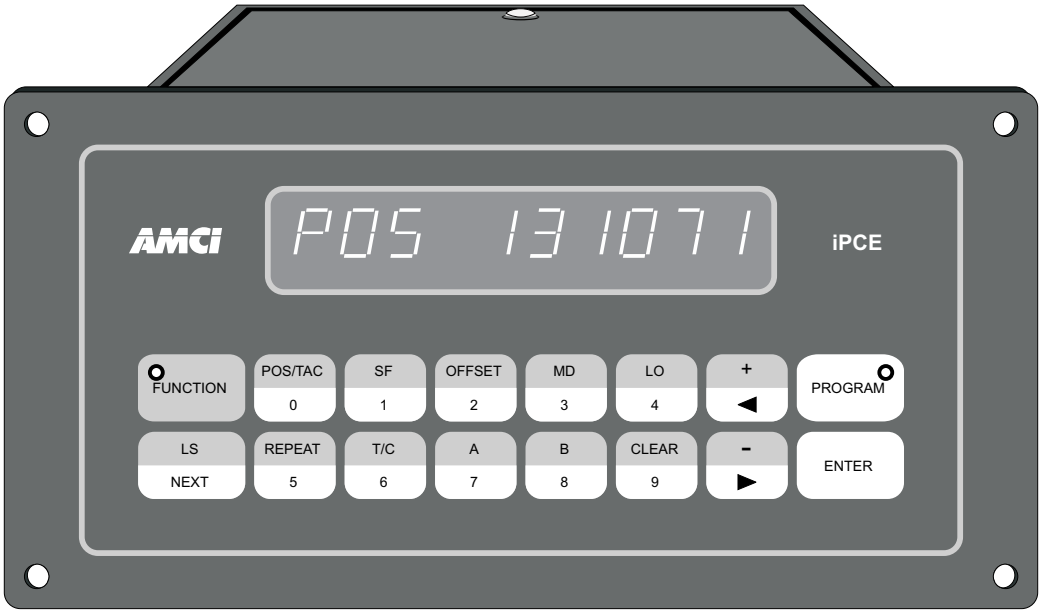
iPCE

Intelligent Programmable Controller Encoder



USER'S MANUAL

Catalog Number: iPCE-493M

AMCI ADVANCED MICRO CONTROLS INC.

Important User Information

The products and application data described in this manual are useful in a wide variety of different applications. Therefore, the user and others responsible for applying these products described herein are responsible for determining the acceptability for each application. While efforts have been made to provide accurate information within this manual, AMCI assumes no responsibility for the application or the completeness of the information contained herein.

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Throughout this manual the following two notices are used to highlight important points.

⚠WARNING WARNINGS tell you when people may be hurt or equipment may be damaged if the procedure is not followed properly.

ⓘCAUTION CAUTIONS tell you when equipment may be damaged if the procedure is not followed properly.

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The information contained within this manual is subject to change without notice.

Standard Warranty

ADVANCED MICRO CONTROLS, INC. warrants that all equipment manufactured by it will be free from defects, under normal use, in materials and workmanship for a period of [1] year. Within this warranty period, AMCI shall, at its option, repair or replace, free of charge, any equipment covered by this warranty which is returned, shipping charges prepaid, within one year from date of invoice, and which upon examination proves to be defective in material or workmanship and not caused by accident, misuse, neglect, alteration, improper installation or improper testing.

The provisions of the "STANDARD WARRANTY" are the sole obligations of AMCI and excludes all other warranties expressed or implied. In no event shall AMCI be liable for incidental or consequential damages or for delay in performance of this warranty.

Returns Policy

All equipment being returned to AMCI for repair or replacement, regardless of warranty status, must have a Return Merchandise Authorization number issued by AMCI. Call (203) 585-1254 with the model number and serial number (if applicable) along with a description of the problem. A "RMA" number will be issued. Equipment must be shipped to AMCI with transportation charges prepaid. Title and risk of loss or damage remains with the customer until shipment is received by AMCI.

24 Hour Technical Support Number

24 Hour technical support is available on this product.

For technical support, call (203) 583-7271.

1] OBJECTIVE

The objective of this manual is to explain the operation, installation, programming and servicing of iPCE Series Programmable Controller Encoders. It is strongly recommended that the user read the following instructions. If after reading this manual there are any unanswered questions, call the factory. An applications engineer will be available to assist you. You may void your warranty if these instructions are not followed.

2] INTRODUCTION TO PROGRAMMABLE CONTROLLER ENCODERS

AMCI iPCE series is a versatile, programmable, resolver-based encoder system, designed for use with Programmable Controllers or Industrial Computers. These encoders will provide reliable rotary position in absolute single turn or multiturn applications with a maximum resolution of 1024 counts/turn. Standard programmable features include: scale factor, offset, preset, limit setpoints, motion detector, decimal point and Binary, BCD or Gray output codes. A tachometer function is also provided. All AMCI Programmable Encoders feature simple programming which can be mastered by anyone.

3] iPCE-1 APPLICATIONS

iPCE-1 series encoder is a single resolver system which can be programmed as an absolute single turn encoder or a quasi-absolute multiturn encoder. Scale factor programming allows setting the number of turns from 1 to 128 and the counts/turn from 2 to 1024. In multiturn applications, turns data is accumulated and stored in non-volatile memory during power down conditions. And, unlike incremental designs, turns data is based on absolute position data and is not upset by noise or high shaft accelerations. Reset or preset input can be used for machine synchronization, if required. iPCE-1 series uses the HT-20 or HT-20-[X] brushless resolver transducer.

4] iPCE-2 APPLICATIONS

Series iPCE-2 accepts 2 resolvers and can be used in 2 axis single turn applications or with option M or N in absolute multiturn encoder applications.
iPCE-2 controllers with two transducers perform the same function as two iPCE-1 systems. Data outputs are multiplexed [time shared] on a common parallel bus.
iPCE-2, option M with an HTT-20-100 transducer is a 100 turn 6 digit absolute encoder. It is programmable for 1,2,4,5,10,20, 50 and 100 turns and a maximum of 1024 counts/turn. Option N with an HTT-20-180 transducer is a 180 turn, 6 digit absolute encoder. This version is programmable for 1,2,3,6,9,10,12,15, 18,20,30,60,90 and 180 turns and a maximum of 1024 counts/turn. HTT-20-[X] are two resolver transducers.

5] iPCE-4 APPLICATIONS

iPCE-4 controllers accept 4 resolvers and can be used in 4 axis, single turn absolute encoder applications. This series performs the same function as 4 iPCE-1 encoders. Data outputs are multiplexed on a common parallel bus.

6] iPCE-1 SYSTEM DESCRIPTION

Series iPCE-1 systems consist of a Transducer [brushless resolver] and a Controller. The transducer, coupled to the shaft of the controller machine, supplies a pair of analog signals proportional to shaft position. The microcomputer based electronics of the Controller converts these analog signals to digital format by a ratiometric A to D converter. Maximum scan time is 400 microseconds from input to output.

iPLC-1 programming is accomplished with the use of a self-contained keyboard and display. Optional remote display connected to iPCE-1 via a single twisted pair cable is available.

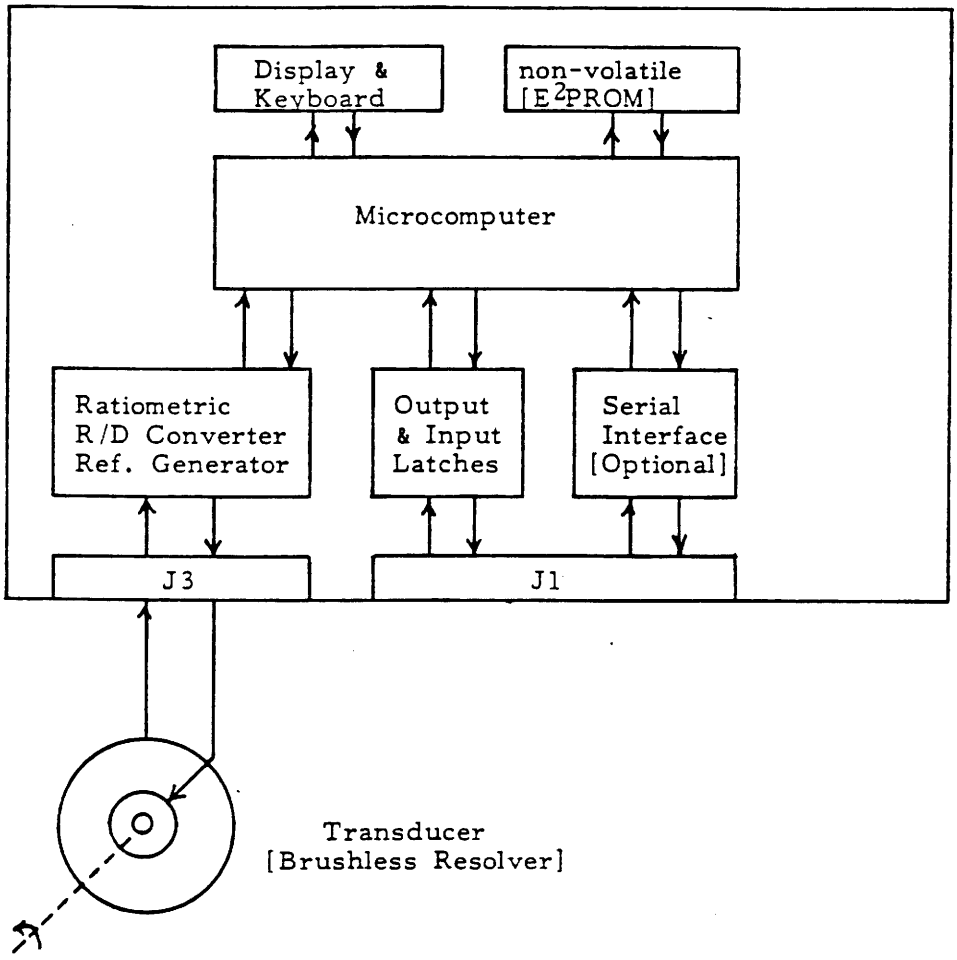


Fig.1 iPCE-1 Block Diagram

7.1] TRANSDUCER DESCRIPTION

Mechanically connected to the shaft of the controlled machine, the transducer is subject to severe environmental conditions such as continuous mechanical shock and vibration, extreme temperature and humidity variations, and exposure to contaminates such as oil mist, coolants and solvents. iPCE utilizes a brushless resolver based transducer in a rugged Nema 13 housing.

The resolver is unsurpassed by any other type of rotary position transducer in terms of reliability and the ability to withstand the industrial environment. Originally developed for military applications, the resolver has benefited from more than 40 years of continuous use and development. The resolver is essentially a variable rotary transformer, with one primary winding located in the rotor and two secondary windings located in the stator, mechanically displaced 90 degrees to each other. In general, the rotor winding is excited by an AC voltage called the Reference Voltage [Vr] Fig. 2. The induced voltages in the stator windings are proportional to the product of the sine/cosine of their angular with the rotor winding, and the instantaneous value of the Reference Voltage. If you consider the ratio of the stator voltages, it is obvious that the result is proportional **only** to the angular displacement. Thus, the resolver can provide a set of voltages with their ratio uniquely representing the absolute position of the shaft. In a brushless resolver the reference voltage is supplied to the rotor without the use of brushes and slip rings.

iPCE-1 systems use the following transducers:

HT-20 Single turn transducer Dwg. # B1001
HT-20-[X] Multiturn transducer Dwg. # B1015
[X]- Number of input turns for full scale.

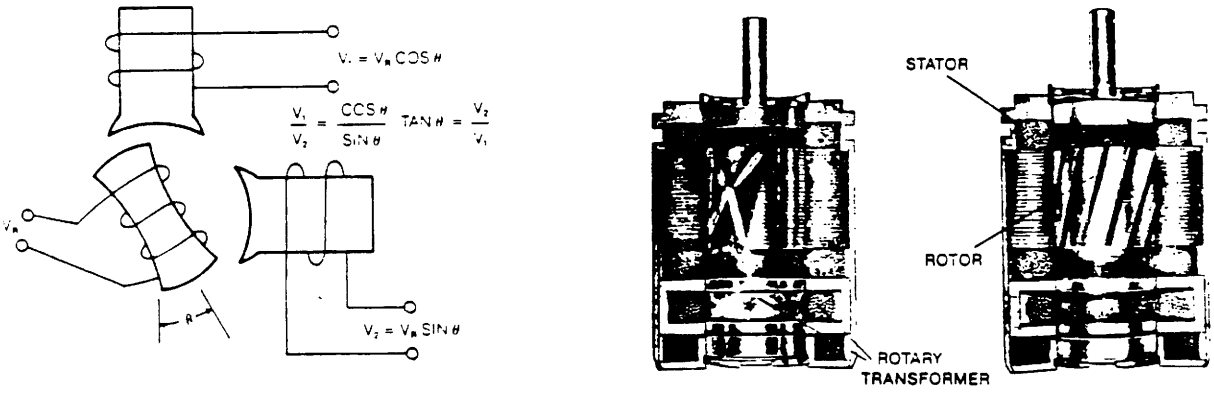


Fig. 2 Resolver Transducer

7.2 iPCE-1 FRONT PANEL DESCRIPTION

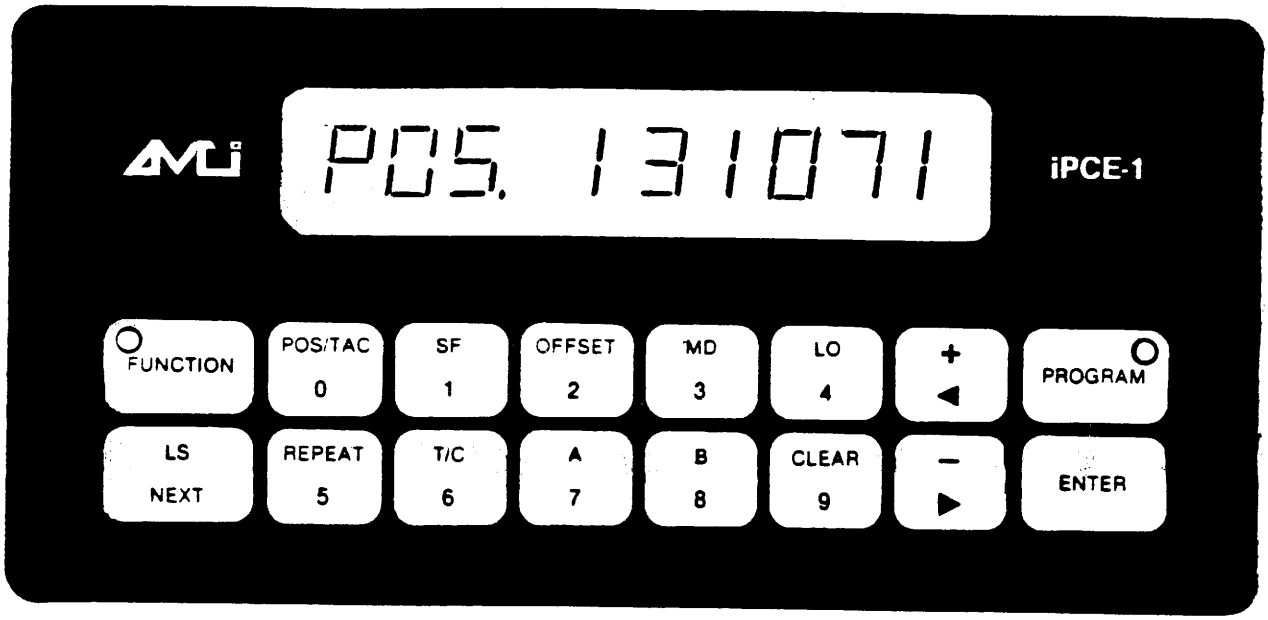


Fig.3 iPCE-1 Front Panel

DISPLAY Information is easily read on a bright vacuum fluorescent 10 character alphanumeric display.

KEYBOARD Data is entered on a sealed keyboard with 16 tactile feel keys. Two level keys are organized for efficient data entry and inspection.

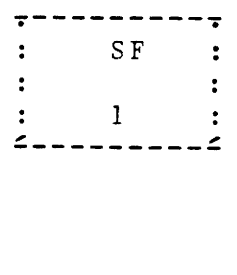
KEY DESCRIPTIONS

○ [LED] FUNCTION

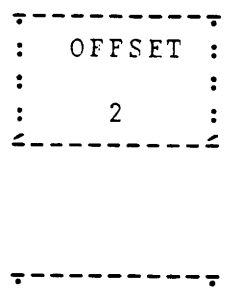
FUNCTION KEY The keyboard has two levels for most keys. The function key selects by alternate action which level is active. When the Function LED is illuminated, the keyboard is in the Function Mode - [POS/TAC, SF, etc]. When the Function LED is OFF, the keyboard is in the Numerical Mode - [0,1,2, NEXT, etc].

POS/TAC 0

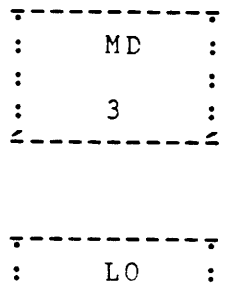
POSITION/TACHOMETER KEY This key displays, by alternate action, the scaled position data and 4 digit speed data [RPM]. [**POS 131072**],[**TACH 1200**]



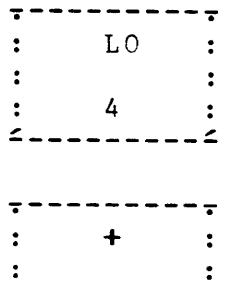
SCALE FACTOR KEY This key is used to display or program the number of turns, the full scale count and the number of counts/turn. The following are the maximum values allowed:
Number of Turns - 999
Full Scale Count - 131,072
Counts/Turn - 1024
[N. TURNS XXX], [F.SC. XXXXXX], [S.F. XXXX.XXX]



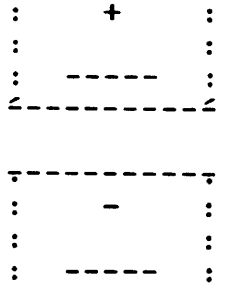
OFFSET KEY This key is used to display or program an angular displacement of the transducer shaft from electrical [true] zero. The offset is a positive displacement which is added to the angle read from the transducer.



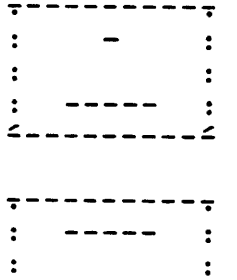
MOTION DETECTOR This key is used to display or program the FROM-TO setpoints in RPM [revolutions per minute] of the motion comparator. If the FROM limit setpoint is less than the TO setpoint, the MD output will be enabled if the transducer speed is between the setpoints. If the FROM limit setpoint is greater than the TO setpoint, the MD output will be enabled if the transducer speed is outside the setpoints. **[M.D. XXX-XXX]**



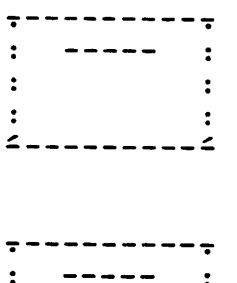
LOGIC OUTPUT KEY This key is used to program the format of the output data. The available output codes are: +Binary, -Binary, +BCD, -BCD, +Gray and -Gray. **[L.OUT +BIN]**



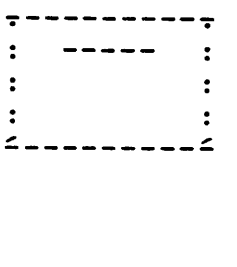
INCREMENT KEY Not applicable



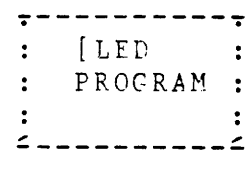
DECREMENT KEY Not applicable



MOVE CURSOR LEFT KEY Moves the blinking cursor to the left by one character. The cursor indicates the digit that will be changed when entering data. The cursor will move one digit to the right when a numbered key is pressed.



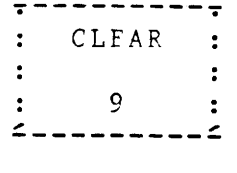
MOVE CURSOR RIGHT KEY Same as above except cursor moves to the right.



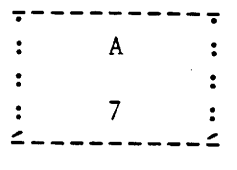
PROGRAM KEY This key is used to enter the Program Mode. User selected 4 digit Program Codes can be used to restrict entry into any of the available programs. **[PROGRAM 4], [P.CODE XXXX]**

ENTER KEY This key is used in the Program Mode. When the ENTER key is pressed, two things happen:

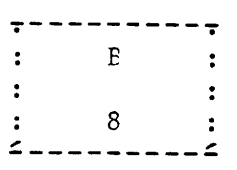
1] Entered data is immediately executed.
2] Entered data is stored in E^2PROM permanent memory.



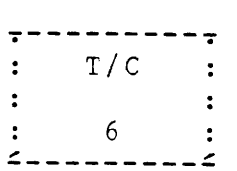
CLEAR KEY The clear key is used in the Auto-Zero and Program Code commands.



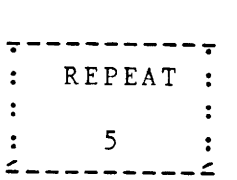
A KEY Used in optional functions.



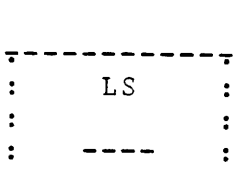
RESET/PRESET KEY This key is used to display or program the reset or preset function. **[PR. XXXXXX]**



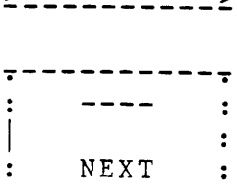
TIMER/COUNTER KEY Used to access timer/counter optional functions.



DECIMAL POINT KEY This key is used to display or program the decimal point position. **[DEC.POINT X]**



LIMIT SWITCH KEY This key is used to display or program the 2 limit setpoints. **[L.1 XXXXXX], [L.2 XXXXXX]**

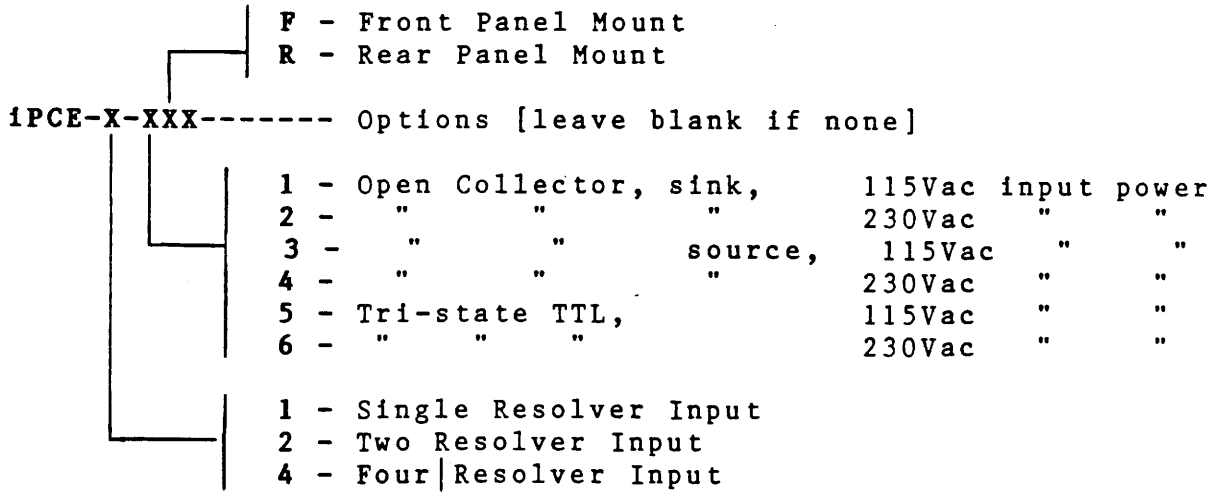


NEXT KEY This key is used to examine or modify the P.CODE and to examine the Model/Revision number and the Check sum or its Program memory.

8.0] iPCE SERIES COMPARISON

MODEL [Option]	TRANSDUCER	MAX. FULL SCALE TURNS	MAX.FULL SCALE	TYPE OF ENCODER
iPCE-1	HT-20	999	131,072	Absolute single turn or quasi-absolute multiturn
iPCE-2	[2] HT-20	1	1024	2 Axis single turn
iPCE-2 [M]	HTT-20-100	100	102,400	Absolute multiturn
iPCE-2 [N]	HTT-20-180	180	184,320	Absolute multiturn
iPCE-4	[4] HT-20	1	1024	4 Axis single turn

9.0] iPCE PART NUMBERING SYSTEM



Note: Above part number describes only the controller. Transducer and other system components are specified separately.

10] iPCE-1 PROGRAMMING INSTRUCTIONS

DATA ENTRY
Numerical data can only be entered if the display cursor is BLINKING. Data is entered digit by digit by pressing the appropriate numbered keys. The BLINKING cursor shows the location of the next entry. After a digit is entered on the display, the cursor will move to the right for the next entry. The cursor can be moved using the > < keys, if necessary. After each display line of data have been changed, the ENTER key must be pressed. The entry will now be executed and stored in E^2PROM memory. Illegal data will not be accepted.

PROGRAM SELECTION
iPCE-1 allows the user to run any 1 of 9 programs. On power failure or loss, the last program in operation before the power outage will be reinstated on power up.

PROGRAM CODE
A program code P-CODE is available for each program to restrict access to program commands. All factory supplied units are P-CODE programmed with 0000 [4 zeros] in all programs. This code will allow universal access to all programs without the need of a P-CODE. If a user wants to have his own code for a specific program, he can do so in the program mode.

10.1] PROGRAM MODE without P.CODE [P.CODE = 0000]

You want to enter the program mode of program 1, which has a universal access P.CODE = 0000.

PRESS	DISPLAY	COMMENTS
[PROGRAM]	**[PROGRAM 4]**	Current running program
[1],[ENTER]	**[PROGRAM 1]**	Program LED **ON**. Program 1 ready to program. Program 1 running.
.		
.		
.		
[PROGRAM]	**[POS. XXXXXX]**	Program LED **OFF**. Out of program mode. Program 1 running.

Note: XXXXXX - Any 6 digit number

10.2] NEW PROGRAM CODE

You want to enter your own program code [1234] for program 2.

PRESS	DISPLAY	COMMENTS
[PROGRAM]	[PROGRAM 1]	Current running program.
[2],[ENTER]	[PROGRAM 2]	Program LED ON. Program 2
[FUNCTION]	[PROGRAM 2]	Function LED OFF.
[NEXT]	[P.CODE-0000]	Old program 2 code [0000]
[1,2,3,4],[ENTER]	[P.CODE-1234]	New program code.
[PROGRAM]	[POS. XXXXXX]	Program LED OFF. Out of program mode.

10.3] PROGRAM MODE with P.CODE

You want to enter program 2 program mode. A P.Code [1234] is necessary for access.

PRESS	DISPLAY	COMMENTS
[PROGRAM]	[PROGRAM 2]	Current running program.
[ENTER]	[P.CODE-]	Asking for program code.
[1,2,3,4],[ENTER]	[PROGRAM 2]	Program LED ON. Program 2 ready to program.
[PROGRAM]	[POS. XXXXXX]	Program LED OFF. Out of program mode. Program 2 running.

10.4] CHANGE PROGRAM CODE

You want to change program 2 program code to [0000].

PRESS	DISPLAY	COMMENTS
[PROGRAM]	[PROGRAM 2]	Current running program.
[ENTER]	[P.CODE-]	Asking for program 2 code.
[1,2,3,4],[ENTER]	[PROGRAM 2]	Program LED ON.
[FUNCTION]	[PROGRAM 2]	Function LED OFF.
[NEXT]	[P.CODE-1234]	Old program code.
[0,0,0,0],[ENTER]	[P.CODE-0000]	New P.Code.

10.5] PROGRAM SCALE FACTOR

iPCE-1 is programmable for up to 1024 turns with a maximum full scale count of 131,072 and a maximum counts/turn of 1024.

You want to program a full scale count of 110,050 for 128 turns.

PRESS	DISPLAY	COMMENTS
*		Must be in program mode. See 10.1 or 10.3.
[SF]	**[N. TURNS XXX]**	Number of turns display.
[0,1,2,8],[ENTER]	**[F.S.C. 131072]**	Full Scale Count display. Displayed number is max. programmable count allowed, for the number of turns entered.
[1,1,0,0,5,0], [ENTER],[SF]	**[SF. 859.766]**	Scale Factor display. Computed counts/turn.

This sequence clear, offset, preset and decimal point.

10.6] PROGRAM OFFSET

You want to offset [advance] the electrical position of the transducer by 10,000.

PRESS	DISPLAY	COMMENTS
*		Must be in program mode. See 10.1 or 10.3.
[OFFSET]	**[OFF. XXXXXX]**	Current offset.
[A,B,C,D,E,F], [ENTER]	**[OFF. ABCDEF]**	New offset. ABCDEF = 10,000 + old offset.

Note: * - A reminder to be in the program mode.

10.7] PROGRAM AUTO-ZERO OFFSET

The transducer is aligned to mechanical zero. You want the electrical position to be zero.

PRESS	DISPLAY	COMMENTS
*		Must be in program mode. See 10.1 or 10.3.
[POS/TAC]	**[POS. XXXXXX]**	Current position.
[CLEAR]	**[POS. 000000]**	Calculated offset is stored in EEROM.

10.8] PROGRAM DECIMAL POINT

You want to program a decimal point as follows: XXXX.XX

PRESS	DISPLAY	COMMENTS
*		Must be in program mode See 10.1 or 10.3.
[REPEAT]	**[DEC.POINT X]**	Decimal point display.
[2], [ENTER]	**[DEC.POINT 2]**	

Note: Decimal point display indicates the number of decimal point places from the right.

10.9] REMOTE PRESET/RESET

An input [Input 1, pin 3-J1] is provided, to force iPCE electrical position to a pre-programmed count. If zero is the programmed count, the function is a reset.

You want to program a reset function.

PRESS	DISPLAY	COMMENTS
*		Must be in program mode. See 10.1 or 10.3.
[B]	**[PR. XXXXXX]**	Old preset count. [The number of displayed digits depends on the scale factor].
[0,0,0,0,0,0]		
[ENTER]	**[PR. 000000]**	

Whenever there is Low to High transition on Input 1, position will become zero. The value of the calculated offset can be viewed on the Offset display. It is not stored in EEROM and is lost on power down.

10.10] PROGRAM MOTION DETECTOR

A] You want to program the MD output to turn OFF if the speed of the transducer fall below 10 RPM or equals or exceeds 50 RPM.

PRESS	DISPLAY	COMMENTS
*		Must be in program mode. See 10.1 or 10.3.
[MD]	**[M.D. XXX-XXX]**	Current Motion Detector dwell limits.
[0,1,0],[0,5,0] [ENTER]	**[M.D. 010-050]**	10 ≥ MD ON > 50 RPM.

B] You want to program the MD output to turn ON if the speed of the transducer falls below 10 RPM or equals or exceeds 50 RPM.

[MD]	**[M.D. XXX-XXX]**	Current limits.
[0,5,0].[0,1,0] [ENTER]	**[M.D. 050-010]**	10 ≥ MD OFF > 50 RPM.

10.11] LIMIT PROGRAMMING

You want to program Limit 1 for 12020 and Limit 2 for 18900.

PRESS	DISPLAY	COMMENTS
[LS]	**[L.1 XXXXXX]**	Limit 1 setpoint display.
[0,1,2,0,2,0], [ENTER]	**[L.1 012020]**	Output - pin 40, J1.
[LS]	**[L.2 XXXXXX]**	Limit 2 setpoint display
[0,1,8,9,0,0] [ENTER]	**[L.2 018900]**	Output - pin 36, J1.

Note: Output will be enabled when transducer position is at or greater than setpoint number.

10.12] PROGRAM LOGIC OUTPUT CODE

* Must be in program mode.
See 10.1 or 10.3.

To program your logic output code, press the [LO] key repeatedly until it appears on the display. Press [ENTER].

Note: 6 codes are available + Binary, - Binary, + BCD, - BCD, + Gray and - Gray.

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iPLC/PCE-1 KEYBOARD COMMANDS

1. CHANGE: To read or change the Program Code.

PRESS	DISPLAY	COMMENTS
[PROGRAM],[ENTER]	[PROGRAM 1]	Current running program.
[FUNCTION]	[PROGRAM 1]	
[NEXT]	[P. CODE-XXXX]	Current P. Code

To change P. Code, enter new P. Code, press ENTER.

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2. ADDITION: To clear a Transducer Fault.
(A functioning transducer must be connected).

Press CLEAR while in POS/TAC function.

NOTES:

1. When in transducer fault mode, all outputs are off.
2. To see transducer position in Transducer Fault mode, press OFFSET key.

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3. ADDITION: To display model number and EPROM memory check sum.

PRESS	DISPLAY	COMMENTS
[PROGRAM]	[PROGRAM 1]	Current running program.
[NEXT]	[IPLC-1 -3]	Model and Revision number
[NEXT]	[EPROM XXXX]	Check sum.

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4. ADDITION: To clear all data in a program.

PRESS	DISPLAY	COMMENTS
[PROGRAM] [1]	[PROGRAM 1]	Select program to be cleared.
[ENTER]	[PROGRAM 1]	
[CLEAR]	[CLR. PRG 1]	
[ENTER]	[CLR. PRG 1]	Program 1 cleared after 5 seconds.

5. ADDITION: To clear a EEROM error.

PRESS	DISPLAY	COMMENTS
	[EEROM ERR. *]	

Turn power to unit OFF then ON. If the display is the same, continue to next step.

[CLEAR]	**[CLEAR PRG x]**	Y=1,2,3,4-CURRENT PROGRAM
[ENTER]	**[CLEAR PRG X]**	Program cleared after 5 seconds.

NOTE: Only an [EEROM ERR. *] with a blinking asterisk (*) can be cleared. If the (*) is not blinking after power interruption, unit must be returned for repair.

NOTE: A EEPOM error may be displayed when entering a new program for the first time. This is normal. All programs on new units or on units with new EEROM's must be initialized before they can be accessed. Factory units with under 10 programs are initialized at the factory. New units with over 10 programs must be initialized by the end users when the programs are accessed for the first time and first time only. To initialize a program follow the procedure for clearing a EEPOM error.

---

6. ADDITION: To clear a RAM error [RAM ERROR *], turn power to unit OFF then ON. If display is the same, unit must be returned for repairs.

11] LOGIC INPUT CONNECTIONS

PRESET/RESET [Input 1, pin 3-J1]. A zero [0] to one [1] transition will initiate preset/reset.

DISPLAY DISABLE [Input 5, pin 12-J1]. A logic 1 will freeze the display.

KEYBOARD DISABLE [Input 6, pin 10-J1]. A logic 1 will disable the keyboard.

PROGRAM DISABLE [Input 4, pin 4-J1]. A logic 1 will disable keyboard programming.

DATA CONTROL INPUTS

TRANSITION [Input 7, pin 8-J1]. A zero [0] to [1] or a [1] to [0] transition will update the output data latch within 50μ sec. of the change. This input can be connected to a watch dog timer output of a programmable controller.

LEVEL [Input 8, pin 6-J1]. A logic [1] will continuously update the output latches every 400μ sec. A logic [0] will freeze the output latches within 10 mS.

Input Logic [1]- 3 to 15 Vdc.
" " [0]- 0 to 1 Vdc.

12] J1 INPUT/OUTPUT ASSIGNMENTS

Pin 1	In 2	Pin 15	Bit 10	Pin 29	Bit 6
2	In 3	16	GND	30	Bit 19
3	In 1	17	Bit 9	31	Bit 5
4	In 4	18	+Tx	32	Bit 20
5	Bit 13	19	Bit 16	33	Bit 4
6	In 8	20	-Tx	34	Bit 21
7	Bit 12	21	OE	35	Bit 3
8	In 7	22	-Rx	36	LS 2
9	Bit 11	23	--	37	Bit 2
10	In 6	24	+Rx	38	MD
11	Bit 14	25	Bit 8	39	Bit 1 (LSB)
12	In 5	26	Bit 17	40	LS 1
13	Bit 15	27	Bit 7		
14	Vn	28	Bit 18		

Notes: 1] [OE] Output Enable pin 21-J1 must be grounded for normal operation. [This is tri-state control on TTL output units].
2] Tx,Rx are optional assignments.
3] Internal +12Vdc unregulated supply [pin 14-J1] may be used as a logic [1] supply for the inputs.

Appendix : iPCE-2-1F/R

Model iPCE-2-1F/R is a absolute 2 axis single turn encoder. It is the same as iPCE-1, except for the following:

1] Data outputs share a common bus.

2] Only single turn operation. Transducers share a common programmable scale factor of 2 to 1024 counts/rev. **[S.FAC. 1024]**

3] [REPEAT] Key alternatively selects the displayed transducer. **[POS.A. 1099]**, **[POS.B. 1021]**, or **[TACH.A. 0325]**, **[TACH.B. 1010]**.

4] [OFFSET] Key displays the 2 transducers sequentially. **[OFF.A. 0622]**, **[OFF.B. 1020]**.

5] [MD] Key. The Motion Detector monitors transducer A.

6] Deleted Functions: Limit setpoints, Decimal point, Reset/preset.

7] 400μ sec. conversion time for each transducer.

8] Input 2 selects the transducer data on the output bus. Logic "0" - Transducer A; Logic "1" - Transducer B. Logic level must be stable for 400μ sec. minimum before output data is valid.

Appendix : iPCE-4

Model iPCE-4 is an absolute 4 axis single turn encoder. It is the same as iPCE-1, except for the following.

1] Data outputs share a common bus.

2] Only single turn operation. Transducers share a common programmable scale factor of 2 to 1024 counts/rev. [S.FAC 1024].

3] [REPEAT] Key alternatively selects the displayed transducer. [POS.A 1023], [POS.B 1011], [POS.C 1001], [POS.D 0994] or [TACH.A 0325], [TACH.B 0023], [TACH.C 0123], [TACH.D 0543].

4] [OFFSET] Key displays the 4 transducers sequentially. [OFF.A. 0000], [OFF.B. 0012], [OFF.C 1001], [OFF.D. 0100].

5] [MD] Key. The Motion Detector monitors transducer A.

6] Deleted Functions: Limit setpoints, decimal point, reset/preset.

7] 400 μ sec. conversion time for each transducer.

8] Inputs 2 & 3 select the transducer data on the output data bus. Input logic levels must be stable for 400 μ sec. minimum before output data is valid.

TRANSDUCER	INPUT 2	INPUT 3
A	0	0
B	1	0
C	0	1
D	1	1

17) SOURCE DRIVER OUTPUT OPTION

Output Driver ..... Sprague UDN-2981A or equivelent.

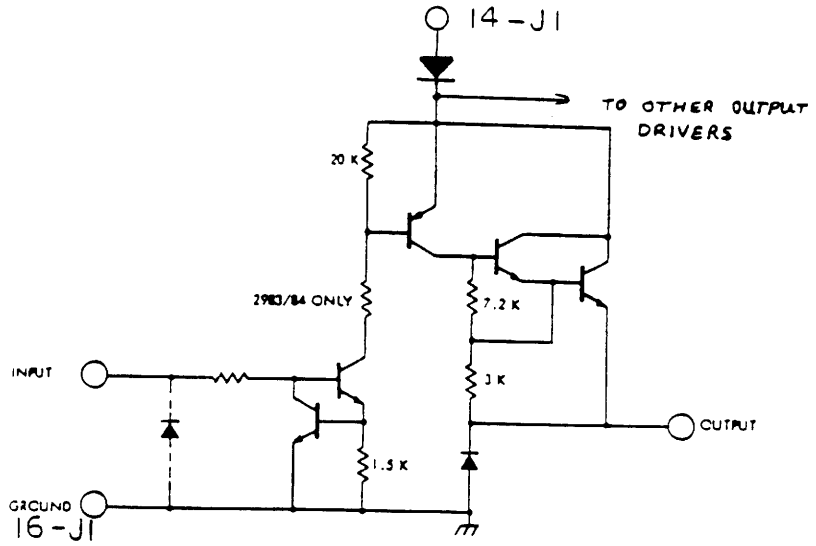
Output Voltage Range ..... +5 top +50 Vdc.

Maximum Output Current ..... 100 mAdc.

Maximum Saturation Voltage 1.8Vdc

CONNECTION INFORMATION:

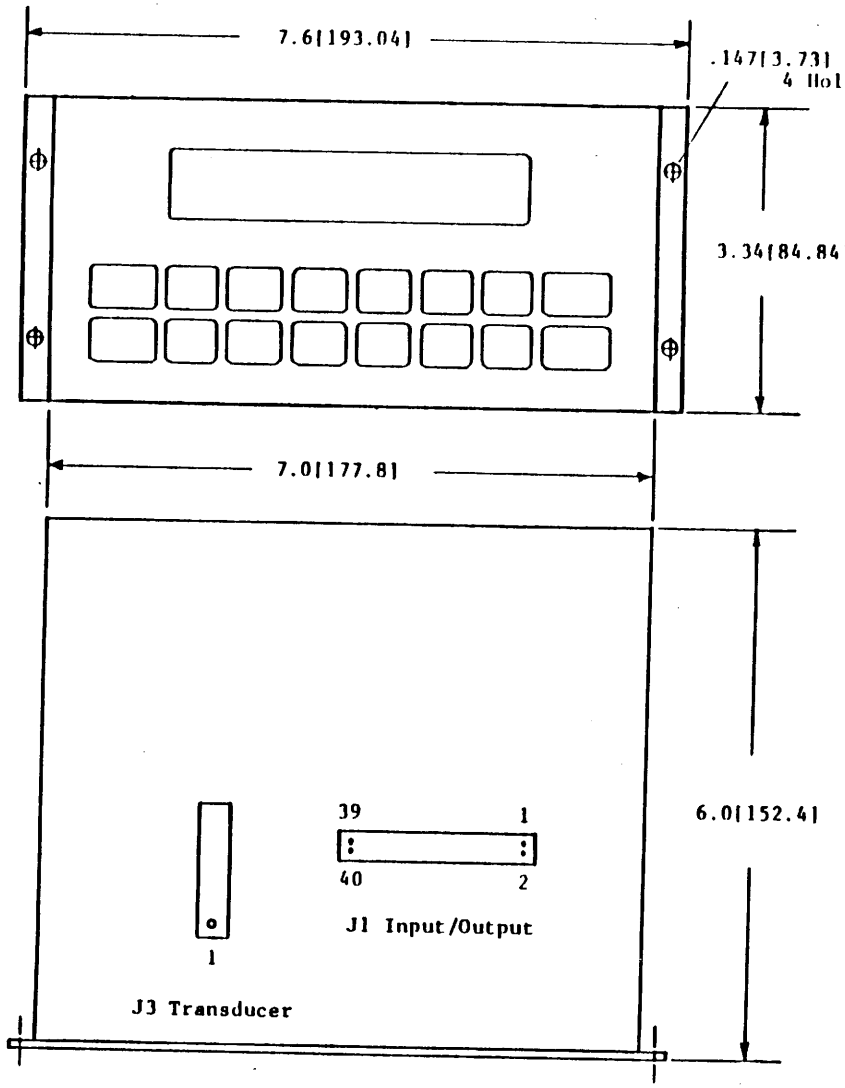
To power the output drivers, it is necessary the connect a positive external supply (+5 to +50 Vdc) to Vn (pin 14-J1) with respect to GND (pin 16-J1).

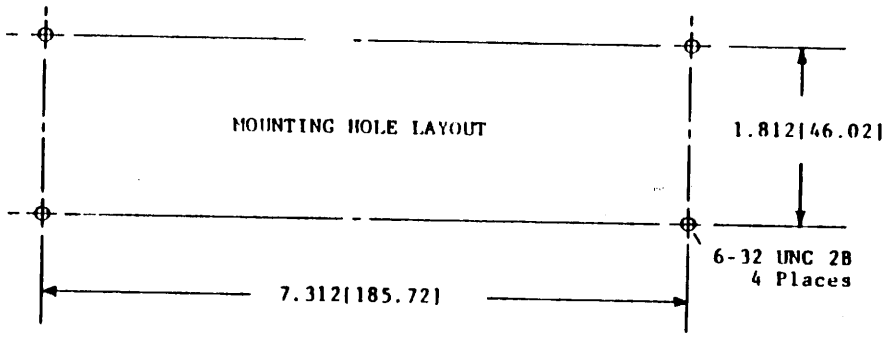


INDIVIDUAL DRIVER SCHEMATIC DIAGRAM

NOTE: The Motion Detector Output (pin 38-J1) is an open collector sinking output.

DATE	SYM	REVISION RECORD	APPR	DR	CK





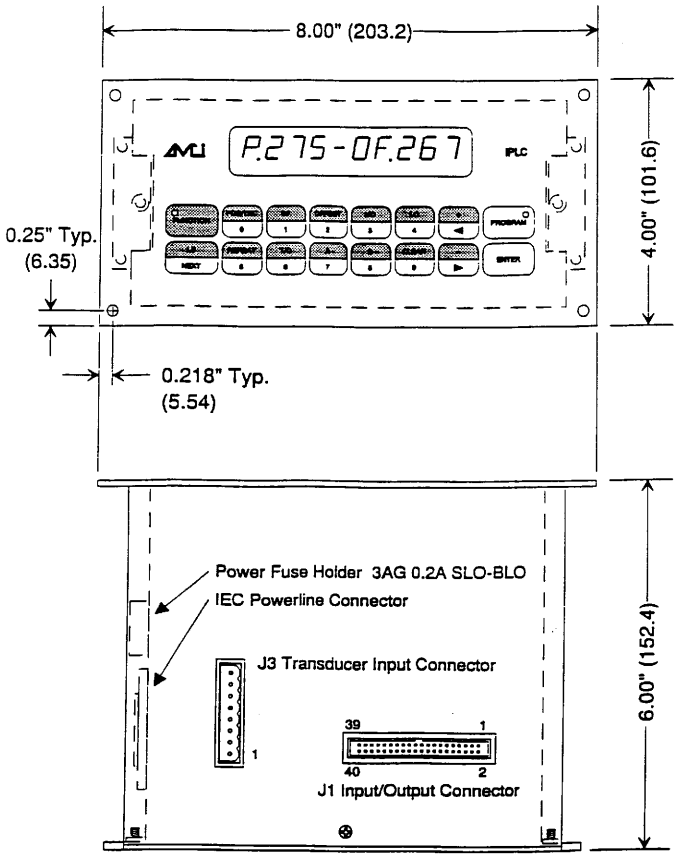
REAR PANEL MOUNTING

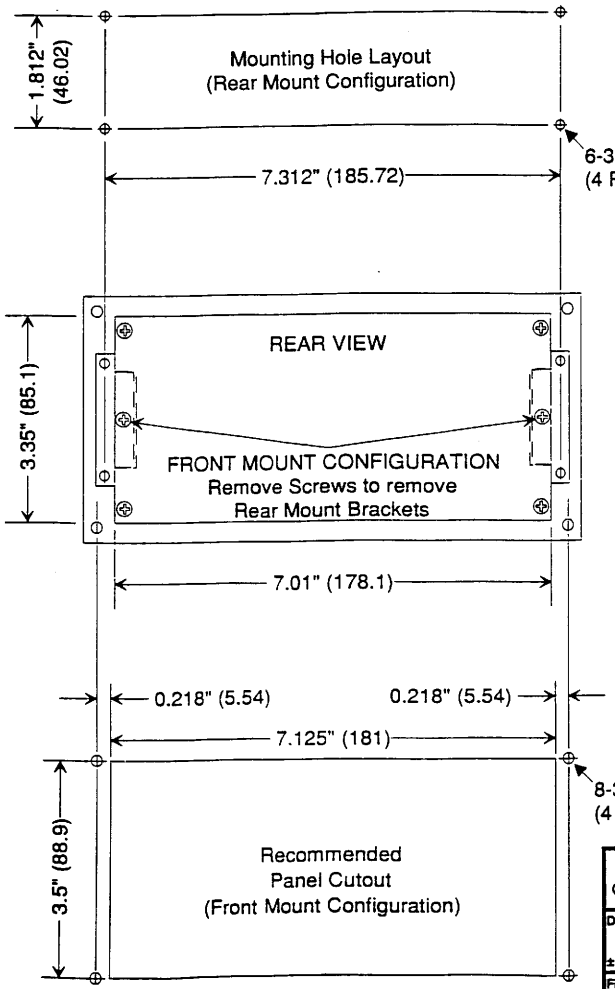
TOLERANCES (UNLESS OTHERWISE NOTED)	AMCI		
DECIMAL	1PLC/1PCE	SCALE	DRAWN BY JA
FRACTIONAL	TITLE OUTLINE DRAWING		APPROVED BY DRC
ANGULAR	DATE 10/9/85	DRAWING NUMBER B1011 Rev.A	

K-E ALBANY, NY ENGINEERS STANDARD FORM

MADE IN U.S.A.

DATE	SYM	REVISION RECORD	AUTH	DR	CK





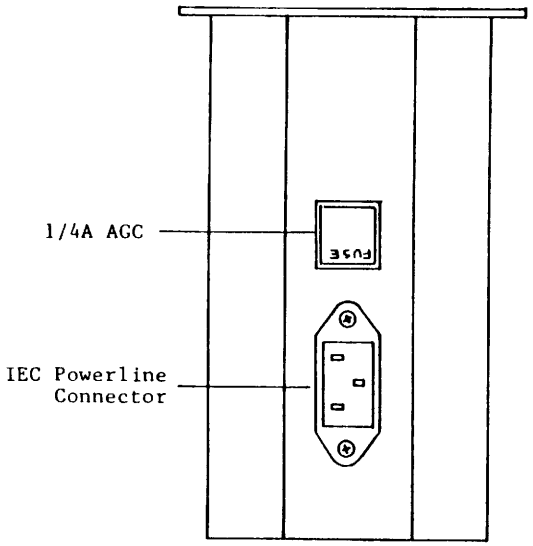
Universal Mount iPLC/iPCE's can be used in either Front or Rear Mount applications. For Front Mount applications, remove the rear mount brackets before installation. Rear Mount applications do not require modification.

Universal Mount units are not exact replacements for existing Rear Mount units because of the front bezel. See B1011 Rev. A for Rear Mount dimensions. Replacement applications should check for proper clearance before ordering this mounting option.

( ) = Dimensions in millimeters

TOLERANCES (EXCEPT AS NOTED)	ADVANCED MICRO CONTROLS INC.		
DECIMAL ±	iPLC/iPCE	SCALE 1:2	DRAWN BY DWN APPROVED BY WKE
FRACTIONAL ±	TITLE Outline Drawing: Universal Mount		
ANGULAR ±	DATE 2/19/93	DRAWING NUMBER B1185	

DATE	SYM	REVISION RECORD	AUTH	DR	C

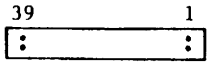


J1 INPUT/OUTPUT

1	In 2	11	Bit 14	21	$\overline{OE}$	31	Bit 5
2	In 3	12	In 5	22	-Rx	32	Bit 20
3	In 1	13	Bit 15	23	Reserve	33	Bit 4
4	In 4	14	Vn	24	+Rx	34	Bit 21
5	Bit 13	15	Bit 10	25	Bit 8	35	Bit 3
6	In 8	16	GND	26	Bit 17	36	LS 2
7	Bit 12	17	Bit 9	27	Bit 7	37	Bit 2
8	In 7	18	+Tx	28	Bit 18	38	MD
9	Bit 11	19	Bit 16	29	Bit 6	39	Bit 1
10	In 6	20	-Tx	30	Bit 19	40	LS 1

J3	
1	A
2	B
3	Shield
4	GND
5	C
6	E
7	F
8	G

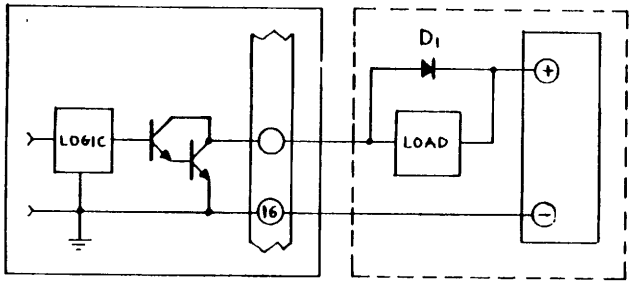
J3 Transducer



J1 Input/Output

Input Logic [1] 3 to 15Vdc
[0] 0 to 1 Vdc

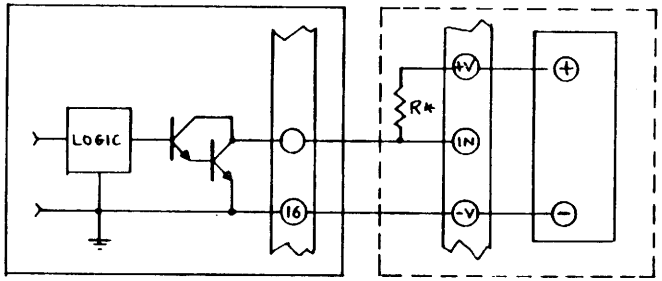
J1 Input/Output - IDC Flat cable connector
J3 Transducer- Buchanan SSB4V08S [Black]
Phoenix MSTB1.5/8-ST-5.08 [Green]



iPCE-1 Output Typical User Connection

1. iPCE-1 Driving Inductive Loads [Relays, Solenoids, etc.]

D1- Clamp Diode 1N4002 or equiv.



iPCE-1 Output Typical User Connection

2. iPCE-1 Driving Logic Circuits [P.C.'s, etc.]

*Add 1K resistor on each output driving TTL type input modules.

Open Collector Output
Vce Max. 50Vdc
Vce[sat] @ 100Ma =.9Vdc

Tx,Rx- Optional Assignments

$\overline{OE}$- Output Enable, Gnd. for normal operation.

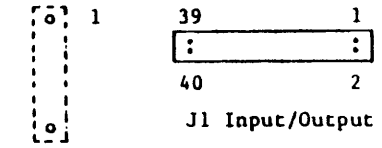
Note: Internal +12Vdc unregulated supply [pin 14], can be used as a logic 1 supply for the inputs.

TOLERANCES (EXCEPT AS NOTED)	AMCI		
DECIMAL .	Serial No. 2535 and up.	SCALE	DRAWN BY JR
FRACTIONAL .	TITLE iPCE-1-1/2 Open Collector Conn. Dwg.		APPROVED BY WXC
ANGULAR .	DATE 5/12/86	DRAWING NUMBER B1031	

DATE	SYM	REVISION RECORD	AUTH	DR	CK

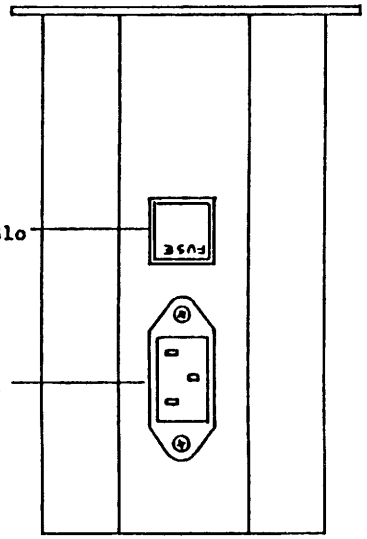
J1 INPUT/OUTPUT

1	In 2	11	Bit 14	21	ŌĒ	31	Bit 5
2	In 3	12	In 5	22	-Rx	32	Bit 20
3	In 1	13	Bit 15	23	Reserve	33	Bit 4
4	In 4	14	Vn	24	+Rx	34	Bit 21
5	Bit 13	15	Bit 10	25	Bit 8	35	Bit 3
6	In 8	16	GND	26	Bit 17	36	LS 2
7	Bit 12	17	Bit 9	27	Bit 7	37	Bit 2
8	In 7	18	+Tx	28	Bit 18	38	MD
9	Bit 11	19	Bit 16	29	Bit 6	39	Bit 1
10	In 6	20	-Tx	30	Bit 19	40	LS 1



J1 Input/Output

J3 Transducer [on other side]



Input Logic [1] 3 to 15Vdc
[0] 0 to 1 Vdc

J1 Input/Output - IDC Flat cable connector

J3 Transducer-

Phoenix MSTB1.5/8-ST-5.08 [Green]

Tx,Rx- Optional Assignments

ŌĒ- Output Enable, Gnd. for normal operation.

Note: Internal +12Vdc unregulated supply [pin 14], can be used as a logic 1 supply for the inputs.

TOLERANCES (UNLESS OTHERWISE NOTED)	AMCI		
DECIMAL ±	Serial No. 2535 and up.	SCALE	DRAWN BY JR
			APPROVED BY WKC
FRACTIONAL ±	TITLE IPCE-4 CONNECTION DRAWING		
ANGULAR ±	DATE 12/1/87	DRAWING NUMBER B1057	

K-E ALPHANUMERIC NO. 1485 ENGINEERS STANDARD FORM

MADE IN U.S.A.

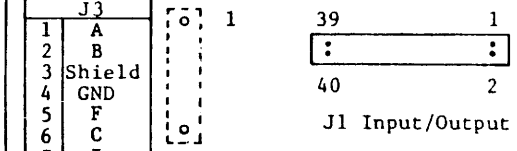
DATE	SYM	REVISION RECORD	AUTH	DR	C

J1 INPUT/OUTPUT

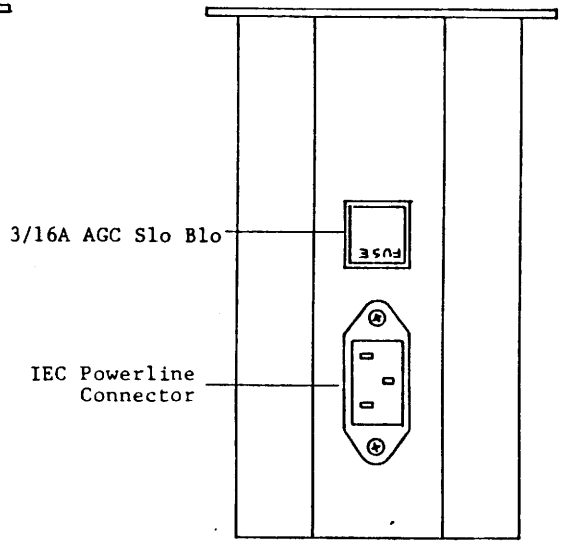
1	In 2	11	Bit 14	21	ŌĒ	31	Bit 5
2	In 3	12	In 5	22	-Rx	32	Bit 20
3	In 1	13	Bit 15	23	Reserve	33	Bit 4
4	In 4	14	Vn	24	+Rx	34	Bit 21
5	Bit 13	15	Bit 10	25	Bit 8	35	Bit 3
6	In 8	16	GND	26	Bit 17	36	LS 2
7	Bit 12	17	Bit 9	27	Bit 7	37	Bit 2
8	In 7	18	+Tx	28	Bit 18	38	MD
9	Bit 11	19	Bit 16	29	Bit 6	39	Bit 1
10	In 6	20	-Tx	30	Bit 19	40	LS 1

J3	
1	A
2	B
3	Shield
4	GND
5	F
6	C
7	I
8	G

J3 Transducer [on other side]

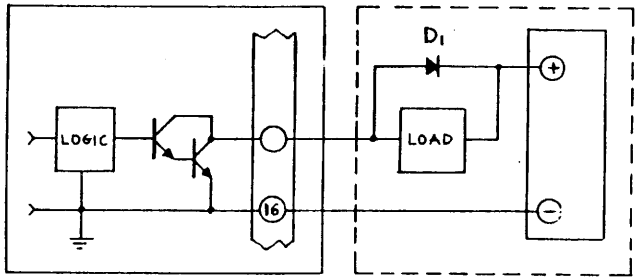


J1 Input/Output



Input Logic [1] 3 to 15Vdc
[0] 0 to 1 Vdc

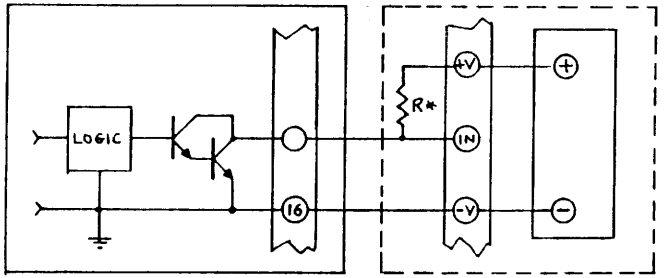
J1 Input/Output - IDC Flat cable connector
J3 Transducer- Buchanan SSB4V08S [Black]
Phoenix MSTB1.5/8-ST-5.08 [Green]



iPCE-2 Output Typical User Connection

1. iPCE-2 Driving Inductive Loads
[Relays, Solenoids, etc.]

D1- Clamp Diode 1N4002 or equiv.



iPCE-2 Output Typical User Connection

2. iPCE-2 Driving Logic Circuits
[P.C.'s, etc.]

*Add 1K resistor on each output driving TTL type input modules.

Open Collector Output
Vce Max. 50Vdc
Vce[sat] @ 100Ma =.9Vdc

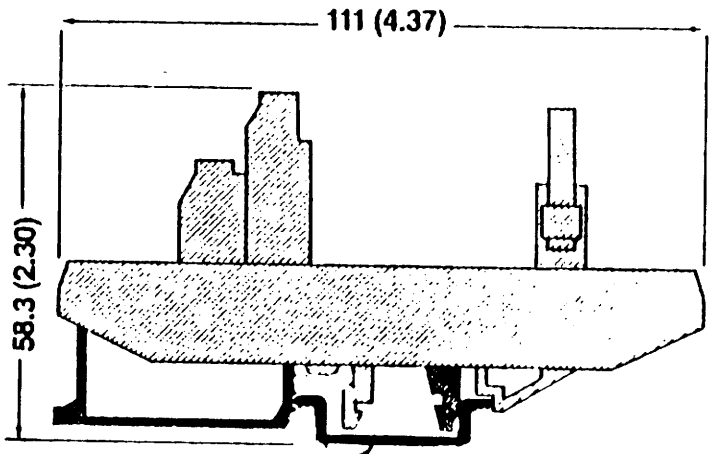
Tx,Rx- Optional Assignments

ŌĒ- Output Enable, Gnd. for normal operation.

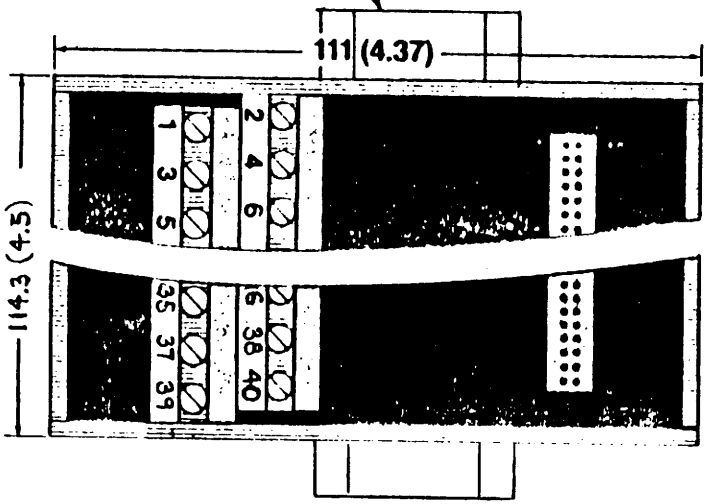
Note: Internal +12Vdc unregulated supply [pin 14], can be used as a logic 1 supply for the inputs.

TOLERANCES (EXCEPT AS NOTED)	AMCI		
DECIMAL ±	Serial No. 2535 and up.	SCALE	DRAWN BY JR / APPROVED BY WXC
FRACTIONAL ±	TITLE iPCE-2-1/2 Open Collector Conn. Dwg.		
ANGULAR ±	DATE 5/12/86	DRAWING NUMBER B1032 Rev A	

DATE	SYM	REVISION RECORD	AUTH	DR.	CK.



6" long Mounting Rail, supplied.



** Cable connectors are keyed. Make sure to mate them properly.

Notes: 1] 12" cable, for connecting to iPLC/PCE controllers, is supplied.
2] IM-1 terminal numbers correspond to iPLC/PCE J1 pin numbers.
3] [ ] dimensions are in inches.

TOLERANCES (EXCEPT AS NOTED)	ADVANCED MICRO CONTROLS, INC.		
DECIMAL ±	IM-1	SCALE	DRAWN BY LOB APPROVED BY WLL
FRACTIONAL ±	TITLE: INTERFACE MODULE OUTLINE DRAWING		
ANGULAR ±	DATE 6/22/87	DRAWING NUMBER A1036	

ADVANCED MICRO CONTROLS INC.

PLYMOUTH INDUSTRIAL PARK., TERRYVILLE, CT 06786 T: (860) 585-1254 F: (860) 584-1973