7SG26 Tau 500

Auto Reclose and Check Synchronisation

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

Software Revision History

Contents

1. GENERAL

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

- IEC 255

2. CHARACTERISTIC ENERGIZING QUANTITY

AC Voltage Vn	63.5/110 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

Min. 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. The 30/34V and 48/54V inputs meet the requirements of ESI 48-4 ESI 1. However, the 110/125V or 220/250V inputs will operate with a DC current of less than 10mA. If 110/125V or 220/250V inputs compliant with ESI48-4 ESI 1 are required, a relay with 48/54V status inputs can be supplied with external dropper resistors as follows:-

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	<20ms
Typical response time when programmed to energise an output relay contact	<25ms
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.

4. SETTING RANGES

DAR Settings

A/R In Service	In/Out
Dead Bar Charge	Enabled/Disabled
Dead Line Charge	Enabled/Disabled
Dead Line & Dead Bar Close	Enabled/Disabled
Check Sync Close	Enabled/Disabled
Unconditional Close	Enabled/Disabled
Manual Close DBC	Enabled/Disabled
Manual Close DLC	Enabled/Disabled
Manual Close DLDB	Enabled/Disabled
Manual Close CS	Enabled/Disabled
Number of Shots	1..4
First Deadtime	0.1 – 900sec in 0.1sec steps
Second Deadtime	0.1 – 900sec in 0.1sec steps
Third Deadtime	0.1 – 900sec in 0.1sec steps
Fourth Deadtime	0.1 – 900sec in 0.1sec steps
Live Line Check	Enabled/Disabled
CS during dead	Enabled/Disabled
VT Fail Lockout	Enabled/Disabled
Close Pulse	0.1 – 20sec in 0.1sec steps
Reclaim Time	OFF - 1 – 600sec in 1sec steps
Dead Line Charge Delay	0 – 60 sec in 1sec steps
Dead Bar Charge Delay	0 – 60 sec in 1sec steps
Reclose Blocked Delay	1 – 600sec in 1sec steps
Sync Close Delay	OFF – 900sec in 1sec 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
AutoIsolation Action	Enabled/Disabled
AutoIsolation Timer	OFF - 1 – 200sec in 1sec steps
Minimum LO Time	0 – 60sec in 1sec steps
Reset LO By Timer	Enabled/Disabled
Total Close Count Alarm	1..999
Delta Close Count Alarm	1..999

Check Synchronising Settings

Nominal Volts	63.5/110V
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° + 0°
Reset	operate value -0° + 3°
CS and SS Slip Frequency	
Operate	Setting -15mHz + 0mHz
Reset	operate value -0mHz + 15mHz
Split Detector measurement	
Operate	setting ±1.5°
Reset	detector is latched
Line and Bus Voltage Detector Elements	
Live Operate	setting ±1%
Live Reset	dead operate setting ±1%
Dead Operate	setting ±1%
Dead Reset	live operate setting ±1%
Line and Bus U/V Detector Elements	
Operate	Setting ±1%
Reset	< 104% of operate value
∆V Detector Element	
Operate	Setting ±2% or 0.5V whichever is greater
Reset	Typically > 90% (and always within 2V) of operate value
All Timers	
Timing Accuracy	±1% or 10ms

7. ACCURACY GENERAL

Measuring Accuracy

Voltage	± 1% (for range 7V-132Vrms)
Frequency	Typically ± 10mHz
Phase	Typically ± 1°

8. ACCURACY INFLUENCING FACTORS

Temperature

Ambient Range	-10°C to +55°C
Variation over range	≤ 5%

Frequency

Range	47Hz to 51Hz 57Hz to 61Hz

Setting variation	≤ 1%
Phase Angle Measurement	≤ 1%
Operating time variation	≤ 1%

Auxiliary DC Supply - IEC 60255-11

Allowable superimposed ac component	≤ 12% of DC voltage
Allowable breaks/dips in supply (collapse to zero from nominal voltage)	≤ 20ms

9. THERMAL WITHSTAND

Continuous Overload

AC Voltage	250Vrms

10. BURDENS

AC Burden

	AC Burden
63.5Vrms Input	≤ 0.05VA

DC Burden

	DC Burden
Quiescent (Typical)	<9 Watts
Max	<12 Watts

11. OUTPUT CONTACTS

Contact rating to IEC60255-0-2.

Min 3 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 ≤ 40ms and V ≤ 300 volts)

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

Break
(limit ≤ 5A or ≤ 300 volts)

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

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

12. INDICATION

Green LED Protection Healthy.

32 Red LED Array	Summary Info.
LCD	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

Transient Overvoltage –IEC60255-5

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

Insulation - IEC 60255-5

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 - IEC60255-22-1 Class III

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

Electrostatic Discharge - IEC60255-22-2 Class IV

	Variation
8kV contact discharge	≤ 5%

Conducted & Radiated Emissions - EN 55022 Class A (IEC 60255-25)

Conducted 0.15MHz – 30MHz Radiated 30MHz – 1GHz

Conducted Immunity - (IEC 61000-4-6; IEC 60255-22-6)

	Variation
0.15MHz – 80MHz 10V rms 80% modulation	≤ 5%

Radiated Immunity - IEC60255-22-3 Class III

	Variation
80MHz to 1000MHz, 10V/m 80% modulated	≤ 5%

Fast Transient – IEC60255-22-4 Class IV

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

Surge Impulse -
IEC 61000-4-5 Class IV; (IEC 60255-22-5)

	Variation
4KV Line-Earth (O/C Test voltage +-10%) 2KV Line-Line	≤ 10

Vibration (Sinusoidal) – IEC60255-21-1 Class 1

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

Shock and Bump – IEC60255-21-2 Class 1

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

Seismic – IEC60255-21-3 Class 1

		Variation
Seismic Response	1gn	≤ 5%

Mechanical Classification

Durability	In excess of 10^6 operations