



# Synchro and Resolver Isolation Transformers

T-71-35-07 **5S70/5S72**

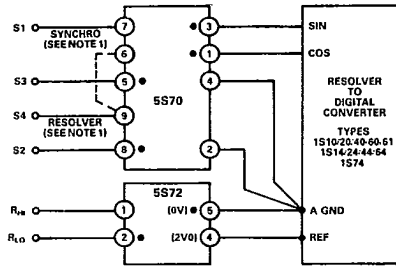
**FEATURES**

- Ultralow Profile – 0.4" (10mm)
- 1kV Isolation Primary to Secondary
- High Accuracy ( $\pm 1.5$  Arc Min Max)

**APPLICATIONS**

- Provides Signal and Reference Isolation for 1S Series Resolver-to-Digital Converters (e.g., 1S10/20/40/60/61, 1S14/24/44/64 and 1S74)
- Enables 1S Series Converters to be Used with Synchro Inputs
- Allows 1S Series Converters to be Used with Higher Signal and Reference Voltages
- External Mounting of the Transformer Eliminates High Voltages from Printed Circuit Boards

**5S70/5S72 CONNECTION DIAGRAM**



NOTES  
 FOR SYNCHRO OPTIONS, CONNECT PIN 9 TO PIN 6.  
 FOR RESOLVER OPTIONS, CONNECT PIN 9 TO S4 TERMINAL OF RESOLVER.  
 • DENOTES START OF WINDING

**5**

**GENERAL DESCRIPTION**

The 5S70 series of miniature transformers provide Resolver-to-Resolver and/or Synchro-to-Resolver format transformations and input isolation for the 1S series of Resolver-to-Digital converters (e.g., 1S10/20/40/60/61, 1S14/24/44/64 and 1S74).

The 5S70 series accept all the standard synchro and resolver signal voltages and give the 2V rms required by the 1S series of converters.

The additional error introduced by the 5S70 is  $\pm 1.5$  Arc Minute maximum.

The 5S72 transformers enable the reference input of the 1S series converters to be isolated and to accept voltages higher than the standard 2V rms.

All transformers operate over the 360Hz to 3kHz frequency range and have an operating temperature range of  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ .

The units are fitted with ruggedly secured threaded inserts to assist with PCB mounting.

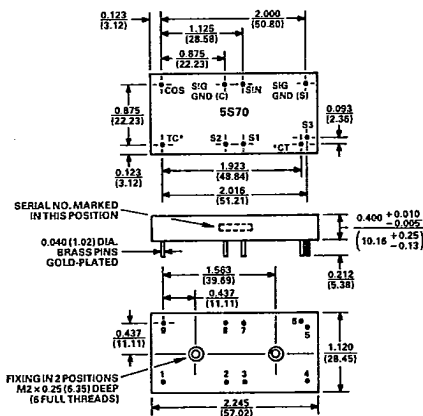
The dc isolation is 1kV from primary to secondary and 5kV between any winding and the threaded insert.

The 5S70 transformers measure only  $2.25'' \times 1.12'' \times 0.4''$  ( $57.0 \times 28.5 \times 10.2$ ) and the 5S72 transformers  $1.12'' \times 1.12'' \times 0.4''$  ( $28.5 \times 28.5 \times 10.2$ ).

**OUTLINE DIMENSIONS**

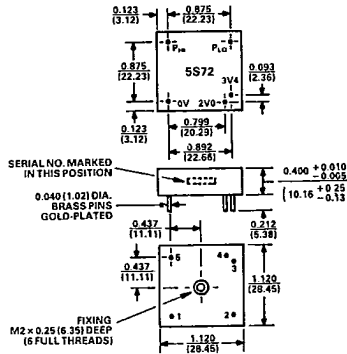
Dimensions shown in inches and (mm).

**5S70 Transformers**



\*TC READS 'S4' AND 'CT' READS 'NC' ON 414, 418 OPTIONS.

**5S72 Transformers**



SYNCHRO & RESOLVER CONVERTERS 5-101

**SPECIFICATIONS** (typical @ +25°C, unless otherwise specified)

T-71-35-07

Model Parameters	5S70 /411	5S70 /412	5S70 /414	5S70 /418	5S72 /11V8	5S72 /26V	5S72 /115V	Units
<b>INPUTS</b>								
Transformation Format <sup>1</sup>	S to R	S to R	R to R	R to R	Ref.	Ref.	Ref.	
Transformation Ratio	0.169	0.022	0.077	1.000	0.169 0.288	0.077 0.131	0.017 0.030	
Input Voltage <sup>2</sup>	11.8	90	26	11.8	11.8	26	115	V rms
Magnetization Energy @ 400Hz	3.0	17.0	17.0	3.0	3.0	3.0	17.0	mW
<b>OUTPUTS</b>								
Output Voltage	2.0	*	*	*	2.0 3.4	**	**	V rms V rms
Output Phase Shift	0.1	*	*	*	*	*	*	Degrees
Output Resistance	7.4	8.6	2.2	5.9	5.1 <sup>3</sup> 9.4 <sup>4</sup>	6.4 <sup>3</sup> 11.3 <sup>4</sup>	5.5 <sup>3</sup> 9.5 <sup>4</sup>	Ω Ω
REFERENCE FREQUENCY	360 to 3,000	*	*	*	*	*	*	Hz
<b>ANGULAR ACCURACY</b> (With 1S Converters as Load)								
Typical	± 0.33	*	*	*	N/A	N/A	N/A	arc-mins
Max <sup>5</sup>	± 1.5	*	*	*	N/A	N/A	N/A	arc-mins
<b>DC ISOLATION</b>								
Input to Output	1	*	*	*	*	*	*	kV
Primary or Secondary to Threaded Insert	5	*	*	*	*	*	*	kV
<b>TEMPERATURE RANGE</b>								
Operating	-55 to +125	*	*	*	*	*	*	°C
Storage	-60 to +150	*	*	*	*	*	*	°C
<b>DIMENSIONS</b>								
	2.25 × 1.12 × 0.4	*	*	*	1.12 × 1.12 × 0.4	**	**	inches
	57.0 × 28.5 × 10.2	*	*	*	28.5 × 28.5 × 10.2	**	**	mm
<b>WEIGHT</b>								
	1.8	*	*	*	0.9	**	**	oz
	50	*	*	*	25	**	**	g

**NOTES**

<sup>1</sup>S indicates Synchro.  
<sup>1</sup>R indicates Resolver.  
 N/A indicates Not Applicable.  
<sup>2</sup>+ 10% voltage overdrive allowed.  
<sup>3</sup>2V0 output.

<sup>4</sup>3V4 output.<sup>5</sup>Over the operating temperature range.

\*Specification same as 5S70/411.

\*\*Specification same as 5S72/11V8.

Specifications subject to change without notice.

**APPLICATIONS/USER BENEFITS**

Apart from providing signal and reference isolation and allowing synchro inputs to be used with the 1S series of converters, high voltages can also be eliminated from the PCB by mounting the transformers externally.

In addition, by using a number of transformers on a PCB with a single converter, it is possible to cater for a number of different synchro and resolver configurations.

**MODELS AVAILABLE**

The 5S70 and 5S72 transformers are available with a variety of input voltage and format configurations. The transformers operate over the -55°C to +125°C temperature range and accept reference frequencies in the range 360Hz to 3kHz.

**ORDERING INFORMATION**

The transformers should be ordered by reference to the part numbers shown in the Specifications above.