



Super-small Programmable Logic Controller with Built-in Display

KV Series Basic Unit

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.

Symbols

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

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

Safety Information for KV Series

General Precautions

WARNING	<ul style="list-style-type: none"> 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 explosion-proof product. Do not use this product in a hazardous location and/or potentially explosive atmosphere.
CAUTION	<ul style="list-style-type: none"> At startup and during operation of the Ladder Builder for KV, be sure to monitor the functions and performance of the KV Series basic unit and the KV CPU. We recommend that you take substantial safety measures to avoid any damage in the event a problem occurs.
NOTICE	<ul style="list-style-type: none"> Do not open or modify the KV or use it in any way other than described in the specifications. When the KV is used in combination with other instruments, functions and performance may be degraded, depending on operating conditions and the surrounding environment.

Precautions on Regulations and Standards

CE Marking

Keyence Corporation has confirmed that this product complies with the essential requirements of the applicable EC Directive, based on the following specifications. Be sure to consider the following specifications when using this product in the Member State of European Union.

EMC Directive(2004/108/EC)

- Applicable standard EMI : EN61131-2, Class A
EMS : EN61131-2
- Any of the following specifications must be considered if the DC power type (the letter "D" is assigned in models) is installed for use.
 - The length of cable connected to the power supply connector must be less than or equal to 30 m.
 - Mount the following silicon surge protector to the power input terminal of the unit. Okaya Electric Industries Co., Ltd.: RSP-DC24Q-4 (However, shorten the cable length of the silicon surge protector to 100 mm or less)
- When you use the relay output type unit (A model type with R on the end), connect the pressure resistance spark killer which has an appropriate load capacity to the output terminal in tandem with the contact. (As the equipment discharges when the relay contact opens and a noise occurs)KEYENCE use the following spark killer for the test. Okaya Electric Industries Co., Ltd.: XEB0101 0.1μF-10Ω
- As for KV-24AR/T(P) and KV-40AR/T(P), insert the following ferrite core once to the AC power input terminal, and for KV-40DR/T(P) to the DC power input terminal. TDK Corporation: ZCAT3035-1330

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 (2006/95/EC)

- The Low-voltage Directive is applied to AC power type and/or Relay output type.
- Applicable standard EN61131-2
- Over voltage category II
- Use this product under pollution degree 2.
- The AC power type models are designed as Class I equipment. Be sure to connect the protective earthing terminal located on the power supply terminal to the protective earthing conductor in the building installation.
- This product has the temperature derating curve depends on the Continuous Simultaneous ON Ratio. Install the product within the temperature derating curve.
- Use insulated type crimp-style terminals.
- For wiring materials, use lead wires whose sheath is 0.4 mm or more.
- The KV Series is allowed to be installed in a front installation only. (Spacers for expansion units are not available.)
- This product is an open type device. Therefore, it must be installed in an enclosure with IP54 or higher. (e.g. Industrial control panel)
- For wiring to the Power input terminal, Input terminal block and Output Terminal block, use stranded copper wire having a gage of AWG#16 to #24. The tightening torque is 0.5 N·m.

Model of a Basic Unit

Basic unit model designation

The model of a KV Series basic unit is indicated as follows:

KV-10AR

- Output type: R = relay output, T(P) = transistor output (PNP)
- Power supply type: A = AC power type, D = DC power type
- Number of I/O points: 10 = 10 points, 16 = 16 points, 24 = 24 points, 40 = 40 points

NOTICE When the ladder support software "KV-IncrediWare (DOS)" or "LADDER BUILDER for KV Ver. 1.0x" is used, the change all function on the monitor is not available. Using the change all function may damage the basic unit. Never use the change all function.

Specifications

Item	Specifications				
	AC power type		DC power type		
Power supply type	KV-10AR/AT(P) KV-24AR/AT(P)		KV-16AR/AT(P) KV-40AR/AT(P)		
Input supply voltage	100 to 240 V AC (±10%)		24 V DC (+10%, -20%)		
Allowable instantaneous time	Less than 40 ms		Less than 2 ms		
Internal current consumption (converted into 24 V DC value)	Basic units		Basic units		
	Expansion units		Expansion units		
	Others		Others		
Surrounding air temperature	0 to +50°C (32 to 122°F), KV-P3E(01): 0 to +45°C (32 to 113°F), No freezing				
Relative humidity	35 to 85%, No condensation				
Ambient storage temperature	-20 to +70°C (-4 to 158°F), No freezing				
Withstand voltage	1,500 V AC for 1 minute (Between power terminal and I/O terminals as well as between entire external terminals and case)				
Noise resistance	1,500 Vp-p or more, pulse width: 1 μs, 50 ns (by noise simulator) in conformance with IEC standard (IEC61000-4-2/3/4/6)				
Impact resistance	Conforms to JIS B 3502 and IEC61131-2	When intermittent vibration is present		Frequency of sweeps 10 times (80 minutes) in each of X, Y and Z axis directions	
		Frequency	Acceleration		Amplitude
		10 to 57 Hz	—		0.075 mm
Vibration resistance	Conforms to JIS B 3502 and IEC61131-2, 147 ms ² working time: 11 ms, 3 times in each of X, Y and Z axis directions	When continuous vibration is present		Frequency of sweeps 10 times (80 minutes) in each of X, Y and Z axis directions	
		Frequency	Acceleration		Amplitude
		10 to 57 Hz	—		0.035 mm
Insulation resistance	No excessive dust or corrosive gases allowed.				
Weight	Basic units		Basic units		
	Expansion units		Expansion units		
	Others		Others		

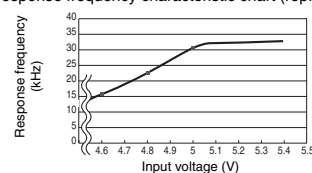
Common I/O specifications

Input specifications

Item	24 V mode	5 V mode (Inputs 000 to 007 can be changed to 5 V input.)
Maximum input rating	24 V DC, 5.3 mA	26.4 V DC
Input voltage	19 V	5 V DC, 1.0 mA
Minimum ON voltage	2 mA	4.5 V
Minimum OFF current (voltage)	COM is shared inside.	
Common method	10 ms typical, 10 μs when HSP instruction is used, Variable in 7 steps from 10 μs to 10 ms while special utility relay 2B13 is ON (Set by DM1940)	
Input time constant	10 μs (representative)	
Interrupt input response	30 kHz (24 V±10%) (duty: 50%)	
High-speed counter input response	10 μs (representative)	

* For 5 V ±10%, refer to the 5 V mode response frequency characteristic chart (representative example).

5 V mode response frequency characteristic chart (representative example)



● Output specifications

(relay output): KV-10AR/DR, KV-16AR/DR, KV-24AR/DR, and KV-40AR/DR
 (transistor output): KV-10AT(P)/DT(P), KV-16AT(P)/DT(P), KV-24AT(P)/DT(P), and KV-40AT(P)/DT(P)

Item	Specifications (relay output):	Specifications (transistor output):	
Rated load	250 V AC/30 V DC, 2 A (inductive load), 4 A (resistive load)	30 V DC, 0.1 A (500 to 502), 0.3 A (others)	
Peak load current	5A	0.2 A (500 to 502), 1 A (others)	
ON resistance	50 mΩ or less	Maximum voltage at OFF	30 V DC
		Leak current in OFF status	100 μA or less
		Residual voltage in ON status	0.8 V or less
Rising operating time (OFF → ON)	10 ms or less	10 μs or less (500 to 502) (at 5 to 100 mA), 20 μs or less (others) (at 10 to 300 mA)	
Falling operating time (ON → OFF)	10 ms or less	10 μs or less (500 to 502) (at 5 to 100 mA), 100 μs or less (others) (at 10 to 300 mA)	
Common method	Each common terminal is independent.	1 common	
Relay service life	Electrical service life: 100,000 times or more (20 times/min) Mechanical service life: 20,000,000 times or more	Output frequency	50 kHz (500 to 502)
		Built-in serial resistance	1.6 kΩ 1/2 W (R500 to R502)
Relay replacement	Not allowed		

Installation Environment

■ Installation environment

- Locations exposed to direct sunlight
- Locations whose ambient temperature is outside the allowable range of 0 to +50°C (32 to 122°F) (No freezing)
- Locations whose ambient humidity is outside the allowable range of 35 to 85% RH (No condensation)
- Locations subject to drastic temperature change where condensation may occur
- Locations with corrosive or flammable gases
- Locations with excessive dust, salt, iron powder, or soot
- Locations subject to direct vibrations and impacts
- Locations subject to splashes of water, oil, chemicals, etc.
- Locations where a strong magnetic or electrical field is generated

NOTICE

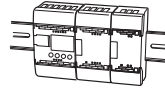
Units are made of synthetic resin. If the unit surface touches a solvent with a strong dissolving force, it could melt. Keep such solvents away from the units.

Installation Position

■ Installation direction

When attaching a unit inside a panel, install the unit so that the front face (equipped with the access window, communication ports, etc.) faces front or upward.

Front installation



Correct

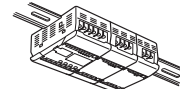
Upward installation



Correct

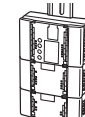
* See page 3.

Installation on ceiling



Incorrect

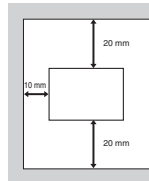
Vertical installation



Incorrect

■ Distance between adjacent panels/equipment

When installing a unit, keep the distances shown on the right between the panel or equipment so that the power supply can release heat.



Point

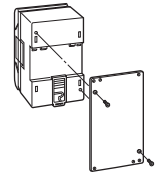
- If the temperature inside the panel exceeds 50°C (122°F), which is specified as the maximum ambient operating temperature, then install heat exchangers, etc. to reduce the temperature.
- Ensure sufficient ventilation space so that the power supply can release heat.
- Never install a unit just above any equipment which generates a lot of heat.

Installation Procedure

This section describes how to attach a connected unit directly to a panel, to a DIN rail, or to a DIN rail with an expansion unit spacer.

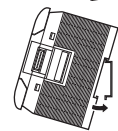
● Attaching a unit directly to a panel

Attach a metal fixture for screw tightening to a KV Series basic unit with set screws. Then, attach the basic unit with a metal fixture directly to the panel.



● Attaching a unit to a DIN rail

Hang an upper claw of a KV Series basic unit to the upper side of the DIN rail, and press the basic unit onto the DIN rail until a click sound is heard.



● Removing a unit from a DIN rail

Pull a lower claw of a KV Series basic unit downward from the front direction using a screwdriver, and then remove the basic unit from the DIN rail.

AC Power Specifications

Item	Specifications
Method	Switching method
Ripple noise	240 mVp-p or less
AC power current consumption	KV-10Ax: 0.4 A KV-16Ax: 0.5 A KV-24Ax: 0.4 A KV-40Ax: 0.7 A
AC power input voltage	100 to 240 V AC (±10%)
AC power factor	60%
Output voltage	24 V DC±10%
Output capacity	KV-10Ax: 0.4 A KV-16Ax: 0.6 A KV-24Ax: 0.6 A KV-40Ax: 0.7 A
Power consumption	KV-10Ax: 14 W KV-16Ax: 21 W KV-24Ax: 21 W KV-40Ax: 24 W
Used fuse	Rated voltage: 240 V AC, rated current: 3.15 A, Characteristics: Fast-melting type

* Includes the internal current consumption and current consumption of expansion units.

Point

The maximum output capacity available with the AC type service power output is the output capacity of each basic unit subtracted by the internal current consumption of the basic unit, connected expansion units, and connected peripheral units.

■ KV Series operation at power interruption

● Drop in supply voltage

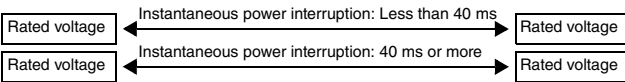
- When the supply voltage drops, the KV Series stops operating and the output turns off.

● Detection of instantaneous power interruption

- An AC type basic unit continues operating against instantaneous power interruption of less than 40 ms. A DC type basic unit continues operating against instantaneous power interruption of less than 2 ms.
- An AC type basic unit may or may not accept instantaneous power interruption of 40 ms or more. A DC type basic unit may or may not accept instantaneous power interruption of 2 ms or more.
- When accepting instantaneous power interruption, a basic unit stops operating and the output turns off.

● Automatic recovery

- Once the supply voltage recovers, the KV Series restarts operation automatically.



Point

If the supply voltage increases gradually or drops, the KV Series may repeat operation and then stop. If problems continue to occur with equipment and other operations from repetitive starts and stops, provide a protection circuit so that the output shuts down until the voltage reaches the rated value.

Cautions on Wiring for Each Unit

This section describes cautions to keep in mind when wiring is performed for I/O units. Be sure to read this section before starting wiring.

● Wiring procedures for basic units

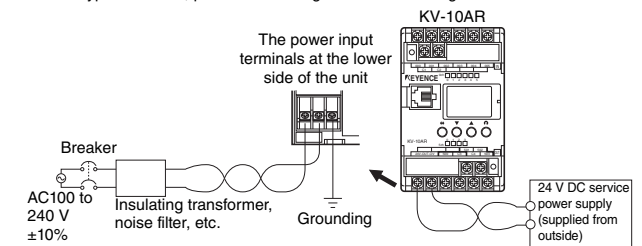
The wiring procedures for basic units are described below.

NOTICE

- Turn off the power before starting wiring.
- For the installation position, select a location whose ambient temperature is 0 to +50°C (32 to 122°F) (No freezing), whose ambient humidity is 35 to 85% RH (No condensation), and one which is not subject to drastic temperature changes.
- If the 24 V DC + output terminal and the 24 V DC - output terminal are switched, the power supply unit and connected units may be damaged. Never switch them.
- Be sure that the sum of the current consumption of all connected units does not exceed the output capacity of the service power supply. If the system is operating in an overload status, the internal circuits may generate heat or be damaged. To recover from an overload status, disconnect some of the connected units.
- Never connect the DC output of any other power supply, either in serial or parallel, to the 24 V DC output terminals. If the DC output is connected, the power supply unit may be damaged.

● Wiring for an AC type basic unit

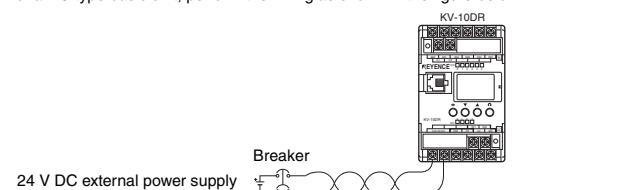
For an AC type basic unit, perform the wiring as shown in the figure below.



- Point**
- Connect an insulating transformer (1:1) or noise filter to reduce line noise.
 - Use twisted cables to reduce induction effects.
 - When using a basic unit in a location with a lot of noise, the noise may be reduced by using completely grounding the basic unit.

● Wiring for a DC type basic unit

For a DC type basic unit, perform the wiring as shown in the figure below.



- Point**
- Connect the power supply to the power supply input terminals with 24 VDC output, which offers a sufficient margin of power capacity. Usually, the sum of the current consumption of all connected units multiplied by 1.5 or more is required for the power capacity.
 - To reduce line noise, insert a ferrite core.

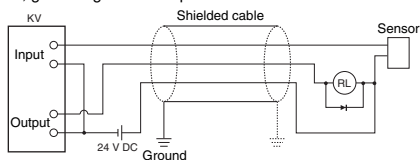
● Cautions on wiring for I/O units

When performing wiring for an I/O unit, pay strict attention to the following contents.

- Separate input lines from output lines in wiring.
- If the wiring for power is located near I/O signal lines, a malfunction may occur caused by the effects of a high voltage and large current.
- Keep I/O signal lines away from the power wiring by at least 100 mm.
- Separate 24VDC I/O lines from 100 VAC and 200 VAC lines.
- When using pipes for wiring, make sure that the pipes are securely grounded.

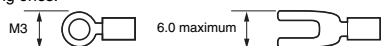
When I/O signal lines cannot be separated from the wiring for power

In such a case, perform grounding on the KV side using batch-shielded cables. (In some environments, grounding should be performed on the reverse side of the KV.)



● Terminal

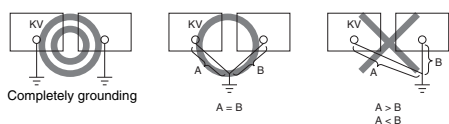
The terminal screws used are M3. When performing wiring with crimp-style terminals, use the following ones.



● Cautions on grounding

Because the KV Series is constructed to be sufficiently resistant to noise, it can usually be used without being grounded. However, when the KV Series is used in an environment with a lot of noise, grounding is required. In such a case, pay strict attention to the following contents.

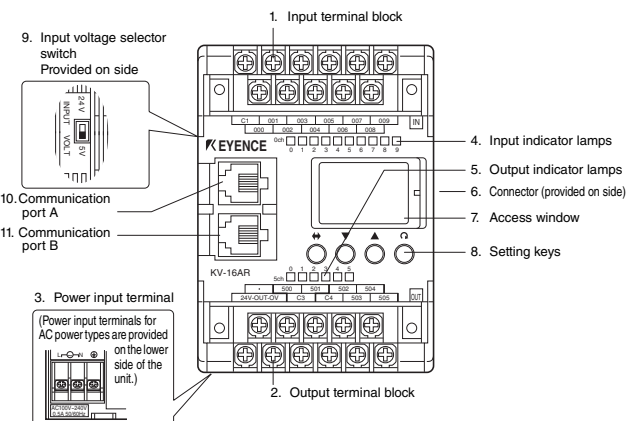
- Perform completely grounding for each individual unit. In this case, the ground resistance should be 100 Ω or less.
- If individual grounding is not possible, perform common grounding. In this case, the length of each grounding cable should be equal.



Contact Protection

If inductive loads such as clutches, motors, and solenoids are used, a rush current may flow when the load power supply is turned on, or a counter electromotive voltage may be generated when the load power supply is shut down. The rush current and the counter electromotive voltage can contribute considerably to shortening the service life of the contacts. To prevent this from happening, provide a contact protection circuit.

Part Names and Functions

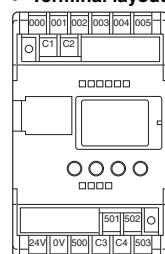


No.	Name	Function
1	Input terminal plate	24 V DC input terminal plate (000 to 007 can be changed to 5 V input).
2	Output terminal plate	Output terminal plate. Pulse output function is built in 500 to 502 (in transistor output type only). A 1.6 kΩ current limiting resistor is built in R502 (to connect a motor driver).
3	Power input terminal (KV-□□/DR/DT(P))	Supplies 24 V DC.
4	Input indicator lamps	Supplies 100 to 240 V AC to the power input terminals on the lower side of the unit and allows service power to be taken from the 24 V DC terminal.
5	Output indicator lamps	Indicate input status. Each lamp lights up at ON.
6	Connector (provided on side)	Indicate output status. Each lamp lights up at ON.
7	Access window	Used to connect an expansion unit. Used to refer to and change the current and set values of timers and counters as well as the contents of data memories. The backlight color indicates the operation status. Lit in green: RUN mode Lit in red: PROGRAM mode Flashing red: Error status
8	Setting keys	Used to refer to and change current values, etc. while referring to the access window.
9	Input voltage selector switch	Changes the input voltage of the basic unit. <input type="checkbox"/> : 24 V input <input type="checkbox"/> : 5 V input
10	Communication port A	Modular connector for connecting a personal computer, handheld programmer, or operator panel.
11	Communication port B	Modular connector for connecting a personal computer, handheld programmer, or operator panel.

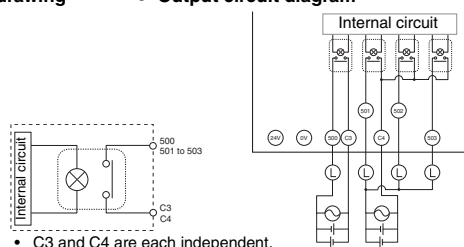
Terminal layout drawings and I/O circuit diagrams

KV-10AR/DR (Relay output type)

● Terminal layout drawing

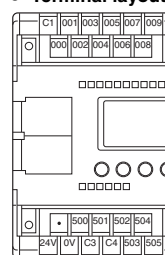


● Output circuit diagram

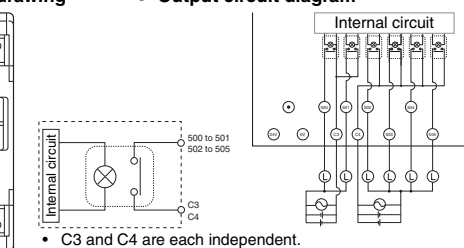


KV-16AR/DR (Relay output type)

● Terminal layout drawing

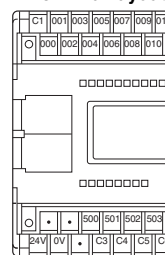


● Output circuit diagram

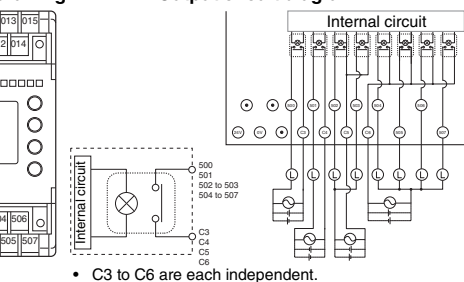


KV-24AR/DR (Relay output type)

● Terminal layout drawing



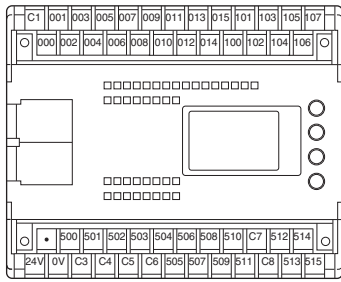
● Output circuit diagram



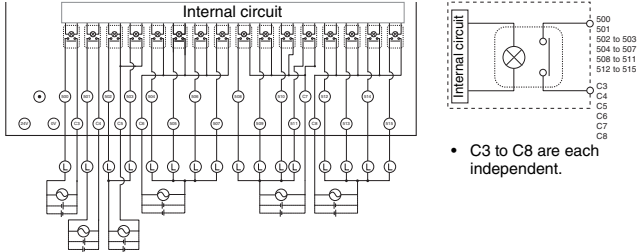
Terminal layout drawings and I/O circuit diagrams

KV-40AR/DR (Relay output type)

● **Terminal layout drawing**



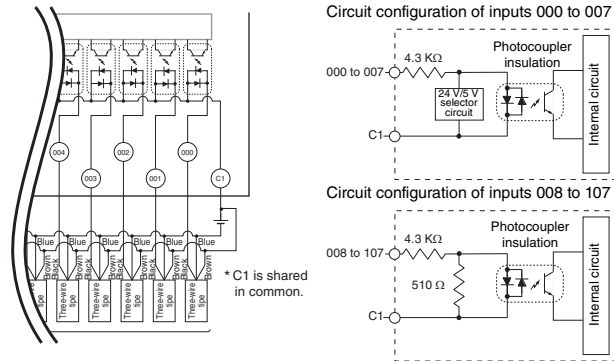
● **Output circuit diagram**



• C3 to C8 are each independent.

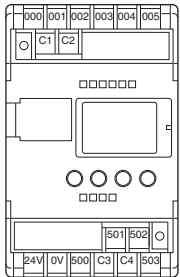
● **Input circuit diagram (KV-□□AR/KV-□□DR)**

*The number of input points varies with the model.

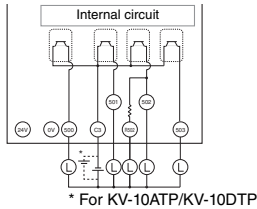


KV-10AT(P)/DT(P) (Transistor output type)

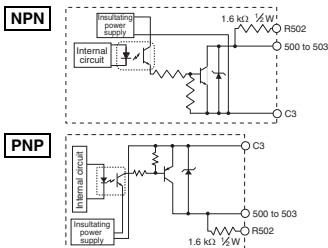
● **Terminal layout drawing**



● **Output circuit diagram**



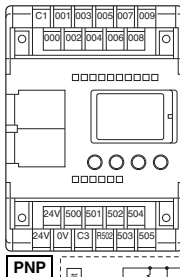
* For KV-10ATP/KV-10DTP



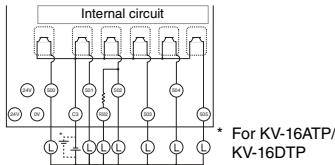
• A 1.6 kΩ current limiting resistor is built in R502 (to connect a motor driver).

KV-16AT(P)/DT(P) (Transistor output type)

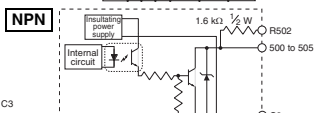
● **Terminal layout drawing**



● **Output circuit diagram**



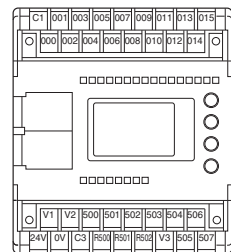
* For KV-16ATP/KV-16DTP



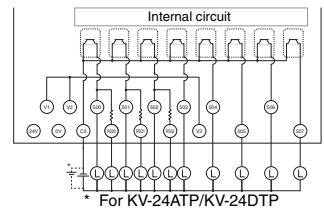
• A 1.6 kΩ current limiting resistor is built in R502 (to connect a motor driver).

KV-24AT(P)/DT(P) (Transistor output type)

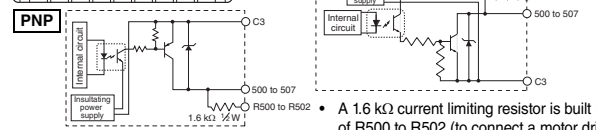
● **Terminal layout drawing**



● **Output circuit diagram**



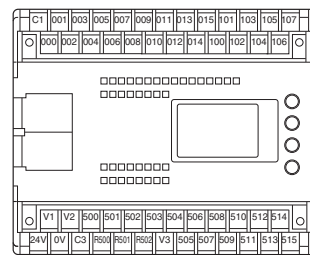
* For KV-24ATP/KV-24DTP



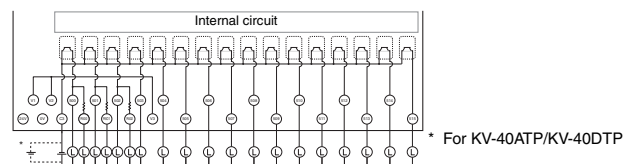
• A 1.6 kΩ current limiting resistor is built in each of R500 to R502 (to connect a motor driver).
• V1 to V3 are short-circuited inside (so they can be used as a relay terminal block).

KV-40AT(P)/DT(P) (Transistor output type)

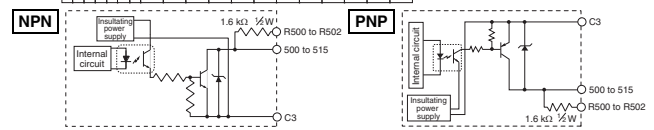
● **Terminal layout drawing**



● **Output circuit diagram**



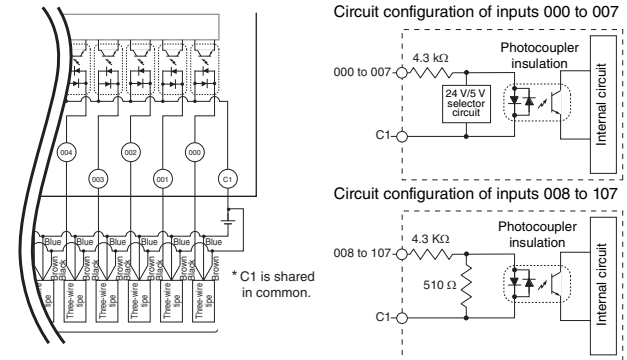
* For KV-40ATP/KV-40DTP



• A 1.6 kΩ current limiting resistor is built in each of R500 to R502 (to connect a motor driver).
• V1 to V3 are short-circuited inside (so they can be used as a relay terminal block).

● **Input circuit diagram (KV-□□AT(P)/KV-□□DT(P))**

*The number of input points varies with the model.



Relationship between Continuous Simultaneous ON Ratio and Ambient Temperature

NOTICE

If the number of I/O points which turn ON at the same time exceeds the specifications range, the unit may be damaged.

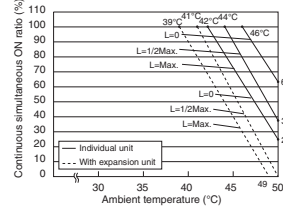
The graphs below show the relationship between the ambient temperature and the continuous simultaneous ON ratio.

Load current L:

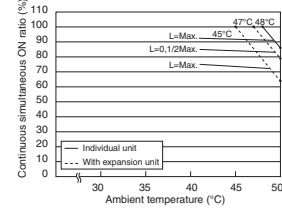
$$\text{(AC power output capacity at 400 mA)} - \text{(Individual current consumption when KV-D20 is connected)} = \text{(Service power output current)} + \text{(Expansion unit current consumption)}$$

KV-10AR/AT (P)/DR/DT (P)

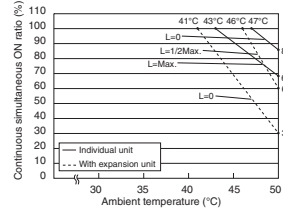
Derating when KV-10AR is mounted upward



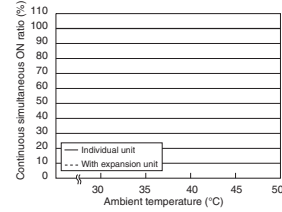
Derating when KV-10AR is mounted in front



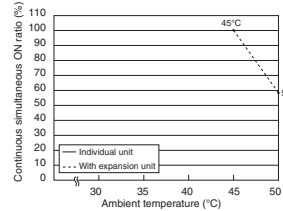
Derating when KV-10AT(P) is mounted upward



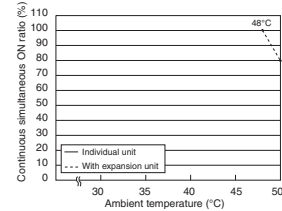
Derating when KV-10AT(P) is mounted in front



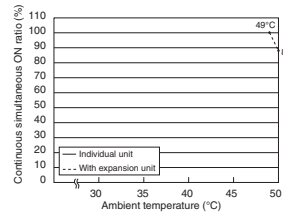
Derating when KV-10DR is mounted upward



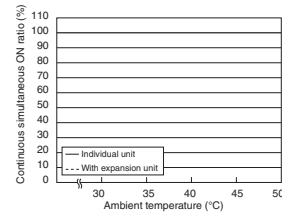
Derating when KV-10DR is mounted in front



Derating when KV-10DT(P) is mounted upward



Derating when KV-10DT(P) is mounted in front

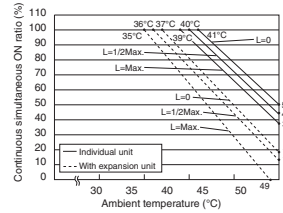


KV-16AR/AT (P)/DR/DT (P)

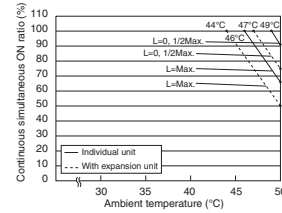
Load current L:

$$\text{(AC power output capacity at 600 mA)} - \text{(Individual current consumption when KV-D20 is connected)} = \text{(Service power output current)} + \text{(Expansion unit current consumption)}$$

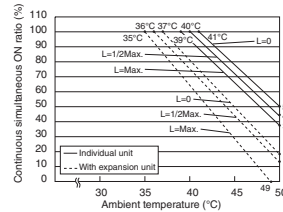
Derating when KV-16AR is mounted upward



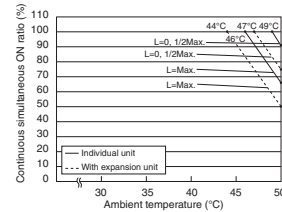
Derating when KV-16AR is mounted in front



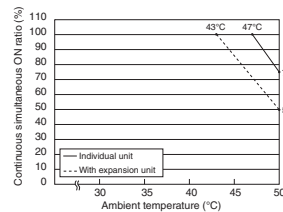
Derating when KV-16AT(P) is mounted upward



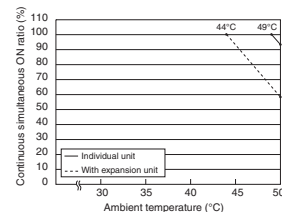
Derating when KV-16AT(P) is mounted in front



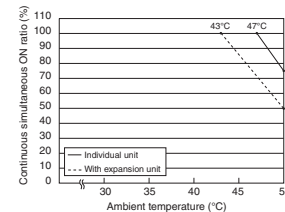
Derating when KV-16DR is mounted upward



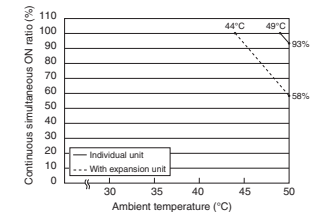
Derating when KV-16DR is mounted in front



Derating when KV-16DT(P) is mounted upward



Derating when KV-16DT(P) is mounted in front

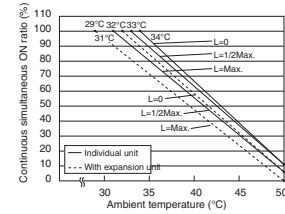


KV-24AR/AT (P)/DR/DT (P)

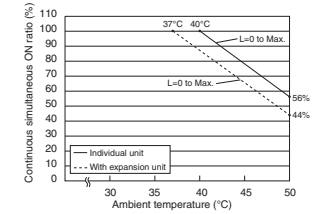
Load current L:

$$\text{(AC power output capacity at 600 mA)} - \text{(Individual current consumption when KV-D20 is connected)} = \text{(Service power output current)} + \text{(Expansion unit current consumption)}$$

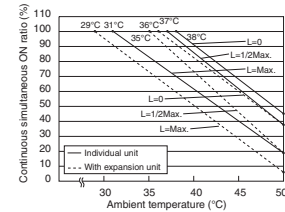
Derating when KV-24AR is mounted upward



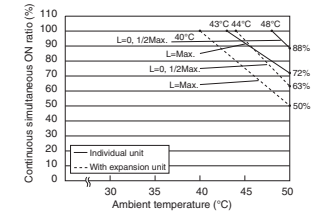
Derating when KV-24AR is mounted in front



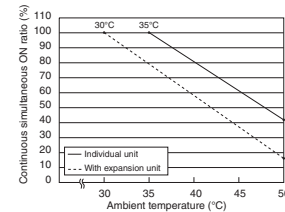
Derating when KV-24AT(P) is mounted upward



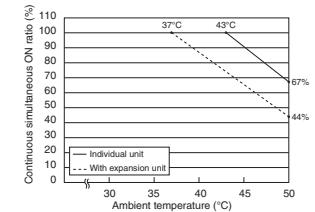
Derating when KV-24AT(P) is mounted in front



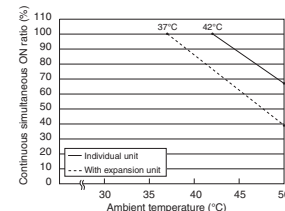
Derating when KV-24DR is mounted upward



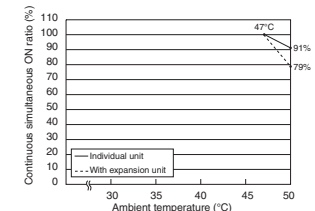
Derating when KV-24DR is mounted in front



Derating when KV-24DT(P) is mounted upward



Derating when KV-24DT(P) is mounted in front

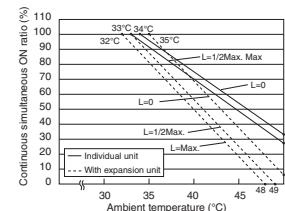


KV-40AR/AT (P)/DR/DT (P)

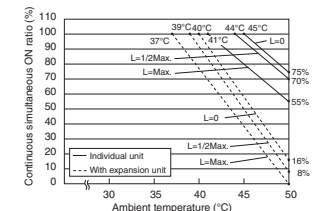
Load current L:

$$\text{(AC power output capacity at 700 mA)} - \text{(Individual current consumption when KV-D20 is connected)} = \text{(Service power output current)} + \text{(Expansion unit current consumption)}$$

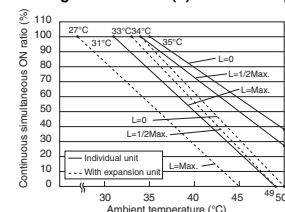
Derating when KV-40AR is mounted upward



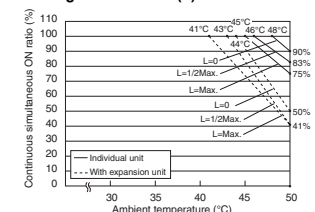
Derating when KV-40AR is mounted in front



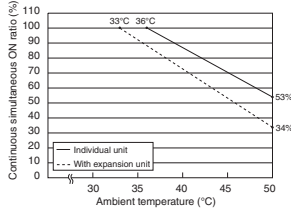
Derating when KV-40AT(P) is mounted upward



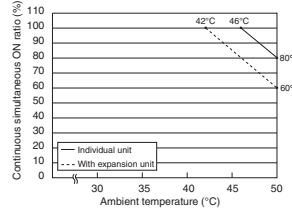
Derating when KV-40AT(P) is mounted in front



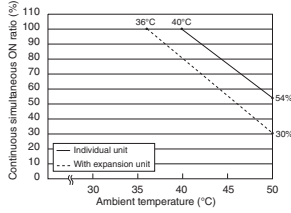
Derating when KV-40DR is mounted upward



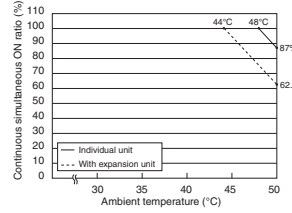
Derating when KV-40DR is mounted in front



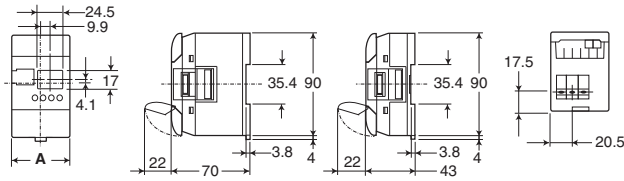
Derating when KV-40DT(P) is mounted upward



Derating when KV-40DT(P) is mounted in front



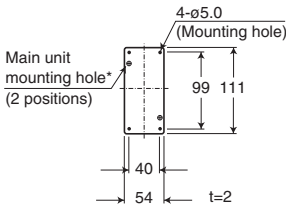
Dimensions



	A
KV-10AR/AT(P)/DR/DT(P) (10-I/O basic unit)	55
KV-16AR/AT(P)/DR/DT(P) (16-I/O basic unit)	65
KV-24AR/AT(P)/DR/DT(P) (24-I/O basic unit)	80
KV-40AR/AT(P)/DR/DT(P) (40-I/O basic unit)	110

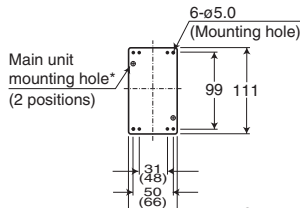
Metal Fixture for Screw Tightening

KV-10AR/AT(P)/DR/DT(P)
(10-I/O basic unit)
OP-35345



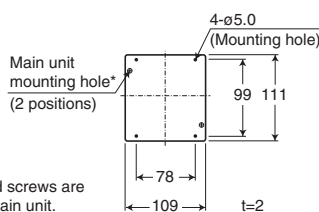
* Two M3.5 countersunk-head screws are included for mounting the main unit.

KV-16 (24) AR/AT(P)/DR/DT(P)
(16 (24) -I/O basic unit)
OP-35346 (OP-35347)



* Two M3.5 countersunk-head screws are included for mounting the main unit.

KV-40AR/AT(P)/DR/DT(P)
(40-I/O basic unit)
OP-35348



* Two M3.5 countersunk-head screws are included for mounting the main unit.

WARRANTIES AND DISCLAIMERS

- 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.
- 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.
- 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.
- 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 1110-2

KEYENCE CORPORATION

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

www.keyence.com

AUSTRIA Phone: +43-2236-378266-0	HUNGARY Phone: +36 14 748 313	SINGAPORE Phone: +65-6392-1011
BELGIUM Phone: +32 1 528 12 22	ITALY Phone: +39-2-6688220	SLOVAKIA Phone: +421 2 5939 6461
CANADA Phone: +1-905-696-9970	JAPAN Phone: +81-6-6379-2211	SWITZERLAND Phone: +41 43 455 77 30
CHINA Phone: +86-21-68757500	KOREA Phone: +82-31-642-1270	TAIWAN Phone: +886-2-2718-8700
CZECH REPUBLIC Phone: +420 222 191 483	MALAYSIA Phone: +60-3-2092-2211	THAILAND Phone: +66-2-369-2777
FRANCE Phone: +33 1 56 37 78 00	MEXICO Phone: +52-81-8220-7900	UK & IRELAND Phone: +44-1908-696900
GERMANY Phone: +49-6102-36 89-0	NETHERLANDS Phone: +31 40 20 66 100	USA Phone: +1-201-930-0100
HONG KONG Phone: +852-3104-1010	POLAND Phone: +48 71 36861 60	

Specifications are subject to change without notice.

A6WW1-MAN-1090

Copyright (c) 2011 KEYENCE CORPORATION. All rights reserved.
11767E 1081-1 [96M11767] Printed in Japan

