

APPLICATION		REVISIONS			
NEXT ASSY	USED ON	REV	DESCRIPTION	DATE	APPROVED
		A	ECN 299	09/05/07	JWM
		B	ECN 302: MATE -7 TO -9	06/24/09	JWM

CONTRACT NO.		<b>QUAD TRON, INC.</b>			
<b>APPROVALS</b>	<b>DATE</b>	<b>MICRO PCM ENCODER SERIES, MODEL MI_BASE3</b>			
DRAWN MJC	09/05/07	<b>PCM BASE/PRE-MOD FILTER MODULE</b>			
CHECKED RHM	09/05/07	SIZE	FSCM NO.	DRAWING NO.	REV A
ISSUE JWM	09/05/07	A	OBPE4	57-2566	SHEET 1 OF 6

# MICRO PCM ENCODER SERIES

## MI\_BASE3 MODULE

### PCM BASE/PRE-MOD FILTER MODULE

The MI\_BASE3 module with a Micro Series power supply module connected forms a base data acquisition unit for a standalone or distributed PCM system. For a distributed PCM system, the MI\_BASE3 module/power supply can be a controller or remote data acquisition unit. Mechanically other stackable modules mount on top of the MI\_BASE3/power supply data acquisition unit. The customer can stack and interchange additional modules on top, for example, signal conditioning, Multiplexers, Thermocouples, Flash Memory Recorder modules, and etc to meet customer requirements. A 4-wire bus (2 twisted pairs) is used to electrically connect multiple data acquisition units in the distributed PCM system. This 4-wire bus can be either RS485 or LVDS and up to 200 feet in total length. Additionally, this 4-wire bus can be connected to a CAIS bus using Quad Tron's CAIS Bus Interface Module that also operates with Quad Tron's and other vendors CAIS compatible Series Encoders. Programming a distributed PCM system is performed through the controller to minimize wiring (single point programming.) Programming is programmed via any Personal Computer with the controller connected to the Com Port with Windows based software provided for parameter and frame format programming. Additionally the PCM system can be remote programmed with one RS485 twisted pair. The MI\_BASE3 module also supports high-speed analog and digital sampling rates with simultaneous sampling. The MI\_BASE3 has an internal pre-modulation filter (PMF). The PMF input is one of the programmable code outputs internally selected.

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**PCM Encoder Operation Parameters:**

Bit Rate:

Programmable, DC to 5 mega bits per second.

Bits Per Word:

8, 9, 10, 11, 12, 13, 14, 15, 16, programmable.

Synchronization Pattern:

Synchronization pattern and sub frame ID's are programmable.

Frame Format:

Any frame format is programmable with sub frames and super commutation allowed. A counter may also be programmed within the frame format along with a subframe ID counter.

PCM Code Outputs:

- Single Ended PCM output 1
- RS422 PCM output 1
- Single Ended PCM output 2
- RS422 PCM output 2
- RS485 PCM output 3
- PMF output 4

The PCM code output is programmable to the following codes:

- |       |       |                          |
|-------|-------|--------------------------|
| NRZ-L | BIO-L |                          |
| NRZ-M | BIO-M | RNRZ-L (randomized data) |
| NRZ-S | BIO-S |                          |

Other Outputs:

- Zero Degree Clk,
- Word Pulse,
- Frame Pulse,
- 0 to +3.3 Volts

Pre Mod Filter Output:

PMF output and return available at J1 connector. The PMF input is one of the programmable code outputs internally selected. Output:  $\pm 2.5$  Volts P/P, or specify.

Asynchronous Data RS232/RS485 Input:

- RS232 or RS485 Asynchronous Data Input for PCM data acquisition, (GPS, etc.)
- Includes 1K word FIFO

Power: See Micro Series Power Supply Modules

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**Environmental:**

Operating Temperature: -40°C to +85°C  
Storage Temperature: -55°C to +125°C  
Humidity: Relative humidity of 85% for two hours at 65°C.  
Altitude: Unlimited  
Vibration: 20g's RMS from 5 to 2000Hz in each major axis.  
Acceleration: Constant acceleration of 100g's in each axis.  
Shock: 100g's for 10m second in each major axis.

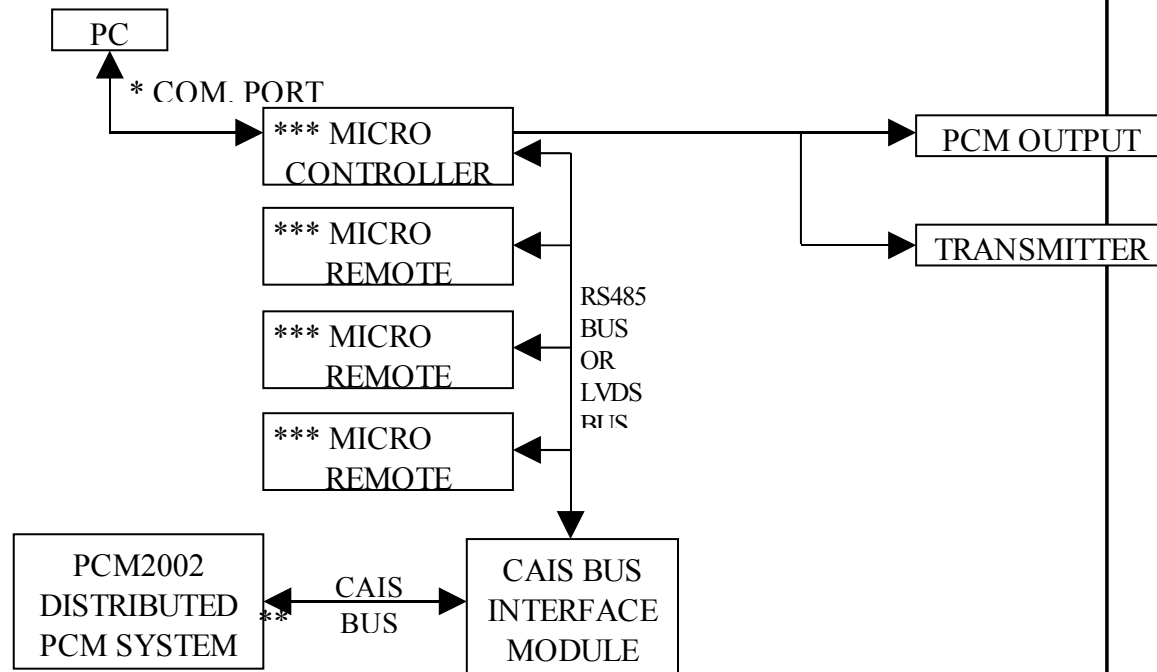
**Mechanical:**

Size: Typical Base/PS & 2 Channel Signal Conditioning with Bridge Excitation Voltage.  
Length: 3.50 inches; Width: 1.25 inches; Height: 1.240 inches.

**OTHER STACKABLE MODULES BASED ON CUSTOMER REQUIREMENTS:**

Solid State Recording (Flash Memory)	2 Channel Bridge Excitation
0.25 or 2.0 Watt Transmitter	32 Channel Single Ended
16 CH Single Ended or 8 CH Differential	16 Channel Bi-Level Multiplexer
4 or 12 Channel Thermocouple	Output Filters, Pre-Mod
IRIG TIME-B and GPS Reader/Generator	USB2 Read Unit
RS422 Channels	CAIS Bus Interface

**FIGURE 1**



\* SINGLE POINT PROGRAMMING.  
\*\* OPTIONAL CAIS BUS.  
\*\*\* MODULAR

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J1 Pin Connections:

Connector PN: Nanonics # STMO51M6HN; TYCO # 4-1589487-5

Mate PN: PN: Nanonics # STMO51PC2DC018N; TYCO # 7-158947-9

1	B+RTN	26	B+
2	B+RTN	27	B+
3	TDI_PROM	28	TCK_PROM
4	STP0	29	TMS_PROM
5	COM_LVDS+	30	TDO_PROM
6	STP1	31	COM_LVDS-
7	DGND	32	BITCLK
8	STP2	33	REP_LVDS-
9	REP_LVDS+	34	FRMPLS
10	STP3	35	CODE2_422-
11	CODE2_422+	36	2XBITCLK
12	STP4	37	CODE2
13	CODE1_422+	38	WRDPLS
14	RS485+_1	39	CODE1_422-
15	RS485-_1_TER	40	SNCPLS
16	RS485-_1	41	CODE1
17	DGND	42	CODE3_485+
18	RS485+_2	43	RS232_RS485_PROGRAMMING_STRAP
19	RS485-_2_TER	44	CODE3_485-
20	RS485-_2	45	TMS_ATMEL
21	TCK_ATMEL	46	DGND
22	REMOTE_LVDS_RS485_STRAP/ CONTROLLER_FRAME_COUNT_RESET	47	TDO_ATMEL
23	TDI_ATMEL	48	PMF_OUT
24	RDX232_0	49	R_RESET_ATMEL
25	TDX232_0	50	RDX232_1
		51	TDX232_1

**PIN SIGNAL**

**FUNCTION**

26	B+	<b><u>Power input 5.5V to 16V</u></b>
27	B+	
1	B+RTN	Power input return
2	B+RTN	
7	DGND	Digital Ground
17	DGND	
41	CODE1	Single Ended PCM output 1
13	CODE1_422+	RS422 PCM output 1
39	CODE1_422-	

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37	CODE2	Single Ended PCM output 2
11	CODE2_422+	RS422 PCM output 2
35	CODE2_422-	
42	CODE3_485+	RS485 PCM output or remote programming pins or
44	CODE3_485-	asynchronous data channel input, termination resistor internal to unit.
24	RDX232_0	RS232 interface for PCM programming
25	TDX232_0	
50	RDX232_1	RS232 asynchronous PCM data channel,
51	TDX232_1	(GPS, etc.)
32	BITCLK	PCM timing signals, TTL levels
34	FRMPLS	
36	2XBITCLK	
38	WRDPLS	
40	SNCPLS	
48	PMF_OUT	Premod Filter Output
46	PMF_RTN	Premod Filter return
3	TDI_PROM	JTAG programming,
28	TCK_PROM	for factory use only
29	TMS_PROM	
30	TDO_PROM	
21	TCK_ATMEL	JTAG programming,
23	TDI_ATMEL	for factory use only
45	TMS_ATMEL	
47	TDO_ATMEL	
49	RESET_ATMEL	
4	STP0	Unit Identifier straps,
6	STP1	for distributed PCM
8	STP2	system configurations
10	STP3	
12	STP4	
14	RS485+_1	RS485 pair for distributed PCM system
16	RS485-_1	
15	RS485-_TER	RS485 termination resistor
18	RS485+_2	RS485 pair for distributed PCM system
20	RS485-_2	
19	RS485-_2_TER	RS485 termination resistor
5	COM_LVDS+	LVDS pair for distributed PCM system
31	COM_LVDS-	
9	REP_LVDS+	LVDS pair for distributed PCM system
33	REP_LVDS-	
9	REP_LVDS+	LVDS pair for distributed PCM system
33	REP_LVDS-	
22	REMOTE_LVDS_RS485_STRAP/ CONTROLLER_FRAME_COUNT_RESET	Remote distributed bus strap, Leave unconnected for RS485 type distributed bus, Connect to DGND (pin 7 or 17) for LVDS type distributed bus. Connect to DGND to reset controller frame count.
43	RS232_RS485_PROGRAMMING_STRAP	Leave unconnected for RS232 port programming, Connect to DGND (pin 7 or 17) for RS485 port programming

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