

# ICM PROGRAMMABLE CONTROLLER

PART NO PIC-AB-01

## ACCESS BEAR

### DESCRIPTION

The Access Bear is a timer/counter module that will help you with your timing and/or counting applications. This powerful tool gives you 32 channels. Each one is a separate timer or counter. The Access Bear provides you with these PLC value added capabilities.

1. The current time or count may be displayed.
2. The timer/counter setpoint may be displayed.
3. The timer/counter setpoint may be programmed.
4. The channel number may be recalled by the Bear Bones.

The programming of this module is straight forward and simple. It is very much like setting the time on your watch. It requires version 1.5 or higher in the PR-05 or DOC-01 programmers.

### FEATURES

Direct connection to the Bear Bones or Bear Bones Expander.  
 Front panel mounting.  
 Three digit, seven bar segmented display.  
 Three button programming.  
 One display selector.  
 Three LED's to indicate selections.

### APPLICATIONS

Many machines require the flexibility of operator accessible setpoints. It may be that you are building a product that has different model numbers and each model requires different setpoint(s). Since the program remains the same for the product you need only change the setpoint(s).

Perhaps there are changes in operating conditions such as temperature, humidity or changes in production line speeds. Any of these variables might require you to change the setpoint of a timer or counter.

The Access Bear gives you the capability to respond to these variables.



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DESCRIPTION The Access Bear  
 Timer/Counter Module

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## ACCESS BEAR

### SPECIFICATIONS





Number of functions - 32 may be programmed as on delay timers or up counters.

Ranges - 000 to 999 seconds      NOTE: With a zero setpoint the timer/counter  
          000 to 999 minutes            contact changes state when the given  
          000 to 999 counts            channel is enabled.

Digital display - displays channel number  
                  - displays programmed setpoint  
                  - actual time/count  
                  - displays off to indicate no setpoint is programmed.

LED Indication - Timers (Off)    Seconds (Off)    Actual (Off)  
                  - Counters (On)   Minutes (On)    Setpoint (On)

I/O Addresses - dedicated to page 6. Do not install I/O expanders or other feature cards with page 6 selected.

-  - toggle the display from actual to setpt. to actual. Display current version if any channel # is displayed.
-  - toggle between channel number and actual or data displayed as blinking is accepted - go to next display.
-  - increment blinking display up. Pause if in actual display.
-  - increment blinking display down. Pause if in actual display.

Power Supply - 5 VDC  $\pm 5\%$ ; 2 MV Ripple max.; 225 MADC draw.

Accuracy -  $.05\% \pm 1$  digit.

CAUTION - enclosure door hinges MUST NOT be used in lieu of a ground.


### OPTIONS

Key Lock Out - prevent or allow access to setpoints.

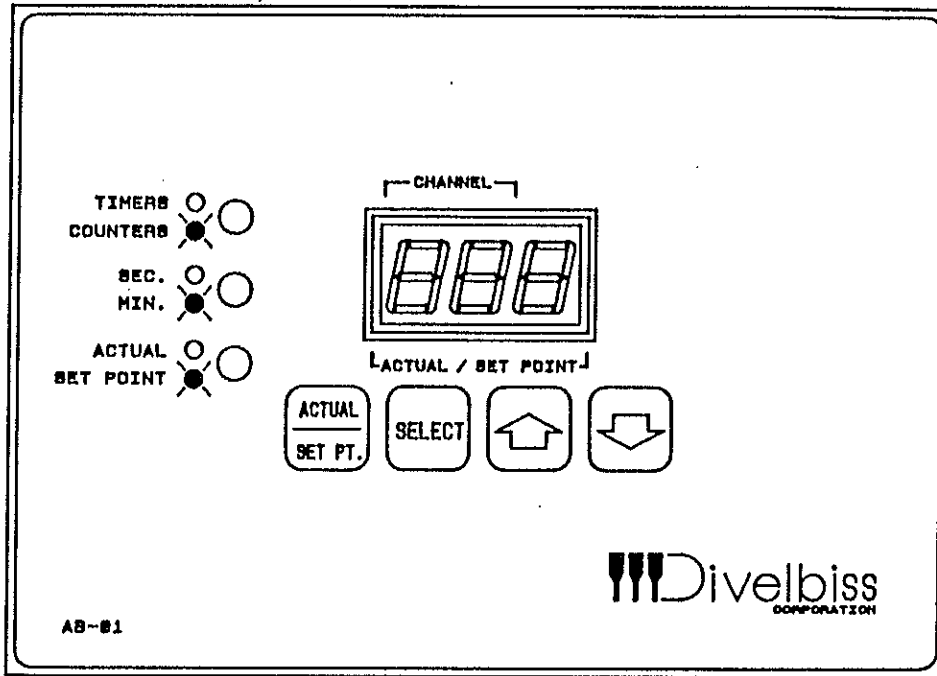
Gasket - Upgrade to NEMA 13.

### WARNING

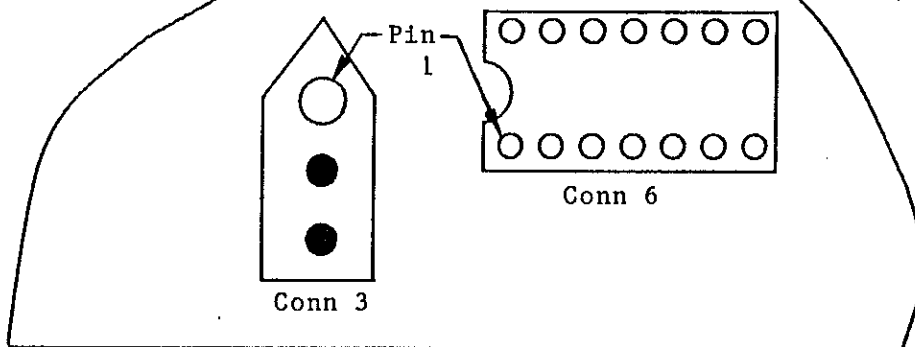
The ICM Programmable Controller, as with other solid state controls, must not be used in applications which would be hazardous to personnel in the event of failure of the controller. Precautions must be taken to provide mechanical and/or electrical safeguards external to the controller.

	
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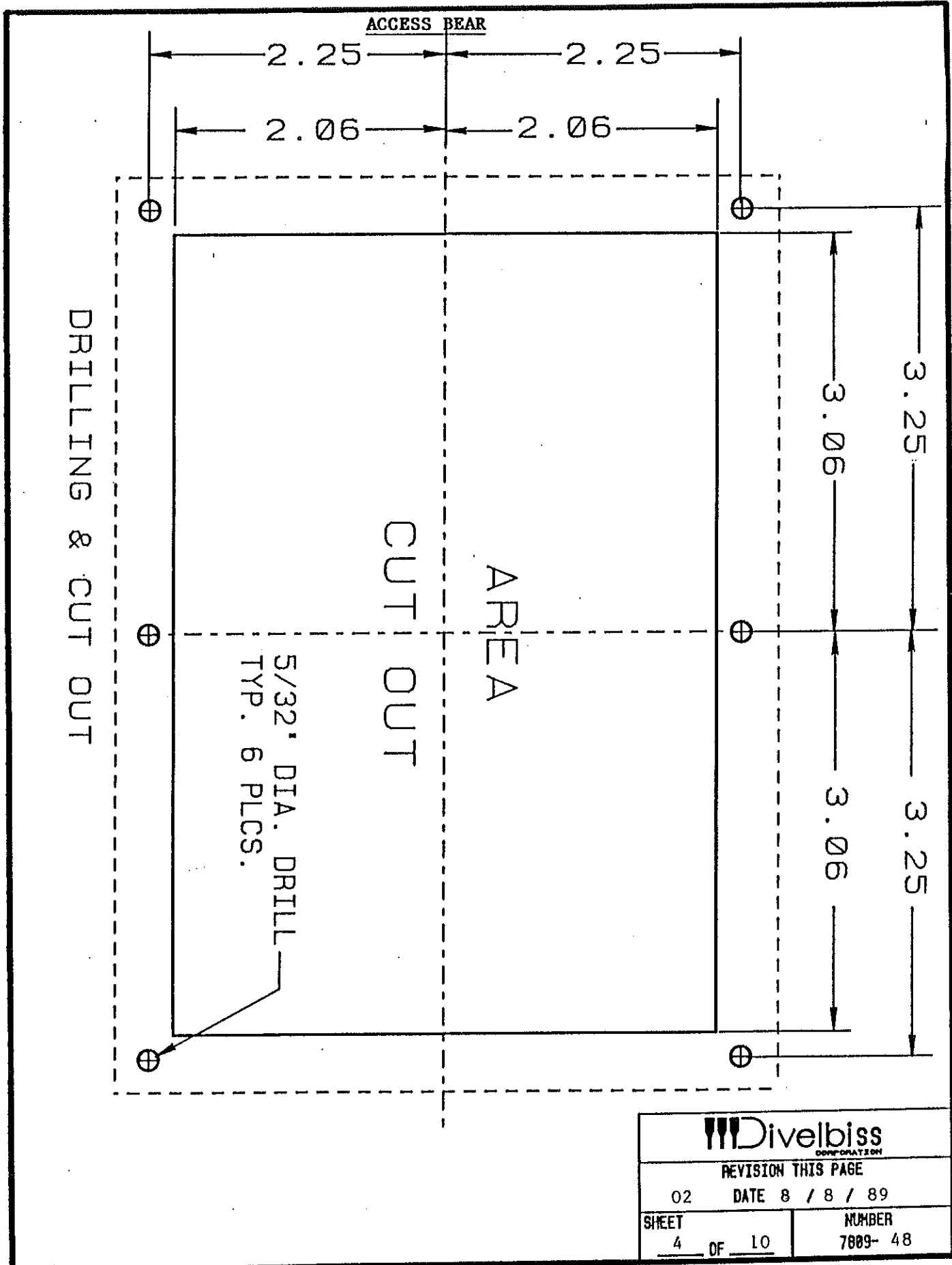



Top  
view



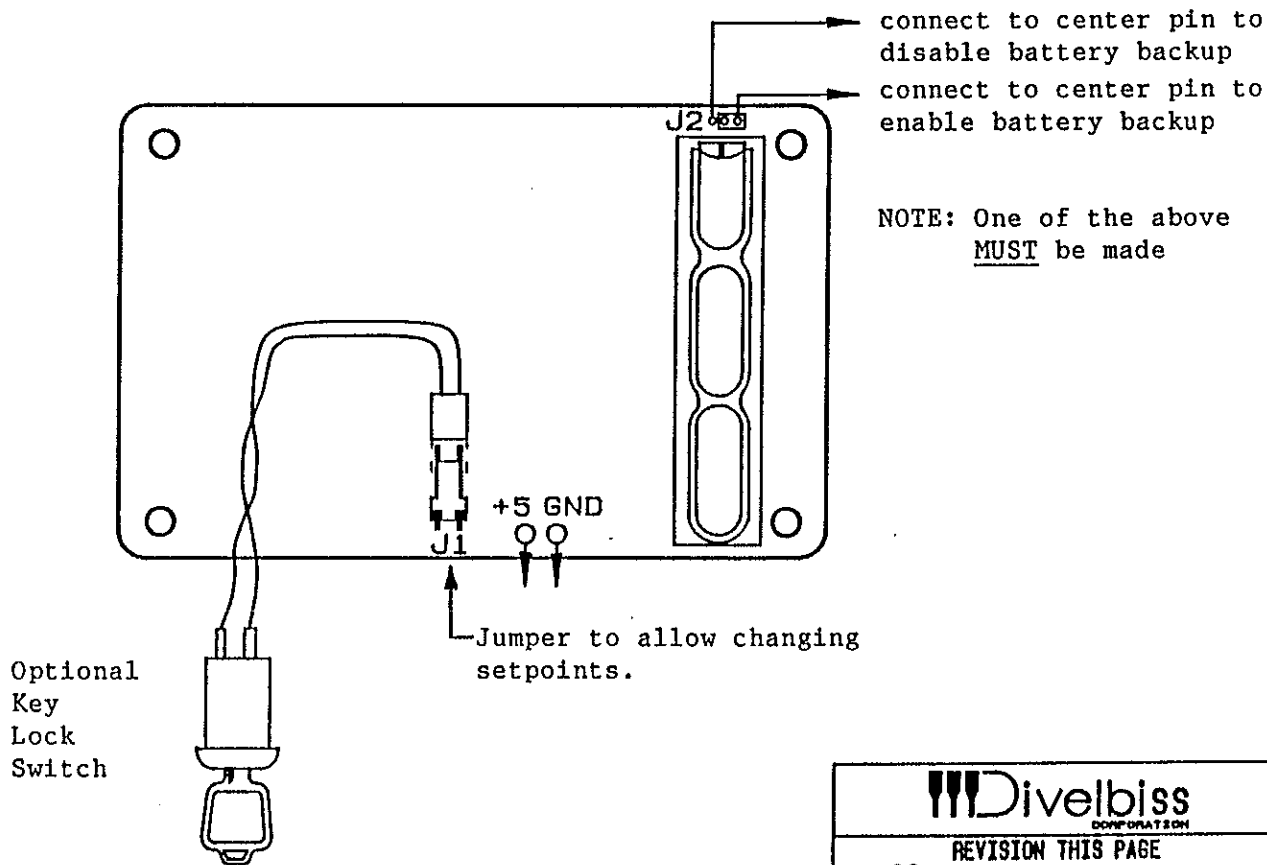
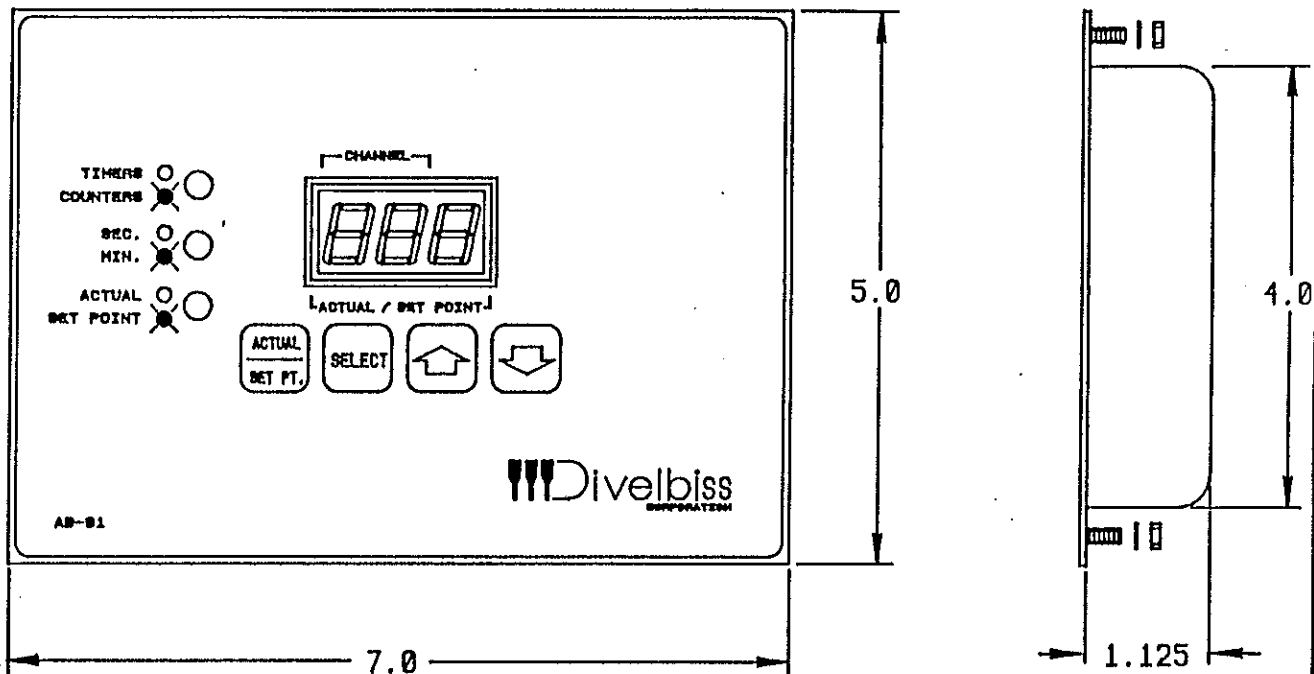
Bear Bones, Bear Bones Expander

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There are a total of 32 possible function groups with 12 control relays assigned to each group.

How these assignments use these relays depends on the name of the function programmed. A TDPU; TDDO; RET; PGEN; CNTR or SR requires one group of 12 relays. A DR requires 2 groups of 12 relays for a selection of 1 to 12 channels; 3 groups of 12 relays for a selection of up to 16 channels.

Function	CR's	Function	CR's
1	108 thru 119	17	300 thru 311
2	120 " 131	18	312 " 323
3	132 " 143	19	324 " 335
4	144 " 155	20	336 " 347
5	156 " 167	21	348 " 359
6	168 " 179	22	360 " 371
7	180 " 191	23	372 " 383
8	192 " 203	24	384 " 395
9	204 " 215	25	396 " 407
10	216 " 227	26	408 " 419
11	228 " 239	27	420 " 431
12	240 " 251	28	432 " 443
13	252 " 263	29	444 " 455
14	264 " 275	30	456 " 467
15	276 " 287	31	468 " 479
16	288 " 299	32	480 " 491

The ABR requires 1 group of 12 relays for 4 ABR channels. All 32 ABR channels will require 8 functions. The remaining 24 functions are still available in your PR-05 for you.

ERROR CODES

- Er1 - Displayed on initial power up or on low battery. Press any key to clear.
- Er2 - The programmed function does not exist (example #33). Press any key to clear.
- Er3 - No data received from the Bear Bones. Press any key to clear.
- Er4 - Communication error with the Bear Bones. Press any key to clear.
- Er5 - Internal Ram error. Return unit for repair.
- Er6 - Internal Ram error. Return unit for repair.

The error codes will appear on a first in basis. The codes will not over ride each other.

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## ACCESS BEAR

### ENTERING A SETPOINT

The Access Bear derives its' power from the Bear Bones. Check page 3 to insure that you have made your connections properly. Always connect and disconnect the Access Bear when the Bear Bones is turned off.

When the Bear Bones is turned on the Access Bear should display either channel 01 or Er1 through Er4. If Er5 or 6 is displayed, return the Access Bear for repair. If Er1 through Er4 is displayed, press SELECT, channel 01 will be displayed.

Once channel 01 is displayed, you may scroll through the channels by pressing the UP or DOWN arrows. For this example stop at channel number 03. Once you have displayed the desired channel number press SELECT to display the actual time or count for that channel. If no setpoint is programmed you will see OFF displayed. If a setpoint is programmed you will see ~~000~~ displayed.

To program a setpoint press ACTUAL/SETPOINT. Note that the SETPOINT led is lit and the left most digit is blinking. Use the arrowed push buttons to select the desired number, then push SELECT. The second digit is blinking. Set it just like the first. Treat the third digit just like the first two.

The decimal point may be positioned with either of the arrowed keys. Note that the decimal point will not blink or be displayed if the COUNTER function is selected. Once the decimal point is in the desired position press SELECT.

The TIMERS/COUNTERS led will blink. To select TIMER press the DOWN arrow. To select COUNTERS press the UP arrow. Once the selection is made press SELECT.

The SEC./MIN. led will blink. To select SECONDS (SEC.) press the DOWN arrow. To select MINUTES (MIN.) press the UP arrow. Once the selection is made press SELECT.

You may enter a setpoint of ~~000~~ which causes the timer or counter N.O. contact to be closed when the start/reset line is high.

You may enter a timer setpoint that is less than the scan time of your program. This could cause your program to behave in an unexpected fashion. To calculate your scan time, check the memory used with your PR-05. Now multiply memory used by .000005. As an example, assume you used 2385 bytes in your program. Your scan time would be  $2385 \times .000005 = .011925$  seconds or 11.925 milli-seconds. A setpoint of .01 seconds or 10 milliseconds would be less than one scan of your program.


### CHANGING A SETPOINT

Changing a setpoint is very much like entering one. The only significant difference are:

1. When you enter the setpoint mode the display will present the previous setpoint which may or may not be zero.
2. After changing the setpoint the decimal point will blink only if the previous setpoint was a timer.

### DISPLAYING VERSION

The current software version can be displayed by pressing actual/setpt. when any channel number is displayed.

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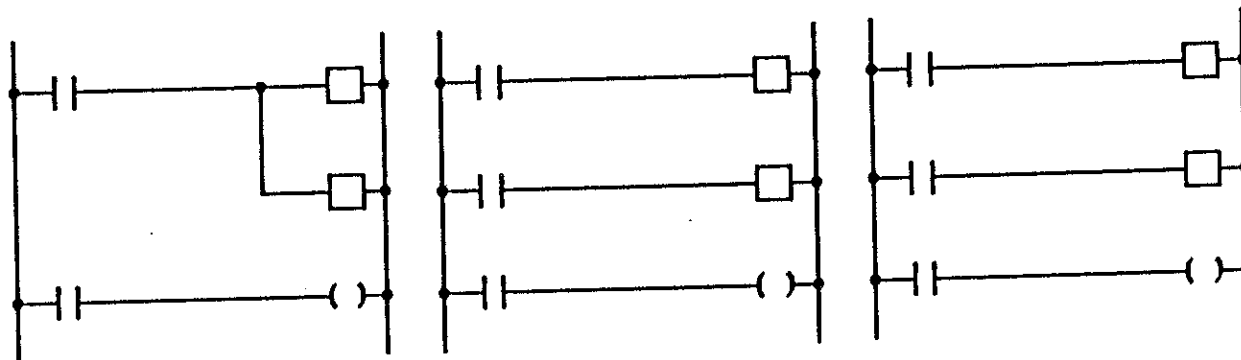
PROGRAMMING

These examples demonstrate how to program an Access Bear channel in your user program.

On delay timer

Retentative timer

Counter



S = Start

I = Increment

C = Complete

All three examples are for channel 03. The retentative timer requires that input 1/09 be closed to accumulate time. The counter requires that input 1/09 be closed each time you wish to increment the counter. All three programs require that input 1/08 be closed to enable the channel.

PROGRAM KEYSTROKE SEQUENCE

THE OUTPUT

-| | -; 1, 0, 8, enter  
FUNCT  
FUN  
ADV  
ADV  
(ABR)

Established the input for start/reset  
Displays sub menu "Fun Instr Insert"  
Displays sub menu "TDPU TDDO RET"  
Displays sub menu "GEN CNTR DR"  
Displays sub menu "SR ABR"  
Causes the "Start/Reset" and "Increment" boxes to be displayed and connects the input to the "Start/Reset" box.

You will be prompted with the lowest #ABR channel that is not programmed. If all 32 channels are programmed, your display will show "FUNCT NOT AVAILABLE".

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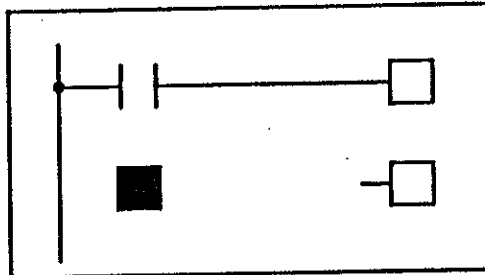
PROGRAMMING (Con't)

O: 3: ENTER

You will be prompted with the lowest function group available. The group you select will apply to this ABR channel and the other three of that ABR group. In this example 01, 02, and 04. When you program these remaining three channels no function number will be displayed.

Your programmer should be displaying

Rung XXX



Note that the I/O addresses will be displayed at the bottom of the screen when the cursor is placed on an element.

Paralleling the two boxes or programming them separately is done just like other PR-05 functions.

THE INPUT

-| |-  
FUNCT  
FUN  
ADV  
ADV  
ABR

Establishes this as an input.  
Displays sub menu "Fun Instr Insert"  
Displays sub menu "TDPE TDDO RET"  
Displays sub menu "PGEN CNTR DR"  
Displays sub menu "SR ABR"  
You will be prompted with the lowest # ABR Channel of the next function group that is not programmed in this case ABR-05. Since this is an input there is no error code. If all 32 channels are programmed your display will default to "ABR01C".

O: 3: ENTER

The input is complete. This can be treated just like any input or CR and used anywhere in the program.

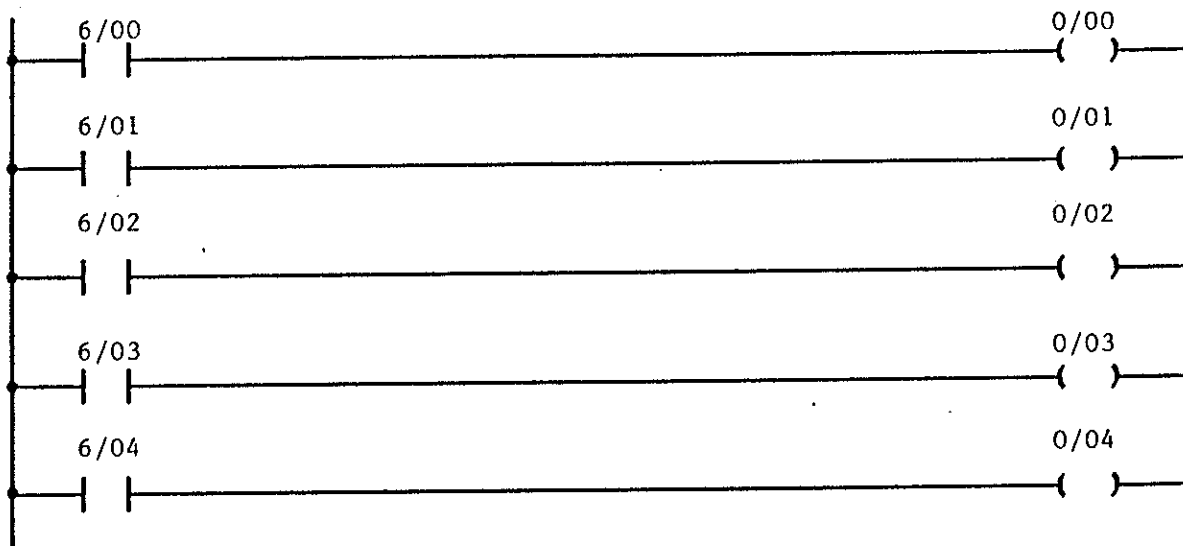
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ACCESS BEAR

PROGRAMMING (Con't)

The Access Bear provides you with the capability of using your Bear Bones to tell you which channel of the Access Bear is displaying data. This is done by reserving input address 6/00 thru 6/04 to generate a binary number that represents the displaying channel number.


The following ladder diagram is an example of how to take advantage of this capability.



Channel 01 would be represented by all outputs being OFF. If Channel 11 were displaying, outputs 0/01 and 0/03 would be ON and outputs 0/00, 0/02 and 0/04 would be OFF.

These five outputs could be used to drive an alpha numeric display. This display could be programmed to tell the operator the name of the function being timed or counted. Suppose that channel 03 is counting parts. The display could read "PARTS COUNTER".

Input 6/06 will indicate if one of the four push buttons has been pressed within 30 seconds.

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