

INSTRUCTION MANUAL

MEMORY UNIT

MODEL MU01-COS

KIKUSUI ELECTRONICS CORPORATION

819121

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1. GENERAL

1-1. Description

Memory Unit MU01-COS is used in conjunction with Step Controller SC02-COS or SC01-COS to control Programmable Oscilloscope COS5030-PG with programs stored in the memory unit. This programmable oscilloscope system can be used as a very effective means of labor economization in production and inspection lines of video tape recorders, video disks, and other electronic products.

1-2. Features

- o Storing of various programs:

The various programs set by Remote Controller RC01-COS to control Programmable Oscilloscope COS5030-PG can be stored.

- o Large program step capacity:

Up to 96 program steps can be stored. As the start step and end step can be set as required with the 2-digit START switches and END switches, many programs can be stored in effect without requiring to rewrite programs for individual ones.

- o Simple program writing and copying procedure:

Program writing into this Memory Unit can be done in a simple one-touch operation by using Remote Controller RC01-COS. If two or more Memory Units are connected in series, programs can be written into all of the units simultaneously.

- o Backup power source for memory:

Memory (C-MOS RAM) is backed up with a battery power source so that the stored programs are not lost even when the AC line power is interrupted or has failed.

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2. SPECIFICATIONS

Number of program steps: Up to 96 (00 - 95)

Programmable items: All items that can be programmed by Remote Controller RC01-COS

Operating functions

START step: The smallest program step number. It can be set at any step within 00 - 95, provided that it is smaller than the END step number.

END step: The largest program step number. It can be set at any step within 00 - 95, provided that it is larger than the START step number.

WRITE mode: Data received from Remote Controller (or other Memory Unit) connected to the DATA INPUT terminal of this Memory Unit is stored in memory each time the program step is counted up, and the same data is sent out from the DATA OUT terminal.

READ mode: Data stored in memory is sent out from the DATA OUTPUT terminal. If the Step Controller is in the AUTO state, the step number is counted up at each preset time interval,

Backup power source for memory

Type of power source: Dry cells (SUM-3 × 2)

Source voltage warning: The POWER lamp (LED) blinks when dry-cells have discharged.

Maintaining time: One year or more

Power requirements

Voltage: 100 V, 115 V, 215 V, 230 V. (within ±10% of each voltage)

Frequency: 50 - 60 Hz

Power consumption: Approx. 15 VA

Dimensions and weight

Outline dimensions

Maximum dimensions: 220 W × 85 H × 330 D mm
(8.66 W × 3.35 H × 12.99 D in.)

Mainframe: 210 W × 70 H × 310 D mm
(8.27 W × 2.76 H × 12.20 D in.)

Weight: Approx. 2.6 kg (5.7 lbs)

Ambient temperature and humidity

Ranges to satisfy specifications: 5°C to 35°C (40°F to 95°F),
up to 85% RH

Operating ranges: 0°C to 40°C (32°F to 104°F),
up to 90% RH

Accessories

Fuse (slow blow, 0.2 A)	(99-02-0112)	1
Fuse (slow blow, 0.4 A)	(99-02-0114)	1
Power cord	(85-10-0120)	1
Instruction manual	()	1

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3. GENERAL PRECAUTIONS

3-1. Unpacking the Memory Unit

When the Memory Unit is delivered to you, please immediately unpack it and check for any signs of damage which might have been sustained when in transportation. If any sign of damage is found, please immediately notify the bearer and your Kikusui dealer.

3-2. Checking the AC Line Voltage

The required AC line voltage and fuse for this device are indicated on the rear panel of the device. Before operating the device, make it sure that the AC line voltage setting of the device conforms with the voltage of the AC line on which the device is to be operated. If the device voltage does not conform with the line voltage, the device may not operate normally or may be damaged. When the two voltages are found to be not conforming, make them conform by changing the voltage setting of the device or by changing the line voltage to the device voltage (within a tolerance of $\pm 10\%$) using an autotransformer or other appropriate equipment.

3-3. Environmental Conditions

This device can be operated in ambient temperature 0°C to 40°C and humidity up to 90% RH. Do not operate the device in environmental conditions exceeding these ranges or in a place where the device is subjected to vibration. Such will cause malfunctioning or damage to the device.

3-4. Inter-device Connection Cables

Note that devices may be damaged if inter-device connection cables are incorrectly connected or if they are connected or disconnected when the powers of the devices are on. Be sure to turn off the powers of the devices and connect them correctly with the inter-device connection cables.

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3-5. Backup Battery for Memory

This device has two dry cells (SUM-3) as a backup power source for memory. When the dry cells are discharged and the backup source voltage has dropped below a certain level, the POWER pilot lamp (LED) on the front panel blinks. The dry cells must be replaced with new ones when the lamp has started blinking. For replacement of the dry cells, contact your Kikusui dealer.

3-6. AC Line Voltage Change

The AC line voltage requirement of this device can be changed at the rear panel of the device. When the device is operated on an AC line higher than 125 V, the power cord and fuse must be changed. For the 200-V AC power cord (item name "VM0099-VM0081 AC Cord," item code number 85-10-0140), contact your Kikusui dealer. For the fuse, see the following table.

Selector position	Nominal voltage	Allowable voltage range	Fuse
A	100 V	90 V - 110 V	0.4A, slow blow
B	115 V	104 V - 126 V	
C	215 V	194 V - 236 V	0.2A, slow blow
D	230 V	207 V - 253 V	

3-7. AC Outlet

This device has on its rear panel an AC outlet which can be used for Programmable Oscilloscope COS5030-PG, Remote Controller RC01-COS, or Probe Selector PS02-COS. The outlet may be used for other devices also, provided that the total power does not exceed 100 VA. The outlet provides the AC power irrespective of turning on or off of the power switch of this device.

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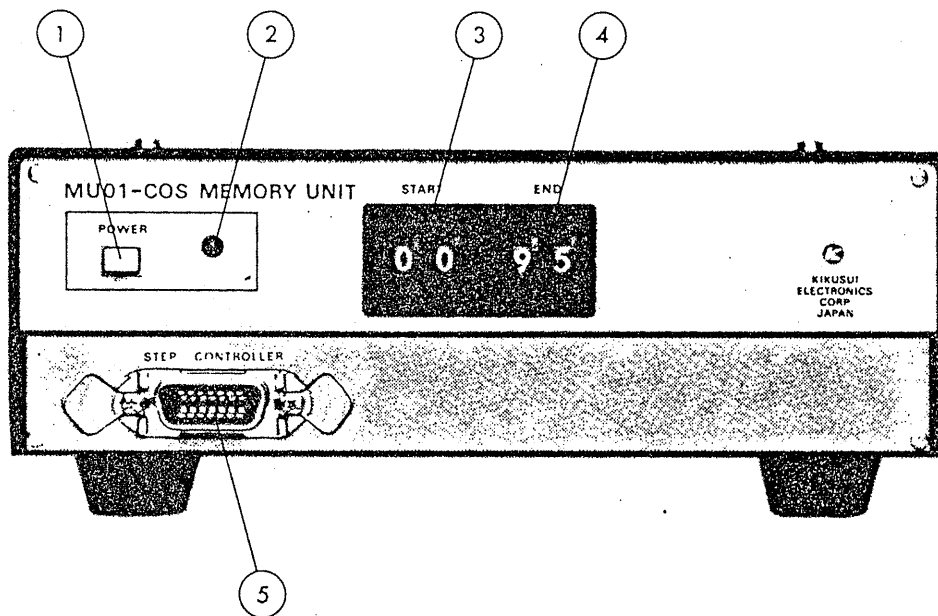


Figure 4-1

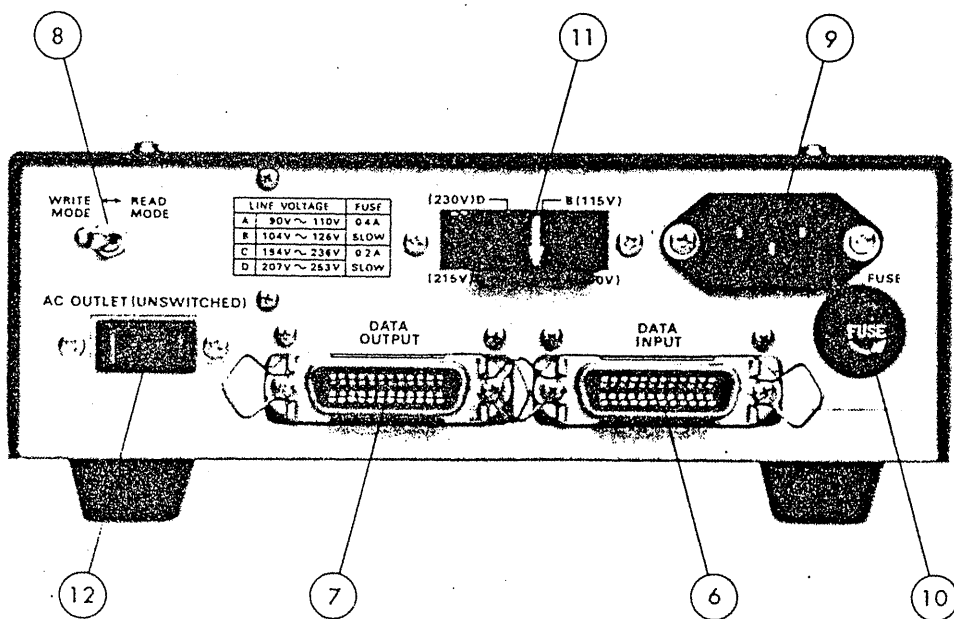


Figure 4-2

4. PANEL DESCRIPTION AND INTER-DEVICE CONNECTIONS

4-1. Description of Front Panel Items (See Figure 4-1.)

- ① POWER switch: The depressed state is for device power on. As you press this button again, it pops up and the power is turned off.
- ② Power lamp: This lamp (LED) lights when the device power is on. It blinks when the backup power source voltage (internal battery voltage) has dropped.
- ③ START switches: These digital switches are for setting a start point of program steps. Setting can be done at one of 96 steps of 00 - 95. No step change is effected, however, unless setting is done at a step of a smaller number than that set by ④ END switches. Setting at 96 - 99 is the same in effect with setting at 95. When the step number is counted up and has exceeded the one preset by ④ END switches, it returns to the preset one.
- ④ END switches: These digital switches are for setting a start point of program steps. Setting can be done at one of 96 steps of 00 - 95. No step change is effected, however, unless setting is done at a step of a larger number than that set by ③ START switches. Setting at 96 - 99 is the same in effect with setting at 95. When the step number is counted down and has exceeded the one preset by ③ START switches, it returns to the preset one.
- ⑤ Connector for Step Controller: This connector mates with the 14-pin cable (belonging to SC02-COS) to connect Step Controller SC02-COS. To connect Step Controller SC01-COS, use the CA-1 or CA-2 cable (optional).

4-2. Description of Rear Panel Items (See Figure 4-2.)

- ⑥ DATA INPUT connector: This connector accepts input data to be stored in this device. Connect this connector to Remote Controller RC01-COS using the 24-pin cable.
- ⑦ DATA OUTPUT connector: This connector delivers output data to control Programmable Oscilloscope COS5030-PG. Connect this connector to the oscilloscope using the 24-pin cable.
- ⑧ WRITE MODE ↔ READ MODE: This switch selects either the WRITE mode or the READ mode for memory. When in the READ mode, data stored in memory is read and delivered via ⑦ DATA OUTPUT connector as dictated by the Step Controller. When in the WRITE mode, data entered via ⑥ DATA INPUT connector is stored in memory and at the same time it is fed to ⑦ DATA OUTPUT connector, as dictated by the Step Controller. This switch has a lock mechanism in order to prevent inadvertent mode change which may destroy stored data. To change the modes, turn the switch pulling up its knob.
- ⑨ AC power inlet: The AC power input connector. Connect the AC power cord (supplied) to this connector.
- ⑩ Fuse holder: The AC input power fuse holder. To remove the holder cap, turn it counterclockwise.
- ⑪ AC line voltage selector plug: This plug selects an AC line voltage on which this device operates. Be sure to correctly set the plug to conform with the line voltage, referring to the voltage table and observing the direction of the arrowhead mark.
- ⑫ AC outlet: Provides an AC power, being connected in parallel with ⑨ AC power inlet.

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4-3. Inter-device Connections

(1) To write data in memory

This device by itself cannot write data in its memory. Data should be sent from Remote Controller RC01-COS or transferred from other Memory Unit MU01-COS. Inter-device connections for writing data are shown in Figure 4-3. Data being written can be monitored by connecting Programmable Oscilloscope COS5030-PG to the DATA OUTPUT connector of this device. If another Memory Unit MU01-COS is connected to the DATA OUTPUT connector, the same data can be written in it also simultaneously.

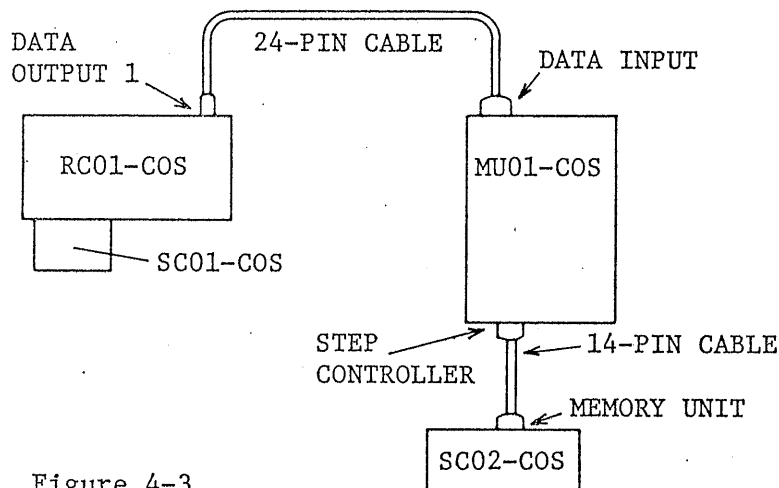


Figure 4-3

(2) To read data from memory

Connect the devices as shown in Figure 4-4. To transfer stored in this memory to other Memory Unit MU01-COS, connect it instead of COS5030-PG.

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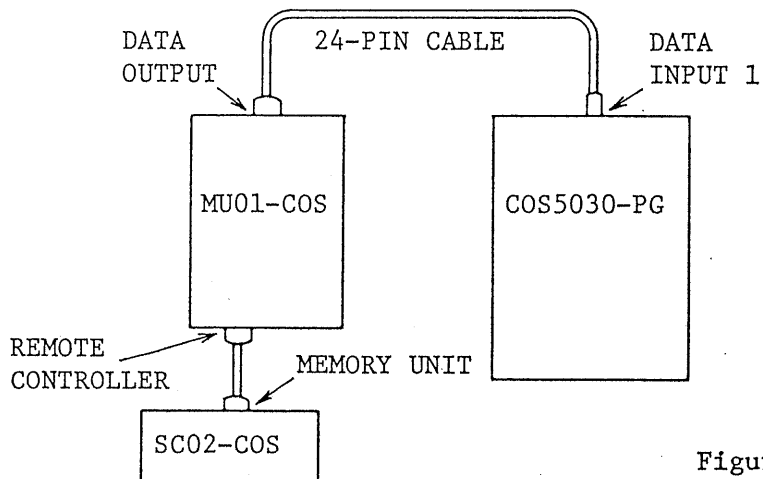


Figure 4-4

4-4. Step Controller To Be Used in Conjunction

This device should normally be used in connection with Step Controller SC02-COS which is capable of manual operation as required. When no manual operation is required, Step Controller SC01-COS may be used. Note that, for Step Controller SC01-COS, inter-device connection cable CA-1 or CA-2 is required.

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5. OPERATION METHOD

5-1. Initial Procedure

- (1) Before connecting the power cord to an AC line receptacle, make it sure that the line voltage selector plug on the rear panel of the device is set correctly.
- (2) In order to prevent inadvertent erasure of data stored in memory, be sure to set the READ/WRITE selector switch on the rear panel to the READ state.
- (3) Turn on the POWER switch and check that the power pilot lamp (LED) is turned on.

5-2. Write Procedure

Explanation here is done assuming that the required data has already be stored in Remote Controller RC01-COS and such data is to be transferred to Memory Unit MU01-COS.

- (1) Connect the devices as shown in Figure 4-2. Set the READ/WRITE switch in the READ state and then turn on the power of MU01-COS.
- (2) Set the START and END digital switches of Remote Controller RC01-COS and Memory Unit MU01-COS at the required step numbers.
- (3) By operating the Step Controller connected to the Remote Controller and Memory Unit, set their step numbers at the END step number.
- (4) Set the Remote Controller in the READ state. Set the READ/WRITE selector switch of Memory Unit in the WRITE state.
- (5) Press the UP button of the Remote Controller. The step number indication of Memory Unit will change to that which has been set by the START switches and data will be written in the START step.
- (6) Each time as you press the UP button of the Remote Controller, data of each step will be written in the Memory Unit.

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- (7) When the step number has reached that which has been set by the END switches, change the READ/WRITE selector switch of the Memory Unit to the READ state.

When the above procedure is done, data transfer from the Remote Controller to the Memory Unit is complete. Now the Memory Unit can be disconnected and operated by itself. Be sure to check before disconnecting or connecting the inter-device connection cables that the powers of the devices are off.

Data is written in memory at the instant the step is counted up being linked to the step up operation of the Remote Controller. In this case, if the Step Controller of the Memory Unit side is in the AUTO state, the step of Memory Unit also is counted up and data is written; if the Step Controller is in the MANUAL state, the step of Memory Unit does not change and data is written only in the indication step.

This manual function can be used for program editing by writing data of an arbitrary step of the Remote Controller in an arbitrary step of the Memory Unit. For such editing, set at first the Memory Unit at the required step number and then set the Remote Controller to the required step number by operating the UP button.

When the Remote Controller and Memory Unit are connected together and the Memory Unit is set in the WRITE mode, data is written in the Memory Unit at the instant the UP button of the Remote Controller is operated. In this case, to change steps of the Remote Controller side, operate the DOWN button.

5-3. Read Procedure

The procedure for operating Programmable Oscilloscope COS5030-PG with data stored in Memory Unit MU01-COS is explained here.

- (1) Turn off the power switches of the devices and connect them with inter-device connection cables as shown in Figure 4-3.
- (2) Set the READ/WRITE selector switch of Memory Unit in the READ state and then turn on the power switch.

- (3) Set the start and end steps with the START and END digital switches, respectively.

When the above procedure is done, the Programmable Oscilloscope can be operated with the steps of the programs stored in the Step Controller.

Up to 96 program steps can be stored. Since the start step and stop step can be set as required with the START and STOP digital switches, many different programs in effect are available by means of the digital switches. Due to this feature that individual programs are not required to be rewritten, the Memory Unit can be used conveniently for production lines where various programs are required.