COMPUTER CONVERSIONS CORPORATION
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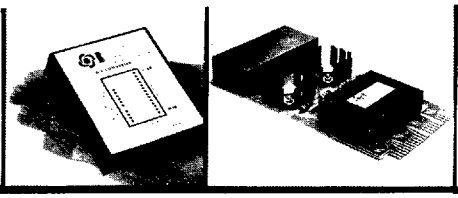


DIGITAL TO SYNCHRO CONVERTER
DSC SERIES

T-71-35-03

DESCRIPTION

The DSC series are low cost, miniature, continuously updating, digital to synchro or resolver converters designed for military and industrial control applications. They will accept a 14, 12, or 10 bit natural binary angle and convert it into 3 wire synchro or 4 wire resolver signals. Single module units can drive most control transformers (CT) with ±4 minute accuracy. Printed circuit mounted units can drive the most common torque receivers (60 and 400 Hz), and feature hybrid power amplifiers and output Scott "T" transformer isolation,for trouble free system operation. Any unit is available with ±1% corrected scale factor error in the same size. Only standard ±15 and +5 V power is required for any of the units in this series.

FEATURES

- High Accuracy and Resolution
- Transformer Isolated Output and Reference
- Synchro or Resolver Outputs
- Output Short Circuit Protected
- Only ±15 and +5V DC Power required
- Scale factor corrected units available
- No Adjustments
- Up to 25VA output drive capability at 60 and 400 Hz.
- Low Cost
- Miniature Size
- 14, 12, and 10 Bit Units
- TTL / DTL Compatible input
- Input Latches Available

SPECIFICATIONS

MODELS	14 BIT	12 BIT	10 BIT
400 Hz.	DSC 40	DSC 412	DSC 410
60 Hz. (External Transformers)	DSC 60	DSC 612	DSC 610
ACCURACY (1):	±4 minutes	±15 minutes	±30 minutes
RESOLUTION:	14 Bits (1 LSB=1.3')	12 Bits (1 LSB=5.27')	10 Bits (1 LSB=21')
CODING:	Natural Binary Angle	•	•
DIGITAL INPUT:	Parallel, positive logic DTL/TTL Compatible	•	•
FAN IN:	2 TTL Loads	•	•
OUTPUT(2) VOLTAGES: (Transformer isolated) (6)	A. Synchro 11.8V RMS L-L 400 Hz (DSC40-L)	•	•
	B. Synchro 90V RMS L-L 400 Hz (DSC40-H)	•	•
	C. Synchro 90V RMS L-L 60 Hz (DSC60-H) (2 modules)	•	•
	D. Resolver 11.8V RMS 400 Hz. (DRC40)	•	•
OUTPUT LOAD (3) (4)	A. Standard units will drive a 1 VA load (DSC40/60 series)	•	•
	B. 100 ohms L-L balanced (DSCS40-L)	•	•
	C. 5000 ohms L-L balanced (DSCS40-H)	•	•
	D. 4000 ohms L-L balanced (DSCS60-H) (2 modules)	•	•
	E. 130 ohms L-L balanced (DRC40)	•	•
	F. 5 VA (DSC40/60-PC)	•	•
RESPONSE TIME	100 μ sec		
REFERENCE INPUT: (Transformer Isolated)	26V @ 5ma rms 400 Hz (DSC40-DRC40-L)	•	•
	115V @ 1.2ma rms 400 Hz. (DSC40-H)	•	•
	115V @ 1.5ma rms 60 Hz. (DSC60-H)	•	•
POWER SUPPLIES (5)	Voltage / +15V	-15V	+5V
	Current (avg) / 150 ma	130 ma	50 ma
	Current (Peak) / 450 ma	450 ma	50 ma
TEMPERATURE RANGE OPERATING: (7)	0°C to +70°C (DSC40-L or H-1)	•	•
	-55°C to +105°C (DSC40-L or H-2)	•	•
STORAGE:	-55°C to +125°C	•	•
SIZE:	A. 2.6 x 3.1 x 1" H 400 Hz.	•	•
	B. 2.6 x 3.1 x .82"H specify (DSC-D-L or H)	•	•
	C. 60 Hz. units have additional external transformer module (4.40" x 1.90" x 1.5" H.)	•	•
	D. 4⅛ x 9¼" P.C. card with 22 pin double sided edge connector (5 VA - PC card units)	•	•

• Same as 14 Bit Model

NOTES:

1) Accuracy applies over operating temperature range, ±10% amplitude and frequency variations, ±5% variation of power supplies ±10% harmonic distortion.
2) Different voltages and frequencies available.
3) Accuracy of all 5VA units is ±6 minutes.
4) 1 VA capability is standard; other loads specified in b, c, or d, available in DSCS series.
5) 5 VA units require ±15V with 1.5 amp turn on capabilities and 375 ma each average.
6) Scale factor corrected units (±1%) specify SDC40K or 60K.
7) Units with 883 Level B components available (–83).

ORDERING GUIDE:

1) Specify basic model desired.
2) Add operating temperature range.
3) To order 14 Bit 400 Hz 11.8V L-L Synchro output into 150 ohms L-L load operating from 0 to 70°C use part number DSC40-L-1.
4) To order 14 Bit 60 Hz 90V synchro output into 5VA load operating from 0 to 70°C use part number DSC60-PC-H-1.

OTHER VERSIONS:

1. The entire DSC series is available as repairable units packaged on printed circuit cards with edge connectors. Custom units are available on your standard PC card sizes. Please contact a CCC applications engineer for further information.
2. A version of the DSC series is available with BCD INPUT.
3. Hermetically sealed units in cans can also be supplied.
4. Individual RESOLVER TO SYNCHRO POWER CONVERTERS consisting of 2 hybrid power amplifiers and a Scott "T" transformer are also available in modular or PC card configurations.
5. Converters capable of driving size 23 torque receivers are also available.

APPLICATIONS INFORMATION

1. POWER SUPPLIES

The converter requires three (+15V, -15V & +5V) current limited, regulated DC supplies. The ±15V supplies must be capable of supplying the necessary turn-on surge currents as specified. CONNECT CAREFULLY BECAUSE REVERSAL OR IMPROPER CONNECTIONS CAN DAMAGE CONVERTER.

2. PRINTED CIRCUIT MOUNTING

Logic level signals should be kept far away from AC and power signals. Do not put AC or power pins next to data pins at the connector. In addition, try to keep the AC and power pins separated as well.

3. DIGITAL INPUTS

The DSC series will accept 14, 12, or 10 Bits of digital angle data. Data must be TTL/DTL compatible. Fan in is 2 standard TTL loads. If less than the full data input capability of the converter is used, ground the unused input pins. This will prevent a fixed rotation of the synchro output data and a resulting error.

4. REFERENCE INPUT

Correctly connecting this input to the converter is essential for proper operation. If the reference is applied to the digital or power inputs damage could result.

5. OUTPUT AMPLITUDE VARIATION

The magnitude of the DSC outputs vary ±7% as a function of the output angle required. This scale factor variation will cause no error when driving a synchro or resolver. However, in applications where the sine and cosine are to be used independently, (i.e. co-ordinate transformation or CRT display of sine and cosine) a determination must be made if this variation will cause errors. Scale Factor correction of ±1% available.

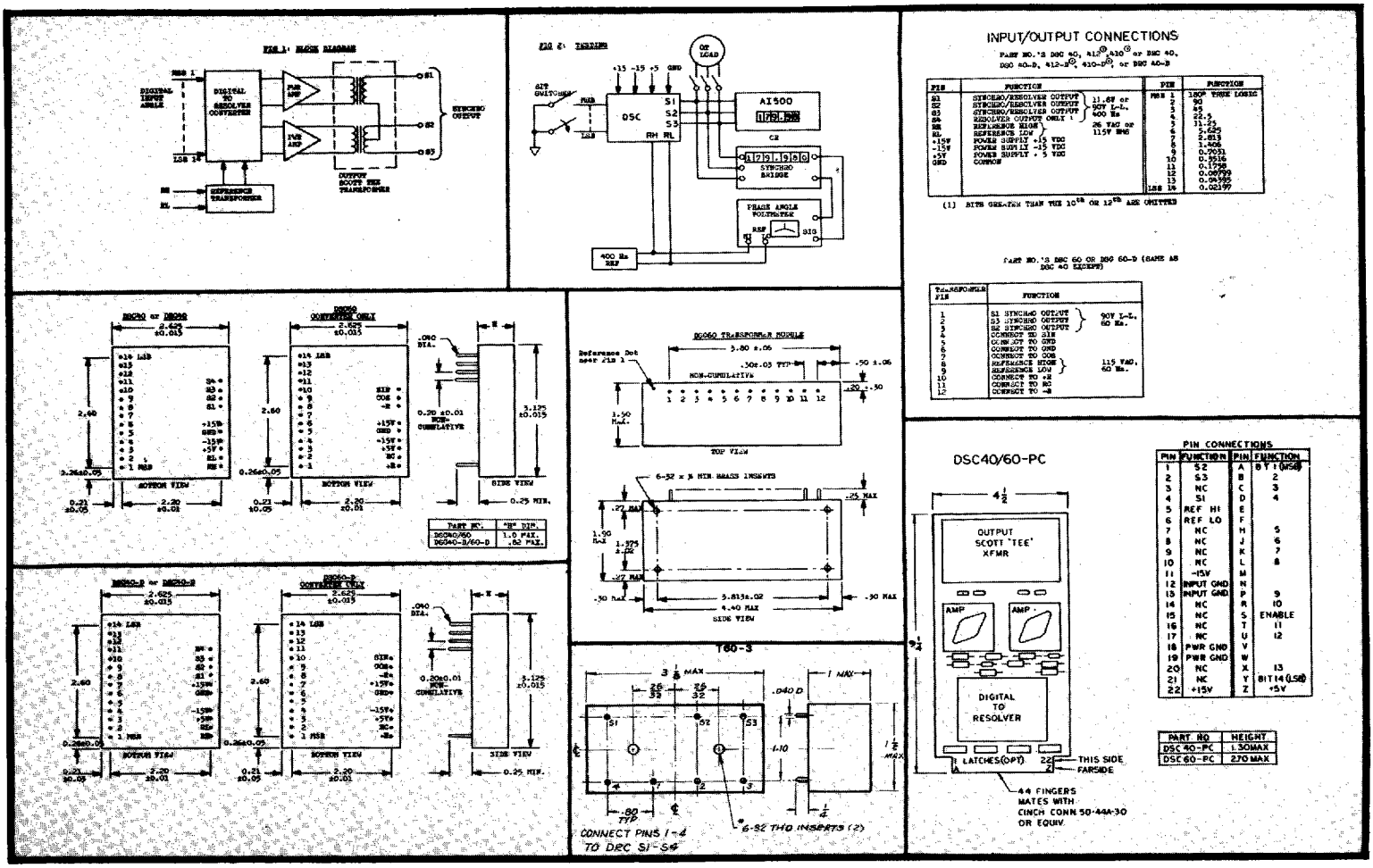
6 LOADS

The DSC series modular converters (DSC 40/60) are designed to drive a CT (control transformer), CX, or CDX. They can not drive torque receivers. However the DSC 40/60-PC units can drive up to three size eleven or two size fifteen Torque receivers. Note that only ±15V and +5V DC supplies are required in any case and all units have transformer isolated outputs and reference. In addition, no synchro stator leads have to be grounded which results in generally trouble free system performance. When determining the amount of power required for your application consider the length of cable between the DSC converter and the synchro load, because large distances can cause extra loading of the output power amplifiers. If there are any doubts, contact a CCC applications engineer for assistance.

To obtain maximum performance of the DSC series when driving CT's, load tuning should be used. By tuning, the effective impedance of the load is increased and thus, more CT's can be driven in parallel. Please consult the synchro manufacturer for the proper value of these tuning capacitors.

7. TESTING

Test equipment should be set up as indicated in Figure 2. The best way to test the DSC series is to utilize CCC's Angle Indicator AI500 which will directly read out the error of the converter. Another method requires that an input angle be simulated via bit switches and adjusting a synchro bridge for a null on a phase angle voltmeter. The error is the bridge reading subtracted from the bit switch input angle. The DSC40 or 60 modular units are guaranteed to have a maximum angular error of ±4 minutes or arc. (14 Bit unit).



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