IDEC

INSTRUCTION SHEET
WB2F 2D Code Scanner

Confirm that the delivered product is what you have ordered. Read this instruction sheet to make sure of correct operation. Make sure that the instruction sheet is kept by the end user.

SAFETY PRECAUTIONS

In this operation instruction sheet, safety precautions are categorized in order of importance to Warning and Caution:

⚠ **WARNING**

Warning notice are used to emphasize that improper may cause severe personal injury or death.

⚠ **CAUTION**

Caution notices are used where inattention might cause personal injury or damage to equipment.

⚠ **WARNING**

- This product is not designed for use in medical equipment, nuclear power, railways, aircraft, passenger vehicle equipment, or similar applications requiring a high degree of reliability and safety. Do not use the product for these applications.
- When using this product in a system that may impact human life, such as in the management of chemicals, take the utmost care with a redundant design and safety design so that there is no possibility of impacting human life when data is mistaken.
- Do not modify, disassemble, or repair this product. There is a risk of serious ac cidents such as electric shock, damage, fire, malfunction, and other heave accident.
- Do not directly look at the scan window (transparent section) or expose any person to it while the LED is illuminated (performing reading operation). There is a risk of danger to the eyes.
- This product is for general electronic equipment. Do not use it for applications where there is a direct threat to the body or to human life due to malfunction or failure.
- Always turn off the power supply before wiring, maintaining, and inspecting the product. Otherwise there is a risk of electric shock or failure.

⚠ **CAUTION**

- Do not connect the product to a power supply outside the rated power supply voltage range or to an AC power supply. Otherwise there is a risk of explosion or burnout.
- Mistakenly wiring the product may cause the internal circuit to be damaged. Wire the input and output circuits by referring to "Input and output circuit connection example" in article 6. This product is not equipped with a protection circuit for a reversed power supply connection, so there is a risk of damage when the power supply connection is reversed. Use extreme caution when connecting the power supply.
- Avoid parallel wiring of the product's wires in the same conduit or duct with high voltage lines or power lines (inverter power lines in particular) as this may cause malfunction or damage due to the effect of induction noise.
- If the wires are long and when there is a risk of being affected by power sources or solenoids, independently wire the product as a general rule.
- Avoid installing or using the product in the following locations as there is a risk of malfunction or damage.
  1) Near induction equipment or heat sources
  2) Locations with many vibrations or shocks
  3) Dusty and dirty locations
  4) In an atmosphere with hazardous gases such as sulfidizing gas
  5) Locations in direct contact with water, oils, or chemicals
  6) Outdoors
- This product is not an explosion-proof product. Confirm that explosion-proof capabilities are not required when installing the product.

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1 Type number

WB2F-100S1B — Communication interface
- B : RS-232

2 General specifications

| Model		WB2F-100S1B
Rated power supply voltage		5VDC±0.25V *1
Consumption Current		500mA or less (peak 1A or less)
Operation Button		Equipped on unit (tactile switch) x 2
Reading distance	Barcode	50 to 180mm (narrow bar size 0.5mm) *2
	2D code	50 to 150mm (cell size 0.5mm) *2
Focal point		100mm
Field of view		70mm×50mm (at focalpoint)
Number of digits to be read	Barcode	64 digits max.
	2D code	7,089 digits max.
PCS		0.45 or higher *2
Minimum resolution		0.127mm
Light source		High brightness red LED
Imaging element		CMOS image sensor with grobal shutter
Frame rate	Quad-VGA (1280*960)	36fps
	720 p (1280*720)	40fps
	WVGA(800*480)	60fps
Communication interface	Serial I/F	RS-232(600~115,200bps) *3
	USB	USB2.0 Full-speed 12Mbps (virtual COM) *4
Connection type		13pin DIN type connector 2m
External input		2 circuits Non-voltage contact(Low active) Voltage input(VIL : 0-1.0V, VIH : 4.0-VCC)
External output		4 circuits NPN open collector (sink) Max. rating 26.4V DC, 50mA
Dielectric strength		500V AC (live part-dead part, 1minute)
Anti-ESD		Contact ±4kV, air ±8kV (IEC61000-4-2)
Ambient usage temperature		0 to 45℃ (no freezing)
Ambient usage humidity		30 to 85%RH (no condensation)
Ambient usage illumination		10,000lx or lower (under sunlight) 6,000lx or lower (under incandescent light) 2,000lx or lower (under fluorescent light)
Ambient storage temperature		-20 to 60℃ (no freezing)
Weight		Approx. 150g
Protective construction		IP65
Certified standards		UL/c-UL Listing, CE marking(self declared), VCCI(Report of Compliance), FCC(Verification), ICES-003(self declared)
Symbols to be read	Barcode	EAN-13/8(including addon), UPC-A/E0/E1(including addon), CODE39, Codabar(=NW7), Interleaved 2of5(=ITF), Standard 2of5(=Industrial 2of5), Matrix 2of5, Chinese Post Matrix, COOP 2of5, SCODE, Code93, Code128, GS1-128(formerly : EAN-128), MSI/Plessey, Italian Pharmacy(=Code32), CIP39, Tri-Optic, TELEPEN, Code11, GS1 Databar(formerly /RSS)Omni-directional, Truncated, Limited, Expanded), GS1 Databar Stacked (Omni-directional,Expanded), IATA 2of5
	2D code	QR Code/ GS1 QR Code, Micro QR Code, DataMatrix(DataCode) / GS1 DataMatrix, PDF417, Micro PDF417 GS1 composite(CC-A, CC-B, CC-C), Japan Postal

*1 Use only a Listed Power Supply with an output rated 5Vdc and marked LPS or NEC Class 2 for use the WB2F as UL Listing product
*2 By IDEC standard barcode or 2D code
*3 RS-232 setting parameters of factory setting are baud rate 9,600bps, data size 8bit, 1 stop bit, even parity bit, no flow control
*4 For maintenance interface (incompatible USB bus power)

3 Mounting

- The tightening torque for the product mounting screws is 0.4 to 0.5 N·m.
- Do not overtighten the mounting screws or hit the product with a hammer or the act that requires excessive stress on the root part of the cable (strongly pull or bend, etc.) the protective construction will be damaged.

Mounting Bracket (included)

Product mounting screws (included)
SEMS M3 x 6mm(2 screws)
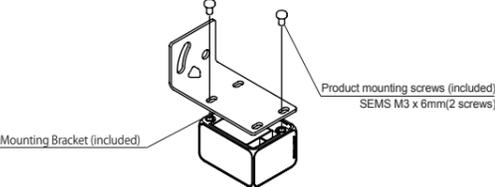
- Do not use the included mounting screws when mounting the product to a plate with a thickness greater than 2.3 mm.
- Ensure that the screw depth of the mounting screw is 3 to 5 mm.
- When mounting with except using the included mounting bracket, the maximum mounting hole diameter should be φ3.4mm.
- Mount the product so that the barcode or 2D code skew angle is that shown in the following diagram. Reading performance drops drastically if the barcodes are face-to-face with the optical axis.

15 to 60°   ·15 to -60°   Optical axis   WB2F

9.4mm

(50 to 180mm)
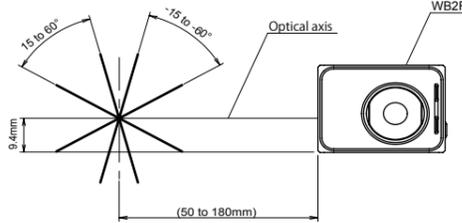
4 Usage precautions

- The power supply reset time is less than 5 seconds, so use the product 5 seconds after turning the power on.
- When the load and the unit are connected to different power supplies, always turn on the unit's power supply first.
- Install the product so that the scan window is not directly exposed to sunlight or fluorescent light.

■Cleaning the scan window
If dust, dirt, or water drops gets on the scan window (transparent section) or if it gets scratched, this will affect code reading performance. Periodically inspect the scan window (transparent section) to see if there is any dust on it, and when you find dust, clean it off.
- To clean the scan window, blow off dust/dirt with an airbrush, and then gently wipe it off with a soft-tipped item such as a cotton swab.
- Reading performance may drop when the scan window is subject to moisture, so wipe it off with a soft cloth to use the product. It may affect the material of the optical section, so do not use chemicals on it.
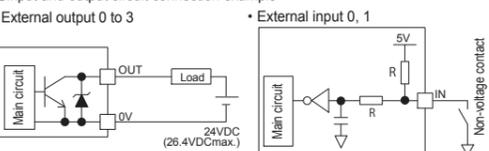
■Cleaning the scanner unit
Wipe off any dirt on the scanner unit with a soft, dry cloth.
- Do not use chemicals. This may alter the case or strip the paint.
- When the dirt is particularly bad, wipe it off with a cloth soaked in a neutral detergent diluted with water and wrung out thoroughly, and then wipe with a soft, dry cloth.

5 Installing the driver

- Using the USB interface
To use the USB interface, you must install the dedicated Active USB-COM port drive (virtual COM port driver) on the host computer. For details on the installation procedure, refer to the WB2F User's Manual.
The manual can be downloaded from the dedicated site on the IDEC website. If using this product in an environment where the IDEC homepage cannot be accessed, please contact IDEC sales representatives.

6 Wiring, terminal layouts

□Input and output circuit connection example
- External output 0 to 3

OUT
0V
Main circuit
Load
24VDC
(26.4VDCmax.)

- External input 0, 1

5V
R
R
IN
Main circuit
Non-voltage contact

□Terminal layout of connectors
• DIN connector

Conductor color	Signal name	Function
1	OUT0	External output 0
2	OUT1	External output 1
3	OUT2	External output 2
4	OUT3	External output 3
5	+5V	DC power supply+
6	TXD	RS-232 transmission data
7	IN0	External input 0
8	IN1	External input 1
9	0V	Power supply- (combined SG)
10	RXD	RS-232 receive data
11	CTS	RS-232 control signal
12	RTS	RS-232 control signal
13	NC	No connection

• USB connector (Mini-B)

Pin number	Signal name	Function
1	VBUS	Bus power
2	D-	Data-
3	D+	Data+
4	NC	No connection
5	GND	Ground

DIN connector

USB connector

Note: USB connector is for maintenance. For the RS-232 signals, extend the cable with a AWG28 or thicker cable with due consideration the drop in the power supply voltage. If the total cable length exceeds 2.8 m, this may affect noise resistance.
Note: For the RS-232 interface, connect a shield of cable to ground or 0V when the communication performance is not good by the noise environment.
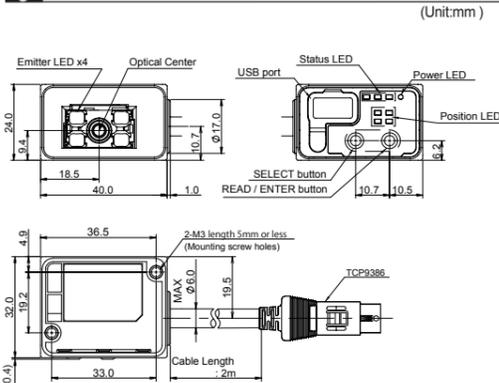
7 Initialization

If you want to initialize the product, read the above barcode in maintenance mode. All the settings will be restored to the factory defaults.
Turn on this product with the operation button pushed and continue holding the READ / ENTER button for 5 seconds to switch to maintenance mode. When maintenance mode starts, the three status LEDs will flash. When initialization is complete, the three status LEDs will turn off and normal operation mode will be restored.

8 Reading range

Install the product by referring to Appendix A of reading range.
This reading range is a representative example measured under the following measurement conditions.
- IDEC standard barcode or 2D code
- Skew:15°, pitch: 0°, tilt: 0°
- Ambient illumination: 300 to 500 lx

9 Part names and dimension

(Unit:mm)

Emitter LED x4   Optical Center   USB port   Status LED   Power LED   Position LED
SELECT button   READ / ENTER button
24.0   9.4   18.5   40.0   1.0   10.7   φ17.0   10.7   10.5
36.5   4.9   32.0   19.2   33.0   (0.4)   2-M3 length 5mm or less (Mounting screw holes)   TCP9386   MAX φ6.0   19.5   Cable Length 2m

10 Precautions when discarding the product

- When discarding the product, handle it as industrial waste.

11 Other important information

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Appendix A : Reading range (typical example)
読取範囲（代表例）
读取范围（典型示例）

80
60
40
20
0
20
40
60
80
(mm)

50   100   150   200   250

DataMatrix 0.127mm pcs 0.9
65 ← → 125

DataMatrix 0.25mm pcs 0.9
45 ← → 170

DataMatrix 0.5mm pcs 0.9
50 ← → 240

Code-39 0.127mm pcs 0.9
65 ← → 150

Code-39 0.25mm pcs 0.9
45 ← → 190

Code-39 0.5mm pcs 0.9
50 ← → 250

EAN-13 0.33mm pcs 0.45
60 ← → 100