AIPHONE

NDRM

Rack Mount Communication and Access/Camera Control System

Master Consoles:	NDRM-12	NDRM-20
Add-On Consoles:	NDA-20	NDA-40

- INSTRUCTIONS -

The NDRM Rack Mount Communication and Access/Camera Control System is designed for communication between a central master console and remote intercom stations. In addition to communication to remote locations, an external device can be activated, such as a CCTV camera when the associated sub station is selected, a door strike or maglock can be selectively controlled, or both functions can be included. All other features, functions, and components are the same as a standard NEM system.

1 NAMES & FEATURES

NDRM-20 (pictured)
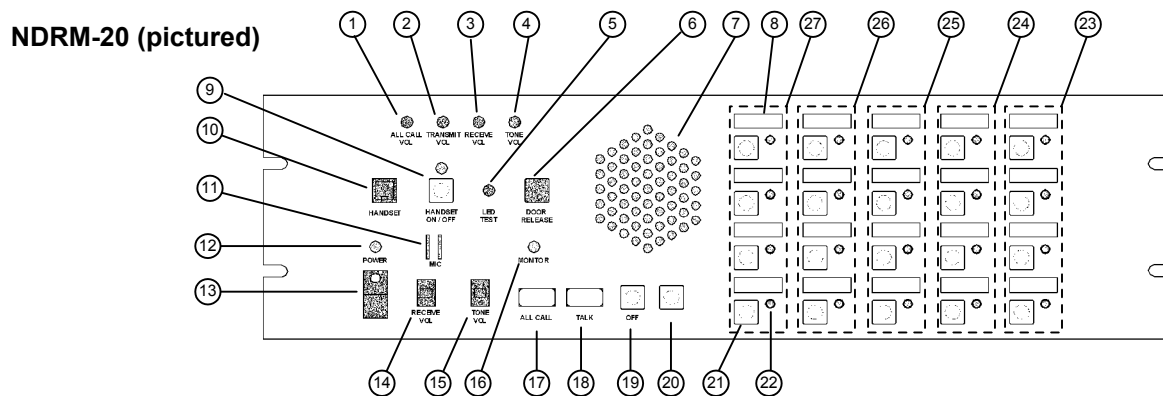
NAMES & FUNCTIONS:

1. All Call Volume
2. Transmit Volume
3. Receive Volume
4. Call Tone Volume
5. LED Test
6. Door Release Button
7. Speaker
8. Directory Card
9. Handset ON/OFF Button & Light
10. Handset/Headset Jack
11. Microphone
12. Power LED
13. Power Switch
14. Receive Volume (3 postion switch)

15. Tone Volume (3 postion switch)
16. Monitor LED
17. All Call Button
18. Talk Button
19. Off Button
20. Reset Button (optional feature)
21. Station Selector Switch
22. Station Selector LED
23. Station select switches 1~4
24. Station select switches 5~8
25. Station select switches 9~12
26. Station select switches 13~16
27. Station select switches 17~20

FEATURES:
• Rack mount master available with 12, and 20 station capacity, occupying 3 rack spaces
• Add-on panels available with 20 or 40 station capacity, occupying 3 rack spaces
• Field expandable with 4 station add-on kit (NDRM-12 and NDA-20 only)
• Expandable to 100 intercom stations with All Call
• Simplex open voice communication
• Modular handset jack for VOX handset or headset communication to remote station(s)
• Intercom channels with LED status indication (calling in and communicating)
• Selective door release and CCTV camera activation while in communication with a remote station
• Call-in LED and tone stay on until call is answered
• Built-in All Call for up to 100 stations
• One master, or dual master w/NEW-5 adaptor per 5 subs

TERMINAL DEFINITIONS CP-544 - Sub & Relay connection PC Board:

NO	Normally open side of momentary relay contact (activated when door release button is pressed)
COM	Common side of momentary relay contact (activated when door release button is pressed)
NC	Normally closed side of momentary relay contact (activated when door release button is pressed)
NO	Normally open side of maintained relay contact (activated when station button is selected)
COM	Common side of maintained relay contact (activated when station button is selected)
E	Common side of voice communication
H	14V DC output
1~4	Station select number (Numbered in sequence per size of master)
	(Numbered top to bottom, right to left on master station.)
CN51	Plug for connection to CP-530 (located inside master or add-on selector)

TERMINAL DEFINITIONS CP-543A - Mother Board (Master and Add-On):

NO	Normally open side of relay contact (Master Only) (Activated when Door release button is pressed)
COM	Common side of relay contact (Master Only) (Activated when Door release button is pressed)
X1~X8	Add-on selector connection (Master Only)
Q	Occupied circuit control (Master Only)
H	14V DC output (Master Only)
E	Common side of communication (Master Only)
S	Chime extension output (Master Only)
B	All Call signal activation (Master Only)
Y	Internal amplifier control (Master Only)
Vn/An	All Call Circuit
A+/A-	24V DC Power
B+/B-	24V DC Power (Master Only)
CN1	Connection to NDRM master unit (Master Only)
CN1	Connection to NDA Add-on unit (Add-On Only)

CP-543A (Master Station)

CP-543A (Add-On Selector)

IMPORTANT!

Make sure that terminal board assembly that contains the Master mother terminal board (CP-543A) is connected to the Master Station. The Add-on terminal board contains the Add-on mother terminal board (CP-543A), but it is slightly different. Master and add-on mother terminal boards are NOT interchangeable.

TERMINAL BOARD ASSEMBLY LAYOUT:
(NDRM-20 Shown)

CP-543A Mother Terminal Board

CP-544 Sub & Relay Board (Stations 13~16)

CP-544 Sub & Relay Board (Stations 17~20)

CP-544 Sub & Relay Board (Stations 1~4)

CP-544 Sub & Relay Board (Stations 5~8)

CP-544 Sub & Relay Board (Stations 9~12)

7"H x 19"W x 2"D

WIRING & INSTALLATION:
Before Installation:
· Make sure you have the proper power supply(ies) and all necessary and compatible equipment for the system.
· Background music is optional and requires additional equipment. See notes below.
· Lay out your system in advance, assigning station numbers for all sub station locations.
· Surge protection for the intercom equipment is strongly recommended. Add SA-1 surge arrestors for the power supply, plus one per two wires connected to the master station.

Wire:
· Shielded wire is strongly recommended. Use the proper gauge for the distance being run.

Wiring Method:
· Run intercom cables at least 20" away from all AC wiring, fluorescent lights, dimmer switches, and other electrical or electronic devices. Wiring can cross AC wires at 90 degrees.
· Sub stations may be homerun to the master station, or daisy-chained. If daisy-chained, include one common wires plus one individual wire per station on the run.
· If more than one master is used, homerun sub to the NEW-5 Dual Master Adaptors, then wire NEW-5's to each master.

Intercom Locations:
· Do not install intercoms near dimmer or light switches, or other electrical wall devices.
· To prevent feedback, do not place sub stations back-to-back on a common wall.

Mounting the Master & Add-On Units:
· Each master and add-on requires three rack console spaces.
· Secure the masters and add-on stations using the included screws. See information provided with your rack console for more detailed information.

Mounting the terminal board:
· Make sure that the appropriate terminal board assembly is used for the master and add-on selector(s). Master and add-on mother terminal boards mounted on terminal board assembly are different and are NOT interchangeable.
· Secure the terminal board inside the rack console using the supplied screws
· Terminal board must be mounted within 5' of the master and add-on units, connected with ribbon cables.

Individual Components for System:

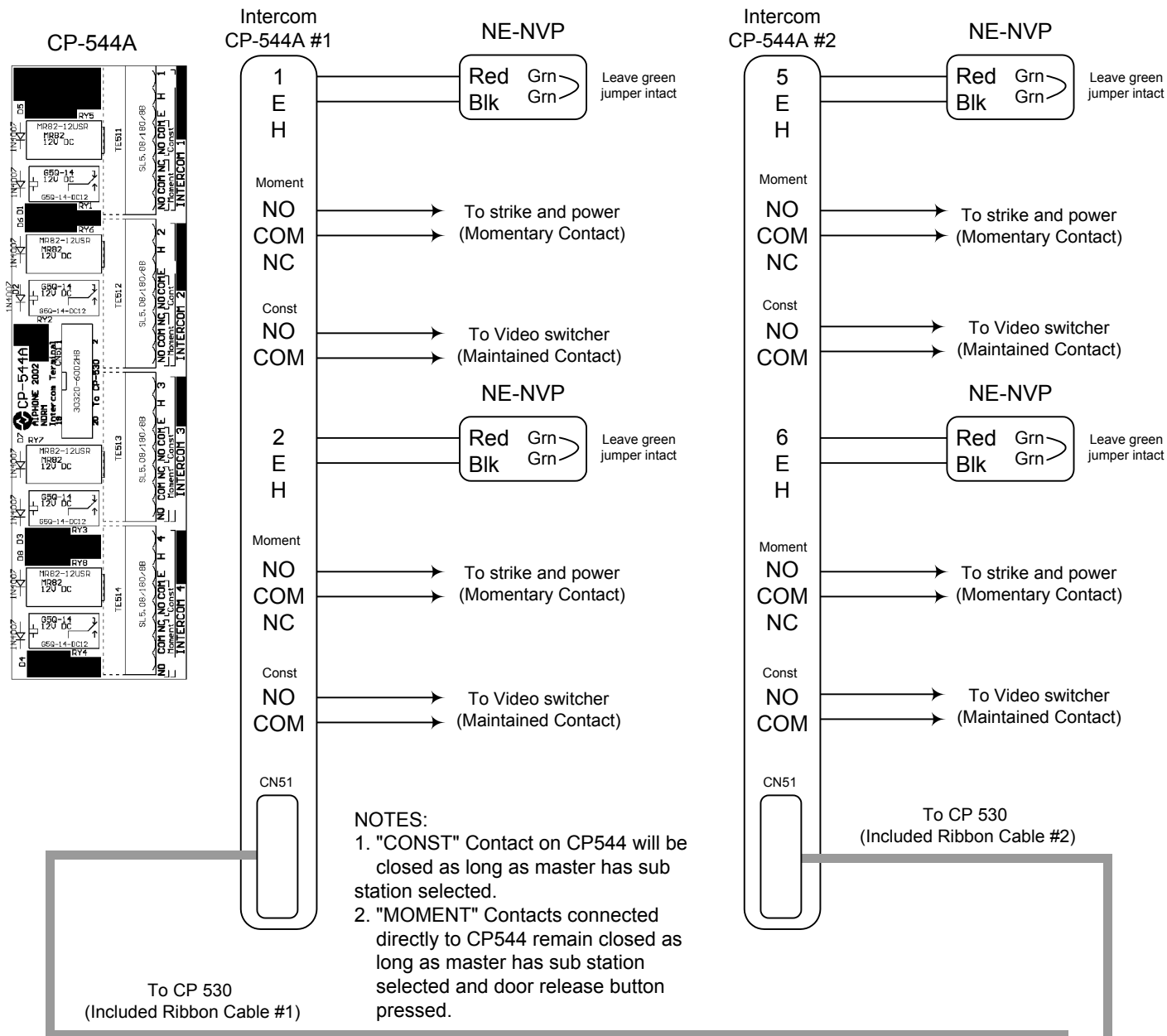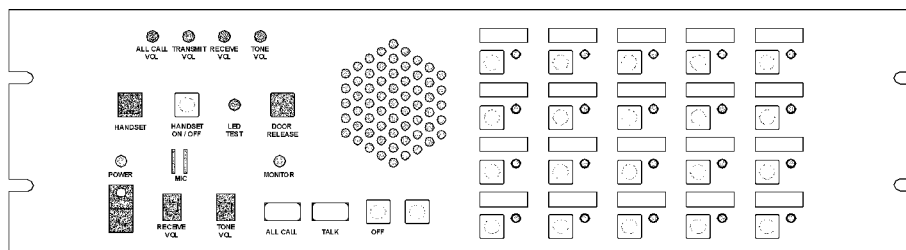|	
NDRM-12	12-call Master Station
NDRM-20	20-call Master Station
NDA-20	20-call Add-on Selector
NDA-40	40-call Add-on Selector
NDI-4S	4-Station selector add-on kit (NDRM-12 or NDA-20 can be expanded to 20 and 40, respectively)
TBP-6	Terminal Back Plate for up to 6 terminal boards
PS-2420UL	24V DC, 2A Power Supply (1 per master and 1 per each add-on panel)
NE-NVP/B	Vandal proof sub station
NE-NVP-RA	Vandal proof sub for Areas of Rescue Assistance
NE-NVP-2DC	Vandal proof sub station with standard and emergency DPDT call button
NE-SS	Vandal proof sub station, 2-Gang
NE-SSR	Vandal proof sub station with red mushroom push button, 2-Gang
NE-JA	Flush mount door station with stainless steel cover
NE-DA	Surface mount door station
NA-NE	Flush mount sub station with aluminum faceplate
NA-A	Wall/Desk mount sub
NA-AN	Wall/Desk mount sub with privacy
NA-T/A	Handset Sub Station
SBX-NVP	Surface mount box for NE-NVP/B sub station
SBX-2G	Surface mount box for NE-SS and NE-SSR sub station
NBX-2	Surface mount box for NA-NE sub station
SA-1	Surge Arrestor (1 per 2 wires being protected)
NEW-5	Dual Master Adaptor (1 per 5 sub stations)
PS-1225UL	12V DC power supply for NEW-5 (1 per 5 NEW-5)
NB-U	Background Music Adaptor

3 WIRING DIAGRAMS

3A. CONNECTION OF MAIN TERMINAL TO MASTER AND ADD-ON

CP-543A
(Master)

Mother Board
CP-543A

PS-2420UL

A+
A-

B-
B+

+
-

CN 1

IMPORTANT!
Make sure that the appropriate mother terminal board (CP-543A) is connected to the master and add-on selector(s). Master and add-on mother terminal boards are NOT interchangeable.

(Included Ribbon cable "M")

Q
H
E
S
B
Y
V1
A1
V2
A2

NDRM-20
(Back View)

2-pin connector.
Connect to add-on selector(s).

CP-543A
(Add-on)

NDA-20
(Back View)

(Included Ribbon cable)

Mother Board
CP-543A

V1
A1
V2
A2
V3
A3
V4
A4

PS-2420UL

2-pin connector.
Connect to master station.

A+
A-

+
-

CN 1

(Included Ribbon cable "A")

3B. SYSTEM USED FOR SELECTIVE DOOR RELEASE OR CCTV CAMERA CALL-UP

WIRING DIAGRAM:

* Yellow and Orange wires from NE-NVP-RA connect directly to master board (CP543) "H" & "S" terminals.

**Normally Open contacts remain closed as long as master has sub station selected and door release button depressed.

***Normally Open contacts remain closed as long as master has sub station selected.

* Numbered ribbon cables from NDRM master determine sub station placement on the master console. Cable 1 connects to CP544 of sub stations 1 through 4, cable 2 for station 5 through 8, etc. Connection is the same for NDA add-on selectors.
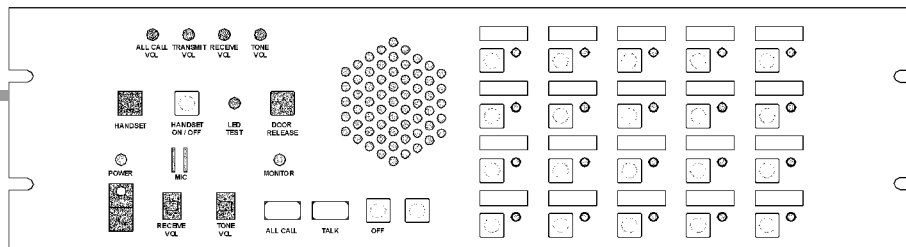
3 WIRING DIAGRAMS

3C. SYSTEM WITH BOTH DOOR RELEASE AND CCTV CAMERA CALL-UP

WIRING DIAGRAM:

NOTES:
1. "CONST" Contact on CP544 will be closed as long as master has sub station selected.
2. "MOMENT" Contacts connected directly to CP544 remain closed as long as master has sub station selected and door release button pressed.

To CP 530
(Included Ribbon Cable #1)

To CP 530
(Included Ribbon Cable #2)

* Numbered ribbon cables from NDRM master determine sub station placement on the master console. Cable 1 connects to CP544 of sub stations 1 through 4, cable 2 for station 5 through 8, et cetera. Connection is the same for NDA add-on selectors.

3D. SYSTEM USED WITH LEF-5-NE MASTERS

WIRING DIAGRAM:

Mother Board
CP-543A

Intercom
CP-544A #1

LEW-5-NE/B

NE-NVP-RA-LE

PS-2420UL

+
-

A+
A-

B-
B+

CN 1

H
Q
E
S
B
Y
V1
A1
V2
A2

Ribbon Cable "M"

1
E
H

Moment
NO
COM
NC

Const
NO
COM

4
E
H

Moment
NO
COM
NC

Const
NO
COM

CN51

N1   D1
N2   D2
N3   D3
N4   D4
N5   D5

NE

H

Q

Red
Blk
Gray

Grn
wire

Blu
Pur
Org

NAR-2A*

Blue
Blue

Yel

* Reset Button:
(Any normally closed
button or keyswitch.
Not required when
resetting the call from
the master.)

LEF-5-NE

**Wire each
station to a
designated
number station
as shown here.**

1
K1
2
K2
3
K3
4
K4
5
K5
E
R
L

L1
K1
L2
K2
L3
K3
L4
K4
L5
K5
LE
RF

NE-NVP-LE

Red
Blk
Pur

Grn
wire

To CP-530
(Included Ribbon Cable #1)

PS-1225UL

+
-

+
-

NOTES:
1. "K" Terminal connections are required in this application, with or
   without door release being included.
2. Standard NE-NVP/B, NE-NVP-RA or NE-NVP-2DC cannot be
   used in a system with the LEF-5-NE Master stations.

Specially modified versions of these units must be used.
The models are identified as:
NE-NVP-RA-LE (for use with LEF-5-NE)
NE-NVP-LE Vandal proof sub for LEF-5-NE
NE-NVP-2DC-LE (for use with LEF-5-NE)
3. For more detailed information, please refer to the instructions
included with the LEW-5-NE and the LEF-5-NE.

* Numbered ribbon cables from NDRM
master determine sub station placement
on the master console.
Cable 1 connects to CP544 of sub
stations 1 through 4, cable 2 for station 5
through 8, etc. Connection is the same
for NDA add-on selectors.

NDRM-20

ALL CALL VOL   TRANSMIT VOL   RECEIVE VOL   TONE VOL

HANDSET   HANDSET ON / OFF   LED TEST   DOOR RELEASE

POWER   MIC   MONITOR

RECEIVE VOL   TONE VOL   ALL CALL   TALK   OFF

OPERATIONS:
* POWER SWITCH MUST BE ON FOR THE SYSTEM TO BE OPERATIONAL.
⬧ Receiving a call from a single sub station:
1. Sub station calls in with electronic tone, heard until the call is answered at the master.
2. LED light corresponding to calling station will light at master, flashing until the call is answered.
3. Depress station button with lit LED. LED will change from flashing to steady.
4. Press TALK to speak, release to hear reply, or use handset. NOTE: Handset can be used only if the handset is connected and the HANDSET ON/OFF button is in the ON position (Green LED lit).
5. Press OFF button when the call is concluded.

⬧ Receiving calls from multiple sub stations:
1. When multiple sub station calls are received, each calling sub's LED will flash and the electronic tone is heard until the first call is answered at the master.
2. Depress one of the station buttons with a flashing LED, whichever one is to be answered
3. The call tone will be muted and the answered station's LED will be steadily lit. All other LED's will remain flashing.
4. Press TALK to speak, release to hear reply, or use handset. NOTE: Handset can be used only if the handset is plugged in and the HANDSET ON/OFF button is in the ON position (Green LED lit).
5. Press OFF button when the call is concluded. Station call light will turn off and communication will be disconnected. (Important: If OFF button is not pressed and a second station button is selected, both stations will receive outgoing voice from master)
6. Select the next station with a flashing LED and repeat the steps above.

⬧ Activating door release:
1. When a sub station is selected, the "MOMENT" relay is activated when the DOOR RELEASE button is pressed.
2. Door release contact will be active as long as the DOOR RELEASE button is pressed.

⬧ Activating a CCTV Camera:
1. When a sub station is selected, the "CONST" relay is activated as long as that station is selected.
2. This relay provides both Normally Open and Normally Closed contacts, depending on the requirements of the other system.

⬧ Calling a sub station:
1. Depress station button of the location you wish to call. A pre-announce, mono-electronic tone will be heard at the called station.
2. Press TALK to speak, release to hear reply, or use handset. NOTE: Handset can be used only if the handset is connected and the HANDSET ON/OFF button is in the ON position (Green LED lit).
3. Press OFF button when the call is concluded.

⬧ Initiating an ALL CALL from the master station:
1. Press and hold the ALL CALL button, then make an announcement. If the handset is used, speak into the handset to make the announcement, otherwise, speak into the microphone on the face of the unit.
2. To conclude, release the button.
3. All Call is a one way outgoing announcement only. If a station wishes to respond, they must press their call button, and the master station can then answer the call as described above.
4. If background music is included, the music will be heard on the system while it is not occupied. When the master station selects a station to place or answer a call, the music will be muted throughout the entire system.

⬧ Initiating a GROUP CALL from the master station:
1. Select the stations that will receive the Group Call.
2. Press TALK to make announcement or use the handset. NOTE: Handset can be used only if the handset is connected and the HANDSET ON/OFF button is in the ON position (Green LED lit).
3. Press OFF button when the announcement is concluded.

⬧ Adjusting System Volume Levels
1. Using a small screwdriver, adjust the overall volume controls located in the upper left corner of the master unit. All Call, Transmit, Receive, and Tone volumes can all be adjusted independently.
2. Use the three position switch on the front of the master for user control of the Receive and Tone volumes.

⬧ Testing LED's
1. Using a small screwdriver, press and hold the LED Test button.
2. All station LED's should illuminate. Any station LED's that do not illuminate must be replaced.

SPECIFICATIONS:
(Subject to change without notice)

Power Source:	24V DC at master. Use PS-2420UL for master and each add-on selector
Commun. Output:	500mW at 20 ohms
Communication:	Push-to-talk, release-to-listen (TALK button) or VOX handset at master. Hands free at sub station.
Calling:	Master to sub: By voice only after pretone.
	Sub to master: Call button on sub activates tone and LED at master.
	Tone remains active until call is answered.
	LED is active until call is concluded.
Wiring:	2 conductors homerun to sub station, or loop a multi-conductor with 1 common + 1 individual wire per sub station on the wire run.
	Separate 2 conductor from each relay contact used on terminal board.
	Shielded cable is recommended. Use Aiphone #822202 (22AWG) or #821802 (18AWG) wire (2 cond.).
Wiring Distance:	420' with 22AWG; 1,000' with 18AWG.
Ribbon Cable:	5' from master or add-on to terminal board
Dimensions:	NDRM-*n*, NDA-*n* : 5-1/4" X 19" X 10-1/8"
(H x W x D)	Terminal Board Assembly: 7" x 19" x 2"