

CA150 & CA150-KHS Specifications / Settings

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Product Documentation Library CD

Also refer to the CA150 Installation Guide for complete instructions. Ensure that lock hardware complies with all building codes and fire regulations.

Cable Specifications

Device	Signal	Distance	Cable Type
Readers to ACU	Wiegand	500 ft / 152.4 m	6 conductors shielded 22 AWG
Exception Readers to ACU – PX-620, HID-5375, MR-10, MR-20, HID-iClass (Rev A), iClass KEYRK40	Wiegand	500 ft / 152.4 m	6 conductors shielded 18 AWG
Door strikes & electro magnets to ACU	n/a	500 ft / 152.4 m	1 pair 18 AWG
Contacts & exit devices	n/a	500 ft / 152.4 m	1 pair 22 AWG
Motion sensors (PIR)	n/a	500 ft / 152.4 m	2 pairs 22 AWG
PC to ACU (direct serial)	RS-232 (57.6k or 115.2k BPS)	20 ft / 6 m	5 conductors shielded 22 AWG
Network	TCP/IP		10/100 Base - T

Door & AUX Outputs – Powered/Unpowered Jumpers

The door output relay and the AUX output relay are each fused at 500 mA. Each output has a set of jumpers which configures the output to source power from the CA150 or configures the output as a dry contact. When the output is configured as a dry contact, the connected device requires an independent power source.

Output	Device Current	Power Source	Relay	Jumpers	Setting
Door	500 mA or less	CA150 via PoE or +12 VDC supply	Powered	J8 J9	
	Over 500 mA	Independent power supply	Unpowered	J8 J9	
AUX	500 mA or less	CA150 via PoE or +12 VDC supply	Powered	J10 J11	
	Over 500 mA	Independent power supply	Unpowered	J10 J11	

CA150 Output/Port Current Ratings

The following table outlines current ratings of the power sourcing ports on the CA150. The ports are current limited with PTC resetting fuses. Do not exceed the maximum.

Port	Current Rating
Reader port 1	500 mA
Reader port 2	500 mA
Door output	500 mA
AUX / accessibility output	500 mA
RTE port	300 mA
PoE* (built-in power supply)	Maximum for all connected devices 680 mA @ 12V

If the total current of all devices exceeds 680 mA @ 12V, use a +12V DC UL approved power supply.
*POE under license with ChriMar Systems Inc., US Patents 8,155,012 - 8,942,107 - 9,049,019

Communication LEDs

The following table outlines the CA150s on-board communication LEDs for diagnostics.

LED	State of LED	Notes
TD 1 - Green	Flashing – normal	Main processor sending data to on-board supervised inputs processor or RS-485 port
	Not Illuminated – abnormal condition	Follow restore factory defaults J1 procedure in attempt to resolve.
	Illuminated – abnormal condition	Follow restore factory defaults J1 procedure in attempt to resolve
TD 1 - Red	Flashing – normal	Main processor receiving data from on-board supervised inputs processor or RS-485 port
	Not Illuminated – abnormal condition	Follow restore factory defaults J1 procedure in attempt to resolve
	Illuminated – abnormal condition	Follow restore factory defaults J1 procedure in attempt to resolve
TD 2 - Green	Flashing – normal	Control board sending data via communication path determined by S1.10 & S1.11 to Client/Communication Mgr
	Not Illuminated – abnormal condition	If Client/Communication Mgr not polling the control board If S1.10 & S1.11 are configured for on-board NETCOMP programming
	Illuminated – abnormal condition	Follow restore factory defaults J1 procedure in attempt to resolve
TD 2 - Red	Flashing – normal	Control board receiving data via communication path determined by S1.10 & S1.11 from Client/Communication Mgr
	Not Illuminated – abnormal condition	If Client/Communication Mgr not polling the control board If S1.10 & S1.11 are configured for on-board NETCOMP programming
	Illuminated – abnormal condition	Possible wiring fault

System Software Mode – DIP Switches S2.9 & S2.10

S2.9 and S2.10 select the Keyscan software. If the DIP switches are altered, you must clear memory to reset the control board. S2.9 and S2.10 do not have to be changed for software version upgrades.

Software / Version	Switches #	Settings
		0 = OFF / 1 = ON
System VII (version 7.0.14 or higher)	S2.9 S2.10	0 0
Vantage (version 8.1.13 or higher)	S2.9 S2.10	0 1
Future Use	S2.9 S2.10	1 0
Aurora	S2.9 S2.10	1 1

Supervision Mode DIP Switches S2.7 & S2.8

S2.7 & S2.8 set the input supervision type. The setting applies universally for the door contact, the request to exit, and auxiliary/supervised inputs on the control board. All inputs must be the same.

Input Mode	Switches #	Settings
		0 = OFF / 1 = ON
Non-supervised or digital	S2.7 S2.8	0 0
Single end-of-line supervision	S2.7 S2.8	1 0
Double end-of-line supervision	S2.7 S2.8	1 1

System Configuration – DIP Switches S1.1 – S1.12

Switch S1 consists of 12 individual DIP switches – S1.1 to S1.12 – which set system functions, communication modes and speeds as reviewed in the following table.

S1 Switch #	Setting	Function	Notes
S1.1	0=Off 1=On	Communication Mode	
	0	Serial Communication – standard polling	
	0	Network Communication – standard polling	
	1	Reverse Network Communication	Requires a license from Keyscan.
S1.2		Communication Bit Rate	
	0	115,200 bit/s	
	1	57,600 bit/s	
S1.3		P3 Card Lockout	
	0	Enabled	
	1	Disabled	
S1.4		Alternate Panel Serial # Selection	
	0	Factory-assigned serial #	Only set DIP switch for alternate serial number if prompted in the Client software when adding a panel.
1	Adds 1000 to factory-assigned serial #		
S1.5		Reader LED Mode	
	0	Red LED type reader	
	1	Red & green LED type reader	
S1.6		Unassigned	
	0	n/a	
	1	n/a	
S1.7		Temporary Card Countdown	
	0	Disabled	If credentials are issued on a temporary basis, the temporary card countdown function must be enabled.
1	Enabled		
S1.8		Accessibility Output	
	0	AUX Output	
	1	Accessibility Output	
S1.9		Clear Memory Enable	
	0	Disabled	Note – clear memory enable S1.9 activates the Clear Memory jumper J1 to reload factory defaults.
1	Enabled		
S1.10 & S1.11		Communication Terminal Block Activation	
	0 0	Enables RS-232 serial TB5 terminal block	For direct serial communication
	0 1	Future use	
	1 0	Enables Ethernet operation mode	For network communication
	1 1	Enables Ethernet program mode	For programming the Ethernet module
S1.12		Flash Program Memory Upgrade	
	0	n/a	
	1	n/a	

System Status LED

The system status LED is multi-colour – red, amber and green – indicating the current system status as outlined. The control board also has a piezo that emits audible tones under certain LED states. Refer to the CA150 Installation Guide on the Keyscan Product Documentation Library CD.

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Reader Configuration – DIP Switches S2.1 – S2.6

S2.1 – S2.6 set the control board reader format. Reader formats apply to PROM version 3.4.03 or greater unless otherwise stated in the table below. Keyscan does not recommend any 26-bit card formats. See the CA150 Installation Guide for more on the pitfalls of the 26-bit format.

Advantage of Keyscan 36-bit Proprietary Wiegand Format Cards

Keyscan's 36-bit proprietary Wiegand format cards and tags, which include a manufacturer's code, offer a high level of security. Keyscan tracks all its cards and tags. This ensures that no duplicate cards or tags are sold by Keyscan. When installing or upgrading a Keyscan access control system, we recommend our proprietary Keyscan 36-bit Wiegand format cards and tags, available in 125 kHz or 13.56 MHz formats, for a high level of security.

Security Levels

The reader configuration table below reviews not only the supported reader formats, but also the security level of each format. Be aware that where Keyscan's 36-bit proprietary cards share a combined reader format with other manufacturer's cards, the other manufacturer's card binary bits may be truncated to accommodate the joint format. This lessens the overall security, as not all bits are read.

The reader formats in the table have been given one of the following security ratings:

- High
- Medium
- Low
- Very Low

Reader formats ranked with medium, low, and very low are NOT recommended. The ratings are based on whether a card's binary bits are truncated and/or the cards are sold by other manufacturers, which Keyscan has no control over.

Card Number Formats

The supported card number formats fall under the following two types:

- Standard Card Number – 3 digit facility code* / 5 digit card number
 - Facility code range: 1 – 255
 - Card number range: 1 – 65535
- Extended Card Number – hexadecimal 0-9, A-F or decimal 0 – 9
 - Hexadecimal range: 1 – FFFFFFFF
 - Decimal range: 1 – 281474976710655

*The facility code may also be referred to as the site code or the batch code.

Keyscan assumes no responsibility for liability for any card format.

Ref #	Reader Format	Security Level	Settings S2.1 – S2.6 0=OFF / 1=ON	Card Number Format	Notes
A	Keyscan 36-bit only	High	0 0 0 0 0 0	Standard	
B	FIPS/TWIC – 75-bit output (48-bit FASC-N, 25-bit expiration date, 2 parity bits)	High	0 0 0 0 0 1	Extended	Legacy support only
C	HID Corporate 1000 - 35-bit output	Medium	1 0 0 0 0 1	Extended	
D	MIFARE – CSN 32-bit output	Low	0 1 0 0 0 1	Extended	Only reads the card serial number sector.
E	MIFARE – Reverse CSN 32-bit output	Low	1 1 0 0 0 1	Extended	Only reads the card serial number sector.
F	MIFARE – 40-bit CSN (32-bit CSN, 8-bit Checksum)	Low	0 0 1 0 0 1	Extended	Only reads the card serial number sector.
G	26 to 48 Pass-through Large Card Format	Medium - Low	1 1 1 1 1 1	Extended	
H	26 to 48 Pass-through Large Card Format (with first and last parity bits dropped)	Medium - Low	0 1 1 1 1 1	Extended	
I	University 1000 - 56-bit	Medium	0 1 1 0 0 1	Extended	Custom order only. Facility code required when ordering.
J	MIFARE Reverse 40-bit (32-bits reverse CSN + 8-bits checksum = 40 bits)	Low	1 0 1 0 0 1	Extended	Only reads the card serial number sector.
K	MLF Indala Format = 16039	Medium	1 1 1 0 0 1	Extended	Custom order only. Letter required from dealer.
L	FIPS/TWIC – 75-bit output (48-bit FASC-N, 25-bit expiration date, 2 parity bits) & Keyscan 36-bit	High	1 0 0 1 0 1	Extended	Legacy support only
M	FIPS/TWIC – 75-bit output (48-bit FASC-N, 25-bit expiration date, 2 parity bits) & Keyscan 36-bit & Mifare – 40-bit CSN (32-bit CSN, 8-bit Checksum)	High	0 1 0 1 0 1	Extended	Legacy support only
N	37-bit H10304 & Keyscan 36-bit	Medium	1 1 0 1 0 1	Extended	Reader PROM 3.4.04 or higher
O	37-bit H10302 & 35-bit Corporate 1000	Medium	0 0 0 1 0 1	Extended	Reader PROM 3.4.04 or higher
P	HID Corporate 1000 48-bit & Keyscan 36-bit	Medium	0 0 1 1 0 1	Extended	Reader PROM version 3.4.06 or higher
Q	HID Corporate 1000 48-bit, HID Corporate 35-bit, HID H10302 & Keyscan 36-bit	Medium – Low	1 0 1 1 0 1	Extended	Reader PROM version 3.4.06 or higher
R	HID Corporate 1000 48-bit, HID Corporate 35-bit, HID H10302, Keyscan 36-bit & Standard 26-bit	Low	0 1 1 1 0 1	Extended	Reader PROM version 3.4.06 or higher
S	Kaba Integrated 17-byte	High	1 0 1 1 1 1	Extended	Reader/IO PROM version 3.6.00 or greater

Ref #	Reader Format	Security Level	Settings S2.1 – S2.6 0=OFF / 1=ON	Card Number Format	Notes
The following reader formats are NOT recommended.					
1	Standard 26-bit & Keyscan 36-bit	Low	1 0 0 0 0 0	Standard	
2	Legacy Northern 34-bit, Standard 26-bit & Keyscan 36-bit	Low	0 1 0 0 0 0	Standard	
4	Kantech 32-bit & Keyscan 36-bit	Medium	0 0 1 0 0 0	Standard	
6	Intercon 32-bit & Keyscan 36-bit	Low	0 1 1 0 0 0	Standard	
12	Legacy GE 40-bit or Casi-Rusco Ex. Prox-Lite 941-W RDR	Low	0 0 1 1 0 0	Standard	
13	Legacy 37-bit (37 Bit Corp H10302) & Keyscan 36-bit	Low	1 0 1 1 0 0	Standard	
17	Legacy 37-bit (alternate 37 Bit Corp H10304) & Standard 26-bit & Keyscan 36-bit	Low	1 0 0 0 1 0	Standard	
23	Legacy 37-bit (alternate 37 Bit Corp H10302) & Standard 26-bit & Keyscan 36-bit	Low	1 1 1 0 1 0	Standard	
Refer to the CA150 Installation Guide for additional reader formats supported by Keyscan.					

Supported Keypad Wiegand Outputs

Keyscan supports the following keypad PIN data Wiegand outputs:

- HID Wiegand with 4-bit word burst
- Indala unbuffered mode Wiegand with 8-bit word burst
- WSSKP-1 facility code 0 (zero) with 36-bit Keyscan Wiegand output

If using third party biometric devices connected to Keyscan CA or EC control board reader ports, do not use reserved facility code 0 (zero).

Reader Current Consumption

Do not run reader cables in same conduit with AC power or signal cables. Keep reader cables at least 12 inches or 30 centimetres from AC, computer data, telephone data, or electric lock device cables. Do not install readers where broad spectrum EMI noise may be present. Motors, pumps, generators, and AC switching relays can create EMI noise. Readers mounted on a metal surface can have reduced read ranges.

Reader	Power/Current	Notes
K-PROX2 & K-PROX SG	12 VDC, 80 mA	(125 KHz HID compatible)
K-VAN	12 VDC, 90 mA	
K-KPR	12 VDC, 115 mA	
K-SMART (13.56 MHz)	12 VDC, 210 mA	
K-SMART GOV (Legacy)	12 VDC, 210 mA	
HID-5365	12 VDC, 110 mA	
HID-5395	12 VDC, 115 mA	
HID-6005	12 VDC, 75 mA	
HID-5455	12 VDC, 125 mA	
HID-5355KP	12 VDC, 120 mA	
HID 5375	24 VDC, 1.5 A	Requires 18 AWG cable. Connect to separate 24 VDC 2 Amp linear power supply. (Not supplied with ACU)
Indala PX 603 / PX605	12 VDC, 100 mA	
Indala PX 610	12 VDC, 150 mA	
Indala PX 620	24 VDC, 1.2 A	Requires 18 AWG cable. Connect to separate 24VDC 2 Amp linear power supply. (Not supplied with ACU kit.)
Indala PXX 501	12 VDC, 80 mA + 20 mA interface = 100 mA	
KR90L HID iClass Long Range Reader	12 VDC 1300 mA inrush 110 mA standby 300 mA peak	
HID iClass Legacy		HID Base Part Number
KR10L	12 VDC, 60 mA	900N
KR40L	12 VDC, 65 mA	920N
KRK40L	12 VDC, 85 mA	921N
HID multiClass Legacy		
KRP10L	12 VDC, 75 mA	900P
KRP15L	12 VDC, 75 mA	910P
KRP40L	12 VDC, 85 mA	920P
KRPK40L	12 VDC, 95 mA	921P
HID iClass SE		
KR10SE	12 VDC, 60 mA	900N
KR40SE	12 VDC, 65 mA	920N
KRK40SE	12 VDC, 85 mA	921N
HID multiClass		
KRP10SE	12 VDC, 75 mA	900P
KRP15SE	12 VDC, 75 mA	910P
KRP40SE	12 VDC, 85 mA	920P
KRPK40SE	12 VDC, 95 mA	921P
For HID pivClass Legacy and HID pivClass readers, refer to the Keyscan Technical Guide version 11.13 or later on the Keyscan Product Documentation Library CD.		