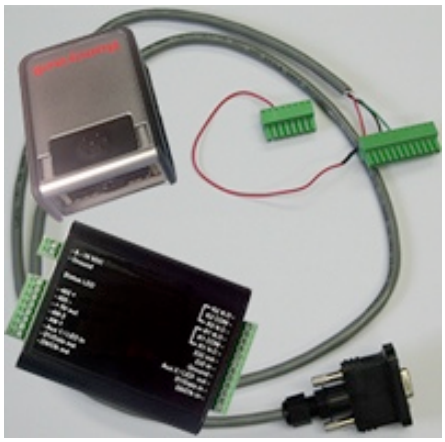
CYPRESS

TSP-2000 Series

Operations Manual

Barcode Scanner with Wiegand Converter



TSP-2104

Overview and Features:

The Cypress TSP series of products provide bar code to wiegand solutions for turnstyle and visitor pass applications.

Units are preconfigured to capture barcodes and provide the wiegand representation of the barcode characters - limited to the available conversions as indicated in this manual. Customization is available upon request, engineering fees are additional.

The TSP-2104 barcode scanner has a sleep mode with IR wake-up and deliver excellent scanning of 1D barcodes. Formats include Code 39, UPC, Code 32, Code 2 of 5, Code 128 and others.

The TSP-2104 has scan area of 1280 x 960 pixel array. 30% minimum reflectance difference. Reads 1D, PDF417 and 2D bar codes - Pitch 45º and Skew 65º

The TSP-2104 offer different wiegand output options as identified on the included Wiegand Converter application table.

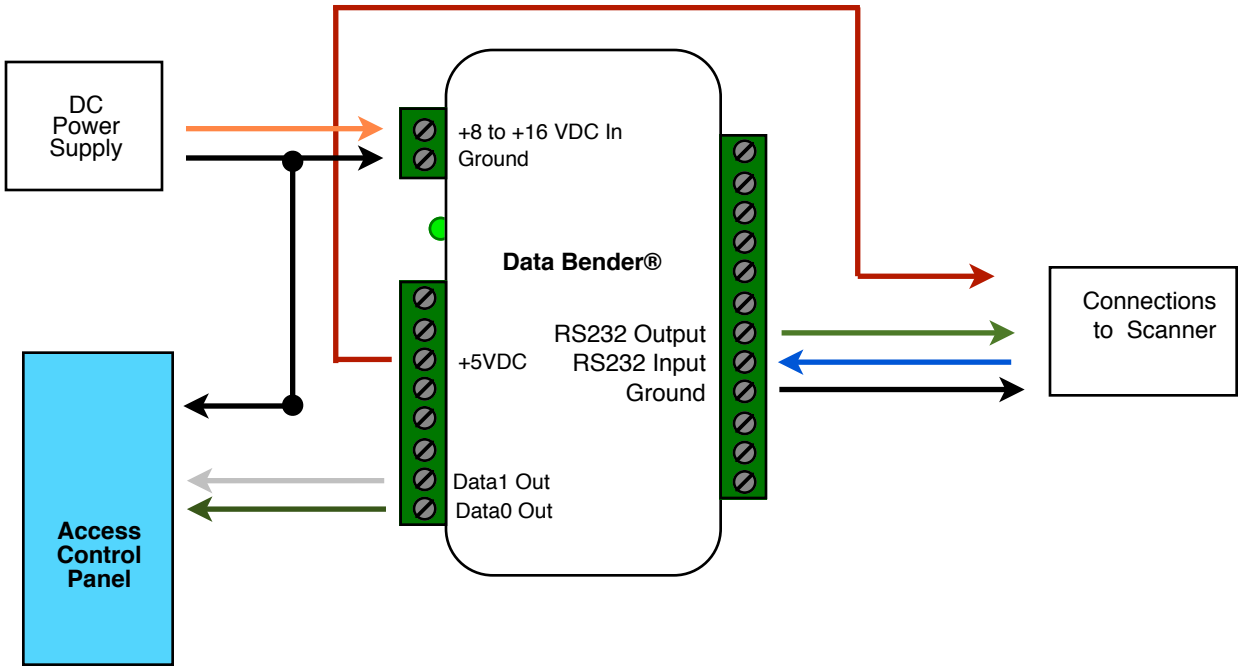
Included items:

Configuration Guides - (TSP-2104 for additional customization if needed)
Custom interface cable
Scanner
Data Converter

Technical Specifications

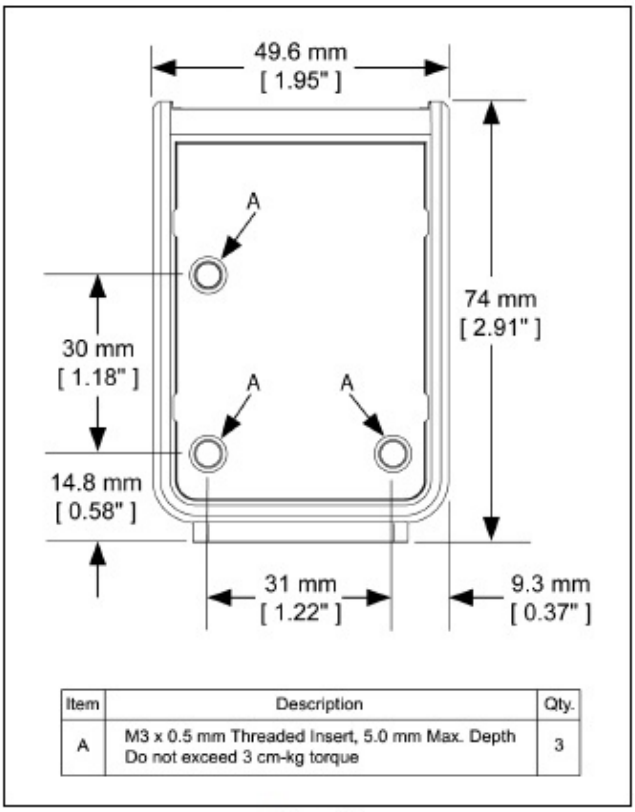
PHYSICAL	4.125” X 2.875” X .75” - ALUMINUM HOUSING (CVX-2104 CONVERTER) 2.9” X 1.97” X 1.0” (TSP-2104) SCANNER - VUQUEST 3310g	
Temperature	Storage (-55 C to +150 C) Operating (-40 C to +85 C)	
Humidity	95% (non-condensing)	
Power	Input	Unreg input 8 to 16 vDC @ 100ma Max
	Output	+5vDC @ 250ma
Scanner output	Interface	RS-232
	Format	ASCII
Converter output	Interface	Wiegand
	Format	Wiegand
Misc	Relay	Contacts - 1a @ 120Vac
Warranty	1 year conditional	

Wiring Diagram for TSP-2104



Scanner Mounting Specifications

The 3310g has three M3 x 0.5 mm threaded inserts on the bottom of the scanner for mounting with screws.



Item	Description	Qty.
A	M3 x 0.5 mm Threaded Insert, 5.0 mm Max. Depth Do not exceed 3 cm-kg torque	3

Figure 10.

TSP-2104
3100g Scanner
Specifications

Parameter	*Specification*
Dimensions (Typical):	
Height	1.02 inches (26mm)
Length	2.91 inches (74mm)
Width	1.97 inches (50mm)
Weight	2.5 ounces (70g)
Wavelength:	
Illumination LED	633nm
Aimer LED	528nm
Image Size	844 x 640 pixels
Skew Angle	±65°
Pitch Angle	±45°
Motion Tolerance: Enhanced Streaming Presentation Trigger	up to 240 inches per second for 13 mil UPC
Symbol Contrast	Grade 1.0 (20% or greater)
Voltage Requirements	4 - 5.5 VDC at input connector
Current Draw @5VDC	Scanning: 450mA, 2.3W Standby: 90mA, .45W
Power Supply Noise Rejection	Maximum 100mV peak to peak, 10 to 100 kHz
Temperature Ranges:	
Operating	+32°F to +104°F (0°C to 40°C)
Storage	-4°F to +158°F (-20°C to 70°C)
Humidity	5 to 95% non-condensing
Mechanical Drop	Operational after 30 drops from 4.9 feet (1.5m) to concrete at 23°C
Vibration	Withstands 5G peak from 22 to 300 Hz
ESD Tolerance	Up to 15kV direct air Up to 8 kV indirect coupling plane
Solids and Water Protection	IP53

The scanner has a view finder that projects a bright green aiming beam that corresponds to the scanner's horizontal field of view. The aiming beam should be centered over the bar code, but it can be positioned in any direction for a good read.

The aiming beam is smaller when the scanner is closer to the code and larger when further away from the code. Symbologies with larger bars or elements should be read farther from the unit and those with smaller bars should be read closer.

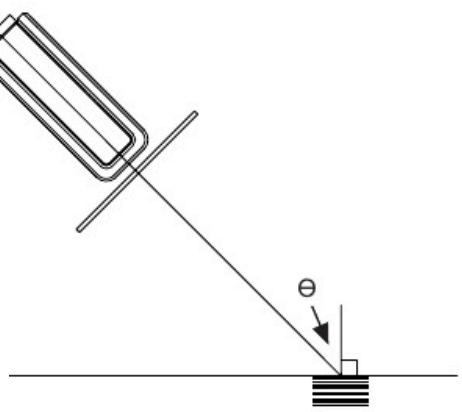
If the code being scanned is highly reflective, it may be necessary to tilt the code up to 15 t0 18 degrees to prevent unwanted reflection.

Linear bar code

2D Matrix symbol

TSP-2104 - Barcode specifications

- Avoid specular reflections, caused by ambient and internal light sources.
- The bar code should be slightly off perpendicular to the axis of the scanner.
- To reduce specular reflections the skew angle can vary significantly depending on the application such as: ambient illumination sources, code size and code type.
- Excessive angles should be avoided.
- Other factors, such as surface qualities, mounting distances, secondary windows and external illumination can easily impact these recommendations.
- If a secondary window is used, the window should be mounted as close to the front of scanner as possible at a 90° angle to the optical axis to avoid specular reflections.
- For secondary windows, Honeywell recommends the following:
  - Optical quality glass
  - >95% transmission in the nominal 650nm wavelength
  - Anti-reflective coating on both sides
  - Avoid window thickness above 2mm
- A skew angle of 15° to 20° between the normal of the bar code's surface and the optical axis of the imager is sufficient to avoid specular reflections.
- Avoid pitch angles above 20° to prevent code compression.



Depth of Field

Typical Performance

Bar code	Standard Range (SR)
5 mil Code 39	55 mm - 159 mm (2.2" - 6.3")
7.5 mil Code 39	35 mm - 239 mm (1.4" - 9.4")
10 mil Code 39	26 mm - 330 mm (1.0" - 13.0")
20 mil Code 39	47 mm - 553 mm (1.9" - 21.8")
13 mil UPC	39 mm - 435 mm (1.5" - 17.1")
6.7 mil PDF417	36 mm - 178 mm (1.4" - 7.0")
10 mil PDF417	36 mm - 289 mm (1.4" - 11.4")
10 mil Data Matrix	47 mm - 216 mm (1.9" - 8.5")
20 mil Data Matrix	33 mm - 414 mm (1.3" - 16.3")

Guaranteed Performance

Bar code	Standard Range (SR)
5 mil Code 39	64 mm - 145 mm (2.5" - 5.7")
7.5 mil Code 39	59 mm - 221 mm (2.3" - 8.7")
10 mil Code 39	42 mm - 308 mm (1.7" - 12.1")
20 mil Code 39	64 mm - 488 mm (2.5" - 19.2")
13 mil UPC	55 mm - 410 mm (2.2" - 16.1")
6.7 mil PDF417	48 mm - 160 mm (1.9" - 6.3")
10 mil PDF417	49 mm - 274 mm (1.9" - 10.8")
10 mil Data Matrix	62 mm - 195 mm (2.4" - 7.7")
20 mil Data Matrix	47 mm - 377 mm (1.9" - 14.8")

Note: Performance may be impacted by bar code quality and environmental conditions.

Wiegand Converter
DIP Switch Application Table

#	DIP SWITCH SETTING								INPUT		OUTPUT	
	1	2	3	4	5	6	7	8	Interface	Format	Interface	Format
31	X	X	X	X	X				TEST	TEST	RS-232 (9600)	Test String
46		X	X	X		X			SERIAL	0 - 248 BITS	SERIAL	0 - 248 BITS
65	X						X		RS-232 (9600)	10 Dec	Wiegand	26 bit
66		X					X		RS-232 (2400)	10 Dec	Wiegand	26 bit
67	X	X					X		RS-232 (1200)	10 Dec	Wiegand	26 bit
68			X				X		RS-232 (9600)	12 Hex	Wiegand	Variable
69	X		X				X		RS-232 (2400)	12 Hex	Wiegand	Variable
70		X	X				X		RS-232 (1200)	12 Hex	Wiegand	Variable
71	X	X	X				X					
72				X			X					
73	X			X			X					
74		X		X			X					
75	X	X		X			X					
76			X	X			X					
77	X		X	X			X					
78		X	X	X			X					
79	X	X	X	X			X		RS-232 (9600)	ASCII	Strobed	ABA
80					X		X		RS-232 (2400)	ASCII	Strobed	ABA
81	X				X		X		RS-232 (1200)	ASCII	Strobed	ABA
82		X			X		X		RS-232 (9600)	ASCII	Strobed NoPU	ABA
83	X	X			X		X		RS-232 (9600)	ASCII Decimal	F/2F	12 digit ABA
84			X		X		X					
85	X		X		X		X					
86		X	X		X		X		RS-232 (9600)	ASCII Decimal	Wiegand	36 bit
87	X	X	X		X		X		RS-232 (9600)	ASCII Decimal	Wiegand	37 bit
88				X	X		X					
89	X			X	X		X					
90		X		X	X		X					
91	X	X		X	X		X					
92			X	X	X		X					
93	X		X	X	X		X					
94		X	X	X	X		X					
95	X	X	X	X	X		X					