



Handheld Mobile Computer

BT-W100GA/W155GA

Instruction Manual

Introduction

Read this instruction manual before using the product in order to achieve maximum performance. Keep this instruction manual in a safe place after reading it so that it can be used at any time.

In this instruction manual, the BT-W100GA Series means the BT-W100GA and BT-W155GA.

Symbols

The following symbols alert you to important messages. Be sure to read these messages carefully.

	It indicates a hazardous situation which, if not avoided, will result in death or serious injury.
	It indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	It indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	It indicates a situation which, if not avoided, could result in product damage as well as property damage.
	It indicates cautions and limitations that must be followed during operation.
	It indicates additional information on proper operation.
	It indicates tips for better understanding or useful information.

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- The information contained in this manual is subject to change without notice.

Safety Information for the BT-W100GA Series

General cautions

	- Do not use this product for the purpose of protecting a human body or a part of human body. - This product is not intended for use as an explosion-proof product. Do not use this product in a hazardous location and/or potentially explosive atmosphere. - Suffocation may result from wrapping the lanyard around the neck. Be careful to use BT-W100GA around a power-driven machine on work.
	- Verify that this device is operating normally in terms of functionality and performance before the start of work and when operating the device. - We recommend that you take substantial safety measures to avoid any damage in the event that a problem occurs. - If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired. - Do not throw, drop or trample down the BT-W100GA Series and accessories to strong physical shock. - Keep BT-W100GA Series or accessories out of the reach of children. Children may swallow batteries, batteries attachment covers and straps around themselves.
	- When the BT-W100GA Series is used in combination with other instruments, functions and performance may be degraded, depending on operating conditions and the surrounding environment. - The LCD panel may generate microscopic spots (black/bright spot), uneven brightness or crosstalk (phenomenon that non-existent lines or patterns are displayed), depending on the conditions. - If the same display remains on the screen for a long time, afterimage may occur due to the characteristics of LCD.

Safety Precautions on Laser Product

This product employs a semiconductor laser for its light source.

Item	BT-W100GA	BT-W155GA
Wavelength	655 nm	655 nm
Output	1.0 mW	390 μW
Laser Class	Class 2 laser product (IEC60825-1, FDA(CDRH) Part 1040.10*)	Class 1 laser product (IEC60825-1, FDA(CDRH) Part 1040.10*)

* The laser classification for FDA(CDRH) is implemented based on IEC60825-1 in accordance with the requirements of Laser Notice No.50.

Follow the instructions mentioned in this manual. Otherwise, injury to the human body (eyes and skin) may result.

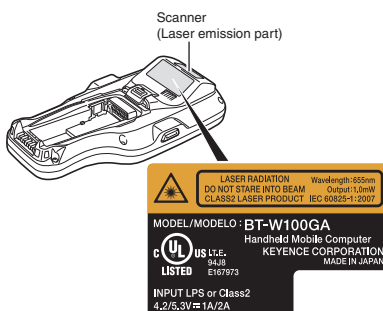
	Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. - Do not disassemble this product. Laser emission from this product is not automatically stopped when it is disassembled. Class 1 Laser Product - Do not stare into the direct or specularly reflected beam. Class 2 Laser Product - Do not stare into the direct or specularly reflected beam. - Do not direct the beam at other people or into areas where other people unconnected with the laser work might be present. - Be careful of the path of the laser beam. If there is a possibility that the operator may be exposed to the specular or diffuse reflections, block the beam by installing a protective enclosure. - Install this product so that the path of the laser beam is not as the same height as that of human eye.
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Safety Precautions on LED Product

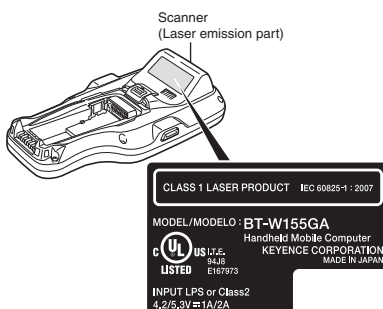
	- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. - Follow the instructions mentioned in this manual. Otherwise, injury to the human body (eyes and skin) may result. - Do not stare into the beam. - Do not disassemble this product. LED emission from this product is not automatically stopped when it is disassembled. - Do not view directly with optical instruments. Viewing the LED output with certain optical instruments (for example, eye loupes, magnifiers and microscopes) within a distance of 100 mm may pose an eye hazard.
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Locations of warning / explanation labels

BT-W100GA



BT-W155GA



Precautions on Regulations and Standards

FCC Regulations

- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions; (1) This device may not cause harmful interface, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- Application regulation
 - FCC Part 15 Subpart B ClassA
 - FCC Part 15 Subpart C
 - FCC Part 15 Subpart E
- The available scientific evidence does not show that any health problems are associated with using low power wireless devices. There is no proof, however, that these low power wireless devices are absolutely safe. Low power Wireless devices emit low levels of radio frequency energy (RF) in the microwave range while being used. Whereas high levels of RF can produce health effects (by heating tissue), exposure of low-level RF that does not produce heating effects causes no known adverse health effects. Many studies of low-level RF exposures have not found any biological effects. Some studies have suggested that some biological effects might occur, but such findings have not been confirmed by additional research. The BT-W100GA Series has been tested and found to comply with FCC radiation exposure limits set forth for an Controlled environment and meets the FCC radio frequency (RF) Exposure Guidelines.
- Compliance with FCC requirement 15.407(c)

Data transmission is always initiated by software, which is the passed down through the MAC, through the digital and analog baseband, and finally to the RF chip. Several special packets are initiated by the MAC. These are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted. In other words, this device automatically discontinues transmission in case of either absence of information to transmit or operational failure.
- 5.15-5.35GHz band is restricted to indoor operations only.
- Frequency Tolerance: ±25ppm

CAUTION

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

- FCC CAUTION**
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.**

IC Regulations

- The BT-W100GA Series complies with the following regulations specified by the IC.
- Applicable regulation
 - ICES-003
 - RSS-247
 - The available scientific evidence does not show that any health problems are associated with using low power wireless devices. There is no proof, however, that these low power wireless devices are absolutely safe. Low power Wireless devices emit low levels of radio frequency energy (RF) in the microwave range while being used. Whereas high levels of RF can produce health effects (by heating tissue), exposure of low-level RF that does not produce heating effects causes no known adverse health effects. Many studies of low-level RF exposures have not found any biological effects. Some studies have suggested that some biological effects might occur, but such findings have not been confirmed by additional research. The BT-W100GA Series has been tested and found to comply with IC radiation exposure limits set forth for an uncontrolled environment and meets RSS-102 of the IC radio frequency (RF) Exposure rules.
 - 5150-5350 MHz band is restricted to indoor operation only.

High-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.
 - Data transmission is always initiated by software, which is the passed down through the MAC, through the digital and analog baseband, and finally to the RF chip. Several special packets are initiated by the MAC. These are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted. In other words, this device automatically discontinues transmission in case of either absence of information to transmit or operational failure.
 - Les connaissances scientifiques dont nous disposons n'ont mis en évidence aucun problème de santé associé à l'usage des appareils sans fil à faible puissance. Nous ne sommes cependant pas en mesure de prouver que ces appareils sans fil à faible puissance sont entièrement sans danger. Les appareils sans fil à faible puissance émettent une énergie radioélectrique (RF) très faible dans le spectre des micro-ondes lorsqu'ils sont utilisés. Alors qu'une dose élevée de RF peut avoir des effets sur la santé (en chauffant les tissus), l'exposition à de faibles RF qui ne produisent pas de chaleur n'a pas de mauvais effets connus sur la santé. De nombreuses études ont été menées sur les expositions aux RF faibles et n'ont découvert aucun effet biologique. Certaines études ont suggéré qu'il pouvait y avoir certains effets biologiques, mais ces résultats n'ont pas été confirmés par des recherches supplémentaires. Le BT-W100GA série a été testé et jugé conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles d'exposition aux fréquences radioélectriques (RF) CNR-102 de l'IC.
 - La bande 5150-5350 MHz est restreinte à une utilisation à l'intérieur seulement. Les radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5250-5350 MHz et 5650-5850 MHz, et ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

La transmission des données est toujours initiée par le logiciel, puis les données sont transmises par l'intermédiaire du MAC, par la bande de base numérique et analogique et, enfin, à la puce RF. Plusieurs paquets spéciaux sont initiés par le MAC. Ce sont les seuls moyens pour qu'une partie de la bande de base numérique active l'émetteur RF, puis désactive celui-ci à la fin du paquet. En conséquence, l'émetteur reste uniquement activé lors de la transmission d'un des paquets susmentionnés. En d'autres termes, ce dispositif interrompra automatiquement toute transmission en cas d'absence d'information à transmettre ou de défaillance.

CAUTION

- This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.**
- Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.**

UL certification

- The BT-W100GA Series complies with the following UL/CSA standards and has obtained the UL/C-UL certifications.
- Applicable standards UL60950-1
 - UL File No. E167973
 - UL category NWGQ/NWGQ7

CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

Mexico(Méjico)

La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

■ Precautions on wireless LAN and Bluetooth

WARNING

- Remove the main battery of the BT-W100GA Series near locations where using wireless devices is banned at medical institutions or near electric devices for medical purposes. Carry and use the product away from an implanted cardiac pacemaker.
- The BT-W100GA Series uses the radio wave of 5GHz band, and can 5.2GHz band (W52), 5.3GHz band (W53), 5.6GHz band (W56) and 5.8GHz band (W58). Using 5.2GHz band (W52) and 5.3GHz band (W53) outdoors is prohibited by Radio Act.

WARNING

- Retirez la batterie principale de la série BT-W100GA près des endroits où l'aide d'appareils sans fil est interdite dans les établissements médicaux ou à proximité d'appareils électriques à des fins médicales. Transporter et à utiliser le produit en dehors d'un stimulateur cardiaque implanté.
- Série BT-W100GA utilise l'onde radio de 5 GHz bande, et peut bande de 5,2 GHz (W52), bande de 5,3GHz (W53h), bande de 5,6GHz (W56) et 5,8 GHz bande (W58) utilisant la bande de 5,2 GHz (de W52) et de la bande de 5,3GHz (W53) en plein air il est interdit par la loi Radio.

Important

- Depending on the environment, communication may be impossible. Check the communication availability before using.
- If this product is used near devices with the same frequency band, such as a wireless LAN device, microwave oven, heating equipment for industrial use, high-frequency equipment for medical use, etc., radio wave interference may occur and the communication speed will become slow or communication may become impossible.
- If a wireless LAN and Bluetooth are used at the same time, radio wave interference may occur and the communication speed will become slow or communication may be interrupted. If there is communication failure, stop using either the wireless LAN or Bluetooth.
- Communication may be impossible at locations near metallic objects, locations surrounded with metallic walls or where there is a lot of metallic powder.
- Possible bluetooth communication distance is approx. 10 m of vision, however, even within 10 m, communication may become impossible depending on the environment. Check the communication availability before using.

■ Handling of the BT-W100GA

NOTICE

- Use within the temperature range described in "Specifications" (4 page). Do not leave the product inside a closed car or at a place exposed to direct sunlight. Doing so may damage to the unit.
- Use within the humidity range described in "Specifications" (4 page). Do not use the product at locations where condensation occurs due to the rapid temperature change. Doing so may damage to the unit.
- This is a precision instrument. Dropping this product or subjecting it to shock may cause damage. Be careful when carrying or using this unit.
- Do not put the BT-W100GA Series at a location with high humidity or a dusty area. Doing so may damage to the unit.
- Do not insert a sharp object such as a needle to the buzzer hole on the back side of the BT-W100GA Series. The water-proof sheet may be damaged.

Precautions for proper use

■ Handling of packing

NOTICE

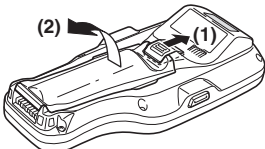
- The BT-W100GA Series has an IP54 protection rating, however, if the "Battery attachment cover" is not properly attached, the IP54 rating cannot be guaranteed. When using in environments where water or dust is present, check if these are properly attached.
- Dropping the BT-W100GA Series or subjecting to extreme shock may lose water-proof feature. Handle with great care.

Attaching the rechargeable battery pack

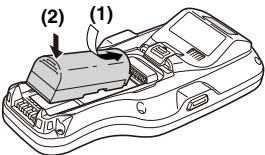
- Before attaching the rechargeable battery pack, make sure to check if the packing has properly been set on the main unit side of the battery pack attachment cover.
- Do not use batteries other than BT-WB1GA.
- Make sure to charge BT-WB1GA when using for the first time.
- Before replacing the rechargeable battery pack, be sure to turn the power of the BT-W100GA Series.

■ Attaching the rechargeable battery pack

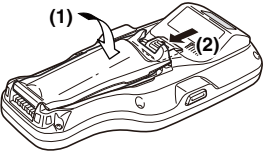
- 1 Slide the fixed lock lever in the arrow direction (1) and remove the battery attachment cover (2).



- 2 Face the flat part of the new rechargeable battery pack (BT-WB1GA) inward, and align the contact polarity as shown in the illustration. From the grip side (1), push in lightly with your finger (2).



- 3 Align the claw of the battery attachment cover from the grip side and close (1). Slide the lock lever in the arrow direction to fix (2).



Point

Check that the lock lever is completely fixed. If the lock lever is not completely fixed, the battery pack may come off.

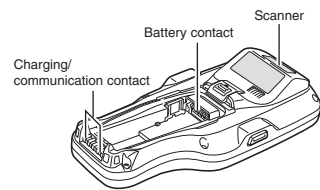
NOTICE

When attaching or replacing the rechargeable battery pack, be careful not to allow dust to enter inside. Contact failure may occur. This may cause charging function to deteriorate and instantaneous interruption.

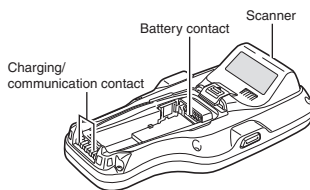
Cleaning

Clean the following parts with air blow periodically.
If removing dirt is difficult, use a cotton swab to clean the contacts directly.
(Use absolute ethanol if dirt is stuck on them.)
Remove the battery attachment cover before cleaning the battery contact.

BT-W100GA



BT-W155GA



NOTICE

If dirt or dust is attached, contact failure may occur on the battery/charging/communication contacts. This may cause charging function to deteriorate and instantaneous interruption. Make sure that waste textile is not attached to the battery/charging/communication contacts when cleaning.

Checking the Package

When opening the package, check the following items are all included.
If there is something missing, product failure or damage, contact your nearest KEYENCE sales office.

■ BT-W100GA/W155GA



Specifications

Item		Specifications	
Model		BT-W100GA	BT-W155GA
Scanning type		Laser Type	Camera Type
Control part	CPU	ARM Cortex®-A8 (800 MHz)	
	OS	Microsoft® Windows® Embedded Compact 7	
Main memory	RAM		256 MB
	ROM		512 MB Flash-ROM
	Screen	Type	3.5 in transmissive TFT LCD (Vertically Aligned)
		Resolution	W 480 x H 640 (VGA)
		Color	65536 colors
		Back Light	Super luminosity white LED
	Operation status LED		tri-color LED (red, green, blue, yellow, cyan, magenta, white)
Operation part	Touch panel		Analog resistance film (hardened glass)
	Keyboard	Number	26 keys
		Backlight	LED (orange)
Scanner	Reading specification	Reading light source	Visible light semiconductor laser (655 nm) Output 1.0 mW Class 2 laser product (IEC60825-1)*
		Pointer light source	-
		Scan count	100 scans/second
		Minimum resolution	0.127 mm
		Reading distance	35 to 270 mm (CODE39 narrow bar width 0.508 mm) 40 to 190 mm (CODE39 narrow bar width 0.254 mm) 25 to 205 mm (QR cell size 0.508 mm) 75 to 140 mm (QR cell size 0.254 mm)
		Reading width (Field range)	81x 51 mm (Reading distance 110 mm)
		PCS	0.45 or more (reflection rate of space part 70% or more)
	Decoding capability		JAN/EAN/UPC (add-on code compatible), CODE128, GS-128, CODE39, NW-7, CODE93, ITF, Industrial2of5, COOP2of5, GS1-DataBar
			JAN/EAN/UPC (add-on code compatible) CODE128, GS-128, CODE39, NW-7, CODE93, ITF COOP2of5, Industrial2of5 QR code, micro QR, DataMatrix (ECC200), PDF417, GS1-DataBar, composite symbol
Wireless communication	Wireless LAN	Wireless Radio	IEEE802.11a/b/g/n
		Radio frequency range	2.4 GHz (b/g/n: 1 - 11 ch) 5 GHz (a/n: W52, W53, W56, W58) W52 can only be used indoors.
		communication distance	Indoors: 100 m of vision
		Security	Security: WEP(64/128 bit)/WPA/WPA2 WPA encryption: TKIP/AES Authentication: WPA(2)-PSK / TLS / PEAP / TTLS / LEAP / EAP-FAST
	Bluetooth	Wireless standard	Bluetooth® V2.1 +EDR
		Supported profile	SPP, PAN(PANU), FTP(Client), HSP(AG), HID(Host/Device)
		Communication distance	Approx. 10 m
Expansion Slot	Supported media		microSD/SDHC card
	Capacity		up to 32 GB
Power source	Main battery	Type	Rechargeable, removable Lithium ion battery pack
		Capacity	2450 mAh
		Continuous usage time	Approx. 19 hours*1,3
		Charging time	Approx. 4.5 hours (at room temperature)
	Backup battery	Clock	Built-in lithium secondary battery (approx. 6 months)*2,3
		RAM data	Electric double layer capacitor (approx. 3 minutes)*2,3
Others	Buzzer		Musical tones: 16 tones Volume: 3 levels
	Vibration function		Enable (Pattern is not variable)
	Clock accuracy		± 80 seconds per month (at room temperature)

Item		Specifications	
Environ- ment resis- tance	Enclosure sealing	IP54 (IEC60529)	
	Drop resistance	Multiple drops to concrete: 1.5 m ³	
	Operation temperature	-20 to +50 °C (No freezing) ^{*4}	
	Operation humidity	20 to 85%RH (No condensation)	
	Storage temperature	-20 to +60 °C (No freezing)	
	Storage humidity	20 to 85%RH (No condensation)	
Dimensions () show grip parts.		170 x 79 x 36.1 (31.3) mm	170 x 79 x 40.4 (31.3) mm
Weight with battery pack		259 g	262 g
Accessory		Hand Strap Back Cover, Wrist strap, Stylus pen	

^{*1} This indicates the case when barcodes are read once per 20 seconds and round trip wireless communication is made at room temperature with the operation status LED, vibration function OFF, the buzzer ON (low volume), the backlight ON (brightness 1) and the charging mode².

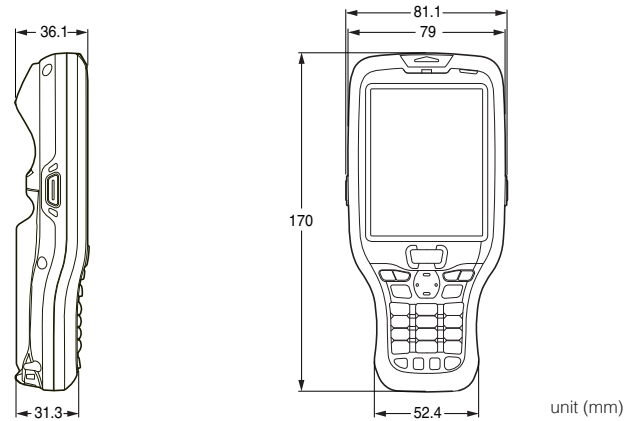
^{*2} This indicates the case when the main battery is not attached or the battery level is low, and operations are performed at room temperature.

^{*3} This is a typical value at room temperature, but not a guaranteed value.

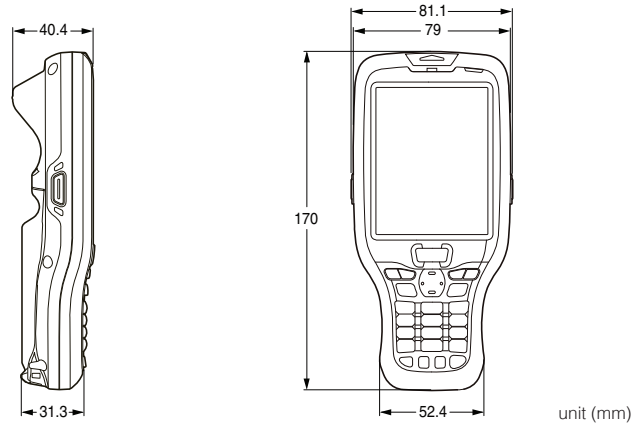
^{*4} Replace the main battery in an environment that has a temperature of -5 °C or higher. The product may not start in low-temperature environments.

Outline dimensional drawing

BT-W100GA



BT-W155GA



WARRANTIES AND DISCLAIMERS

- (1) KEYENCE warrants the Products to be free of defects in materials and workmanship for a period of one (1) year from the date of shipment. If any models or samples were shown to Buyer, such models or samples were used merely to illustrate the general type and quality of the Products and not to represent that the Products would necessarily conform to said models or samples. Any Products found to be defective must be shipped to KEYENCE with all shipping costs paid by Buyer or offered to KEYENCE for inspection and examination. Upon examination by KEYENCE, KEYENCE, at its sole option, will refund the purchase price of, or repair or replace at no charge any Products found to be defective. This warranty does not apply to any defects resulting from any action of Buyer, including but not limited to improper installation, improper interfacing, improper repair, unauthorized modification, misapplication and mishandling, such as exposure to excessive current, heat, coldness, moisture, vibration or outdoors air. Components which wear are not warranted.
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- (3) The Products and any samples ("Products/Samples") supplied to Buyer are not to be used internally in humans, for human transportation, as safety devices or fail-safe systems, unless their written specifications state otherwise. Should any Products/ Samples be used in such a manner or misused in any way, KEYENCE assumes no responsibility, and additionally Buyer will indemnify KEYENCE and hold KEYENCE harmless from any liability or damage whatsoever arising out of any misuse of the Products/Samples.
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If the Products/Samples purchased by Buyer are to be resold or delivered to a third party, Buyer must provide such third party with a copy of this document, all specifications, manuals, catalogs, leaflets and written information provided to Buyer pertaining to the Products/Samples.

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GERMANY Ph: +49 6102 36 89-0	MEXICO Ph: +52-55-8850-0100	TAIWAN Ph: +886-2-2718-8700	

Specifications are subject to change without notice.

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