

Specifications on communication of J-chip Reader

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Supported communication protocol

J-chip receiver supports following communication protocol.

1. TCP/IP (8 connections)
2. Serial communication

The TCP/IP communication (8 connections) and serial communication are able to be connected at a same time, as they are controlled individually.

TCP/IP Communication

Total number of connection and connection mode

The maximum number of accessible connection is 8 connections and the type of connection (TCP Server /TCP Client) of the each connection can be designated differently.

Each 8 spots controls measuring data.

Establishing / disconnecting TCP/IP connection

Establishing the connection -- type of connection is "Client"

J-chip receiver (TCP Client) starts sending connection request (=connect) to a prearranged host until the connection is established, even when TCP/IP connection is disconnected, after TCP/IP connection reaches operational condition.

The interval of connection request is around 5 seconds.

The host waits for connecting request from the receiver at a designated port.

Establishing the connection -- type of connection is "Server"

J-chip receiver (TCP server) waits for connection request from the host at a designated port after TCP/IP connection reaches operational condition.

The host sends connection request to designated receiver.

Disconnecting the connection

TCP/IP connection is disconnected by its host's control.

J-chip receiver sends "N command (notification of receiver name)" within five seconds on establishing TCP/IP connection. The host sorts out each receiver by the name.

When existed name is used, the host disconnects previous connection and takes new connection.

The host disconnects the TCP/IP connection when the host cannot receive "N command (notification of receiver name)" within five seconds.

Default value of TCP/IP related setting

Network	IP Address	192.168.1.220
	Net Mask	255.255.255.0
	Default Gateway	192.168.1.254
	Listen Port	54321
Connection1 Use		
	Connection Type	TCP Client
	Remote IP Address	192.168.1.1
	Remote Port	12345
Connection2- Connection8		
	Not use	

Packet form

A packet consists of ASCII-character-strings and terminated by <CR>(carriage return: ASCII 0x0d).

Communication Command

N command (from Receiver to Host)

Sending receiver's name(x---x) to host.

"x---x" is expressed in ASCII-character which is up to 32 one-byte characters of variable length.

N0000x-----x<cr>

J-chip receiver send s "N command" immediately on establishing its connection.

Host will cut the connection, if it does not receive N command within 10 seconds.

S command (from Host to Receiver)

Get Host to start data-sending to J-chip receiver, starting from data-index-number 'hhhhh'.

When data sending has already started, then changed the data-index-number to 'hhhhh'.

'hhhhh' is 5 digits number (00000 – FFFFF).

Even data-index-number "Shhhh<cr>" is also usable.

This is for keeping compatibility of previous model of J-chip receiver and current model.

When the command is sent in "hhhh", the receiver processed the command for "0hhhh".

Shhhhh<cr>

Note: How receiver process data.

It will not change working sending-Pointer when (Data index number -1) designated by S command does not exist at that time.

It will change working sending-Pointer when data index number designated by S command is '0000'.

It will not send data unless it receives S command from the host after establishing a connection and sending 'N command'.

E command (from Host to Receiver)

Stopping data sending to J-chip receiver

When data sending has been stopped already, nothing will be done.

E<cr>

D command (from Receiver to HOST)

Dx-----x<cr>

J-chip receiver keep sending tag data to the Host, starting from receiving S command after establishing connection until receiving 'E command' or connection cut off since it receives 'S command'.

'x-----x' is Tag data. Form of the tag data is same to serial connection but doesn't have checksum.

Tag data form

(1):Tag code	7 bytes (XFFFFFFF)
(2):Measured Time	12 bytes (_hh:mm:ss.mm)
(3):PC_ID	2 bytes (XX XX:01-99)
(4):N/A	2 bytes (_1 fixed)
(5):Number of elapsed days	1 byte (X:0-9)
(6):Same ID sequence number	3 bytes (XXX: 1-999) Number of lap
(7):Data index number	4 bytes (XXXX:0000-FFFF)
(8): N/A	1 bytes (one space)
(9): NEWINDEX	5 bytes (XXXXX:00000-FFFFF)

(1) (2) (3) (4) (5)(6) (7) (8)(9)
“**J003D5A 00:10:15. 1001 11 10001 00001**”

Tag Code (Tag prefix + tag ID)

‘X’ : “Tag prefix” which is prefixed to J-chip receiver. Selectable at “System Option” in WEB menu.

‘FFFFFF’ : Unique tag ID (‘000000’ – ‘FFFFFF’)

Measured Time

‘_hh:mm:ss.mm’: “hh” is Hour, “mm” is Minute, “ss” is Second and “mm” is Millisecond.

PC_ID

‘XX’ : “PC_ID” (‘00’ – ‘99’) which is prefixed to J-chip receiver.

This is selectable at “System Option” in WEB menu.

Number of elapsed days

The starting day of measuring is expressed as “0”. And “one “ day is added every time when the internal timer moves from “23:59:00” to “00:00:00” until 9th day during measuring time. When 9th day is over, it starts counting from “0” again.

Same ID sequence number (amount of lap)

Total counting number of same ID. The number starts from “_1” up to “999”.

Data index number

Number is increased one by one according to measured order, from “0000” until “FFFF”.

If the number reaches to “FFFF”, it returns to “0000” again.

NEWINDEX

Number is increased one by one according to measured order, from “00000” until “FFFFF”.

Serial communication

Communication method

RS232C

Specifications

Transfer speed	4800 bps,9600 bps,19200 bps,38400 bps
Data length	8 bits
Stop bit	1 bit
Flow control	Nil
Parity	Nil

Packet Form

Packet consists of ASCII-character-strings and terminated by <CR>(carriage return, ASCII 0x0d).

Communication Command

The <cr> in the following text shows carriage return (0x0d).

Requesting tag data (when designate amount of obtaining tag data)

Command	'requested amount of obtaining tag data' <cr> The amount is '1-9'.
Explanation	This is a command or asking obtaining requested amount of tag data..
Response	'x-----x (tag data)'<cr> Requested amount of tag data will be sent. If the amount of stored tag is less than the request, " * (asterisk)<cr>" shall be sent after the last data.

Example: Case 1 When command '1<cr>' is sent out and there are still 10 data stored which has been sent, The response is:
'tag data <cr>'

Case 2 When command '3<cr>' is sent out and there are still 10 data has been sent, The response is:
'tag data <cr>'
'tag data <cr>'
'tag data <cr>'

Case 3 When command '1<cr>' is sent out and there are no data has been sent, The response is:
'*<cr>'

Case 4 When command '3<cr>' is sent out and there are no data has been sent,
The response is:
'*<cr>'

Case5 When command '9<cr>' is sent out and there are only 3 data has been sent,
The response is:
'tag data <cr>'
'tag data <cr>'
'tag data <cr>'
'*<cr>'

Requesting tag data (designating index)

Command: Rxxxx<chk><cr>

'xxxxx' is 5 digits(00000-FFFFF) in hex.
<chk> is CheckSum in 2bytes. If this CheckSum is ASCII-character in hex, to which the lower 1 byte of total sum of 'Rxxxx' (5 bytes) tuned. If this Check Sum is Rxxxx<chk><cr> , this processed as R0xxxx<chk>.

Ex : When 'xxxx' is '0000', this processed as 'R0000012<chk>'.

Explanation: This is a command which requests tag data of NEWINDEX 'xxxxx'.

Response tag data<cr>
If designated tag data is not exist,
'*(asterisk)<cr>' will be sent.

Requesting formatting an index which has been sent out

Command: S<cr> 'S' is capitol letter.

Explanation: To return next index number to be sent to the starting position (00000).

Response: No response.

Requesting tag data (starting "continuous sending" & stopping "continuous sending")

START

Command: C<cr> 'C' is capitol letter.

Explanation: To start continuous tag data-sending.

Response: No response.

STOP

Command: c<cr> 'c' is small letter.

Explanation: To stop continuous tag data sending.

Response: No response.

When J-chip receiver starts continuous tag data sending, it will ignore all command except 'c' command.

Requesting re-execution of the last request-command of tag data.

Command: R<cr>

Explanation: When J-chip receiver receives this command, the receiver carries on same process to the last tag data command (ex. Designating amount of tag data obtain, designating index).

These commands include "1<cr>-9<cr>" and "Rxxxx<chk><cr>".

Response: Same to the response of requesting tag data command, received at the end.

Requesting measuring timer setting

Command: Thhmssnn <chk><cr>
hhmssnn means "hh" = (hour), "mm"=(minute), "ss"-(second) and "nn"=(millisecond) -- 00000000 – 23595999.
It accept from '00000000' to '23595999'
<chk> is CheckSum of 2 bytes and turned lower 1 byte of total sum of 'Thhmssnn'(total 9 byte) into hex ASCII-character.
For Example : Command for setting clock to '12:00:00.00'
T12000000D7<cr>

Explanation: Setting a measuring clock as ordered.

Response: No response

Caution: When this command is sent to J-chip receiver from PC during measurement, receiver will ignore this command. Because time changes has not been accepted during measurement.

Receiver set measuring clock to the time according to received command, though it cannot adjust the time difference comes out from communicating between PC and receiver. The host will adjust his time difference.

Requesting an information of the receiver

Command I<cr>

Explanation Asking for IP address, version of the firmware and time of measuring clock of the J-chip receiver.

Response IP:xxx.xxx.xxx.xxx Ver:y.yy.y hh:mm:ss.nn <chk><cr>
 'xxx.xxx.xxx.xxx' : IP address.
 'y.yy.y':version No.
 'hh:mm:ss.nn': time of measuring clock.

<chk> is Check Sum of 2 bytes and turned lower 1 byte of total sum of 'IP:xxx.xxx.xxx.xxx_Ver:y.yy.y_hh:mm:ss.nn_'(total 42 bytes) into hex ASCII-character.

Tag data Form

(1):Tag code	7 bytes (FFFFFFF)
(2):Measured Time	12 bytes (_hh:mm:ss.mm)
(3):PC_ID	2 bytes (XX XX:01-99)
(4):N/A	2 bytes (_1 fixed)
(5):Number of elapsed days	1 byte (X:0-9)
(6):Same ID sequence number	3 bytes (XXX: 1-999) Number of lap
(7):Data index number	4 bytes (XXXX:0000-FFFF)
(8): N/A	1 bytes (one space)
(9): NEWINDEX	5 bytes (XXXXX:00000-FFFFF)
(10):Checksum	2 byte

(1) (2) (3) (4) (5)(6) (7) (8)(9) (10)
“J003D5A 00:56:50. 7005 11 10000 00000C8”

Tag Code (Tag prefix + tag ID)

'X' : "Tag prefix" which is prefixed to J-chip receiver. Selectable at "System Option" in WEB menu.
 'FFFFFF' : Unique tag ID('000000' – 'FFFFFF').

Measured Time

'_hh:mm:ss.mm': "hh" is Hour, "mm" is Minute, "ss" is Second and "mm" is Millisecond.

PC_ID

'XX' : "PC_ID ('00' – '99')" which is prefixed to J-chip receiver.
 This is selectable at "System Option" in WEB menu.

Number of elapsed days (amount of lap)

The starting day of measuring is expressed as "0". And "one " day is added every time when the internal timer moves from "23:59:59" to "00:00:00" until 9th day during time measuring. When 9th day is over, it starts counting from "0" again.

Same ID sequence number

Total counting number of same ID. The number starts from "_1" up to "999".

Data index number

Number is increased one by one according to measured order, from "0000" until "FFFF".
If the number reaches to "FFFF", it returns to "0000" again.

NEWINDEX

Number is increased one by one according to measured order, from "00000" until "FFFFF".

Check Sum

Turned lowest one byte of total number of (1) to (8) =37 bytes into hex ASCII-character.

Specifications on communication Appendix

Both Network and RS communication use same communication command.

<chk> in the following text means "Check Sum" which is used only for serial communication.

List of Host command

Both Network and RS communication use same communication command.

<chk> is used only in thecae of "Check Sum" and RS communication.

1.Information acquisition

1.1 Get time relationship information

→ GT<chk><cr>

← GTdhhmssnnMR<chk><cr>

d	Amount of elapsed days between 0< - >9.
hhmssnn	hour minute second milisecond (milisecond is 10 milisecond unit) /8 characters of fixed length
M	Element of current time setting. 0 No setting (The elapsed time after power is ON) 1 Time setting by GPS. 2 Not used(N/A). 3 Time setting by the Host. 4 Reserved time. 5 Not used (N/A). 6 System time 7 Not used (N/A).
R	The current status of current reservation time,1 character with fixed Length. 0 No reserved time. 1 Time is reserved (waiting SYNC signal).

1.2 Acquisition of receiver information

→ GS<chk><cr>

← GSiipvvvvv,nnnnnnnnn<chk><cr>

ii	PC-ID 2 characters of fixed length between 00< - >99.
p	Tagprifix 'A'< - >'Z' 1 character of fixed length.
vv	version-character-string of variable length, max 8 characters.
,	delimiter
nn	name of receiver with variable length, max 32 characters.

1.3 Acquisition of network information of receiver

→ GN<chk><cr>

← Gn aaaaa, mmmmm, ggggg <chk><cr>

aaaaa	IP address, "." description of variable length.
,	delimiter

mmmmm	Net mask
,	delimiter
ggggg	Default gate way

1.4 Acquisition of log information

→ GL<chk><cr>

← GLs xxxxx, ffff, uuuuu <chk><cr>

s	Mesuring status
0	Measuring is stopping
1	Measuring is carrying on
xxxxx	Amount of log after start mesuring, 8 characters in hexadecimal, fixed length.
,	delimiter
ffff	all size of data area in decimal of variable length. (MB unit)
,	delimiter
uuuuu	size of unused data area in decimal of variable length. (MB unit)

1.5 Acquisition of measuring information

→ GM<chk><cr>

← GMmnn<chk><cr>

m	measuring mode, 1 character with fixed length.
0	First time
1	Mid time
nn	Holding time. 2 characters of fixed length between 00< - >60..

1.6 Information of connection

→ GC<chk><cr>

← GCpppp:channel0:channel1: channel2: channel3: channel4:
channel5: channel6:chanel7<chk><cr>

A port number awaiting connection and 8 channel information with connectable divide by ":"

pppp	Port No. of awaiting connection of receiver
Description of each channel.	
msaaaa,pppp	
m	connection mode. 1 character of fixed length.
0	unused
1	Receiver is client.
2	Receiver is server.
3	Receiver is client and Hot-standby is on.
s	connecting status. 1 character of fixed length.
0	No connection
1	Connecting
2	No connection (when receiver sends connection request to Hot-standby while Hot-standby is on.)
3	Connecting (when receiver is connecting to Hot-standby while Hot-standby on.)
aaaa	IP address, written in "." of variable length.
	"0.0.0.0" when it is unused or receiver is server without connection.

, delimiter
 pppp TCP port No. receiver is connecting to ,
 between 1-65535 in decimal of variable length.
 "0" when it is unused or receiver is server without connection.

1.7 Acquisition of serial

→ GR<chk><cr>
 ← GRbbbb,mxxxxxx<chk><cr>

bbbb baudrate.
 4800 or 9600 or 19200 or 38400 of variable length.
 , delimiter
 m usage setting.
 0 No modem
 1 Modem Dialout
 1 Modam Dialin
 xxxx... Tel No. ,32 characters in variable length during modem Dialout.

1.8 Acquisition of electric power supply information

→ GW<chk><cr>
 ← GWcuEIAeeeeiii<chk><cr>

Get electric power supply information.

c Flag of internal-battery charge is on going 1character of fixed length.
 0 Charging is not carried on
 1 Charging
 u Flag of internal-battery is in use 1character of fixed length.
 0 Not in use
 1 In use
 E Flag of external-power-supply voltage is decreasing
 1character of fixed length.
 0 Normal voltage level
 1 Decreasing voltage level
 I Flag of internal-power-supply voltage is decreasing
 1character of fixed length.
 0 Normal voltage level
 1 Decreasing voltage level
 A Electric-power-supply alarm setting 1 character of fixed length
 0 Electric power supply alarm is set on
 1 Electric power supply alarm is set off
 eee Level of external-power supply voltage
 0.1 V unit, 3 characters in decimal, fixed length
 iii Level of internal-power supply voltage
 0.1 V unit 3 characters in decimal, fixed length

1.9 Acquisition of trigger information

→ GG<chk><cr>

← GGTgrrccll<chk><cr>

Get trigger information.

T	Flag of auto-tuning 1 character of fixed length. 0 auto-tuning is not carried on 1 auto-tuning is going on
g	Flag of trigger ON/OFF 1 character of fixed length. 0 OFF 1 ON
rr	Duty ratio 2 characters in decimal, fixed length between 00 <-> 50. "00" means "trigger antenna is not connected"
cc	Reserved. 00 fixed.
ll	Trigger level, hexadecimal of fixed length between 00 <-> FF.

1.10 Acquisition of LAN-LED motion control information

→ GB<chk><cr>

← GBSnnnnnnnn<chk><cr>

Get LAN-LED motion control information.

s	LED motion control, when receiver connects as server. 0 Not going to LED motion control 1 Going to LED motion control
n	LED motion control, when receiver connects as client. For 8 channels from Channel 0 to Channel 7, each channel has one character 0 Not going to LED motion control 1 Going to LED motion control

2.Setting

2.1 Time setting

→ ATdhmmssnn<chk><cr>

← ATx<chk><cr>

Adding elapsed time to T command of compatible specification.

d	Elapsed days,1 charcter between 0< - >9.
hh	Hour between 00< - >23 .
mm	Minute between 00< - >59.
ss	Second between 00< - >59.
nn	Milisecond between 00< - >99.
x	Result 0 Normal end 1 Failure(format is different,mesuring is on etc...)

a) T command of previous version is hadled as "d=0"

b) This command goes into effect immediately.

2.2 Reservedtime setting

→ AVdhhmmssnn<chk><cr>

← AVx<chk><cr>

d	Elapsed days between 0< - >9.
hh	Hour between 00< - >23
mm	Minute between 00< - >59.
ss	Second between 00< - >59.
nn	Milisecond between 00< - >99.
x	Result
	0 Normal end
	1 Failure(format is different, mesuring is going on etc...)

a) This command goes into effect immediately.

b) When reserved time was set before, the reserved time will be rewritten.

2.3 Reserved time cancellation

→ Av<chk><cr>

← Avx<chk><cr>

To cancell the reserved time.

x	Result
	0 Normal end
	1 Failure(format is different,mesuring is going on etc...)

a) This command goes into effect immediately.

b) Finish normally even time is not reserved.

2.4 PCID Setting

→ Alnn<chk><cr>

← Alx<chk><cr>

Setting PCID.

nn	PC-ID. Between 00< - >99,2 characters of fixed length.
x	Result
	0 Normal end
	1 Failure(format is different,mesuring is going on etc...)

a) This command goes into effect immediately.

2.5 Tagprefix setting

→ APa<chk><cr>

← APx<chk><cr>

Setting tagprefix.

a Tagprefix.' A' < - >'Z', 1 character of fixed length.

x	Result
	0 Normal end
	1 Failure(format is different, mesuring is going on etc...)

a) This command goes into effect immediately.

2.6 Serial setting

→ ARbbbb,m<cr>

← ARx<cr>

Setting serial.

bbbb	Assigning baudrate. 4800 or 9600 or 19200 or 38400 of variable length.
,	delimiter
m	set of usage. 0 No modem 1 Modem Dialout 2 Modam Dialin
x	Result 0 Normal end 1 Failure(format is different, mesuring is going on etc...)

a) This command goes into effect immediately.

b) Command cannot be sent via serial line because of a).

Status of the result is "1" when sending has been done.

2.7 TEL number setting during modem is callout

→ ALxxxxxxx<cr>

← ALx<cr>

Set a telephone number of the modem.

xxxx... TEL No. is set by less than 32 characters of variable length.

x	Result 0 Normal end 1 Failure(format is different, mesuring is going on etc...)
---	---

a) This command goes into effect immediately

b) Command cannot be sent via serial line because of a).

Status of the result is "1" when sending has been done.

2.8 Holding time Setting

→ AHnn<chk><cr>

← AHx<chk><cr>

Set a holding time.

nn Setting a holding time by 2 characters of fixed length between 00< - >60.

x	Result 0 Normal end 1 Failure(format is different, mesuring is going on etc...)
---	---

a) This command goes into effect immediately

2.9 Mesuring mode setting

→ AMn<chk><cr>

← AMx<chk><cr>

Setting a measuring mode.

n	Choose a measuring mode by 1 character of fixed length.
0	Beginning time
1	Mid time
x	Result
0	Normal end
1	Failure(format is different, measuring is going on etc...)

a) This command goes into effect immediately

2.10 Setting a Device name of receiver

→ AEnnnnnnn<chk><cr>

← AEx<chk><cr>

Set a Device name of receiver.

nnn	Device name,32 characters of variable length.
x	Result
0	Normal end
1	Failure(format is different,during measurement etc...)

a) This command goes into effect after rebooting.

2.11 Receiver's network setting

→ ANaaaaaa,mmmmmm,gggggg<chk><cr>

← ANx<chk><cr>

aaaaaa	IP address, written in "." of variable length.
,	delimiter
mmmmmm	Net mask written in "." of variable length.
,	delimiter
gggggg	Default gate way, written in "." of variable length.
x	Result
0	Normal end
1	Failure(format is different, measuring is going on etc...)

a) This command goes into effect after rebooting up.

2.12 Setting a connection waiting port of a receiver

→ ASppp<chk><cr>

← ASx<chk><cr>

ppp	TCP port No. of which receiver connects to, between 1< - >65535 in decimal of variable length
x	Result
0	Normal end
1	Failure(format is different, measuring is going on etc...)

a) This command goes into effect after rebooting up.

2.14 Rebooting a receiver

→ AZ<chk><cr>

← AZx<chk><cr>

Rebooting a receiver.

x	Result
0	Normal end
1	Failure(format is different,mesuring is going on etc...)

2.15 GPS time Off-set setting

→ AOshhmm <chk><cr>

← AOx<chk><cr>

s	“+” (plus) or “-” (minus)
hh	Hour,2 characters between “00”< - >”23” of fixed length.
mm	Minutes. Selectable from 00 or 15 or 30 or 45 of fixed length

x	Result
0	Normal end
1	Failure(format is different, mesuring is going on etc...)

a) This command goes into effect immediately.

2.16 Date,time setting

→ ADYYYYMMDDhhmmss<chk><cr>

← ADx<chk><cr>

Set date and time of system time.

“Timestamp” in the file gets affected by this date,time setting.

YYYY	Year , 4 characters between 1970< - >2038 of fixed length.
MM	Month, 2 characters between 01< - >12 of fixed length.
DD	Day, 2 characters between 01< - >31 of fixed length
hh	Hour, 2 characters between 00< - >23 of fixed length.
nn	Minute, 2 characters between 00< - > 59 of fixed length.
ss	Second, 2 characters between 00< - >59 of fixed length.

x	Result
0	Normal end
1	Failure(format is different, mesuring is going on etc...)

a) This command goes into effect immediately.

2.17 Trigger setting

→ AGrr <chk><cr>

← AGx<chk><cr>

Setting trigger.

rr	duty ratio, 2 characters between 01< - >50 in decimal of fixed length.
----	--

x	Result
0	Normal end
1	Failure(format is different, mesuring is going on etc...)

a) This command goes into effect immediately.

b) This setting goes off after powering off

c) AGrrcc<chk><cr> also acceptable

in order to keep the compatibility with previous version of J-chip receiver. In this case, "cc" part will be neglected.

2.18 Setting a LAN-LED motion control

→ ABSnnnnnnnn<chk><cr>

← ABx<chk><cr>

Set a LAN-LED motion control.

s	LED motion control of a receiver connecting as a server .
0	No LED control
1	Controlling LED
n	LED motion control of a receiver connecting as a client. There are 8 channels between Channel 0 to Channel 7, one character for each channel,
0	No LED control
1	Controlling LED
x	Result
0	Normal end
1	Failure(format is different, mesuring is going on etc...)

a) This command goes into effect immediately.

3. Behavior

3.1 Measuring start and measuring stop

→ BMs<chk><cr>

← BMx<chk><cr>

Start measuring or stop measuring.

s	Starting or stopping command is one character of fixed length.
0	stop
1	start
x	Result
0	Normal end
1	Failure(measuring is going on or mesuring is off etc...)

a) This command goes into effect immediately.

3.2 Trigger on / off

→ BTs<chk><cr>

← BTx<chk><cr>

On or off a trigger.

s	Command for trigger on or off, is one character of fixed length.
0	off
1	on
x	Result
0	Normal end
1	Failure(during automatical synchronization, already became ordered status, trigger antenna is not conected yet etc...)

a) This command goes into effect immediately.

3.3 Automatical trigger tuning

→ BG<chk><cr>

← BGx<chk><cr>

Make trigger tuning automatically

x	Result
0	Normal end
1	Failure(trigger is off, during automatical tuning etc...)
2	Finished automatical tuning

a) When this command finishes normally, the reply will come by 2 steps.

→ BG<cr>

← BG0<cr>

← BG2<cr>

Processing from BG0 to BG2 takes few seconds.

It is not allowed to send other command between BG0 and BG2.

b) When this command ends in faille, the number of reply will one time or two.

→ BG<cr>

← BG0<cr>

or

→ BG<cr>

← BG0<cr>

← BG1<cr>

3.4 Power alarm setting (only with LAN)

→ BWS<chk><cr>

← BWx<chk><cr>

Setting a power alarm.

s	Command for alarm on or off, is one character of fixed length.
0	off
1	on

x	Result
0	Normal end
1	Failure

a) This command goes into effect immediately.

b) This setting is effected only to a connecting which sent command.

c) A default setting on establishing a connection is "0 "(off).

3.5 D/O setting

→ BOcb<chk><cr> when b is 0 or 1

or

→ BOcbttt<chk><cr> when b is 2

← BOx<chk><cr>

Control a receiver's D/O output

c	D/O channel number.
0	D/O 1

	1	D/O 2
	2	D/O 3
b		Channel motion.
	0	D/O output off
	1	D/O output on
	2	After D/O is on, make D/O off on set time.
ttt		Setting a time in 100 ms unit during channel motion is "2".
		Between 001 < - > 255, 3 characters in decimal, fixed length.
x		Result
	0	Normal end
	1	Failure(command is wrong etc.)

a) D/O1 is set to making buzzer alarm.

So when the D/O1 is used by BO command, the result will be over lap with buzzer output.

4. Information of tuning reject(Log)

4.1 Power alarm (effect only with LAN)

← LWei <cr>

This command comes when the electric power supply status is changed or changed status is kept over 5 seconds.

c		External power supply condition
	0	power voltage is normal
	1	power voltage is decreasing
b		Internal power condition
	0	power voltag is normal
	1	power voltag is decreasing

a) This command will be sent only to a connection turned on by "3.5" power setting.