MCP1
Remote Control Protocol Specifications

Version 1.0.0

This specification document applies to MCP1 V5.0.0 and later.

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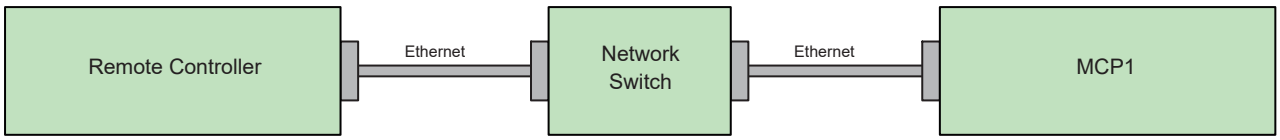
0. Revision History

Version	Date	Section	Description
V1.0.0	Jan. 25, 2023	–	Initial version

1. Setup

1.1. Connection Procedure



1.2. Configuring the Remote Controller

MCP1 can be controlled from an external controller through the Ethernet (NETWORK) connector.
IP Address: Specify the IP address of the device to be controlled.
TCP Port: 49280

1.3. Device Configuration

Up to eight remote controller devices can connect simultaneously to an MCP1.
When recalling a preset between MCP1s, the MCP1 performing a recall is regarded as a remote controller.

2. Command List

2.1. Commands from a device sent to a remote controller

No.	Notification details		Reply from device	Remarks
1-1	Device status change notification	Device run mode notification	NOTIFY devstatus runmode…	
1-2		Device error status notification	NOTIFY devstatus error…	
1-3	Preset change notification	Current preset number change notification	NOTIFY sscurrent…	
1-4		Preset recall start notification	NOTIFY ssrecall…	

2.2. Commands for controlling a device

No.	Notification details		Reply from device	Remarks
2-1	Device status query	Device run mode query	devstatus runmode	
2-2		Device error status query	devstatus error	
2-3	Device run mode change	Device run mode change	devmode normal devmode emergency	
2-4	External control protocol run mode setting	Result and change notification character encoding setting	scpmode encoding…	
2-5		Keepalive activation setting	scpmode keepalive…	
2-6	Preset processing	Current preset number query	sscurrent…	
2-7		Preset recall processing	ssrecall…	

2.3. Extended commands

No.	Notification details		Reply from device	Remarks
3-1	Product information query request	External control protocol version query	devinfo protocolver …	
3-2		Firmware version query	devinfo version …	
3-3		Product name query	devinfo productname …	
3-4		Serial number query	devinfo serialno …	
3-5		Device ID query	devinfo deviceid…	
3-6		Device name query	devinfo devicename…	
3-7	Preset list query processing	Preset number query	ssnum…	
3-8		Nth preset information query	ssinfo…	

3. Command Specifications

3.1. Basic Command Specifications

Below is the syntax of commands exchanged between a device and remote controller.

<command name> <option 1> <option 2> . . . <option n> <new line>

- Each command must end with LF (0x0A).
- LF (0x0A) code can be sent as a heart-beat command.
- At least one space is necessary between a command name and an option and between options.
- Commands must be expressed using ASCII characters. Other characters are not allowed.

3.2. Commands a Device Sends to a Remote Controller

3.2.1. Device status change notification

1-1) Device run mode notification

Command	Option 1	Option 2	Description
NOTIFY devstatus	runmode	“emergency”	Emergency run mode
		“update”	Update mode
		“normal”	Normal run mode

Example: Notification: NOTIFY devstatus runmode “normal”
Meaning: The run mode was changed to normal mode.

1-2) Device error status notification

Command	Option 1	Option 2	Description
NOTIFY devstatus	error	“flt/xxxx”	Alert fault information
		“err/xxxx”	Alert error information
		“wrn/xxxx”	Alert warning information

Details:
“flt/xxxx” = “**flt/**message**//** xnnn onf (sssss) **ID-**xxx 2012/12/31 23:59:59”
“err/xxxx” = “**err/**message**//** xnnn onf (sssss) **ID-**xxx 2012/12/31 23:59:59”
“wrn/xxxx” = “**wrn/**message**//** xnnn onf (sssss) **ID-**xxx 2012/12/31 23:59:59”
The first three characters indicate the alert type.
message = Alert message (The section from “/” to “//” after the alert type is the message data.)
. . . up to 32 characters (ascii characters)
nnn = Alert number (panel display number)
. . . 2 or 3 digit hexadecimal notation (The x at the front indicates hexadecimal notation.)
onf = Alert on/off
. . . Persistent alerts turn on when an alert condition occurs and turn off when they are cleared.
Single-shot alerts turn on while an alert condition is true.
sssss = Identical alert count (a counter that indicates the number of identical alerts, normally set to 1)
. . . Decimal notation
xxx = UNIT ID number . . . 3-digit hexadecimal
Date
Time

Example: Notification: NOTIFY devstatus error “err/DCP[0] communication error// x53 on (1) ID-001 2013/1/22 11:38:23”
Meaning: Error alert 53 occurred.

3.2.2. Preset change notification

1-3) Current preset number change notification

Command	Option 1	Description
NOTIFY sscurrent	(index)	Current preset number change notification

Details: (index) = Current preset index number

Example: Notification: NOTIFY sscurrent 10
Meaning: The current preset was changed to index 10 (preset 10).

1-4) Preset recall start notification

Command	Option 1	Description
NOTIFY ssrecall	(index)	Current preset recall start notification

Details: (index) = Preset index number

Example: Notification: NOTIFY ssrecall 10
Meaning: Preset recall processing for index 10 (preset 10) has started.

3.3. Commands for controlling a device

3.3.1. Device status query

2-1) Device run mode query

Command	Option 1	Description
devstatus	runmode	Queries the run mode

Response

Response string	Description
OK devstatus runmode “emergency”	Emergency run mode
OK devstatus runmode “update”	Update mode
OK devstatus runmode “normal”	Normal run mode

Example: Command: devstatus runmode
Response: OK devstatus runmode “normal”
Meaning: Query the run mode.
The device is currently in normal run mode.

Note: After device responds with -OK devstatus runmode “normal”-, device starts to send commands.
In order to establish remote control communication, the external controller must send [devstatus runmode] command to the device and await response. When the device responds as [OK devstatus runmode “normal”], the device is ready to receive commands.

2-2) Device error status query

Command	Option 1	Description
devstatus	error	Queries the error status

Response

Response string	Description
OK devstatus error “none”	No alerts
OK devstatus error “flt/xxxx”	Fault alert
OK devstatus error “err/xxxx”	Error alert
OK devstatus error “wrn/xxxx”	Warning alert

Details:
“flt/ xxxx” = “**flt/**message**//** xnnn onf (sssss) **ID**-xxx 2012/12/31 23:59:59”
“err/ xxxx” = “**err/**message**//** xnnn onf (sssss) **ID**-xxx 2012/12/31 23:59:59”
“wrn/ xxxx” = “**wrn/**message**//** xnnn onf (sssss) **ID**-xxx 2012/12/31 23:59:59”
The first three characters indicate the alert type.
message = Alert message (The section from “/” to “//” after the alert type is the message data.)
... up to 32 characters (ascii characters)
nnn = Alert number (panel display number)
... 2 or 3 digit hexadecimal notation (The x at the front indicates hexadecimal notation.)
onf = Alert on/off
... Persistent alerts turn on when an alert condition occurs and turn off when they are cleared.
Momentary event sends only ON when it happens.
sssss = Identical alert count (a counter that indicates the number of identical alerts, normally set to 1)
... Decimal notation
xxx = UNIT ID number ... 3- digit hexadecimal
Date
Time

Example:
Command: devstatus error
Response: OK devstatus error “err/DCP[0] communication error// x53 on (1) ID-001 2013/1/22 11:38:23”
Meaning: Query the alert status.
Error alert 53 is occurring.

3.3.2. Device run mode change

2-3) Device run mode change

Command	Option 1	Description
devmode	normal	Sets the run mode to normal
	emergency	Sets the run mode to emergency

Response

Response string	Description
OK devmode normal	Normal run mode change complete
OK devmode emergency	Emergency run mode change complete

Example:
Command: devmode emergency
Response: OK devmode emergency
Meaning: Change to emergency mode.
Run mode was changed to emergency.

3.3.3. External control protocol run mode setting

2-4) Result and change notification character encoding setting

Command	Option 1	Option 2	Description
scpmode	encoding	ascii	ASCII encoding mode (default setting)
		utf8	UTF-8 encoding mode

Response

Response string	Description
OK scpmode encoding ascii	ASCII encoding mode change complete
OK scpmode encoding utf8	UTF-8 encoding mode change complete

Example: Command: scpmode encoding utf8
Response: OK scpmode encoding utf8
Meaning: Change the result and change notification encoding mode to UTF-8.
The encoding mode was changed to UTF-8.

2-5) Keepalive activation setting

Command	Option 1	Option 2	Description
scpmode	keepalive	(interval)	Maximum interval for a client to send some kind of message, including heart beats (default setting = disabled)

Details: (interval) = Timeout value (msec) * Timeout value should be more than 1000.
* The actual timeout value will be increased by 1 second.

Response

Response string	Description
OK scpmode keepalive xxxx	Keepalive activated notification

Details: xxxx = The specified timeout value (msec)

Example: Command: scpmode keepalive 2000
Response: OK scpmode keepalive 2000
Meaning: Set the timeout value to 2000 msec (2 seconds).
The timeout value was set to 2000 msec (2 seconds).

Note: When unexpected disconnection happens, remote controller can't finish communication with closing process. In such case, device has to keep status "connected" and remote controller can't establish new connection after that.

In order to prevent the situation above, device watches keepalive command if connection with remote controller is still alive. If device doesn't receive keepalive command within timeout value which is set by this command, device terminates connection by itself.

After the Keepalive activation command has been activated, the Remote controller must send any command or LF(0x0A) code as a heart beat to the device within the timeout value.

3.3.4. Preset processing

2-6) Current preset number query

Command	Description
sscurrent	Queries the current preset number (index number)

Response

Response string	Description
OK sscurrent (index) unmodified	The current preset number (no parameter changed after recalling the preset.)
OK sscurrent (index) modified	The current preset number (parameter changed after recalling the preset.)

Details: (index) = Current preset number

Example: Command: sscurrent
Notification: OK sscurrent 10 unmodified
Meaning: Query the last index number (preset number) that was recalled.
The index number (preset number) is index 10 (preset 10),
and no parameter was changed after the preset was recalled).

2-7) Preset recall processing

Command	Option 1	Description
ssrecall	(index)	Recalls a specified index preset within the preset list.

Details: (index) = Preset number

Response

Response string	Description
OK ssrecall (index)	Requested index number

Details: (index) = Preset number

Example: Command: ssrecall 1
Notification: OK ssrecall 1
Meaning: Recall the index 1 preset (preset 1).
The preset of index 1 (preset 1) was recalled.

3.4. Extended commands

3.4.1. Product information query request

3-1) External control protocol version query

Command	Option 1	Description
devinfo	protocolver	Queries the external control protocol version

Response

Response string	Description
OK devinfo protocolver “xxxx”	External control protocol version

Details: xxxx = Version

Example: Command: devinfo protocolver
Notification: OK devinfo protocolver “1.0.0”
Meaning: Query the protocol version.
Protocol version = V1.0.0

3-2) Firmware version query

Command	Option 1	Description
devinfo	version	Queries the firmware version

Response

Response string	Description
OK devinfo version “xxxx”	Firmware version

Details: xxxx = Version

Example: Command: devinfo version
Notification: OK devinfo version “1.0.0”
Meaning: Query the firmware version.
Firmware version = V1.00

3-3) Product name query

Command	Option 1	Description
devinfo	productname	Queries the product name

Response

Response string	Description
OK devinfo productname “xxxx”	Product name

Details: xxxx = Product name

Example: Command: devinfo productname
Notification: OK devinfo productname “MCP1”
Meaning: Query the product name.
Product name = “MCP1”

3-4) Serial number query

Command	Option 1	Description
devinfo	serialno	Queries the serial number

Response

Response string	Description
OK devinfo serialno “xxxx”	Serial number

Details: xxxx = Serial number

Example: Command: devinfo serialno
Notification: OK devinfo serialno “ZA37640CHNET101001”
Meaning: Query the serial number.
Serial number = “ZA37640CHNET101001”

3-5) Device ID query

Command	Option 1	Description
devinfo	deviceid	Queries the device ID

Response

Response string	Description
OK devinfo deviceid “xxx”	Device ID

Details: xxx = Device ID
* 3-digit hexadecimal

Example: Command: devinfo deviceid
Notification: OK devinfo deviceid “001”
Meaning: Query the device ID.
Device ID = “001”

Note: The device ID corresponds to the UNIT ID.

3-6) Device name query

Command	Option 1	Description
devinfo	devicename	Queries the device name assigned by the user

Response

Response string	Description
OK devinfo devicename “xxxx”	Device name assigned by the user

Details: xxxx = Device name

Example: Command: devinfo devicename
Notification: OK devinfo devicename “MCP1”
Meaning: Query the device name.
Device name = “MCP1”

Important: The character encoding for the device name conforms to the setting specified by the scpmode encoding command.

3.4.2. Preset list query processing

3-7) Preset number query

Command	Description
ssnum	Queries the number of presets

Response

Response string	Description
OK ssnum (num)	Number of presets

Details: (num) = Number of presets

Example: Command: ssnum
Notification: OK ssnum 8
Meaning: Query the number of presets.
The number of presets is 8.

3-8) Nth preset information query

Command	Option 1	Description
ssinfo	(index)	Queries the information of the specified preset within the preset list.

Response

Response string	Description
OK ssinfo (index) “xxxxxx” (attrib) “yyyyyy” “zzzzzz”	Nth preset information within the preset list

Details:
(index) = Requested index number
“xxxxxx” = Text expressing the relevant preset number
(attrib) = Relevant preset attribute
preinst = Preinstalled preset
reserve = Reserved area
user = User preset available
empty = Empty
“yyyyyy” = Title text of the relevant preset
“zzzzzz” = Comment text of the relevant preset. (Reserved for future use. Since MCP1 does not currently use comments, “” will be returned.)

Example:
Command: sssinfo 10
Notification: OK ssinfo 10 “10” user “Preset 10” “”
Meaning: Query the contents of the index 10 preset (preset 10).
The preset at index 10 (preset) contains:
display number = “010”
title = “Preset 10”
comment = “”
and is a stored preset.

Important: The character encoding for preset titles and comments conforms to the setting specified by the scpmode encoding command.

3.5. Command Errors

3.5.1. Command Error Notifications

Error notification that indicates errors in commands.
If an error is found when the command is sent, this notification is returned instead of the normal successful notification.

[Notification syntax] ERROR <command name> <error code>

Command name	Alphanumeric	Name of the command that caused the error
Error code	Alphanumeric	Error description * See the error codes below.

Error code

Error code	Description
UnknownCommand	Ignored because it was an unknown command.
WrongFormat	Ignored because the command parameter format was wrong and could not be interpreted. Examples: The number of parameters is wrong. The parameter syntax is wrong.
InvalidArgument	Ignored because the command parameter content was outside the appropriate range and could not be interpreted. Examples: The parameter value is outside the range. The parameter syntax does not comply with the specifications. The letter case of the parameter is wrong.
UnknownAddress	Ignored because the specified address does not exist.
UnknownEventID	Ignored because the specified event ID does not exist.
TooLongCommand	Could not be interpreted because the command was too long.
AccessDenied	Procedure rejected because the peer device is not in an normal running state. Examples: Rejected because an ssrecall command was received in emergency run mode.
Busy	The device is busy processing; it can't receive commands.
ReadOnly	Ignored because an attempt was made to set a parameter at a read-only address.
NoPermission	Ignored because you do not have access permission.
InternalError	An internal error may have occurred. Examples: Failed to process the command.

4. Command Sequence

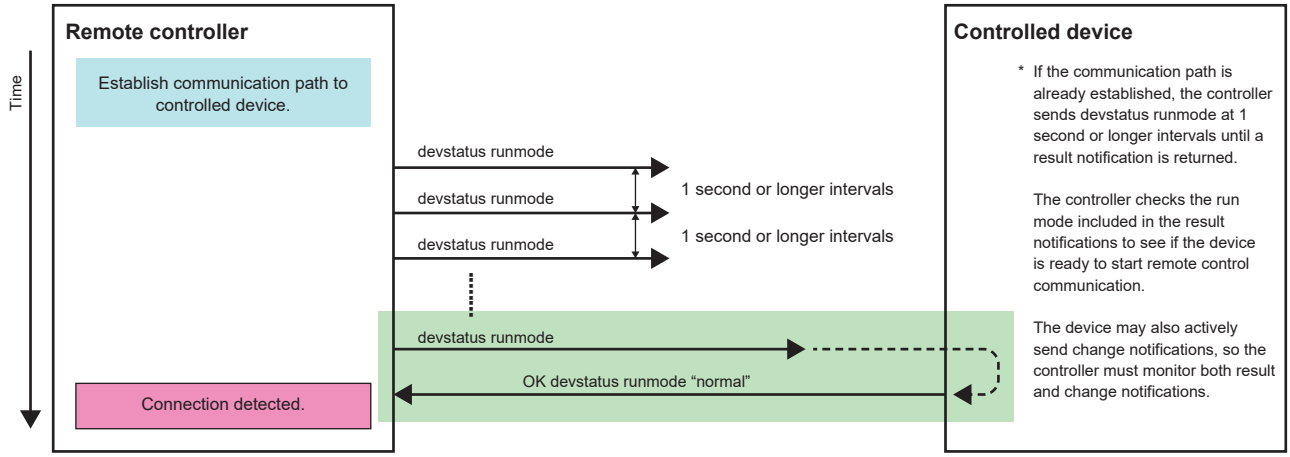
4.1. Communication start sequence

The amount of time for the controller and the controlled device to start is different.
Remote control is an act of controlling the controlled device from the controller, so the controller must wait for the controlled device to become ready.

The controller needs to wait using the sequence below.

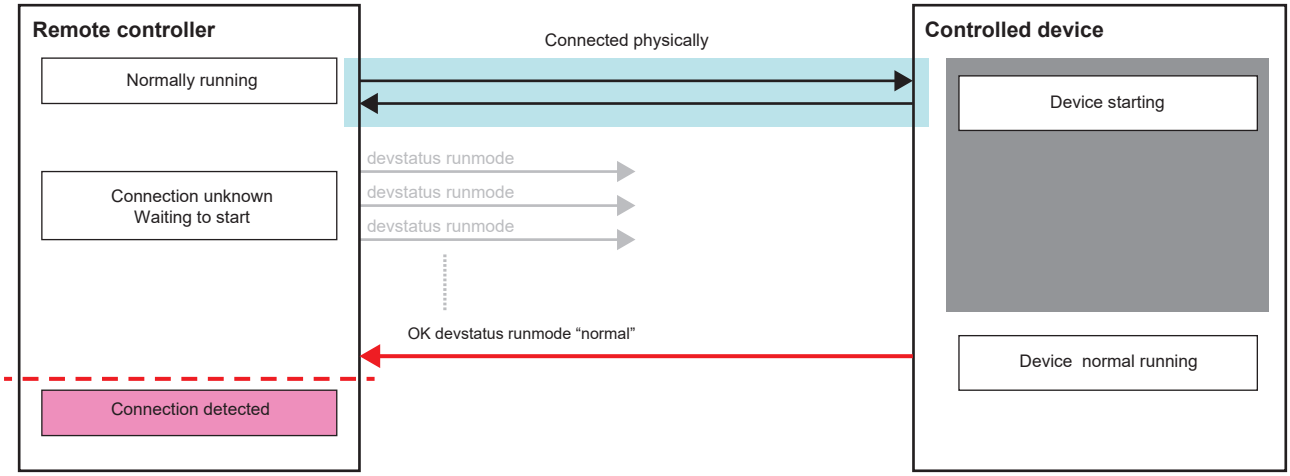
- If an Ethernet connection is required, the remote controller needs to establish a logical session.
- After the session is established, the controller sends devstatus commands at 1 second or longer intervals.
- If “OK devstatus runmode” is returned, the controller should check the information.
- If the controller determines that the controlled device is in normal running mode, the controller can start sending command strings to change parameter value and preset etc. If the controlled device is not in normal running mode, the controller continues trying.

Note: In order to establish remote control communication, the external controller must send [devstatus runmode] command to the device and await response.
When the device responds as [OK devstatus runmode “normal”], the device is ready to receive commands.

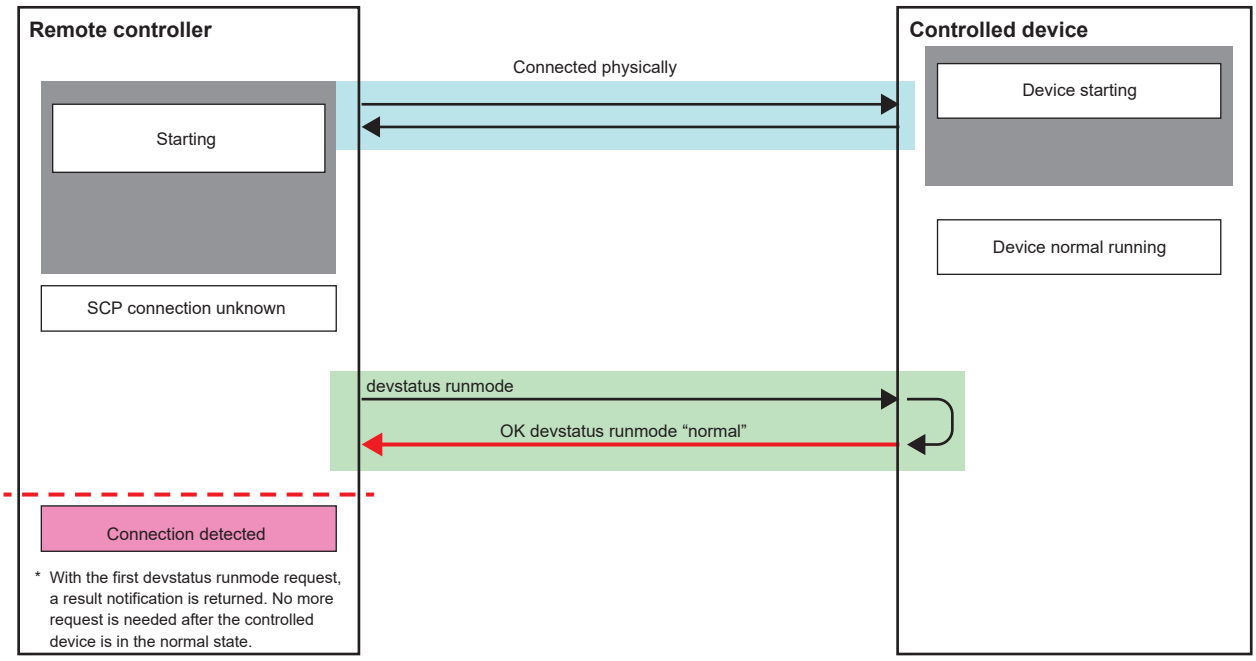


The reason for using such a sequence is provided below.

Example when the controller starts earlier than the controlled device



Example when the controlled device starts earlier than the controller



The controller can recognize that the controlled device is ready to receive commands when there is response for “devstatus runmode” command.