

IQ9000
SINGLE CHIP
SERIAL SCANNER

USER'S MANUAL



CyberTouch

IQ9000 Single Chip Serial Scanner

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USER INFORMATION

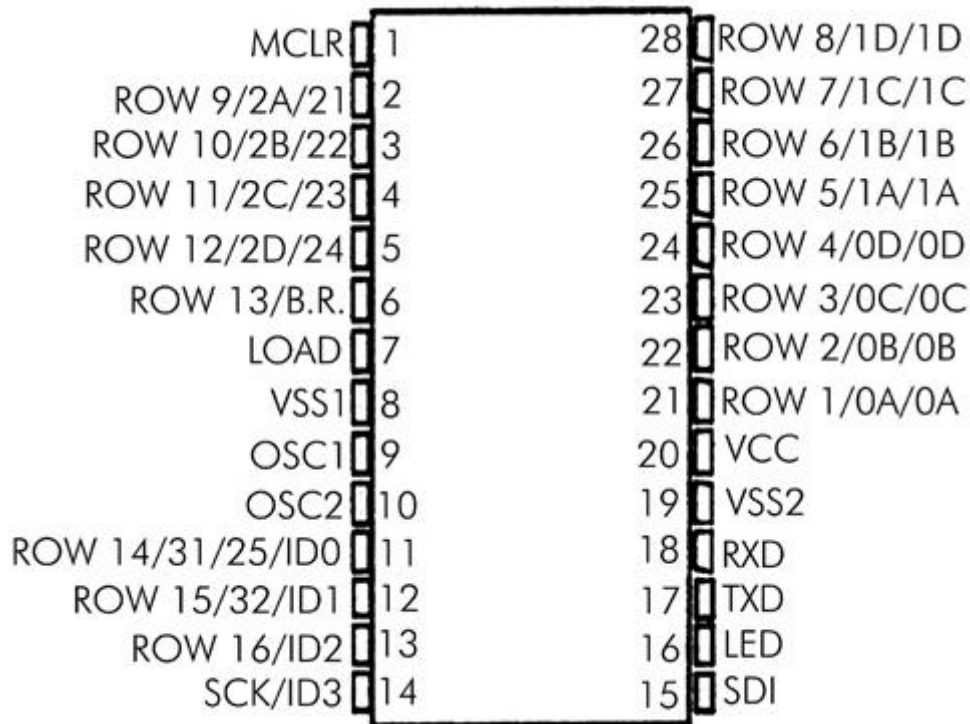
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INTRODUCTION

This manual has been written for users of the CyberTouch CyberScan Scanner in combination with CyberTouch CyberScan drivers. This CyberScan touch screen controller has been designed for the CyberTouch touch screen family. The touch screen controller described within this document is assumed to be used with resistive touch screen products manufactured by CyberTouch. Touch screens between manufacturers vary with regards to light transmission, sensitivity and electrical characteristics. ALL TOUCH SCREENS DO NOT FUNCTION THE SAME WAY.

IQ9000

The compact single chip serial scanner controller, model IQ9000, is an easy to use RS232 compatible touch screen controller. It scans, debounces, encodes and interpolates a 16 column by 16 row, a 32 column by 32 row or a 40 column by 25-row digital touch screen. An appropriate resistor and external scanning circuitry make selection of the touch screen resolution. For every touch, the IQ9000 sends eight bytes comprising of the coordinates and state of the specific touch. Baud rate is selectable as 1200 or 9600. A schematic for the implementation of each of the touch screen resolutions is available.



DATA FORMAT

Coordinate position and status are encoded into eight bytes.

- Byte 1: ASCII 'T' (decimal 84)
- Byte 2: ASCII 'K' (decimal 75)
- Byte 3: point status:
 - 1-first point
 - 2-middle point
 - 4-last point
- Byte 4: Row Count high (Always zero)
- Byte 5: Row Count low
- Byte 6: Column Count high (Always zero)
- Byte 7: Column Count low
- Byte 8: hex 80 (decimal 128)

IQ9000 Pin Description

Signal Name	Pin #	DESCRIPTION		
V _{CC}	20	V _{CC} = +5Volts		
V _{SS1}	8	Ground		
V _{SS2}	19	Ground		
RXD	18	Receive serial data		
TXD	17	Transmit serial data		
OSC1	9	Oscillator input		
OSC2	10	Oscillator output		
MCLR	1	Reset. Apply 0V to provide orderly start-up		
SCK/ID3	14	Column data clock/Implementation identification-See Table 11		
SDI	15	Column serial data		
LED	16	Touch Detect indicator LED		
LOAD	7	Column data load pulse		
Implementation		1616	3232	4025
ROW 1/OA/OA	21	Row 1 output	Bank 0 Encoded Row	Bank 0 Encoded Row
ROW 2/OB/OB	22	Row 2 output	Uses external decoder	Uses external decoder
ROW 3/OC/OC	23	Row 3 output	See Table 1	See Table 1
ROW 4/OD/OD	24	Row 4 output		
ROW 5/1A/1A	25	Row 5 output	Bank 1 Encoded Row	Bank 1 Encoded Row
ROW 6/1B/1B	26	Row 6 output	Uses external decoder	Uses external decoder
ROW 7/1C/1C	27	Row 7 output	See Table 1	See Table 1
ROW 8/1D/1D	28	Row 8 output		
ROW 9/2A/21	2	Row 9 output	Bank 2 Encoded Row	Row 21 output
ROW 10/2B/22	3	Row 10 output	Uses external decoder	Row 22 output
ROW 11/2C/23	4	Row 11 output	See Table 1	Row 23 output
ROW 12/2D/24	5	Row 12 output		Row 24 output
ROW 13/B.R.	6	Row 13 output	Baud Rate Selection	Baud Rate Selection
		Baud Rate Selection	L= 1200	H= 9600
ROW 14/31/25/ID0	11	Row 14 output	Row 31 output	Row 25 output
ROW 15/32/ID1	12	Row 15 output	Row 32 output	
ROW 16/ID2	13	Row 16 output	Implementation identification - See Table 2	

DCBA	Row Bank 0	Row Bank 1	Row Bank 2
LLLL	1	11	21
LLLH	2	12	22
LLHL	3	13	23
LLHH	4	14	24
LHLL	5	15	25
LHLH	6	16	26
LHHL	7	17	27
LHHH	8	18	28
HLLL	9	19	29
HLLH	10	20	30
HHHH	None	None	None

Table 1

Notes: L and H - State of outputs from IQ9000.

Implementation Selection	ID3	ID2	ID1	IDO
1616	L	L	H	L
3232	L	L	H	H
4025	L	H	L	L

Table 2

Notes:

L-1 Meg Ohm resistor to VSS

H-1 Meg Ohm resistor to VCC

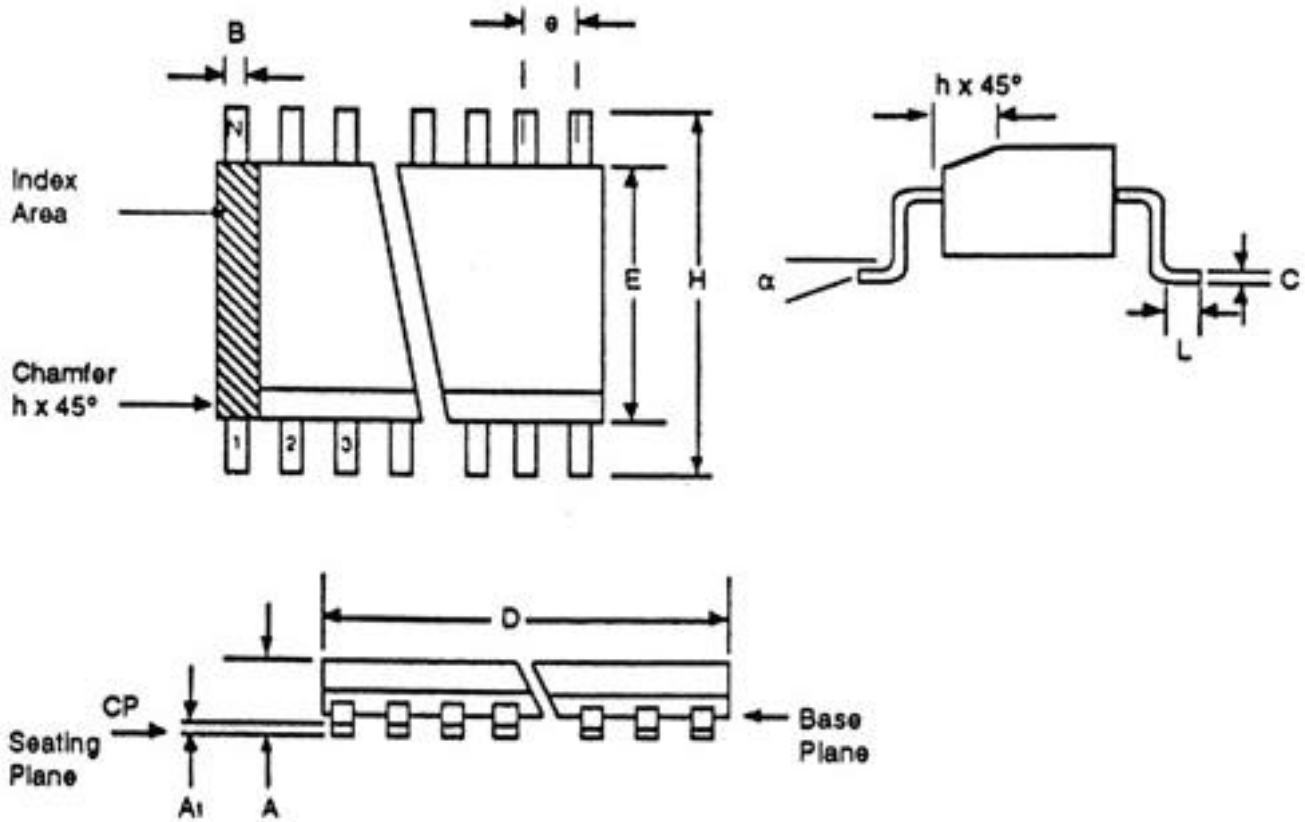
DC ELECTRICAL CHARACTERISTICS

(VDD=3.0 to 6.0 VDC, VSS=0VDC, 0°C to 70°C)

Characteristics	Symbol	Min	Typ	Max	Unit
Supply Voltage	V_{DD}	3.0	—	6.0	V
Supply Current	I_{DD}	—	2.0	5.0	mA
Input Low Voltage	V_{IL}	V_{SS}	—	0.8	V
Input High Voltage	V_{IH}	2.0	—	V_{DD}	V
Input Leakage Current	I_{IL}	—	—	-1	μ A
Output Low Voltage	V_{OL}	—	—	0.6	V
Output High Voltage	V_{OH}	$V_{DD}-0.7$	—	—	V

DIMENSIONAL PACKAGE DRAWING

Package Type: 28-Lead Plastic Surface Mount (SOIC - Wide, 300 mil Body)



Package Group: Plastic SOIC (SO)						
	Millimeters			Inches		
Symbol	Min	Max	Notes	Min	Max	Note
α	0°	8°		0°	8°	
A	2.3622	2.6416		0.093	0.104	
A1	0.1016	0.2997		0.004	0.0118	
B	0.3556	0.4826		0.014	0.019	
C	0.2413	0.3175		0.0095	0.0125	
D	17.7038	18.0848		0.697	0.712	
E	7.4168	7.5946		0.292	0.299	
e	1.270	1.270	Typical	0.050	0.050	Typical
H	10.0076	10.6426		0.394	0.419	
h	0.381	0.762		0.015	0.030	
L	0.4064	1.143		0.016	0.045	
N	28	28		28	28	
CP	—	0.1016		—	0.004	



CyberTouch

CyberTouch is the acknowledged industry leader in designing the highest quality resistive touch screens available to the OEM market. For the past two decades, we have earned a worldwide reputation of excellence for state-of-the-art touch screen technology. You will find us a reliable business partner committed to long-term relationships and ready to support your needs from concept to completion.

853 Lawrence Drive
Newbury Park, California
91320-2232, USA
Vox: 805.499-5000
Fax: 805.499.5888
www.cybertouchusa.com