External Control Command Specifications

DuraVision®
PT-LAN51

Remote Controlled Pan & Tilt Head

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1 External control protocol

1.1 Communication device

The PT-LAN51 (device) and an external control device (host) such as a PC can be connected via serial communication (RS-232C) or Ethernet.

(*) Do not control from both RS-232C and Ethernet at the same time.
(*) Do not make TCP connections to one device from multiple hosts.

1.2 Communication setting

Communication specifications of serial communication

Baud rate	Data length	Stop Bit	Parity Bit	Flow
38400bps	8 bits	1 bit	No	No

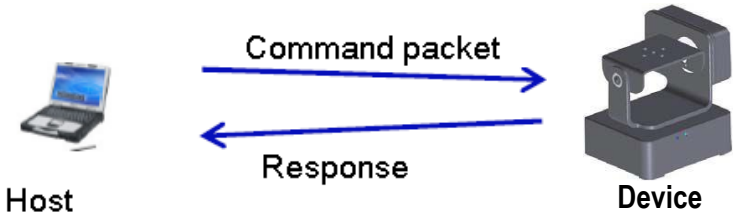
Communication specifications of Ethernet communication

When using for the first time, it is necessary to connect with serial communication and set the IP address.

Default IP address	Default Subnet mask	Default Gateway	Port
192.168.1.100	255.255.255.0	192.168.1.254	0xD002

1.3 Communication protocol

The communication protocol between the device and the host is a master-slave method in which the device responds to host requests.



1.4 Packet format

The packet format sent and received between the host and device is independent of the communication medium. Data in each area is stored in Big Endian.

(*) For serial communication, send each communication data within 100msec.
(*) For Ethernet communication, send STX to BCC in one TCP/IP packet.

1.4.1 Command and response packet

Command packet

STX	DIR	ADR	TYPE	LEN	CODE1	CODE2	DATA	EXT	BCC

Command response packet

RES

Status request response packet

STX	DIR	ADR	TYPE	LEN	CODE1	CODE2	DATA	EXT	BCC

1.4.2 Detail of packet fields

Name	Length	Bit	Definition
STX	1byte	-	Packet starts code (fixed at 0x02)
DIR	1byte	-	Packet direction code 0x80: Command 0x40: Response
ADR	1byte	-	Device address number (fixed at 0x00)
TYPE	1byte	-	Model code (fixed at 0x01)
LEN	2byte	-	Byte length of transmission data (not including CODE1 and CODE2)
CODE1	1byte	[7]	Command type 0: Setting command 1: Getting command
		[6:5]	Unused (fix at 0)
		[4]	Switch location information 0: Pulse value 1: Angle value (Angle x 100 times value) (*) Valid only for command category = 0x05<Pan/Tilt>. Otherwise fixed at 0.
		[3:0]	Command category 0x0: System commands 0x5: Pan/Tilt control
CODE2	1byte	-	Command code
DATA	0 - LEN	-	Send data for data length (This field does not exist if the data length is 0)
ETX	1byte	-	Packet end code (fixed at 0x03)
BCC	1byte	-	Check code (XOR value from STX to ETX)

Name	Length	Definition
RES	1byte	Command response

1.4.3 Response code

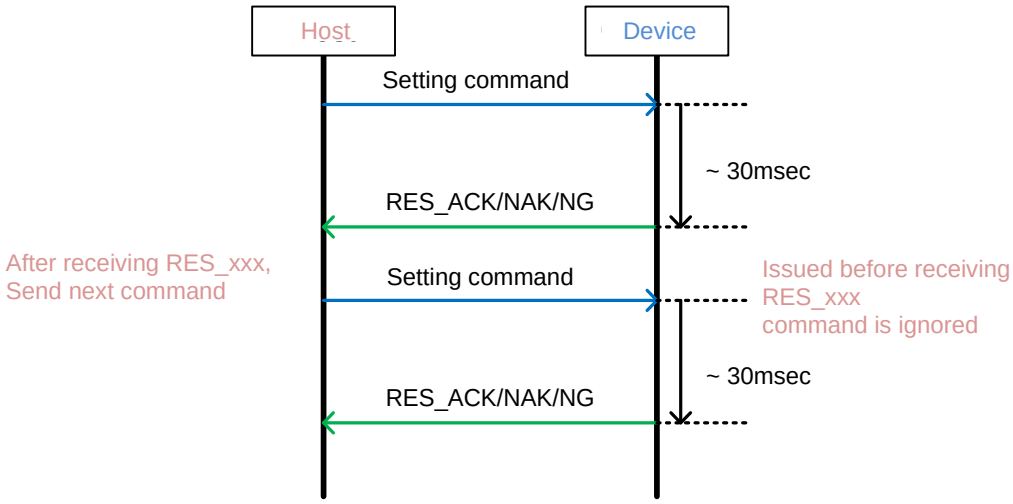
Name	Value	Definition
RES_ACK	0x20	Success of receiving
RES_NAK_RCV_TO	0x41	Timeout error
RES_NAK_BCC	0x42	BCC error
RES_NG_NO_CMD	0x81	Unknown command
RES_NG_INIT	0x82	Before initialization
RES_NG_STATE	0x83	Impossible to receive (In case equipment cannot execute command)
RES_NG_DATA_LEN	0x84	Incorrect data length
RES_NG_PARA	0x85	Incorrect parameter
RES_NG_MOVE	0x86	Failed in command movement

2 Communication sequence

There are two types of commands. The first is a command to set the main unit, and the second is a command to request the current state.

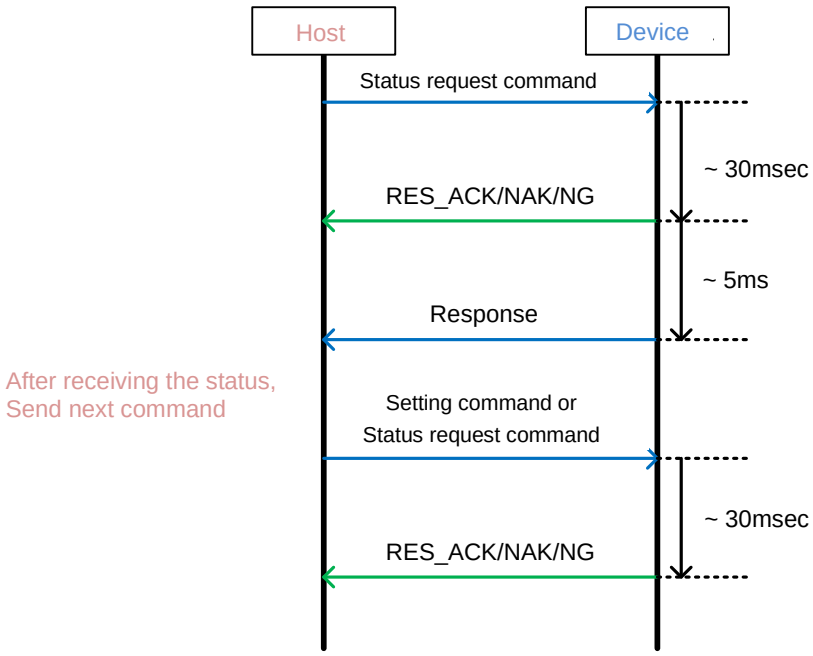
2.1 Setting command

The setting command returns only a 1-byte response code.



2.2 Status request command

A status request command returns a 1-byte response code, and then returns the requested response data.



3 Command

3.1 Command overview

Command Category	CODE1	CODE2	Command Type	Action
0x00 (System)	0x00	0x00	Setting	Reboot
		0x02		Network address setting
		0x03		TCP keep-alive setting
		0x0F		Factory reset
	0x80	0x01	Status request	Get version information
		0x02		Get network information
		0x03		Get TCP keep-alive information
		0x05		Get model name
		0x06		Get serial number
		0x0E		Get system down factor
0x05 (Pan/Tilt)	0x05 (Pulse value), 0x15 (Angle value)	0x01	Setting	Mount mode setting
		0x04		Speed (IR remote control) setting
		0x05		Control mode setting
		0x06		Movement limit range (user limit) setting
		0x07		Speed button setting
		0x08		Origin movement speed setting
		0x20		Trigger move
		0x21		Trigger movement and get motor/tally status
		0x22		Origin moves
		0x23		Specified position move
		0x24		User home position setting
		0x25		Move user home position
		0x26		Preset position setting
		0x27		Move to preset position
		0x28		LED setting
	0x85 (Pulse value), 0x95 (Angle value)	0x01	Status request	Get mount mode
		0x02		Get maximum speed value
		0x03		Get motor information
		0x04		Get speed (IR remote control)
		0x05		Get control mode
		0x06		Get movement limit range (user limit)
		0x07		Get speed button
		0x08		Get origin movement speed
		0x20		Get motor/tally status
		0x24		Get user home position
		0x26		Get preset position
		0x28		Get LED status

3.2 System command

3.2.1 Reboot

Reboot PT-LAN51.

< Setting command >

LEN	CODE1	CODE2	DATA
0	0x00	0x00	-

3.2.2 Get version information

Get the version information of the firmware.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x80	0x01	-

< Response >

LEN	CODE1	CODE2	DATA 1	DATA 2	DATA 3-4
4	0x80	0x01	Major version	Reserved (0x00)	Minor version

3.2.3 Network address setting

Make Ethernet setting for the main unit.
This unit does not support DHCP. Please set a valid network address.
The setting will be reflected after a reboot.

< Setting command >

LEN	CODE1	CODE2	DATA 1-4	DATA 5-8	DATA 9-12
12	0x00	0x02	IP address	Subnet mask	Default gateway

3.2.4 Get network information

Get current Ethernet setting information.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x80	0x02	-

< Response >

LEN	CODE1	CODE2	DATA 1-4	DATA 5-8	DATA 9-12	DATA 13-18	DATA 19-20
20	0x80	0x02	IP address	Subnet mask	Default gateway	MAC address	Port number (Fixed 0xD002)

3.2.5 TCP keep-alive setting

Set the TCP keep-alive function.
The setting will be reflected after a reboot.

When this function is enabled, if no data transmission/reception continues for <Time> period while TCP connection is established, TCP keep-alive packet will be sent and response packet or sequence data communication to the same packet will be sent for <Interval> wait duration. This "packet transmission + response wait" is repeated <Number of transmissions> times until a response is obtained. If the response is not finally obtained, the device closes the current TCP connection and returns to the state of waiting for connection establishment.

< Setting command >

LEN	CODE1	CODE2	DATA 1	DATA 2-3	DATA 4-5	DATA 6-7
7	0x00	0x03	Enable/Disable	Time	Interval	Number of transmissions

Enable/Disable
Enables (1) / Disables (0) the TCP keep-alive function.
If disable is selected, set dummy data (e.g., 0) to <Time>, <Interval> and < Number of transmissions>.

Time
Sets the time from the last data transmission/reception to the first TCP keep-alive packet.
The unit is seconds (*). If 0 is specified, 1 is set.

Interval
Sets the time to wait for a Response to TCP keep-alive packets.
The unit is seconds (*). If 0 is specified, 1 is set.

Number of transmissions
Set the number of "TCP keep alive packet transmission + wait for response".
If set to 0, closes the TCP connection without sending a TCP keep-alive packet <Time> after the last data was sent or received.

(*) Due to the internal counter, a time lag may occur depending on the operating conditions.

3.2.6 Get TCP keep-alive information

Get the current TCP keepalive feature setting.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x80	0x03	-

< Response >

LEN	CODE1	CODE2	DATA 1	DATA 2-3	DATA 4-5	DATA 6-7
7	0x80	0x03	Enable/Disable	Time	Interval	Number of transmissions

Enable/Disable
Time
Interval
Number of transmissions
Same as 0x00_0x03 command (TCP keep-alive setting)

3.2.7 Get model name

Get the model's name.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x80	0x05	-

< Response >

LEN	CODE1	CODE2	DATA 1-8	DATA 9-16	DATA 17-24
24	0x80	0x05	Series name	Model's name	Option

Series name

You can get the series name "PT" of this unit as a fixed value.

Model's name

You can get the model name "LAN51" of this unit as a fixed value.

Option

Used to identify derived models.

3.2.8 Get serial number

Get the serial number.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x80	0x06	-

< Response >

LEN	CODE1	CODE2	DATA 1	DATA 2-9
9	0x80	0x06	Reserved(0x00)	Serial number

Serial number

Serial number (ASCII Character code)

3.2.9 Get system down factor

Get the current system down factor.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x80	0x0E	-

< Response >

LEN	CODE1	CODE2	DATA 1	DATA 2
2	0x80	0x0E	System down factor 1	System down factor 2

System down factor

1: There is a system down factor

0: There is no system down factor (or the factor has already been resolved)

System down factor 1	Definition
[7-2]	(Unused)
[1]	Abnormal access to non-volatile memory
[0]	Abnormal temperature

System down factor 2	Definition
[7]	Pan/Tilt emergency stop
[6]	Power failure (DC-OUT)
[5]	Power failure (Power Input)
[4]	PoE class fault
[3-0]	(Unused)

3.2.10 Factory reset

Initializes the non-volatile memory that retains user settings and restores the factory defaults.
After initialization, the device will automatically restart.

< Setting command >

LEN	CODE1	CODE2	DATA
0 or 1 (*)	0x00	0x0F	Mode

(*) Initialize all items without DATA (Mode) if LEN=0

Mode

DATA	Definition
0x10	Initialize settings other than Ethernet settings
Other	Initialize all items

3.3 Pan/Tilt control

Command for Pan/Tilt head.
CODE1 selects whether to process setting/getting and position information with pulse values or angle values.

CODE1	Set	Get	Pulse	Angle	Definition
0x05	✓	-	✓	-	Setting command. Position information is pulse value.
0x85	-	✓	✓	-	Getting command. Position information is pulse value.
0x15	✓	-	-	✓	Setting command. Position information is an angle value (angle x 100 times value)
0x95	-	✓	-	✓	Getting command. Position information is an angle value (angle x 100 times value)

Angle values can be calculated from pulse values.
Angle value = pulse value * step angle / gear ratio

The step angle and gear ratio can be obtained with the 0x85_0x03 command (Get motor information).

3.3.1 Mount mode setting

Sets the Pan/Tilt installation status.

< Setting command >

LEN	CODE1	CODE2	DATA
1	0x05, 0x15	0x01	Mode

Mode

Bit	Name	Definition
[7:3]	-	Unused (Fixed at 0)
[2]	Tilt reverse mode	This bit is valid only when “Mount mode” is normal (0). 0: Normal 1: Reverse, tilt works in the opposite direction
[1]	pan reverse mode	This bit is valid only when “Mount mode” is normal (0). 0: Normal 1: Reverse, pan works in the opposite direction
[0]	Mount mode	0: Normal 1: Ceiling mounted; Pan/Tilt operates in the opposite direction

3.3.2 Get mount mode

Get the Pan/Tilt installation status.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x85, 0x95	0x01	-

< Response >

LEN	CODE1	CODE2	DATA
1	0x85, 0x95	0x01	Mode

Mode

Bit	Name	Definition
[7:5]	-	(Unused)
[4]	Stage mode	0: Upper, set the stage up 1: Lower, set the stage down (*) This setting is done with the DIP switch on the main unit.
[3]	-	(Unused)
[2]	Tilt reverse mode	This bit is valid only when “Mount mode” is normal (0). 0: Normal 1: Reverse, tilt works in the opposite direction
[1]	pan reverse mode	This bit is valid only when “Mount mode” is normal (0). 0: Normal 1: Reverse, pan works in the opposite direction
[0]	Mount mode	0: Normal 1: Ceiling mounted; Pan/Tilt operates in the opposite direction

3.3.3 Get maximum speed value

Get the maximum pan/tilt speed value.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x85, 0x95	0x02	-

< Response >

LEN	CODE1	CODE2	DATA 1
1	0x85, 0x95	0x02	Maximum speed value

Maximum speed value

Maximum speed value (Common Pan/Tilt)

3.3.4 Get motor information

Get information of each motor such as operating range (limit position) of each axis, motor step angle, gear ratio, etc.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x85, 0x95	0x03	-

< Response >

LEN	CODE1	CODE2	DATA 1-2	DATA 3-4	DATA 5-6	DATA 7-8
16	0x85, 0x95	0x03	Pan step angle	Pan gear ratio	Pan limit(right)	Pan limit(left)
			DATA 9-10	DATA 11-12	DATA 13-14	DATA 15-16
			Tilt step angle	Tilt gear ratio	Tilt limit(up)	Tilt limit(down)

Pan step angle

Tilt step angle

It is the value obtained by multiplying the step angle of the motor by 1000.

Pan gear ratio

Tilt gear ratio

It is the value of the gear ratio of the mechanism.

Pan limit(right)

Pan limit(left)

It is the limit position value that Pan can operate (16bits signed integer).

Tilt limit (up)

Tilt limit (down)

It is the limit position value that Tilt can operate (16bits signed integer)

3.3.5 Speed (IR remote control) setting

Sets the speed at which the IR remote control operates.

< Setting command >

LEN	CODE1	CODE2	DATA 1	DATA 2
2	0x05, 0x15	0x04	Pan speed	Tilt speed

Pan speed
Tilt speed
Operation speed: maximum speed value (highest speed) ~ 1 (lowest speed)
Get the maximum speed value that can be set with the 0x85_0x02 command (Get maximum speed value).

3.3.6 Get speed (IR remote control)

Get the operation speed that works with the IR remote control.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x85, 0x95	0x04	-

< Response >

LEN	CODE1	CODE2	DATA 1	DATA 2
2	0x85, 0x95	0x04	Pan speed	Tilt speed

Pan speed
Tilt speed
Operation speed

3.3.7 Control mode setting

Sets the Pan/Tilt control mode.

< Setting command >

LEN	CODE1	CODE2	DATA 1
1	0x05, 0x15	0x05	Control mode

Control mode

Bit	Name	Definition
[7:5]	-	Unused (Fixed at 0)
[4]	Smart position move	Adjust the speed of Pan/Tilt to the position specified by the position movement command, move in a straight line as much as possible (0: off, 1: on)
[3:0]	-	Unused (Fixed at 0)

3.3.8 Get control mode

Gets the Pan/Tilt control mode.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x85, 0x95	0x05	-

< Response >

LEN	CODE1	CODE2	DATA 1
1	0x85, 0x95	0x05	Control mode

Control mode
Same as 0x05_0x05 command (Control mode setting).

3.3.9 Movement limit range (user limit) setting

Sets the operating range of Pan/Tilt.

< Setting command >

LEN	CODE1	CODE2	DATA 1	DATA 2-3	DATA 4-5	DATA 6-7	DATA 8-9
9	0x05, 0x15	0x06	Mode	Pan right (Max)	Pan left (Min)	Tilt up (Max)	Tilt down (Min)

Mode

Bit	Name	Definition
[7:4]	Tilt Mode	0x0: Reset (the setting is canceled, and the unit operates within the limit range) 0x1: Setting 0x2 to 0xF: No change
[3:0]	Pan Mode	0x0: Reset (the setting is canceled, and the unit operates within the limit range) 0x1: Setting 0x2 to 0xF: No change

If reset is selected at the Pan/Tilt mode, set dummy data (e.g., 0) to the reset parts of <Pan right (Max)>, <Pan left (Min)>, <Tilt up (Max)> and <Tilt down (Min)>.

Pan right(max) limit
Pan left(min) limit
Tilt up(max) limit
Tilt down(min) limit

Specify the operating range. Set the configurable range within the limits of the 0x05_0x03 command (Get motor information). It is recommended to include the origin in the setting range. Regardless of this setting range, it will move to the origin-by-origin movement request.
(16bits signed integer)

3.3.10 Get movement limit range (user limit)

Get the Pan/Tilt operating range.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x85, 0x95	0x06	-

< Response >

LEN	CODE1	CODE2	DATA 1	DATA 2-3	DATA 4-5	DATA 6-7	DATA 8-9
9	0x85, 0x95	0x06	Mode	Pan right (Max)	Pan left (Min)	Tilt up (Max)	Tilt down (Min)

Mode

Bit	Name	Definition
[7:4]	Tilt Mode	0x0: Not set 0x1: Already set
[3:0]	Pan Mode	0x0: Not set 0x1: Already set

Pan right(max) limit
Pan left(min) limit
Tilt up(max) limit
Tilt down(min) limit

If it has already been set, the operating range can be acquired. If not set, the same value as each limit of the 0x05_0x03 command (Get motor information) is returned. (16bits signed integer)

3.3.11 Speed button setting

Sets the speed of the speed button on the IR remote control.

< Setting command >

LEN	CODE1	CODE2	DATA 1	DATA 2	DATA 3	DATA 4
4	0x05, 0x15	0x07	Mode	Speed 1	Speed 2	Speed 3

Mode

Bit	Name	Definition
[7:5]	-	Unused (Fixed at 0)
[4]	Mode	0: Initialize (set to default value) 1: Setting
[3:1]	-	Unused (Fixed at 0)
[0]	Motor	0: Pan 1: Tilt

If initialize is selected at the mode, set dummy data (e.g., 0) to <speed 1>, <speed 2>, and <speed 3>.

Speed 1-3

Setting speed for each button: Maximum speed value (highest speed) ~ 1 (lowest speed)
Get the maximum speed value that can be set with the 0x85_0x02 command (Get maximum speed value).

3.3.12 Get speed button

Get the information of the speed button of the IR remote control.

< Status request command >

LEN	CODE1	CODE2	DATA
1	0x85, 0x95	0x07	Motor

Motor

Motor (axis) selection

Bit	Name	Definition
[7:1]	-	(Unused)
[0]	Motor	0: Pan 1: Tilt

< Response >

LEN	CODE1	CODE2	DATA 1	DATA 2	DATA 3
3	0x85, 0x95	0x07	Speed 1	Speed 2	Speed 3

Speed 1-3

Same as 0x05_0x07 command (Speed button setting).

3.3.13 Origin movement speed setting

Set the movement speed to the origin position.

< Setting command >

LEN	CODE1	CODE2	DATA 1	DATA 2
2	0x05, 0x15	0x08	Pan speed	Tilt speed

Pan speed
Tilt speed

Movement speed to origin position: Maximum speed value (highest speed) ~ 1 (lowest speed)
Get the maximum speed value that can be set with the 0x85_0x02 command (Get maximum speed value).

3.3.14 Get origin movement speed

Get the movement speed to the origin position.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x85, 0x95	0x08	-

< Response >

LEN	CODE1	CODE2	DATA 1	DATA 2
2	0x85, 0x95	0x08	Pan speed	Tilt speed

Pan speed
Tilt speed

It is the same as the 0x05_0x08 command (Origin movement speed setting).

3.3.15 Trigger move

Perform trigger action.

< Setting command >

LEN	CODE1	CODE2	DATA 1	DATA 2	DATA 3
3	0x05, 0x15	0x20	Mode	Pan speed	Tilt speed

Mode

Bit	Name	Definition
[7]	-	Unused (Fixed at 0)
[6]	Pan valid	0: Pan specification invalid (Pan motor does not work) 1: Pan specification valid
[5:4]	Pan mode	0: Stop 1: Move left 2: Move right 3: Move to origin
[3]	-	Unused (Fixed at 0)
[2]	Tilt valid	0: Tilt specification invalid (Tilt motor does not work) 1: Tilt specification valid
[1:0]	Tilt mode	0: Stop 1: Move up 2: Move down 3: Move to origin

If invalid is selected at the pan/tilt valid, set dummy data (e.g., 0) to the disabled parts of <Pan mode>, <Tilt mode>, <Pan speed> and <Tilt speed>.

Pan speed
Tilt speed

Operation speed: maximum speed value (highest speed) ~ 1 (lowest speed)
Get the maximum speed value that can be set with the 0x85_0x02 command (Get maximum speed value).

3.3.16 Get motor/tally status

Get the Pan/Tilt status and tally lamp status.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x85, 0x95	0x20	-

< Response >

LEN	CODE1	CODE2	DATA 1	DATA 2-3	DATA 4-5
5	0x85, 0x95	0x20	Status	Pan position	Tilt position

Status

Bit	Name	Definition
[7]	-	(Unused)
[6]	Tally	0: Off 1: On
[5:4]	Pan	0: Initializing (move commands cannot be accepted) 1: Initialization completed or stopped 2: Moving 3: Limit position reached
[3:2]	Tilt	0: Initializing (move commands cannot be accepted) 1: Initialization completed or stopped 2: Moving 3: Limit position reached
[1:0]	-	(Unused)

Pan position

Pan current position

Tilt position

Tilt current position

3.3.17 Trigger movement and get motor/tally status

This command performs trigger operation and motor/tally status acquisition at the same time.

< Setting & Status request command >
The communication sequence is the same as "Status request command".

LEN	CODE1	CODE2	DATA 1	DATA 2	DATA 3
3	0x05, 0x15	0x21	Pan/Tilt mode	Pan speed	Tilt speed

Pan/Tilt Mode
Pan speed
Tilt speed
Same as 0x05_0x20 command (Trigger move)

< Response >

LEN	CODE1	CODE2	DATA 1	DATA 2-3	DATA 4-5
5	0x05, 0x15	0x21	Status	Pan position	Tilt position

Status
Pan position
Tilt position
Same as 0x85_0x20 command (Get motor/tally status)

3.3.18 Origin moves

Move to the origin position.

< Setting command >

LEN	CODE1	CODE2	DATA
0	0x05, 0x15	0x22	-

3.3.19 Specified position move

Move to the specified position.

< Setting command >

LEN	CODE1	CODE2	DATA 1	DATA 2	DATA 3-4	DATA 5-6
6	0x05, 0x15	0x23	Mode	Speed	Pan position	Tilt position

Mode

Bit	Name	Definition
[7:2]	-	Unused (Fixed at 0)
[1]	Tilt valid	0: Tilt specification invalid (Tilt motor does not work) 1: Tilt specification valid
[0]	Pan valid	0: Pan specification invalid (Pan motor does not work) 1: Pan specification valid

If invalid is selected at the pan/tilt valid, set dummy data (e.g., 0) to the disabled parts of <Pan position> and <Tilt position>

Speed
Operation speed: maximum speed value (highest speed) ~ 1 (lowest speed)
Get the maximum speed value that can be set with the 0x85_0x02 command (Get maximum speed value).

Pan position
Tilt position
Same as 0x85_0x20 command (Get motor/tally status)

3.3.20 User home position setting

Set or delete the user home position.

< Setting command >

LEN	CODE1	CODE2	DATA 1	DATA 2-3	DATA 4-5
1 or 5	0x05, 0x15	0x24	Mode	Pan position	Tilt position

Mode (*1)

Name	Definition
Mode	0: Delete Delete user home position information 1: Register current position Register current position as user home position 2: Specified position setting Sets the specified position as the user home position.

If delete is selected at the mode, set dummy data (e.g., 0) to <Pan position> and <Tilt position>.

Pan position
Pan position (Valid when “Mode” = 2) (*)
Tilt position
Tilt position (Valid when “Mode” = 2) (*)

(*) When Mode=0,1, Pan/Tilt position can be omitted with LEN=1.
If Mode=2, be sure to set LEN=5.
Set the setting position within the range obtained by the 0x85_0x03 command (Get motor information).

3.3.21 Get user home position

Get user home position setting information.

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x85, 0x95	0x24	-

< Response >

LEN	CODE1	CODE2	DATA 1	DATA 2-3	DATA 4-5
5	0x85, 0x95	0x24	Status	Pan position	Tilt position

Status
User home position setting state (0: not set, 1: set)
Pan position
Pan position (Valid when “Status” = 1)
Tilt position
Tilt position (Valid when “Status” = 1)

3.3.22 Move user home position

Move to user home position.
It will not work if the user home position is not set.

< Setting command >

LEN	CODE1	CODE2	DATA 1
0 or 1 (*)	0x05, 0x15	0x25	Speed

(*) If LEN=0, it will operate at the speed specified on the main unit side (same speed as origin movement)

Speed
Operation speed: maximum speed value (highest speed) ~ 1 (lowest speed)
Get the maximum speed value that can be set with the 0x85_02 command (Get maximum speed value).

3.3.23 Preset position setting

Sets the current Pan/Tilt position as a preset position.

< Setting command >

LEN	CODE1	CODE2	DATA 1
1	0x05, 0x15	0x26	Preset number

Preset number

15 presets can be set (1-15)

3.3.24 Get preset position

Get preset position information.

< Status request command >

LEN	CODE1	CODE2	DATA 1
1	0x85, 0x95	0x26	Preset number

Preset number

Same as 0x05_0x26 command (Preset position setting).

< Response >

LEN	CODE1	CODE2	DATA 1-2	DATA 3-4
4	0x85, 0x95	0x26	Pan position	Tilt position

Pan position

Pan preset position

Tilt position

Tilt preset position

3.3.25 Move to preset position

Move to preset position.

< Setting command >

LEN	CODE1	CODE2	DATA 1	DATA 2
2	0x05, 0x15	0x27	Preset number	Speed

Preset number

Same as 0x05_0x26 command (Preset position setting).

Speed

Operation speed: maximum speed value (highest speed) ~ 1 (lowest speed)

Get the maximum speed value that can be set with the 0x85_02 command (Get maximum speed value).

3.3.26 LED setting

Sets the LED (Tally).

< Setting command >

LEN	CODE1	CODE2	DATA
1	0x05, 0x15	0x28	LED

LED

Bit	Name	Definition
[7:1]	-	Unused (Fixed at 0)
[0]	Tally	Tally (0: Off, 1: On)

Tally light turns to "0: Off" with power off/on.

3.3.27 Get LED status

Gets the status of the LED (Tally).

< Status request command >

LEN	CODE1	CODE2	DATA
0	0x85, 0x95	0x28	-

< Response >

LEN	CODE1	CODE2	DATA 1
1	0x85, 0x95	0x28	LED

LED

Same as 0x05_0x28 command (LED setting).

Appendix A. Initial value/fixed value

■ Initial value list

Command Category	CODE2	Command	Item	Value
0x00	0x02	Network address	IP address	192.168.1.100
			Subnet mask	255.255.255.0
			Default gateway	192.168.1.254
	0x03	TCP keep-alive	Enable/Disable	Disable
			Time	7200 (second = 2hour)
			Interval	75 (second)
			Number of transmissions	9 (times)
0x05	0x01	Mount mode	Mount mode	Normal
			Pan reverse mode	Normal
			Tilt reverse mode	Normal
	0x04	Speed (IR remote control)	Pan speed	106
			Tilt speed	106
	0x05	Control mode	Smart position move	On
	0x06	Movement limit range (User limit)	Pan right	Not set
			Pan left	Not set
			Tilt up	2500 (pulse) (*)
			Tilt down	-2500 (pulse) (*)
	0x07	Speed button	Speed 1 (Pan & Tilt)	147
			Speed2 (Pan & Tilt)	106
			Speed3 (Pan & Tilt)	50
	0x08	Origin movement speed	Pan speed	134
			Tilt speed	78
	0x24	User home position	Pan position	Not set
			Tilt position	Not set
	0x26	Preset position	Pan position (Preset number 1-15)	0
			Tilt position (Preset number 1-15)	0
	0x28	LED	Tally	Off

(*) Set during a factory reset. When reset by the movement restriction range Setting command, it becomes "not set".

■ Fixed value list

Command Category	CODE2	Command	Item	Value
0x05	0x02	Maximum speed value	-	147
	0x03	Motor information	Pan step angle	1800 (pulse)
			Pan gear ratio	150
			Pan limit(right)	14300 (pulse)
			Pan limit (left)	-14300 (pulse)
			Tilt step angle	1800 (pulse)
			Tilt gear ratio	150
			Tilt limit (up)	14500 (pulse)
			Tilt limit (down)	-14500 (pulse)

■ Speed setting and rotation speed (excerpt)

Speed setting	Rotation speed (angle°/sec)
147	50.0175
134	45.3375
120	40.2975
106	35.2575
92	30.2175
78	25.1775
64	20.1375
50	15.0975
43	12.5775
36	10.0575
29	7.5375
25	6.0975
17	3.2175
13	1.7775
7	0.36

Appendix B. Command example - basic operation

1. Get maximum speed number

First, get the maximum speed number of the main unit. The speed value may vary depending on the settings, so be sure to get it.

- (CODE1:0x85, CODE2:0x02) Get maximum speed number
  - No command data

Command packet (Host -> PT-LAN51)

STX	DIR	ADR	TYPE	LEN1	LEN2	CODE1	CODE2	ETX	BCC
0x02	0x80	0x00	0x01	0x00	0x00	0x05	0x02	0x03	0x87

BCC = 0x02^0x80^0x00^0x01^0x00^0x00^0x05^0x02^0x03=0x87

Response code (PT-LAN51 -> Host)

RES
0x20

0x20 = RES_ACK: Successful receive

Response packet (PT-LAN51 -> Host)

STX	DIR	ADR	TYPE	LEN1	LEN2	CODE1	CODE2	DATA1	ETX	BCC
0x02	0x40	0x00	0x01	0x00	0x02	0x05	0x02	0x93	0x03	0xD6

BCC = 0x02^0x40^0x00^0x01^0x00^0x02^0x05^0x02^0x93^0x03=0xD6

DATA1:Pan/Tilt max speed= 0x93 = 147 This value will be the maximum speed value.

2. Pan move

- (CODE1:0x05, CODE2:0x20) Trigger move
  - Pan (Enable, right, speed=100)

DATA1

Pan/Tilt Mode = 0x60

Bit	Name	Value	Definition
[7]	-	0-------	0: (Unused)
[6]	Pan valid	-1------	1: Pan specification valid
[5:4]	Pan Mode	--10----	2: Move right
[3]	-	----0---	0: (Unused)
[2]	Tilt valid	-----0--	0: Tilt specification invalid
[1:0]	Tilt Mode	------00	0: Stop (Ignored because tilt specification is invalid)

DATA2

Pan Speed = 0x64 (=100)

DATA3

Tilt Speed = 0x00 (=0)

Command packet (Host -> PT-LAN51)

STX	DIR	ADR	TYPE	LEN1	LEN2	CODE1	CODE2	DATA1	DATA2	DATA3
0x02	0x80	0x00	0x01	0x00	0x03	0x05	0x20	0x60	0x64	0x00

ETX	BCC
0x03	0xA2

BCC = 0x02^0x80^0x00^0x01^0x00^0x03^0x05^0x20^0x60^0x64^0x00^0x03=0xA2

Response (PT-LAN51 -> Host)

RES
0x20

0x20 = RES_ACK: Successful receive

3. Pan/Tilt move

- (CODE1:0x05, CODE2:0x20) Trigger move
  - Pan (Enable, left, speed=147)
  - Tilt (Enable, down, speed=100)
  - No get status

DATA1

Pan/Tilt Mode = 0x56

Bit	Name	Value	Definition
[7]	-	0-------	0: (Unused)
[6]	Pan valid	-1------	1: Pan specification valid
[5:4]	Pan Mode	--01----	1: Move left
[3]	-	----0---	0: (Unused)
[2]	Tilt valid	-----1--	1: Tilt specification valid
[1:0]	Tilt Mode	------10	2: Move down

DATA2

Pan Speed = 0x93 (=147)

DATA3

Tilt Speed = 0x64 (=100)

Command packet (Host -> PT-LAN51)

STX	DIR	ADR	TYPE	LEN1	LEN2	CODE1	CODE2	DATA1	DATA2	DATA3
0x02	0x80	0x00	0x01	0x00	0x03	0x05	0x20	0x56	0x93	0x64

ETX	BCC
0x03	0x07

BCC = 0x02^0x80^0x00^0x01^0x00^0x03^0x05^0x20^0x56^0x93^0x64^0x03=0x07

Response (PT-LAN51 -> Host)

RES
0x20

0x20 = RES_ACK: Successful receive

4. Pan/Tilt stop

■ (CODE1:0x05, CODE2:0x20) Trigger move
- ➢ Pan (Enable, stop)
- ➢ Tilt (Enable, stop)

DATA1

Pan/Tilt Mode = 0x44

Bit	Name	Value	Definition
[7]	-	0-------	0: (Unused)
[6]	Pan valid	-1------	1: Pan specification valid
[5:4]	Pan Mode	--00----	0: Stop
[3]	-	----0---	0: (Unused)
[2]	Tilt valid	-----1--	1: Tilt specification valid
[1:0]	Tilt ode	------00	0: Stop

DATA2

Pan Speed = 0x00

DATA3

Tilt Speed = 0x00

Command packet (Host -> PT-LAN51)

STX	DIR	ADR	TYPE	LEN1	LEN2	CODE1	CODE2	DATA1	DATA2	DATA3
0x02	0x80	0x00	0x01	0x00	0x03	0x05	0x20	0x44	0x00	0x00

ETX	BCC
0x03	0xE2

BCC = 0x02^0x80^0x00^0x01^0x00^0x03^0x05^0x20^0x44^0x00^0x00^0x03=0xE2

Response (PT-LAN51 -> Host)

RES
0x20

0x20 = RES_ACK: Successful receive

5. Pan/Tilt origin move

■ (CODE1:0x05, CODE2:0x20) Trigger move
- ➢ Pan (Enable, move to origin)
- ➢ Tilt (Enable, move to origin)

DATA1

Pan/Tilt Mode = 0x77

Bit	Name	Value	Definition
[7]	-	0-------	0: (Unused)
[6]	Pan valid	-1------	1: Pan specification valid
[5:4]	Pan Mode	--11----	3: Move to origin
[3]	-	----0---	0: (Unused)
[2]	Tilt valid	-----1--	1: Tilt specification valid
[1:0]	Tilt Mode	------11	3: Move to origin

DATA2

Pan Speed = 0x00

DATA3

Tilt Speed = 0x00

Command packet (Host -> PT-LAN51)

STX	DIR	ADR	TYPE	LEN1	LEN2	CODE1	CODE2	DATA1	DATA2	DATA3
0x02	0x80	0x00	0x01	0x00	0x03	0x05	0x20	0x77	0x00	0x00

ETX	BCC
0x03	0xD1

BCC = 0x02^0x80^0x00^0x01^0x00^0x03^0x05^0x20^0x77^0x00^0x00^0x03=0xD1

Response (PT-LAN51 -> Host)

RES
0x20

0x20 = RES_ACK: Successful receive

6. Pan/Tilt move, Get status - Detail type command

■ (CODE1:0x85, CODE2:0x20) Get motor/tally status
  ➢ No command data

Command packet (Host -> PT-LAN51)

STX	DIR	ADR	TYPE	LEN1	LEN2	CODE1	CODE2	ETX	BCC
0x02	0x80	0x00	0x01	0x00	0x00	0x85	0x20	0x03	0x25

BCC = 0x02^0x80^0x00^0x01^0x00^0x00^0x85^0x20^0x03=0x25

Response (PT-LAN51 -> Host)

RES
0x20

0x20 = RES_ACK: Successful receive

Response packet (PT-LAN51 -> Host)

STX	DIR	ADR	TYPE	LEN1	LEN2	CODE1	CODE2
0x02	0x40	0x00	0x01	0x00	0x05	0x85	0x20

DATA1	DATA2-3		DATA4-5		EXT	BCC
0x28	0x3A	0x98	0xEC	0x78	0x03	0xFE

BCC = 0x02^0x40^0x00^0x01^0x00^0x05^0x85^0x20^0x28^0x3A^0x98^0xEC^0x78^0x03=0xFE

DATA1

Pan position = 0x28

Bit	Name	Value	Definition
[7]	-	0-------	0: (Unused)
[6]	Tally	-0------	0: Off
[5:4]	Pan	--10----	2: Moving
[3:2]	Tilt	----10--	2: Moving
[1:0]	-	------00	0: (Unused)

DATA2-3

Pan position = 0x3A98 = 15000

DATA4-5

Tilt position = 0xEC78 = -5000

(CODE1:0x84, CODE2:0xC3) The rotation angle can be calculated from the gear ratio and step angle obtained by motor information.

Pan step angle = 1800 => 1.8°
Pan gear ratio = 150
Pan position = 15000

15000*1.8/150 = 180°

Tilt step angle = 1800 => 1.8°
Tilt gear ratio = 150
Tilt position = -5000

-5000*1.8/150 = -60°

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