the date and time of completing the excitation
frequency		The excitation frequency (in the unit of Hz)
reference		Target control level
Attribute	unit	The unit for the target control level
response		Response level
Attribute	unit	The unit for the response level
drive		Drive level (in the unit of mV)
elapsed_time		Elapsed time
cycle		Number of cycles (in the unit of cycles)
level		Excitation level (in the unit of dB)
abort		Abort check result
	True	Abort check error
	False	No error
alarm		Alarm check result
	True	Alarm being issued
	False	No alarm
limit		Limit check result
	True	Limit effective
	False	No limit

input	
Tag	**Meaning**
channel	Input channel response

	Tag	Meaning
Attribute	module	Module ID
	ch	Channel number
	name	Channel name

channel		
Tag	**Meaning**	
response	Input response level	
Attribute — unit	The unit of input response level	
phase	Phase (in the unit of degrees)	
distortion	Distortion factor (in the unit of %)	
error	Type of error	
	NoError	Normal (no error)
	IniLoopOpen	An open loop detected in the initial measurement
	IniExceed	An excessive response detected in the initial measurement
	LoopOpen	An open loop detected
	RespExceed	An excessive response detected
	OverLoad	An overload detected
	AmbExceed	An excessive ambient noise detected
abort *2	Abort check result	
	True	Abort check error
	False	No error
alarm *2	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit *3	Limit check result	
	True	Limit effective
	False	No limit

*1   Effective only on the channel, for which the target relative tolerance or the monitoring profile is defined.

*2   Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.6 RADOM test

Random
<k2status>
<status id="**4**" end_id="">**RUN**</status>
<test_path>**C:¥K2Data¥RANDOM¥Test01.ran2**</test_path>
<timestamp>**2019/01/23 12:34:56**</timestamp>
<reference unit="**m/s2**">**123.4**</reference>
<response unit="**m/s2**">**123.5**</response>
<drive>**890.0**</drive>
<elapsed_time>**0:23:45**</elapsed_time>
<test_time>**1:23:45**</test_time>
<level>**0.0**</level>
<loop>**1000**</loop>
<crest_factor>**3.5**</crest_factor>
<over_clip>**False**</over_clip>
<abort>**False**</abort>
<alarm>**False**</alarm>
<limit>**False**</limit>
<tolerance>
<abort>**False**</abort>
<abort_band>**0.0**</abort_band>
<alarm>**True**</alarm>
<alarm_band>**5.0**</alarm_band>
<tolerance_ext number="**1**">
<abort>**False**</abort>
<abort_band>**0.0**</abort_band>
<alarm>**False**</alarm>
<alarm_band>**0.0**</alarm_band>
</tolerance_ext>
</tolerance>
<level_schedule>
<schedule>**3**</schedule>
<elapsed_time>**0:23:45**</elapsed_time>
</level_schedule>
<input>
<channel module="**000**" ch="**Ch1**" name="**Acc1**">
<response unit="**m/s2**">**123.5**</response>
<error>**NoError**</error>
<abort>**False**</abort>

```xml
            <alarm>False</alarm>
            <limit>False</limit>
            <tolerance>
                <abort>False</abort>
                <abort_band>0.0</abort_band>
                <alarm>True</alarm>
                <alarm_band>5.0</alarm_band>
                <tolerance_ext number="1">
                    <abort>False</abort>
                    <abort_band>0.0</abort_band>
                    <alarm>False</alarm>
                    <alarm_band>0.0</alarm_band>
                </tolerance_ext>
            </tolerance>
        </channel>
        <channel module="000" ch="Ch2" name="Acc2">
            <response unit="m/s2">124.8</response>
            <error>NoError</error>
            <tolerance>
                <abort>False</abort>
                <abort_band>0.0</abort_band>
                <alarm>False</alarm>
                <alarm_band>0.0</alarm_band>
            </tolerance>
        </channel>
        <channel module="000" ch="Ch4" name="Force">
            <response unit="N">56.7</response>
            <error>NoError</error>
        </channel>
    </input>
</k2status>
```

Tag	Meaning
status	Same as GetStatus command
test_path	Test definition file path name being executed
timestamp	Current date and time on the PC, on which the K2+ application is installed If the K2+ application was in the STOP state, the date and time of completing the excitation

reference	Target control level (rms)		
 Attribute unit	The unit for the target control level		
response	Response level (rms)		
 Attribute unit	The unit for the response level		
drive	Drive level (in the unit of mV rms)		
elapsed_time	Elapsed time		
test_time	Defined test time (followings are defined according to the type)		
	Type	**Display example**	
	Infinite	Infinite	
	By time	12:34:56	
level	Excitation level (in the unit of dB)		
loop	Loop count		
crest_factor	Crest factor		
over_clip	Excessive clipping		
	True	An excessive clipping detected	
	False	No error	
abort	Abort check result		
	True	Abort check error	
	False	No error	
alarm	Alarm check result		
	True	Alarm being issued	
	False	No alarm	
limit	Limit check result		
	True	Limit effective	
	False	No limit	

tolerance		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)	

tolerance_ext		Extended tolerance check		
Attribute	number	Extended tolerance number		

tolerance_ext *1		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

level_schedule *2	
Tag	**Meaning**
schedule	Level schedule number
elapsed_time	Elapsed time

input	
Tag	**Meaning**
channel	Input channel response

Attribute	module	Module ID
	ch	Channel number
	name	Channel name

channel		
Tag	**Meaning**	
response	Input response level (rms)	
Attribute	unit	The unit of input response level
error	Type of error	
	NoError	Normal (no error)
	LoopOpen	An open loop detected
	RespExceed	An excessive response detected
	OverLoad	An overload detected
	AmbExceed	An excessive ambient noise detected
abort *3	Abort check result	
	True	Abort check error
	False	No error

alarm *3	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit *4	Limit check result	
	True	Limit effective
	False	No limit

tolerance	
Tag	**Meaning**
abort	Abort check result
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)
alarm	Alarm check result
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)
tolerance_ext	Extended tolerance check
Attribute — number	Extended tolerance number

tolerance_ext *1	
Tag	**Meaning**
abort	Abort check result
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)
alarm	Alarm check result
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)

*1   Effective only if the extended tolerance is defined.

*2   Effective only if the level schedule is defined.

*3   Effective only on the channel, for which the monitoring profile is defined.

*4   Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.7 RANDOM SOR test (sweep)

Sine On Random(Sweep)

```
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:¥K2Data¥RANDOM¥Test01.sor2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <reference unit="m/s2">123.4</reference>
    <response unit="m/s2">123.5</response>
    <drive>890.0</drive>
    <elapsed_time>0:23:45</elapsed_time>
    <level>0.0</level>
    <loop>1000</loop>
    <crest_factor>3.5</crest_factor>
    <over_clip>False</over_clip>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <tolerance>
        <abort>False</abort>
        <abort_band>0.0</abort_band>
        <alarm>True</alarm>
        <alarm_band>5.0</alarm_band>
        <tolerance_ext number="1">
            <abort>False</abort>
            <abort_band>0.0</abort_band>
            <alarm>False</alarm>
            <alarm_band>0.0</alarm_band>
        </tolerance_ext>
    </tolerance>
    <sor_sweep>
        <active>True</active>
        <base_frequency>100.0</base_frequency>
        <direction>Forward</direction>
        <sweep_count>11</sweep_count>
        <test_time>100 doble-sweep</test_time>
        <abort>False</abort>
        <alarm>False</alarm>
        <pause_time>0:00:00</pause_time>
        <fixed_time>0:00:00</fixed_time>
```

```xml
        <sine number="1">
            <frequency>100.0</frequency>
            <reference unit="m/s2">123.4</reference>
            <response unit="m/s2">123.5</response>
            <drive>890.0</drive>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
        </sine>
        <sine number="2">
            <frequency>50.0</frequency>
            <reference unit="m/s2">246.8</reference>
            <response unit="m/s2">246.6</response>
            <drive>1620.0</drive>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
        </sine>
</sor_sweep>
<input>
    <channel module="000" ch="Ch1" name="Acc1">
        <response unit="m/s2">123.5</response>
        <error>NoError</error>
        <abort>False</abort>
        <alarm>False</alarm>
        <limit>False</limit>
        <tolerance>
            <abort>False</abort>
            <abort_band>0.0</abort_band>
            <alarm>True</alarm>
            <alarm_band>5.0</alarm_band>
            <tolerance_ext number="1">
                <abort>False</abort>
                <abort_band>0.0</abort_band>
                <alarm>False</alarm>
                <alarm_band>0.0</alarm_band>
            </tolerance_ext>
        </tolerance>
    </channel>
    <channel module="000" ch="Ch2" name="Acc2">
```

```xml
            <response unit="m/s2">124.8</response>
            <error>NoError</error>
            <tolerance>
                <abort>False</abort>
                <abort_band>0.0</abort_band>
                <alarm>False</alarm>
                <alarm_band>0.0</alarm_band>
            </tolerance>
        </channel>
        <channel module="000" ch="Ch4" name="Force">
            <response unit="N">56.7</response>
            <error>NoError</error>
        </channel>
    </input>
</k2status>
```

Tag	Meaning
status	Same as GetStatus command
test_path	Test definition file path name being executed
timestamp	Current date and time on the PC, on which the K2+ application is installed. If the K2+ application was in the STOP state, the date and time of completing the excitation
reference	Target control level (rms)
Attribute unit	The unit for the target control level
response	Response level (rms)
Attribute unit	The unit for the response level
drive	Drive level (in the unit of mV rms)
elapsed_time	Elapsed time
level	Excitation level (in the unit of dB)
loop	Loop count
crest_factor	Crest factor
over_clip	Excessive clipping
	True	An excessive clipping detected
	False	No error

abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit	Limit check result	
	True	Limit effective
	False	No limit

tolerance		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)	
tolerance_ext	Extended tolerance check	
Attribute / number	Extended tolerance number	

tolerance_ext *1		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

sor_sweep		
Tag	**Meaning**	
active	Sine wave control active	
	True	Active
	False	Disabled

base_frequency	Reference frequency (in the unit of Hz)		
direction	Sweep direction		
	Forward	Forward	
	Backward	Reverse	
	Pause	Paused for turning the sweep backward	
	Fixed	Sweep being fixed	
sweep_count	Number of sweeps (in the count of single sweeps)		
test_time	Defined test time (followings are defined according to the type)		
	Type		**Display example**
	Infinite		Infinite
	By single sweep counts		3 single-sweep
	By double sweep counts		2 double-sweep
	By time		12:34:56
	By the vibration cycle		123 cycle
	By the vibration kcycle		456 kcycle
abort	Abort check result		
	True	Abort check error	
	False	No error	
alarm	Alarm check result		
	True	Alarm being issued	
	False	No alarm	
pause_time	The duration of pause for turning the sweep backward		
fixed_time	Fixed sweep time		
sine	Harmonic frequency element		
Attribute	number	Harmonic frequency element number	

sine	
Tag	**Meaning**
frequency	The excitation frequency (in the unit of Hz)
reference	Target control level
Attribute — unit	The unit for the target control level
response	Response level
Attribute — unit	The unit for the response level
drive	Drive level (in the unit of mV)

	abort	Abort check result	
		True	Abort check error
		False	No error
	alarm	Alarm check result	
		True	Alarm being issued
		False	No alarm
	limit	Limit check result	
		True	Limit effective
		False	No limit

input		
Tag		**Meaning**
channel		Input channel response
	module	Module ID
Attribute	ch	Channel number
	name	Channel name

channel		
Tag		**Meaning**
response		Input response level (rms)
Attribute	unit	The unit of input response level
error		Type of error
	NoError	Normal (no error)
	LoopOpen	An open loop detected
	RespExceed	An excessive response detected
	OverLoad	An overload detected
	AmbExceed	An excessive ambient noise detected
abort *2		Abort check result
	True	Abort check error
	False	No error
alarm *2		Alarm check result
	True	Alarm being issued
	False	No alarm
limit *3		Limit check result
	True	Limit effective
	False	No limit

tolerance		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)	
tolerance_ext	Extended tolerance check	
Attribute: number	Extended tolerance number	

tolerance_ext *1		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

*1　Effective only if the extended tolerance is defined.

*2　Effective only on the channel, for which the monitoring profile is defined.

*3　Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.8 RANDOM SOR test (fixed frequency)

Sine On Random(Fixed Frequency)

```
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:\K2Data\RANDOM\Test01.sor2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <reference unit="m/s2">123.4</reference>
    <response unit="m/s2">123.5</response>
    <drive>890.0</drive>
    <elapsed_time>0:23:45</elapsed_time>
    <level>0.0</level>
    <loop>1000</loop>
    <crest_factor>3.5</crest_factor>
    <over_clip>False</over_clip>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <tolerance>
        <abort>False</abort>
        <abort_band>0.0</abort_band>
        <alarm>True</alarm>
        <alarm_band>5.0</alarm_band>
        <tolerance_ext number="1">
            <abort>False</abort>
            <abort_band>0.0</abort_band>
            <alarm>False</alarm>
            <alarm_band>0.0</alarm_band>
        </tolerance_ext>
    </tolerance>
    <sor_fixed>
        <active>True</active>
        <base_frequency>100.0</base_frequency>
        <test_time>1:23:45</test_time>
        <abort>False</abort>
        <alarm>False</alarm>
        <sine number="1">
            <frequency>100.0</frequency>
            <reference unit="m/s2">123.4</reference>
            <response unit="m/s2">123.5</response>
```

```
            <drive>890.0</drive>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
        </sine>
        <sine number="2">
            <frequency>50.0</frequency>
            <reference unit="m/s2">246.8</reference>
            <response unit="m/s2">246.6</response>
            <drive>1620.0</drive>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
        </sine>
    </sor_fixed>
    <input>
        <channel module="000" ch="Ch1" name="Acc1">
            <response unit="m/s2">123.5</response>
            <error>NoError</error>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
            <tolerance>
                <abort>False</abort>
                <abort_band>0.0</abort_band>
                <alarm>True</alarm>
                <alarm_band>5.0</alarm_band>
                <tolerance_ext number="1">
                    <abort>False</abort>
                    <abort_band>0.0</abort_band>
                    <alarm>False</alarm>
                    <alarm_band>0.0</alarm_band>
                </tolerance_ext>
            </tolerance>
        </channel>
        <channel module="000" ch="Ch2" name="Acc2">
            <response unit="m/s2">124.8</response>
            <error>NoError</error>
            <tolerance>
                <abort>False</abort>
```

```
            <abort_band>0.0</abort_band>
            <alarm>False</alarm>
            <alarm_band>0.0</alarm_band>
        </tolerance>
      </channel>
      <channel module="000" ch="Ch4" name="Force">
          <response unit="N">56.7</response>
          <error>NoError</error>
      </channel>
    </input>
</k2status>
```

Tag			Meaning	
status			Same as GetStatus command	
test_path			Test definition file path name being executed	
timestamp			Current date and time on the PC, on which the K2+ application is installed If the K2+ application was in the STOP state, the date and time of completing the excitation	
reference			Target control level (rms)	
Attribute	unit		The unit for the target control level	
response			Response level (rms)	
Attribute	unit		The unit for the response level	
drive			Drive level (in the unit of mV rms)	
elapsed_time			Elapsed time	
level			Excitation level (in the unit of dB)	
loop			Loop count	
crest_factor			Crest factor	
over_clip			Excessive clipping	
		True	An excessive clipping detected	
		False	No error	
abort			Abort check result	
		True	Abort check error	
		False	No error	
alarm			Alarm check result	
		True	Alarm being issued	
		False	No alarm	

limit	Limit check result	
	True	Limit effective
	False	No limit

tolerance		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)	
tolerance_ext	Extended tolerance check	
Attribute number	Extended tolerance number	

tolerance_ext *1		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

sor_fixed		
Tag	**Meaning**	
active	Sine wave control active	
	True	Active
	False	Disabled
base_frequency	Reference frequency (in the unit of Hz)	
test_time	Defined test time (followings are defined according to the type)	
	Type	**Display example**
	Infinite	Infinite
	By time	12:34:56

abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
sine	Harmonic frequency element	

	Attribute	number	Harmonic frequency element number

sine		
Tag	**Meaning**	
frequency	The excitation frequency (in the unit of Hz)	
reference	Target control level	
Attribute — unit	The unit for the target control level	
response	Response level	
Attribute — unit	The unit for the response level	
drive	Drive level (in the unit of mV)	
abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit	Limit check result	
	True	Limit effective
	False	No limit

input	
Tag	**Meaning**
channel	Input channel response

	Attribute	module	Module ID
		ch	Channel number
		name	Channel name

channel		
Tag	**Meaning**	
response	Input response level (rms)	
Attribute unit	The unit of input response level	
error	Type of error	
	NoError	Normal (no error)
	LoopOpen	An open loop detected
	RespExceed	An excessive response detected
	OverLoad	An overload detected
	AmbExceed	An excessive ambient noise detected
abort *2	Abort check result	
	True	Abort check error
	False	No error
alarm *2	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit *3	Limit check result	
	True	Limit effective
	False	No limit
tolerance		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)	
tolerance_ext	Extended tolerance check	
Attribute number	Extended tolerance number	

tolerance_ext *1		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

*1   Effective only if the extended tolerance is defined.

*2   Effective only on the channel, for which the monitoring profile is defined.

*3   Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.9   RANDOM ROR test

Random On Random

```
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:¥K2Data¥RANDOM¥Test01.ror2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <reference unit="m/s2">123.4</reference>
    <response unit="m/s2">123.5</response>
    <drive>890.0</drive>
    <elapsed_time>0:23:45</elapsed_time>
    <level>0.0</level>
    <loop>1000</loop>
    <crest_factor>3.5</crest_factor>
    <over_clip>False</over_clip>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <tolerance>
        <abort>False</abort>
        <abort_band>0.0</abort_band>
        <alarm>True</alarm>
        <alarm_band>5.0</alarm_band>
        <tolerance_ext number="1">
            <abort>False</abort>
            <abort_band>0.0</abort_band>
            <alarm>False</alarm>
            <alarm_band>0.0</alarm_band>
        </tolerance_ext>
    </tolerance>
    <ror>
        <active>True</active>
        <base_frequency>100.0</base_frequency>
        <direction>Forward</direction>
        <sweep_count>11</sweep_count>
        <test_time>100 doble-sweep</test_time>
        <abort>False</abort>
        <alarm>False</alarm>
        <pause_time>0:00:00</pause_time>
        <fixed_time>0:00:00</fixed_time>
```

```xml
<narrow_band number="1">
    <abort>False</abort>
    <abort_band>0.0</abort_band>
    <alarm>False</alarm>
    <alarm_band>0.0</alarm_band>
</narrow_band>
<narrow_band number="2">
    <abort>False</abort>
    <abort_band>0.0</abort_band>
    <alarm>False</alarm>
    <alarm_band>0.0</alarm_band>
</narrow_band>
</ror >
<input>
    <channel module="000" ch="Ch1" name="Acc1">
        <response unit="m/s2">123.5</response>
        <error>NoError</error>
        <abort>False</abort>
        <alarm>False</alarm>
        <limit>False</limit>
        <tolerance>
            <abort>False</abort>
            <abort_band>0.0</abort_band>
            <alarm>True</alarm>
            <alarm_band>5.0</alarm_band>
            <tolerance_ext number="1">
                <abort>False</abort>
                <abort_band>0.0</abort_band>
                <alarm>False</alarm>
                <alarm_band>0.0</alarm_band>
            </tolerance_ext>
        </tolerance>
    </channel>
    <channel module="000" ch="Ch2" name="Acc2">
        <response unit="m/s2">124.8</response>
        <error>NoError</error>
        <tolerance>
            <abort>False</abort>
            <abort_band>0.0</abort_band>
            <alarm>False</alarm>
```

```
                <alarm_band>0.0</alarm_band>
            </tolerance>
        </channel>
        <channel module="000" ch="Ch4" name="Force">
            <response unit="N">56.7</response>
            <error>NoError</error>
        </channel>
    </input>
</k2status>
```

Tag	Meaning	
status	Same as GetStatus command	
test_path	Test definition file path name being executed	
timestamp	Current date and time on the PC, on which the K2+ application is installed If the K2+ application was in the STOP state, the date and time of completing the excitation	
reference	Target control level (rms)	
Attribute unit	The unit for the target control level	
response	Response level (rms)	
Attribute unit	The unit for the response level	
drive	Drive level (in the unit of mV rms)	
elapsed_time	Elapsed time	
level	Excitation level (in the unit of dB)	
loop	Loop count	
crest_factor	Crest factor	
over_clip	Excessive clipping	
	True	An excessive clipping detected
	False	No error
abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm

limit	Limit check result	
	True	Limit effective
	False	No limit

tolerance		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)	
tolerance_ext	Extended tolerance check	
Attribute	number	Extended tolerance number

tolerance_ext *1		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

ror		
Tag	**Meaning**	
active	Narrow band control active	
	True	Active
	False	Disabled
base_frequency	Reference frequency (in the unit of Hz)	
direction	Sweep direction	
	Forward	Forward
	Backward	Reverse
	Pause	Paused for turning the sweep backward
	Fixed	Sweep being fixed

sweep_count	Number of sweeps (in the count of single sweeps)	
test_time	Defined test time (followings are defined according to the type)	

Type	Display example
Infinite	Infinite
By single sweep counts	3 single-sweep
By double sweep counts	2 double-sweep
By time	12:34:56

abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
pause_time	The duration of pause for turning the sweep backward	
fixed_time	Fixed sweep time	
narrow_band	Narrow band element	

Attribute	number	Narrow band element number

narrow_band	
Tag	**Meaning**
abort	Abort check result
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)
alarm	Alarm check result
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)

input	
Tag	**Meaning**
channel	Input channel response

Attribute	module	Module ID
	ch	Channel number
	name	Channel name

channel		
Tag	**Meaning**	
response	Input response level (rms)	
Attribute unit	The unit of input response level	
error	Type of error	
	NoError	Normal (no error)
	LoopOpen	An open loop detected
	RespExceed	An excessive response detected
	OverLoad	An overload detected
	AmbExceed	An excessive ambient noise detected
abort *2	Abort check result	
	True	Abort check error
	False	No error
alarm *2	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit *3	Limit check result	
	True	Limit effective
	False	No limit

tolerance		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)	
tolerance_ext	Extended tolerance check	
Attribute number	Extended tolerance number	

tolerance_ext *1		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

*1　Effective only if the extended tolerance is defined.

*2　Effective only on the channel, for which the monitoring profile is defined.

*3　Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.10 RANDOM ROR test (extended)

<div style="background-color:#f5a623; text-align:center; font-weight:bold;">Extended Random On Random</div>

```xml
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:¥K2Data¥RANDOM¥Test01.rorex2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <reference unit="m/s2">123.4</reference>
    <response unit="m/s2">123.5</response>
    <drive>890.0</drive>
    <elapsed_time>0:23:45</elapsed_time>
    <level>0.0</level>
    <loop>1000</loop>
    <crest_factor>3.5</crest_factor>
    <over_clip>False</over_clip>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <tolerance>
        <abort>False</abort>
        <abort_band>0.0</abort_band>
        <alarm>True</alarm>
        <alarm_band>5.0</alarm_band>
        <tolerance_ext number="1">
            <abort>False</abort>
            <abort_band>0.0</abort_band>
            <alarm>False</alarm>
            <alarm_band>0.0</alarm_band>
        </tolerance_ext>
    </tolerance>
    <extended_ror>
        <active>True</active>
        <abort>False</abort>
        <alarm>False</alarm>
        <fixed>False</fixed>
        <fixed_time>0:00:00</fixed_time>
        <narrow_band number="1">
            <active>True</active>
            <frequency>100.0</base_frequency>
            <response unit="m/s2">123.5</response>
```

```xml
            <elapsed_time>0:23:45</elapsed_time>
            <direction>Forward</direction>
            <sweep_count>11</sweep_count>
            <test_time>100 doble-sweep</test_time>
            <pause_time>0:00:00</pause_time>
            <abort>False</abort>
            <abort_band>0.0</abort_band>
            <alarm>False</alarm>
            <alarm_band>0.0</alarm_band>
        </narrow_band>
        <narrow_band number="2">
            <active>True</active>
            <frequency>100.0</base_frequency>
            <response unit="m/s2">123.5</response>
            <elapsed_time>0:23:45</elapsed_time>
            <test_time>1:23:45</test_time>
            <direction>Fixed</direction>
            <abort>False</abort>
            <abort_band>0.0</abort_band>
            <alarm>False</alarm>
            <alarm_band>0.0</alarm_band>
        </narrow_band>
    </extended_ror>
    <input>
        <channel module="000" ch="Ch1" name="Acc1">
            <response unit="m/s2">123.5</response>
            <error>NoError</error>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
            <tolerance>
                <abort>False</abort>
                <abort_band>0.0</abort_band>
                <alarm>True</alarm>
                <alarm_band>5.0</alarm_band>
                <tolerance_ext number="1">
                    <abort>False</abort>
                    <abort_band>0.0</abort_band>
                    <alarm>False</alarm>
                    <alarm_band>0.0</alarm_band>
```

```xml
                </tolerance_ext>
            </tolerance>
        </channel>
        <channel module="000" ch="Ch2" name="Acc2">
            <response unit="m/s2">124.8</response>
            <error>NoError</error>
            <tolerance>
                <abort>False</abort>
                <abort_band>0.0</abort_band>
                <alarm>False</alarm>
                <alarm_band>0.0</alarm_band>
            </tolerance>
        </channel>
        <channel module="000" ch="Ch4" name="Force">
            <response unit="N">56.7</response>
            <error>NoError</error>
        </channel>
    </input>
</k2status>
```

Tag		Meaning
status		Same as GetStatus command
test_path		Test definition file path name being executed
timestamp		Current date and time on the PC, on which the K2+ application is installed If the K2+ application was in the STOP state, the date and time of completing the excitation
reference		Target control level (rms)
Attribute	unit	The unit for the target control level
response		Response level (rms)
Attribute	unit	The unit for the response level
drive		Drive level (in the unit of mV rms)
elapsed_time		Elapsed time
level		Excitation level (in the unit of dB)
loop		Loop count
crest_factor		Crest factor

over_clip	Excessive clipping	
	True	An excessive clipping detected
	False	No error
abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit	Limit check result	
	True	Limit effective
	False	No limit

tolerance		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)	
tolerance_ext	Extended tolerance check	
Attribute number	Extended tolerance number	

tolerance_ext *1		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

extended_ror		
Tag	**Meaning**	
active	Narrow band control active	
	True	Active
	False	Disabled
abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
narrow_band	Narrow band element	
Attribute — number	Narrow band element number	

narrow_band		
Tag	**Meaning**	
active	Narrow band control active	
	True	Active
	False	Disabled
frequency	Reference frequency (in the unit of Hz)	
response	Response level (PSD)	
Attribute — unit	The unit for the response level	
drive	Drive level (in the unit of mV rms)	
elapsed_time	Elapsed time	
direction	Sweep direction	
	Forward	Forward
	Backward	Reverse
	Pause	Paused for turning the sweep backward
	Fixed	Fixed
	Finished	Test finished
sweep_count	Number of sweeps (in the count of single sweeps)	

	test_time	Defined test time (followings are defined according to the type)	
		Type	**Display example**
		Infinite	Infinite
		By single sweep counts	3 single-sweep
		By double sweep counts	2 double-sweep
		By time	12:34:56
	pause_time	The duration of pause for turning the sweep backward	
	abort	Abort check result	
		True	Abort check error
		False	No error
	abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)	
	alarm	Alarm check result	
		True	Alarm being issued
		False	No alarm
	alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

input		
Tag	**Meaning**	
channel	Input channel response	
Attribute	module	Module ID
	ch	Channel number
	name	Channel name

channel		
Tag	**Meaning**	
response	Input response level (rms)	
Attribute	unit	The unit of input response level
error	Type of error	
	NoError	Normal (no error)
	LoopOpen	An open loop detected
	RespExceed	An excessive response detected
	OverLoad	An overload detected
	AmbExceed	An excessive ambient noise detected
abort *2	Abort check result	
	True	Abort check error
	False	No error

alarm *2	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit *3	Limit check result	
	True	Limit effective
	False	No limit

tolerance		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)	
tolerance_ext	Extended tolerance check	
Attribute: number	Extended tolerance number	

tolerance_ext *1		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

*1   Effective only if the extended tolerance is defined.

*2   Effective only on the channel, for which the monitoring profile is defined.

*3   Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.11 SHOCK

7.11.1 Starting excitation

Shock(In Excitation)
<k2status>
<status id="4" end_id="">RUN</status>
<test_path>C:¥K2Data¥SHOCK¥Test01.sho2</test_path>
<timestamp>2019/01/23 12:34:56</timestamp>
<level>0.0</level>
<polarity>Positive</polarity>
<loop_update>5</loop_update>
<xfr_average>8</xfr_average>
<progress>60.0</progress>
<repeat>
<count>10</count>
<times>Infinite</times>
<interval>0.0</interval>
</repeat>
<level_schedule>
<schedule>3</schedule>
<status>Repeat</status>
<iteration_count>2</iteration_count>
<repeat_count>5</repeat_count>
</level_schedule>
</k2status>

Tag	Meaning	
status	Same as GetStatus command	
test_path	Test definition file path name being executed	
timestamp	Current date and time on the PC, on which the K2+ application is installed	
level	Excitation level (in the unit of %)	
polarity	Polarity	
	Positive	Positive
	Negative	Negative
loop_update	Number of loop updates	
xfr_average	Average number of XFR measurements	
progress	Progress (in the unit of %)	

repeat *1	
Tag	**Meaning**
count	Number of repeated excitations
times	Repeated excitation number setting
	Infinit	Infinite
interval	Repeat interval (in the unit of millisecond)

level_schedule *2		
Tag	**Meaning**	
schedule	Schedule number	
status	Condition	
	Idle	Not yet executed
	Iterration	Iteration in progress
	Excitation	Excitation in progress
	Pause	Excitation suspended
	Stop	Cancelled
	Complete	Completed
iteration_count	Number of iterations	
repeat_count	Number of schedule repetitions	

*1   Effective only if the repeated excitation is defined.

*2   Effective only if the level schedule is defined.

7.11.2　Test completion status (single axis)

Shock (Test Fibnished, Single Axis)

```xml
<k2status>
    <status id="5" end_id="0">END</status>
    <test_path>C:¥K2Data¥SHOCK¥Test01.sho2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <group number="1" name="">
        <reference unit="m/s2">
            <plus>100.0</plus>
            <plus_time>102.4</plus_time>
            <minus>-25.0</minus>
            <minus_time>204.8</minus_time>
        </reference>
        <response unit="m/s2">
            <plus>101.2</plus>
            <plus_time>102.4</plus_time>
            <minus>-24.8</minus>
            <minus_time>204.8</minus_time>
        </response>
        <control_error unit="m/s2">
            <plus>1.2</plus>
            <plus_time>204.8</plus_time>
            <plus_ratio>1.2</plus_ratio>
            <minus>-0.2</minus>
            <minus_time>409.6</minus_time>
            <minus_ratio>-0.8</minus_ratio>
        </control_error>
        <drive module="000" ch="Ch1" name="">
            <plus>987.6</plus>
            <plus_time>102.4</plus_time>
            <minus>-123.5</minus>
            <minus_time>204.8</minus_time>
        </drive>
        <error_ratio>0.56</error_ratio>
        <abort>False</abort>
        <tolerance>
            <error>True</error>
            <classical_shock>
                <front>False</front>
```

```xml
                <main>True</main>
                <rear>False</rear>
            </classical_shock>
        </tolerance>
    </group>
    <level>0.0</level>
    <polarity>Positive</polarity>
    <loop_update>5</loop_update>
    <xfr_average>8</xfr_average>
    <progress>100.0</progress>
    <repeat>
        <count>10</count>
        <times>10</times>
        <interval>0.0</interval>
    </repeat>
    <level_schedule>
        <schedule>3</schedule>
        <status>Complete</status>
        <iteration_count>2</iteration_count>
        <repeat_count>5</repeat_count>
    </level_schedule>
    <input>
        <channel module="000" ch="Ch1" name="Acc1">
            <response unit="m/s2">
                <plus>101.2</plus>
                <plus_time>102.4</plus_time>
                <minus>-24.8</minus>
                <minus_time>204.8</minus_time>
            </response>
            <abort>False</abort>
        </channel>
        <channel module="000" ch="Ch2" name="Acc2">
            <response unit="m/s2">
                <plus>56.7</plus>
                <plus_time>102.4</plus_time>
                <minus>-12.3</minus>
                <minus_time>204.8</minus_time>
            </response>
            <abort>False</abort>
        </channel>
```

```
    </input>
</k2status>
```

Tag	Meaning
status	Same as GetStatus command
test_path	Test definition file path name being executed
timestamp	Current date and time on the PC, on which the K2+ application is installed
	If the K2+ application was in the STOP state, the date and time of completing the excitation
group	Excitation group

Attribute		
	number	Excitation group number (Always one)
	name	Excitation group name (Always empty)

group		
Tag		**Meaning**
reference		Peak of control target

	Attribute		
		unit	The unit for the peak of control target

	reference		
		Tag	**Meaning**
		plus	Positive peak
		plus_time	The duration of positive peak (in the unit of millisecond)
		minus	Negative peak
		minus_time	The duration of negative peak (in the unit of millisecond)

response			
			Response peak

	Attribute		
		unit	The unit of response peak

	response		
		Tag	**Meaning**
		plus	Positive peak
		plus_time	The duration of positive peak (in the unit of millisecond)
		minus	Negative peak
		minus_time	The duration of negative peak (in the unit of millisecond)

control_error			
			Control error peak

	Attribute		
		unit	The unit of control error peak

control_error	
Tag	**Meaning**
plus	Positive peak
plus_time	The duration of positive peak (in the unit of millisecond)
plus_ratio	Positive peak (in the unit of %)
minus	Negative peak
minus_time	The duration of negative peak (in the unit of millisecond)
minus_ratio	Negative peak (in the unit of %)

drive		Drive output	
Attribute	module	Module ID	
	ch	Channel number	
	name	Channel name	

drive		
Tag	**Meaning**	
plus	Positive peak (in the unit of mV)	
plus_time	The duration of positive peak (in the unit of millisecond)	
minus	Negative peak (in the unit of mV)	
minus_time	The duration of negative peak (in the unit of millisecond)	

error_ratio	Error ratio (in the unit of %)	
abort	Abort check result	
	True	Abort check error
	False	No error

tolerance		
Tag	**Meaning**	
error	Tolerance check error	
	True	A tolerance error present
	False	No tolerance error
classical_shock	Tolerance check error in the classical shock test *3	

classical_shock		
Tag	**Meaning**	
front	Before the main pulse	
	True	A tolerance error present
	False	No tolerance error
main	Main pulse	
	True	A tolerance error present
	False	No tolerance error
rear	After the main pulse	
	True	A tolerance error present

Tag			Meaning	
		False	No tolerance error	
level		Excitation level (in the unit of %)		
polarity		Polarity		
		Positive	Positive	
		Negative	Negative	
loop_update		Number of loop updates		
xfr_average		Average number of XFR measurements		
progress		Progress (in the unit of %)		

repeat *1	
Tag	**Meaning**
count	Number of repeated excitations
times	Repeated excitation number setting

		Meaning	
times		Repeated excitation number setting	
	Infinit	Infinite	
interval	Repetition interval (in the unit of millisecond)		

level_schedule *2	
Tag	**Meaning**

Tag			Meaning	
schedule		Schedule number		
status		Condition		
		Idle	Not yet executed	
		Iterration	Iteration in progress	
		Excitation	Excitation in progress	
		Pause	Excitation suspended	
		Stop	Cancelled	
		Complete	Completed	
iteration_count		Number of iterations		
repeat_count		Number of schedule repetitions		

input	
Tag	**Meaning**

	Tag		Meaning
	channel		Input channel response
Attribute	module		Module ID
	ch		Channel number
	name		Channel name

	channel	
	Tag	**Meaning**
	response	Response peak
Attribute	unit	The unit of response peak

response	
Tag	**Meaning**
plus	Positive peak
plus_time	The duration of positive peak (in the unit of millisecond)
minus	Negative peak
minus_time	The duration of negative peak (in the unit of millisecond)
abort	Abort check result
True	Abort check error
False	No error

*1   Effective only if the repeated excitation is defined.

*2   Effective only if the level schedule is defined.

*3   Effective only if the target waveform is a classical shock.

7.11.3　Test completion status (multi-axis)

Shock (Test Fibnished, Multi Axis)

```
<k2status>
    <status id="5" end_id="0">END</status>
    <test_path>C:¥K2Data¥SHOCK¥Test01.sho2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <group number="1" name="Z-Axis">
        <reference unit="m/s2">
            <plus>100.0</plus>
            <plus_time>102.4</plus_time>
            <minus>-25.0</minus>
            <minus_time>204.8</minus_time>
        </reference>
        <response unit="m/s2">
            <plus>101.2</plus>
            <plus_time>102.4</plus_time>
            <minus>-24.8</minus>
            <minus_time>204.8</minus_time>
        </response>
        <control_error unit="m/s2">
            <plus>1.2</plus>
            <plus_time>204.8</plus_time>
            <plus_ratio>1.2</plus_ratio>
            <minus>-0.2</minus>
            <minus_time>409.6</minus_time>
            <minus_ratio>-0.8</minus_ratio>
        </control_error>
        <drive module="000" ch="Ch1" name="Out-Z">
            <plus>987.6</plus>
            <plus_time>102.4</plus_time>
            <minus>-123.5</minus>
            <minus_time>204.8</minus_time>
        </drive>
        <error_ratio>0.56</error_ratio>
        <abort>False</abort>
        <tolerance>
            <error>True</error>
            <classical_shock>
                <front>False</front>
```

```xml
            <main>True</main>
            <rear>False</rear>
        </classical_shock>
    </tolerance>
</group>
<group number="2" name="X-Axis">
    <reference unit="m/s2">
        <plus>50.0</plus>
        <plus_time>512.0</plus_time>
        <minus>-10.0</minus>
        <minus_time>204.8</minus_time>
    </reference>
    <response unit="m/s2">
        <plus>51.2</plus>
        <plus_time>512.0</plus_time>
        <minus>-11.8</minus>
        <minus_time>204.8</minus_time>
    </response>
    <control_error unit="m/s2">
        <plus>1.2</plus>
        <plus_time>204.8</plus_time>
        <plus_ratio>1.2</plus_ratio>
        <minus>-0.2</minus>
        <minus_time>409.6</minus_time>
        <minus_ratio>-0.8</minus_ratio>
    </control_error>
    < drive module="000" ch="Ch2" name="Out-X">
        <plus>497.6</plus>
        <plus_time>102.4</plus_time>
        <minus>-63.5</minus>
        <minus_time>204.8</minus_time>
    </drive>
    <error_ratio>0.56</error_ratio>
    <abort>False</abort>
    <tolerance>
        <error>True</error>
        <classical_shock>
            <front>False</front>
            <main>True</main>
            <rear>False</rear>
```

```xml
            </classical_shock>
        </tolerance>
    </group>
    <level>0.0</level>
    <polarity>Positive</polarity>
    <loop_update>5</loop_update>
    <xfr_average>8</xfr_average>
    <progress>100.0</progress>
    <repeat>
        <count>10</count>
        <times>10</times>
        <interval>0.0</interval>
    </repeat>
    <level_schedule>
        <schedule>3</schedule>
        <status>Complete</status>
        <iteration_count>2</iteration_count>
        <repeat_count>5</repeat_count>
    </level_schedule>
    <input>
        <channel module="000" ch="Ch1" name="Acc1">
            <response unit="m/s2">
                <plus>101.2</plus>
                <plus_time>102.4</plus_time>
                <minus>-24.8</minus>
                <minus_time>204.8</minus_time>
            </response>
            <abort>False</abort>
        </channel>
        <channel module="000" ch="Ch2" name="Acc2">
            <response unit="m/s2">
                <plus>56.7</plus>
                <plus_time>102.4</plus_time>
                <minus>-12.3</minus>
                <minus_time>204.8</minus_time>
            </response>
            <abort>False</abort>
        </channel>
    </input>
</k2status>
```

Tag	Meaning
status	Same as GetStatus command
test_path	Test definition file path name being executed
timestamp	Current date and time on the PC, on which the K2+ application is installed If the K2+ application was in the STOP state, the date and time of completing the excitation
group	Excitation group

	Tag	Meaning
Attribute	number	Excitation group number
	name	Excitation group name

group		
Tag		**Meaning**
reference		Peak of control target

	Attribute	unit	The unit for the peak of control target

reference		
Tag		**Meaning**
plus		Positive peak
plus_time		The duration of positive peak (in the unit of millisecond)
minus		Negative peak
minus_time		The duration of negative peak (in the unit of millisecond)

response		Response peak

	Attribute	unit	The unit of response peak

response		
Tag		**Meaning**
plus		Positive peak
plus_time		The duration of positive peak (in the unit of millisecond)
minus		Negative peak
minus_time		The duration of negative peak (in the unit of millisecond)

control_error		Control error peak

	Attribute	unit	The unit of control error peak

control_error		
Tag	**Meaning**	
plus	Positive peak	
plus_time	The duration of positive peak (in the unit of millisecond)	
plus_ratio	Positive peak (in the unit of %)	
minus	Negative peak	
minus_time	The duration of negative peak (in the unit of millisecond)	
minus_ratio	Negative peak (in the unit of %)	

drive	Drive output	
Attribute module	Module ID	
ch	Channel number	
name	Channel name	

drive		
Tag	**Meaning**	
plus	Positive peak (in the unit of mV)	
plus_time	The duration of positive peak (in the unit of millisecond)	
minus	Negative peak (in the unit of mV)	
minus_time	The duration of negative peak (in the unit of millisecond)	

error_ratio	Error ratio (in the unit of %)	
abort	Abort check result	
	True	Abort check error
	False	No error

tolerance		
Tag	**Meaning**	
error	Tolerance check error	
	True	A tolerance error present
	False	No tolerance error
classical_shock	Tolerance check error in the classical shock test *3	

classical_shock		
Tag	**Meaning**	
front	Before the main pulse	
	True	A tolerance error present
	False	No tolerance error
main	Main pulse	
	True	A tolerance error present
	False	No tolerance error
rear	After the main pulse	
	True	A tolerance error present
	False	No tolerance error

level	Excitation level (in the unit of %)	
polarity	Polarity	
	Positive	Positive
	Negative	Negative
loop_update	Number of loop updates	
xfr_average	Average number of XFR measurements	
progress	Progress (in the unit of %)	

repeat *1		
Tag	**Meaning**	
count	Number of repeated excitations	
times	Repeated excitation number setting	
	Infinit	Infinite
interval	Repetition interval (in the unit of millisecond)	

level_schedule *2		
Tag	**Meaning**	
schedule	Schedule number	
status	Condition	
	Idle	Not yet executed
	Iterration	Iteration in progress
	Excitation	Excitation in progress
	Pause	Excitation suspended
	Stop	Cancelled
	Complete	Completed
iteration_count	Number of iterations	
repeat_count	Number of schedule repetitions	

input		
Tag	**Meaning**	
channel	Input channel response	
Attribute — module	Module ID	
Attribute — ch	Channel number	
Attribute — name	Channel name	

channel		
Tag	**Meaning**	
response	Response peak	
Attribute — unit	The unit of response peak	

response	
Tag	**Meaning**
plus	Positive peak
plus_time	The duration of positive peak (in the unit of millisecond)
minus	Negative peak
minus_time	The duration of negative peak (in the unit of millisecond)
abort	Abort check result

abort	True	Abort check error
	False	No error

*1   Effective only if the repeated excitation is defined.

*2   Effective only if the level schedule is defined.

*3   Effective only if the target waveform is a classical shock.

7.12   Multi-SWEEP SINE multiple frequency sweep test

Multiple Frequency Sweep

```
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:¥K2Data¥MMS¥Test01.fds2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <elapsed_time>0:23:45</elapsed_time>
    <level>0.0</level>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <peak_drive>
        <plus>409.6</plus>
        <minus>-408.4</minus>
    </peak_drive>
    <error>NoError</error>
    <multiple_frequency>
        <direction>Forward</direction>
        <sweep_count>11</sweep_count>
        <test_time>100 double-sweep</test_time>
        <pause_time>0:00:00</pause_time>
        <fixed_time>0:00:00</fixed_time>
        <element number="1">
            <frequency>100.0</frequency>
            <reference unit="m/s2">123.4</reference>
            <response unit="m/s2">123.5</response>
            <drive>890.0</drive>
            <elapsed_time>0:23:45</elapsed_time>
            <cycle>10000</cycle>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
            <error>NoErrorr</error>
            <input>
                <channel module="000" ch="Ch1" name="Acc1">
                    <response unit="m/s2">123.5</response>
                    <phase>1.2</phase>
                    <error>NoError</error>
                    <abort>False</abort>
```

```xml
                    <alarm>False</alarm>
                    <limit>False</limit>
                </channel>
                <channel module="000" ch="Ch2" name="Acc2">
                    <response unit="m/s2">124.8</response>
                    <phase>1.0</phase>
                    <error>NoError</error>
                </channel>
                <channel module="000" ch="Ch4" name="Force">
                    <response unit="N">56.7</response>
                    <phase>2.1</phase>
                    <error>NoError</error>
                </channel>
            </input>
        </element>
        <element number="2">
            <frequency>200.0</frequency>
            <reference unit="m/s2">123.4</reference>
            <response unit="m/s2">123.5</response>
            <drive>890.0</drive>
            <elapsed_time>0:23:45</elapsed_time>
            <cycle>10000</cycle>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
            <error>NoError</error>
            <input>
                <channel module="000" ch="Ch1" name="Acc1">
                    <response unit="m/s2">123.5</response>
                    <phase>1.2</phase>
                    <error>NoError</error>
                    <abort>False</abort>
                    <alarm>False</alarm>
                    <limit>False</limit>
                </channel>
                <channel module="000" ch="Ch2" name="Acc2">
                    <response unit="m/s2">124.8</response>
                    <phase>1.0</phase>
                    <error>NoError</error>
                </channel>
```

```
                    <channel module="000" ch="Ch4" name="Force">
                        <response unit="N">56.7</response>
                        <phase>2.1</phase>
                        <error>NoError</error>
                    </channel>
                </input>
            </element>
        </multiple_frequency>
</k2status>
```

Tag	Meaning	
status	Same as GetStatus command	
test_path	Test definition file path name being executed	
timestamp	Current date and time on the PC, on which the K2+ application is installed If the K2+ application was in the STOP state, the date and time of completing the excitation	
elapsed_time	Elapsed time	
level	Excitation level (in the unit of dB)	
abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit	Limit check result	
	True	Limit effective
	False	No limit
peak_drive	Peak drive	

peak_drive		
Tag	Meaning	
plus	Positive peak (in the unit of mV)	
minus	Negative peak (in the unit of mV)	

error	Error status	
	NoError	No error
	OverClip	Excessive clipping error
	LoopOpen	Open loop error

multiple_frequency	
Tag	**Meaning**
direction	Sweep direction
	Forward — Forward
	Backward — Reverse
	Pause — Paused for turning the sweep backward
	Fixed — Sweep being fixed
	Finished — Sweeping finished
sweep_count	Number of sweeps (in the count of single sweeps)
test_time	Defined test time (followings are defined according to the type)

Type	Display example
Infinite	Infinite
By single sweep counts	3 single-sweep
By double sweep counts	2 double-sweep
By time	12:34:56

Tag	Meaning
pause_time	The duration of pause for turning the sweep backward
fixed_time	The time of fixed sweep at the maximum frequency
element	Sweep element
Attribute — number	Element number

element	
Tag	**Meaning**
frequency	The excitation frequency (in the unit of Hz)
reference	Target control level
Attribute — unit	The unit for the target control level
response	Response level
Attribute — unit	The unit for the response level
drive	Drive level (in the unit of mV)
elapsed_time	Elapsed time
cycle	Number of cycles (in the unit of cycles)
abort	Abort check result
	True — Abort check error
	False — No error

alarm		Alarm check result	
		True	Alarm being issued
		False	No alarm
limit		Limit check result	
		True	Limit effective
		False	No limit
error		Type of error	
		NoError	No error
		OverClip	Excessive clipping error
		LoopOpen	Open loop error
		LoopCheckError	Loop check error

input		
Tag		**Meaning**
channel		Input channel response
Attribute	module	Module ID
	ch	Channel number
	name	Channel name

channel			
Tag		**Meaning**	
response		Input response level	
Attribute	unit	The unit of input response level	
phase		Phase (in the unit of degrees)	
error		Type of error	
		NoError	Normal (no error)
		IniLoopOpen	An open loop detected in the initial measurement
		IniExceed	An excessive response detected in the initial measurement
		LoopOpen	An open loop detected
		RespExceed	An excessive response detected
		OverLoad	An overload detected
		AmbExceed	An excessive ambient noise detected
abort *1		Abort check result	
		True	Abort check error
		False	No error
alarm *1		Alarm check result	
		True	Alarm being issued
		False	No alarm

limit *2	Limit check result	
True	Limit effective	
False	No limit	

*1 Effective only on the channel, for which the target relative tolerance or the monitoring profile is defined.

*2 Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.13 Multi-SWEEP SINE delayed sweep test

Time Delayed Sweep

```
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:¥K2Data¥MMS¥Test01.tis2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <elapsed_time>0:23:45</elapsed_time>
    <level>0.0</level>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <peak_drive>
        <plus>409.6</plus>
        <minus>-408.4</minus>
    </peak_drive>
    <error>NoError</error>
    <time_delayed>
        <test_time>100 single-sweep</test_time>
        <element number="1">
            <frequency>100.0</frequency>
            <reference unit="m/s2">123.4</reference>
            <response unit="m/s2">123.5</response>
            <drive>890.0</drive>
            <elapsed_time>0:23:45</elapsed_time>
            <cycle>10000</cycle>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
            <error>NoError</error>
            <direction>Forward</direction>
            <sweep_count>11</sweep_count>
            <input>
                <channel module="000" ch="Ch1" name="Acc1">
                    <response unit="m/s2">123.5</response>
                    <phase>1.2</phase>
                    <error>NoError</error>
                    <abort>False</abort>
                    <alarm>False</alarm>
                    <limit>False</limit>
```

```xml
                </channel>
                <channel module="000" ch="Ch2" name="Acc2">
                    <response unit="m/s2">124.8</response>
                    <phase>1.0</phase>
                    <error>NoError</error>
                </channel>
                <channel module="000" ch="Ch4" name="Force">
                    <response unit="N">56.7</response>
                    <phase>2.1</phase>
                    <error>NoError</error>
                </channel>
            </input>
        </element>
        <element number="2">
            <frequency>200.0</frequency>
            <reference unit="m/s2">123.4</reference>
            <response unit="m/s2">123.5</response>
            <drive>890.0</drive>
            <elapsed_time>0:23:45</elapsed_time>
            <cycle>10000</cycle>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
            <error>NoErrorr</error>
            <direction>Forward</direction>
            <sweep_count>11</sweep_count>
            <input>
                <channel module="000" ch="Ch1" name="Acc1">
                    <response unit="m/s2">123.5</response>
                    <phase>1.2</phase>
                    <error>NoError</error>
                    <abort>False</abort>
                    <alarm>False</alarm>
                    <limit>False</limit>
                </channel>
                <channel module="000" ch="Ch2" name="Acc2">
                    <response unit="m/s2">124.8</response>
                    <phase>1.0</phase>
                    <error>NoError</error>
                </channel>
```

```
            <channel module="000" ch="Ch4" name="Force">
                <response unit="N">56.7</response>
                <phase>2.1</phase>
                <error>NoError</error>
            </channel>
        </input>
    </element>
</time_delayed>
</k2status>
```

Tag	Meaning		
status	Same as GetStatus command		
test_path	Test definition file path name being executed		
timestamp	Current date and time on the PC, on which the K2+ application is installed If the K2+ application was in the STOP state, the date and time of completing the excitation		
elapsed_time	Elapsed time		
level	Excitation level (in the unit of dB)		
abort	Abort check result		
	True	Abort check error	
	False	No error	
alarm	Alarm check result		
	True	Alarm being issued	
	False	No alarm	
limit	Limit check result		
	True	Limit effective	
	False	No limit	
peak_drive	Peak drive		

peak_drive		
Tag	Meaning	
plus	Positive peak (in the unit of mV)	
minus	Negative peak (in the unit of mV)	

error	Error status	
	NoError	No error
	OverClip	Excessive clipping error
	LoopOpen	Open loop error

time_delayed		
Tag	**Meaning**	
test_time	Defined test time (followings are defined according to the type)	

	Type	Display example
	Infinite	Infinite
	By single sweep counts	3 single-sweep
	By time	12:34:56

element	Spot element	
Attribute — number	Element number	

element		
Tag	**Meaning**	
frequency	The excitation frequency (in the unit of Hz)	
reference	Target control level	
Attribute — unit	The unit for the target control level	
response	Response level	
Attribute — unit	The unit for the response level	
drive	Drive level (in the unit of mV)	
elapsed_time	Elapsed time	
cycle	Number of cycles (in the unit of cycles)	
abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit	Limit check result	
	True	Limit effective
	False	No limit
direction	Sweep direction	
	Forward	Forward
	Fixed	Sweep being fixed
	Finished	Seeping finished

		sweep_count	Number of sweeps (in the count of single sweeps)	
		error	Type of error	
			NoError	Normal (no error)
			OverClip	Excessive clipping error
			LoopOpen	Open loop error
			LoopCheckError	Loop check error
		input		
		Tag	**Meaning**	
		channel	Input channel response	
	Attribute	module	Module ID	
		ch	Channel number	
		name	Channel name	
		channel		
		Tag	**Meaning**	
		response	Input response level	
	Attribute	unit	The unit of input response level	
		phase	Phase (in the unit of degrees)	
		error	Type of error	
			NoError	Normal (no error)
			IniLoopOpen	An open loop detected in the initial measurement
			IniExceed	An excessive response detected in the initial measurement
			LoopOpen	An open loop detected
			RespExceed	An excessive response detected
			OverLoad	An overload detected
			AmbExceed	An excessive ambient noise detected
		abort *1	Abort check result	
			True	Abort check error
			False	No error
		alarm *1	Alarm check result	
			True	Alarm being issued
			False	No alarm
		limit *2	Limit check result	
			True	Limit effective
			False	No limit

*1   Effective only on the channel, for which the target relative tolerance or the monitoring profile is defined.

*2   Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.14 Multi-SWEEP SINE multi-spot test

Multi Spot

```
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:¥K2Data¥MMS¥Test01.msp2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <elapsed_time>0:23:45</elapsed_time>
    <level>0.0</level>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <peak_drive>
        <plus>409.6</plus>
        <minus>-408.4</minus>
    </peak_drive>
    <error>NoError</error>
    <multi-spot>
        <test_time>1:23:45 </test_time>
        <element number="1">
            <frequency>100.0</frequency>
            <reference unit="m/s2">123.4</reference>
            <response unit="m/s2">123.5</response>
            <drive>890.0</drive>
            <elapsed_time>0:23:45</elapsed_time>
            <cycle>10000</cycle>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
            <error>NoError</error>
            <input>
                <channel module="000" ch="Ch1" name="Acc1">
                    <response unit="m/s2">123.5</response>
                    <phase>1.2</phase>
                    <error>NoError</error>
                    <abort>False</abort>
                    <alarm>False</alarm>
                    <limit>False</limit>
                </channel>
                <channel module="000" ch="Ch2" name="Acc2">
```

```xml
                    <response unit="m/s2">124.8</response>
                    <phase>1.0</phase>
                    <error>NoError</error>
                </channel>
                <channel module="000" ch="Ch4" name="Force">
                    <response unit="N">56.7</response>
                    <phase>2.1</phase>
                    <error>NoError</error>
                </channel>
            </input>
    </element>
    <element number="2">
        <frequency>200.0</frequency>
        <reference unit="m/s2">123.4</reference>
        <response unit="m/s2">123.5</response>
        <drive>890.0</drive>
        <elapsed_time>0:23:45</elapsed_time>
        <cycle>10000</cycle>
        <abort>False</abort>
        <alarm>False</alarm>
        <limit>False</limit>
        <error>NoErrorr</error>
        <input>
            <channel module="000" ch="Ch1" name="Acc1">
                    <response unit="m/s2">123.5</response>
                    <phase>1.2</phase>
                    <error>NoError</error>
                    <abort>False</abort>
                    <alarm>False</alarm>
                    <limit>False</limit>
            </channel>
            <channel module="000" ch="Ch2" name="Acc2">
                    <response unit="m/s2">124.8</response>
                    <phase>1.0</phase>
                    <error>NoError</error>
            </channel>
            <channel module="000" ch="Ch4" name="Force">
                    <response unit="N">56.7</response>
                    <phase>2.1</phase>
                    <error>NoError</error>
```

```
                </channel>
            </input>
        </element>
    </multi-spot>
</k2status>
```

Tag	Meaning		
status	Same as GetStatus command		
test_path	Test definition file path name being executed		
timestamp	Current date and time on the PC, on which the K2+ application is installed If the K2+ application was in the STOP state, the date and time of completing the excitation		
elapsed_time	Elapsed time		
level	Excitation level (in the unit of dB)		
abort	Abort check result		
	True	Abort check error	
	False	No error	
alarm	Alarm check result		
	True	Alarm being issued	
	False	No alarm	
limit	Limit check result		
	True	Limit effective	
	False	No limit	
peak_drive	Peak drive		

peak_drive		
Tag	**Meaning**	
plus	Positive peak (in the unit of mV)	
minus	Negative peak (in the unit of mV)	

error	Error status		
	NoError	No error	
	OverClip	Excessive clipping error	
	LoopOpen	Open loop error	

multi_spot		
Tag	**Meaning**	
test_time	Defined test time (followings are defined according to the type)	

	Type	Display example
	Infinite	Infinite
	By time	12:34:56

element			Spot element	
Attribute	number		Element number	

element			
Tag		**Meaning**	
frequency		The excitation frequency (in the unit of Hz)	
reference		Target control level	
	Attribute unit	The unit for the target control level	
response		Response level	
	Attribute unit	The unit for the response level	
drive		Drive level (in the unit of mV)	
elapsed_time		Elapsed time	
cycle		Number of cycles (in the unit of cycles)	
abort		Abort check result	
	True	Abort check error	
	False	No error	
alarm		Alarm check result	
	True	Alarm being issued	
	False	No alarm	
limit		Limit check result	
	True	Limit effective	
	False	No limit	
error		Type of error	
	NoError	Normal (no error)	
	OverClip	Excessive clipping error	
	LoopOpen	Open loop error	
	LoopCheckError	Loop check error	

input		
Tag		**Meaning**
channel		Input channel response
	Attribute module	Module ID
	ch	Channel number
	name	Channel name

channel		
Tag	**Meaning**	
response	Input response level	
Attribute unit	The unit of input response level	
phase	Phase (in the unit of degrees)	
error	Type of error	
	NoError	Normal (no error)
	IniLoopOpen	An open loop detected in the initial measurement
	IniExceed	An excessive response detected in the initial measurement
	LoopOpen	An open loop detected
	RespExceed	An excessive response detected
	OverLoad	An overload detected
	AmbExceed	An excessive ambient noise detected
abort *1	Abort check result	
	True	Abort check error
	False	No error
alarm *1	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit *2	Limit check result	
	True	Limit effective
	False	No limit

*1   Effective only on the channel, for which the target relative tolerance or the monitoring profile is defined.

*2   Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.15 Multi-SINE SWEEP test

<div style="background-color:#FFC000">**Sweep**</div>

```
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:¥K2Data¥M-SINE¥Test01.mswp2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <frequency>100.0</frequency>
    <elapsed_time>0:23:45</elapsed_time>
    <cycle>10000</cycle>
    <level>0.0</level>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <xfr_average>8</xfr_average>
    <sweep>
        <direction>Forward</direction>
        <sweep_count>11</sweep_count>
        <test_time>100 doble-sweep</test_time>
        <pause_time>0:00:00</pause_time>
        <fixed_time>0:00:00</fixed_time>
    </sweep>
    <group number="1" name="Z-Axis">
        <reference unit="m/s2">123.4</reference>
        <response unit="m/s2">123.5</response>
        <phase>1.2</phase>
        <abort>False</abort>
        <alarm>False</alarm>
        <drive module="000" ch="Ch1" name="Out-Z1">
            <level>890.0</level>
            <phase>1.2</phase>
        </drive>
        <drive module="000" ch="Ch2" name="Out-Z2">
            <level>889.7</level>
            <phase>1.3</phase>
        </drive>
        <input>
            <channel module="000" ch="Ch1" name="Acc1">
                <response unit="m/s2">123.5</response>
                <phase>1.2</phase>
```

```xml
                    <distortion>1.5</distortion>
                    <error>NoError</error>
                    <abort>False</abort>
                    <alarm>False</alarm>
                    <limit>False</limit>
                </channel>
                <channel module="000" ch="Ch4" name="Force">
                    <response unit="N">56.7</response>
                    <phase>2.1</phase>
                    <distortion>2.1</distortion>
                    <error>NoError</error>
                </channel>
            </input>
        </group>
        <group number="2" name="X-Axis">
            <reference unit="m/s2">56.7</reference>
            <response unit="m/s2">56.5</response>
            <phase>91.2</phase>
            <abort>False</abort>
            <alarm>False</alarm>
            <drive module="000" ch="Ch3" name="Out-X">
                <level>456.7</level>
                <phase>91.3</phase>
            </drive>
            <input>
                <channel module="000" ch="Ch2" name="Acc2">
                    <response unit="m/s2">56.5</response>
                    <phase>1.0</phase>
                    <distortion>1.1</distortion>
                    <error>NoError</error>
                </channel>
            </input>
        </group>
</k2status>
```

Tag	Meaning
status	Same as GetStatus command
test_path	Test definition file path name being executed

timestamp	Current date and time on the PC, on which the K2+ application is installed	
	If the K2+ application was in the STOP state, the date and time of completing the excitation	
frequency	The excitation frequency (in the unit of Hz)	
elapsed_time	Elapsed time	
cycle	Number of cycles (in the unit of cycles)	
level	Excitation level (in the unit of dB)	
abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit	Limit check result	
	True	Limit effective
	False	No limit
xfr_average	Average number of XFR measurements	

sweep		
Tag	**Meaning**	
direction	Sweep direction	
	Forward	Forward
	Backward	Reverse
	Pause	Paused for turning the sweep backward
	Fixed	Sweep being fixed
sweep_count	Number of sweeps (in the count of single sweeps)	
test_time	Defined test time (followings are defined according to the type)	
	Type	**Display example**
	Infinite	Infinite
	By single sweep counts	3 single-sweep
	By double sweep counts	2 double-sweep
	By time	12:34:56
	By the vibration cycle	123 cycle
	By the vibration kcycle	456 kcycle
pause_time	The duration of pause for turning the sweep backward	
fixed_time	The time of fixed sweep at the maximum frequency	
group	Excitation group	
Attri number	Excitation group number	

		name	Excitation group name
		group		
		Tag	**Meaning**	
		reference	Target control level	
	Attribute	unit	The unit for the target control level	
		response	Response level	
	Attribute	unit	The unit for the response level	
		phase	Phase (in the unit of degrees)	
		abort	Abort check result	
			True	Abort check error
			False	No error
		alarm	Alarm check result	
			True	Alarm being issued
			False	No alarm
		drive	Drive output	
	Attribute	module	Module ID	
	Attribute	ch	Channel number	
	Attribute	name	Channel name	
		drive		
		Tag	**Meaning**	
		level	Drive level (in the unit of mV)	
		phase	Phase (in the unit of degrees)	
		input		
		Tag	**Meaning**	
		channel	Input channel response	
	Attribute	module	Module ID	
	Attribute	ch	Channel number	
	Attribute	name	Channel name	
		channel		
		Tag	**Meaning**	
		response	Input response level	
	Attribute	unit	The unit of input response level	
		phase	Phase (in the unit of degrees)	
		distortion	Distortion factor (in the unit of %)	

		error	Type of error	
			NoError	Normal (no error)
			IniLoopOpen	An open loop detected in the initial measurement
			IniExceed	An excessive response detected in the initial measurement
			LoopOpen	An open loop detected
			RespExceed	An excessive response detected
			OverLoad	An overload detected
			AmbExceed	An excessive ambient noise detected
		abort *1	Abort check result	
			True	Abort check error
			False	No error
		alarm *1	Alarm check result	
			True	Alarm being issued
			False	No alarm
		limit *2	Limit check result	
			True	Limit effective
			False	No limit

*1 Effective only on the channel, for which the target relative tolerance or the monitoring profile is defined.

*2 Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.16   Multi-SINE SPOT test

Spot

```
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:¥K2Data¥M-SINE¥Test01.mspt2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <frequency>100.0</frequency>
    <elapsed_time>0:23:45</elapsed_time>
    <cycle>10000</cycle>
    <level>0.0</level>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <xfr_average>8</xfr_average>
    <spot>
        <repeat_count>3</repeat_count>
        <test_repeat_count>5</test_repeat_count>
        <spot_number>1</spot_number>
        <test_spot_count>3</test_spot_count>
        <elapsed_time>0:23:45</elapsed_time>
        <cycle>10000</cycle>
        <repeat_pause>False</repeat_pause>
        <pause_time>0:00:00</pause_time>
    </spot>
    <group number="1" name="Z-Axis">
        <reference unit="m/s2">123.4</reference>
        <response unit="m/s2">123.5</response>
        <phase>1.2</phase>
        <abort>False</abort>
        <alarm>False</alarm>
        <drive module="000" ch="Ch1" name="Out-Z1">
            <level>890.0</level>
            <phase>1.2</phase>
        </drive>
        <drive module="000" ch="Ch2" name="Out-Z2">
            <level>889.7</level>
            <phase>1.3</phase>
        </drive>
        <input>
```

```xml
        <channel module="000" ch="Ch1" name="Acc1">
            <response unit="m/s2">123.5</response>
            <phase>1.2</phase>
            <distortion>1.5</distortion>
            <error>NoError</error>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
        </channel>
        <channel module="000" ch="Ch4" name="Force">
            <response unit="N">56.7</response>
            <phase>2.1</phase>
            <distortion>2.1</distortion>
            <error>NoError</error>
        </channel>
    </input>
</group>
<group number="2" name="X-Axis">
    <reference unit="m/s2">56.7</reference>
    <response unit="m/s2">56.5</response>
    <phase>91.2</phase>
    <abort>False</abort>
    <alarm>False</alarm>
    <drive module="000" ch="Ch3" name="Out-X">
        <level>456.7</level>
        <phase>91.3</phase>
    </drive>
    <input>
        <channel module="000" ch="Ch2" name="Acc2">
            <response unit="m/s2">56.5</response>
            <phase>1.0</phase>
            <distortion>1.1</distortion>
            <error>NoError</error>
        </channel>
    </input>
</group>
</k2status>
```

Tag	Meaning
status	Same as GetStatus command

test_path	Test definition file path name being executed	
timestamp	Current date and time on the PC, on which the K2+ application is installed If the K2+ application was in the STOP state, the date and time of completing the excitation	
frequency	The excitation frequency (in the unit of Hz)	
elapsed_time	Elapsed time	
cycle	Number of cycles (in the unit of cycles)	
level	Excitation level (in the unit of dB)	
abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit	Limit check result	
	True	Limit effective
	False	No limit
xfr_average	Average number of XFR measurements	

spot		
Tag	**Meaning**	
repeat_count	Number of repetitions	
test_repeat_count	Defined repeat times (followings are defined according to the type)	
	Type	**Display example**
	Once	1
	By repeat times	100
	Infinite	Infinite
spot_number	Spot number	
test_spot_count	Defined number of spots	
elapsed_time	Elapsed time	
test_time	Defined stay time	
cycle	Number of cycles (in the unit of cycles)	
repeat_pause	Paused for turning backward	
	True	Paused for turning backward
	False	Other than the above
pause_time	The duration of pause for turning backward	
group	Excitation group	
Attrib number	Excitation group number	

	name	Excitation group name	
	group		
	Tag	**Meaning**	
	reference	Target control level	
Attribute	unit	The unit for the target control level	
	response	Response level	
Attribute	unit	The unit for the response level	
	phase	Phase (in the unit of degrees)	
	abort	Abort check result	
		True	Abort check error
		False	No error
	alarm	Alarm check result	
		True	Alarm being issued
		False	No alarm
	drive	Drive output	
Attribute	module	Module ID	
Attribute	ch	Channel number	
Attribute	name	Channel name	
	drive		
	Tag	**Meaning**	
	level	Drive level (in the unit of mV)	
	phase	Phase (in the unit of degrees)	
	input		
	Tag	**Meaning**	
	channel	Input channel response	
Attribute	module	Module ID	
Attribute	ch	Channel number	
Attribute	name	Channel name	
	channel		
	Tag	**Meaning**	
	response	Input response level	
Attribute	unit	The unit of input response level	
	phase	Phase (in the unit of degrees)	
	distortion	Distortion factor (in the unit of %)	

		error	Type of error	
			NoError	Normal (no error)
			IniLoopOpen	An open loop detected in the initial measurement
			IniExceed	An excessive response detected in the initial measurement
			LoopOpen	An open loop detected
			RespExceed	An excessive response detected
			OverLoad	An overload detected
			AmbExceed	An excessive ambient noise detected
		abort *1	Abort check result	
			True	Abort check error
			False	No error
		alarm *1	Alarm check result	
			True	Alarm being issued
			False	No alarm
		limit *2	Limit check result	
			True	Limit effective
			False	No limit

*1 Effective on the channel, for which the target relative tolerance or the monitoring profile is defined.

*2 Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.17　Multi-RANDOM test

Random

```
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:¥K2Data¥M-RANDOM¥Test01.mran2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <elapsed_time>0:23:45</elapsed_time>
    <test_time>1:23:45</test_time>
    <level>0.0</level>
    <loop>1000</loop>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <xfr_average>8</xfr_average>
    <level_schedule>
        <schedule>3</schedule>
        <elapsed_time>0:23:45</elapsed_time>
    </level_schedule>
    <group number="1" name="Z-Axis">
        <reference unit="m/s2">123.4</reference>
        <response unit="m/s2">123.5</response>
        <abort>False</abort>
        <alarm>False</alarm>
        <tolerance>
            <abort>False</abort>
            <abort_band>0.0</abort_band>
            <alarm>True</alarm>
            <alarm_band>5.0</alarm_band>
            <tolerance_ext number="1">
                <abort>False</abort>
                <abort_band>0.0</abort_band>
                <alarm>False</alarm>
                <alarm_band>0.0</alarm_band>
            </tolerance_ext>
        </tolerance>
        <drive module="000" ch="Ch1" name="Out-Z1">
            <level>890.0</level>
            <crest_factor>3.52</crest_factor>
            <over_clip>False</over_clip>
```

```xml
        </drive>
        <drive module="000" ch="Ch2" name="Out-Z2">
            <level>889.7</level>
            <crest_factor>3.51</crest_factor>
            <over_clip>False</over_clip>
        </drive>
        <input>
            <channel module="000" ch="Ch1" name="Acc1">
                <response unit="m/s2">123.5</response>
                <error>NoError</error>
                <abort>False</abort>
                <alarm>False</alarm>
                <limit>False</limit>
                <tolerance>
                    <abort>False</abort>
                    <abort_band>0.0</abort_band>
                    <alarm>True</alarm>
                    <alarm_band>5.0</alarm_band>
                    <tolerance_ext number="1">
                        <abort>False</abort>
                        <abort_band>0.0</abort_band>
                        <alarm>False</alarm>
                        <alarm_band>0.0</alarm_band>
                    </tolerance_ext>
                </tolerance>
            </channel>
            <channel module="000" ch="Ch4" name="Force">
                <response unit="N">56.7</response>
                <error>NoError</error>
            </channel>
        </input>
    </group>
    <group number="2" name="X-Axis">
        <reference unit="m/s2">56.7</reference>
        <response unit="m/s2">56.5</response>
        <abort>False</abort>
        <alarm>False</alarm>
        <tolerance>
            <abort>False</abort>
            <abort_band>0.0</abort_band>
```

```
                <alarm>True</alarm>
                <alarm_band>10.0</alarm_band>
                <tolerance_ext number="1">
                    <abort>False</abort>
                    <abort_band>0.0</abort_band>
                    <alarm>False</alarm>
                    <alarm_band>0.0</alarm_band>
                </tolerance_ext>
            </tolerance>
            <drive module="000" ch="Ch3" name="Out-X">
                <level>456.7.0</level>
                <crest_factor>3.71</crest_factor>
                <over_clip>False</over_clip>
            </drive>
            <input>
                <channel module="000" ch="Ch2" name="Acc2">
                    <response unit="m/s2">124.8</response>
                    <error>NoError</error>
                    <tolerance>
                        <abort>False</abort>
                        <abort_band>0.0</abort_band>
                        <alarm>False</alarm>
                        <alarm_band>0.0</alarm_band>
                    </tolerance>
                </channel>
            </input>
        </group>
</k2status>
```

Tag	Meaning
status	Same as GetStatus command
test_path	Test definition file path name being executed
timestamp	Current date and time on the PC, on which the K2+ application is installed. If the K2+ application was in the STOP state, the date and time of completing the excitation
elapsed_time	Elapsed time
test_time	Defined test time (followings are defined according to the type)

Type	Display example
Infinite	Infinite
By time	12:34:56

level	Excitation level (in the unit of dB)	
loop	Loop count	
abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit	Limit check result	
	True	Limit effective
	False	No limit
xfr_average	Average number of XFR measurements	

level_schedule *1	
Tag	Meaning
schedule	Level schedule number
elapsed_time	Elapsed time
group	Excitation group

Attribute	number	Excitation group number
	name	Excitation group name

group		
Tag		Meaning
reference		Target control level (rms)
Attribute	unit	The unit for the target control level
response		Response level (rms)
Attribute	unit	The unit for the response level
abort		Abort check result
	True	Abort check error
	False	No error
alarm		Alarm check result
	True	Alarm being issued
	False	No alarm

tolerance		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)	
tolerance_ext	Extended tolerance check	
Attribute number	Extended tolerance number	

tolerance_ext *2		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

drive		Drive output
Attribute	module	Module ID
	ch	Channel number
	name	Channel name

drive		
Tag	**Meaning**	
level	Drive level (in the unit of mV rms)	
crest_factor	Crest factor	
over_clip	Excessive clipping	
	True	An excessive clipping detected
	False	No error

input	
Tag	**Meaning**
channel	Input channel response

Attribute		
	module	Module ID
	ch	Channel number
	name	Channel name

channel		
Tag	**Meaning**	
response	Input response level (rms)	

Attribute		
	unit	The unit of input response level

error	Type of error	
	NoError	Normal (no error)
	LoopOpen	An open loop detected
	RespExceed	An excessive response detected
	OverLoad	An overload detected
	AmbExceed	An excessive ambient noise detected

abort *3	Abort check result	
	True	Abort check error
	False	No error

alarm *3	Alarm check result	
	True	Alarm being issued
	False	No alarm

limit *4	Limit check result	
	True	Limit effective
	False	No limit

tolerance		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)	

		tolerance_ext	Extended tolerance check		
	Attribute	number	Extended tolerance number		
			tolerance_ext *1		
		Tag	**Meaning**		
		abort	Abort check result		
			True	Abort check error	
			False	No error	
		abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)		
		alarm	Alarm check result		
			True	Alarm being issued	
			False	No alarm	
		alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)		

*1   Effective only if the level schedule is defined.

*2   Effective only if the extended tolerance is defined.

*3   Effective only on the channel, for which the monitoring profile is defined.

*4   Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.18 NON GAUSSIAN test (single axis)

Non Gaussian(Single Axis)

```
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:¥K2Data¥N-GAUSS ¥Test01.ngaus2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <elapsed_time>0:23:45</elapsed_time>
    <test_time>1:23:45</test_time>
    <level>0.0</level>
    <loop>1000</loop>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <xfr_average>8</xfr_average>
    <level_schedule>
        <schedule>3</schedule>
        <elapsed_time>0:23:45</elapsed_time>
    </level_schedule>
    <group number="1" name="">
        <reference unit="m/s2">123.4</reference>
        <response unit="m/s2">123.5</response>
        <kurtosis>5.5</kurtosis>
        <skewness>0.12</skewness>
        <response_clip>False</response_clip>
        <abort>False</abort>
        <alarm>False</alarm>
        <abort_kurtosis>False</abort_kurtosis>
        <alarm_kurtosis>False</alarm_kurtosis>
        <abort_skewness>False</abort_skewness>
        <alarm_skewness>False</alarm_skewness>
        <tolerance>
            <abort>False</abort>
            <abort_band>0.0</abort_band>
            <alarm>True</alarm>
            <alarm_band>5.0</alarm_band>
            <tolerance_ext number="1">
                <abort>False</abort>
                <abort_band>0.0</abort_band>
                <alarm>False</alarm>
```

```xml
                    <alarm_band>0.0</alarm_band>
                </tolerance_ext>
            </tolerance>
            <drive module="000" ch="Ch1" name="">
                <level>890.0</level>
                <crest_factor>3.52</crest_factor>
                <over_clip>False</over_clip>
            </drive>
            <input>
                <channel module="000" ch="Ch1" name="Acc1">
                    <response unit="m/s2">123.5</response>
                    <kurtosis>5.5</kurtosis>
                    <skewness>0.12</skewness>
                    <error>NoError</error>
                    <abort>False</abort>
                    <alarm>False</alarm>
                    <limit>False</limit>
                    <tolerance>
                        <abort>False</abort>
                        <abort_band>0.0</abort_band>
                        <alarm>True</alarm>
                        <alarm_band>5.0</alarm_band>
                        <tolerance_ext number="1">
                            <abort>False</abort>
                            <abort_band>0.0</abort_band>
                            <alarm>False</alarm>
                            <alarm_band>0.0</alarm_band>
                        </tolerance_ext>
                    </tolerance>
                </channel>
                <channel module="000" ch="Ch2 name="Acc2">
                    <response unit=" m/s2">56.7</response>
                    <error>NoError</error>
                    <kurtosis>5.5</kurtosis>
                    <skewness>0.12</skewness>
                </channel>
            </input>
        </group>
</k2status>
```

Tag	Meaning
status	Same as GetStatus command
test_path	Test definition file path name being executed
timestamp	Current date and time on the PC, on which the K2+ application is installed If the K2+ application was in the STOP state, the date and time of completing the excitation
elapsed_time	Elapsed time
test_time	Defined test time (followings are defined according to the type)

	Type	Display example
	Infinite	Infinite
	By time	12:34:56

Tag	Meaning	
level	Excitation level (in the unit of dB)	
loop	Loop count	
abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit	Limit check result	
	True	Limit effective
	False	No limit
xfr_average	Average number of XFR measurements	

level_schedule *1	
Tag	**Meaning**
schedule	Level schedule number
elapsed_time	Elapsed time
group	Excitation group

Attribute	Tag	Meaning
Attribute	number	Excitation group number (Always one)
	name	Excitation group name (Always empty)

group		
Tag		**Meaning**
reference		Target control level (rms)
Attribute	unit	The unit for the target control level

response	Response level (rms)		
Attribute	unit	The unit for the response level	
kurtosis	Kurtosis		
skewness *2	Skewness		
abort	Abort check result		
		True	Abort check error
		False	No error
alarm	Alarm check result		
		True	Alarm being issued
		False	No alarm
abort_kurtosis	Kurtosis abort check result		
		True	Abort check error
		False	No error
alarm_kurtosis	Kurtosis alarm check result		
		True	Alarm being issued
		False	No alarm
abort_skewness *2	Skewness Abort check result		
		True	Abort check error
		False	No error
alarm_skewness *2	Skewness Alarm check result		
		True	Alarm being issued
		False	No alarm

tolerance		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)	
tolerance_ext	Extended tolerance check	
Attribute number	Extended tolerance number	

tolerance_ext *3		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

drive	Drive output	
Attribute	module	Module ID
	ch	Channel number
	name	Channel name

drive		
Tag	**Meaning**	
level	Drive level (in the unit of mV rms)	
crest_factor	Crest factor	
over_clip	Excessive clipping	
	True	An excessive clipping detected
	False	No error

input		
Tag	**Meaning**	
channel	Input channel response	
Attribute	module	Module ID
	ch	Channel number
	name	Channel name

channel		
Tag	**Meaning**	
response	Input response level (rms)	
Attribute	unit	The unit of input response level
kurtosis	Kurtosis	
skewness *2	Skewness	

error	Type of error	
	NoError	Normal (no error)
	LoopOpen	An open loop detected
	RespExceed	An excessive response detected
	OverLoad	An overload detected
	AmbExceed	An excessive ambient noise detected
abort *4	Abort check result	
	True	Abort check error
	False	No error
alarm *4	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit *5	Limit check result	
	True	Limit effective
	False	No limit

tolerance	
Tag	**Meaning**
abort	Abort check result
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)
alarm	Alarm check result
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)
tolerance_ext	Extended tolerance check
Attribute number	Extended tolerance number

tolerance_ext *3		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

*1   Effective only if the skewness control is defined.

*2   Effective only if the level schedule is defined.

*3   Effective only if the extended tolerance is defined.

*4   Effective only on the channel, for which the monitoring profile is defined.

*5   Effective only on the channel, for which the limit control is defined in the monitoring profile.

7.19   NON GAUSSIAN test (multi-axis)

Non Gaussian(Multi Axis)

```
<k2status>
    <status id="4" end_id="">RUN</status>
    <test_path>C:¥K2Data¥N-GAUSS ¥Test01.ngaus2</test_path>
    <timestamp>2019/01/23 12:34:56</timestamp>
    <elapsed_time>0:23:45</elapsed_time>
    <test_time>1:23:45</test_time>
    <level>0.0</level>
    <loop>1000</loop>
    <abort>False</abort>
    <alarm>False</alarm>
    <limit>False</limit>
    <xfr_average>8</xfr_average>
    <level_schedule>
        <schedule>3</schedule>
        <elapsed_time>0:23:45</elapsed_time>
    </level_schedule>
    <group number="1" name="Z-Axis">
        <reference unit="m/s2">123.4</reference>
        <response unit="m/s2">123.5</response>
        <kurtosis>5.5</kurtosis>
        <skewness>0.12</skewness>
        <response_clip>False</response_clip>
        <abort>False</abort>
        <alarm>False</alarm>
        <abort_kurtosis>False</abort_kurtosis>
        <alarm_kurtosis>False</alarm_kurtosis>
        <abort_skewness>False</abort_skewness>
        <alarm_skewness>False</alarm_skewness>
        <tolerance>
            <abort>False</abort>
            <abort_band>0.0</abort_band>
            <alarm>True</alarm>
            <alarm_band>5.0</alarm_band>
            <tolerance_ext number="1">
                <abort>False</abort>
                <abort_band>0.0</abort_band>
                <alarm>False</alarm>
```

```xml
            <alarm_band>0.0</alarm_band>
        </tolerance_ext>
    </tolerance>
    <drive module="000" ch="Ch1" name="Out-Z1">
        <level>890.0</level>
        <crest_factor>3.52</crest_factor>
        <over_clip>False</over_clip>
    </drive>
    <drive module="000" ch="Ch2" name="Out-Z2">
        <level>889.7</level>
        <crest_factor>3.51</crest_factor>
        <over_clip>False</over_clip>
    </drive>
    <input>
        <channel module="000" ch="Ch1" name="Acc1">
            <response unit="m/s2">123.5</response>
            <kurtosis>5.5</kurtosis>
            <skewness>0.12</skewness>
            <error>NoError</error>
            <abort>False</abort>
            <alarm>False</alarm>
            <limit>False</limit>
            <tolerance>
                <abort>False</abort>
                <abort_band>0.0</abort_band>
                <alarm>True</alarm>
                <alarm_band>5.0</alarm_band>
                <tolerance_ext number="1">
                    <abort>False</abort>
                    <abort_band>0.0</abort_band>
                    <alarm>False</alarm>
                    <alarm_band>0.0</alarm_band>
                </tolerance_ext>
            </tolerance>
        </channel>
        <channel module="000" ch="Ch4" name="Force">
            <response unit="N">56.7</response>
            <error>NoError</error>
            <kurtosis>5.5</kurtosis>
            <skewness>0.12</skewness>
```

```xml
            </channel>
        </input>
    </group>
    <group number="2" name="X-Axis">
        <reference unit="m/s2">56.7</reference>
        <response unit="m/s2">56.5</response>
        <kurtosis>5.5</kurtosis>
        <skewness>0.12</skewness>
        <response_clip>False</response_clip>
        <abort>False</abort>
        <alarm>False</alarm>
        <abort_kurtosis>False</abort_kurtosis>
        <alarm_kurtosis>False</alarm_kurtosis>
        <abort_skewness>False</abort_skewness>
        <alarm_skewness>False</alarm_skewness>
        <tolerance>
            <abort>False</abort>
            <abort_band>0.0</abort_band>
            <alarm>True</alarm>
            <alarm_band>10.0</alarm_band>
            <tolerance_ext number="1">
                <abort>False</abort>
                <abort_band>0.0</abort_band>
                <alarm>False</alarm>
                <alarm_band>0.0</alarm_band>
            </tolerance_ext>
        </tolerance>
        <drive module="000" ch="Ch3" name="Out-X">
            <level>456.7.0</level>
            <crest_factor>3.71</crest_factor>
            <over_clip>False</over_clip>
        </drive>
        <input>
            <channel module="000" ch="Ch2" name="Acc2">
                <response unit="m/s2">124.8</response>
                <error>NoError</error>
                <tolerance>
                    <abort>False</abort>
                    <abort_band>0.0</abort_band>
                    <alarm>False</alarm>
```

Tag	Meaning
status	Same as GetStatus command
test_path	Test definition file path name being executed
timestamp	Current date and time on the PC, on which the K2+ application is installed If the K2+ application was in the STOP state, the date and time of completing the excitation
elapsed_time	Elapsed time
test_time	Defined test time (followings are defined according to the type)

		Type	Display example
test_time		Infinite	Infinite
		By time	12:34:56

Tag	Meaning	
level	Excitation level (in the unit of dB)	
loop	Loop count	
abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
limit	Limit check result	
	True	Limit effective
	False	No limit
xfr_average	Average number of XFR measurements	

level_schedule *1	
Tag	Meaning
schedule	Level schedule number
elapsed_time	Elapsed time
group	Excitation group

Attribute	number	Excitation group number
	name	Excitation group name

group		
Tag	**Meaning**	
reference	Target control level (rms)	
Attribute unit	The unit for the target control level	
response	Response level (rms)	
Attribute unit	The unit for the response level	
kurtosis	Kurtosis	
skewness *2	Skewness	
abort	Abort check result	
	True	Abort check error
	False	No error
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
abort_kurtosis	Kurtosis abort check result	
	True	Abort check error
	False	No error
alarm_kurtosis	Kurtosis alarm check result	
	True	Alarm being issued
	False	No alarm
abort_skewness *2	Skewness Abort check result	
	True	Abort check error
	False	No error
alarm_skewness *2	Skewness Alarm check result	
	True	Alarm being issued
	False	No alarm

tolerance		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm

	alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)	
	tolerance_ext	Extended tolerance check	
Attribute	number	Extended tolerance number	

tolerance_ext *3		
Tag	**Meaning**	
abort	Abort check result	
	True	Abort check error
	False	No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)	
alarm	Alarm check result	
	True	Alarm being issued
	False	No alarm
alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

drive	Drive output	
Attribute	module	Module ID
	ch	Channel number
	name	Channel name

drive	
Tag	**Meaning**
level	Drive level (in the unit of mV rms)
crest_factor	Crest factor
over_clip	Excessive clipping

over_clip	True	An excessive clipping detected
	False	No error

input	
Tag	**Meaning**
channel	Input channel response

Attribute	module	Module ID
	ch	Channel number
	name	Channel name

channel	
Tag	**Meaning**
response	Input response level (rms)

Attribute	unit	The unit of input response level

kurtosis	Kurtosis			
skewness *2	Skewness			
error	Type of error			
	NoError	Normal (no error)		
	LoopOpen	An open loop detected		
	RespExceed	An excessive response detected		
	OverLoad	An overload detected		
	AmbExceed	An excessive ambient noise detected		
abort *4	Abort check result			
	True	Abort check error		
	False	No error		
alarm *4	Alarm check result			
	True	Alarm being issued		
	False	No alarm		
limit *5	Limit check result			
	True	Limit effective		
	False	No limit		

tolerance	
Tag	**Meaning**
abort	Abort check result
	True — Abort check error
	False — No error
abort_band	Bandwidth above the tolerance check abort line (in the unit of Hz)
alarm	Alarm check result
	True — Alarm being issued
	False — No alarm
alarm_band	Bandwidth above the tolerance check alarm line (in the unit of Hz)
tolerance_ext	Extended tolerance check
Attribute: number	Extended tolerance number

tolerance_ext *3	
Tag	**Meaning**
abort	Abort check result
	True — Abort check error
	False — No error
abort_band	Bandwidth above the extended tolerance check abort line (in the unit of Hz)

			alarm	Alarm check result	
				True	Alarm being issued
				False	No alarm
			alarm_band	Bandwidth above the extended tolerance check alarm line (in the unit of Hz)	

*1　Effective only if the level schedule is defined.

*2　Effective only if the skewness control is defined.

*3　Effective only if the extended tolerance is defined.

*4　Effective only on the channel, for which the monitoring profile is defined.

*5　Effective only on the channel, for which the limit control is defined in the monitoring profile.

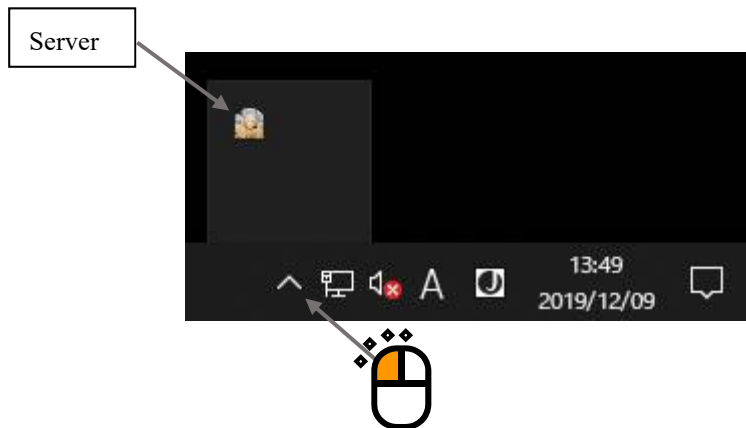# Chapter 8 Operation procedures of software

When the PC is started up, the server is automatically executed and resides.

Usually, modification of preset values or operation of the software is not required.
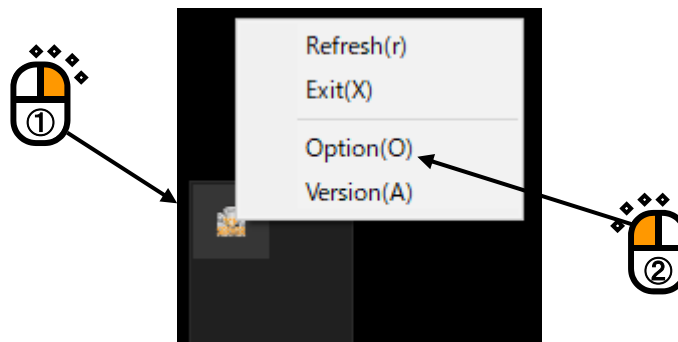
8.1 Display

The server is displayed on the task tray.

To display the task tray, click ⋀ button in the lower right part in Windows screen, as shown below.

8.2 Menu

The menu can be displayed by right-clicking the displayed server icon.

The followings are shown in the menu.

Refresh: Initializes the server. Use it in case of errors including communication error.

Exit: Exits the server.

Option: Modifies the setting of the server. For details, refer to the next section.

Version: Displays the version and options of the installed K2+.

8.3 Setting change

Enter the port number of TCP/IP to be opened by the server. The default is 9000.