Technical product information No. 06.04

Product/Version	**CamDisc^{svr} 4, CamDisc^{svr} 10, CamTel^{svr} 4, CamTel^{svr} 10, CamMobile 4, CamMobile 10**
Date	June 2006
Topic	Generic Protocol: **svr** series devices inclusive of **CamMobile**
Short Description	**CamControl LITE** version 3.51 and higher supports PTZ control by Generic Protocol.
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1 Remote Adapter Generic Product Description

The Remote Adapter Generic is a protocol implementer that can be used to control any remote system. The commands are forwarded to the remote system as specified by the user. This eliminates the need for translation into prescribed, system-specific commands. The systems are controlled as usual through the HeiTel user interfaces.

When using the generic protocol, all remote commands are saved in an R01 control file in the receiver (see 3 "Commands"). This also applies to the basic command set for the PTZ control window (pan/tilt and zoom/focus). As these basic commands have not been included in the R01 files up until now, these must be defined in the corresponding camera section as needed.

Note: If the generic protocol is enabled for controlling a PTZ system, the PTZ functions cannot be accessed through a Web browser when the internal device Web server is being used (**svr** units and **CamMobile**)!

1.1 Interfaces

HeiTel offers four different generic protocols that are adapted to a specific interface operating mode and data rate:

Binary file name	R01 file code	Operating mode	Data format	Baud rate
generic1.bin	036	RS485	8/N/1	4800
generic2.bin	038	RS485	8/N/1	9600
generic3.bin	039	RS232	8/N/1	4800
generic4.bin	040	RS232	8/N/1	9600

Note: When using **svr**-series devices or **CamMobile** units, you can also redirect the output from the internal adapter to the transparent serial interface to directly control external devices with a serial interface.

2 Connections and Configuration

Selecting the protocol (generic1 to generic4) specifies the transmission type and interface speed (see 1.1 "Interfaces"). Please consult the corresponding hardware description for information on connecting systems from other manufacturers. The pin assignments of the corresponding HeiTel device interfaces are described in the device manuals.

3 Commands

The basic functions of the R01 files for the selection of the operating window and saving commands and the basic procedures for creating these files have not changed. For further information, please consult the **Remote Adapter** manual, chapter 4.4 "Control file (R01) structure" or the current software manuals for **CamControl LITE** or **CamControl PRO** chapter 8.4.1 "Function and structure of R01 files".

The line "Generic=1" must be entered in the header of the R01 files. This ensures that your **CamControl LITE** or **CamControl PRO** receiver software operates in generic mode for the corresponding device. This means that that commands in the R01 file are transmitted in unencrypted form. The commands in the R01 file are also assigned to the PTZ controls in **CamControl LITE** or **CamControl PRO**.

Important entries in the R01 control file:

- In the [ADAPTER] section, the entry "Generic=1" means that the generic protocol is used.
- The default address "ADDRESS=0001001" must be used for each section [CAMx] in which the camera is to be controlled using the generic protocol.
- The commands for the basic command set "pan/tilt and zoom/focus" must be added if needed.

3.1 Command Structure

The Remote Adapter Generic transmits commands of up to 25 hexadecimal characters in length, whereby any characters can be used. ASCII characters must be converted to hexadecimal notation. You can use corresponding programs (HEX editors) to convert these characters. Chapter 4.2 of this document also contains a conversion table for converting ASCII characters into hexadecimal values.

A command is initiated with the start code and closed with the end code.

The start code is: "#"

The end code is: "y"

The start and end codes are entered in clear text and replace the codes "*" and "!xy" from the standard R01 files. The command string must be entered in hexadecimal notation and without spaces between these two codes.

3.2 Sample R01 file

The following example illustrates the structure of an R01 file for a transmitter with the serial number CV123456.

The example is based on the following assumptions:

Transmitter: CV123456 → R01 file name: CV123456.R01

Interface requirements: RS485, 4800 baud → selected protocol type: generic1.bin

Controls in the receiver software: → Mode=3

- Call only camera 1
- PTZ controls
- 1-line window for other functions

Commands for this example – the individual characters for the commands are first converted into hexadecimal values (see 4.2 "ASCII-hexadecimal conversion table"):

Function	Command (ASCII)	Command (hexadecimal) [Prefix 0x as code for hexadecimal values]
Tilt up	UP	0x55, 0x50
Tilt down	DOWN	0x44, 0x4F, 0x57, 0x4E
Pan left	LEFT	0x4C, 0x45, 0x46, 0x54
Pan right	RIGHT	0x52, 0x49, 0x47, 0x48, 0x54
Stop pan/tilt	STOP	0x53, 0x54, 0x4F, 0x50
Set preset 1	SETPRE1	0x53, 0x45, 0x54, 0x50, 0x52, 0x45, 0x31
Call preset 1	CALLPRE1	0x43, 0x41, 0x4C, 0x4C, 0x50, 0x52, 0x45, 0x31

Using this information, the R01 file CV123456.R01 would be as follows:

```
[ADAPTER]                          ; Section: Adapter settings
GENERIC=1                          ; Enable generic protocol

[CAM1]                             ; Section: Controls for camera 1
MODE=3                             ; PTZ controls and 1-line window
ADDRESS=0001001                    ; Default address

UP_P=#5550y                        ; Arrow up, left mouse button depressed
DN_P=#444F574Ey                    ; Arrow down, left mouse button depressed
LT_P=#4C454654y                    ; Arrow left, left mouse button depressed
RT_P=#5249474854y                  ; Arrow right, left mouse button depressed
UPLT_P=                            ; Arrow up left, left mouse button depressed
DNLT_P=                            ; Arrow down left, left mouse button depressed
UPRT_P=                            ; Arrow up right, left mouse button depressed
DNRT_P=                            ; Arrow down right, left mouse button depressed
ZP_P=                              ; Zoom plus, left mouse button depressed
ZM_P=                              ; Zoom minus, left mouse button depressed
FP_P=                              ; Focus plus, left mouse button depressed
FM_P=                              ; Focus minus, left mouse button depressed

UP_R=#53544F50y                    ; Arrow up, left mouse button not depressed
DN_R=#53544F50y                    ; Arrow down, left mouse button not depressed
LT_R=#53544F50y                    ; Arrow left, left mouse button not depressed
```

RT_R=#53544F50y ; Arrow right, left mouse not button depressed
UPLT_R= ; Arrow up left, left mouse button not depressed
DNLT_R= ; Arrow down left, left mouse button not depressed
UPRT_R= ; Arrow up right, left mouse button not depressed
DNRT_R= ; Arrow down right, left mouse button not depressed
ZP_R= ; Zoom plus, left mouse button not depressed
ZM_R= ; Zoom minus, left mouse button not depressed
FP_R= ; Focus plus, left mouse button not depressed
FM_R= ; Focus minus, left mouse button not depressed

CT1= Set preset 1 ; Text list box 1
CMD1=#53455450524531y ; Command list box 1
CT2 = Preset 1 ; Text list box 2
CMD2=#43414C4C50524531y ; Command list box 2

This R01 file can now be copied directly into the program directory and will be applied automatically the next time that transmitter CV123456 is accessed.

Creating generally valid R01 files for the selection dialogue

In order for the new file to be generally available for further transmitters in the **CamControl LITE** or **CamControl PRO** selection dialogue when the protocol **generic1** (RS485, 4800 baud) is being used, an extension must be added to this file that corresponds with this protocol type.

The protocol, **generic1** in this example, has the code 036 (see 1.1 "Interfaces"). A *generally valid* R01 file could simply be named CV123456.036 and would appear in the list. But, because the file extension alone determines which files are shown in the list, the file can be assigned any name that describes its contents. For example, the file could be called "Customer1.036" or "Device1.036".

3.3 Included R01 control files

There are three example R01 files included for each of the four protocol types. These files can be found in the file protocols.zip or in the receiver software sub-directory \RM\RM01 and can be used to create your own control files:

File name	Operating mode	Baud rate	Type	Functions
4854800A.036	RS485	4800	A	PTZ functions; 2-line window, 10 functions each; button panel with 16 buttons;
4854800B.036			B	PTZ functions; 2-line window
4854800C.036			C	PTZ functions; 1-line window
4859600A.038	RS485	9600	A	PTZ functions; 2-line window, 10 functions each; button panel with 16 buttons;
4859600B.038			B	PTZ functions; 2-line window
4859600C.038			C	PTZ functions; 1-line window
2324800A.039	RS232	4800	A	PTZ functions; 2-line window, 10 functions each; button panel with 16 buttons;
2324800B.039			B	PTZ functions; 2-line window
2324800C.039			C	PTZ functions; 1-line window
2329600A.040	RS232	9600	A	PTZ functions; 2-line window, 10 functions each; button panel with 16 buttons;
2329600B.040			B	PTZ functions; 2-line window
2329600C.040			C	PTZ functions; 1-line window

4 Other

4.1 Controlling systems with an RS232 port through the transparent channel

Devices from the **svr** series and **CamMobile** can also receive control signals for RS232 remote systems directly from the transparent serial interfaces starting with software version 3.50. No special remote adapter is needed. An entry must simply be added to the R01 file to redirect the data stream to this interface.

As no remote adapter is used, no generally valid R01 files can be provided in the software. This means that the R01 file must be created individually for each transmitter and copied into the program directory.

The required operating mode of the transparent serial interface (SIO) and the transmission speed and data format (parities and stop bits) are configured in the transmitter settings.

The following entry must also be added to the R01 file to redirect the data:

```
[ADAPTER]
TRANSSIO=1                    ; 0 = default (output internal adapter)
                              ; 1 = output to transparent SIO
```

4.2 ASCII-hexadecimal conversion table

You can use the following table to convert ASCII characters to hexadecimal values. You can also use corresponding programs (HEX editors) to convert these characters.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0_	NUL	SOH	STX	ETX	EOT	ENQ	ACK	BEL	BS	HT	LF	VT	FF	CR	SO	SI
1_	DLE	DC1	DC2	DC3	DC4	NAK	SYN	ETB	CAN	EM	SUB	ESC	FS	GS	RS	US
2_	SP	!	“	#	$	%	&	‘	(	)	*	+	,	-	.	/
3_	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4_	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5_	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6_	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7_	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	DEL
8_	x	y	z													