



## IMPORTANT SAFETY INSTRUCTIONS



1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with manufacturer's instructions.
8. Do not install near any heat sources such as radiators, registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord and plug from being walked on or pinched particularly at plugs, convenience receptacles, and the point where it exits from the apparatus.
11. Only use attachments and accessories specified by Rane.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. The plug on the power cord is the AC mains disconnect device and must remain readily operable. To completely disconnect this apparatus from the AC mains, disconnect the power supply cord plug from the AC receptacle.
16. This apparatus shall be connected to a mains socket outlet with a protective earthing connection.
17. When permanently connected, an all-pole mains switch with a contact separation of at least 3 mm in each pole shall be incorporated in the electrical installation of the building.
18. If rackmounting, provide adequate ventilation. Equipment may be located above or below this apparatus, but some equipment (like large power amplifiers) may cause an unacceptable amount of hum or may generate too much heat and degrade the performance of this apparatus.
19. This apparatus may be installed in an industry standard equipment rack. Use screws through all mounting holes to provide the best support.

**WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

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**WARNING:** This product may contain chemicals known to the State of California to cause cancer, or birth defects or other reproductive harm.

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## FCC Statement

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

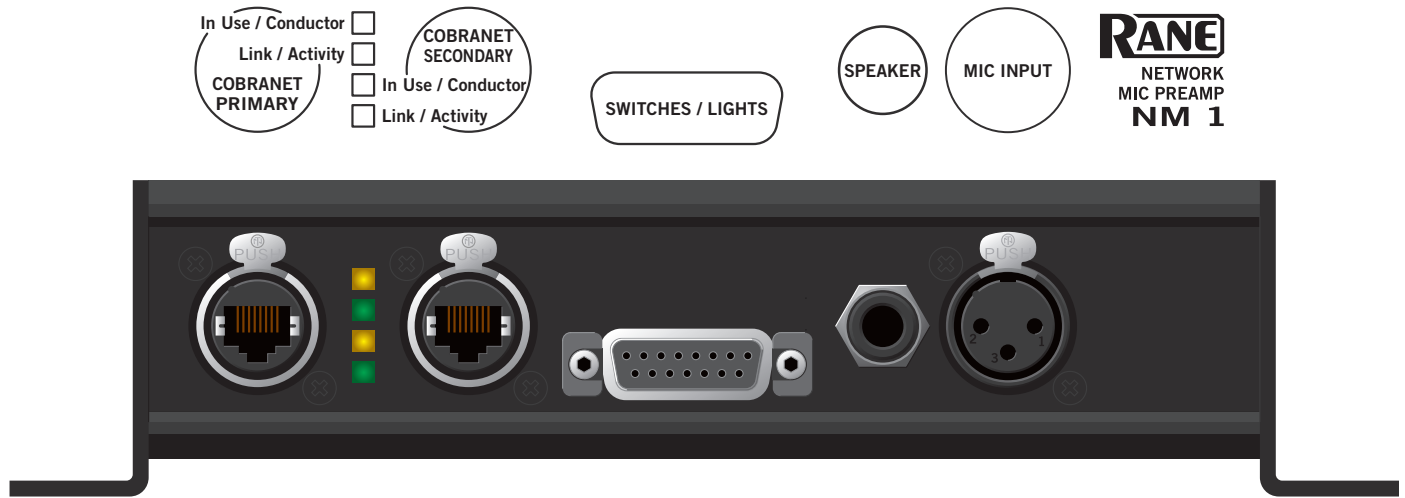
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**CAUTION:** Changes or modifications not expressly approved by Rane Corporation could void the user's authority to operate the equipment.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Shielded CAT5e or better cables are required in order to comply with the FCC Rules part 15 limits for a Class B digital device.



## Connections

### COBRANET PRIMARY Connector

### COBRANET SECONDARY Connector

These Neutrik Ethercon connectors accept CAT 5e Ethernet cables terminated with the standard RJ-45 plug. They are used as the Primary and Secondary connections to a LAN carrying CobraNet data. The Ethercon connectors also accept a Neutrik-designed housing for RJ-45 plugs (Neutrik NE8MC series) that is similar to the industry standard XLR connector. This Ethercon plug is much more rugged than the standard RJ-45; a version of the housing is available to retrofit over CAT 5e cables that are already terminated. (Note that certain cables such as Belden MediaTwist require special strain-reliefs to work with the Ethercon shell.)

The cabling used to connect the NM 1 to other Ethernet equipment must be CAT 5e minimum. CAT 6 is also acceptable. For more information about CobraNet network design, redundancy, and Primary and Secondary ports, please refer to the CobraNet website [www.cobranet.info](http://www.cobranet.info).

Both the Primary and the Secondary ports fully support PoE (IEEE 802.3af). For the NM 1 to operate, at least one of the two Ethernet ports must be connected to a device that is an IEEE 802.3af compliant Power Source Equipment (PSE). Power can be supplied to the NM 1 through either the unused pairs of the CAT 5 cable, or in a "phantom power" scheme using the data pairs. This allows the use of PSE devices from manufacturers that support either scheme. The NM 1 requests the maximum power, approximately 13W, on both ports (see data sheet for more details on power requirements). The PSE must be chosen carefully to ensure that it can provide full power to every port that is connected to a NM 1.

Power can be supplied to the NM 1 through either port; it automatically switches between the ports to support fully redundant system designs. If power is available on both ports, the NM 1 chooses one as the active power port. PoE supports equipment hot-plugging, so a PSE senses when a load is disconnected and stops delivering power on that port. To allow the fastest possible switch-over from the active port, the stand-by port always draws a minimum current from its PSE so the PSE is awake and ready to deliver power as soon as the NM 1 needs it. This allows seamless redundancy in the power supply to the NM 1.

Note the port the NM 1 chooses to power from is independent from the port that is being used for CobraNet data.

### In Use / Conductor LEDs

There is one yellow LED for each CobraNet port. This indicator lights on the port in use and blinks if the device is also the Conductor. (More documentation is at [www.cobranet.info](http://www.cobranet.info))

### Link / Activity LEDs

There is one green LED for each CobraNet port. This indicator lights when Link is established and blinks when CobraNet network activity is detected.

### SWITCHES / LIGHTS Connector

This female DB-15 connector allows an external switch and lamp panel to be attached for push-to-talk, cough mute, and other similar functions. It is provided with lugs so that any DB-15 plug with mounting ears and spring-latches can be used (e.g. Amp part numbers for the spring latch are 745779-3 (bulk), 745779-2 (two/bag), 745255-3 (bulk) or 745255-2 (two/bag) )

| Switches / Lights Connector Pinout |                 |
|------------------------------------|-----------------|
| Pin 1                              | Talk button     |
| Pin 2                              | Cough button    |
| Pin 3                              | NC              |
| Pin 4                              | Override button |
| Pin 5                              | Private button  |
| Pin 6                              | Ground          |
| Pin 7                              | Ground          |
| Pin 8                              | Ground          |
| Pin 9                              | Ground          |
| Pin 10                             | Ground          |
| Pin 11                             | Talk LED        |
| Pin 12                             | Cough LED       |
| Pin 13                             | NC              |
| Pin 14                             | Override LED    |
| Pin 15                             | Private LED     |

The LED output pins provide +12 VDC through 160Ω current limiting resistors when they are turned on. When turned off, they are floating. LED indicators should be connected between these pins and ground pins on this connector.

The switch inputs have internal pull-ups to +3.3 VDC and are ESD protected. When a pushbutton input is needed, normally-open switches should be connected between one of these inputs and a ground pin.

### SPEAKER Connector

This amplifier output is a standard ¼" TRS phone connector. It is used to connect a 4Ω minimum loudspeaker to the NM 1 for monitoring the selected CobraNet audio channel. The NM 1 power amplifier can deliver 1 watt continuously into an 8Ω load with a pink noise signal that has a 15 dB crest factor (see data sheet for detailed specifications). The output configuration requires that the positive and negative signals must remain isolated from the chassis and from ground. The plug used *must* be TRS; use of a TS (i.e. mono) phone plug shorts the power amplifier and causes a malfunction.

The threaded metal bushing allows use of a ¼" phone plug with a threaded locking ring (e.g., Switchcraft Number 298).

The connector sleeve is connected directly to chassis ground; the tip is the positive signal; the ring is the negative signal.

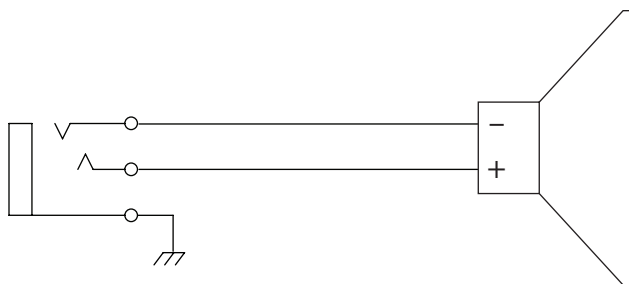


Figure 1. Speaker wiring

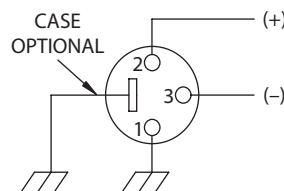


Figure 2. Mic wiring

### MIC INPUT Connector

The balanced microphone input is an industry standard XLR-3 type connector (see the NM 1 Data Sheet for specifications). Gain is adjusted via SNMP control. IEC 61938 P48 compliant 48V phantom power is provided.

Connect pins 2 and 3 to the balanced output of the microphone. Pin 1 is directly connected to the chassis; for best noise immunity, the microphone cable should have a braid or double wound shield. If a cable such as Belden 1800F is used that has both a wire shield and a drain wire, then all the shield wires and not just the drain wire should be connected to pin 1 of the XLR connector.



### SysName Switches

On the rear panel are four rotary switches that are used to create a four digit identifier that becomes part of the SNMP variable, sysName. sysName is then used to uniquely identify a CobraNet device on the network. The condition of being unique requires that each device on the network have a different setting. Looking at the unit with the switches facing you, as in the above diagram, the identifier reads from left to right.

Thus, setting the switches to 1, A, 3, 7, respectively, sets the sysname variable to "NM1-Sw1A37."

### Mounting

The NM 1 is equipped with mounting ears to solidly attach it to a surface if needed. Rubber feet are also included for tabletops.

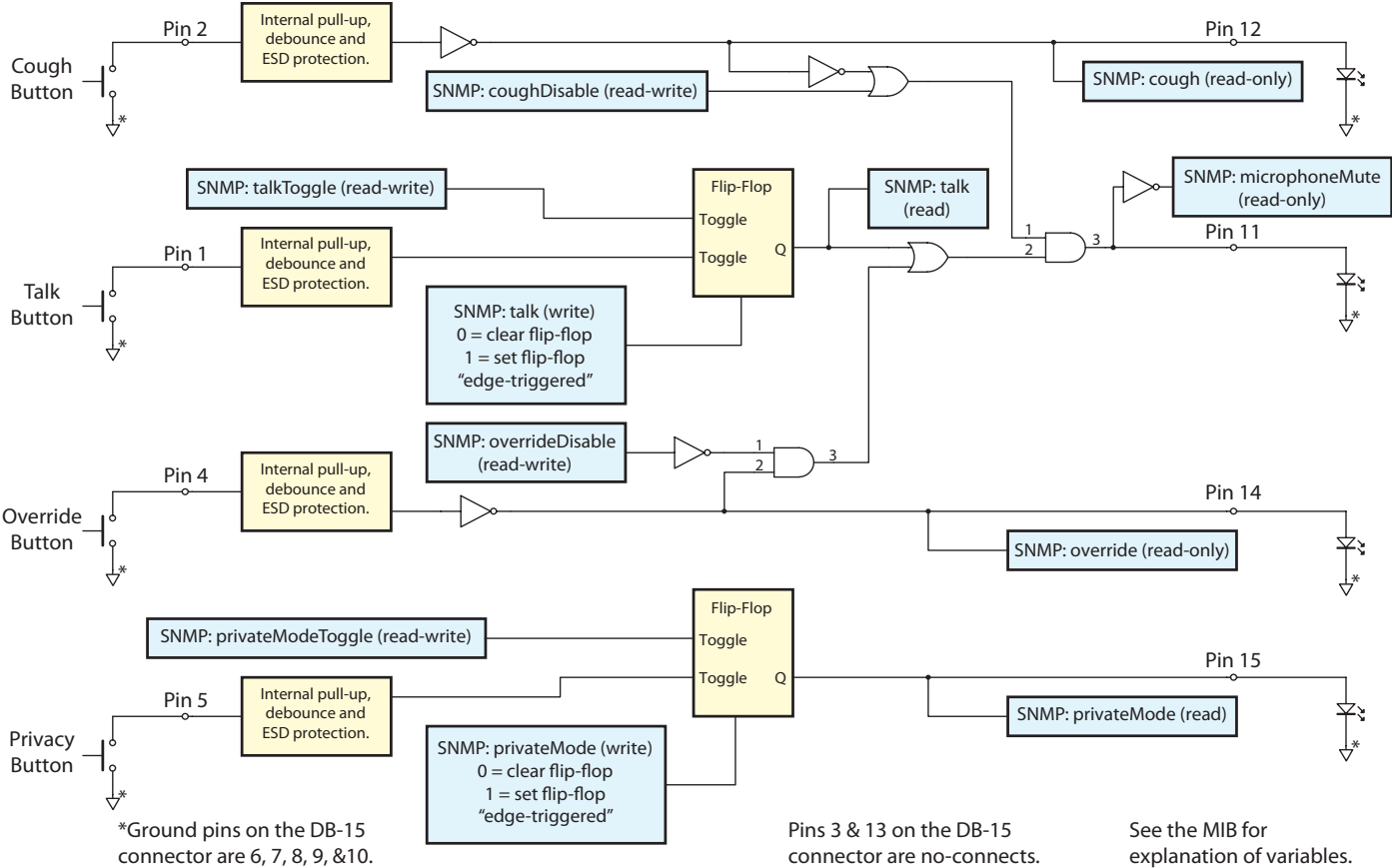
### SNMP

If you are new to SNMP or would like an easy overview, see the RaneNote "SNMP: Simple? Network Management Protocol" at [www.rane.com/note161.html](http://www.rane.com/note161.html).

### Software

Refer to the NM 1 Data Sheet for software information.

# Appendix 1. Switches / Lights Connector Logic



# Appendix 2. NM 1 MIB

```
--
-- RANE-NM1-MIB-V1.my
-- MIB generated by MG-SOFT Visual MIB Builder Version 4.0 Build 341
-- Thursday, May 20, 2004 at 17:53:02
--

RANE-NM1-MIB-V1 DEFINITIONS ::= BEGIN

    IMPORTS
        mfgExtensions
            FROM PEAKAUDIO-MIB
        OBJECT-TYPE
            FROM RFC-1212
        Counter
            FROM RFC1155-SMI;

    -- Node definitions
    --

    -- Node definitions
    --

    -- 1.3.6.1.4.1.2680.1.2.7
    rane OBJECT IDENTIFIER ::= { mfgExtensions 7 }

    -- 1.3.6.1.4.1.2680.1.2.3
    NM1 OBJECT IDENTIFIER ::= { rane 3 }
```

```
-- 1.3.6.1.4.1.2680.1.2.7.3.1
micPreampGain OBJECT-TYPE
    SYNTAX INTEGER (10..65)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "Gain through the mic pre-
        amplifier stage. Gain can be
        adjusted in 1 db increments
        in the range 10dB through
        65dB."
    DEFVAL { 10 }
    ::= { NM1 1 }

-- 1.3.6.1.4.1.2680.1.2.7.3.2
microphoneMute OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "State of the microphone
        mute.
        0 - unmuted
        1 - muted"
    ::= { NM1 2 }
```

|   |   |
|---|---|
| <pre>-- 1.3.6.1.4.1.2680.1.2.7.3.3 talk OBJECT-TYPE     SYNTAX INTEGER     ACCESS read-write     STATUS mandatory     DESCRIPTION         "Present state of the talk         button flip flop.         0 - off         1 - on"     ::= { NM1 3 }</pre> <pre>-- 1.3.6.1.4.1.2680.1.2.7.3.4 talkToggle OBJECT-TYPE     SYNTAX Counter     ACCESS read-write     STATUS mandatory     DESCRIPTION         "Toggle the talk button flip         flop. Set this variable to any         value other than its current         value to cause the flip flop to         change state."     ::= { NM1 4 }</pre> <pre>-- 1.3.6.1.4.1.2680.1.2.7.3.5 cough OBJECT-TYPE     SYNTAX INTEGER     ACCESS read-only     STATUS mandatory     DESCRIPTION         "Present state of the cough         momentary button.         0 - not depressed         1 - depressed"     ::= { NM1 5 }</pre> <pre>-- 1.3.6.1.4.1.2680.1.2.7.3.6 coughDisable OBJECT-TYPE     SYNTAX INTEGER     ACCESS read-write     STATUS mandatory     DESCRIPTION         "Control for disabling cough         button from the audio         muting logic. Cough         indicator will continue to         function normally but audio         will not be affected.         0 - cough function enabled         - default         1 - cough function disabled"     ::= { NM1 6 }</pre> | <pre>-- 1.3.6.1.4.1.2680.1.2.7.3.7 override OBJECT-TYPE     SYNTAX INTEGER     ACCESS read-only     STATUS mandatory     DESCRIPTION         "Present state of the override         momentary button.         0 - not depressed         1 - depressed"     ::= { NM1 7 }</pre> <pre>-- 1.3.6.1.4.1.2680.1.2.7.3.8 overrideDisable OBJECT-TYPE     SYNTAX INTEGER     ACCESS read-write     STATUS mandatory     DESCRIPTION         "Control for disabling         override button from the         audio muting logic. Override         indicator will continue to         function normally but audio         will not be affected.          0 - override function enabled         - default         1 - override function disabled"     ::= { NM1 8 }</pre> <pre>-- 1.3.6.1.4.1.2680.1.2.7.3.9 privateMode OBJECT-TYPE     SYNTAX INTEGER     ACCESS read-write     STATUS mandatory     DESCRIPTION         "Present state of the private         mode button flip flop.         0 - off         1 - on"     ::= { NM1 9 }</pre> <pre>-- 1.3.6.1.4.1.2680.1.2.7.3.10 privateModeToggle OBJECT-TYPE     SYNTAX Counter     ACCESS read-write     STATUS mandatory     DESCRIPTION         "Toggle the private mode         button flip flop. Set this         variable to any value other         than its current value to         cause the flip flop to change         state."     ::= { NM1 10 }</pre> |
|---|---|

END

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-- RANE-NM1-MIB-V1.my  
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