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.

Find the *Keyence KV-40T* at our website: *Click HERE*

Super-small Programmable Logic Controllers

KV Series



Features

- The world's smallest PLCs!
- Variety of expansion options
- 20 kHz clock pulse output
- User-friendly Windows® ladder software

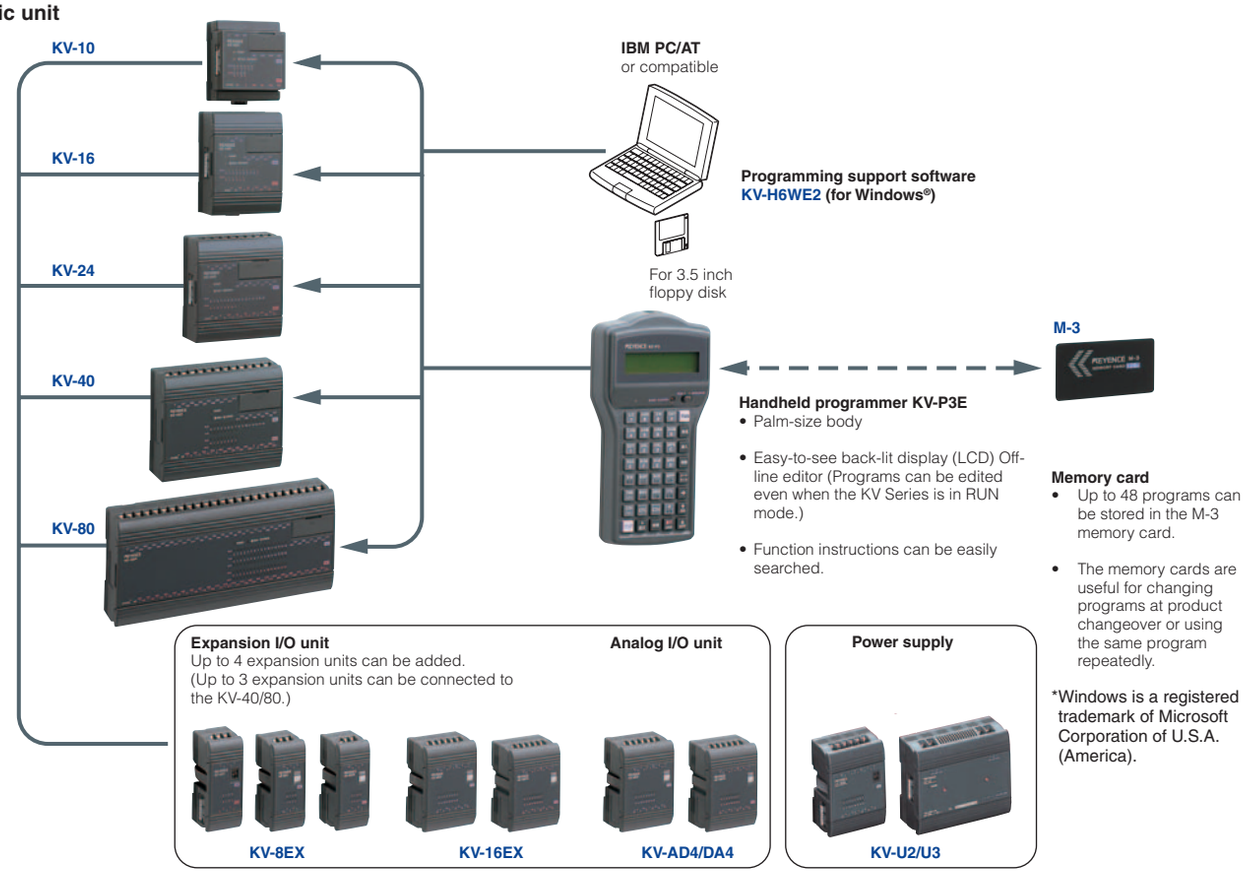
CE

Refer to P.858 for list of products complying with EU Directives.

*Windows is a registered trademark of Microsoft Corporation of U.S.A. (America).

System Configurations

Basic unit



Artisan Technology Group - Quality Instrumentation Guaranteed | (888) 88-SOURCE | www.artisantg.com

Description

Smallest PLCs in the world

The KV-10 (with 10 I/Os) is about the same size as three general-purpose relays. The KV-80 (with 80 I/Os) is as small as a VHS videotape. KV Series PLCs require little space on a control panel.

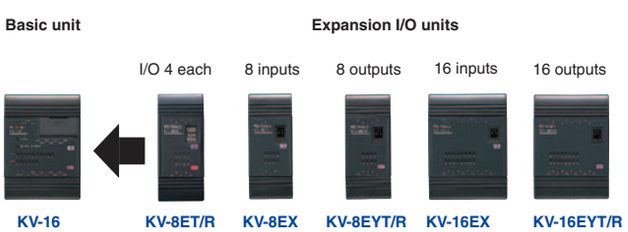
KV-10



The KV-10 can be mounted in two-thirds the space required by conventional 10 I/O PLCs.

Several expansion options available to increase the number of I/Os

Up to 4 expansion units can be added.



With the KV Series, it's easy to expand the number of I/Os. To achieve the input/output ratio that suits your needs, KV-16E or KV-8E expansion units can be added in any combination of 3 to the KV-80 or KV-40. Any combination of 4 expansions units can be added to the other models.

Analog I/O units with 12-bit resolution

The KV-DA4 (D/A connector) and KV-AD4 (A/D converter) with 4 channel I/O are available.

Support software for Windows®

The new Ladder Builder support software enables a program to be debugged on a PC screen without connecting a PLC or other device.

Interrupts and counters

The interrupt input instruction receives pulse signals as short as 25 µs regardless of the program cycle time, thus allowing real time processing.
The KV Series also provides two 10 kHz counters that are suitable for counting pulses with a high frequency.

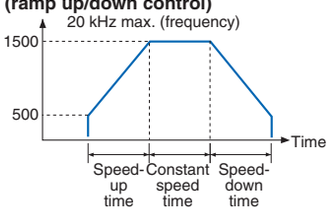
Convenient analog timer

Useful during startup, the analog timer trimmer enables the adjustment of the values for timers and counters, in real time, based on actual operating conditions, with a range from 0 to 249. There are 2 analog timers in the KV-80, KV-40, and KV-24, and 1 in the KV-16 and KV-10.

20 kHz clock pulse output (KV-80)

The 20 kHz clock pulse output enables positioning at varying speeds. The KV Series is useful as a pulse generator for stepping motors.
(The KV-10/16/24/40 has a maximum clock frequency of 2 kHz.)

Example of trapezoidal control (ramp up/down control)



Other useful features

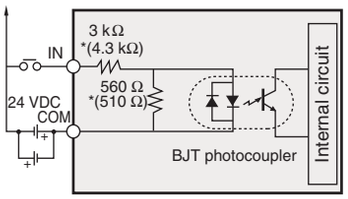
- Built-in 1 ms timer
- Memory capacity of up to 3000 steps (500 steps: KV-10/16)
- Serial communication function
- Relay replacement is possible. (KV-80R, KV-16EYR)
- Programs are stored in EEPROM, eliminating the need for backup battery.

*Windows is a registered trademark of Microsoft Corporation of U.S.A. (America).

Artisan Technology Group - Quality Instrumentation Guaranteed | (888) 88-SOURCE | www.artisantg.com

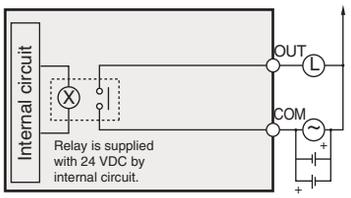
Input/Output Circuits

Input circuit



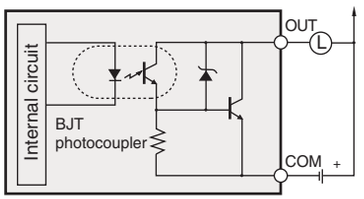
- Applicable to all KV models.
- *Values in ( ) used only for terminals connected to relays other than 0000 through 0005.
- Input from both NPN [(+) connected to COM] and PNP [(-) connected to COM] transistors are applicable.

Output circuit (relay contact)



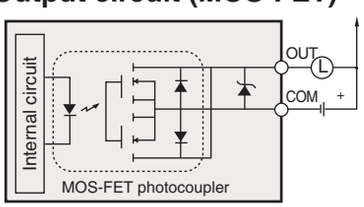
- Applicable only to the KV-80R, KV-40R, KV-24R, KV-16R, KV-10R, KV-8ER, KV-8EYR, and KV-16EYR.
- A separate power supply is required for the load.

Output circuit (BJT)



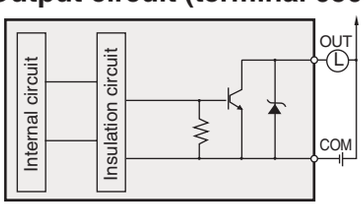
- Applicable only to KV-80T (terminals other than 0500), KV-10T, KV-8ET, KV-8EYT, and KV-16EYT
- A separate power supply is required for the load.

Output circuit (MOS-FET)



- Applicable only to the KV-40T, KV-24T, and KV-16T.
- A separate power supply is required for the load.

Output circuit (terminal 0500 on KV-80T only)



- A separate power supply is required for the load.

Software

The Ladder Builder for KV creates sequence programs in Windows®

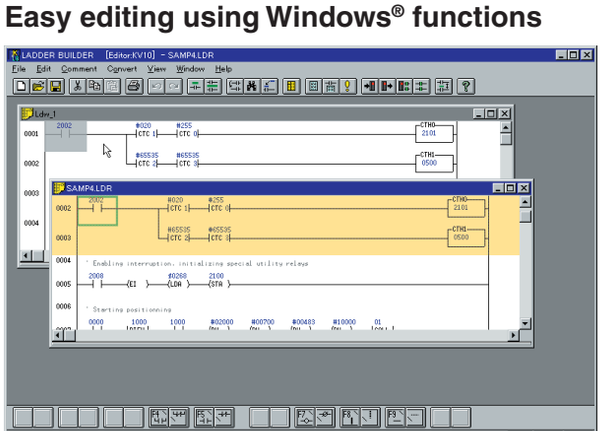
KV-H6WE2

User-friendly operation and high-level programming capabilities make the Ladder Builder for KV [KV-H6WE2] ideal for beginners and experienced programmers alike.

*Windows is a registered trademark of Microsoft Corporation of U.S.A. (America).

Editor

Easy editing using Windows® functions



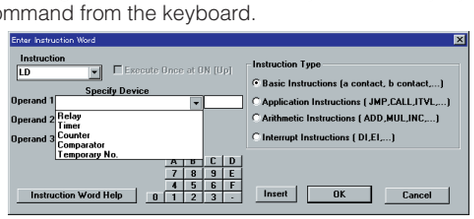
Multi-file editing

Multiple files can be edited simultaneously on the Ladder Builder for KV. You can freely cut and paste from one file to another.

Artisan Technology Group - Quality Instrumentation Guaranteed | (888) 88-SOURCE | www.artisantg.com

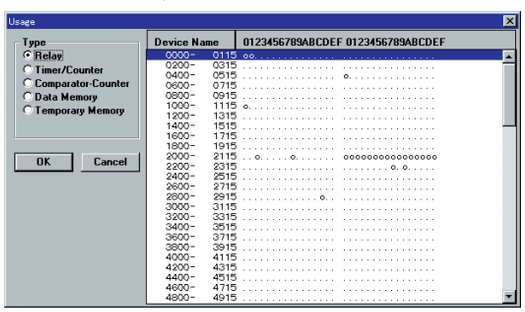
Instruction selection window

The user-friendly design allows data entry from a keyboard or a mouse. You can select and specify a device or command from a list provided by device type.
This ensures error-free entry of target symbols. For fast programming, you can also enter the symbol directly by typing the command from the keyboard.



Usage list

When creating Ladder diagrams, it can be difficult to keep track of addresses already used. The usage list displays which ones are used/available.



UNDO function

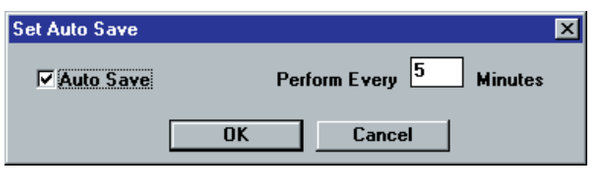
The Ladder Builder for KV enables efficient editing. If you accidentally delete an instruction, you can undo the action simply by clicking the “Undo” button. “Redo” button cancels “Undo”.





Auto-save function

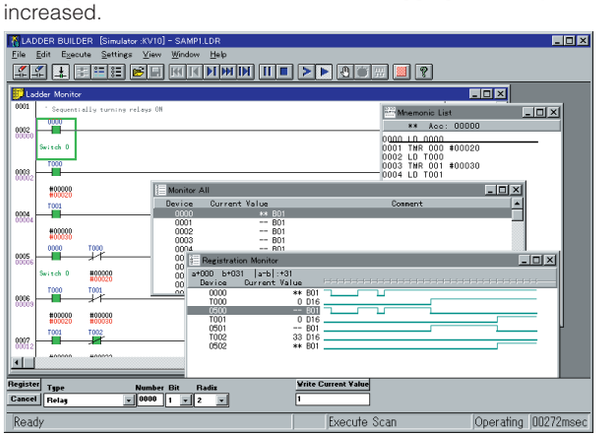
The Ladder Builder for KV automatically backs up your program at predetermined intervals. This protects your data from being lost due to PC power loss or system crash.



Simulator

Quick debugging without a PLC

Even without a PLC connected, the Ladder Builder for KV can simulate program execution. The execution can be checked without transferring the program to the PLC. By providing a single-step execution function (forward or reverse) in addition to a regular scan execution function, debugging efficiency is increased.



Forward/reverse single step execution

You can easily find a problem in complex operations by checking the operation process one step at a time.

Ladder Simulator enables direct checking of the ladder diagram execution

By clicking an element in the ladder diagram, the simulator screen quickly appears, allowing element setting/resetting.

Monitors All function

Timers, counters and data memories can be checked simultaneously in multiple windows. For effective debugging, you can check devices at one time, which don’t directly appear in the ladder diagram.

Registration Monitor

The Ladder Builder for KV can display multiple timing charts of any devices simultaneously. This enables convenient checking of all element on/off timing.

Monitor

Real time monitoring without stopping the machine

Ladder diagram and element on/off stands can be monitored real time.
Timing charts can be monitored simultaneously.

BUILT-IN DISPLAY
VISUAL KV
ANALOG-I/O
KL
COMPACT
KV-300
KV

Artisan Technology Group - Quality Instrumentation Guaranteed | (888) 88-SOURCE | www.artisantg.com

Specifications

Input/Output specifications

Type	Basic unit									
Model	KV-10R	KV-10T	KV-16R	KV-16T	KV-24R	KV-24T	KV-40R	KV-40T	KV-80R	KV-80T
No. of inputs	6		10		16		24		48	
Common input	1									
Input rating	24 VDC, Current consumption 7 mA (Input 000 to 005) 5 mA: (others)									
No. of outputs	4		6		8		16		32	
Common output	1		2		4		6		14	
Type of output	Relay	BJT	Relay	MOS-FET	Relay	MOS-FET	Relay	MOS-FET	Relay	BJT
Rated load	Relay: 250 VAC/30 VDC, 2 A, peak load current 5 A, Transistor: 30 VDC, 0.3 A MOS-FET: 30 VDC, 0.6 A (Output 0500), 30 VDC, 0.5 A (Others) peak load current 1 A									

Type	Expansion unit							
Model	KV-8ER	KV-8ET	KV-8EX	KV-8EYR	KV-8EYT	KV-16EX	KV-16EYR	KV-16EYT
No. of inputs	4		8	—		16	—	
Common input	1		2	—		4	—	
Input rating	24 VDC, Current consumption 7 mA (Input 000 to 005) 5 mA: (others)							
No. of outputs	4		—	8		—	16	
Common output	1		—	2		—	4	
Type of output	Relay	BJT	—	Relay	BJT	—	Relay	BJT
Rated load	Relay: 250 VAC/30 VDC, 2 A, peak load current 5 A, Transistor: 30 VDC, 0.3 A MOS-FET: 30 VDC, 0.6 A (Output 0500), 30 VDC, 0.5 A (Others) peak load current 1 A							

Power supply unit specifications

Model	KV-U2	KV-U3
Operation system	Switching type	
Power supply voltage	100 to 240 VAC (50/60 Hz) ±10%	
Output voltage	24 VDC ±10% (Ripple: 240 m Vp-p max.)	
Output current	0.8 A	1.4 A
Weight (brackets not included)	Approx. 170 g	Approx. 300 g

Analog I/O specifications (Input: KV-AD4, Output: KV-DA4)

Type	Voltage	Current
Analog I/O range	-10 to +10 V	4 to 20 mA
Input impedance	1 MΩ	300 Ω
Output impedance	0.5 Ω min.	—
Number of I/O	4 channels of inputs or outputs	
Resolution	5 mV (1/4000)	4 µA (1/4000)

Artisan Technology Group - Quality Instrumentation Guaranteed | (888) 88-SOURCE | www.artisantg.com

General specifications (R and T in model names indicate relay output and transistor output)

Model	KV-10 (R/T)	KV-16 (R/T)	KV-24 (R/T)	KV-40 (R/T)	KV-80 (R/T)
Programming language	Ladder diagram and expanded ladder diagram				
Number of instructions	Basic: 16, application: 34, arithmetic:26, interrupt: 4				
Execution time (basic I/O instructions)	1.0 µs min., 1.92 µs average		1.4 µs min., 3.12 µs average		
Avg. number of steps	500 steps/program		3000 steps/program		
Input (Maximum extendable number of inputs)	6 inputs (70 max.)	10 inputs (74 max.)	16 inputs (80 max.)	24 inputs (72 max.)	48 inputs (80 max.)
Output (Maximum extendable number of outputs)	4 outputs (68 max.)	6 outpus (70 max.)	8 outputs (72 max.)	16 outputs (64 max.)	32 outputs (80 max.)
Maximum extendable number of I/Os	74	80	88		128
Internal utility relays (with latching function)	160		800		
Special utility relays	160				
Data memory (16 bits)	1,000 words		2,000 words		
Temporary memory (16 bits)	32 words				
Timer/Counter	A total of 64 timers, up, and up-down counters are provided: 0.1-s timer (0 to 6553.5 s) 0.01-s timer (0 to 655.35 s) 1-ms timer (0 to 65.535 s) 1 analog timer (0 to 24.9 s, 0 to 2.49 s, or 0 to 0.249 s)		A total of 120 timers, up, and up-down counters are provided: 0.1-s timer (0 to 6553.5 s) 0.01-s timer (0 to 655.35 s) 1-ms timer (0 to 65.535 s) 2 analog timers (two of 0 to 24.9 s, 0 to 2.49 s, or 0 to 0.249 s)		
High-speed counter	2 auto-reset up-counters (max. input response frequency: 10 kHz)				
High-speed counter comparator	4				
Direct clock pulse	2 channels, 2 kHz max. (output from 0500), 1.5 kHz max. (output from 0501)				2 channels, 20 kHz max. (output from 0500), 1.5 kHz max. (output from 0501)
Memory backup	Program memory: EEPROM, programs retained for 10 years min., rewritable 50,000 times min. Data memory: data retained for 2 months min. by capacitors (at +25°C (77°F))				
Supply voltage	24 VDC +10% to -20%				
Maximum current consumption	KV-10R: 75 mA KV-10T: 65 mA	KV-16R: 105 mA KV-16T: 70 mA	KV-24R: 130 mA KV-24T: 75 mA	KV-40R: 220 mA KV-40T: 115 mA	KV-80R: 400 mA KV-80T: 300 mA
Ambient temperature	0 to +50°C (32 to 122°F), No condensation				
Relative humidity	35 to 85%, No condensation				
Withstand voltage	1500 VAC applied between power terminal and I/O terminal, and between terminals and housing (1 min.)				
Weight	KV-10R: approx. 130 g KV-10T: approx. 120 g	KV-16R: approx. 200 g KV-16T: approx. 180 g	KV-24R: approx. 250 g KV-24T: approx. 220 g	KV-40R: approx. 340 g KV-40T: approx. 270 g	KV-80R: approx. 600 g KV-80T: approx. 500 g

BUILT-IN DISPLAY
VISUAL KV
ANALOG-I/O
KL
COMPACT
KV-300
KV

Artisan Technology Group - Quality Instrumentation Guaranteed | (888) 88-SOURCE | www.artisantg.com

Instructions

Basic instructions

Instruction	Symbol	Mnemonic	Function
LOAD	nnnn	LD	Connects N.O. contact to bus.
LOAD BAR	nnnn	LDB	Connects N.C. contact to bus.
AND	nnnn	AND	Connects N.O. contact in series with previous contact.
AND BAR	nnnn	ANB	Connects N.C. contact in series with previous contact.
OR	nnnn	OR	Connects N.O. contact in parallel with previous contact.
OR BAR	nnnn	ORB	Connects N.C. contact in parallel with previous contact.
AND LOAD		ANL	Connects in series blocks made of one or more contacts.
OR LOAD		ORL	Connects in parallel blocks made of one or more contacts.
OUT	nnnn	OUT	Outputs input ON/OFF status to R coil.
OUT BAR	nnnn	OUB	Outputs inverted input ON/OFF status to R coil.
SET	nnnn (SET)	SET	Forces R ON and holds this status when input is ON.
RESET	nnnn (RES)	RES	Forces R/T/C OFF when input is ON.
0.1-s TIMER	#ddddd T xxx	TMR	16-bit on-delay T that counts down in 0.1-s decrements.
0.01-s TIMER	#ddddd TH xxx	TMH (FNC49)	16-bit on-delay T that counts down in 0.01-s decrements.
1-ms TIMER	#ddddd TS xxx	TMS (FNC51)	16-bit on-delay T that counts down in 1-ms decrements.
COUNTER	#ddddd C xxx nnnn	C	Sets 16-bit up-counter.

Application instructions

Instruction	Symbol	Mnemonic	Function
UP-DOWN COUNTER	UDC xxx UP #ddddd DW RES	UDC (FNC52)	Sets a 16-bit up-down counter.
DIFFERENTIATE UP	nnnn DIFU	DIFU (FNC10)	Turns ON R for 1 scan time at rising edge of input.
DIFFERENTIATE DOWN	nnnn DIFD	DIFD (FNC09)	Turns ON R for 1 scan time at falling edge of input.
KEEP	KEEP SET RES nnnn	KEEP (FNC22)	Turns ON R and holds this status when SET input is ON. Turns OFF R when RESET input is ON.
SHIFT	SFT UP nnnn DW I RES mmmm	SFT (FNC39)	Sets shift register.
HIGH SPEED	HSP nnnn	HSP (FNC18)	Reduces input relay time constant to 25 µs for higher input response.
MASTER CONTROL	MC	MC (FNC24)	Selects ON/OFF status of R coils, Ts, or Cs.
MASTER CONTROL RESET	MCR	MCR (FNC25)	Represents end of MC.
MEMORY SWITCH	MEMSW	MEMSW (FNC26)	Sets memory switches.
STAGE	nnnn STG	STG (FNC 44)	Executes instructions between STG & JMP when R (operand) is ON.

Artisan Technology Group - Quality Instrumentation Guaranteed | (888) 88-SOURCE | www.artisantg.com

Application instructions

JUMP	nnnn JMP	JMP (FNC 21)	Turns current stage OFF and next stage ON when input is ON.
END STAGE	ENDS	ENDS (FNC 14)	Turns current stage OFF when input is ON.
NOP		NOP (FNC30)	Performs no operation.
END	END	END	Indicates end of each routine of program.
END HI	ENDH	ENDH	Indicates end of entire program.

Application instructions

Instruction	Mnemonic
STEP	STP
STEP END	STE
INTERVAL TIMER	ITVL
8 BIT COUNTER	CTH
8 BIT COUNTER COMPARATOR	CTC
SUBROUTINE CALL	CALL
SUBROUTINE ENTRY	SBN
SUBROUTINE RETURN	RET
REPEAT START	FOR
REPEAT END	NEXT
16 KEY INPUT	HKEY
WAIT ON	W-ON
WAIT OFF	W-OFF
WAIT UP EDGE	W-UE
WAIT DOWN EDGE	W-DE
CONNECT	CON
PUSH	MPS
READ	MRD
POP	MPP

Interrupt instructions

INTERRUPT DISABLED	DI
INTERRUPT ENABLED	EI
INTERRUPT	INT
RETURN INTERRUPT	RETI

Arithmetic instructions

DATA MEMORY WRITE	DW
TRIMMER SETING	TMIN
LOAD A	LDA
STORE A	STA
COMPARE	CMP
ADD	ADD
SUBTRACT	SUB
MULTIPLY	MUL
DIVIDE	DIV
AND A	ANDA
OR A	ORA
EXCULSIVE OR A	EORA
SHIFT RIGHT A	SRA
SHIFT LEFT A	SLA
ROTATE RIGHT A	RRA
ROTATE LEFT A	RLA
COMPLEMENT	COM
INCREMENT MEMORY	INC
DECREMENT MEMORY	DEC
MULTIPLEXER	MPX
DEMULTIPLEXER	DMX
TRANSFER BCD	TBCD
TRANSFER BIN	TBIN
ASCII CONVERT	ASC
REVERSE ASCII CONVERT	RASC
SQUARE ROOT	ROOT

* Differentiation instructions can be used for all arithmetic instructions other than DATA MEMORY WRITE.

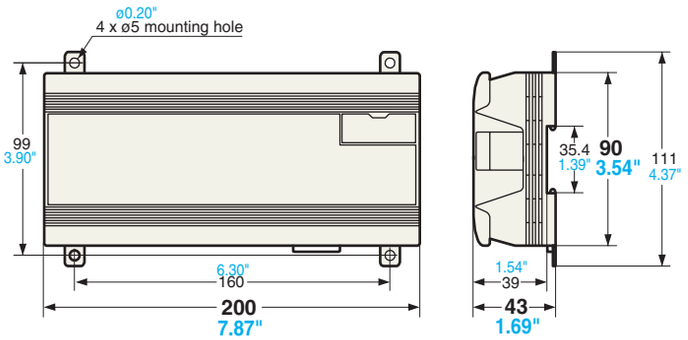
Artisan Technology Group - Quality Instrumentation Guaranteed | (888) 88-SOURCE | www.artisantg.com

Dimensions

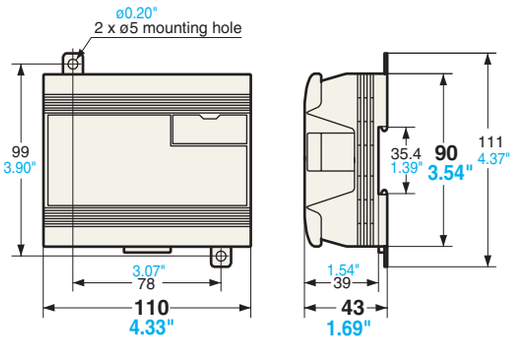
Unit: mm inch

Basic units

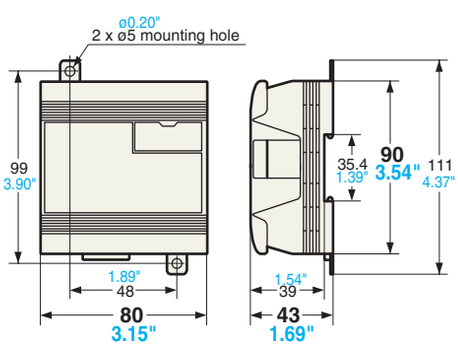
KV-80R/T



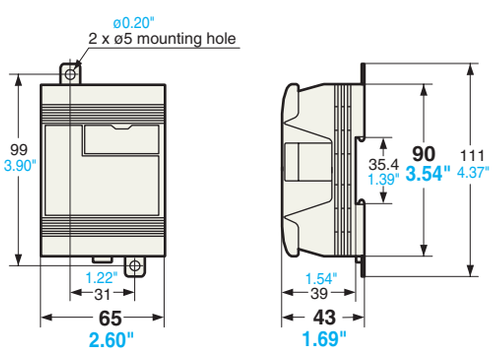
KV-40R/T



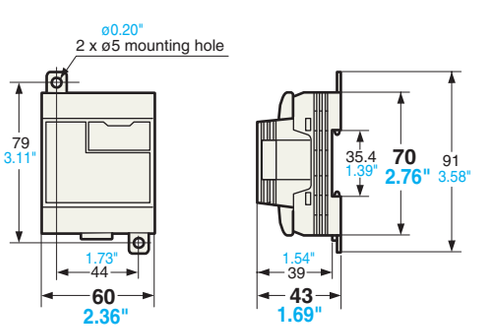
KV-24R/T



KV-16R/T



KV-10R/T

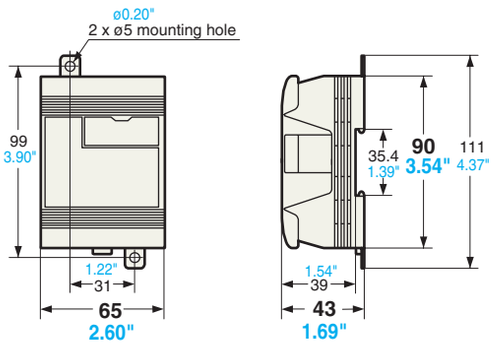


Artisan Technology Group - Quality Instrumentation Guaranteed | (888) 88-SOURCE | www.artisantg.com

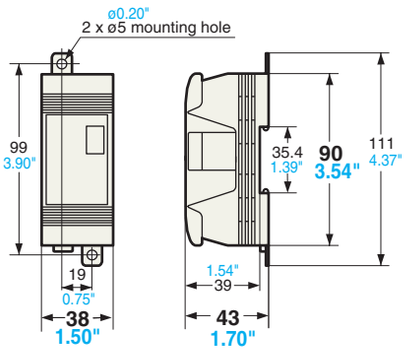
Unit: mm inch

Expansion units

KV-16EX/16EYR/T/AD4/DA4

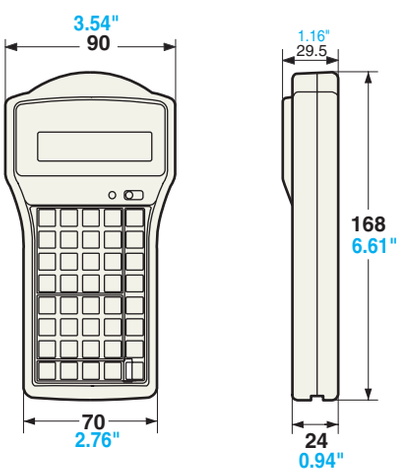


KV-8R/T/8EX/8EYR/T



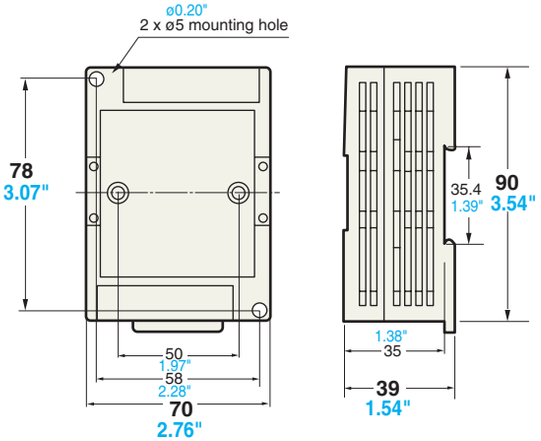
Handheld programmer

KV-P3E

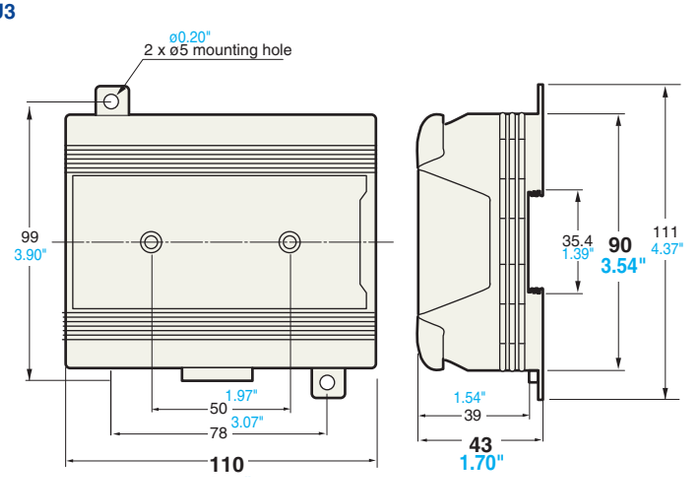


Power supplies

KV-U2



KV-U3



Artisan Technology Group - Quality Instrumentation Guaranteed | (888) 88-SOURCE | www.artisantg.com

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