

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

KEYENCE

96M16900

96M16900-1

Compact Switching Power Supply

MS2 Series
Instruction Manual

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

Safety Precautions

■Symbol Guide

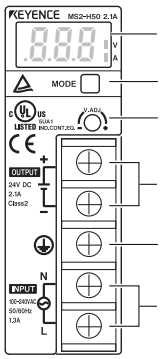
The following symbols are used to show potentially hazardous situations or to provide extra information. Be sure to read this section carefully.

DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a situation which, if not avoided, could result in product damage as well as property damage.
Important	Indicates cautions and limitations that must be followed during operation.
Point	Indicates additional information on proper operation.

■General Precautions

DANGER	• **Do not use this product for the purpose to protect 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.** • **Do not use this product in an application that may cause death, serious injury or serious property damage due to a failure with this product should occur, such as nuclear power plants, on aircraft, trains, ships, or vehicles, used within medical equipment, playground equipment, roller coasters and other rides, etc.**
WARNING	• **When this unit is used in a system that may cause a serious accident or damage if the unit fails, be sure to install a safety device.** • **Pay attention to prevent foreign matter such as metal particles, dust, paper or wood chips from entering the inside of this unit. Failure to follow this may result in a fire or product failure.** • **Do not touch any metallic part while electric current is applied or immediately after input is shut off. Failure to follow this may result in a burn due to a high temperature.** • **If a failure or abnormality occurs while this unit is in use, immediately such off AC input and stop operation of this unit . Failure to follow this may result in a fire or accident.** • **Do not perform any electrical wiring while electric current is applied. Failure to follow this may result in an electric shock or fire.** • **Be sure to connect the grounding cable. Failure to follow this may result in an electric shock or fire.** • **Do not touch this unit within 1 minute after AC input is turned off. Failure to follow this may result in an electric shock.** • **Do not modify or repair this unit. Failure to follow this may result in an electric shock, accident, or product failure.** • **Do not touch any terminal of this unit while electric current is applied. Use the unit with the terminal cover installed to avoid an electric shock.** • **You must perform a sufficient risk assessment for the machine where this product is to be installed prior to installing this product. Provide appropriate protective fail-safe measures on the machine independent from this product in case a failure with this product should occur.**
NOTICE	• **Check that the AC input rated voltage of this unit is equal to the voltage of the AC power supply.** • **Do not connect the AC power supply to the DC output terminals.** • **Do not disturb the convection of air near the vent of the casing.**

Part Names and Functions



Digital display window
Displays the current values of output current/voltage and other items.

Display mode selection (MODE)
Switches the display mode.

Output voltage adjustment trimmer (V.ADJ)
Adjusts the output voltage within the range of ±5%.

DC output terminal (+, –) *
A load is connected here. (24 VDC)

Protective earthing terminal (⏚)
Connect to the protective earthing conductor in the building installation.

AC input terminal (N, L)
An input cable is connected here. (100 to 240 VAC)

*Only the MS2-H300 has DC output of 4-terminal.

Precautions on Regulations and Standards

■CE and UKCA Markings

KEYENCE CORPORATION has confirmed that this product complies with the essential requirements of the applicable EU Directive(s) and UK regulations, based on the following specifications. Be sure to consider the following specifications when using this product in the Member States of European Union and in the United Kingdom.

● **EMC Directive (CE) and Electromagnetic Compatibility Regulations (UKCA)**

- Applicable standard (BS)EN55011, Group 1, Class A
  (BS)EN61000-6-2

Remarks: These specifications do not give any guarantee that the end-product with this product incorporated complies with the essential requirements of EMC Directive. The manufacturer of the end-product is solely responsible for the compliance on the end-product itself according to EMC Directive.

● **Low-voltage Directive(CE) and Electrical Equipment (Safety) Regulations(UKCA)**

- Applicable standard (BS) EN62368-1
  (BS) EN 50178
- Overvoltage category II
- Use this product under pollution degree 2.
- The MS2 Series are designed as a Class I equipment. Be sure to connect the protective earthing terminal to the protective earthing conductor in the building installation.
- The MS2 Series are open type equipment. When installing MS2 series, be sure to install it in a conductive enclosure (e.g. an industrial control panel) with IP54 or higher.
- Use the MS2 Series according to the derating conditions and the installation conditions described in this manual.
- The MS2 Series does not include a disconnecting device. Be sure to install a disconnecting device such as a circuit breaker in the building installation wiring.

■UL Certificate

This product complies with the following UL and CSA standards and has been certified by UL.

- UL File No. E195940
  E242533
- UL Category Code NMTR, NMTR7
  QQGQ2, QQGQ8
- Applicable standard UL 508
  UL 60950-1
  CAN/CSA C22.2 No. 107.1 (MS2-H50/H75/H100)
  CAN/CSA C22.2 No. 14 (MS2-H150/H300)
  CAN/CSA C22.2 No. 60950-1

Be sure to consider the following specifications when using this product as a product certified by UL.

- Use wires that meet the following conditions for the terminal block.
  Wire range AWG#12-20
  Wire Material Copper wire only
  WARNING: USE CONDUCTORS WITH INSULATION RATED FOR AT LEAST 75ºC
- Use crimp terminals for wiring to the I/O terminal block, and tighten them with a tightening torque of 12.4-14.2 lbf-in (1.2N·m to 1.4N·m).
- The MS2 Series are designed as a Class I equipment. Be sure to connect the protective earthing terminal to the protective earthing conductor in the building installation.
- The MS2 Series are open type equipment. When installing MS2 series, be sure to install it in a conductive enclosure (e.g. an industrial control panel) with IP54 or higher.
- Use the MS2 Series according to the derating conditions and the installation conditions described in this manual.
- The MS2 Series does not include a disconnecting device. Be sure to install a circuit breaker in the building installation wiring.
- The output of the MS2-H50 is rated as Class 2 output specified in NFPA70 (NEC: National Electrical Code) and C22.1 (CEC：Canadian Electrical Code).

■NOM Certification

This product has acquired NOM certification based on the following standards.

- Applicable Standard NOM-001-SCFI

Be sure to consider the requirements in the above UL certification when using this product as a NOM certified product.

Installation Conditions

■Installation environment

- Installation this unit indoors.
- Do not install this unit in locations exposed to direct sunlight.
- Do not install this unit in locations in which there is corrosive gas or flammable gas.
- Do not install this unit in locations exposed to a lot of dust, soot, or stem.
- Do not install this unit in locations in which water, oil, or chemicals may splash onto the unit.
- When installing this unit in a location subject to vibration or impact, consider the vibration proof mounting.

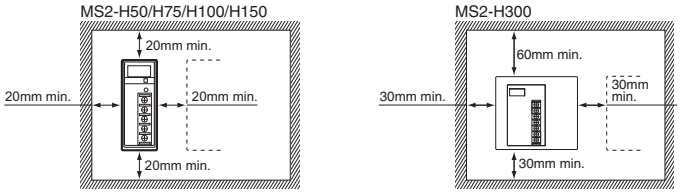
■When installing this unit in a control console

- The ambient temperature for this unit should not exceed the upper temperature limit (refer to the derating characteristic). When the upper temperature limit may be exceeded, install a cooling fan or cooler so that the ambient temperature is below the upper temperature limit.
- Leave a sufficient ventilation space around this unit for head dissipation.
- Do not install this unit just above a device with high head generation (transformer, inverter, servo amplifier, etc.).

Installation

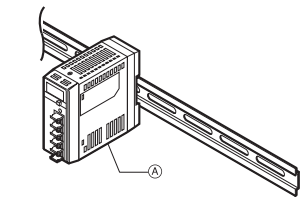
■Space around the unit

The MS2 Series uses natural air-cooling. To ensure sufficient convection of air to dissipate heat, provide enough space between the MS2 Series and the control panel or other nearby devices as shown below.



■Installation orientation

Install this unit with the base Ⓐ down as shown below. Do not install the unit in any other orientation.



■Mounting bracket (optional)

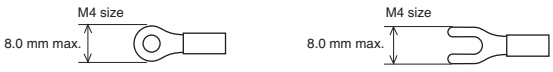
Make sure that the tightening torque for the mounting screw holes of this unit is 0.5 N·m or less.

Wiring

Terminals

Screw size	Tightening torque
M4	1.2 N·m

Crimp terminals

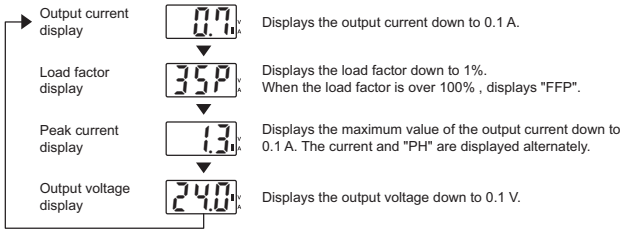


Cables

Select cables with a wire diameter suited to the output rated current.

Method of Operation

The display mode changes each time when the MODE switch is pressed.



- The MS2 Series is set to the output current display mode before shipment. It retains the display mode that was used before the power was turned off.
- The maximum value for the peak current display mode is cleared when the power is turned off and the display mode is changed.
- When the switch is held down for 3 seconds or more, the current mode is locked and cannot be changed. To unlock the mode, hold down the switch again for 3 seconds or more.

Specificatons

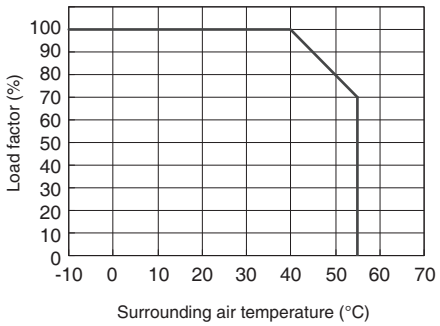
	Model	MS2-H50	MS2-H75	MS2-H100	MS2-H150	MS2-H300
Input conditons	Rated Input voltage *1	100 to 240 VAC (85 to 264 VAC, 110 to 370 VDC)				
	Rated Frequency *1	50/60 Hz (47 to 63 Hz, DC)				
	Input current (100/200 VAC)	1.3 A/0.7 A max.	1.9 A/0.9 A max.	2.1 A/1.3 A max.	2.2 A/1.1 A max.	3.9 A/1.8 A max.
	Efficiency (100/200 VAC)	82%/85% typ. (with 100% load)				
	Leakage current (100/200 VAC)	0.4 mA/0.75 mA max. (with 100% load)				
	Rush current (100/200 VAC)	25 A/50 A max. (with 100% load, at 25°C cold start)				18 A/36 A max.
Output conditons	Rated output voltage	24 VDC				
	Adjustable voltage range	±5% (with V.ADJ)				
	Rated output current	2.1 A (Class2)	3.2 A	4.5 A	6.5 A	12.5 A
	Ripple/noise voltage	180mVp-p max.				
	Input fluctuation	0.4% max.				
	Load fluctuation	1.5% max.				
	Temperature fluctuation	0.02%/°C max.				
	Starting time	500 ms max. (at Surrounding Air Temperature of 0 to 55°C under rated I/O conditions)				
	Output holding time	20 ms min. (at Surrounding Air Temperature of 25°C under rated I/O conditions)				
Protection	Overcurrent protection	Constant current voltage limiting. Automatic reset				
		2.7 A min.	4.0 A min.	5.3 A min.	7.9 A min.	15.6 A min
	Overvoltage protection *2	Activates when the voltage reaches 26.4 V or more. Voltage turn-off. Operation resumes when the input power is turned on again.				
Display	Display method	3-digit, 7-segment LED (Character height: 10 mm)				
	Memory backup time	Approx. 10 years (at 20°C)				
	Display resolution	0.1 A/0.1 V/1%				
Environment	Surrounding Air Temperature (for operation)	–10 to 55°C, No condensation (See "Output Derating Characteristics".)				
	Relative humidity	25 to 85%, No condensation				
	Surrounding Air Temperature (for storage)	–20 to 70°C, No condensation				
	Withstand voltage	3.0 kVAC 50/60 Hz 1 min (across input and output terminals) 2.0 kVAC 50/60 Hz 1min (across input terminals and PE terminal) 500 VAC 50/60 Hz 1 min (across output terminals and PE terminal)				
	Shock	Peak acceleration: 300 m/s², in X, Y, and Z directions, 2 times respectively				
	Vibration	In X, Y, and Z directions, 2 hours respectively under the following conditions 10 to 57 Hz, 0.3 mm double-amplitude, 57 to 500 Hz, 19.6 m/s² (2G), 5.5-minute cycle				
	Insulation resistance	100 MΩ min. (with 500 VDC megohmmeter) (across input and output terminals) (across input terminals and PE terminal) (across output terminals and PE terminal)				
Applicable standard	Safety standard	UL : UL508, UL60950-1 cUL: CAN/CSA C22.2 No. 107.1 CAN/CSA C22.2 No.60950-1 EN : EN62368-1, EN50178 IEC : EN62368-1			UL : UL508, UL60950-1 cUL: CAN/CSA C22.2 No. 14 CAN/CSA C22.2 No.60950-1 EN : EN62368-1, EN50178 IEC : EN62368-1	
	EMC standard	FCC Part 15B ClassA, EN55011 Class A, EN61000-6-2				
Other	Parallel operation	Possible (OP-42207 is required.) *3				
	Serial operation	Possible (External diode is required.) *3				
	Cooling method	Natural air-cooling				
	Weight	Approx. 270g	Approx. 500g	Approx. 520g	Approx. 700g	Approx. 1540g

*1 For conforming to safety standards shown above, rated input voltage is 100 to 240 VAC 50/60 Hz.
*2 To reset the unit, turn off the input power once, wait for 3 minutes or more until the charge accumulated in the input capacitor is completely discharged, and then turn on the input power again.
*3 The Applicable standards do not apply for parallel and serial operations.

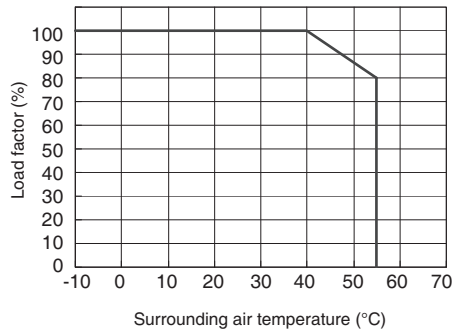
Output Derating Characteristics

* The characteristic data shown above are obtained when this unit is installed as described in this Manual.
* The surrounding air temperature is the temperature 50 mm below the bottom of the MS2 Series unit.

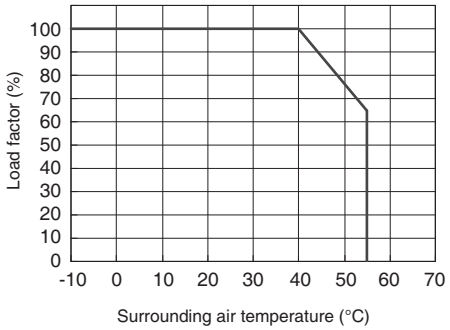
MS2-H50/H150



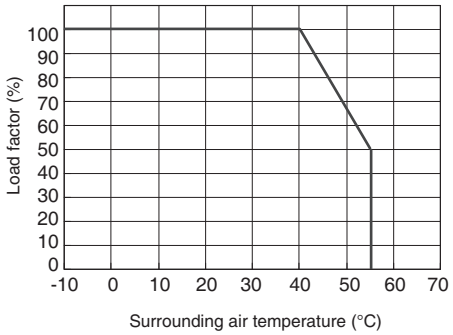
MS2-H75



MS2-H100

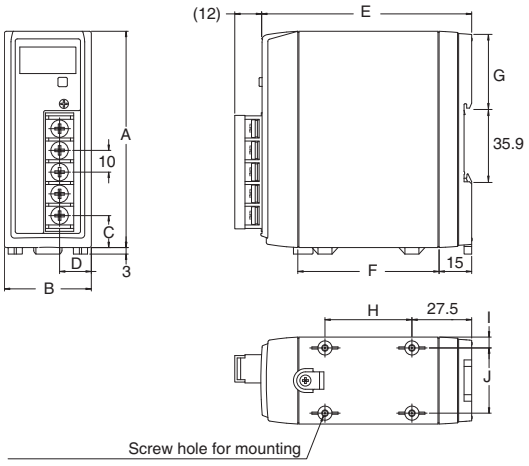


MS2-H300



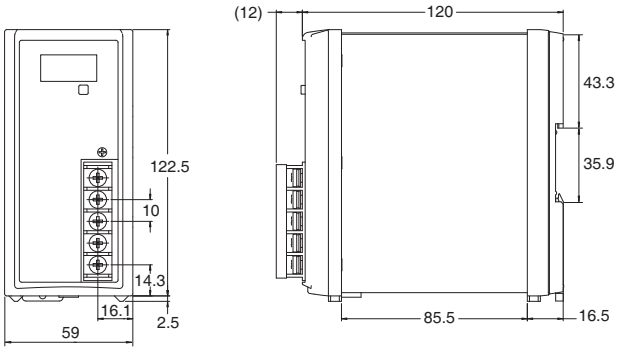
Dimensions

MS2-H50/H75/H100

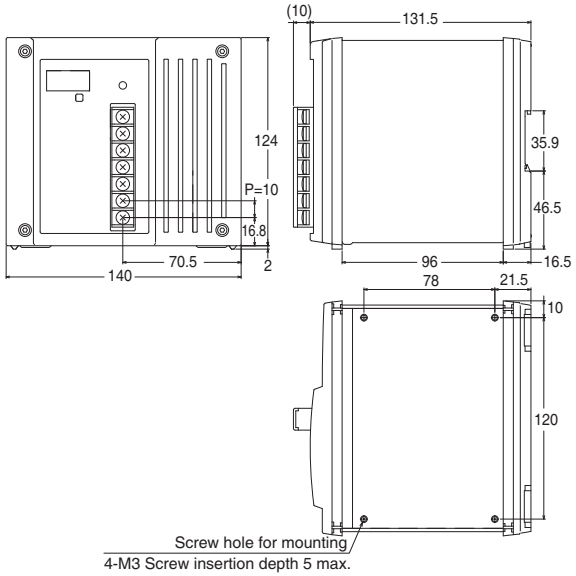


Model	A	B	C	D	E	F	G	H	I	J
MS2-H50	99.5	40	14.7	14.6	97	65	33.4	40	5	30
MS2-H75/H100	114.5	52	15.1	17.1	110	78	41	52	4.75	42.5

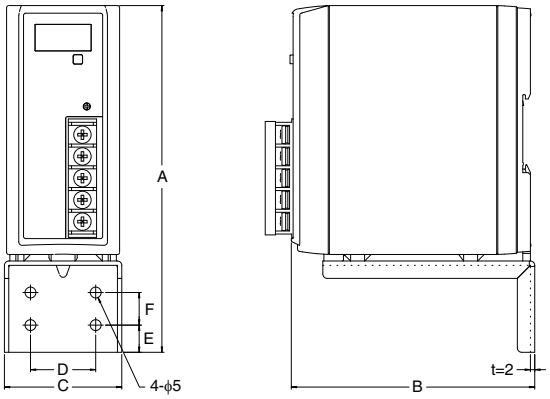
MS2-H150



MS2-H300



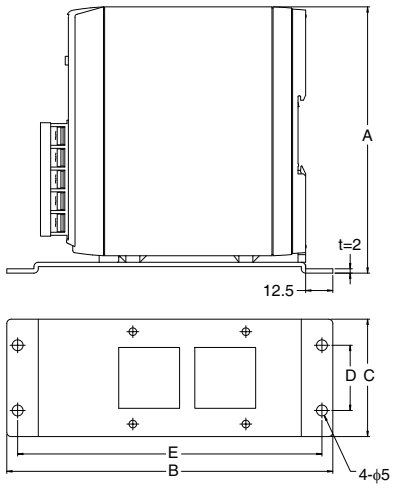
When front mounted



Mounting bracket	OP-51624	OP-51627	OP-42174
Matching model	MS2-H50	MS2-H75/H100	MS2-H150
A	123.5	159.5	170
B	99	112	122
C	45	54	59
D	20	30	40
E	8	12.5	12.5
F		15	15

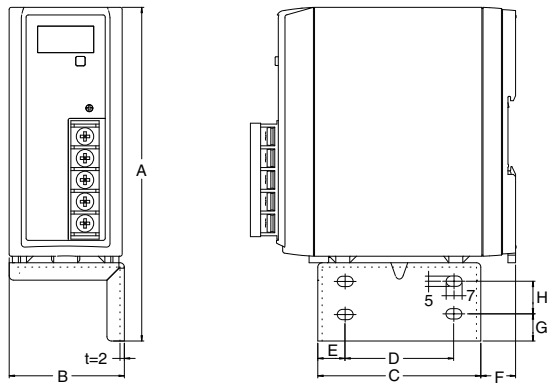
Two holes only for OP-51624.

When bottom mounted



Mounting bracket	OP-51625	OP-51628	OP-42175
Matching model	MS2-H50	MS2-H75/H100	MS2-H150
A	107.5	122.5	132.5
B	135	150	160
C	45	54	55
D	20	30	40
E	125	140	150

When side mounted



Mounting bracket	OP-51626	OP-51629	
Matching model	MS2-H50	MS2-H75/H100	MS2-H150
A	120.5	153.5	157
B	45	54	60
C	65	75	75
D	40	50	50
E	12.5	12.5	12.5
F	14.5	16	20.5
G	8	12.5	12.5
H		15	15

Two holes only for OP-51626.
The side mounting bracket can be attached to either sides.

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.

(2) KEYENCE is pleased to offer suggestions on the use of its various Products. They are only suggestions, and it is Buyer's responsibility to ascertain the fitness of the Products for Buyer's intended use. KEYENCE will not be responsible for any damages that may result from the use of the Products.

(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.

(4) **OTHER THAN AS STATED HEREIN, THE PRODUCTS/SAMPLES ARE PROVIDED WITH NO OTHER WARRANTIES WHATSOEVER. ALL EXPRESS, IMPLIED, AND STATUTORY WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT OF PROPRIETARY RIGHTS, ARE EXPRESSLY DISCLAIMED.**
IN NO EVENT SHALL KEYENCE AND ITS AFFILIATED ENTITIES BE LIABLE TO ANY PERSON OR ENTITY FOR ANY DIRECT, INDIRECT, INCIDENTAL, PUNITIVE, SPECIAL OR CONSEQUENTIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, ANY DAMAGES RESULTING FROM LOSS OF USE, BUSINESS INTERRUPTION, LOSS OF INFORMATION, LOSS OR INACCURACY OF DATA, LOSS OF PROFITS, LOSS OF SAVINGS, THE COST OF PROCUREMENT OF SUBSTITUTED GOODS, SERVICES OR TECHNOLOGIES, OR FOR ANY MATTER ARISING OUT OF OR IN CONNECTION WITH THE USE OR INABILITY TO USE THE PRODUCTS, EVEN IF KEYENCE OR ONE OF ITS AFFILIATED ENTITIES WAS ADVISED OF A POSSIBLE THIRD PARTY'S CLAIM FOR DAMAGES OR ANY OTHER CLAIM AGAINST BUYER. In some jurisdictions, some of the foregoing warranty disclaimers or damage limitations may not apply.

BUYER'S TRANSFER OBLIGATIONS:

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.

E 1101-3

KEYENCE CORPORATION

1-3-14, Higashi-Nakajima, Higashi-Yodogawa-ku,
Osaka, 533-8555, Japan
PHONE: +81-6-6379-2211

www.keyence.com/glb

AUSTRIA
Ph: +43 (0)2236 378266 0

BELGIUM
Ph: +32 (0)15 281 222

BRAZIL
Ph: +55-11-3045-4011

CANADA
Ph: +1-905-366-7655

CHINA
Ph: +86-21-3357-1001

CZECH REPUBLIC
Ph: +420 220 184 700

FRANCE
Ph: +33 1 56 37 78 00

GERMANY
Ph: +49-6102-3689-0

HONG KONG
Ph: +852-3104-1010

HUNGARY
Ph: +36 1 802 7360

INDIA
Ph: +91-44-4963-0900

INDONESIA
Ph: +62-21-2966-0120

ITALY
Ph: +39-02-6688220

KOREA
Ph: +82-31-789-4300

MALAYSIA
Ph: +60-3-7883-2211

MEXICO
Ph: +52-55-8850-0100

NETHERLANDS
Ph: +31 (0)40 206 6100

PHILIPPINES
Ph: +63-(0)2-8981-5000

POLAND
Ph: +48 71 368 61 60

ROMANIA
Ph: +40 (0)269 232 808

SINGAPORE
Ph: +65-6392-1011

SLOVAKIA
Ph: +421 (0)2 5939 6461

SLOVENIA
Ph: +386 (0)1 4701 666

SWITZERLAND
Ph: +41 (0)43 455 77 30

TAIWAN
Ph: +886-2-2721-8080

THAILAND
Ph: +66-2-369-2777

UK & IRELAND
Ph: +44 (0)1908-696-900

USA
Ph: +1-201-930-0100

VIETNAM
Ph: +84-24-3772-5555

Specifications are subject to change without notice.

A6WW1-MAN-2090

Copyright (c) 2021 KEYENCE CORPORATION. All rights reserved.

16900GB 2041-1 96M16900 Printed in Japan

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP