IDEC

INSTRUCTION SHEET
WB1F Fix Linear CCD 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 accidents such as electric shock, damage, fire, malfunction, and other heave accident.
- Do not directly look at the reading window (red 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.

EU Authorized Representative:
IDEC Elektrotechnik GmbH
Heselstuecken 8, 22453 Hamburg, Germany

Manufacturer：
IDEC CORPORATION
2-6-64, Nishiyahara, Yodogawa-ku,
Osaka 532-0004, Japan

1 Type number

WB1F-100S1☐
└ Communication interface
　└ B：RS-232
　　 S：USB

2 General specifications

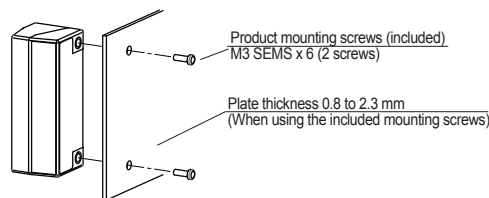| Model	WB1F-100S1B	WB1F-100S1S
Rated power supply voltage	DC5V±0.25V *1	USB bus power (5V DC)
Consumption current	200 mA or less (peak 350 mA or less)	
Operation button	Equipped on unit (tactile switch) x 1	
Reading distance	35±10 mm *2	
Reading width	80 mm (reading distance 35 mm) *2	
Number of digits to be read	64 digits max.	
PCS	0.45 or higher(White reflectance 75% or higher) *2	
Minimum resolution	0.127 mm	
Light source	Red LED (λp=630 nm)	
Reading method	Linear CCD image sensor (2,500 pixels)	
Reading confirmation	OK output, NG output, PWM output, indicator LED x 3	indicator LED x 3
Number of scans	500 scans/second	
Communication interface	RS-232 (600 to 115,200 bps)	USB 2.0 full-speed 12 Mbps (virtual COM)
Connection type	Loose wires + shield 1 m, 10CxAWG30 shielded cable	USB connector Type A 1m, 2PxAWG28 shielded cable
External trigger input	1 circuit Non-voltage contact (L active) Voltage input(VIL: 0V-1.0 V, VIH: 4.0 V-VCC)	None
OK output, NG output, PWM output	1 circuit each (3 circuits total) NPN open collector (sink) Max. rating 26.4V DC, 100 mA	None
Dielectric strength	500V AC (live part-dead part, 1 minute)	
Anti-ESD	Contact ±6 kV, air ±8 kV (IEC 61000-4-2)	
Ambient usage temperature	0 to 40°C (no freezing)	
Ambient usage humidity	30 to 85%RH (no condensation)	
Ambient usage illumination	5,000 lx or lower (under incandescent light)	
Ambient storage temperature	-20 to +60°C (no freezing)	
Weight	Approx. 50 g (in packaging: approx. 100 g)	
Protective construction	IP40	
Certified standards	UL/c-UL Recognized *1	UL/c-UL Listing
	CE marking(self declared), VCCI(Report of Compliance), FCC(Verification), ICES-003 (self declared)	
Codes to be read	EAN-13/8 (including add-on), UPC-A/E/E1 (including add-on), CODE39, Codabar (=NW7), Interleaved 2 of 5 (=ITF), Standard 2 of 5 (=Industrial 2 of 5), Matrix of 5, IATA 2 of 5, Chinese Post Matrix, COOP 2 of 5, SCODE, Code93, Code128, GS1-128 (formerly: EAN-128), MSI/Plessey, Itarian Pharmacy (=Code32), CIP39, Tri-Optic, TELEPEN, Code11, GS1 Databar (formerly: RSS)*3	

*1 If you use the WB1F as UL Recognized product, you shall use a limited source or class 2 power source as a power supply.
*2 By IDEC standard barcode
*3 Omni-directional, Truncated, Limited, Expanded

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 protective construction will be damaged.

Product mounting screws (included)
M3 SEMS x 6 (2 screws)

Plate thickness 0.8 to 2.3 mm
(When using the included mounting 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.
- Mount the product so that the barcode skew angle is that shown in the following diagram. Reading performance drops drastically if the barcodes are face-to-face with the optical axis

WB1F

20 to 40°　0 to -20°

Barcode　(35)
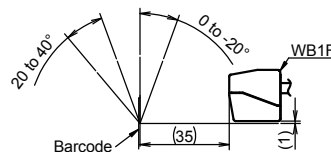
4 Usage precautions

- The power supply reset time is 300 ms, so use the product 300 ms 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 reading window is not directly exposed to sunlight or fluorescent light.

☐Cleaning the reading window
If dust, dirt, or water drops gets on the reading window (red transparent section) or if it gets scratched, this will affect code reading performance.
Periodically inspect the reading window (red transparent section) to see if there is any dust on it, and when you find dust, clean it off.
- To clean the reading 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 reading window is subject to moisture, so wipe it off with a soft cloth to use the product. PMMA is used for the material for the optical section, so do not use ammonia, sodium hydroxide, or any organic solvents such as alcohol, benzine, or thinner on it.

☐Cleaning the scanner unit
Wipe off any dirt on the scanner unit with a soft, dry cloth.
- Do not use organic solvents such as alcohol, benzine, or thinner. 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 type
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 unit manual.
The unit 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.
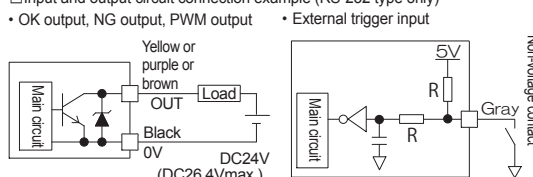
6 Wiring, terminal layouts

☐Wiring the power supply (RS-232 type only)

WB1F
Red: power supply+
Black: power supply-
DC5V±0.25V
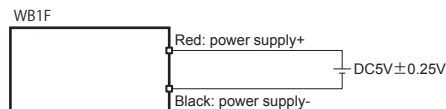
Note: Reverse voltage or over voltage may cause damage to the WB1F.

☐Input and output circuit connection example (RS-232 type only)
- OK output, NG output, PWM output
- External trigger input

Yellow or purple or brown　OUT　Load
Black　0V
DC24V (DC26.4Vmax.)

5V
R
R
Gray
Non-voltage contact

☐Wire colors and terminal layouts

• RS-232 type

Conductor color	Signal name	Function
Black	0V	Power supply- (combined SG)
Red	5V	DCPower supply+
Yellow	NG_O	NG output
Purple	OK_O	OK output
Blue	CTS	RS-232 control signal
Orange	RTS	RS-232 control signal
White	RXD	RS-232 receive data
Green	TXD	RS-232 transmission data
Gray	Ex_trig	External trigger input
Brown	PWM_O	PWM output

• USB type

Pin number	Signal name	Function
1	VBUS	Bus power
2	D-	Data-
3	D+	Data+
4	0V	Ground

TYPE A
4 3 2 1
(Mating surface side)

Note: For the USB type, do not extend the cable. For the RS-232 type, extend the cable with a AWG30 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 type, connect a shield of cable to ground or 0V when the communication performance is not good by the noise environment.
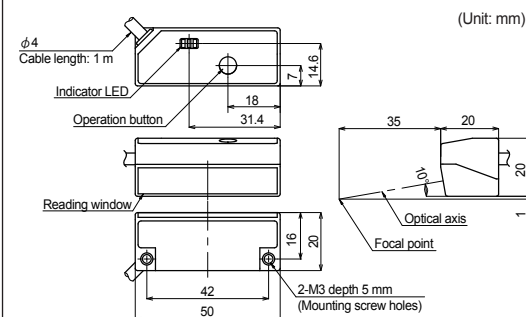
7 Initialization

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 operation button for 5 seconds to switch to maintenance mode. When maintenance mode starts, the three indicator LEDs will all flash. When initialization is complete, the three indicator LEDs will turn off and normal operation mode will be restored.

8 Reading range

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

9 Part names and dimension

(Unit: mm)

φ4
Cable length: 1 m
Indicator LED
Operation button
14.6
7
18
31.4
Reading window
16
20
42
50
2-M3 depth 5 mm
(Mounting screw holes)

35
20
10°
20
1
Optical axis
Focal point

10 Precautions when discarding the product

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

11 Other important information

IDEC CORPORATION

http://www.idec.com

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

80

60

(Unit: mm)

5

10

10

5

Resolution: from 0.127

Resolution: from 0.19

35