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INSTRUCTION MANUAL FOR MODEL NCM-515 CONTROLLER

取 扱 説 明 書

JRC

Japan Radio Co., Ltd.

PREFACE

This controller is intended to designate the receiving frequency via keyboard, combined with the JRC Model NRD-515 Receiver and Model NDH-515 or NDH-518 Memory Unit.

CONTENTS

SECTION 1
SPECIFICATIONS

(1) Frequency setting	0 to 29.9999MHz
(2) Functions	Frequency setting using keyboard, frequency up/down, addition/subtraction, constant addition/subtraction, 4-channel frequency memory, key lock, built-in buzzer
(3) Display	
Frequency	Numeric display on 6 digits, (10MHz – 100Hz)
Operation mode	PRESET, MR and LOCK arrowed display on LCD
(4) Output data	BCD code, TTL level; 22-bit parallel output (on 10MHz – 100Hz digits)
(5) Power source	+10V DC, supplied from receiver main unit
(6) Dimensions & Weight	146 (H) x 94 (W) x 29 (D) mm, 0.5 kg
(7) Accessories	CQE-515 joint unit ..... 1 Instruction manual 1

SECTION 2
PRECAUTIONS BEFORE USE

2.1 Interconnection

Either of two methods is selectable, as described below.

CAUTION: Always set off the power switch of the associated receiver, before connection of the NCM-515 Controller.

2.1.1 Connection to NRD-515 receiver

Connect the 34-pin square plug, P13, of the connection cable of this controller to the "MEMORY INPUT" connector located at the rear panel of the receiver.

In this case, the furnished CQE-515 joint unit is not used.

2.1.2 Connection to NRD-515 receiver with memory unit

When using this controller together with memory unit, NDH-515 or NDH-518, connect both in parallel to the NRD-515 receiver.

With seeing Figure 2-1, take the procedure below.

Remove the setscrews ① and ② from the rear side of the receiver, using screwdriver.

Fully insert the connector J1 of the CQE-515 joint unit into the MEMORY INPUT connector on the rear panel.

Secure the CQE-515 joint unit to the rear panel by passing setscrews and spring washers ③–⑥ through the joint unit.

Connect NDH-515/518 connection plug to MEMORY connector and NCM-515 connection plug to CONT connector of joint unit.

NOTE: When not using the memory unit change the NCM-515 connection plug to the MEMORY connector.

2.2 Inserting and Replacing the Memory Back-up Battery

When setting off the power switch of the receiver, the frequency stored in the 4-channel memory will be lost.

When wishing to retain the stored frequency, insert a back-up battery into the battery holder of this controller.

(1) Inserting the battery

First power off the receiver. Then remove four setscrews from the bottom face of this controller. Take off the lower case. The PC board will be exposed and the battery holder will be accessible. Insert the battery into it with correct polarity.

The battery is not furnished. Please buy it.

Use any of the followings for camera use.

- Silver oxide cell, No. 544, 6V, Sony-Eveready co.
- Silver oxide cell 4G13/6V, National Mallory Battery corp.
- Alkali dry cell, No. A544, 6V, Sony-Eveready co.

NOTE: The memory data will be retained so long as the receiver is energized, even if the power switch of this controller is set off.
Under this condition, no back-up battery is used.

(2) Replacing the Battery

If the stored memory data change or stored information is lost soon, the back up battery will be faded already.

In such case, replace the battery with new one. The replacement is similar to the insertion of the battery denoted in Paragraph 2.2 (1).

Since the memory contents are lost at the time of the battery removal, store again.

2.3 Silencing the Built-in Buzzer

Every time pressing each key or error occurs, the buzzer sounds for confirmation.

If no buzzer sounding is wished, follow the procedure for silencing the buzzer singing, as follows:

Remove four set screws from the bottom face and remove the lower case. Cut off the jumper wire JP1 on the PC board, using cutting nipper.

SECTION 3
OPERATING CONTROLS AND FUNCTION

Refer to Figure 3-1.

① [LCD display] ..... Indicates receiving frequencies on 6 digits from 10MHz to 100Hz, and Operating modes: MR (memory read), PRE (preset), LOCK, with arrowed LCD marks.

② [POWER] switch ..... For switching on and off the power.

③ [STEP] switch ..... For selecting the frequency step either 1kHz or 0.1kHz upon UP/DOWN operation mode.

④ [SPEED] switch ..... For selecting the frequency scanning speed either FAST or SLOW.

⑤ [LOCK] key ..... When pressing this key, the [STEP] and [SPEED] switches and all the keys are locked. When pressing once, they are locked and the [LOCK] indicator appears. When pressing again, they are released and the indicator disappears.

⑥ [PRE/MAN] key ..... For selecting the control mode of the receiver. In the PRESET mode, the receiving frequency is controlled from the controller and arrow indicator appears. In the MANUAL mode, the receiving frequency is controlled manually from tuning dial of the receiver and arrow indicator disappears.

⑦ [0] – [9] numeric key ..... For entering desired receiving frequency.
NOTE: [M1 1] – [M4 4] keys are also used for selecting Memory Channels 1 – 4.

⑧ [·] decimal point key ..... For inserting the decimal point in the receiving frequency under entry.
Press when entering the fraction part of the receiving frequency below the kHz-digit.

⑨ [+], [–], [=] keys ..... Press for addition, subtraction, and constant addition/constant subtraction upon setting the receiving frequency.
In addition [=] key is used to send the indicated frequency to the receiver.

⑩ [▲] UP, [▼] DOWN keys ..... Press for incrementing up and down the receiving frequency.

⑪ [M] (memory) key ..... Press for storing the frequency indicated on the display into Memory channels 1 through 4.

⑫ [MR] (memory read) key ..... Press for reading the stored data in the Memory channels 1 through 4.

⑬ [CE] (clear entry) key ..... Press in case:
wrong entry is made, wishing to return the display to "0", mis-operation is made, or wishing to clear an error.

⑭ [C] (all clear) key ..... Press for clearing all controls, including output data to the receiver.
Exception: Stored memory contents in Memory channels 1 through 4 and PRE/MAN mode information still remain uncleared.

SECTION 4
OPERATING PROCEDURE

4.1 Receiving Operation

Connect this controller to the NRD-515 receiver as denoted in Paragraph 2.1.

4.1.1 Frequency setting by Numeric Key

Enter the receiving frequency by kHz unit.

(1) Example: Entering a receiving frequency of 14,250.0 kHz

Key operation	Value on display		Value on RX display
[M1 1]	1		Previous frequency
[M4 4]	14		"
[M2 2]	142		"
[5]	1425		"
[0]	14250		"
[·]	14250.		"
[0]	14.250.0		"
[PRE/MAN]	14.250.0	PRE	14.250.0

(2) **Example:** Entering a receiving frequency with clearing mis-operation on the way

	Key operation	Value on display		Value on RX display
	[9]	9	PRE	14.250.0
	[5]	95		"
Mis-ope.	[6]	956		"
Correct.	[CE]	0		"
	[9]	9		"
	[5]	95		"
	[4]	954		"
	[=]	954.0		954.0

4.1.2 Frequency addition/subtraction

A certain frequency can be added to or substracted from the current frequency under reception.

Example:

	Key operation	Value on display		Value on RX display
	Enter a frequency of 6.210.0	6.210.0	PRE	6.210.0
①6210.0kHz	[−]	6.210.0	"	6.210.0
− 10kHz	[1]	1	"	6.210.0
= 6200.0kHz	[0]	10	"	6.210.0
	[=]	6.200.0	"	6.200.0
	[+]	6.200.0	"	6.200.0
②6200.0kHz	[5]	5	"	6.200.0
+ 5.5kHz	[·]	5.	"	6.200.0
= 6205.5kHz	[5]	5.5	"	6.200.0
	[=]	6.205.5	"	6.205.0

If the resultant value exceeds the frequency range of 0 to 29.9999MHz after frequency addition or subtraction, an error mark "E" will appear on the display.

NOTE: Even if the error mark appears, the original frequency before the frequency addition/subtraction will be held as it was.
In this case, press the [CE] key to clear for error.

4.1.3 Scanning reception

The current frequency under reception can be stepped up or down by pressing the [▲]UP or [▼] DOWN key, respectively.

Two modes are available: step by step and sequential modes, as described below.

(1) Step by Step frequency change mode
Set the [STEP] switch to the [1]kHz or [0.1] kHz position.

Example: [STEP] switch set to [0.1] kHz

Key operation	Value on display		Value on RX display
Enter a frequency of 17.777.7	17.777.7	PRE	17.777.7
UP [▲]	17.777.8	PRE	17.777.8
UP [▲]	17.777.9	"	17.777.9
DOWN [▼]	17.777.8	"	17.777.8
DOWN [▼]	17.777.7	"	17.777.7

Each time the key is pressed, the frequency increments or decrements with intervals of 100Hz.

(2) Sequential scanning mode
Set the [STEP] switch to the [1] kHz or [0.1] kHz position.
Set the [SPEED] switch to the [FAST] or [SLOW] position.
Pressing the UP or DOWN key more than 0.5 sec, the frequency sequentially increments or decrements with intervals of the selected frequency step.
When releasing this key, the frequency scanning ceases.
This function is available for continuous tuning of the frequency.
During the UP or DOWN key is pressed, press the other key at the same time, than the frequency changes up to down or inversely for smooth tuning.

(3) Precautions
Set both the [STEP] and [SPEED] switches before starting the UP/DOWN operation.
If pressing other key during the UP/DOWN operation, this controller will not accept the information from the pressed key.
The frequency will changed repeatedly with the UP/DOWN operation within the range of 0 to 29.9999MHz.

4.1.4 Frequency change with constant intervals

The frequency under reception can be incremented or decremented with intervals of designated step frequency.

Example: Reception of short-wave broadcast programs arranged with intervals of 5kHz

	Key operation	Value on display		Value on RX display
	Enter a frequency of 6.055.0.	6.055.0	PRE	6.055.0
①6,055kHz	[+]	6.055.0	"	6.055.0
+ 5kHz	[5]	5	"	6.055.0
constant	[=]	6.060.0	"	6.060.0
addition	[=]	6.065.0	"	6.065.0
(5kHz −	[=]	6.070.0	"	6.070.0
step up)				

	Key operation	Value on display		Value on RX display
	[−]	6.070.0		6.070.0
②6.070kHz	[5]	5	PRE	6.070.0
− 5kHz	[=]	6.065.0	"	6.065.0
constant	[=]	6.060.0	"	6.060.0
subtraction	[=]	6.055.0	"	6.055.0
(5kHz −	[CE]	0	"	6.055.0
step down)	[C]	0	"	000.0

If the resultant value of frequency exceeds the frequency range of 0 to 29.9999MHz after the constant addition/subtraction, an error mark "E" will be displayed.

In this case, however, the previous frequency value will be retained on the display of the receiver, as it was.

In the event of the error, press the [CE] key to clear.

In this control mode, the step frequency can be set to desired value, unlike the up/down reception mode.

4.1.5 Reception with use of contained memory

This controller contains four-channel frequency memory.

It is available to storing desired frequencies at any time, which can be changed and read out for preset reception.

(1) Memory operation

For storing desired frequencies in the memory. Either PRESET or MANUAL mode may be selected for storing the frequency in the memory.

Example: MANUAL mode, frequency of 11,795.0kHz to be stored in Channel 1:

Key operation	Value on display		Value on RX display
Entry of 11.795.0	11.795.0	(PRE)	Previous frequency
[M]	"		"
[M1] [1]	"		"
		Not displayed	

Now, the end.

(2) Reception with memory

Stored frequencies are used for reception, as follows:

The preset reception can be made in such manner:

Read a desired frequency from the memory channel and select the PRESET mode, then the receiver can receive the frequency.

Example: Preset reception with stored frequency of 11,795.0kHz in Channel 1

Key operation	Value on display		Value on RX display
	Previous freq.		Previous freq.
[MR]	"		"
[M1] [1]	11.795.0	MR	"
[PRE/MAN]	"	PRE	11.795.0

If selecting any memory channel with no content of frequency, the display will indicate "0.0" and the display on the receiver will indicate "000.0".

(3) Changing the stored frequency

The stored frequencies in the memory are changeable, irrespective of the already stored frequencies.

Storing a new frequency according to Paragraph 4.1.5. (1) will suffice for changing the stored frequency.

If pressing the [CE] key and [C] key, no stored frequencies can be cleared.

4.1.6 Operational precautions

(1) No frequencies from the receiver can be stored in the memory of this controller.

(2) When setting the [POWER] switch of this controller to [OFF] position, it is electrically separated from the receiver at all. As a result, the receiver becomes operable independently.

(3) Every time the display indicates an error mark "E", press either [CE] key or [C] key.

(4) It is not needed to enter the "0" of 100Hz digit, because it is automatically appended when a following function key is pressed.

(5) No continuous operation of the frequency addition/subtraction can be made.

(6) After completion of such functional operations as UP/DOWN, addition/subtraction, constant addition/subtraction, memory-in and memory-read operations, this controller will always be ready for entry of the next receiving frequency.

(7) The frequency data will be transfered to the receiver at the moment of pressed the [PRE/MAN] key for PRESET mode or pressing the [MR], [M1] [1] – [M4] [4], [=], [UP] or [DOWN] key in the PRESET mode.

(8) If this controller backed up with battery does not operate at all or malfunctions by pressing some key after the [POWER] switch set [ON], then make an attempt for operation, as follows: Set the power switch of the receiver to OFF, take off the battery once, and insert it again.

4.2 Reception with Controller and Memory Unit Connected Parallel to Receiver

Connect this controller and memory unit to the receiver in such manner as denoted in Paragraph 2.1.2.

Set the NRD-515's [POWER] switch to [ON] and then this controller's [POWER] switch to [ON].

When controlling the receiver from this controller, place the [PRESET/MANUAL] switch in [MANUAL].

The operating procedure is shown in Table 4-1.

For the basic operating procedure of this controller, refer to Paragraph 4.1.

For the operating procedure of the memory unit, refer to the Memory Unit Instruction manual.

Table 4-1

OPERATION MODE	PRESET/MANUAL SETTING		OPERATION		
	MEMORY UNIT	CONTROLLER	RECEIVER	MEMORY UNIT	CONTROLLER
1. Reception, manual	MANUAL	MANUAL	Operating in MANUAL (Remote control from memory unit and controller not possible)	Remote control not possible. Writing f_R into memory in memory unit possible (Writing f_{RC} in memory not possible)	Remote control not possible. Writing f_{RC} into memory possible
2. Reception with memory unit	PRESET	(Manual operation)	Operating in f_{RM} (Remote control from controller not possible)	Remote control of receiver in f_{RM}	Same as above
3. Reception with controller	MANUAL	PRESET	Operating in f_{RC} (Remote control from memory unit not possible)	Operating in MANUAL. Writing f_{RC} into memory of memory unit possible	Remote control of receiver in f_{RC}. Writing f_{RC} into memory possible

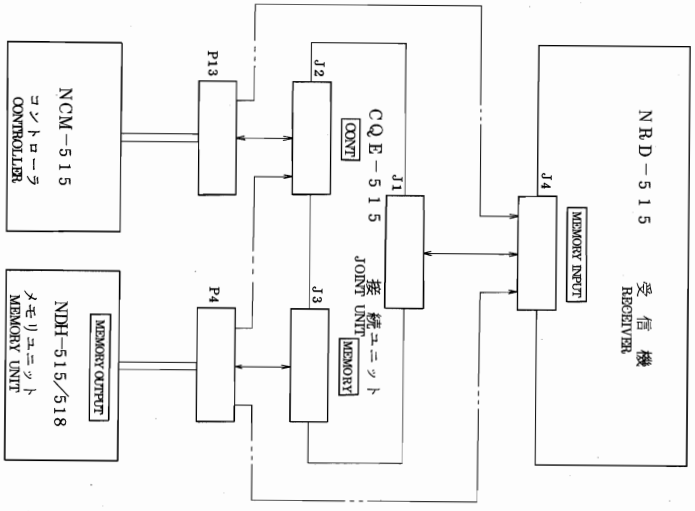
NOTE 1. When setting the memory unit into the PRESET mode, the memory unit has priority of the operation and the controller operates in the MANUAL mode independently of the receiver.

NOTE 2. This controller is incapable of storing the frequency from the receiver and memory unit into its own memory.

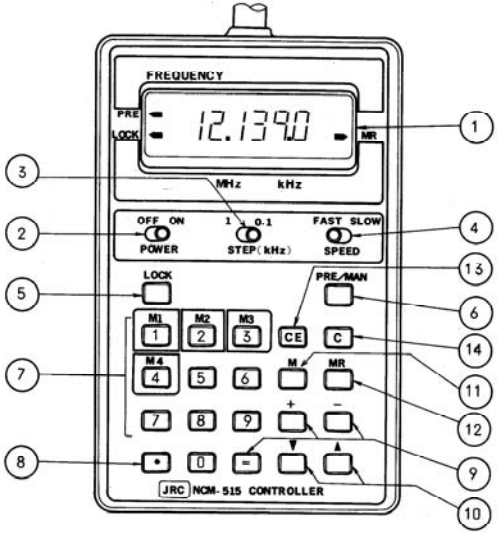
NOTE 3. f_R . . . receiving frequency, f_{RM} . . . memory unit frequency, f_{RC} . . . controller frequency.

付図 1 NRD－515・NDH－515／518・NCM－515 相互接続図

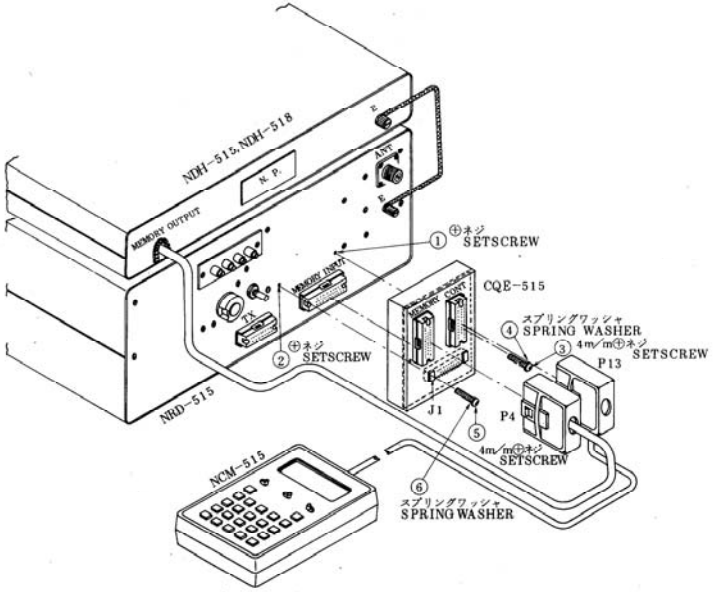
Appendix1 INTERCONNECTION DIAGRAM



3. 各部の名称と使い方



3－1図
Figure3－1



2－1図
Figure2－1

CQE - 515

JOINT UNIT SCHEMATIC DIAGRAM

CONT MEMORY