101-MILLIMETER COMPATIBLE SWIPE READER TECHNICAL REFERENCE MANUAL

Part Number 99821101-6

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REGISTERED TO ISO 9001:2000

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Rev Number	Date	Notes
1	1989	Initial Release
2	22 Oct 99	Formatted manual; Added IEC requirements to Specifications; Changed values in Specifications; Clarified Connector information; Added correct drawings; Clarified Card Present Signal
3	14 Sep 00	Section 1, Specs Corrected length dimension to 101.6 mm. Written to <i>SI, International System of Units</i> .
4	25 Jul 01	Front Matter: Added to Agency page: FCC Class B, UL and CUL, CE Class B. Copyright 2001 added.
5	08 Apr 03	Front Matter: added ISO line to logo, changed Tech Support phone number, added new warranty, changed warranty from 90 days to 1 year.
6	16 Jul 03	Sec 1: added cable length to Configuration Table and deleted P/N 21050149 and added 21050005, added MTBF Electronics to Specification Table, changed power requirements to 2.7 VDC, and corrected units. Table 2-1, 2-2, and 2-3 added mating connectors and changed V_{cc} from 2.4 to 2.7. Table 2-1 corrected color-coding for pin 6.

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FCC WARNING STATEMENT

This equipment has been tested and found to comply with the limits for Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

FCC COMPLIANCE STATEMENT

This device complies with Part 15 Of The FCC Rules. Operation of this device is subject to the following two conditions: (1) This device may not cause harmful interference. And (2) This device must accept any interference received, including interference that may cause undesired operation.

CANADIAN DOC STATEMENT

This digital apparatus does not exceed the Class B limits for radio noise for digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de las classe B prescrites dans le Réglement sur le brouillage radioélectrique édicté par les ministère des Communications du Canada.

CE STANDARDS

Testing for compliance to CE and FCC requirements was performed by an independent laboratory. The unit under test was found compliant to Class B.

UL/CSA

This product is recognized per Underwriter Laboratories and Canadian Underwriter Laboratories 1950.

TABLE OF CONTENTS

SECTION 1. FEATURES AND SPECIFICATIONS	1
CONFIGURATIONS	1
REFERENCE DOCUMENT	1
SPECIFICATIONS	2
SECTION 2. INSTALLATION	3
MOUNTING	3
CONNECTORS	5
TIMING	6
DATA	7
STROBE	7
CARD PRESENT	7

FIGURES

Figure 1-1.	101-millimeter Compatible Swipe Reader	vi
Figure 2-1.	Reader Mounting Dimensions With Cover	3
Figure 2-2.	Reader Mounting Dimensions Without Cover	4
Figure 2-3.	Timing	6

TABLES

Table 2-1. I/O Connector f	or Single Track, 6 Pin	5
Table 2-2. I/O Connector f	or Dual Track, 8 Pin 5	5
Table 2-3. I/O Connector f	or 3 Track, 10 Pin6	6



Figure 1-1. 101-millimeter Compatible Swipe Reader

SECTION 1. FEATURES AND SPECIFICATIONS

The 101-millimeter OEM Swipe Reader has a TTL level interface and is designed for use in retail, access control, and time and attendance environments. This Reader is in compliance with industry specifications, including ANSI/ISO Standards 7810, 7811-1 through -6, 7812, 7813, and AAMVA. The Reader can be customized. Bidirectional read capability is available.

CONFIGURATIONS

	Part Number	Read	Color	Cable Length
Integral Electronics,	21050001	Track 1	Black	20"
Single Track with Cover	21050002	Track 2	Black	20"
	21050003	Track 3	Black	20"
Integral Electronics,	21050058	Track 1	Black	7"
Single Track without Cover	21050057	Track 2	Black	21"
Integral Electronics,				
Dual Tracks with Cover	21050004	Tracks 1 & 2	Black	20"
Dual Tracks with Cover	21050005	Tracks 2 & 3	Black	20"
Integral Electronics,	21050145	Tracks 1,2, & 3	Black	20"
3 Tracks with Cover				

REFERENCE DOCUMENT

I/O Interface for TTL Swipe Readers, Technical Reference Manual, P/N 99875148

SPECIFICATIONS

IEC:	IEC 1000-4-2	ESD (Electro Static Discharge)			
Meets or Exceeds	IEC 1000-4-3	Radiated EMC Field (2X requirement)			
Requirements for:	IEC 1000-4-4	Electrical Fast Transient Burst requirement (transmission on I/O cable)			
Flammability	Meets UL94V-0	0			
Recording Method	Two-Frequency	y Coherent Phase (F2F)			
Speed	Card speed thr	ough the unit may vary from:			
	2 to 125 in/s at	75 bpi (5.1 to 318 cm/s at 29.5 b/cm)			
	2 to 60 in/s at 2	210 bpi (5.1 to 152.4 cm/s at 82.7b/cm)			
Power Requirements	Single Track:	2.7 to 5.5Vdc at 1 mA, typical			
	Dual Track:	2.7 to 5.5Vdc at 2 mA, typical			
	3 Tracks:	2.7 to 5.5Vdc at 3 mA, typical			
Output Signal Levels	$V_{ol} = 0.4 \text{ VDC} a$	at 2 mA			
	$V_{oh} = V_{cc} - 0.5 V$	/DC at -2 mA			
Operating Temperature	-30 °C to 70 °C	2			
Operating Humidity	10% to 90% re	lative humidity			
Life	300,000 passes	s Single Track			
	1,000,000 pass	ses Multi-Track			
MTBF Electronics	125,000 h				
Dimensions	Length: 4.0" (10	01.6 mm)			
	Height: 1.08" (27.4 mm)				
	Width: 1.62" (4	41.1 mm)			
Cable Length,	Single Track:	20" (508.0 mm)			
Standard:	Dual Track:	20" (508.0 mm)			
	3 Track	20" (508.0 mm)			
	Consult Factor	y for other lengths			
Connector	See Section 2,	Connectors			
Colors available	Black, Standard	d			
	Pearl White Av	ailable			

SECTION 2. INSTALLATION

This section consists of installation and checkout of the Reader.

MOUNTING

The dimensions for mounting with the cover are shown in Figure 2-1.



Figure 2-1. Reader Mounting Dimensions With Cover

The dimensions for mounting without the cover are shown in Figure 2-2.



Figure 2-2. Reader Mounting Dimensions Without Cover

CONNECTORS

Single Track I/O Connector is shown in Table 2-1, and the Dual Track I/O Connector is shown in Table 2-2.

	Pin Number	Color	Signal
Connector for Single Track, 6 Pin	1	Yellow	DATA
	2	Orange	CARD PRESENT
Molex 6 Pin	3	Green	STROBE
22-01-2061	4	_	KEY
0.100 inch Contact Spacing	5	Red	V _{cc}
Mates to Molex 22-05-2061	6	Brown	GND

Table 2-1. I/O Connector for Single Track, 6 Pin

Note: V_{cc} = 2.7 to 5.5 VDC

Table 2-2, 1/O Connector for Duar Track, 01 m	Table 2-2.	I/O Connector	for Dual	Track, 8 Pin
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	Pin Number	Color	Signal
Connector for Dual Track, 8 Pin	1	Yellow	DATA (Tk 2)
	2	White	CARD PRESENT
	3	Green	STROBE (Tk 2)
Molex 8 Pin	4	_	KEY
22-01-2081	5	Red	V _{cc}
0.100 inch Contact Spacing	6	Black	GND
	7	Blue	STROBE (Tk 1 or Tk 3)
Mates to Molex 22-05-2081	8	Brown	DATA (Tk 1 or Tk 3)

Note: V_{cc} = 2.7 to 5.5 VDC

	Pin Number	Color	Signal
Connector for 3 Track, 10 Pin	1	Yellow	DATA (Tk 2)
	2	White	CARD PRESENT
	3	Green	STROBE (Tk 2)
	4		KEY
	5	Red	V _{cc}
Molex 10 Pin	6	Black	GND
22-01-2101	7	Blue	STROBE (Tk 1)
0.100 inch Contact Spacing	8	Brown	DATA (Tk 1)
Mates to Molex 22-05-2101	9	Gray	STROBE (Tk 3)
	10	Orange	DATA (Tk 3)

Table 2-3. I/O Connector for 3 Track, 10 Pin

Note: V_{cc} = 2.7 to 5.5 VDC

TIMING



Notes:

- 1. Time out of the CARD PRESENT signal occurs approximately 150 ms after the last strobe transition.
- 2. DATA is valid 1.0 μ sec before the negative edge of STROBE.

Figure 2-3. Timing

DATA

The Data signal is valid while the strobe is low. If the Data signal is high, the bit is a zero. If the Data signal is low, the bit is a one.

STROBE

The Strobe signal indicates when Data is valid. It is recommended that Data be loaded by the user with the leading edge (negative) of the Strobe.

CARD PRESENT

Card Present will go low after 14/15 flux reversals from the head. Card Present will return high 150 milliseconds after the last flux reversal.

When no card is being moved through the unit, the Data, Strobe, and Card Present signals are high. The signal timing diagram shown above represents the data along with other signals that are generated during the reading process.

101-Millimeter Compatible Swipe Reader