Specifications / Settings

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Product Documentation

Also refer to the Technical Guide for complete instructions on connecting circuit boards and hardware components, setting DIP switches, testing voltages, and wiring specific readers. Ensure lock hardware complies with building codes and fire regulations.

Important - Circuit Board Function Revisions

On PC1097 version and higher circuit boards, which are distinguished by the DIP switches in the upper right area of the board, the following functions are now configured via the Client software:

- Reader format configuration (formerly jumper J3)
- Reader LED lock state (formerly J16)
- Temporary card countdown (formerly J16)
- HC Accessibility relay all cards enabled (formerly J16)
- End-of-line supervision mode (formerly J18)
- Reader lockdown LED mode (formerly J18)

All of the previously listed functions can be selected or enabled when adding a panel in the Site Unit Setup or the Hardware Setup screen in the Client software. You require the following Keyscan software versions:

- System VII – version 7.0.19 or higher
- Vantage – version 8.1.18 or higher
- Aurora – any version

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 and elevator readers	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
CIM	CAN Bus 1	3280 ft / 1000 m @ 9600 bps 3280 ft/ 1000 m @ 19,200 bps 984 ft / 300 m @ 57,600 bps 262 ft / 80 m @ 115,200 bps	CAT 5 – 2 twisted pairs
PC to ACU NETCOM to ACU (direct serial)	RS-232	100 ft / 30 m @ 9600 bps 49 ft / 14.9 m @ 19,200 bps 26 ft / 8 m @ 57,600 bps 9.8 ft / 3 m @ 115,200 bps	5 conductors shielded 22 AWG
WIEEX2	n/a	4000 ft / 1219.2 m	CAT 5 – 1 twisted pair communication. 1 pair 18 AWG power to TX.

AO Relay States

The following table outlines relay states for auxiliary outputs.

Relay DIP Switch	Status	Possible TZ Status	LED State	N.C. Relay	N.O. Relay
Normal	☐ or red	Off			
Normal	☑ or green	On			
Reversed	☐ or red	Off			
Reversed	☑ or green	On			

Legend			
	LED On		LED Off
	Manual Output Control Off (Red) – System VII/Vantage		Manual Output Control On (Green) System VII/Vantage
	Aux Output Status (red) Aurora		Aux Output Status (Green) Aurora
	DIP Switch - Normal		DIP Switch - Reversed

Circuit Board Current Ratings

The following table outlines Keyscan circuit board current ratings. Do not exceed the operating maximum of the power supply.

Circuit Board Type	Model	Current Rating
CA or EC Control Board	PC109x versions	130 mA
Output Relay Boards	OCB-8	230 mA
Communication Boards	CIM	150 mA
	CIM-LINK	150 mA
	NETCOM2 Rev. B	270 mA
	NETCOM2P or NETCOM6P	140 mA
Specialty Boards	IOCB1616 – with outputs connected	400 mA
	IOCB1616 – no outputs connected	100 mA
	WIEEX2 transmitter (Tx)	50 mA
	WIEEX2 receiver (Rx)	50 mA

S2 DIP Switch Functions / S1 - Reset / S3 - Clear Memory

The DIP switches located at S2 set system functions and communication speeds as reviewed in the following table. Under the Settings column, 0 = switch OFF; 1 = switch ON.

S2 Switch	Setting	Function	Notes
S2.1	0=Off 1=On	**Communication Mode**	
	0	Serial Communication	Also see S2.7 & S2.8 in the table.
	0	Network Communication	As above.
	1	Reverse Network Communication - requires a license from Keyscan	Applies only to the reverse network designated control board with the programmed IP of the host location. All other boards on communication bus S2.1 = 0. Also see S2.7 & S2.8 in the table.
S2.2 & S2.3		**Communication Bit Rate**	
	0 0	9600 bit/s	
	0 1	57,600 bit/s	Recommended setting
	1 1	115,200 bit/s	Not applicable for reverse network.
S2.4 & S2.5		**Alternate Panel Serial # Selection**	
	0 0	Factory assigned serial # *	* Leave on factory assigned setting unless prompted in the Client software when inputting panel data.
	0 1	Alternate serial # 1 – adds 1000 to factory-assigned serial #	(not supported on Aurora)
	1 0	Alternate serial # 2 – adds 100 to factory-assigned serial #	(not supported on Aurora)
	1 1	Alternate serial # 3 – adds 10 to factory-assigned serial #	(not supported on Aurora)
S2.6		**Lockdown**	
	0	Disabled	
	1	Enabled	CA250 – AI #8 / CA4500 & CA8500 – AI #16 are dedicated lockdown aux inputs when lockdown enabled.
S2.7 & S2.8		**Communication Terminal Block Activation**	
	0 0	Direct serial communication connect to RS-232 (COM4) – TB4 terminal block	
	0 1	CB-485 and CPB-10-2 communication connect to CPB/CB MODULE (COM4) H1 header	
	1 0	NETCOMP communication plugs directly into M1 on control board (COM 4)	
	1 1	Program mode for NETCOMP plugged into M1 (COM4) on the control board	
CIM communication connects to H2 header (H2 is an open header and is not regulated by S2 DIP switches)			
S2.9 & S2.10		**KHS – IP Address**	
	n/a	Reserved for Keyscan Hosted Services	
S2.11 & S2.12		**Software Selection**	
	0 0	System VII	
	1 0	Vantage	
	1 1	Aurora	
S1 - Reset	If control board is powered and any S2 DIP switch listed at the right was altered, momentarily press the S1 switch to initialize the changes on the board.		S2.1 / S2.2 & S2.3 / S2.4 & S2.5 / S2.6 / S2.7 & S2.8
S3 – Clear Memory	If control board has been altered based on any changes/actions listed at the right, perform a clear memory to restore factory defaults – press S1, wait 5 seconds, then press S3 within 10 seconds.		S2.11 & S2.12 / new installation / PROM replacement / cover removed

Notes on Communication Settings

- 9600 bit/s recommended for CPB-10-2 only – not supported on Aurora
- Modem communication not supported on Aurora and not supported on current hardware products
- Ensure you are running the most current software version with this control board - for the latest software updates, visit www.keyscan.ca

Program Control Board with Host IP Address for Reverse Network

Requires a NETCOM6 or NETCOM6P and a Reverse Network license from Keyscan.

- Ensure the control board has power - set S2.7 and S2.8 OFF – press and release S1
- Connect programming serial cable to TB4 – green to GND – black to TD - red to RD
- Open NETCOM Utility > Keyscan Hyper Terminal – select Com Port and set baud rate as S2
- Select Open Port
- With the Hyper Terminal screen open (currently it's blank) turn S2.1 OFF then back ON – within 15 seconds press and hold the c (lower or upper case) on the keyboard until the Hyper Terminal menu opens – if the menu starts to scroll, release the "c" and wait until the menu has stabilized before going to the next step
- Select 1) Set Primary IP Address
- Enter the IP address of the host router, end point or the PC/server running the Keyscan Reverse Network communication manager – then Press the Enter key
- Select 3) Display IP Address and verify the address is correct otherwise repeat menu option 1)
- To set a secondary IP address, select menu option 2) Set Secondary IP Address – to set an override to the port programmed into the NETCOM device, select menu option 5) Set port number and enter a valid port
- Select 9) Exit – exit Hyper Terminal, exit the NETCOM Utility - disconnect the serial cable
- Set NETCOM Communication on controller:
  - NETCOM6P mounted on controller – S2.7 ON / S2.8 OFF – Press S1 Reset
  - NETCOM6P/CIM0 – S2.7 & S2.8 n/a – CIM HDR1 to ACU H2
  - NETCOM6 – S2.7 OFF / S2.8 OFF

Specifications / Settings

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Circuit Board Card Capacity

PC1097 and higher circuit boards are defaulted for – Aurora: 45,000 and System VII and Vantage: 32,000 card-storage capacity. The names of the credential holders are not stored in the ACU. It is strongly recommended that either the dealer/installer or the end-user schedule automatic database backups at regular intervals to safeguard all site and cardholder data. The database backup and scheduling functions are located in the Client software. In the event that the database is not backed up, you cannot retrieve names from the access control board.

Reader Formats

Reader formats are set in the Client software as noted on the opposite side. Keyscan control boards are factory defaulted for Keyscan's 36-bit proprietary Wiegand format. Reader formats apply to PROM version 4.03 or greater unless stated otherwise in the table below.

26-Bit Cards – Waiver of Liability

Keyscan does not recommend any 26-bit card formats. See the Client help for more on the pitfalls of the 26-bit format. Installing dealers should have an authorized end-user sign a waiver of liability before enabling a reader format for 26-bit cards. A Waiver of Liability can be found in the Client help – System VII v7.0.19 / Vantage v8.1.18 or later versions and on all versions of Aurora.

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 Format table below reviews an abbreviated list of supported reader formats and the security level of each format. A full list is in the Client help. 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 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 – FFFFFFFFFFFF
  - 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	Card Number Format	Notes
A	Keyscan 36-bit only	High	Standard	
B	FIPS/TWIC – 75-bit output (48-bit FASC-N, 25-bit expiration date, 2 parity bits)	High	Extended	Legacy support only
C	HID Corporate 1000 - 35-bit output	Medium	Extended	
D	MIFARE – CSN 32-bit output	Low	Extended	Only reads the Card Serial Number sector.
E	MIFARE – Reverse CSN 32-bit output	Low	Extended	Only reads the Card Serial Number sector.
F	MIFARE – 40-bit CSN (32-bit CSN, 8-bit Checksum)	Low	Extended	Only reads the Card Serial Number sector.
G	26 to 48 Pass-through Large Card Format (with first and last parity bits dropped)	Medium - Low	Extended	
H	University 1000 - 56-bit	Medium	Extended	Custom order only. Facility code required on ordering.
I	MIFARE Reverse 40-bit (32-bits reverse CSN + 8-bits checksum = 40 bits	Low	Extended	Only reads the Card Serial Number sector.
J	MLF Indala Format = 16039	Medium	Extended	Custom order only. Letter required from dealer.
K	FIPS/TWIC – 75-bit output (48-bit FASC-N, 25-bit expiration date, 2 parity bits) & Keyscan 36-bit	High	Extended	Legacy support only
L	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	Extended	Legacy support only
M	37-bit H10304 & Keyscan 36-bit	Medium	Extended	Reader PROM 4.04 or higher
N	37-bit H10302 & 35-bit Corporate 1000	Medium	Extended	Reader PROM 4.04 or higher
O	HID Corporate 1000 48-bit & Keyscan 36-bit	Medium	Extended	Reader PROM 5.02 or higher (supported on Aurora only)
P	HID Corporate 1000 48-bit, HID Corporate 1000 35-bit, HID H10302 & Keyscan 36-bit	Medium – Low	Extended	Reader PROM 5.02 or higher (supported on Aurora only)
Q	HID Corporate 1000 48-bit, HID Corporate 1000 35-bit, HID H10302, Keyscan 36-bit & Standard 26-bit	Low	Extended	Reader PROM 5.02 or higher (supported on Aurora only)
R	HID Corporate 1000 48-bit, HID Corporate 1000 35-bit, HID H10302, Keyscan 36-bit & Standard 26-bit	Low	Extended	Reader PROM 5.02 or higher (supported on Aurora only)
Reader Formats below are NOT recommended.				
1	Standard 26-bit & Keyscan 36-bit	Low	Standard	
2	Legacy - Northern 34-bit, Standard 26-bit & Keyscan 36-bit	Low	Standard	
4	Kantech 32-bit & Keyscan 36-bit	Medium	Standard	
6	Intercon 32-bit & Keyscan 36-bit	Low	Standard	
28	Intercon 32-bit & Keyscan 36-bit & Standard 26-bit	Medium	Standard	
30	Cards between 26-bit & 40-bit read as 26 bit card location with parity check	Very Low	Standard	

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 Power

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 (125 KHz compatible)	12 VDC, 80 mA	
K-VAN	12 VDC, 90 mA	
K-KPR	12 VDC, 115 mA	
K-SMART (13.56 MHz)	12 VDC, 210 mA	
K-SMART GOV	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, 1.2 A	Requires 18 AWG cable. Connect to separate 24 VDC 2 Amp linear power supply. (Not supplied with ACU)
Indala PX 603	12 VDC, 100 mA	
Indala PX 605	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 PXK 501	12 VDC, 80 mA + 20 mA interface = 100 mA	
KR90L – HID iClass Long Range Reader	12VDC 1300 mA in-rush 110 mA standby 300 mA peak	12 VDC - 2 amps independent power supply per KR90L with 18 AWG cable recommended
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
Stated current for iClass readers is normal standby condition.		
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.		