

7SG26 Tau

Auto Re-close

Document Release History

This document is issue 2010/02. The list of revisions up to and including this issue is:
Pre release

2010/02	Document reformat due to rebrand
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Software Revision History

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1. GENERAL

The relay complies with the relevant clauses in the following specifications:-

- BS142
- IEC 255

2. CHARACTERISTIC ENERGIZING QUANTITY

AC Voltage Vn	63.5 Vrms
Frequency	50 / 60Hz

3. AUXILIARY ENERGIZING QUANTITY

3.1 DC Power Supply

	Nominal	Operating Range
V _{AUX}	48V, 110V	37.5 to 137.5V dc
V _{AUX}	220V	88V to 280V dc

3.2 DC Status Inputs

Nominal Voltage	Operating Range
30 / 34	18V to 37.5V
48 / 54	37.5V to 60V
110 / 125	87.5V to 137.5V
220 / 250	175 to 280V

Minimum of 3 status inputs. Additional modules of 8 self configuring programmable status inputs, opto-isolated may be installed.

Options Available 24V, 30V, 48V, 110 or 220V DC

NB. If status inputs are operated from 110 or 220V auxiliary supplies then external dropper resistors are required and can be supplied:-

Status Input External Resistances

Nominal Voltage	Resistor Value (Wattage)
110 / 125V	2k7 ± 5% ; (2.5W)
220 / 250V	8k2 ± 5% ; (6.0W)

Status Input Performance

Minimum DC current for operation	10mA
Reset/Operate Voltage Ratio	≥ 90%
Typical response time	<5ms
Typical response time when programmed to energise an output relay contact	<15ms
Minimum pulse duration	40ms

Each status input has associated timers which can be programmed to give time delayed pick-up and time delayed drop-off. The pick-up timers have default settings of 15ms, thus providing immunity to an AC input signal. Status inputs will not respond to the following:

- 250V RMS 50/60Hz applied for two seconds through a 0.1μF capacitor.
- 500V RMS 50/60Hz applied between each terminal and earth.
- Discharge of a 10μF capacitor charged to maximum DC auxiliary supply voltage.

The inputs meet the requirements of ESI48-4 ESI 1.

4. SETTING RANGES

DAR Settings

A/R In Service	In/Out
Close Mode Selection	OFF,1P,3P,1P/3P,1P3P/3P,1P1P,3P3P,1P1P/3P3P
Dead Bar Close	Enabled/Disabled
Dead Line Close	Enabled/Disabled
Check Sync Close	Enabled/Disabled
First 1P Deadtime	0.05 – 100sec in 0.05sec steps
Second 1P Deadtime	0.05 – 100sec in 0.05sec steps
First 3P Deadtime	0.1 – 900sec in 0.1sec steps
Second 3P Deadtime	0.1 – 900sec in 0.1sec steps
Start Deadtime	Trip Make, Trip & CB Open, Trip Reset
3P Deadtime Initiate	1P/2P,1P/2P/3P
CB Aux Switches	Type a, Type b, Type a&b
Close Pulse	0.1 – 20sec in 0.1sec steps
Reclaim Time	OFF - 1 – 600sec in 1sec steps
Sync Close Delay	1 – 60sec in 1sec steps
Permissive Close Delay	OFF -1 – 600sec in 1sec steps
Overall Sequence Timer	OFF – 1 – 3000sec in 1 sec steps
Sequence Fail Delay	OFF - 1 – 200sec in 1sec steps
Persistent Intertrip	1 – 180sec in 1sec steps
CB Fail To Open Delay	0.1 – 2000msec in 10msec steps
Minimum LO Time	0 – 60sec in 1sec steps
Reset LO By Timer	Enabled/Disabled
CB Indeterminate	50 –200ms in 10ms steps
CB Memory Timer	0 – 5sec in 1 sec steps
Set Type	Master / Slave
Total Close Count Alarm	1..999
Delta Close Count Alarm	1.999

Check Synchronising Settings

Dead Bus	5 – 150%
Live Bus	10 – 155%
Dead Line	5 – 150%
Live Line	10 – 155%
Bus Undervolts	OFF – 150%
Line Undervolts	OFF – 150%
Voltage Differential	OFF – 100%
Split Angle	OFF – 175°
Manual Close Split Action	COZ/SS/CS
Autoreclose Split Action	Lockout/COZ/SS
Check Sync Angle	5 - 90°
Check Sync Slip	OFF – 2000mHz
Check Sync Timer	OFF – 100s
System Sync Angle	5 - 90°
SS and COZ Slip Frequency	OFF – 2000mHz
System Sync Timer	OFF – 100s
CB Close Time	5 – 200ms

5. ACCURACY REFERENCE CONDITIONS

General	IEC255
Auxiliary Supply	Nominal

Rating	63.5 Vrms
Frequency	50 or 60Hz
Ambient Temperature	20°C

6. ACCURACY

CS and SS Phase Angle measurement	
Operate	Setting $-3^{\circ} + 0^{\circ}$
Reset	operate value $-0^{\circ} + 3^{\circ}$
CS and SS Slip Frequency	
Operate	Setting $-15\text{mHz} + 0\text{mHz}$
Reset	operate value $-0\text{mHz} + 15\text{mHz}$
Split Detector measurement	
Operate	setting $\pm 1.5^{\circ}$
Reset	detector is latched
Line and Bus Voltage Detector Elements	
Live Operate	setting $\pm 1\%$
Live Reset	dead operate setting $\pm 1\%$
Dead Operate	setting $\pm 1\%$
Dead Reset	live operate setting $\pm 1\%$
Line and Bus U/V Detector Elements	
Operate	Setting $\pm 1\%$
Reset	$< 104\%$ of operate value
ΔV Detector Element	
Operate	Setting $\pm 2\%$ or 0.5V whichever is greater
Reset	Typically $> 90\%$ (and always within 2V) of operate value
All Timers	
Timing Accuracy	$\pm 1\%$ or 10ms

7. ACCURACY GENERAL

Measuring Accuracy

Voltage	$\pm 1\%$ (for range 7V-132Vrms)
Frequency	Typically $\pm 10\text{mHz}$
Phase	Typically $\pm 1^{\circ}$

8. ACCURACY INFLUENCING FACTORS

Temperature

Ambient Range	-10°C to $+55^{\circ}\text{C}$
Variation over range	$\leq 5\%$

Frequency

Range	47Hz to 51Hz 57Hz to 61Hz
Setting variation	$\leq 1\%$
Phase Angle Measurement	$\leq 1\%$
Operating time variation	$\leq 1\%$

Auxiliary DC Supply - IEC 255-11

Allowable superimposed ac component	$\leq 12\%$ of DC voltage
Allowable breaks/dips in supply (collapse to zero from nominal voltage)	$\leq 20\text{ms}$

9. THERMAL WITHSTAND

Continuous Overload

AC Voltage	250Vrms
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10. BURDENS

AC Burden

	AC Burden
63.5Vrms Input	$\leq 0.05VA$

DC Burden

	DC Burden
Quiescent (Typical)	<9 Watts (Tau100), <11 Watts (Tau200)
Max	<14 Watts

11. OUTPUT CONTACTS

Contact rating to IEC255-0-2.

Min 5 relays with c/o contacts. Additional modules of 8 self configuring programmable normally open output relays may be installed.

Any relay contact can be programmed for any function.

Carry continuously 5A ac or dc

Make and Carry

(limit $L/R \leq 40ms$ and $V \leq 300$ volts)

for 0.5 sec	20A ac or dc
for 0.2 sec	30A ac or dc

Break

(limit $\leq 5A$ or ≤ 300 volts)

ac resistive	1250VA
ac inductive	250VA @ PF ≤ 0.4
dc resistive	75W
dc inductive	30W @ $L/R \leq 40$ ms 50W @ $L/R \leq 10$ ms

Minimum number of operations	1000 at maximum load
Minimum recommended load	0.5W, limits 10mA or 5V

12. INDICATION

Green LED

32 Red LED Array

LCD

Protection Healthy.

Summary Info.

Alphanumeric display for settings, instrumentation and fault data.

13. ENVIRONMENTAL WITHSTAND

Temperature - IEC 68-2-1/2

Operating range	-10°C to +55°C
Storage range	-25°C to +70°C

Humidity - IEC 68-2-3

Operational test	56 days at 40°C and 95% RH
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Transient Overvoltage -IEC255-5

Between all terminals and earth or between any two independent circuits without damage or flashover	5kV 1.2 / 50µs 0.5J
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Insulation - IEC 255-5

Between all terminals and earth	2.0kV rms for 1 min
Between independent circuits	2.0kV rms for 1 min
Across normally open contacts	1.0kV rms for 1 min

High Frequency Disturbance - IEC255-22-1 Class III

	Variation
2.5kV Common (Longitudinal) Mode	≤ 3%
1.0kV Series (Transverse) Mode	≤ 3%

Electrostatic Discharge - IEC255-22-2 Class III

	Variation
8kV contact discharge	≤ 5%

Radio Frequency Interference - IEC255-22-3 Class III

	Variation
20MHz to 1000MHz, 10V/m	≤ 5%

Fast Transient - IEC255-22-4 Class IV

	Variation
4kV 5/50ns 2.5kHz repetitive	≤ 3%

Vibration (Sinusoidal) - IEC255-21-1 Class 1

		Variation
Vibration response	0.5gn	≤ 5%
Vibration endurance	1.0gn	≤ 5%

Shock and Bump - IEC255-21-2 Class 1

		Variation
Shock response	5 gn 11ms	≤ 5%
Shock withstand	15 gn 11ms	≤ 5%
Bump test	10 gn 16ms	≤ 5%

Seismic - IEC255-21-3 Class 1

		Variation
Seismic Response	1gn	≤ 5%

Mechanical Classification

Durability	In excess of 10 ⁶ operations
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