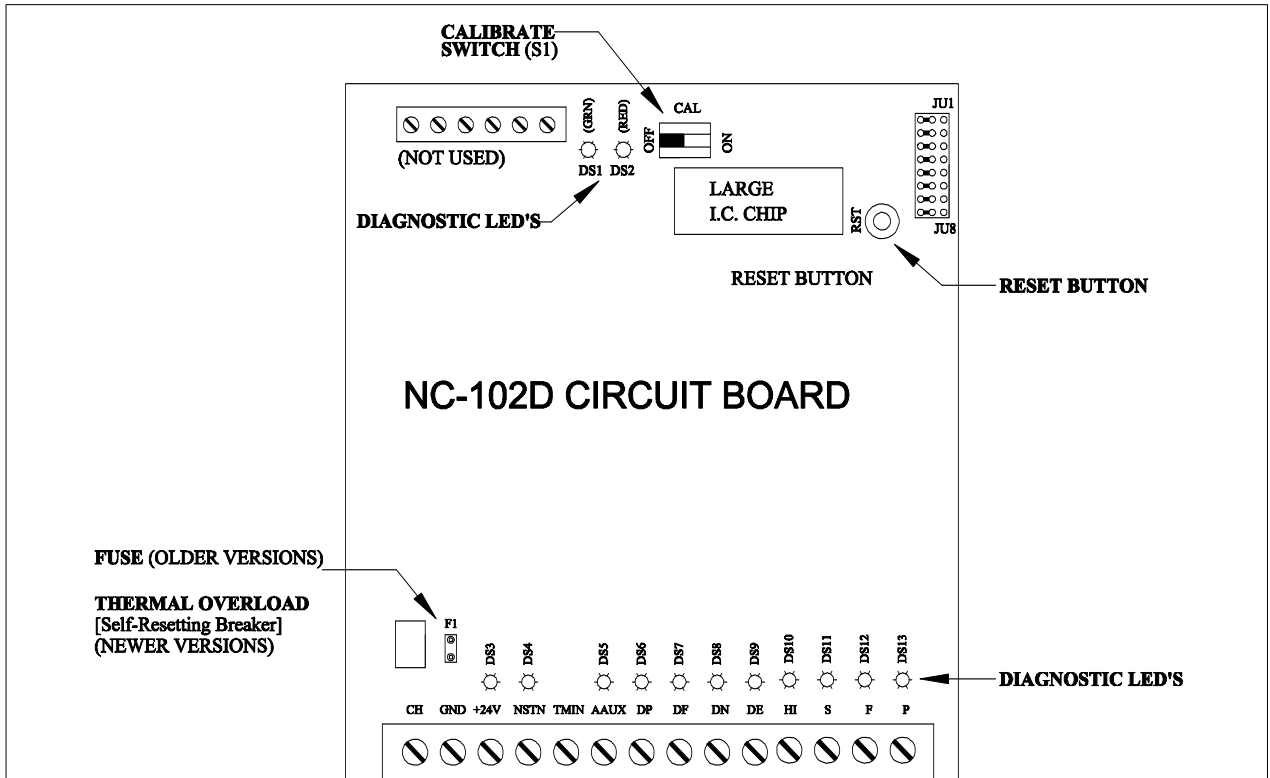


CORNELL MODEL NC-102D CONTROLLER – PIN DEFINITIONS



<u>TERMINAL:</u>	<u>DESCRIPTION</u>	<u>DIAG. LED:</u>	<u>NORMAL OPERATION OF ASSOCIATED LED:</u>
-	-	DS1	GRN - ON = +5V INTERNAL POWER IS OK
-	-	DS2	RED - (REFER TO CALIBRATION PROCEDURE)
CH	CHASSIS GROUND	(NONE)	-
GND	POWER SUPPLY GROUND	(NONE)	-
+24V	POWER SUPPLY+24VDC	DS3	GRN - ON WHEN 24 VDC IS PRESENT
NSTN	NURSE STATION TONE (NOT USED)	DS4	GRN - ON WHEN TONE OUTPUT IS ACTIVE
TMIN	TONE MUTE IN (NOT USED)	(NONE)	-
AAUX	ANY CALL AUX OUT	DS5	GRN - ON WHEN ANY CALL IS ACTIVE
DP	P CALL SIGNAL	DS6	GRN - FAST FLASH ON ANY "P" TYPE CALL
DF	F CALL SIGNAL	DS7	GRN - SLOW FLASH ON ANY "F" TYPE CALL
DN	S CALL SIGNAL	DS8	GRN - LIT STEADY ON ANY "S" TYPE CALL
DE	F OR P CALL SIGNAL	DS9	GRN - FLASH AT F/P RATE (HIGHEST ACTIVE)
HI	TONE / ANNUNCIATOR / DUTY	DS10	GRN - ON WHEN TONE OUTPUT IS ACTIVE
S	"S" CURRENT-SENSING OUTPUT	DS11	RED - LIT STEADY = "S" ACTIVE
F	"F" CURRENT-SENSING OUTPUT	DS12	RED - SLOW FLASH = "F" ACTIVE
P	"P" CURRENT-SENSING OUTPUT	DS13	RED - FAST FLASH = "P" ACTIVE

CORNELL COMMUNICATIONS, INC.
MILWAUKEE, WI USA

DATE: May 31, 2007

SYSTEM: 4000 / 4500 MULTI-STATUS NURSE CALL

TITLE: NC-102D TERMINAL DESIGNATIONS DRAWING # 90016-07 SHEET 1 DWG: JMS

CORNELL MODEL NC-102D CONTROLLER – PIN DEFINITIONS

PLEASE NOTE: This document describes the operation and limitations of the various inputs and outputs of the Cornell Model NC-102D Controller, which is used in conjunction with both 4000-Series and 4500-Series Nurse Call Systems.

The terminations that are used most frequently are marked with an asterisk (*).

SCREW

TERM.: **DESCRIPTION** _____ :

CURRENT-SENSING OUTPUTS:

The following three Current-Sensing Outputs (S, F, & P) are somewhat unique, in that each acts as both:

Output (Signal-Generator) – provides voltage source for associated stations/devices, and provides associated lamp flash functions.

Input (Current-Sensing) – When a station that is connected to one of these terminals is actuated, the NC-102D senses the current draw/load, and based on which are active, triggers appropriate outputs.

S * LOWEST PRIORITY CURRENT-SENSING OUTPUT (“S” = STEADY)

[Normal use = Negative “Feed” for Bed Stations - Steady Negative]

Output levels:

Idle = Hi-Z (open collector)

Active = GND

Maximum continuous input current (sinking) during active state = 3.5A@24Vdc

Input level:

Minimum Trigger Current = 25mA per detectable call change

F * MIDDLE PRIORITY CURRENT-SENSING OUTPUT (“F” = FLASH)

[Normal use = Negative “Feed” for Bath Stations - Flashing Negative at 1Hz]

Output levels:

Idle = Hi-Z (open collector)

Active = 1Hz to GND, (50% duty cycle)

Maximum continuous input current (sinking) during active state = 3.5A@24Vdc

Input level:

Minimum Trigger Current = 25mA per detectable call change

P HIGHEST PRIORITY CURRENT-SENSING OUTPUT (“P” = PRIORITY)

[Normal use = Negative “Feed” for Code or Smoke Detector – Flashing Negative at 2Hz]

Output levels:

Idle = Hi-Z (open collector)

Active = 2Hz to GND, (50% duty cycle)

Maximum continuous input current (sinking) during active state = 3.5A@24Vdc

Input level:

Minimum Trigger Current = 25mA per detectable call change

CORNELL MODEL NC-102D CONTROLLER – PIN DEFINITIONS

SCREW

TERM.: **DESCRIPTION** _____ :

OUTPUTS / INPUTS FOR AUDIBLE INDICATION (SOUNDER OPERATION)

The following two Outputs and one Input are used to drive the sounders that are built into Cornell Dual Status Annunciators and Dual Status Duty Stations.

HI * SOUNDER DRIVER (NON-MUTABLE) OUTPUT

[Normal use = Positive Sounder output to Dual Status Annunciators & Duty Stations]

Function = When the minimum “trigger” current is sensed at any of the Current-Sensing Outputs, the NC-102D determines the highest priority present, and actuates the corresponding tone pulse pattern via “HI”. These tone pulse patterns are as follows:

“P” (Priority) [Smoke/Code]	HI = 2 pulses per second to tone boards
“F” (Flash) [Bath Call]	HI = 1 pulse per second
“S” (Steady) [Routine Call]	HI = 1 pulse every 6 seconds

The output patterns continue to be produced until all stations at each priority level are manually reset. As high-priority calls are cleared, the pulse pattern will de-escalate.

(example: if calls at all three priority levels are present:

When all Code Call Stations are cleared - the Bath Tone will be produced.

When all Bath Stations are cleared – the Routine Call Tone will be produced.

When all Bedside Stations are cleared – the output will be silenced.)

Output levels:

Idle = GND through a 3.0K 1/2W resistor,

Active = +24Vdc (gated 2KHz 50% duty cycle signal)

Maximum current supplied (source) during active state = 500mA@24Vdc

NSTN NURSE STATION SOUNDER DRIVER (MUTABLE) OUTPUT

[Normal use = Negative Sounder output for Dual Status 4500-Series Systems]

Function = This output operates in a similar manner to the “HI” Output (see above), except that it produces a switched Negative, and is mutable (see “TMIN” below). The pulse patterns are the same.

Output levels:

Idle = Hi-Z (open collector)

Active = GND

Max. continuous input current (sinking) during active state = 500mA@24Vdc

TMIN TONE MUTE INPUT (WORKS IN CONJUNCTION WITH “NSTN” ABOVE)

[No current Standard Cornell Annunciators are designed to utilize this input]

This input controls the nurse station tone output (NSTN). If this input is activated, the NSTN output will go into the idle state until another call is entered into the system.

Input levels:

Idle = Hi-Z

Active = Pulse from +5Vdc to GND for a 10ms duration max.

CORNELL MODEL NC-102D CONTROLLER – PIN DEFINITIONS

SCREW

TERM.: **DESCRIPTION** _____ :

DUTY STATION LED OUTPUTS:

Since Cornell Duty Stations are equipped with two LEDs, and the NC-102D is capable of supporting up to three different, unique status condition indications, the following four outputs allow installers to select the desired operation of the Duty Station LEDs. If Dual Status Duty Stations are being used, pick two of these that best fit your application.

DN DUTY NORMAL OUTPUT

[Normal use = Indication of Routine / Bed-Station Status Conditions]

If the “S” Current-Sensing Output is active, this output is active (GND).

Output levels:

Idle = Hi-Z (open collector)

Active = GND

Max. continuous input current (sinking) during active state = 500mA@24Vdc

DE DUTY EMERGENCY OUTPUT

[Normal use = Combined Indication of both Bath and Code/Smoke Status Conditions]

If any “F” or “P” Current-Sensing Outputs are active, this output will flash at the rate corresponding to the cadence of the highest priority (P (2Hz) or F (1Hz)).

Output levels:

Idle = Hi-Z (open collector)

Active = P = 2Hz to GND, (50% duty cycle)

- or - F = 1Hz to GND, (50% duty cycle)

Max. continuous input current (sinking) during active state = 500mA@24Vdc

DF DUTY FLASH OUTPUT

[Normal use = Indication of Bath Emergency Status Conditions, where “P” is not used]

If the “F” Current-Sensing Output is active, this output is active (1Hz).

Output levels:

Idle = Hi-Z (open collector)

Active = 1Hz to GND, (50% duty cycle)

Max. continuous input current (sinking) during active state = 500mA@24Vdc

DP DUTY PRIORITY OUTPUT

[Normal use = Indication of Code/Smoke Status Conditions, where “F” is not used]

If the “P” Current-Sensing Output is active, this output is active (2Hz).

Output levels:

Idle = Hi-Z (open collector)

Active = 2Hz to GND, (50% duty cycle)

Max. continuous input current (sinking) during active state = 500mA@24Vdc

CORNELL MODEL NC-102D CONTROLLER – PIN DEFINITIONS

SCREW

TERM.: DESCRIPTION _____ :

AAUX

ALARM – AUXILLIARY OUTPUT

[Normal use = General Alarm Output for supplemental indication, or interface to other systems, relay driver, etc.]

If any S, F, or P priority calls are in the system, this output is active (GND).

Output levels:

Idle = Hi-Z (open collector)

Active = GND (Steady – this output DOES NOT match F/P “cadence”)

Max. continuous input current (sinking) during active state = 500mA@24Vdc

AXIN1,2

AUXILLIARY INPUTS (FOR FUTURE PRODUCT ENHANCEMENTS)

[Normal use = not used at this time]

Input levels:

Idle = Hi-Z (cathode of the diode in an opto-coupler)

Active = From +24Vdc or Hi-Z to GND

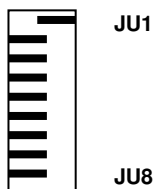
JU1-8

8-POSITION JUMPER BLOCK (FOR FUTURE PRODUCT ENHANCEMENTS)

These 8 jumper selectable inputs are to be used for future product enhancements.

To activate the jumper definition, the jumper MUST be moved from the left position to the right position as shown in Figure 1-1, (JU1 = active).

Figure 1-1. Jumper #1 (JU1) is shown activated.



Jumper Definitions as of 04/03/01.

JU1 If this jumper is activated, system diagnostics will be sent to the 4 pin RS232 header (J2).

JU2-8 These jumpers are undefined.