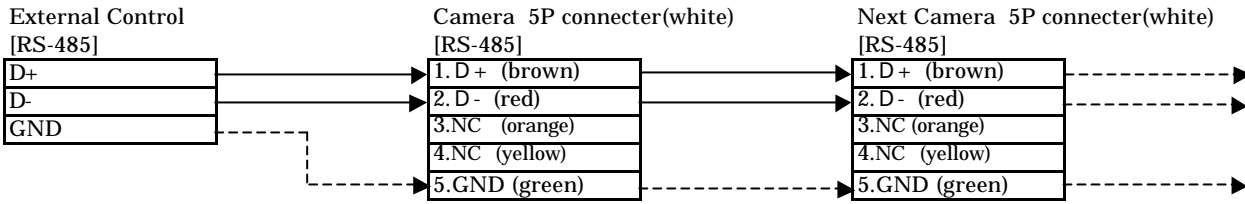


# RS-485 Communication Protocol for PTC-1000

Ver1.02  
2007/11/16

## 1. Connection



## 2. UART Protocol

Transmission mode	Asynchronous half duplex
Baud rate:	9600
Start bit:	1
Data bit:	8
Parity:	None
Stop bit:	1

## 3. Command Packet

Every command is composed of six bytes; the packet format is described as below..

Byte 1	Byte 2	Byte 3	Byte 4	Byte5	Byte 6
Receiver ID	Transmitter ID	OP Code	Data 0	Data 1	Check Sum

The first byte is the Receiver or 'Destination' device ID.

The second byte is the Transmitter or 'Source' device ID.

The third byte is the OP code or 'command' byte.

The fourth and fifth bytes are the data byte.

The sixth byte is the check sum of this command packet.

Checksum = Byte1 XOR Byte2 XOR Byte3 XOR Byte4 XOR Byte5  
(XOR= exclusive or)

## 4. Communication Setting

Please change setting to show below from an IR controller.

CAUTION: Communication is not possible when setting is changed via RS -485.

OSD(On Screen Display) MENU

<UART>

PROTOCOL	MODE1 (Factory Settings:MODE1)	[Protocol]
CAMERA ID	1to223 (Factory Settings:1)	[ID-address]
TERMINATE	ON/OFF (Factory Settings:OFF)	[Terminating Resistance]
BAUD RATE	9600 (Factory Settings:9600)	[Baud Rate]
WAIT TIME	1ms to 5ms (Factory Settings:5ms)	[Acknowledge Delay Time]

COMMAND LIST for PTC-1000

Ver1.02

COMMAND LIST

2007/11/16

CommandSet	Command	Packet	Packet Reply	Comments	
Zoom	Stop	ID 00 24 04 00 cs	00 ID 24 04 00 cs		
	Tele	ID 00 24 01 00 cs	00 ID 24 01 00 cs		
	Wide	ID 00 24 00 00 cs	00 ID 24 00 00 cs		
	Speed	ID 00 24 03 pq cs	00 ID 24 03 pq cs	pp:Speed parameter 00h(Slow) to 03h(Fast), 0Fh:OSD SETTING	
	Speed(Request)	ID 00 24 05 00 cs	00 ID 24 05 pq cs	pp:Speed parameter 00h(Slow) to 03h(Fast), 0Fh:OSD SETTING	
	Lens Position	ID 00 27 pq rs cs	00 ID 27 pq rs cs	pp:High Address rs:Low Address (W-0000h T-7C00h) 0000h to 4000h:Optical Area, 4001h to 7C00h:Electronic Area	
	Lens Position(Request)	ID 00 20 01 00 cs	00 ID 20 pq rs cs	pp:High Address rs:Low Address (W-0000h T-7C00h) 0000h to 4000h:Optical Area, 4001h to 7C00h:Electronic Area	
	Electronic Zoom Off	ID 00 2E 00 00 cs	00 ID 2E 00 00 cs		
	Electronic Zoom Max	ID 00 2E 01 pq cs	00 ID 2E 01 pq cs	pp: Electronic Zoom Max Magnification 01h(x1.5),02h(x2), 03h(x2.5),04h(x3),05h(x4),06h(x6),07h(x8),08h(x16)	
	Electronic Zoom Max (Request)	ID 00 2E 03 00 cs	00 ID 2E 03 pq cs	pp: Electronic Zoom Max Magnification 00h(OFF),01h(x1.5) .02h(x2),03h(x2.5),04h(x3),05h(x4),06h(x6),07h(x8),08h(x16)	
Focus	Stop	ID 00 25 04 00 cs	00 ID 25 04 00 cs		
	Far	ID 00 25 06 pq cs	00 ID 25 06 pq cs	pp:Speed parameter 00h(Slow) 01h(Fast), 0Fh:OSD SETTING	
	Near	ID 00 25 05 pq cs	00 ID 25 05 pq cs	pp:Speed parameter 00h(Slow) 01h(Fast), 0Fh:OSD SETTING	
	Auto	ID 00 26 03 00 cs	00 ID 26 03 00 cs		
	*1 Far(Manual)	ID 00 25 01 pq cs	00 ID 25 01 pq cs	pp:Speed parameter 00h(Slow) 01h(Fast), 0Fh:OSD SETTING	
	*1 Near(Manual)	ID 00 25 00 pq cs	00 ID 25 00 pq cs	pp:Speed parameter 00h(Slow) 01h(Fast), 0Fh:OSD SETTING	
	*1 Auto / Manual	ID 00 26 00 00 cs	00 ID 26 00 00 cs	Toggle	
	Lens Position(Request)	ID 00 20 02 00 cs	00 ID 20 pq rs cs	pp:High Address rs:Low Address (F-1000h N-B800h(@NEAR LIMIT=0.2m))	
Iris	Close	ID 00 23 03 00 cs	00 ID 23 03 00 cs		
	Open	ID 00 23 02 00 cs	00 ID 23 02 00 cs		
	Normal(standard)	ID 00 23 04 00 cs	00 ID 23 04 00 cs		
Pan-tiltDrive (Manual)	Right	ID 00 18 00 pq cs	00 ID 18 00 pq cs	pp:Speed parameter 00h(Slow)to 0Fh(Fast), 16 steps 10h(Auto Speed)	
	Left	ID 00 18 01 pq cs	00 ID 18 01 pq cs		
	Pan Stop	ID 00 13 00 00 cs	00 ID 13 00 00 cs		
	Up	ID 00 18 02 pq cs	00 ID 18 02 pq cs		
	Down	ID 00 18 03 pq cs	00 ID 18 03 pq cs		
	Tilt Stop	ID 00 14 00 00 cs	00 ID 14 00 00 cs		
Pan-tiltDrive (Step)	Right	ID 00 4E 00 pq cs	00 ID 4E 00 pq cs	pp:Degree parameter 00h~ 0Fh 15 steps 1step=1.0125°	
	Left	ID 00 4E 01 pq cs	00 ID 4E 01 pq cs		
	Up	ID 00 4E 02 pq cs	00 ID 4E 02 pq cs		
	Down	ID 00 4E 03 pq cs	00 ID 4E 03 pq cs		
Pan-tiltDrive (Absolute)	Pan	ID 00 07 pq rs cs	00 ID 07 pq rs cs	pp:High Address rs:Low Address (Absolute Position)  Pan:0000h ~ 31FFh<12799d> Tilt:Dome-off:0000h ~ 1D95h<7573d> Dome-on:0496h<1174d> ~ 1900h<6400d>	
	Tilt	ID 00 08 pq rs cs	00 ID 08 pq rs cs		
	Pan(Request)	ID 00 09 00 00 cs	00 ID 09 pq rs cs		
	Tilt(Request)	ID 00 0A 00 00 cs	00 ID 0A pq rs cs		
AutoFlip	Angle	ID 00 18 04 pq cs	00 ID 18 04 pq cs	pp: 00h(off), 01h(100deg),02h(110deg),03h(120deg),04h(130deg), 05h(140deg),06h(150deg),07h(160deg),08h(170deg),09h(180deg)	
	*1 Angle (Request)	ID 00 18 15 00 cs	00 ID 18 15 pq cs		
AutoPan	Run AutoPan	ID 00 11 02 00 cs	00 ID 11 02 00 cs		
	Set Start Point	ID 00 1C 00 00 cs	00 ID 1C 00 00 cs		
	Set End Point	ID 00 1C 01 00 cs	00 ID 1C 01 00 cs		
	Direction	ID 00 1C 02 pq cs	00 ID 1C 02 pq cs	pp:00h=Right, 01h=Left	
	Speed	ID 00 1C 03 pq cs	00 ID 1C 03 pq cs	pp:00h(slow) to 07h(fast)	
	*1 Dwell	ID 00 1C 04 pq cs	00 ID 1C 04 pq cs	pp: Dwell Time 00h(0s),01h(1s),02h(1s),03h(5s) 04h(10s),05h(20s),06h(30s)	
		Direction(Request)	ID 00 1C 12 00 cs	00 ID 1C 12 pq cs	pp:00h=Right, 01h=Left
		Speed(Request)	ID 00 1C 13 00 cs	00 ID 1C 13 pq cs	pp:00h(slow) to 07h(fast)
	*1 Dwell(Request)	ID 00 1C 14 00 cs	00 ID 1C 14 pq cs	pp: Dwell Time 00h(0s),01h(1s),02h(2s),03h(3s) 04h(5s),05h(10s),06h(20s),07h(30s)	

Sequence	Run Sequence N	ID 00 11 01 pq cs	00 ID 11 01 pq cs	pp: Sequence Line 00h(Line1) to 03h(Line4) 4lines
	Preset	ID 00 19 pq rs cs	00 ID 19 pq rs cs	pp: bit7 to 5=Sequence Line 0(Line1) to 3(Line4) bit4 to 0=Sequence number 0(No.1) to 31(No.32) rs: Preset Number 00h(Preset1) to FEh(Preset255) , FFh(Sequence Number Disable)
	Dwell	ID 00 1A pq rs cs	00 ID 1A pq rs cs	pp: bit7 to 5=Sequence Line 0(Line1) to 3(Line4) bit4 to 0=Sequence number 0(No.1) to 31(No.32) rs: Dwell Time 02h(2s),04h(3s),06h(5s),08h(10s),0Ah(30s) 0Ch(1min),0Eh(2min),10h(3min),12h(4min),14h(5min), 00h(Sequence Number Disable)
	Speed	ID 00 1B pq rs cs	00 ID 1B pq rs cs	pp: bit7 to 5=Sequence Line 0(Line1) to 3(Line4) bit4 to 0=Sequence number 0(No.1) to 31(No.32) rs: Speed 00h(Slow) to 07h(Fast) , FFh(Sequence Number Disable)
Sequence & AutoPan	Stop	ID 00 12 00 00 cs	00 ID 12 00 00 cs	Sequence & AutoPan Stop
Preset	Go to Preset N	ID 00 11 00 pq cs	00 ID 11 00 pq cs	pp: Preset number 00h(Position1) to FEh(Position255) 255Positions
	Go to Preset N	ID 00 11 03 pq cs	00 ID 11 03 pq cs	pp: Preset number 00h(Position1) to FEh(Position255) 255Positions
	Memory N	ID 00 1D 00 pq cs	00 ID 1D 00 pq cs	pp: Preset number 00h(Position1) to FEh(Position255) 255Positions
	Clear N	ID 00 1D 01 pq cs	00 ID 1D 01 pq cs	pp: Preset number 00h(Position1) to FEh(Position255) 255Positions
	Home/OSD	ID 00 49 02 00 cs	00 ID 49 02 00 cs	Home/OSD Both
	Reset	ID 00 15 AA 55 cs	00 ID 15 AA 55 cs	
Alarm	Go to Alarm Point	ID 00 10 00 pq cs	00 ID 10 00 pq cs	pp: Alarm number 00h(Alarm1) to 07h(Alarm8)
	Alarm Point Set	ID 00 AD pq rs cs	00 ID AD pq rs cs	pp: Alarm number 00h(Alarm1) to 07h(Alarm8) rs: Preset number 00h(Position0) to FFh(Position255) 256Positions
	Alarm Point (Request)	ID 00 10 02 pq cs	00 ID 10 02 rs cs	pp: Alarm number 00h(Alarm1) to 07h(Alarm8) rs: Preset number 00h(Position0) to FFh(Position255) 256Positions
	Alarm Status (Request)	ID 00 10 03 pq cs	00 ID 10 03 rs cs	pp: Alarm number 00h(Alarm1) to 07h(Alarm8) rs: Alarm Status 00h=Off, 01h=On
Camera Display *1	Title	ID 00 4C 01 pq cs	00 ID 4C 01 pq cs	pp: Title 00h=Off, 01h=On
	Select	ID 00 4C 02 pq cs	00 ID 4C 02 pq cs	pp: Select 00h=Preset, 01h=Camera
	(Request)	ID 00 4D 00 00 cs	00 ID 4D pq rs cs	pp:bit1=Title(0:Off ,1:On),bit2=Select(0:Camera ,1:Preset ) bit0,3 to 7=N/A(always 0) rs:bit0 to 7=N/A(always 0)
ICR	Off	ID 00 48 00 00 cs	00 ID 48 00 00 cs	
	On	ID 00 48 01 00 cs	00 ID 48 01 00 cs	
	Auto	ID 00 48 02 00 cs	00 ID 48 02 00 cs	
	*1 Threshold	ID 00 48 04 pq cs	00 ID 48 04 pq cs	pp:00h(Insensitive) to 0Fh(Sensitive)
	*1 Wavelength	ID 00 48 05 pq cs	00 ID 48 05 pq cs	pp:00h=Visible Ray,01h:850nm,02h:950nm
OSD Control	Up	ID 00 28 00 00 cs	00 ID 28 00 00 cs	Up key push
	Down	ID 00 28 01 00 cs	00 ID 28 01 00 cs	Down key push
	Left	ID 00 28 02 00 cs	00 ID 28 02 00 cs	Left key push
	Right	ID 00 28 03 00 cs	00 ID 28 03 00 cs	Right key push
	Stop	ID 00 28 FF 00 cs	00 ID 28 FF 00 cs	key pull
	MENU	ID 00 28 04 00 cs	00 ID 28 04 00 cs	MENU key push
System Device	(Request)	ID 00 00 00 00 cs	00 ID 00 pq rs cs	pp:00h=Camera,01h=Multiplexer rs=60h:PTC-1000
Communication	Acknowledge	ID 00 84 pq 00 cs	00 ID 84 pq 00 cs	pp: 00h:Enable, 01h:Disable
Device Capability	(Request)	ID 00 4A 00 00 cs	00 ID 4A pq 00 cs	pp:bit0=Cruise(0:non-supported ),bit1=Pan/Tilt(0:supported ) bit2=Zoom(0:supported), bit3=OSDmenu(0:supported ) bit4=DeviceLock(1:supported ),bit5=Home(1:supported ) bit6=0,bit7=0 PTC-1000=30h(defalut)
Camera Status	(Request)	ID 00 01 00 00 cs	00 ID 01 pq rs cs	pp: bit0=Pan busy(0:free ,1:busy), bit1=Tilt busy(0:free ,1:busy) bit2 to 4, 7=N/A(always 0), bit5,6=Pan/Tilt Install Direction(always 1) rs: bit0=OSDmenu(0:off,1:on), bit1=AF(0:manu,1:auto) bit2=OSD operation(0:pan/tilt,1:OSD operation) bit3 to 7=N/A(always 0)
Camera Status 1	(Request)	ID 00 20 00 00 cs	00 ID 20 pq rs cs	pp: bit1=Electronic Zoom(0:off,1:on), bit2=OnePush AF(0:not OnePush,1:OnePush) bit3=Flickerless(0:off,1:on), bit4=BLC(0:off,1:on) bit5=WB AWC(0:off,1:on), bit7=Focus Mode(0:AF,1>manual) bit0,6=N/A(always 0) rs: bit1=Electronic Zoom(0:off,1:on), bit2=OnePush AF(0:not OnePush,1:OnePush) bit0,3to7=N/A(always 0)

Camera Version *1	(Request)	ID 00 02 00 00 cs	00 ID pq rs tu cs	pq:Cam CPU Version, rs:PT CPU Version, tu:Main CPU Version, pq,rs,tu:7-5bit = Major Version, 4-0bit = Minor Version 21h = Version 1.01, FFh = Version 8.31
Power	On/Off	ID 00 82 pq 00 cs	00 ID 82 pq 00 cs	pq: 00h:off,01h:on
Power Status	(Request)	ID 00 82 02 00 cs	00 ID 82 02 pq cs	pq: 00h:on,01h:off
IR Remote *1	Ena/Dis	ID 00 03 pq 00 cs	00 ID 03 pq 00 cs	pq: 00h:Enable,01h:Disable
Sequence Request *2	(Request)	ID 00 03 pq rs cs	00 ID 03 pq rs cs	pq: 4*n + X0h n: Sequence number 0(No.1) to 31(No.32) X: Sequence Line line1,3=0, Sequence Line line2,4=8 rs: 04h + Y Y: Sequence Line line1,2=0, Sequence Line line3,4=1
Sequence Setting *2	(Request)	ID 00 04 01 04 cs	00 ID 04 01 04 cs	<the following communication process> controller: ID 00 03 pq rs cs (Sequence Request Command) PTC-1000: 00 ID 03 pq rs cs controller: ID 00 04 01 04 cs PTC-1000: 00 ID 04 01 pq cs (pq=Dwell Setting) controller: ID 00 04 01 04 cs PTC-1000: 00 ID 04 01 pq cs (pq=Speed Setting) controller: ID 00 04 01 04 cs PTC-1000: 00 ID 04 01 pq cs (pq=Speed Setting) controller: ID 00 04 01 04 cs PTC-1000: 00 ID 04 01 pq cs (pq=Preset Number)
Alarm Notice *2	PTC-1000 Send Command	00 00 80 pq rs cs	tu F0 A0 30 vw cs	This command is sent from PTC-1000. pq: CAMERA ID 1 to 223 r: Alarm Push/Pull status 0=Push, 8=Pull s: Alarm Number 0(Alarm1) to 7(Alarm8),8(Motion Detector) tu: 0xE0 + (pq / 0x10) vw: ASCII Character CODE of Decimal(pq & 0x0F) Exp. vw = 0x31(@pq = 0x01), vw = 0x47(@pq = 0x10), vw = 0x31(@pq = 0x11), vw = 0x47(@pq = 0x20)

\*1 = Private Command

\*2 = Confidential Command

cs=Checksum(Byte1~5:XOR)