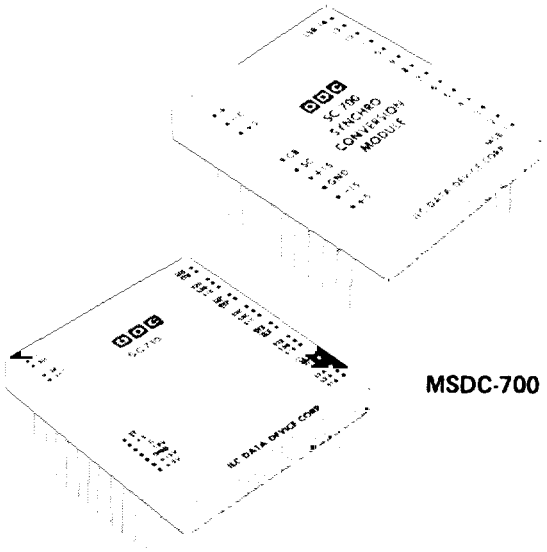
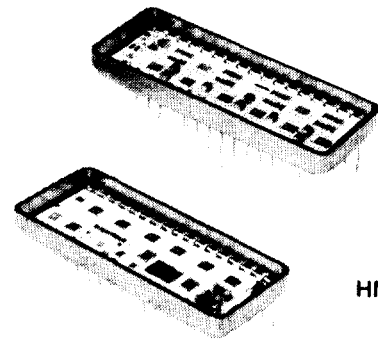
MSDC-700/HMSDC-8700

MULTIPLEXED 14 BIT S/D AND R/D CONVERTERS
New Design Requires Fewer Modules



MSDC-700



HMSDC-8700

E

FEATURES

- *SIMULTANEOUS SAMPLING AND RANDOM ACCESS*
- *SUPERIOR ALGORITHM GIVES INHERENTLY HIGH ACCURACY*
- *ONLY TWO TYPES OF MODULES 4 channel input module and central converter*
- *MODULES AVAILABLE IN DISCRETE OR HYBRID FORM*

DESCRIPTION

These two new series of multiplexed S/D and R/D converters are cost effective because they require fewer components and interconnections. Since each input module contains four signal channels, and the central converter is complete in one module, a 4 channel system can be made with only two modules. All common synchro and resolver line-to-line voltages and frequencies are available, and signal and reference input channels can be interconnected in any combination.

Discrete and hybrid modules can be used together because they are electrically interchangeable. Modules in the discrete MSDC-700 series are low profile (0.43 inch high) and low cost. They feature internal isolation transformers at both 60 Hz and 400 Hz.

Modules in the hybrid HMSDC-8700 series have the small size, low weight, and high reliability of thick-film hybrids. They feature differential solid-state signal and reference inputs with substantial common mode rejection so that transformer isolation is not usually required.

APPLICATIONS

Multiplexed S/D and R/D converters can be used when multiple synchro or resolver inputs are sampled for digital computation or display, and real time tracking is not required. Multiplexing is found in data logging systems, process monitors, ordnance aiming controls, navigation systems, numerical control, and range instrumentation. The synchro and resolver inputs often represent variables which are analyzed by a computer for monitoring or control.

RELIABILITY

The use of MSI and thin film resistor networks, as well as careful thermal design, results in very high MTBF values. Summaries of MTBF calculations are available on request.

PIN CONNECTION TABLES FOR HYBRID MODULES

1. PIN CONNECTION TABLE FOR CENTRAL CONVERTER: SC-8700

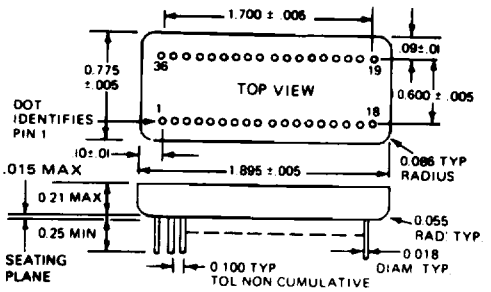
Pin	Name	Description	Pin	Name	Description
1	B1	14 Bit Outputs	20	-C	-COS input. Connect to -C outputs on all input modules.
2	B2		21	+S	+SIN input. Connect to +S outputs on all input modules.
3	B3		22	CB	Converter busy output
4	B4		23	SC	Start conversion input
5	B5		24	TP4	(+5.6) Factory test point
6	B6		25	TP6	(e) Factory test point
7	B7		26	NC	No connection
8	B8		27	+	No connection if unused
9	B9		28	NC	No connection
10	B10		29	TP8	Factory test point
11	B11		30	TP9	(T) Factory test point
12	B12		31	+5V	Power supply connections
13	B13		32	-15V	Power supply connections
14	B14		33	TP7	(E) Factory test point
15	NC	No connection	34	GND	Power supply and logic GND
16	TP1	(+BC) Factory test points	35	TP5	Factory test point
17	TP3	(-BS) Factory test points	36	+15V	Power supply connection
18	TP2	(-BC) Factory test points			
19	AG	Analog GND (Must be connected to pin 34)			

2. PIN CONNECTION TABLE FOR INPUT MODULES: SC-8710 TO SC-8714

Pin	Name	Description	Pin	Name	Description
1	S1A	Synchro or resolver input A. S4 for resolver only.	21	NC	No connection
2	S3A		22	+5V	Power supply connections
3	S4A		23	-15V	
4	S2A		24	GND	
5	S1B	Synchro or resolver input B. S4 for resolver only.	25	+15V	
6	S3B		26	$\overline{STD}$	Sample time inputs and MUX select lines for inputs A, B, C, and D. Connect sample time inputs to any appropriate ST output.
7	S4B		27	$\overline{MD}$	
8	S2B		28	$\overline{STC}$	
9	S1C	Synchro or resolver input C. S4 for resolver only.	29	$\overline{MC}$	
10	S3C		30	$\overline{MB}$	
11	S4C		31	$\overline{STB}$	
12	S2C		32	$\overline{STA}$	
13	S1D	Synchro or resolver input D. S4 for resolver only.	33	$\overline{MA}$	
14	S3D		34	+S	+SIN output. Connect to +S input on central converter module.
15	S4D		35	-C	-COS output. Connect to -C input on central converter module.
16	S2D		36	S/C	SIN/COS select input. No connection if unused.
17	RH	Ref input high			
18	RL	Ref input low			
19	SE	Sample enable input. No connection if unused.			
20	$\overline{ST}$	Sample time output. Connect to sample time inputs on any module.			

D-ABR

MECHANICAL DIAGRAM FOR ALL HYBRID MODULES (SC 8700, SC 8710 – SC 8714)



PACKAGE IS KOVAR WITH ELECTROLESS NICKEL PLATING
PINS ARE KOVAR WITH GOLD PLATING (50 μINCH MIN)
CASE IS ELECTRICALLY FLOATING

DDC will supply this part in either kovar or ceramic, at DDC's option. See page E-6 for Kovar or Ceramic mechanical outline.

ORDERING INFORMATION

Each module required is specified separately. Modules are called out with temperature range as follows:

SC 8710 – 1 – 883B

- Reliability Grade: (Applies to hybrid modules only.)
  - 883B = Fully compliant with MIL-STD-883.
  - B = Screened to MIL- STD-883 but without QCI testing.
  - Blank = Standard DDC procedures.
- Temperature Range (Operating):
  - 1 = –55°C to +105°C
  - 3 = 0°C to +70°C
- Module Number:
  - 700 Series = Discrete encapsulated modules
  - 8700 Series = Hybrid modules

Each system requires the following:

1. Central Converter. Order one of the following:
   Discrete: SC 700.
   Hybrid: SC-8700
2. Signal Input Module. Order one or more of the following:

Input Type	L-L Voltage	Discrete Module No.	Discrete Frequency	Hybrid Module No.	Hybrid Frequency
Synchro	11.8V	SC 710	360-440 Hz	SC 8710	47-440 Hz
Synchro	90V	SC 711	360-440 Hz	SC 8711	47-440 Hz
Synchro	90V	SC-715*	47-440 Hz	–	–
Resolver	11.8V	SC 712	360-440 Hz	SC 8712	47-440 Hz
Resolver	26V	SC 713	360-440 Hz	SC 8713	47-440 Hz
Resolver	90V	SC 714	360-440 Hz	SC 8714	47-440 Hz

*The SC-715 module may be used at 400 Hz by interconnecting the SC-711 sample time outputs ($\overline{ST}$) to the desired SC-715 sample time inputs ($\overline{STA}$, $\overline{STB}$, $\overline{STC}$ and $\overline{STD}$).