

INSTRUCTION MANUAL
FOR
PROGRAMMABLE OSCILLATOR
MODEL ORC21

REV - 1

KIKUSUI ELECTRONICS CORPORATION

Z1-403-720 IA002131

Power Requirements of this Product

Power requirements of this product have been changed and the relevant sections of the Operation Manual should be revised accordingly.

(Revision should be applied to items indicated by a check mark)

Input voltage

The input voltage of this product is _____ VAC,
and the voltage range is _____ to _____ VAC. Use the product within this range only.

Input fuse

The rating of this product's input fuse is _____ A, _____ VAC, and _____.

WARNING

- To avoid electrical shock, always disconnect the AC power cable or turn off the switch on the switchboard before attempting to check or replace the fuse.
- Use a fuse element having a shape, rating, and characteristics suitable for this product. The use of a fuse with a different rating or one that short circuits the fuse holder may result in fire, electric shock, or irreparable damage.

AC power cable

The product is provided with AC power cables described below. If the cable has no power plug, attach a power plug or crimp-style terminals to the cable in accordance with the wire colors specified in the drawing.

WARNING

- The attachment of a power plug or crimp-style terminals must be carried out by qualified personnel.

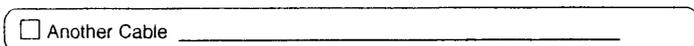
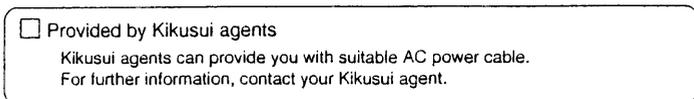
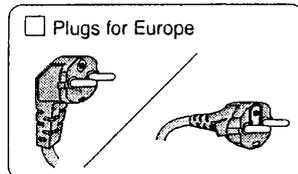
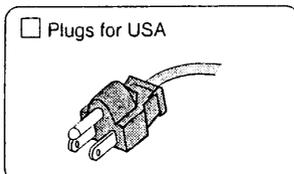
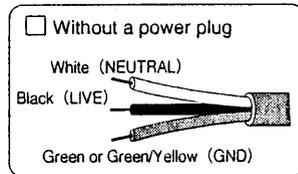
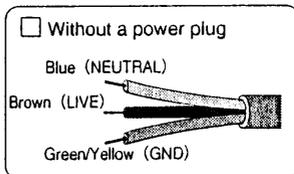


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1. GENERAL

Model ORC21 Programmable Oscillator is incorporated with the various advantageous features which can be summarized as follows:

- (1) Eight oscillator circuits are provided. These circuits are mutually independent and are constantly oscillating.
- (2) The oscillating frequency and output level (attenuation) can be set for each oscillator circuit.
- (3) The switching response of the oscillator circuits is rapid.
- (4) The 'R' and 'L' output terminals are provided.
- (5) The outputs can be ON/OFF-controlled. In case of output OFF, both 'R' and 'L' output circuits can be terminated with external resistors.
- (6) Selection of one of the eight oscillator circuits and ON/OFF-control of the outputs can be made locally on the oscillator front panel or remotely with a remote controller.

* Remote Controllers which can be used for this purpose:

RC01-AVM: Single-channel type

RC02-AVM: Can be used being linked with AC Voltmeter
(AVM Series)

RC01-ORC: Single-channel type, scanning possible

RC02-ORC: Can be used being linked with AC Voltmeter
(AVM Series), scanning possible

- (7) Remote control can be done using the GP-IB Interface (optional).

* GP-IB Interface

IF01-AVM: Up to four devices, including this Oscillator
and AC Voltmeter (AVM Series), can be connected.

2. SPECIFICATIONS

2.1 General Specifications

- (1) No. of oscillator circuits: 8
- * All circuits are constantly oscillating. Frequency and output level can be set for each circuit.
- (2) Output terminals: 'R' and 'L' terminals of BNC receptacle type
- (3) Termination: Can be terminated with any resistance.
- * Both 'R' and 'L' terminals can be terminated. The terminals are binding-post type.
- (4) Output switching response: 10 msec or faster
- * Excluding output ON/OFF response
- (5) Output DC component (offset): ± 20 mV or less
- (6) Operating ambient temperature and humidity: 5 to 35°C (41 to 95°F), 85% RH or less
- (7) Power requirements: 50/60 Hz AC, *approx. 25 VA
- | | |
|-------------|--|
| 90 - 110 V | } Selectable with selector plug on rear panel. |
| 104 - 126 V | |
| 194 - 236 V | |
| 207 - 253 V | |
- * When both 'R' and 'L' outputs are off and the remote control terminals are open.
- (8) External dimensions: 134 W x 180 H x 350 D mm
(5.28 W x 7.09 H x 13.78 D in.)
- (Maximum dimensions): 140 W x 205 H x 400 D mm
(5.51 W x 8.07 H x 15.57 D in.)

(Maximum dimensions)*: 140 W × 205 H × 545 D mm
(5.51 W × 8.07 H × 21.46 D in.)

*: When the front door is open

- (9) Weight: Approx. 6.5 kg (14.3 lbs)
- (10) Accessories:
- | | | |
|---------------------------------|-------|-----|
| Instruction manual | | 1 |
| Fuse (0.5 A) | | 1 |
| AC plug adaptor (3P-2P) | | 1 * |
| Model 943 BNC terminal adaptors | | 2 |

* The AC Plug Adaptor is provided only for model versions for use within Japan.

2.2 Specifications of Oscillator Circuits

- (1) Oscillating frequency: 30 Hz - 30 kHz (3 ranges)
- | | |
|-------|----------------|
| ×1: | 30 Hz - 300 Hz |
| ×10: | 300 Hz - 3 kHz |
| ×100: | 3 kHz - 30 kHz |
- (2) Output voltage: 3.16 Vrms ±10%
- * Maximum output, with open terminals
- (3) Output impedance: 600 Ω ±20%
- (4) Output voltage/frequency characteristics: ±0.5 dB (30 Hz - 30 kHz)
- * With reference to 1 kHz, when at maximum output voltage and with output terminals open.
- (5) Distortion factor: 0.1% or less (300 Hz - 10 kHz)
- 0.5% or less (30 Hz - 30 kHz)
- * Actually measured values at 1 kHz ±3% are approx. 0.01% - 0.03%.
- * When at maximum output voltage, with output terminals open.
- * At 23°C ±5°C (73.4°F ±9°F)

- (6) Output level setting (attenuator setting): 0, -20, -40, -60 dB, (4 ranges)
Continuously-variably adjustable for 20 dB or over.
Can be set at 0 - 60 dB.
- (7) Output ON/OFF-control: Levels of OFF states
80 dB or over (when both 'R' and 'L' are OFF)
60 dB or over (when 'R' or 'L' is OFF)
90 dB or over (when at approximately 1 kHz)
* When terminated with 600 Ω
* When a shielded cable of not longer than 1 meter is used for connection to the measuring AC voltmeter
* When the ON channel is set at the maximum output

2.3 Specifications of Remote Control Section

- (1) Remote control connector: Amphenol 57-40240 equivalent
- (2) Frequency address designation: Positive logic binary codes

	Frequency									
	0	1	2	3	4	5	6	7	*	**
DIO 0	0	1	0	1	0	1	0	1	×	×
DIO 1	0	0	1	1	0	0	1	1	×	×
DIO 2	0	0	0	0	1	1	1	1	×	×
DIO 3	0	0	0	0	0	0	0	0	1	×
R/L 1	0	0	0	0	0	0	0	0	0	1

1: H
0: L
×: Don't care

* GND 1

* When none of '0 - 7' is selected.

** On the front panel, by manual operation

(3) Output ON/OFF designation

	OFF	ON	OFF	ON	OFF	***	L output
	OFF	OFF	ON	ON	OFF		R output
DIO 4	0	1	0	1	x	x	
DIO 5	0	0	1	1	x	x	
DIO 6	x	x	x	x	x	x	
DIO 7	0	0	0	0	1	x	
R/L 1	0	0	0	0	0	1	

1: H
0: L
x: Don't care

* GND 2

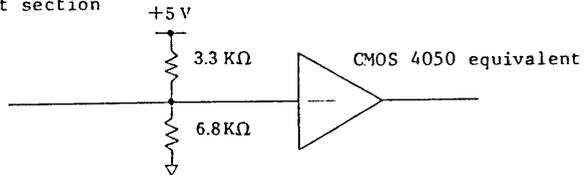
*** On the front panel, by manual operation

(4) Electrical performance

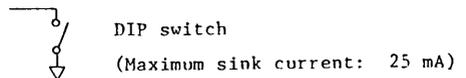
Signal level: TTL level

Maximum allowable application voltage: +15 VDC, -0 VDC

Equivalent circuit
of input section



Equivalent circuit
of output section



* The oscillator circuit (analog) ground and the digital grounds (GND 1, GND 2) are isolated with photocouplers.

3. PRECAUTIONS BEFORE USE

3.1 Unpacking and Inspection

The instrument is shipped from the factory after full mechanical and electrical inspection. Upon receipt of the instrument, please immediately inspect it for any signs of damage which might have been sustained when in transportation and, if any signs of damage are found, immediately notify the transportation company and your Kikusui agent.

3.2 AC Line Voltage

The instrument operates on a 50- or 60-Hz single-phase AC line power. The AC line voltage is selectable for four ranges (90 - 110 V, 104 - 126 V, 194 - 236 V, or 207 - 253 V) with the AC line voltage selector plug on the rear panel of the instrument. Before connecting the power cord of the instrument to an AC line outlet, make sure that the AC line voltage selector plug is set at the correct position.

- * When the AC line voltage is changed, change also the fuse as required referring to the fuse rating table given on the rear panel of the instrument. The fuses are of a regular tubular-glass fuse type. Normally, the instrument is shipped being set at the 90 - 110 V range and with the 1-ampere fuse. To change the line voltage setting, change the line voltage selector plug setting and change also the fuse as required. (The 0.5-ampere fuse accompanies the instrument, as an accessory item.)

The power cord of the instrument has a 3p plug. To operate the instrument on a 2p receptacle which has no pin for the ground line, use the AC plug adaptor (3p-2p adaptor) which is supplied as an accessory item.

- * Note that the use of the 3p-2p adaptor is limited to the 90 - 110 V range and 104 - 126 V range. The instrument casing can be grounded by connecting the ground wire of the adaptor to a ground line.
- * The uncovered metallic terminal on the rear panel of the instrument also is a ground terminal. It is highly recommended to connect securely this terminal to a ground line before connecting the power cord to an AC line receptacle.

3.3 Operating Environments

Do not operate the instrument in direct sunlight or near a source of heat. Avoid operating the instrument in adverse environments such as dusty or corrosive gas atmosphere, chemical stains, mechanical vibration, etc. Note that the longevity of the instrument might be badly shortened if it is exposed to such adverse environments.

When operating the instrument in the remote control mode using an external remote controller, pay attention to logic noise and other EMI (electromagnetic interference) caused by devices. It is recommendable to lay the logic signal lines apart from the oscillator output terminals and to use mutually isolated power sources for the instruments.

3.4 Protection of Output Circuit

Note that the instrument may be damaged if a voltage higher than ± 10 V is applied to the output terminals of the instrument. Even when the applied voltage is lower than ± 10 V, the specification performance may be unattainable. Be sure to operate the instrument with the voltage applied to its output terminals is nominal zero volts.

3.5 Output Cables

Use output cables as short as possible, preferably not longer than 1 meter. If longer cables are used, the output voltage/frequency characteristics and output OFF characteristics may be degraded. Even when the cables are shorter than 1 meter, pay attention to their stray capacitances.

3.6 Remote Control Connector

This connector is for remote control of the Oscillator. The models of the Remote Controllers which can be used for this purpose are as follows:

- RC01-AVM (8-point preset, single-channel type)
- RC02-AVM (8-point preset, dual-channel type)
- RC01-ORC (8-point preset, scanning possible, single-channel type)

RC02-ORC (8-point preset, scanning possible, dual-channel type)

RF01-AVM (GP-1B Interface)

For remote control of the Oscillator with other models of remote controllers, details of the connector are given at a later part of this instruction manual. In the cases the Oscillator is to be operated in particular conditions, refer to your Kikusui agent.

The length of the remote control cable should not be longer than 2 meters. When using a shielded type of cable (a cable which has metallic connectors at both ends and which are connected to the shielding wire of the cable), disconnect either one of the connectors from the shielding wire. If both connectors are left connected to the shielding wire, the potential of the casing of the Oscillator is extended to other instrument connected and an undesirable ground loop is formed with the analog ground line of the oscillator circuit. Pay attention to forming of an undesirable ground loop also when using the uncovered metallic ground terminal on the rear panel of the Oscillator. Also pay attention so that the casing of the Oscillator is not contacted with that of other instrument or device.

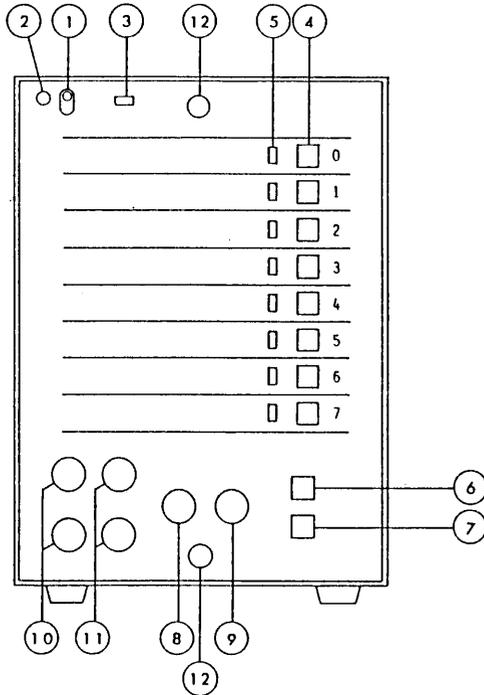
The external remote control signals are fed via photocouplers into the Oscillator. This isolation provision is incorporated in order to prevent the ground loop which could be formed when using the Oscillator in conjunction with an AVM Series AC Voltmeter or other instrument. This isolation is not for insulation against high voltages.

3.7 Notice

The specifications of the Oscillator are subject to change without notice.

4. OPERATION METHOD

4.1 Description of Front Panel Items



- ① Power Switch
- ② Power Indicator LED
- ③ Remote-control Status Indicator LED:

The LED turns on to indicate that the instrument is in the remote control mode, with external signals applied through the Remote Control Connector ①⑥ for '0 - 7' frequency address designation and ON/OFF-control of output signals. When in the remote control mode, the switches ④, ⑥ and ⑦ remain idle.

④ Frequency Address Selector Switches

⑤ Frequency Address Indicator LED's:

The switches select one of the internal oscillating circuits which are assigned with frequency addresses '0 - 7'. The LED of the depressed and locked switch turns on.

* When none of the switches '0 - 7' is depressed (when no frequency address selection is made), none of the LED's turns on.

* The switches are idle when the 'REMOTE' LED ③ is on.

* Use the left-hand spaces of the switches to post the labels indicating the internally-set frequencies and output levels.

⑥ 'L' Line Output ON/OFF Switch

To ON/OFF-control the output signal of 'L' line output terminal ⑧. The depressed and locked state is for ON.

⑦ 'R' Line Output ON/OFF Switch

To ON/OFF-control the output signal of 'R' line output terminal ⑨. The depressed and locked state is for ON.

⑧ 'L' Line Output Terminal

⑨ 'R' Line Output Terminal

* Only one of the internal oscillator circuits is selected at a time by the frequency address selector switches ④. The output signal of the selected oscillator circuit is delivered being branched into the 'L' line and the 'R' line. The output impedance of each of the lines is 600 ohms $\pm 20\%$.

* The outer conductors of the BNC receptacles are connected to the instrument casing.

- ⑩ 'TERMINATION L' Terminals (terminals for connection of 'L' line termination resistor)

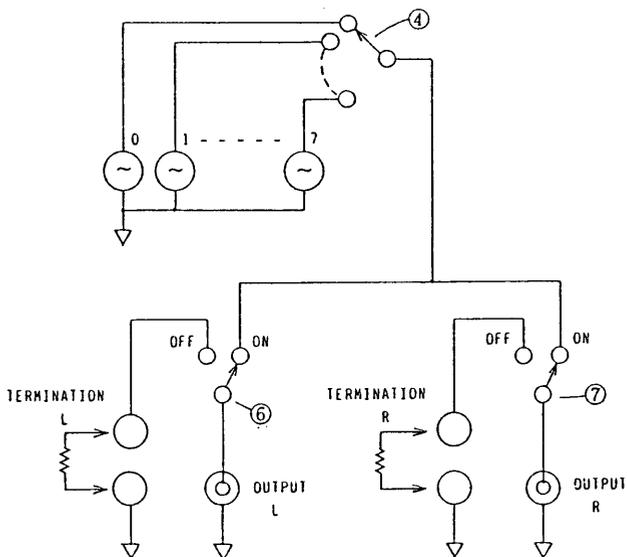
When the output circuit is turned OFF by the 'L' line output ON/OFF switch ⑥, the output circuit of the 'L' line output terminal ⑧ is disconnected from the oscillator circuit. These terminals are used to connect a termination resistor for the device tested. The 'GND' terminal is connected to the casing of the Oscillator.

- * With this provision, measurement of S/N ratio and other test operations on the device to be tested is facilitated. (A resistor of any resistance as required by the device to be tested may be connected to these terminals.)

- ⑪ 'TERMINATION R' Terminals (terminals for connection of 'R' line termination resistor)

The use of these terminals is identical with that of terminals ⑩, except that these terminals are for the 'R' line output circuit and the description of ⑩ should be read by replacing ⑥ with ⑦ and ⑧ with ⑨.

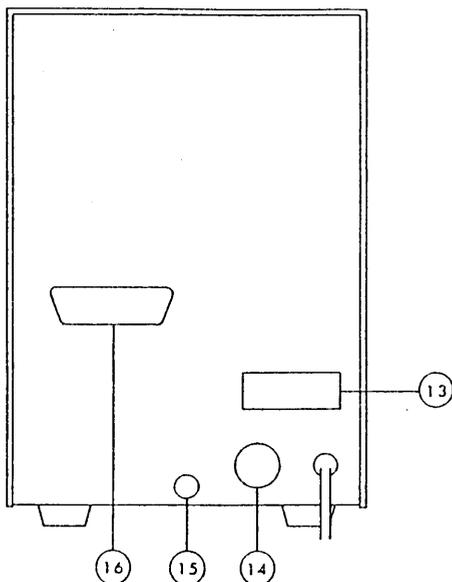
* The principle of the output ON/OFF switching circuit is shown in the following:



⑫ Front Panel Screw

To gain access to the instrument inside to set frequencies and levels of individual frequency addresses, the front panel of the instrument can be opened by turning this screw counterclockwise and pulling the upper section of the front panel to this side.

4.2 Description of Rear Panel Items



⑬ AC Line Voltage Selector Plug

To select the AC line voltage on which the instrument is to be operated. Before connecting the power cord of the instrument to an AC line outlet, make it sure that the plug is set at the correct position for the AC line voltage. When the AC line voltage is changed, change also the fuse as required. (For details, see Section 3.2.)

⑭ Fuse Holder

To hold the AC input power line fuse. The fuse rating should be as follows:

90 V - 110 V	}	1 ampere
100 V - 126 V		
194 V - 236 V	}	0.5 amperes
207 V - 253 V		

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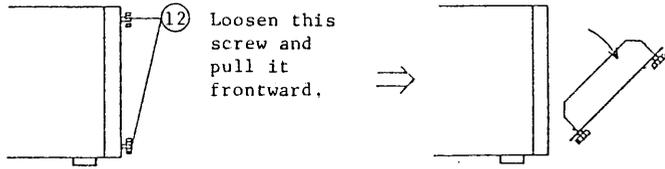
⑮ GND Terminal

This terminal is connected to the instrument casing.

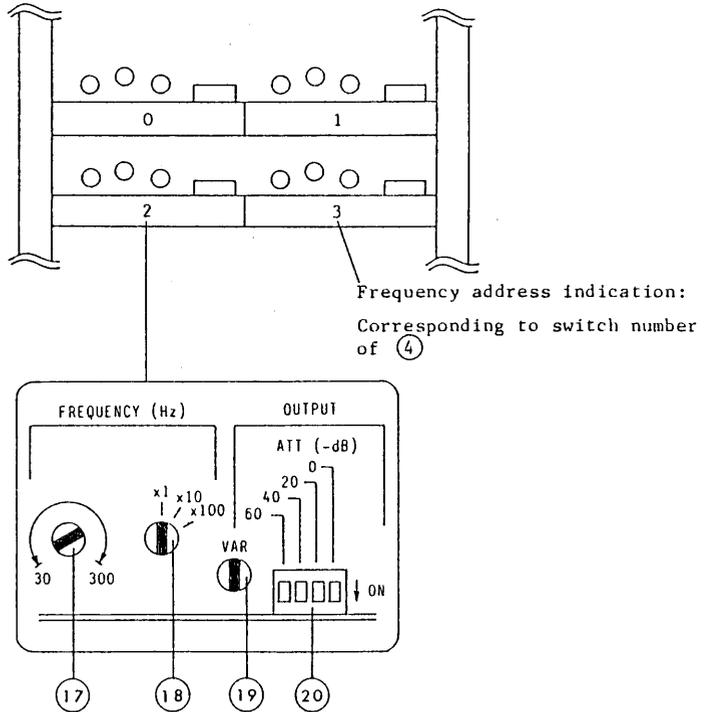
⑯ Remote Control Connector

This connector (Amphenol 57-40240 equivalent) is used for remote control of frequency address selection and ON/OFF-control of output signals with a remote controller. To operate the Oscillator in the local mode with its front panel controls, the connector should be disconnected (the connector pins should be kept open). For details, refer to Sections 3.6 and 4.4.

4.3 Setting of Frequencies and Output Levels



Layout of items on internal panel



① '30 - 300' Frequency Control

With this potentiometer, the oscillating frequency is continuously-variably adjustable with a factor of 10 times or over.

⑱ '×1, ×10, ×100' Frequency Range Selector Switch

To select the oscillating frequency range of ×1 (30 Hz - 300 Hz), ×10 (300 Hz - 3 kHz), ×100 (3 kHz - 30 kHz).

Example: To set at 1 kHz, proceed as follows: Set potentiometer ⑰ at a mid-position and switch ⑱ at '×10'. Connect a frequency counter to output terminal ⑧ or ⑨, and adjust potentiometer ⑰ so that the frequency counter indicates 1 kHz.

* Set both output ON/OFF switches to the ON state and the output attenuator ⑳ at 0 dB.

⑲ 'VAR' Output Level Control

With this potentiometer, the output voltage is continuously-variably adjustable with a factor of 20 dB or over. The output voltage increases as this potentiometer is turned clockwise.

㉔ Output Attenuator Switches

To select one of the four attenuation ranges of 0, -20, -40, and -60 dB. No correct attenuation can be attained if two or more switches are set to the ON state or if none of them is set to the ON state. One of the four switches should be set to the ON state, always.

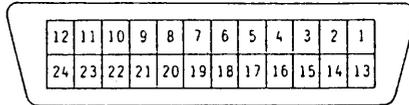
* To set the output voltage to the required level, connect an AC voltmeter to the output terminal (⑧ or ⑨) and adjust the potentiometer ⑰ and switch ㉔ as required.

* The maximum output voltage is obtained when the potentiometer ⑰ is turned to the clockwise extreme position and the switch ㉔ is set for 0 dB. The output voltage in this case is 3.16 V ±10%, with the terminals open.

4.4 Description of Remote Control Terminal

4.4.1 Layout of Connector Pins

R E M O T E



Amphenol 57-40240
receptacle or equivalent

No.	Name	I/O	No.	Name	I/O
1	DIO 0	Input	13	DIO 4	Input
2	DIO 1	Input	14	DIO 5	Input
3	DIO 2	Input	15	DIO 6	Input
4	DIO 3	Input	16	DIO 7	Input
5	DEVICE 0	Output	17	D GND	-
6	DEVICE 1	Output	18	D GND	-
7	DEVICE 2	Output	19	D GND	-
8	VALID	Input	20	D GND	-
9	R/L 1	Input	21	NC	-
10	R/L 2	Input	22	NC	-
11	+5V 2	Output	23	GND 2	-
12	+5V 1	Output	24	GND 1	-

4.4.2 Description of Control Signals [The numbers enclosed in the brackets are pin numbers]

- (1) DIO 0 - 3 [1 - 4]: Level signals, GND-1 system

Signals to designate frequency addresses. Bits are assigned as shown in the following table. The group of DIO 0 - 3 and that of DIO 4 - 7 are with mutually isolated ground systems.

	FREQUENCY									
	0	1	2	3	4	5	6	7	*	**
DIO 0	0	1	0	1	0	1	0	1	x	x
DIO 1	0	0	1	1	0	0	1	1	x	x
DIO 2	0	0	0	0	1	1	1	1	x	x
DIO 3	0	0	0	0	0	0	0	0	1	x
R/L 1	0	0	0	0	0	0	0	0	0	1

* When none of '0 - 7' is selected.

** Local operation with controls on front panel of Oscillator.

* GND 1

1: H 0: L x: Don't care

(2) DIO 4 - 7 [13 - 16]: Level signals, GND-1 system

Signals for ON/OFF-control of output signals. Bits are assigned as shown in the following table.

	OFF	ON	OFF	ON	OFF	***	'L' output
	OFF	OFF	ON	ON	OFF		'R' output
DIO 4	0	1	0	1	x	x	
DIO 5	0	0	1	1	x	x	
DIO 6	x	x	x	x	x	x	
DIO 7	0	0	0	0	1	x	
R/L 1	0	0	0	0	0	1	

*** Local operation with controls on front panel of oscillator.

* GND 2

1: H
0: L
x: Don't care

When in this state, the Oscillator is in an idle state. Both 'L' and 'R' outputs are OFF and none of the frequency address is selected.

(3) DEVICE 0 - 2 [5 - 7]: Level signals, GND-1 system

These bits are for information on Oscillator operation to be sent to an external controller and these bits are being constantly delivered. Normally, however, these bits are not used in regular applications. Therefore, the Oscillator is shipped with these pins set in the open state.

(4) R/L 1 [9]: Level signal, GND-1 system

This bit is for selection between the remote mode with an external remote controller and the local mode with the front panel of the Oscillator for its frequency address designation and its output ON/OFF control. 'L' is for remote and 'H' for local.

- * When this pin is made open, the Oscilloscope operates in the local mode. When in this mode, data of DIO 0 - 7 is ignored.
- * When in the remote control mode of operation, frequency address designation and output ON/OFF control are done with the data of DIO 0 - 7 and the corresponding control switches on the front panel of the Oscillator remain idle.
- * R/L 2 [10]: This pin is not used and it is kept open.

(5) VALID [8]: Low active pulse signal, GND-1 system

This signal is used as a strobe signal when receiving data (DIO 0 - 7, R/L 1) in the latch mode.

- * The instrument must be set to the latch mode by internal switch selection.
- * In this case, R/L 1 also is handled as data.
- * For details, see Section 4.5.

(6) +5V 1 [12]: Power supply, GND-1 system

+5V 2 [11]: Power supply, GND-2 system

These power supplies are for the remote controllers, exclusively. The supply voltages are +4 V to 4.5 V, typically. The current rating of the +5V 1 supply is 0.2 A maximum and that of the +5V 2 supply is 0.1 A maximum. Their ground systems are mutually independent: +5V 1 is of the GND-1 system and +5V 2 is of the GND-2 system.

- * Never short between +5V 1 and GND 1 or between +5V 2 and GND 2. Note that such shorting may cause damage to the instrument.
- * The remote controllers which can be operated on these power supplies are as follows: RC01-AVM, RC02-AVM, RC01-ORC, and RC02-ORC.

Note: These power supplies are not for general use. If you are intended to use these power supplies for other models of controllers than the above, please consult your Kikusui agent beforehand.

- (7) GND 1 [24]: GND-1 system
- GND 2 [23]: GND-2 system

These pins are for the mutually isolated ground lines of GND-1 and GND-2 systems of the remote control signals.

- * It is allowable to short between GND 1 and GND 2. Note, however, that, if an AC voltmeter such as Model AVM23R or AVM25R is remote-controlled at the same time, the ground lines of the INPUT 1 and INPUT 2 circuits of the AC voltmeter are shorted. For details, refer to the instruction manual of the AC voltmeter.
- * The ground lines of the oscillator circuits (analog) also are isolated with photocouplers.

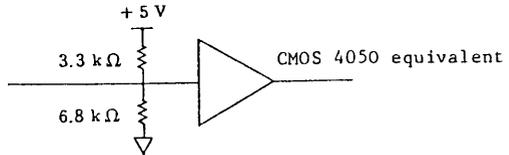
- (8) D GND [17 - 20]: GND-1 system

These pins are for the ground lines of the remote control logic signals. These pins are not used in this Oscillator.

- (9) NC [21, 22]: Not used

4.4.3 Notes and Precautions

- (1) The electrical signals are of a TTL level. The maximum allowable application voltages are +15 VDC and -0 VDC (with respect to each of GND 1 and GND 2).



Equivalent circuit
of output section



DIP switch

(Maximum sink current: 25 mA)

- * To drive the Oscillator with external signals, use open-collector.
- (2) Make GND 1 and GND 2 the same potentials so far as possible. (If it is unavoidable to let them have a certain potential difference, up to ± 15 V of potential difference is allowable.) These two ground systems are mutually isolated. Pay attention so that no noise is induced between them.
- * The ground lines of GND 1 and GND 2 and the ground line of the oscillator circuit (analog) are mutually isolated. The remote control signals are applied through the photocouplers. The isolation is to prevent ground loops which could be formed when making up a measuring system using an AVM Series AC Voltmeter or other instrument in conjunction. The isolation is not for insulation against high voltages.
- (3) The length of the remote control cable should not be longer than 2 meters. When using a shielded type of cable (a cable which has metallic connectors at both ends and which are connected to the shielding wire of the cable), disconnect either one of the connectors from the shielding wire. If both connectors are left connected to the shielding wire, the potential of the casing of the Oscillator is extended to other instrument connected and an undesirable ground loop is formed with the analog ground line of the oscillator circuit.

Pay attention to forming of an undesirable ground loop also when using the uncovered metallic ground terminal on the rear panel of the Oscillator. Also pay attention so that the casing of the Oscillator is not contacted with that of other instrument or device.

- (4) The state that nothing is connected to the remote control connector (the state that all pins of the connector are open) means that all input signals are in the 'H' state and the instrument is in the local mode of operation. When in this state, the 'REMOTE' LED on the front panel goes off and frequency address selection and output ON/OFF control can be made with the controls on the front panel.
- (5) When in the remote control mode, the throughput rate of the Oscillator is approximately 50 msec. The change intervals of the remote control signals must be 50 msec or over.

4.5 Description of Latch Mode.

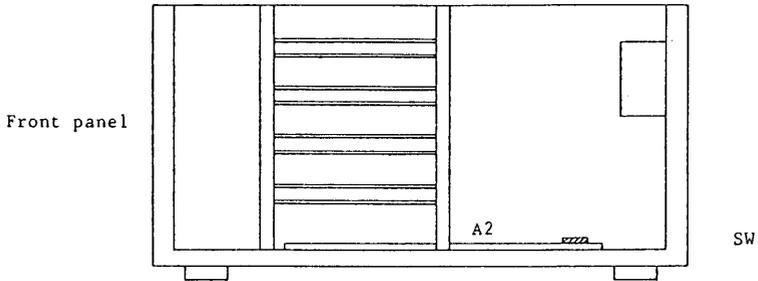
When in the regular operation, frequency address selection and other control operation can be accomplished simply by applying the remote control signals.

When in the latch mode, on the other hand, a strobe signal (the VALID signal) is needed in addition. No remote control actions can be effected simply with data of DIO 0 - 7. Only when the strobe signal (the VALID signal) also is applied, the data is read (latched) and the remote control actions are effected.

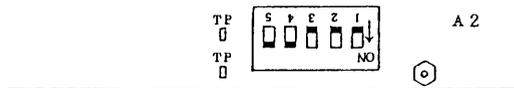
- * Normally, the instrument is not set in the latch mode when it is shipped.
- * The latch function facilitates hooking up of the Oscillator to a computerized system.

4.5.1 Setting for Latch Mode (Internal Setting)

Remove the two screws on the top of the casing and other two screws on the sides. Remove the casing by slowly pulling it upward.



A2: Details of SW (DIP switch) section



Normally, the Oscillator is shipped with its DIP switches set as shown in the above. To set the Oscillator to the latch mode, change the switches as shown in the following:



- * Set switches Nos. 4 and 5 to the OFF state.
- * Switches Nos. 1, 2 and 3 correspond to DEVICE 0 - 2 of Section 4.4.2 as follows:

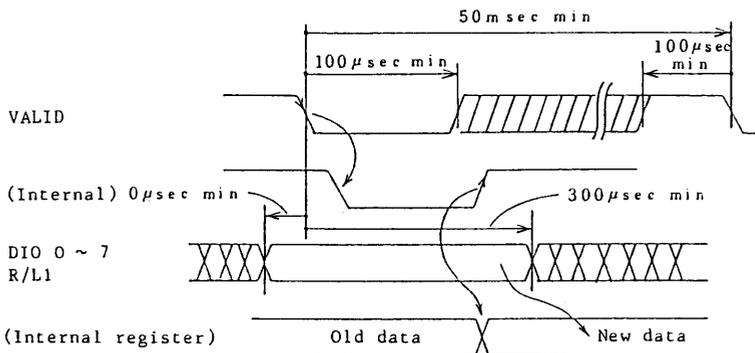
No.1: DEVICE 0

No.2: DEVICE 1

No.3: DEVICE 2

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4.5.2 Timing



Apply a VALID signal after data of DIO 0 - 7 and R/L 1 has been applied to the Oscillator.

* They may be applied at the same time.

The pulse width of the VALID signal must be 100 μsec or over.

* The VALID signal may be changed to the H level at any time after the period of 100 μsec has elapsed. However, it must be set to the H level at 100 μsec or more before the next VALID signal is applied.

The data (DIO 0 - 7, R/L 1) must remain unaltered 300 μsec or more after the VALID signal is applied.

With the above timing, the data is latched in the internal register.

In the above case, R/L 1 is handled as an item of data.