KTD-313 Data Converter

Installation Manual

Contents

Preface

This is the GE *KTD-313 Data Converter Installation Manual*. This document includes an overview of the product and detailed instructions explaining:

- how to install and wire the KTD-313;
- how to configure the KTD-313 to work with various third-party hardware; and
- how to operate the KTD-313.

There is also information describing how to contact technical support if you have questions or concerns.

To use this document effectively, you should have the following minimum qualifications:

- a basic knowledge of CCTV systems and components; and
- a basic knowledge of electrical wiring and low-voltage electrical connections.

Read these instructions and all ancillary documentation entirely before installing or operating this product. The most current versions of this and related documentation may be found on our website. Refer to *Online publication library* on page 18 for instructions on accessing our online publication library.

Note: A qualified service person, complying with all applicable codes, should perform all required hardware installation.

Conventions used in this document

The following conventions are used in this document:

Bold	Menu items and buttons.
Italic	Emphasis of an instruction or point; special terms.
	File names, path names, windows, panes, tabs, fields, variables, and other GUI elements.
	Titles of books and various documents.
Blue italic	(Electronic version.) Hyperlinks to cross-references, related topics, and URL addresses.
`Monospace`	Text that displays on the computer screen.
	Programming or coding sequences.

Safety terms and symbols

These terms may appear in this manual:

CAUTION: *Cautions* identify conditions or practices that may result in damage to the equipment or other property.

WARNING: *Warnings* identify conditions or practices that could result in equipment damage or serious personal injury.

Product overview

The following translators are programmed into the KTD-313:

AD Manchester in, Digiplex out. Receives American Dynamics (AD) Manchester protocol and converts it to Digiplex RS-422. This enables an AD Manchester system to control up to 64 GE Security PTZ receivers on a single twisted-pair cable. In addition, it enables preset control of GE Security receivers and variable-speed control of the CyberDome® when used with variable speed joystick controllers.

Digiplex in, AD Manchester out. RS-422 commands and converts them to AD Manchester protocol, which enables up to 512 AD Manchester receivers or domes to be controlled by at least one GE Security keypad.

Ultrak in, Digiplex out. Receives commands from Ultrak controllers and converts them to Digiplex RS-422. This enables an Ultrak system to control up to 250 GE Security PTZ receivers on a single twisted-pair cable. It also allows preset control of GE Security receivers and variable-speed control of the CyberDome when used with variable speed joystick controllers.

Digiplex in, Ultrak out. Receives Digiplex RS-422 commands and converts them to an Ultrak protocol, which enables up to 250 Ultrak receivers or domes to be controlled by at least one GE Security keypad.

VCL in, Digiplex out. Receives commands from VCL controllers and converts them to Digiplex RS-422. This enables a VCL system to control up to 128 GE Security PTZ receivers.

Digiplex in, VCL out. Receives Digiplex RS-422 commands and converts them to VCL protocol, which enables up to 128 VCL receivers or domes to be controlled by one or more GE Security keypads.

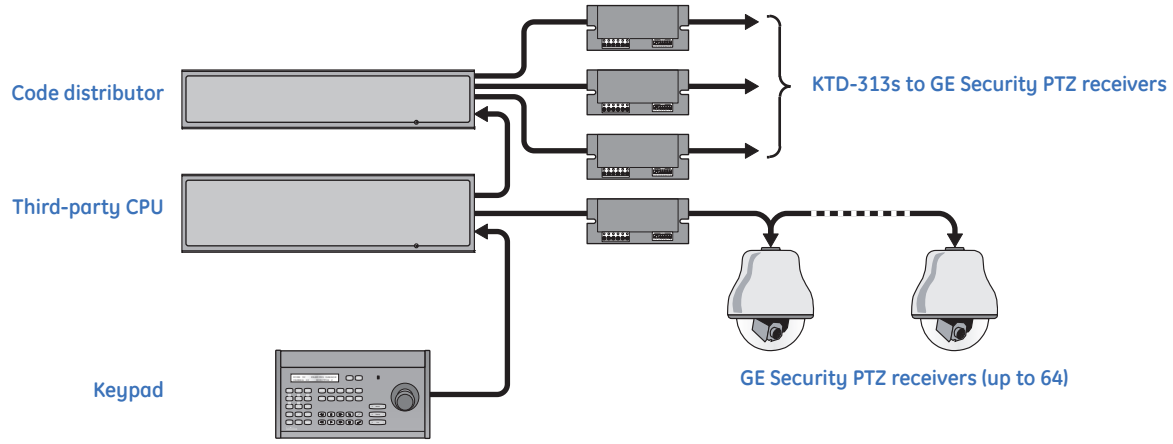
Pelco-D/P in, Digiplex out. Receives commands from Pelco-D/P controllers and converts them to Digiplex RS-422. This enables a Pelco-D system to control up to 254 GE Security PTZ receivers and a Pelco-P system to control up to 64 GE Security PTZ receivers.

Digiplex in, Pelco-D/P out. Receives Digiplex RS-422 commands and converts them to Pelco-D/P protocol, which enables up to 254 Pelco-D (and 64 Pelco-P) receivers or domes to be controlled by one or more GE Security keypads.

Installation

The KTD-313 must be between the unit generating the commands and the PTZ receivers. Each signal line coming from the unit generating the commands must include a KTD-313. *Figure 1* shows a sample system configuration.

Figure 1. Placing the unit in a system (American Dynamics)

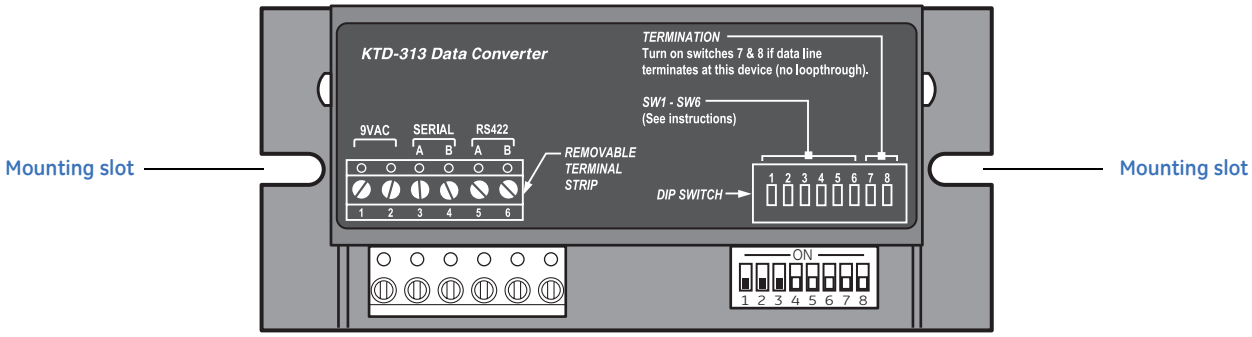


CAUTION: Complete all installation and configuration steps before supplying power to the unit.

Mounting the unit

Mount the unit using the mounting slots (*Figure 2*) and appropriate fasteners (not provided).

Figure 2. KTD-313 mounting slots



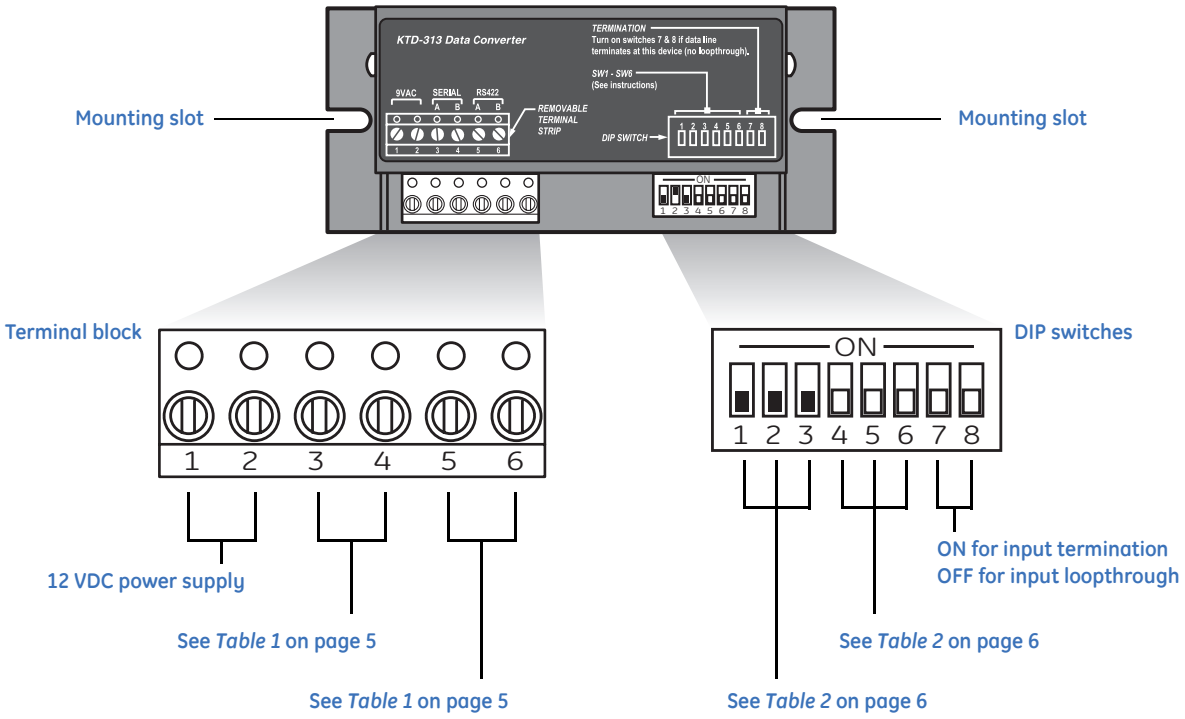
Wiring and DIP switches

This section explains the connections and DIP switch settings you will need to make to use your KTD-313 with third-party vendors' equipment. Because there are special considerations for AD Manchester equipment, see *Connections for AD Manchester in, Digiplex out* on page 7 and *Connections for Digiplex in, AD Manchester out* on page 9 for details not covered in this section.

For all connections, observe polarity when connecting the digital cables.

Figure 3 shows a close-up of the KTD-313's terminal block and DIP switch block. You will need to connect different wires to these six terminals and set the eight DIP switches appropriately to match the third-party hardware in your system.

Figure 3. Terminal block and DIP switches



Refer to *Table 1* on page 5 and *Table 2* on page 6 to determine how to wire and configure your KTD-313 for AD Manchester, Pelco, Ultrak, and VCL equipment. For special exceptions, see the appropriate sections that follow.

Wiring connections

Table 1 shows how to wire the KTD-313 for various third-party vendors' equipment.

For example, on a *Digiplex in, Ultrak out* setup: connect 12 VDC power to terminals 1 and 2; connect wires A and B to terminals 3 and 4 respectively; and connect d+ and d- to terminals 5 and 6 respectively.

Table 1. Wire connections

	Terminals 1 – 2	Terminals 3 – 4		Terminals 5 – 6	
		Wires	Description	Wires	Description
AD Manchester in; Digiplex out	12 VDC power	W, B	AD Manchester serial in	A, B	RS-422 out (Digiplex protocol)
		W, B, S[1]	AD Manchester serial out		
Digiplex in; AD Manchester out	12 VDC power	A, B	RS-422 in (Digiplex protocol Digiplex loopthrough)	W, B	Serial out (AD Manchester protocol)
Pelco-D/P in; Digiplex out	12 VDC power	tx+, tx-	Digital in (Pelco-D/P protocol)	A, B	Digital out (Digiplex protocol)
Digiplex in; Pelco-D/P out	12 VDC power	A, B	RS-422 in (Digiplex protocol)	d+, d-	Digital out (Pelco-D/P protocol)
Ultrak in; Digiplex out	12 VDC power	tx+, tx-	Digital in (Ultrak protocol)	A, B	Digital out (Digiplex protocol
Digiplex in; Ultrak out	12 VDC power	A, B	RS-422 in (Digiplex protocol)	d+, d-	Digital out (Ultrak protocol)
VCL in; Digiplex out	12 VDC power	tx+, tx-	Digital in (VCL protocol)	A, B	Digital out (Digiplex protocol)
Digiplex in; VCL out	12 VDC power	A, B	RS-422 in (Digiplex protocol)	d+, d-	Digital out (VCL protocol)

1. See *Connections for AD Manchester in, Digiplex out* on page 7 for specifics on wiring the KTD-313 for AD Manchester serial out.

DIP switch settings

The DIP switches form groups. Switches 1, 2, and 3 determine the Digiplex setup; switches 4, 5, and 6 determine special features for the selected setup; and switches 7 and 8 set the KTD-313 to loopthrough or termination. To read the values in the table, 0 equals OFF (down position), and 1 equals ON (up position).

Table 2. DIP switch settings per third-party vendor

	Switches 1 – 3	Switch 4	Switches 5 – 6	Switches 7 – 8
AD Manchester in; Digiplex out	000	0: Maximum joystick deflection produces maximum dome speed. 1: Maximum joystick deflection produces 50% dome speed. See *Connections for AD Manchester in, Digiplex out* on page 7 for details.	No settable features.	00: Input loopthrough 11: Input termination
Digiplex in; AD Manchester out	000	Allows you to increase AD Manchester address site range from 64 to 512. See *Connections for Digiplex in, AD Manchester out* on page 9 for specific DIP switch settings.		00: Input loopthrough 11: Input termination
Pelco- D/P in; Digiplex out	111	0: Pelco-D protocol 1: Pelco-P protocol	00: 9600 baud 01: 4800 baud 11: 2400 baud	00: Input loopthrough 11: Input termination
Digiplex in; Pelco- D/P out	011	0: Pelco-D protocol 1: Pelco-P protocol	00: 9600 baud 01: 4800 baud 11: 2400 baud	00: Input loopthrough 11: Input termination
Ultrak in; Digiplex out	010	No settable features. **Note:** The address range of Ultrak controllers is 1 through 250. Digiplex addresses outside this range are not accessible.		00: Input loopthrough 11: Input termination
Digiplex in; Ultrak out	110	No settable features. **Note:** The address range of Ultrak receivers is 1 through 250. Site addresses outside this range are not translated.		00: Input loopthrough 11: Input termination
VCL in; Digiplex out	111	No settable features.		00: Input loopthrough 11: Input termination
Digiplex in; VCL out	110	No settable features.		00: Input loopthrough 11: Input termination

For example, on a *Digiplex in, Ultrak out* setup: set DIP switches 1, 2, and 3 to 110 (ON-ON-OFF); leave switches 4, 5, and 6 to OFF (there are no settable features for this setup, so it doesn't matter what these are set to anyway); and set switches 7 and 8 to 00 (OFF-OFF) for loopthrough or 11 (ON-ON) for termination.

Note: For all connections, set the termination DIP switches (7 and 8) to OFF for every KTD-313 unless it is at the end of a digital line, in which case you should set them both to ON.

Connections for AD Manchester in, Digiplex out

This section details wiring and addressing issues involved with an *AD Manchester in, Digiplex out* setup.

Maximum pan speed

This translator uses DIP switch 4 to control maximum pan speed. This feature is important when you use variable-speed domes as receivers because full joystick deflection is associated with maximum dome speed. Set DIP switch position 4 as follows:

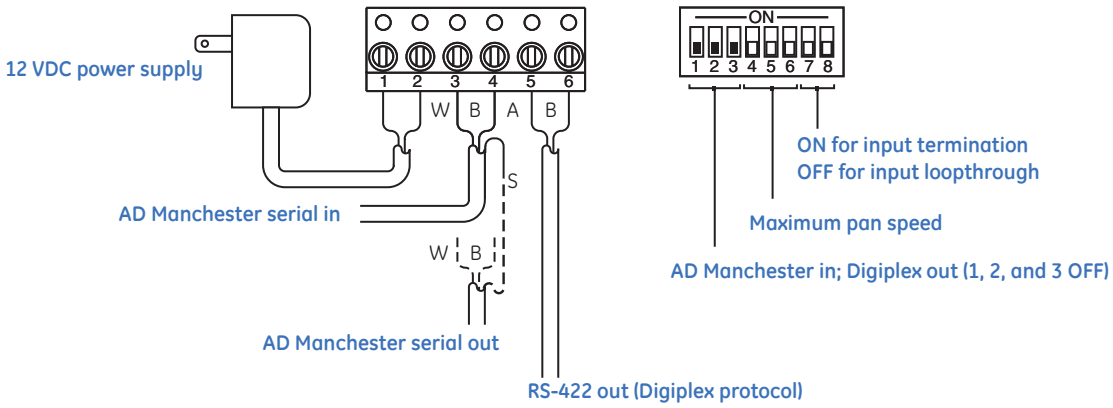
- **OFF:** Maximum joystick deflection produces 100% dome speed. (Use with AD Manchester joystick keypads.)
- **ON:** Maximum joystick deflection produces 50% dome speed. (Use with fixed-speed AD Manchester keypads.)

If there are no variable-speed dome receivers, DIP switch 4 will have no effect.

Wiring

AD Manchester recommends a shielded twisted-pair cable with its system and provides three connections at each of its devices (W, B, shield). If the KTD-313 is the last device in a daisy chain, leave the shield lead disconnected. If connecting to more AD Manchester devices, connect the shield lead of the incoming wire to the shield lead of the outgoing wire (*Figure 4*).

Figure 4. AD Manchester in, Digiplex out



For daisy-chained AD Manchester devices, connect the outgoing wires in parallel.

Site addressing

The following issues exist when installing a KTD-313 and Digiplex receivers in an AD Manchester system:

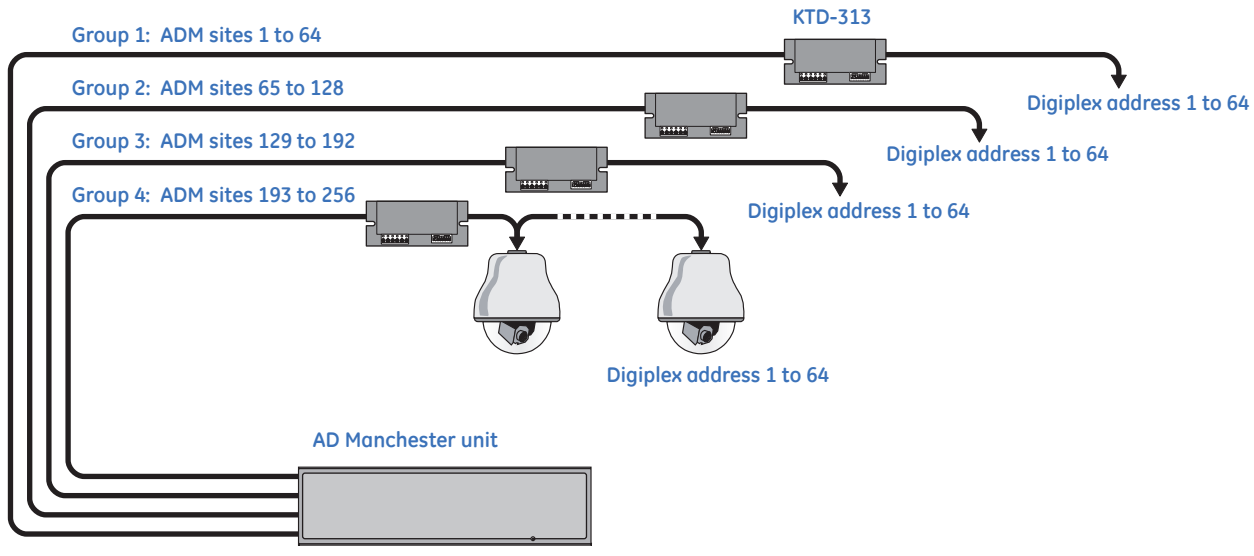
- An AD Manchester CPU typically has four output ports (group outputs) for its PTZ receiver control.
- Each group output from the CPU is responsible for a range of PTZ receivers.
- Group 1 addresses sites 1 through 64; Group 2, 65 – 128; Group 3, 129 – 192; Group 4, 193 – 256.
- An AD Manchester CPU can control at least 256 PTZ receivers; however, the address transmitted to the receiver in any one group is always in the range of 1 to 64. (A typical AD Manchester CPU will not transmit a number higher than 64.)
- Digiplex receivers' site addresses range from 0 to 511.
- The Digiplex receiver must have an address number from 1 to 64, even if its site number is higher than 64. For example, receiver site number 66 will have a Digiplex address of 2 (66 - 64 = 2); site number 256 will have a Digiplex address of 64 (256 - 192 = 64). See *Table 3*.

Table 3. Addressing Digiplex receivers in an AD Manchester system

AD Manchester control output	AD Manchester site number	Minus this number	Equals the Digiplex address
Group 1	1 – 64	0	1 – 64
Group 2	65 – 128	64	1 – 64
Group 3	129 – 192	128	1 – 64
Group 4	193 – 256	192	1 – 64

For example, when receiver site number 68 is called up from the CPU, the signal is sent through group output 2 to a receiver addressed as number 4 (68 - 64 = 4).

Figure 5. AD Manchester CPU addressing Digiplex receivers



Note: Refer to AD Manchester system documentation for further addressing information.

Connections for Digiplex in, AD Manchester out

The address range of AD Manchester receivers is 1 through 64. GE Security keypads can address a range of 0 through 511. DIP switch positions 4 through 6 enable up to 512 AD Manchester receivers or domes to be addressed by selecting the 64 address block to which the KTD-313 responds. (One KTD-313 is required for each 64 address block.) When a GE Security keypad calls AD Manchester receiver site number 68, the signal goes to the KTD-313 with the address block of 64 and to the AD Manchester receiver addressed as number 4 (64 + 4 = 68).

Figure 6. Digiplex in, AD Manchester out

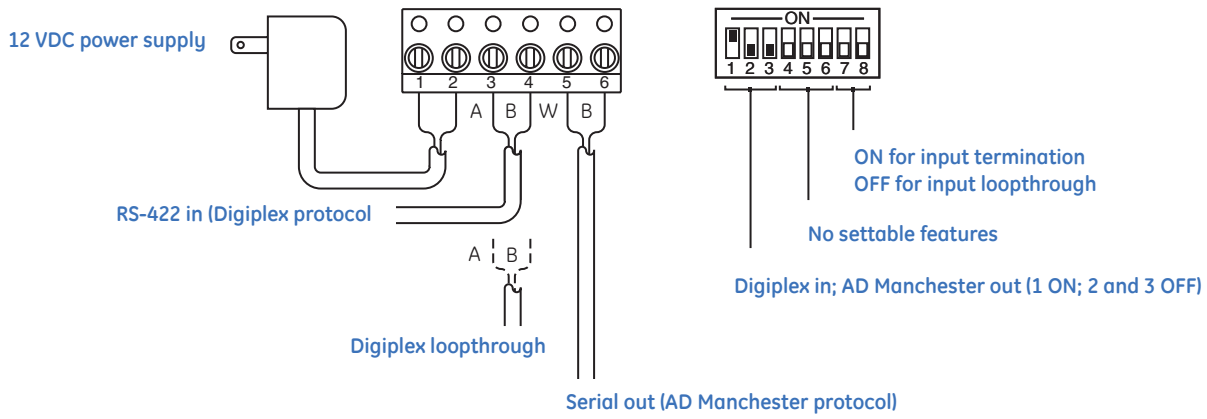


Table 4 lists the address block DIP switch settings and AD Manchester address for each block.

Table 4. DIP switch settings and receiver site numbers

Address block	DIP switches 4 – 6	ADM site address range	Receiver number
0	000	1 – 64	1 – 64
64	100	1 – 64	65 – 128
128	010	1 – 64	129 – 192
192	110	1 – 64	193 – 256

Address block	DIP switches 4 – 6	ADM site address range	Receiver number
256	001	1 – 64	257 –320
320	101	1 – 64	321 – 384
384	011	1 – 64	385 – 448
448	111	1 – 64	449 – 512

The following addressing issues exist when installing AD Manchester receivers in a Digiplex system:

- You can give several KTD-313s the same address block numbers, but make sure there are no duplicated addresses on the outputs of KTD-313s that share the same address block numbers. For example, two KTD-313s share the address block of 0. The first has 32 AD Manchester receivers connected to it, numbered 1 through 32. The second has 32 AD Manchester receivers connected to it, numbered 33 through 64.
- AD Manchester does not permit 0 as a valid address, but GE Security does. A selection of site 0 on a Digiplex control device is rejected by the KTD-313.
- GE Security and AD Manchester addresses are coded differently (AD Manchester sends “site = 0” when address 1 is controlled). To maintain the same numbering for GE Security and AD Manchester components, the addresses are automatically shifted by one. Therefore, one address at each end of the address range is lost.

Operating the unit

When you have finished installing the KTD-313 and all system components, apply power to the system. For platform-specific operation, refer to the appropriate configuration in this section.

AD Manchester in, Digiplex out

When using GE Security receivers in an AD Manchester system, be aware of the following operating issues:

- No GE Security menu-based programming operations are available from AD Manchester controllers.
- AD Manchester controllers cannot control all CyberDome functions.

Table 5 shows compatible commands between AD Manchester controllers and Digiplex receivers. (AD Manchester entries will vary according to controller type; two common entry options are presented.)

Table 5. AD Manchester in, Digiplex out command translations

For this Digiplex result	Use this AD Manchester entry
Focus near	NEAR or FOCUS N
Focus far	FAR or FOCUS F
Iris open	OPEN or IRIS O
Iris close	CLOSE or IRIS C
Zoom in	TELE -or- ZOOM T
Zoom out	WIDE or ZOOM W
Autopan on	Enter 1, then AUX ON or AUX1 ON
Autofocus on	Enter 2, then AUX ON or AUX2 ON
Pan right	Joystick right or PAN R
Pan left	Joystick left or PAN L
Tilt up	Joystick up or TILT U
Tilt down	Joystick down or TILT D
Find preset (number)	Enter number, then SHOT or scene number, PRESET SET
Set preset (number))	Turn the key lock to PROG, enter number, then press the SET SHOT button (accessed through the front panel hole). Turn the keylock to OFF when all presets are finished. -or- Enter scene number, PRESET CALL.

When operating KTA-12 series dome receivers and the CyberDome in an AD Manchester system, autopan limits are set as follows:

- left limit = preset number 63
- right limit = preset number 64

Note: Refer to AD Manchester system documentation for more information.

Digiplex in, AD Manchester out

Not all Digiplex commands can be translated into AD Manchester commands. Conversely, there are some AD Manchester commands that have no corresponding Digiplex translation. *Table 6* shows which commands are translated.

Table 6. Digiplex in, AD Manchester out command translations

Digiplex result	AD Manchester entry
Pan right	Pan right
Pan left	Pan left
Tilt up	Tilt up
Tilt down	Tilt down
Zoom in	Zoom tele
Zoom out	Zoom wide
Focus near	Focus near
Focus far	Focus far
Iris open	Iris open
Iris close	Iris close
Set preset	Set shot[1]
Find preset	Call[2]

1. Scene (preset) numbers are limited to 0 through 7.
2. Digiplex preset 0 corresponds to AD Manchester scene 1.

Note: The current version of the KTD-313 software does not screen out switcher download commands; therefore, it should not be used with the KTD-311, KTD-411, or Paragon.

Ultrak in, Digiplex out

Not all Ultrak commands can be translated into Digiplex commands. Conversely, not all Digiplex commands have corresponding Ultrak translations. *Table 7* shows which commands are translated.

Table 7. Ultrak in, Digiplex out command translations

For this Digiplex result	Use this Ultrak entry
Pan right	Pan right
Pan left	Pan left
Tilt up	Tilt up
Tilt down	Tilt down
Zoom in (fixed speed)	Zoom in
Zoom out (fixed speed)	Zoom out
Focus near	Near
Focus far	Far
Iris open	Open
Iris close	Close
Goto preset n	N Pshot

Command notes:

- Ultrak has no autopan, so GE Security autopan is not available.
- GE Security preset range is 00 to 63. Ultrak preset (Pshot) range is 00 to 99. Ultrak presets above 63 are not translated.

Digiplex in, Ultrak out

Not all Digiplex commands can be translated into Ultrak commands. Conversely, not all Ultrak commands have corresponding Digiplex translations. *Table 8* shows which commands are translated.

Table 8. Digiplex in, Ultrak out command translations

Digiplex command	Ultrak command
Pan right	Pan right
Pan left	Pan left
Tilt up	Tilt up
Tilt down	Tilt down
Zoom in	Zoom in (fixed 50% speed)
Zoom out	Zoom out (fixed 50% speed)
Focus near	Near
Focus far	Far
Iris open	Open
Iris close	Close
Goto preset N	N Pshot

Command notes:

- Ultrak has no autopan; therefore, GE Security autopan is not available.
- GE Security preset range is 00 to 63. Ultrak preset (Pshot) range is 00 to 99. Ultrak presets above 63 are not translated.

Note: Since the KTD-313 software doesn't screen out switcher download commands, don't use it with a KTD-311 or KTD-411.

VCL in, Digiplex out

Not all VCL commands can be translated into Digiplex commands. Conversely, not all Digiplex commands have corresponding VCL translations. *Table 9* shows which commands are translated.

Table 9. VCL in, Digiplex out command translations

For this Digiplex result	Use this VCL entry[1]
Camera select[2]	N camera
Pan right	Pan right (joystick)
Pan left	Pan left (joystick)
Tilt up	Tilt up (joystick)
Tilt down	Tilt down (joystick)
Zoom in	Zoom in (joystick)
Zoom out	Zoom out (joystick)
Focus near	Focus +
Focus far	Focus -
Iris open	Iris +
Iris close	Iris -
Goto preset N	N preset[3]
Set preset N	Preset (hold) N preset (release)[3]
Run autopan	Autopan
Stop autopan	Pan right or pan left
Left autopan limit	Preset (hold) 62 preset (release)
Right autopan limit	Preset (hold) 63 preset (release)
Flip	Auto 180

1. Ademco ADCJA keypad
2. Address range: 1 to 128
3. Preset range: 0 to 63

Digiplex in, VCL out

Not all Digiplex commands can be translated into VCL commands. Conversely, not all VCL commands have corresponding Digiplex translations. *Table 10* shows which commands are translated.

Table 10. Digiplex in, VCL out command translations

For this VCL result	Use this GE Security/Digiplex entry[1]
Camera select	N enter[2]
Pan right	Pan right (joystick)
Pan left	Pan left (joystick)
Tilt up	Tilt up (joystick)
Tilt down	Tilt down (joystick)
Zoom in	Zoom in
Zoom out	Zoom out
Focus near	Focus near
Focus far	Focus far
Iris open	Iris open
Iris close	Iris close
Goto preset N[3]	Find N
Set preset N[3]	Store N store
Run autopan[4]	<esc> + <autofocus>
Stop autopan	Pan right or pan left
Flip	<esc> + <aux3>

1. KTD-405 keypad and Ademco Rapidome.
2. Address Range: 1 to 128.
3. Preset range: 0 to 63.
4. VCL autopan is a series of presets. See VCL documentation for details.

Pelco-D/P in, Digiplex out

Not all Pelco-D/P commands can be translated into Digiplex commands. Conversely, not all Digiplex commands have corresponding Pelco-D/P translations. *Table 11* shows which commands are translated.

Table 11. Pelco-D/P in, Digiplex out command translations

For this Digiplex result	Use this Pelco-D entry[1]	Use this Pelco-P entry[2]
Pan right	Pan right	Pan right
Pan left	Pan left	Pan left
Tilt up	Tilt up	Tilt up
Tilt down	Tilt down	Tilt down
Zoom in	Zoom tele	Zoom in
Zoom out	Zoom wide	Zoom out
Autofocus	8 AUX	F4
Focus near	Focus near	Focus near
Focus far	Focus far	Focus far
Iris open	Iris open	Iris open
Iris close	Iris close	Iris close
Goto preset N	N preset go (N=1 to 64)	N preset (N=1 to 64)
Set preset N	N preset set (N=1 to 64)	N long-preset (N=1 to 64)
Run autopan	Pan auto (or 1 zone or 99 preset go)	99 preset
Stop autopan	Pan man (or 2 zone)	96 preset
Left autopan limit	63 preset set	92 long-preset
Right autopan limit	64 preset set	93 long-preset
Home	1 AUX	Not implemented
Flip	2 AUX	F5
Move 1 video frame LEFT	3 AUX[3]	Not implemented
Move 1 video frame RIGHT	4 AUX[3]	Not implemented
Move 1 video frame UP	5 AUX[3]	Not implemented
Move 1 video frame DOWN	6 AUX[3]	Not implemented
Display camera ID	7 AUX	Not implemented

1. MPT9500 keypad.
2. KBD300 keypad.
3. Not implemented in some CyberDomes.

Digiplex in, Pelco-D/P out

Not all Digiplex commands can be translated into Pelco-D/P commands. Conversely, not all Pelco-D/P commands have corresponding Digiplex translations. *Table 12* shows which commands are translated.

Table 12. Digiplex in, Pelco-D/P out command translations

For this Pelco result	Use this Digiplex entry[1]
Pan right	Pan right
Pan left	Pan left
Tilt up	Tilt up
Tilt down	Tilt down
Zoom in	Zoom in
Zoom out	Zoom out
Focus near	Focus near
Focus far	Focus far
Iris open	Iris open
Iris close	Iris close
Goto preset N	Find N
Set preset N	Store N store
Run autopan	<esc> + <autofocus>
Stop autopan	Pan right or pan left
Left autopan limit	Store ⏮ store (preset 62)
Right autopan limit	Store ⏭ store (preset 63)
Flip	Find 33 (preset 33)
Home	Find 34 (preset 34)
Accessing programming menu	Find 0 (preset 0)

1. KTD-405 keypad; Pelco pan/tilt in 64 presets mode.

Contacting technical support

For assistance installing, operating, maintaining, and troubleshooting this product, refer to this document and any other documentation provided. If you still have questions, you may contact technical support during normal business hours (Monday through Friday, excluding holidays, between 5 a.m. and 5 p.m. Pacific Time).

Table 13. Sales and support contact information

	Sales	Technical support
Phone	**Toll-free:** 888.GESECURity (888.437.3287) in the US, including Alaska and Hawaii; Puerto Rico; Canada. Outside the toll-free area: 503.885.5700.	
E-mail	info@gesecurity.com	generaltech@ge.com
Fax	800.483.2495	**541.752.9096** (available 24 hours a day)

Note: Be ready at the equipment before calling for technical support.

Online publication library

Another great resource for assistance with your GE product is our online publication library. To access the library, go to our website at the following location:

http://www.gesecurity.com

In the **Customer Support** menu, select the *Publication Library* link. After you register and log on, you may search through our online library for the documentation you need.[1]

1. Many GE documents are provided as PDFs (portable document format). To read these documents, you will need Adobe Acrobat Reader, which can be downloaded free from Adobe's website at www.adobe.com.