9.0 MISCELLANEOUS

9.1 RS-232C input

Pin Assignment
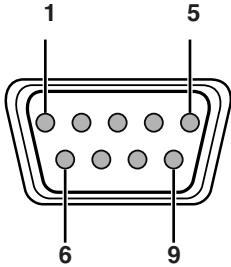
Pin No.	Signal Name	Pin No.	Signal Name
1	N/C	6	N/C
2	RD	7	N/C
3	TD	8	N/C
4	N/C	9	N/C
5	GND		

External Control

Control of this unit is possible via a computer by connecting this unit to an automation device or computer with a RS-232C cross cable (D-sub 9 pins). The commands to control this unit and the response data format against the received commands are explained here.

Communication Specifications

Communication specifications for this unit are as follows:

Baud Rate	19200 bps
Data Format	Binary
Character Length	8 bits
Parity	None
Start Bit	1 bit
Stop Bit	1 bit
Flow Control	None

Command Format

When sending a command to this unit, use the following data format:

Header	Proj. ID	Command	[Com. Parameters]	LF
1 byte	2 bytes	2 bytes	Variable length: 0, 1 or 4 bytes	1 byte

Header	: Designates the Command type. 2 possible headers:
	! (21h): Assigns command to the projector (Command)
	? (3Fh): Query data from the projector (Asking command)
Proj. ID	: Designates the Projector Identification. Fixed to 89h 01h.
Command	: Designates command.
Com. Parameters	: Designates the command parameters. Variable length from 0 to 4 bytes
LF	: Designates the end of the data. Fixed to Line Feed (0Ah)

*[ ] is not necessary

Response data format

Upon receiving a valid control command, the unit sends back the following response data to the computer to

confirm the command: this command is sent to the computer.

Header	Proj. ID	Command Received	Data	LF
1 byte	2 bytes	2 bytes	0 or 1 byte	1 byte

Header	: Designates the header of the projector answer, 2 possible headers:
	Ack (06h): Acknowledgement of valid Command
	@ (40h): Response to a Query data from projector (Asking command)
Proj. ID	: Designates the Projector Identification. Fixed to 89h 01h
Command Received	: Copy the command received (should be the same as the command sent)
Data	: Available only if the command received is a Asking Command.
LF	: Designates the end of the data. Fixed to Line Feed (0Ah)

Available Commands and Parameters

a) Commands

Command Header (21h)	ASCII code	Parameters	Description
Connection Check	00h 00h	none	Checks whether communication between the projector and the computer is working
Power ON/OFF	50h 57h	31h	If the projector is in standby mode, this command switch this unit ON.
		30h	If the projector is powered ON, this command switch this unit into Standby Mode.
Switch Input	49h 50h	30h	Switch active input to S-Video
		31h	Switch active input to Video
		32h	Switch active input to Comp.
		36h	Switch active input to HDMI 1
		37h	Switch active input to HDMI 2
Emulate RCU	52h 43h	xxh xxh xxh xxh	The command sent is executed as a Remote Control Unit command. (See below the RCU Command list and Parameters)

b) Emulate Remote Control Unit Commands (4 bytes)

To emulate a command sent by the RCU, you should send the following command:
Header: 21h   Proj. ID: 89h 01h   Command: 52h 43h   Parameters: 4 bytes

Choose the correct Parameters listed below according to the command

Remote Control Button name	Parameters / ASCII IR codes
Up button	37h 33h 30h 31h
Down button	37h 33h 30h 32h
EXIT	37h 33h 30h 33h
Operate ON	37h 33h 30h 35h
Operate Off	37h 33h 30h 36h
HIDE	37h 33h 31h 44h
MENU	37h 33h 32h 45h
ENTER	37h 33h 32h 46h
Right button	37h 33h 33h 34h
Left button	37h 33h 33h 36h
VIDEO	37h 33h 34h 42h
S-VIDEO	37h 33h 34h 43h

COMP.	37h 33h 34h 44h
TEST	37h 33h 35h 39h
Cinema	37h 33h 36h 39h
Natural	37h 33h 36h 41h
Dynamic	37h 33h 36h 42h
User 1	37h 33h 36h 43h
User 2	37h 33h 36h 44h
User 3	37h 33h 36h 45h
HDMI 1	37h 33h 37h 30h
HDMI 2	37h 33h 37h 31h
INFO	37h 33h 37h 34h
GAMMA	37h 33h 37h 35h
Color Temp.	37h 33h 37h 36h
Aspect	37h 33h 37h 37h
Contrast (+)	37h 33h 37h 38h
Contrast (-)	37h 33h 37h 39h
Brightness (+)	37h 33h 37h 41h
Brightness (-)	37h 33h 37h 42h
Color (+)	37h 33h 37h 43h
Color (-)	37h 33h 37h 44h
Sharp (+)	37h 33h 37h 45h
Sharp (-)	37h 33h 37h 46h

Example:

To emulate Brightness (+), send the command: 21h 89h 01h 52h 43h 37h 33h 37h 41h 0Ah

c) Asking Commands and Data sent by the projector

Asking Command Header (3Fh)	ASCII code	Data sent to PC	Description
Power state	50h 57h	30h	The projector indicates that it is in Standby Mode.
		31h	The projector indicates that it is in Power ON Mode.
		32h	The projector indicates that it is in Cool Down Mode.
		34h	The projector indicates that it is in Warning Mode.
Active Input	49h 50h	30h	Indicates that the S-Video Input is the Active Input
		31h	Indicates that the Video Input is the Active Input
		32h	Indicates that the Comp. Input is the Active Input
		36h	Indicates that the HDMI 1 Input is the Active Input
		37h	Indicates that the HDMI 2 Input is the Active Input

d) Examples

You want to...	Command (PC -> Projector)	Response Data (Projector -> PC)
Check the connection between the projector and the computer	21h 89h 01h 00h 00h 0Ah	ACK: 06h 89h 01h 00h 00h 0Ah
Switch the projector ON	21h 89h 01h 50h 57h 31h 0Ah	ACK: 06h 89h 01h 50h 57h 0Ah
Switch the projector OFF	21h 89h 01h 50h 57h 30h 0Ah	ACK: 06h 89h 01h 50h 57h 0Ah
Switch the projector OFF with OSD confirmation (Emulate RCU)	21h 89h 01h 52h 43h 37h 33h 30h 36h 0Ah	ACK: 06h 89h 01h 52h 43h 0Ah
Change Active Input to Comp.	21h 89h 01h 49h 50h 32h 0Ah	ACK: 06h 89h 01h 49h 50h 0Ah
Display On Screen Menu (Emulate RCU)	21h 89h 01h 52h 43h 37h 33h 32h 45h 0Ah	ACK: 06h 89h 01h 52h 43h 0Ah
Ask the projector its power state The projector being powered ON	3Fh 89h 01h 50h 57h 0Ah	ACK: 06h 89h 01h 50h 57h 0Ah Rsp : 40h 89h 01h 50h 57h 31h 0Ah
Ask the projector its Active Input S-Video being active	3Fh 89h 01h 49h 50h 0Ah	ACK: 06h 89h 01h 49h 50h 0Ah Rsp : 40h 89h 01h 49h 50h 30h 0Ah