Fixed mount CCD bar code reader

NFT-2100

Specification
Ver. 1.0

OPTICON

Version

Control number : SS05011
Model : NFT-2100

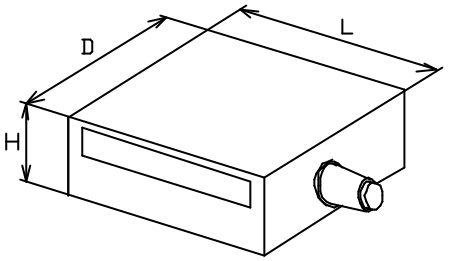
Version	Date	Revisions	Description
Ver 1.0	2005/06/09	-	First registration

1. **About this document.**
This document describes the NFT-2100 fixed mount bar code reader.

2. Outline.
NFT-2100 is a CCD bar code reader designed for embedded and fixed mount applications.
The bar code reader can be configured via bar code menu labels or via serial commands.
RS-232C, USB or keyboard wedge interfaces is supported.
NFT-2100 is environment friendly and is **RoHS** compliant.

3. Physical specifications.

3.1. *Dimensions.*
47.0 D x 55 W x 20.0 H (mm).



3.2. *Weight.*
100g (without cable).

3.3. *Color.*
Black.

3.4. *Material.*
Sheet metal

3.5. *Mounting.*
4 x M3 screws.
The screws may not enter more then 3 mm inside housing.

4. Environmental specifications.

4.1. *Temperature..*
Operating : 0 ~ 45 °C.
Storage : -10 ~ 60 °C.

4.2. *Humidity.*
Operating : 20 ~ 80 RH (non condensing)
Storage : 20 ~ 90 RH (non condensing)

4.3. *Ambient light.*
Fluorecent light: 5000lx
White light : 5000lx

5. Electrical specifications.

5.1. *Input voltage.*
+5VDC ± 10%

5.2. *Power ripple.*
0.1$V_{p\text{-}p}$Max (10 ~ 100 kHz)

5.3. *Current consumption.*
Idle : 45mA Max.
Operating : 130mA Max.

5.4. *Rush current.*
1A Max.

Measurement conditions :
1O resistor connected in series with power line.
Bar code reader not connected to computer.

6. Optical specifications.

6.1. *Light source.*
Red LED 660nm.

6.2. *Image sensor.*
CCD linear image sensor.

7. **Reading specifications.**
Test conditions:
Bar code : JAN/EAN13
Resolution : 0.26mm
PCS : 0.9

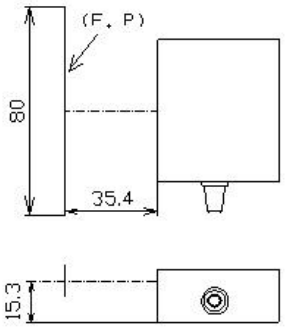
7.1. *Scan rate.*
200 scans/sec.

7.2. *Minimum resolution.*
0.15mm .

7.3. *Minimum PCS*
0.45, background reflection > 70%.

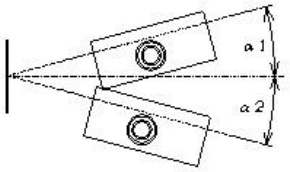
7.4. *Focal point.*
35.4 mm.

7.5. *Reading width.*
Max 80mm at Focal Plane (F.P.).

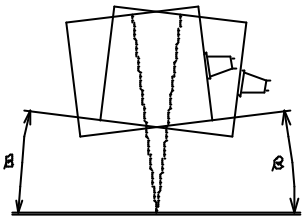


7.6. *Depth of Field.*
30.4 ~ 42.4 mm

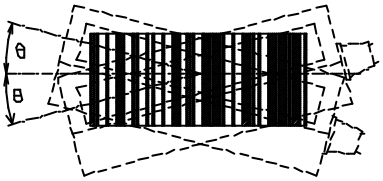
7.7. *Skew angle.*
10° = a1 = 30°
10° = a2 = 30°



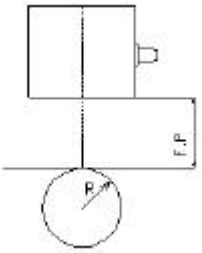
7.8. *Pitch angle.*
0° = ß = 6°



7.9. Tilt angle.
0° = ? = 10°



7.10. Rotation.
R = 30 mm (JAN/EAN13)
R = 20 mm (JAN/EAN8)



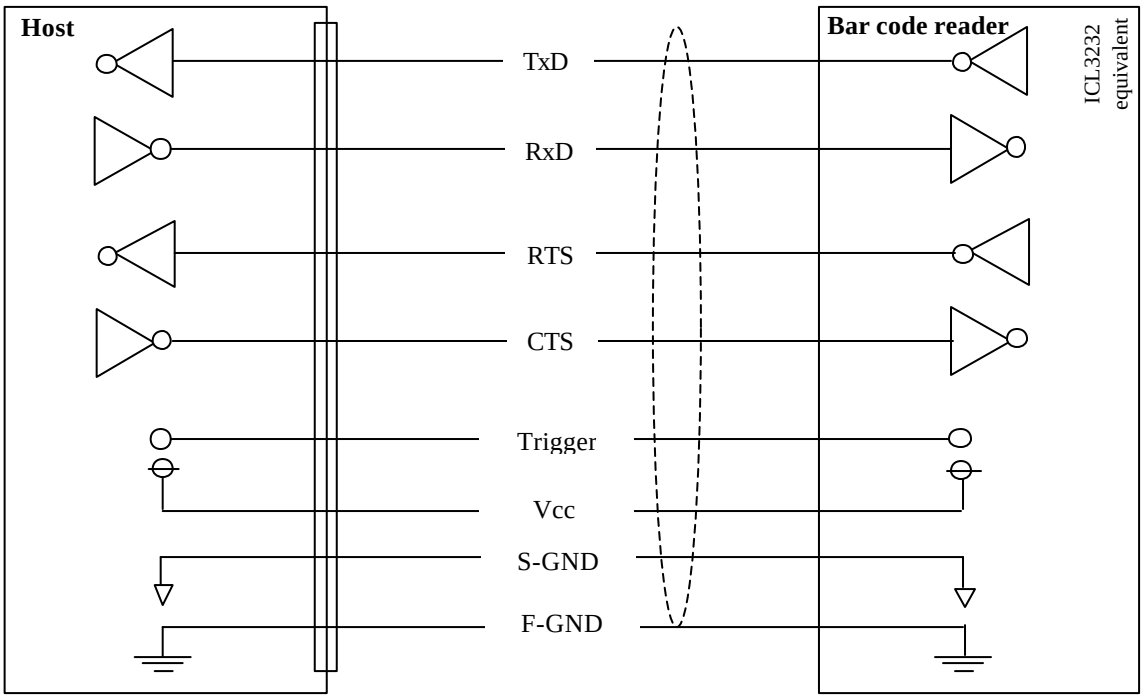
8. Interface specifications.

8.1. RS-232C

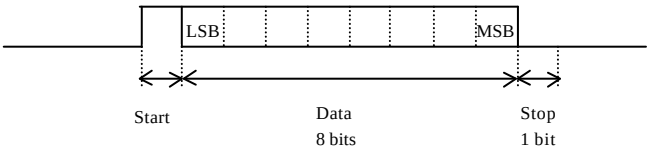
8.1.1. Signal levels :

Signal name	In/Out	RS-232C level (V)	
		OFF	ON
SD / TxD	Out	-5 ~ -15	5 ~ 15
RD / RxD	In	-3 ~ -15	3 ~ 15
RS / RTS	Out	-5 ~ -15	5 ~ 15
CS / CTS	In	-3 ~ -15	3 ~ 15
Trigger	In	Active low	

8.1.2. Interface circuit.

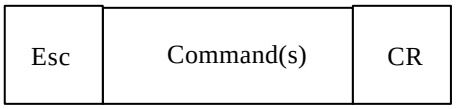


8.1.3. Character format.
Valid for both transmit and receive.



8.1.4. Transmit format.

8.1.5. Receive format :



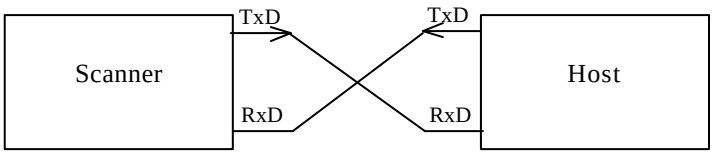
Esc = ASCII 27
CR = ASCII 13

Command(s) = menu command, max 18 bytes.
Refer to Universal menu book for supported serial commands.

8.1.6. Handshaking.
The next handshaking options are supported :

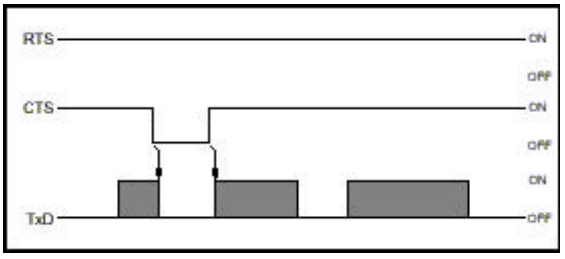
Handshake mode	**Command**
No handshaking	P0
Busy/ready	P1
Modem	P2
ACK/NAK	P3
ACK/NAK No Error	P4

8.1.6.1. NO HANDSHAKING.
In this mode the bar code reader transmits the data regardless of the control signals.
This is the default mode.
By default, the bar code reader RTS line is ON.



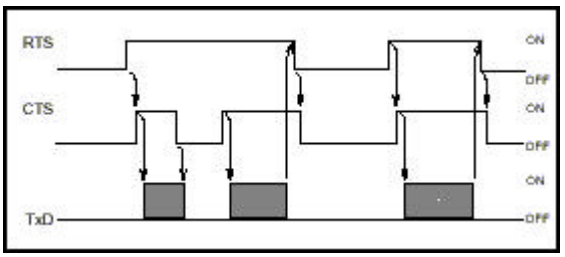
8.1.6.2. BUSY/READY.

The reader's RTS is ON as soon as the power is supplied to the reader and will stay ON while the reader can receive data from the host. The host will keep the reader's CTS ON while it is ready to receive data from the reader. While CTS is ON the reader is able to transmit data. The reader will abort transmission with an error indication o f the buzzer when the CTS is not ON within a certain configurable period. The reader may drop RTS to OFF during transmission if it can not receive data simulaneously



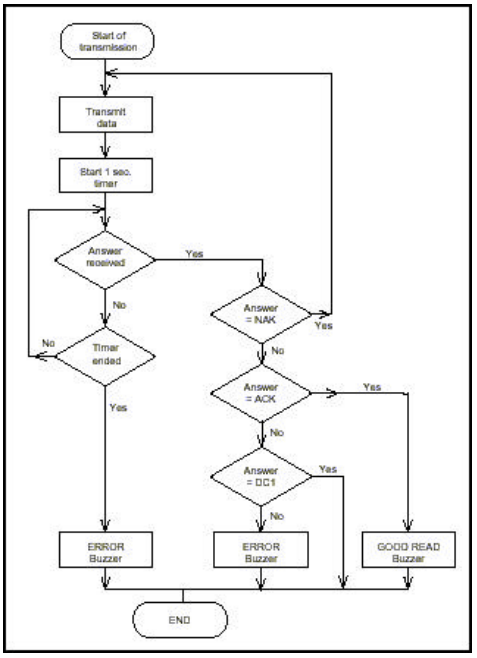
8.1.6.3. MODEM.

The reader's RTS is OFF as soon as power is supplied to the reader. The reader will turn RTS ON when it wants to transmit data to the host. The host should respond by putting CTS ON when it is ready to receive data. While CTS is ON the reader is allowed to transmit data. When all data has been transmitted, the reader will turn RTS OFF. In response, the host should turn OFF the reader's CTS. If, while RTS is ON, the CTS line is not ON for a certain configurable period, the reader will terminate the transmission with an error indication of the buzzer.



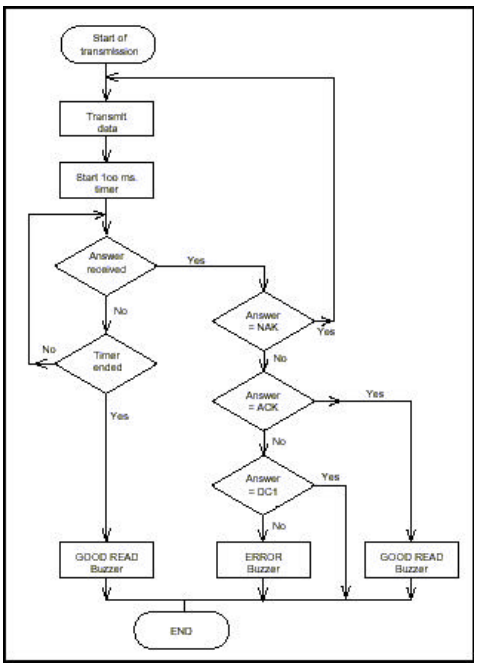
8.1.6.4. ACK/NAK

After data has been transmitted, the reader expects to receive one of the following responses from the host:



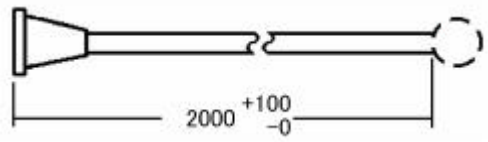
8.1.6.5. ACK/NAK NO ERROR RESPONSE.

The difference from the ACK/NAK mode is that when no response from the host is received within 100 ms, the reader assumes that the data has been received correctly by the host.



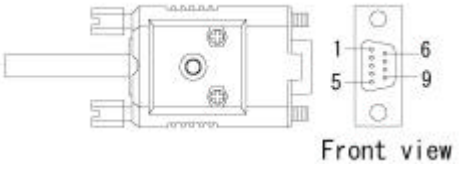
8.1.6.6. CABLE SPECIFICATION.

Cable type : Straight.
Cable thickness : 4.8mm ± 0.5mm
Cable length : 2000mm $^{+100, -0}$
Cable color : Black



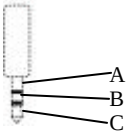
8.1.6.7. CONNECTOR SPECIFICATION.

8.1.6.7.1. DB9 female version.



1	Trigger	6	Jumper #4
2	TxD	7	CTS
3	RxD	8	RTS
4	Jumper #6	9	+5VDC
5	S.GND	CASE	SHIELD

3.5mm stereo jack.
Power supply connector pinout.



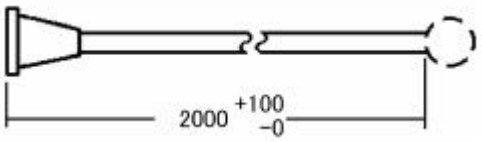
A	S.GND
B	+5VDC
C	N.C.

The bar code reader can be powered via DB9 pin9.
If an external power supply is inserted into the 3.5mm stereo jack, pin 9 is disconnected.

8.1.7. USB.

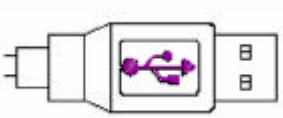
8.1.7.1. CABLE SPECIFICATION.

Cable type : Straight.
Cable thickness : 4.8mm ± 0.5mm
Cable length : 2000mm $^{+100, -0}$
Cable color : Black



8.1.7.2. USB-A CONNECTOR.

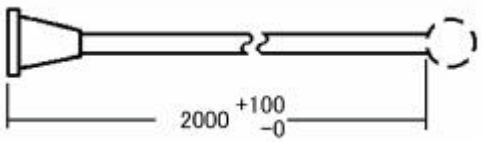
1	+5VDC
2	USB-
3	USB+
4	GND



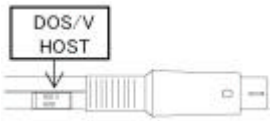
8.1.8. KEYBOARD WEDGE

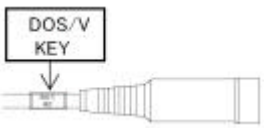
NFT-2100 keyboard wedge supports XT, AT and PS2.
In case the computer uses a DIN5 style connector, an extra PS2-DIN5 adapter is required (not included).

8.1.8.1. CABLE SPECIFICATIONS.



8.1.8.2. CONNECTOR SPECIFICATIONS.





Connect to computer keyboard port.

1	CPU DATA
2	N.C.
3	S.GND
4	+5VDC
5	CPU CLOCK
6	N.C.
Case	SHIELD

Connect keyboard to this connector.

1	KEY DATA
2	N.C.
3	S.GND
4	+5VDC
5	KEY CLOCK
6	N.C.
Case	SHIELD

9. Default settings.

The NFT-2100 default settings can be found in the Universal Menu Book.
A summary is shown below :

9.1. All interfaces.

Enabled symbologies	EAN8, EAN13, UPC-A, UPC-E, Code 39, Tri-optic, Codabar, Interleaved 2of5, Industrial 2of5, Scode, IATA, Code 93, Code 128, MSI Plessey, UK Plessey, Telepen.
Preamble	None
Prefix	None
Postamble	None
Read mode	Multiple read, disable trigger
Multiple read reset time	500 ms
Good read buzzer	High-low, 200ms, before transmission
Good read LED	Green, 200ms

9.2. RS-232C

Baudrate	9600 baud
Databits	8 bits
Parity	None
Stopbits	1 bit
Handshaking	No handshake
Suffix	CR

9.3. USB

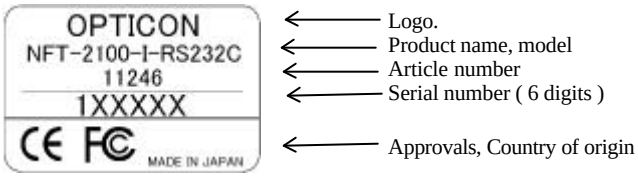
USB descriptor	Human Interface Device
Keyboard language	US
Suffix	Enter

9.4. Keyboard wedge

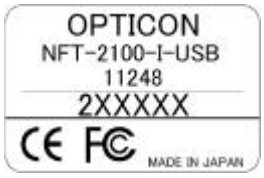
Mode	AT wedge
Keyboard language	US
Suffix	Enter

10. **Model and serial number.**

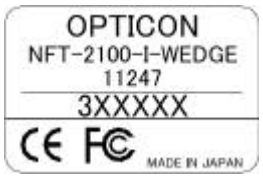
10.1. RS-232C DB9EPF version



10.2. USB version



10.3. Keyboard wedge version



11. Packing specifications.

Packing box size 245(W) x 112 (D) x 39(H) mm

12. Durability.

12.1. Static discharge

7 kV MAX (performance)
15 kV MAX (non destructive)

12.2. Drop test.

In box : 150 cm on concrete floor, 10 times, 1angle, 3 edges, 6 surfaces : does not affect performance.
Drop from 60cm on concrete floor, 4 directions, 3 times : does not affect performance.

12.3. Vibration test.

Applying 12~100Hz, g-19.6m/s^2 (2G), 1 cycle for 60 minutes, 10 cycles applied to X,Y,Z directions, in total 180 minutes does not affect NFT-2100 performance.

13. Reliability.

13.1. MTBF.

300.000 hours

13.2. MTTR.

1.0 hour

Exception :
LED : 10.000 hours.

14. Maintenance and warranty.

As seperately agreed.

15. Norms.

15.1. CE.

Complied.

15.2. FCC.

Complied.

16. Cautions.

16.1. Handling.

Avoid :

- Drop
- Swing on cable
- Pressure

16.2. Extreme stress.

Avoid :

- High and low temperatures

16.3. Submersion.

Avoid

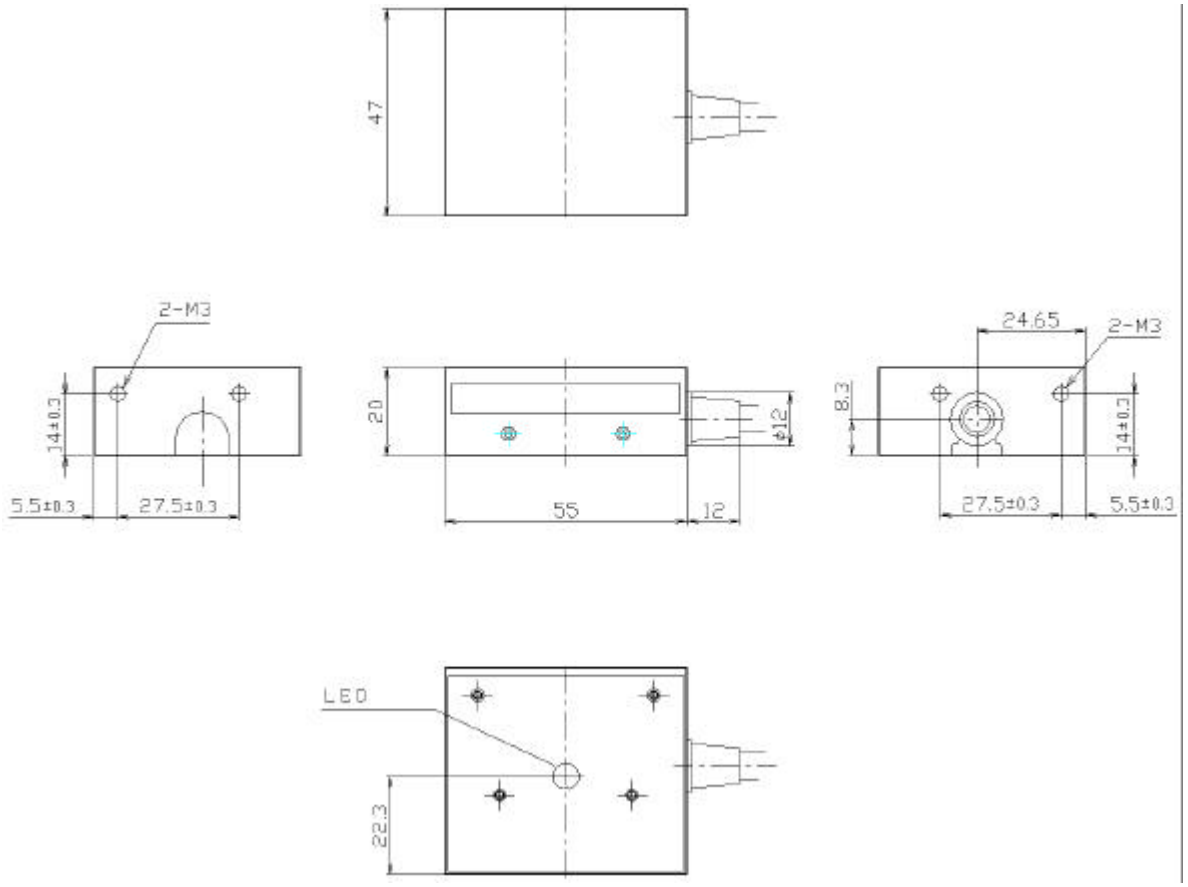
- drop in water
- Chemicals

16.4. Others.

Avoid :

- Plug in and out connectors while power is ON.
- Disassemble NFT-2100

17. Drawing.


47
2-M3
14±0.3
5.5±0.3
27.5±0.3
20
ϕ12
55
12
24.65
2-M3
8.3
14±0.3
27.5±0.3
5.5±0.3
LED
22.3