PROCAB MANUAL

Version 1.3

Operation Manual

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INTRODUCTION

Just as every locomotive has a separate number (address in DCC terms) each cab needs a separate address so the command station can distinguish one cab from another. Each ProCab is shipped from the factory with the address of 2. If this is not your first ProCab you will have to change the address before using the cab. To easily change the address:

Power up your Powerhouse system.

1. Plug in the ProCab cable to the CAB BUS connector of the Powerhouse
2. Unplug your procab at the base of the cab
3. Press and hold the SELECT LOCO button while re-plugging in the cable you just removed from the cab
4. You should see the following display on the cab:
    NCE PROCAB V1.3
    CAB ADDRESS = 02
5. The cursor will be flashing over the 0 of "02". Type in the new cab number. In this case, you will press "3" (valid range = 2-63) followed by ENTER.
6. Press PROG/ESC to skip setting all the other cab setup options. They will be discussed later in this manual.

THE LCD SCREEN

The LCD screen provides you with messages from the Powerhouse Pro Command Station. This information includes: locomotive status, scale time, command prompts and messages regarding programming decoders. The drawing above shows how the display looks during normal operation. The top line of the display includes the locomotive number being controlled and the scale time. The second line shows the direction, speed and status of the locomotive function outputs. Decoder functions are represented with "L" for headlight or the function number 1 through 6 being ON. A dash ("-") indicating the function is OFF

LOCOMOTIVE CONTROL AREA
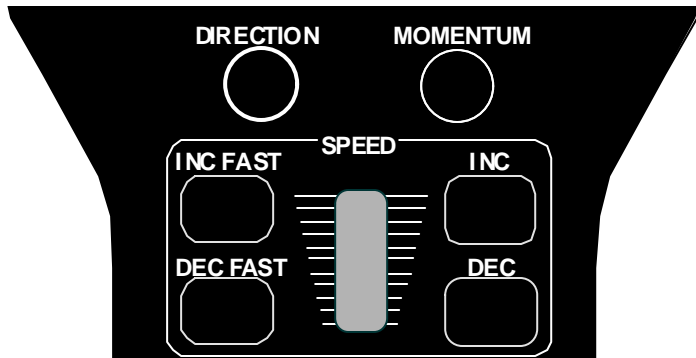
DIRECTION

The **DIR** key changes the direction of your loco or consist. The current direction is displayed as the first three characters of the second line on the screen. This button is disabled if the cab is in Yard mode.

MOMENTUM

This key changes the acceleration/deceleration rate of the currently controlled locomotive/consist.   Note: This feature will be activated with the next (free) upgrade of our Powerhouse Pro.

SPEED CONTROL SECTION

The digital encoder equipped ProCab allows you to use both the speed buttons and the knob for controlling the speed of your locomotive. The left two keys increase or decrease the speed by either 4 or 10 speed steps, depending on the speed step mode (14, 28 or 128), whereas the right keys increase and decrease the speed by one speed step at a time.

The knob increases the speed by pushing it up and decreases the speed when it is pulled down.

Digital encoder equipped ProCabs have a feature called ballistic tracking.   The faster you turn the knob the faster it will increase or decrease the speed.   This rate is adjustable from 0-7.   The factory default value is 3. See the Cab Setup section later in this manual.

Note: if you have a potentiometer speed control in your cab, the buttons will not work unless you turn them on and the potentiometer off.   This can be quickly changed by holding down the Select Loco key when re-plugging in the Cab Cable, this will put the Cab in its internal set up mode.

Note: Speed buttons are disabled if the ProCab is in Yard mode.

COMMONLY USED BUTTONS
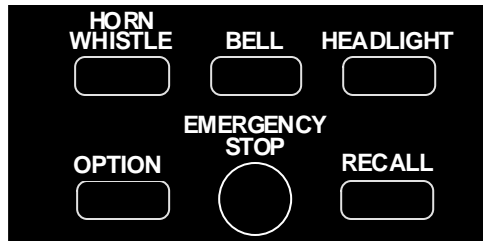
HORN/WHISTLE

Factory default is to operate function 2 when this button is pushed. This can be changed in the **Set Cab Params** menu of the command station. Unlike other keys which toggle the functions on/off this key blows the horn as long as the key is held down. Pressing the **2** key will still toggle the function on or off.

BELL

Factory default is toggle function "3" on or off with each button press. This can be changed in the **Set Cab Params** menu.

HEADLIGHT

Toggles the Headlight on and off. It is defined as Function 0, and pressing the 0 (zero) key will perform the same function, but we felt the headlight warranted its own button and a more convenient location.

OPTION

This button comes factory set up to act as the BRAKE key. Pushing this button will set the speed of the currently controlled locomotive or consist to zero. This button can be programmed to act as any button you wish (see the CAB SETUP section later in this book).

EMERGENCY STOP

Pressing **EMERGENCY STOP** once will stop the active loco/consist for this Cab only. Speed will be immediately set to zero (no momentum). Loco is restarted by changing the speed step or direction.

WHOLE LAYOUT EMERGENCY STOP

Pressing **EMERGENCY STOP** three times in succession will bring the *entire* layout to a stop by shutting off track power. "LAYOUT STOPPED!" will be displayed and is cleared by pressing the **ENTER** key. Only the Cab that executed the Emergency Stop can clear it. Each Loco or Consist can now be

restarted by sending it a command, such as a speed step increase or decrease, or by toggling a Function output.

RECALL

This button toggles between the last two to six trains addressed. **RECALL** allows you to keep two to six locomotives and/or consists active in the command station memory and access them in "round-robin" fashion with each press of the button. Think of **RECALL** as being a set of memory slots. To put a locomotive in a recall "slot", press **SELECT LOCO** and enter the loco or consist to be operated. To put another locomotive in the next slot press **RECALL** to access the next slot. Now press **SELECT LOCO** and enter the second loco. When additional trains are to be added either a "slot" with "000" or an expendable loco/consist must be displayed on the screen. Whatever is on the display will be replaced with the new loco/consist.

The number of RECALLS for each cab can be changed within the "SET CAB PARAMS" menu (see PROG button description). The factory set value is two. You may also "clear out" any locomotives in the recall slots using the "SET CAB PARAMS" menu. We don't advise using RECALL in Yard mode.

LOCO and ACCESSORY SELECTION GROUP
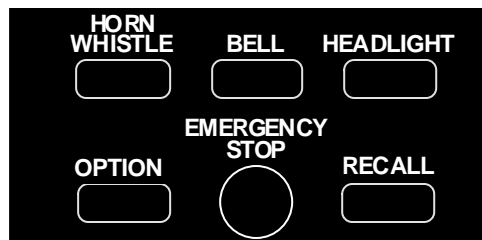
SELECT LOCO

This allows the selection of a locomotive/consist to operate. Press this key, then the loco/consist number, then **ENTER**.

MACRO

When this key is pressed you are prompted to enter the macro number, then press **ENTER**. Macros are used to control one or more accessories with a single command.

This is especially useful for selecting a route through a switch ladder in a staging yard or complex trackwork where it would be inefficient to throw several switches by selecting the individually. Macros are explained in detail in our system reference manual.

SELECT ACCESSORY

For controlling "accessory" decoders that operate accessories such as switch machines, lights, signals, etc.

DATA ENTRY/FUNCTION CONTROL
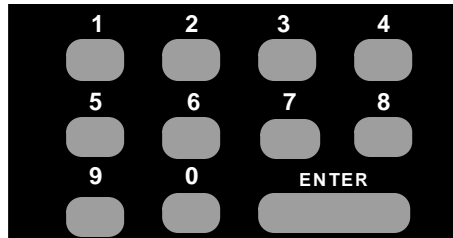
NUMBER KEYS

The keys **0** through **9** serve two purposes. First, when operating a loco/consist if a number key is pressed it toggles the corresponding function on the loco (if that function is connected and supported by the decoder). The second purpose is for typing in numbers such as when selecting locomotives or responding to screen selections during programming.

ENTER

Used to confirm numerical inputs and select a programming mode.

CONSIST SETUP GROUP
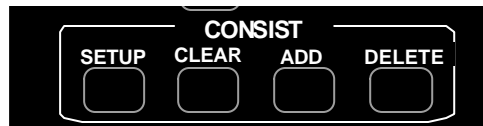
Supports not only the advanced decoders that address the Extended Packet Format but also the entry level decoders that are presently on the market. For complete operating instructions on consist makeup's read the section on **SETTING UP A CONSIST** in the Powerhouse Pro Reference Manual*.*

SETUP

Starts the procedure for either creating an advanced or old style (some call it Universal) consist.
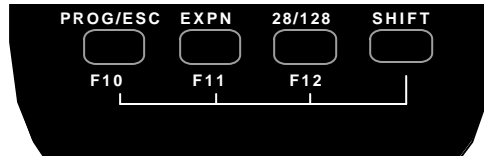
CLEAR

Disbands (breaks up) a consist.

ADD LOCO

Adds a locomotive to a consist.

DELETE LOCO

Drops a locomotive from a consist.

PROGRAMMING and EXTENDED FUNCTION CONTROL

PROG/ESC

Provides selection of the various system menus available for setting up decoders, Cabs, time, etc.

This button also doubles as an "**escape**" key during number/data entry. Whenever the cursor (flashing rectangular box) is shown on the cab display to indicate the cab is waiting for data to be input you can press **PROG/ESC** to cancel the data entry and return to normal operations.

The following menus are accessed round robin fashion with each successive press of the **PROG/ESC** key when in normal operations:

⇒ First press: Program on the Main (Operations Mode programming)

⇒ Second Press: Assign loco to Cab

⇒ Third Press: Set Fast Clock

⇒ Fourth Press: Use Programming Track

⇒ Fifth Press: Set up Command Station

⇒ Sixth Press: Set up Cab Paramters

⇒ Seventh Press: Program accessory decoders on the mainline

⇒ Eighth Press: Set up Macros (switch route control)

⇒ Ninth press: return to normal operations

Pressing ENTER at any of the above menus will select that menu, pressing PROG will step to the next menu.

EXPANSION

Reserved for future features. At present it toggles between the display of lines 1 and 2 of the LCD display and lines 3 and 4. These lines have nothing to display this time. The LoComand (K^2 Engineering), RR&CO (Juergen Freiwald) and ENGINE COMMANDER (KAM Industries) PC software programs are able to send messages to the engineer via these two lines.

28/128

Provides the ability to toggle between 14, 28, and 128 speed step operation of the active loco/consist. The 14 speed step is for first generation decoders. The 28 speed step is second generation decoders and the momentum operation of advanced decoders. 128 speed step is now supported by all decoders except MRC and provides the smoothest operation. When using this key the lower right will display the speed step mode you have selected. This display will be set to the normal operation display the next time a function is toggled or **ENTER** is pressed.

SHIFT

This button gives each key on the Pro Cab an "alter ego". When pressed and held while pressing another key on the cab the alternate value of that key can be used. For example: To access the (future) the extended function F10 you simply press SHIFT and PROG at the same time to activate FUNCTION 10. Every key can programmed to any current or future feature we may think up. This is like having a whole cab full of OPTION keys. Each key is preprogrammed at the factory to one of these alternate uses. Try pressing SHIFT and 4. This takes you directly to the USE THE PROGRAMMING TRACK menu. A list of the shifted keys is tabulated on the next page.

When the radio control option is installed the SHIFT button , when pressed, will also turn on the backlight of the LCD for about 5 seconds. If more keys are pressed within the 5 second period the time on will be extended by 3 seconds each time a key is pressed. This will save LOTS of battery power by not having the backlight on continuously.

CAB BUTTON NUMBERING SCHEME

DCC COMPATIBLE COMMAND CONTROL

L OC: 5 2 2 4   6 : 0 7 AM
F WD: 1 0 8   L 1 - 3 - - -

NCE PROCAB

①   ②

③   ④

⑤   ⑥

⑦   ⑧   ⑨

⑩   ⑪   ⑫

⑬   ⑭   ⑮

⑯ ⑰ ⑱ ⑲

⑳ ㉑ ㉒ ㉓

㉔ ⑨ ㉕

㉖ ㉗ ㉘ ㉙

㉚ ㉛ ㉜

F10   F11   F12
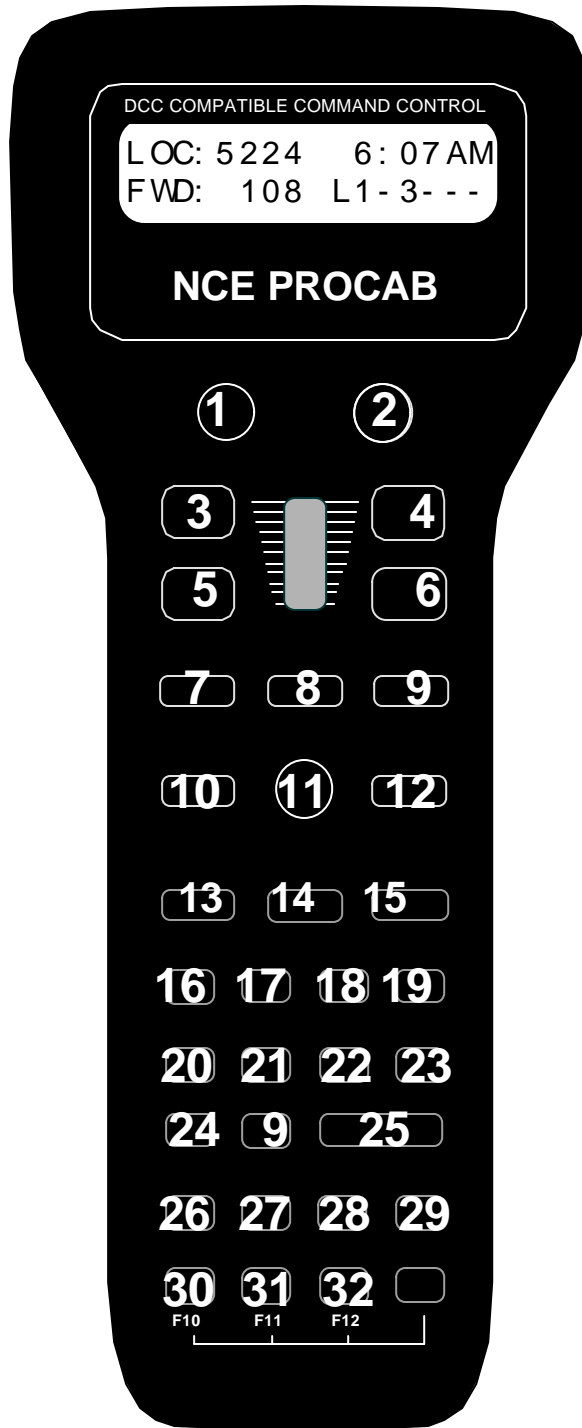
Table of factory default values for "shifted" keys

Key #	Value	Description		Key #	Value	Description
1	67	Direction		17	96	Assign Loco -> Cab
2	94	Brake		18	98	Set Clock
3	90	Increment 4/10 steps		19	99	Use Program Track
4	74	Increment 1 Step		20	100	Setup Command Station
5	91	Decrement 4/10 steps		21	101	Setup Cab Parameters
6	75	Decrement 1 Step		22	118	reserved
7	123	reserved		23	102	Setup Macros
8	81	Headlight		24	108	reserved
9	122	reserved		25	119	reserved
10	125	reserved		26	103	Setup Old Consist
11	116	reserved		27	108	reserved
12	109	reserved		28	120	reserved
13	121	reserved		29	115	reserved
14	117	reserved		30	112	Function 10
15	111	Momentum (future)		31	113	Function 11
16	97	Program on Main		32	114	Function 12

PROCAB SPECIFICATIONS:

Size: 8-3/4 x 3-5/8" x 1"

Power Requirements: 8-16 VDC 40mA (backlight off)

                                    8-16 VDC 120mA (backlight on)

Maximum speaker/buzzer current: 15mA @ 5 volts DC.

Replacement Encoder: Bournes or Digikey part #3315C-1-006

Replacement Potentiometer: Bournes or Digikey part #3310C-1-203

Note: To switch from encoder to pot operation a 1.8K-2.2K resistor must be soldered at the surface mount resistor site labeled CONFIG on the ProCab PC board. Be sure to solder the pot at the correct location (R13... not the encoder location) on the PC board.

6 WIRE CAB BUS CABLE WITH RJ-12 CONNECTORS
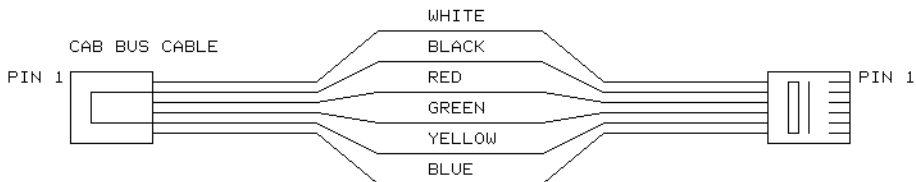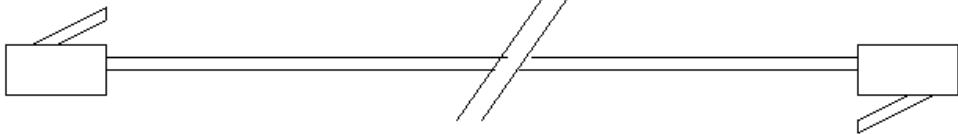
Pin #	Color	Description
Pin 1	White	No Connection, reserved
Pin 2	Black	Ground
Pin 3	Red	- RS-485
Pin 4	Green	+ RS-485
Pin 5	Yellow	+12 volts
Pin 6	Blue	No Connection, reserved

RJ-12 TO 3 WIRE PHONE PLUG CABLE

Compatible with our CBB01 cab bus adapter boards and Wangrow CCP01 connector panels
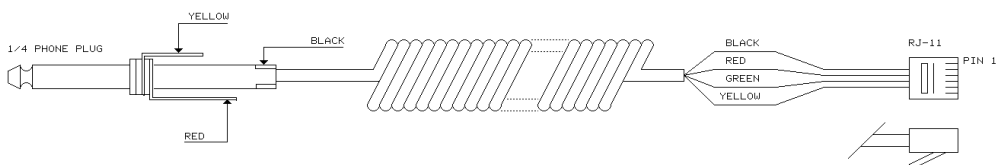
CAB SETUP

The ProCab has various internal setup parameters and operating modes. The following steps describe the various parameters you may change to customize the cab to your liking.

To access the cab set up mode:

1) Turn on the command station

2) Unplug your cab from the command station

3) Press and hold down the SELECT LOCO button on the cab while plugging in the cab. The cab will now enter its internal setup program. At any time you may press PROG/ESC to leave set up mode.

4) Press ENTER to accept the current cab address (unless you want to change it). To change the cab address type in a new address such as 3 followed by the ENTER key. If you make a mistake just unplug the cab and re-plug it while holding down the SELECT LOCO key. **NOTE: If you program the address to zero the cab will reprogram itself to the original factory values, including the cab address, which will be set to 2** .

5) At the "1=YARD 2=NORMAL" prompt you can press ENTER to accept the current operating mode. To select between "normal" operation where the speed knob stops at speed 0 when turned all the way down or "yard" mode.   In yard mode as the knob is turned down to zero it will reverse locomotive direction and start increasing speed in reverse as the knob turning in the "down" direction is continued.   Pushing the knob up will reduce the reverse speed to zero the increase it in a forward direction. **The factory setting is 2 for "normal" Operation**

6) Press ENTER to accept the existing Ballistic Tracking Rate or enter a new rate.   Entering a low number will cause speed knob to change locomotive speed more slowly as the knob is turned, larger numbers will cause a greater change of speed as the knob is turned. **The factory setting is 3 and values from 0-7 will be accepted**.

7) Press ENTER to accept the Speed Button Repeat Rate. This is the rate at which the 4 speed control buttons repeat.   Smaller values will make the buttons repeat faster. The acceptable range is 16 to 255. **The factory setting is 32**.

8) Press ENTER to accept the current Speaker On Time or enter a new value. Smaller values generate a short "beep" as the speed knob is turned through zero when in yard mode and larger numbers generate a logner beep.   Values from 0-99 are accepted. **The factory value is 3**.   NOTE: the beep will only work if there is a speaker installed.

9) Press ENTER to accept the current OPTION key value. If you wish to change it enter a number from the Key Table Chart following this section. **The factory value is 94** so the OPTION button will act as BRAKE button.

10) Press ENTER to accept the "shifted" value for key number 1. If you wish to change it enter a number from the Key Table Chart following this section.   See the Table of Factory Default Values for Shifted Keys on page 10 for the preset factory values.

11) Use the same procedure described in step 10 to accept or program keys number 2 through 32.   Remember you can press PROG/ESC to exit at any time.If you stick it out to key 32, press ENTER to return to normal operations mode.

Key Table Chart

Value	Key Name		Value	Key Name
64	Enter		96	Assign Loco to Cab
65	Program		97	Program on Main
66	Recall		98	Set Clock
67	Direction		99	Use program track
68	Setup consist		100	Setup command station
69	Add loco to consist		101	Setup Procab
70	Delete loco from consist		102	Setup macros
71	Kill consist		103	Setup old consist
72	Select loco		104	Setup advanced consist
73	Horn/Whistle		105	Display LCD lines 3 and 4
74	1 Speed step faster		106	Forward
75	1 Speed step slower		107	Reverse
76	Emergency Stop		108	"Key 32" from old CAB01
77	Bell		109	"Key 33" from small cabs
78	Select Accessory		110	reserved
79	Expn (Expansion) key		111	Momentum (future)
80	Headlight, Zero key		112	F10
81	F1, number 1 key		113	F11
82	F2, number 2 key		114	F12
83	F3, number 3 key		115	reserved
84	F4, number 4 key		116	reserved
85	F5, number 5 key		117	reserved
86	F6, number 6 key		118	reserved
87	F7, number 7 key		119	reserved
88	F8, number 8 key		120	reserved
89	F9, number 9 key		121	reserved
90	4/10 speed steps faster		122	reserved
91	4/10 speed steps slower		123	reserved
92	Macro		124	reserved
93	14/28/128 select		125	"no key" pressed
94	Brake (factory setting)		126	reserved
95	Do not use		127	do not use

Use the following table to record any key values you customize

My Settings for Shifted Keys				
Key #	Shifted Value		Key #	Shifted Value
1			17	
2			18	
3			19	
4			20	
5			21	
6			22	
7			23	
8			24	
9			25	
10			26	
11			27	
12			28	
13			29	
14			30	
15			31	
16			32	

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PROCAB FEATURES

Large backlit display with <u>Plain English</u> messages

DCC COMPATIBLE COMMAND CONTROL

LOC: 5224   6:07 AM
FWD: 108 L1-3- - -

NCE PROCAB

Digital Encoder or Pushbuttons for speed control

DIRECTION   MOMENTUM

SPEED

INC FAST   INC

DEC FAST   DEC

Ergonomically designed for both left *and* right handed operators

Frequently used controls conveniently placed

HORN WHISTLE   BELL   HEADLIGHT

OPTION   EMERGENCY STOP   RECALL

Recall Button can be used to control up to 6 trains per cab

SELECT LOCO   MACRO   SELECT ACCY

Numeric keypad for controlling decoder functions, sound, lights etc.

1   2   3   4

5   6   7   8

Control for new extended functions numbers 9-12

9   0   ENTER

CONSIST
SETUP   CLEAR   ADD   DELETE

Setup advanced or old style (universal) consists. Add or delete locos from consists with ease

PROG/ESC   EXPN   28/128   SHIFT

F10   F11   F12

Shift key provides a user customizable "alter ego" for each key on the cab

Easy change from 14 to 28 to 128 speed step modes