The KTD-410 Protocol Converter translates Digiplex® RS422 protocol into ASCII RS232 protocol, and vice versa. The following provides instruction for installing a KTD-410.

Digiplex RS422 In / ASCII RS232 Out

1) Remove the unit cover and locate the jumper on the PC card (see Figure 1).

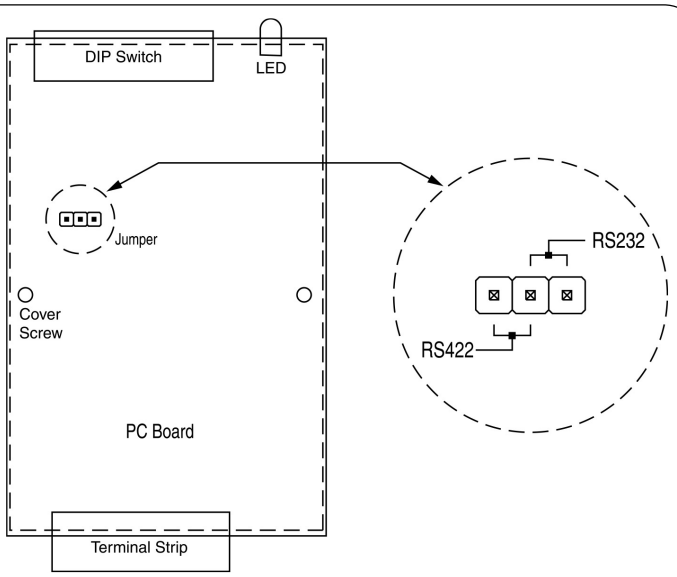

Figure 1. Setting the jumper

2) Place the jumper in the RS422 position (this is the factory default). Replace the cover.

3) Set the DIP switch as follows:
- switch positions 1-9, OFF (not used)
- switch position 10, OFF (factory default)
- switch positions 11-12, ON for RS422 signal termination; OFF for signal loop-through

4) Make cable connections as shown in Figure 2.

5) Supply power to the unit. The LED will illuminate at power-up. When a Digiplex signal is being received, the LED will stay illuminated. When an ASCII signal is being sent, the LED will turn off.

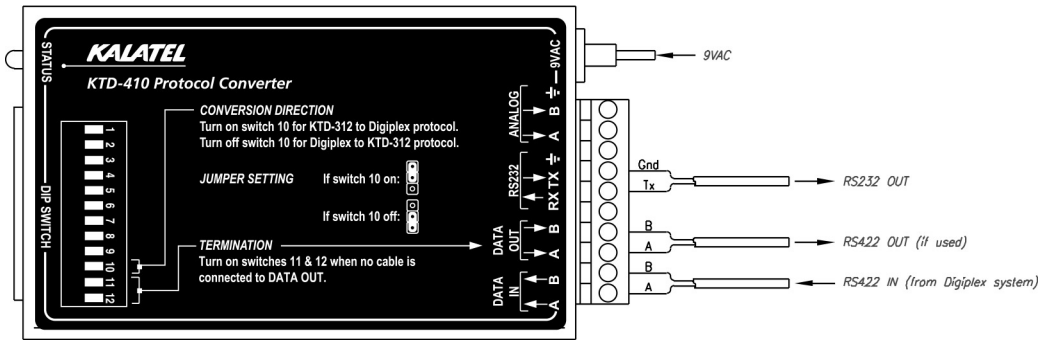

Figure 2. Cable connections: RS422 in / RS232 out

ASCII RS232 In / Digiplex RS422 Out

1) Remove the unit cover and locate the jumper on the PC card (see Figure 1).
2) Place the jumper in the RS232 position. Replace the cover.
3) Set the DIP switch as follows:
- switch positions 1-9, OFF (not used)
- switch position 10, ON
- switch positions 11-12, OFF

4) Make cable connections as shown in Figure 3.
5) Supply power to the unit. The LED will briefly illuminate at power-up and when any non-token Digiplex command is sent.

NOTE: When used as RS232 in / Digiplex out, the KTD-410 must be the start of the RS422 signal. The RS422 input cannot be used.

Installation is complete. The following provides a description of ASCII RS232 protocol.

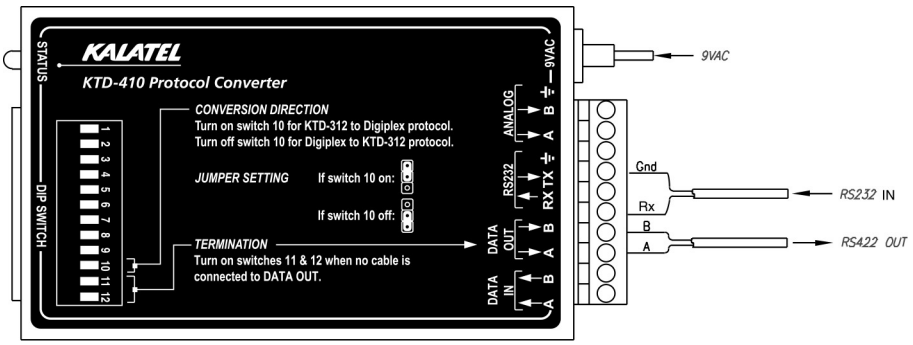

Figure 3. Cable connections: RS232 in / RS422 out

ASCII RS232 Protocol

Data transmitted by the computer and received by the KTD-410 is expected in a seven-character message. The characters are interpreted as ASCII, and no control characters are used. Characters are numbered in the order they are transmitted. All characters must be present. If the site number for a particular command is "0," all three digits of the site select number must contain "0." See "Transmit Non-repeating Data Content" and "Transmit Repeating Data Content" for details about the function codes and exceptions to the other characters.

Character 1: 0-6	Normally 10's digit of monitor select number
Character 2: 0-9	Normally 1's digit of monitor select number
Character 3: alpha-num	Function code
Character 4: 0-5	Normally 100's digit of site select number
Character 5: 0-9	Normally 10's digit of site select number
Character 6: 0-9	Normally 1's digit of site select number
Character 7: ~	Terminator (ASCII "~", 7Eh)

Transmit Message Types

There are two types of messages that the KTD-410 can insert on the Digiplex control cable. The first type is considered non-repeating. One message, and one message only, is sent for each message of this type transmitted by the computer. This type includes switcher commands.

The second type is considered repeating. When the computer sends a message of this type, the KTD-410 transmits the corresponding Digiplex message over and over in a repeating pattern. This message type includes receiver pan and tilt commands. The computer is expected to send its message only once; the KTD-410 manages the repeat pattern. The repeating Digiplex message is terminated by the KTD-410 when it receives the stop-form of the original message, a competing command, or a special cancel function (called universal cancel). For example, if receiver 17 is told to pan right, the KTD-410 continues to send pan-right commands until the KTD-410 receives a stop-pan-right message for receiver 17, a pan-left message for receiver 17 (a competing command to pan-right), or a universal cancel message.

Autopan is handled as a competing function to both pan-right and pan-left. Autopan is not, however, a repeating function. Autopan is handled by receiver hardware. Similarly, pan-right and pan-left behave as if they are competing functions to autopan even though autopan is not a repeating function. All repeating functions have a time-out.

Transmit Non-Repeating Data Content

Table 1 shows the non-repeating functions. In this table, S100 stands for the ASCII character (“0” to “5”) for the 100’s digit of the site, S10 stands for the ASCII character (“0” to “9”) for the 10’s digit of the site, and S1 stands for the ASCII character (“0” to “9”) for the 1’s digit of the site. The maximum site number is 511, and the minimum is 000.

Similarly, M10 stands for the ASCII character (“0” to “6”) for the 10’s digit of the monitor, and M1 stands for the ASCII character (“0” to “9”) for the 1’s digit of the monitor. Monitors are represented by the monitor number minus one (e.g., to access monitor 5, the monitor-select digits “04” must be used). The maximum monitor number is 64 and the minimum is 1. For example, Select CAM 007 on MON 5 is 04#007~.

Table 1: Non-repeating functions

COMMAND	CHAR 1	CHAR 2	CHAR 3	CHAR 4	CHAR 5	CHAR 6	CHAR 7
Start Auto Pan*	M10	M1	"A"=41h	S100	S10	S1	~
Find Preset	Note 1	Note 1	"E"=45h	S100	S10	S1	~
Set Preset	Note 2	Note 2	"Q"=51h	S100	S10	S1	~
Preset Tour (Note 3)*	0	M1	"^"=5Eh	S100	S10	S1	~
Universal Cancel	M10	M1	"_"=5Fh	S100	S10	S1	~
Camera Select	M10	M1	"#"=23h	S100	S10	S1	~
Group Select*	0	0	"="=3Dh	"0"	Note 4	Note 4	~
Sequence*	M10	M1	"$"=24h	S100	S10	S1	~
Group Sequence*	Note 5	Note 5	"="=3Dh	"0"	0	0	
Alarm Enable/Disable (Note 6)	M10	M1	"7"=37h	"0"	"0"	Note 7	~
Clear Screen	M10	M1	"8"=38h	"0"	"0"	"0"	~
Annunciate	M10	M1	"."=2Eh	S100	S10	S1	~
Annunciate Cancel	M10	M1	"/"=2FH	S100	S10	S1	~
Alarm On	“0”	“0”	"["=5Bh	S100	S10	S1	~
Alarm Off	“0”	“0”	"\"=5Ch	S100	S10	S1	~
Time/Date (Note 8)	TC	"0"	"&"=26h	"0"	T10	T1	~
Auto Focus (Note 9)	M10	M1	"*"=2Ah	S100	S10	S1	~
Day-Nite* (Note 10)	1	6	"<"=3Ch	S100	S10	S1	~

*Enabling this function requires a KTD-400 or KTD-404 series keypad controller.

Note 1: Character 2 contains the preset location ("0" – "9") and character 1 contains "0." For the KTA-8Cx-xxxx, characters 1 and 2 are "00 through 63."

Note 2: Character 2 contains the preset location (“0” – "9"), and character 1 contains "0." For KTA-12x-xx-A, KTA-12x-xx-P Discrete Domes, and CyberDome™, characters 1 and 2 are "62" to set the left autopan limit and "63" to set the right autopan limit. For the KTA-8Cx-xxxx, characters 1 and 2 are "00 – 63.”

Note 3: M10=0 and M1=tour number between 1 and 4 for CyberDome. For the KTA-12 series, only tour 1 is used.

Note 4: Characters 5 and 6 contain the group number. Groups 1 through 32 apply only to the KTD-440 (for monitors 1 – 32), and groups 33 through 64 apply only to the KTD-440N (for monitors 33 – 64).

Note 5: Characters 1 and 2 contain the group sequence number. Group sequences 1 through 6 apply only to the KTD-440 (for monitors 1 – 2), and groups 7 through 12 apply only to the KTD-440N (for monitors 33 – 64).

Note 6: Alarm enable/disable is a toggling function. When received by the specified switcher, the switcher changes between alarm enabled and alarm disabled. (The switcher changes to the opposite of what it was prior to receipt of the command.) When disabled, the switcher ignores all alarm functions.

Note 7: Character 6 contains the sequence number ("1" – "4").

Note 8: Sets time/date in KTS-53's. TC="1" for second, "2" for minute, "3" for hour, "4" for day, "5" for month, "6" for year. T10 is 10’s digits of quantity ("0" – "9") and T1 is 1’s digit of quantity ("0" – "9"). Use the last two digits of the year only. This function is designed to set the time of slave-mode KTS-53-1 or KTS-53-16 Time/Date Title Generators. Time is saved after seconds is received, so seconds must be sent last.

Note 9: Enables auto-focus mode on the KTA-8Cx-xxxx.

Note 10: Toggles between Day (color) and Night (monochrome) on CyberDome Day-Nite. Character 1 is always 1 and character 2 is always 6.

Transmit Repeating Data Content

Table 3 uses the same format and symbols as Table 1; however, there are two entries for each command. The first is the message that starts the repeating function and the second is the message that stops it. For the most part, which functions compete with each other is apparent. The special cases of pan-right, pan-left, and autopan were discussed in “Transmit Message Type.”

Table 3: Repeating functions

Command		Char 1	Char 2	Char 3	Char 4	Char 5	Char 6	Char 7
Zoom In	Start	M10	M1	"I"=49h	S100	S10	S1	~
	Stop	M10	M1	"i"=69h	S100	S10	S1	~
Zoom Out	Start	M10	M1	"O"=4Fh	S100	S10	S1	~
	Stop	M10	M1	"o"=6Fh	S100	S10	S1	~
Focus Near	Start	M10	M1	"N"=4Eh	S100	S10	S1	~
	Stop	M10	M1	"n"=6Eh	S100	S10	S1	~
Focus Far	Start	M10	M1	"F"=46h	S100	S10	S1	~
	Stop	M10	M1	"f"=66h	S100	S10	S1	~
Iris Open	Start	M10	M1	"P"=50h	S100	S10	S1	~
	Stop	M10	M1	"p"=70h	S100	S10	S1	~
Iris Close	Start	M10	M1	"C"=43h	S100	S10	S1	~
	Stop	M10	M1	"c"=63h	S100	S10	S1	~
Gate Open/OFF	Start	M10	M1	"B"=42h	S100	S10	S1	~
	Stop	M10	M1	"b"=62h	S100	S10	S1	~
Gate Close/ON	Start	M10	M1	"H"=48h	S100	S10	S1	~
	Stop	M10	M1	"h"=68h	S100	S10	S1	~
Tilt Up (Note 1)	Start	P10	P1	"U"=55h	S100	S10	S1	~
	Stop	P10	P1	"u"=75h	S100	S10	S1	~
Tilt Down (Note 1)	Start	P10	P1	"D"=44h	S100	S10	S1	~
	Stop	P10	P1	"d"=64h	S100	S10	S1	~
Pan Left (Note 1)	Start	P10	P1	"L"=4Ch	S100	S10	S1	~
	Stop	P10	P1	"l"=6Ch	S100	S10	S1	~
Pan Right (Note 1)	Start	P10	P1	"R"=52h	S100	S10	S1	~
	Stop	P10	P1	"r"=72h	S100	S10	S1	~
Fast	Start	M10	M1	"K"=4Bh	S100	S10	S1	~
	Stop	M10	M1	"k"=6Bh	S100	S10	S1	~
Slow	Start	M10	M1	"J"=4Ah	S100	S10	S1	~
	Stop	M10	M1	"j"=6Ah	S100	S10	S1	~
Door 1 Open (Note 2)	Start	M10	M1	"X"=58h	S100	S10	S1	~
	Stop	M10	M1	"x"=78h	S100	S10	S1	~
Door 2 Open (Note 2)	Start	M10	M1	"W"=57h	S100	S10	S1	~
	Stop	M10	M1	"w"=77h	S100	S10	S1	~
Face Video (Note 3)	Start	M10	M1	"S"=53h	S100	S10	S1	~
	Stop	M10	M1	"s"=73h	S100	S10	S1	~
Badge Video (Note 3)	Start	M10	M1	"T"=54h	S100	S10	S1	~
	Stop	M10	M1	"t"=74h	S100	S10	S1	~
Overhead Video (Note 3)	Start	M10	M1	"@"=40h	S100	S10	S1	~
	Stop	M10	M1	" ' "=60h	S100	S10	S1	~
Door 1 Video (Note 3)	Start	M10	M1	"Y"=59h	S100	S10	S1	~
	Stop	M10	M1	"y"=79h	S100	S10	S1	~
Door 2 Video (Note 3)	Start	M10	M1	"Z"=5Ah	S100	S10	S1	~
	Stop	M10	M1	"z"=7Ah	S100	S10	S1	~
Talk (Note 4)	Start	M10	M1	"V"=56h	S100	S10	S1	~
	Stop	M10	M1	"v"=76h	S100	S10	S1	~

Note 1: P10 and P1 are two decimal digits of CyberDome™ speed (00 = slowest, 31 = fastest).
Example: 27L005~ = pan dome #5 left at high speed.
Note 2: Recognized only by KTR-11 Face/Badge Readers. There are no competing functions for either command.
Note 3: Recognized only by KTR-11 Face/Badge Readers.
Note 4: Recognized by KTD-336 Audio Converters. These devices manage Kalatel-format audio over optical fiber and similar links.