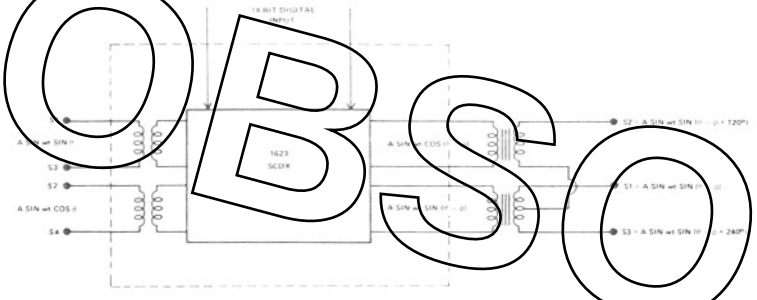
SOLID STATE CONTROL DIFF TRANSMITTER

GENERAL DESCRIPTION

The SCDX Series are solid state control differential transmitters. Their function is analogous to an electromechanical CDX except that the mechanical input of the CDX has been replaced by a binary input angle. The solid state differential transmitter accepts a digital angle input together with either a 3 wire Synchro (or 4 wire resolver) angle input and gives as output synchro or resolver signals representing the difference between the two input angles. Thus the outputs can be described by A sin wt sin $(\theta - \phi)$ and A sin wt cos $(\theta - \phi)$ where θ represents the synchro or resolver input angle, ϕ represents the binary input angle (14 bits) and wt is the synchro excitation frequency.

The outputs from the SCDX resemble in their function the outputs from a conventional resolver but they are not transformer isolated. The outputs are from a pair of operational amplifiers (5.0 volts rms at maximum) which can be fed into a power amplifier and Scott transformer to provide either 3 wire synchro or 4 wire resolver outputs at appropriate voltage levels.



SPECIFICATION SUMMARY (typical @ +25°C and ±15VDC and +5VDC unless otherwise noted)

	SCDX1623
Accuracy[1] (max error):	±4 arc-minutes
Input Resolution:	14 bits
Synchro Inputs:	See Table I Transformer isolated
Reference:	Not required
Output Voltages:	5V rms into 2k ohms min (not transformer isolated)
Output Angle Range:	360°
Power Supplies:	+15V @ 45mA -15V @ 45mA +5V @ 20mA
Power Dissipation:	1.6 Watts
Size:	3.125″ x 2.625″ x 0.8″
Operating Temperature:	0 to +70°C or -55°C to +105°C
Weight	7 oz.

NOTES: 1. Accuracy applies over the operating temp. range plus Table I parameters

ORDERING GUIDE

1. Specify the basic model number per the following table. 60Hz versions require separate transformers.

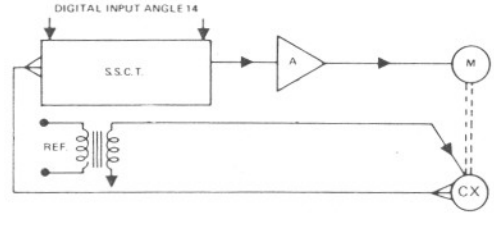
# of Bits	Temp. Range	Freq.	Converter	Transformers
14	0 to +70°C	400Hz	SCDX162351Z	Integral
14	-55°C to +105°C	400Hz	SCDX162361Z	Integral
14	0 to +70°C	60Hz	SCDX1623507	STM163152Z
14	-55°C to +105°C	60Hz	SCDX1623607	STM163162Z

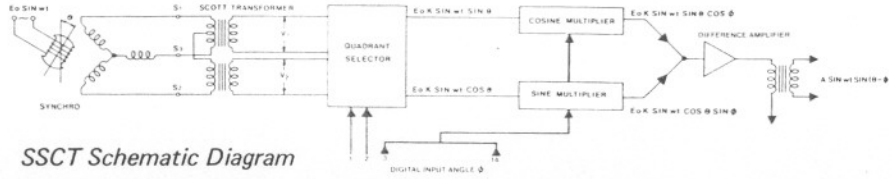
Notes 2 and 3 of SDC series ordering guide apply

SOLID STATE CONTROL TRANSFORMER

GENERAL DESCRIPTION

This SSCT1621 is a solid state control transformer which performs an identical function to an electromechanical control transformer except that the mechanical input of the latter has been replaced by a digital input. The SSCT1621 accepts a 3 wire synchro input together with a digital angle input and outputs the sine of the difference of the two input angles. The output can be described by A sin wt sin $(\theta - \phi)$ where "ϕ" represents a 14 bit parallel binary input angle, "θ" represents a 3 wire synchro input angle, and "wt" is the synchro excitation frequency.





SSCT Schematic Diagram

The scaling of the SSCT1621 is 0.4 volts/degree and the nominal output voltage range is ±5 volts. This implies a span of ±12.5° for full scale output. The SSCT1621 is intended for use as an error generator in follow up servo systems and for this reason the span of the device is more than adequate for all such systems. The A.C. output of the SSCT1621 is transformer isolated.

The SSCT1621 provides an attractive alternative to digital-to-synchro converters in follow up servo applications since the distribution of system power dissipation, and the elimination of balanced output transformers removes constraints associated with D to S converters.

SPECIFICATION SUMMARY (typical @ +25°C and ±15VDC unless otherwise noted)

	SSCT1621
Accuracy[1] (max) error:	±4 arc-minutes
Input Resolution:	14 bits
Synchro Inputs:	See Table I Transformer Isolated
Reference:	Not Required
Output Voltages:	5V rms into 2k ohms min (transformer isolated)
Output Angle Range:	±12.5°
Power Supplies:	+15V @ 40mA −15V @ 40mA No +5V required
Power Dissipation:	1.3 Watts
Size:	3.125" x 2.625" x 0.8"
Operating Temperature:	0 to +70°C or −55°C to +105°C
Weight:	7 oz.

NOTE: [1] Accuracy applies over the operating temp. range plus Table I parameters.

ORDERING GUIDE

1. Specify the basic model number per the following table. 60Hz versions require separate transformers.

# of Bits	Temp. Range	Freq.	Converter	Transformers
14	0 to +70°C	400Hz	SSCT162151Z	Integral
14	−55°C to +105°C	400Hz	SSCT162161Z	Integral
14	0 to +70°C	60Hz	SSCT1621507	STM163652Z
14	−55°C to +105°C	60Hz	SSCT1621607	STM163662Z

Notes 2 and 3 of SDC series ordering guide apply.

ANGLE POSITION INDICATOR

GENERAL DESCRIPTION

Model API 1620 gives a digital display of angles measured by synchros and resolvers. It has a full scale range equivalent to 359.99 mechanical degrees. It has an accuracy of 0.01 degrees and uses a converter which has a resolution of 20 arc-seconds.

Two separate input channels are provided which may be alternately switched into the synchro converter. High level or low level synchros or resolvers can be connected to these inputs and the accuracy or the shaft position of two separate devices can be directly compared.

The meter will work with any reference voltage from 3 volts rms to 115 volts rms and from any reference frequency from 45Hz to 1100Hz. A two position "bite" is incorporated which self checks the meter at 45° and 225°. This is manually operated by a front panel switch.

A push button display check exercises the L.E.D. dot matrix readout and indicates "all 8's". The internal power unit requires 17VA 45 to 400Hz. A power line selector allows voltages of either 115VAC or 230VAC to be chosen. A 5 decade binary or BCD output is available. A data hold capability is provided. This allows a display and output data to be frozen.

SPECIFICATIONS (typical @ +25°C unless otherwise noted)

Accuracy	±0.01° ±1 digit
Angle Range Signal	000.00° to 359.99° continuous rotation
Temperature Range	0 – 50°C
Power	115/230VAC selectable 17VA. 47Hz – 400Hz
Input Signal Voltages	
Synchro or Resolver	11.8V/26V/90V
Frequency	Same as Reference
Reference	
Voltage	3 volts to 115 volts rms
Frequency	47Hz to 1100Hz
Input Impedance	
Reference	200k ohms
Signals	2 meg ohms
Phase Relative to Reference	20°
Display	5 digit, dot matrix LED
Data Outputs	
Angle	5 decades BCD (Binary optional) continuously available
Inhibit	"1" track "0" hold
Converter Busy	"0" = Data stable "1" = converter busy
Display Enable	"0" = Update (follows) "1" = Hold