

7SG11 Argus 7

Check and System Synchronising Relays

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

--	--	--

The copyright and other intellectual property rights in this document, and in any model or article produced from it (and including any registered or unregistered design rights) are the property of Siemens Protection Devices Limited. No part of this document shall be reproduced or modified or stored in another form, in any data retrieval system, without the permission of Siemens Protection Devices Limited, nor shall any model or article be reproduced from this document unless Siemens Protection Devices Limited consent.

While the information and guidance given in this document is believed to be correct, no liability shall be accepted for any loss or damage caused by any error or omission, whether such error or omission is the result of negligence or any other cause. Any and all such liability is disclaimed.

Contents

1 . General	3
2 . Characteristic Energizing Quantity	3
3. Auxiliary Energizing Quantity.....	3
3.1 DC Power Supply.....	3
3.2 DC Status Inputs.....	3
4. Setting Ranges.....	4
5. Accuracy Reference Conditions	4
6. Accuracy	4
7 . Accuracy General.....	5
8 . Accuracy Influencing Factors	5
9. Thermal Withstand	5
10. Burdens.....	5
11. Output Contacts	5
12 Environmental Withstand	6
12.1 General	6
12.2 Immunity	6
12.3 Emissions	6
12.4 Mechanical.....	7

1 . General

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

IEC 255 series of standards.

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}	24, 30, 48V	18V to 60V dc
V _{AUX}	110, 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

NB Status operating voltage need not be the same as the main energising voltage. For 110/125 volt or 220/250 volt working , a standard Argus relay with 48/54 volt status will be supplied for use 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	< 5ms
Typical response time when programmed to energise an output relay contact	< 15ms
Minimum pulse duration	40ms

Each status input has an associated timer which can be programmed to give time delayed pick-up and time delayed drop-off. The pick-up timers have default settings of 20ms, 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

Check Synchronising Settings

CS Phase Angle	5° - 90° step 1°
CS Slip Timer	OFF, 0.1 – 100sec step 0.1sec
CS Slip Frequency	OFF, 0.02 – 2.000Hz step 5mHz
Split Detector	OFF, 90°-175° step 1°
Split Timer	OFF, 0.1 – 100sec step 0.1sec

System Synchronising Settings

SS Phase Angle	5° - 90° step 1°
SS Slip Timer	OFF, 0.1 – 100sec step 0.1sec
SS Slip Frequency	OFF, 0.02 - 2.000Hz step 5mHz

Voltage Element Settings

Bus Dead Range	5V - 127V step 0.5V
Bus Live Range	10V - 132V step 0.5V
Line Dead Range	5V - 127V step 0.5V
Line Live Range	10V - 132V step 0.5V
Bus U/V Detector	OFF, 22V-132V step 0.5V
Line U/V Detector	OFF, 22V-132V step 0.5V
□V Detector	OFF, 0.5V - 44 V step 0.5V

5. Accuracy Reference Conditions

General	IEC255
Auxiliary Supply	Nominal
Rating	63.5 or 110 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 whichever is greater

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 (50Hz)	47Hz to 51Hz
(60Hz)	57Hz to 61Hz
Setting variation	≤ 1%
Phase Angle Measurement	≤ 1%
Operating time variation	≤ 1%

Auxiliary DC Supply - IEC 255-11

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
110Vrms Input	≤ 0.1VA
63.5Vrms Input	≤ 0.05VA

DC Burden

	DC Burden
Quiescent (Typical)	3 Watts
Max	10 Watts

11. Output Contacts

Contact rating to IEC255-0-20.

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 Environmental Withstand

12.1 General

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 - IEC 255-5

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

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

12.2 Immunity

High Frequency Disturbance - IEC 255-22-1 Class III

	Variation
2.5kV Common (Longitudinal) Mode	≤ 5%
1.0kV Series (Transverse) Mode	≤ 5%

Electrostatic Discharge - IEC 255-22-2 Class III

	Variation
8kV contact discharge	≤ 5%

Radio Frequency Interference - IEC 255-22-3 Class III

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

Fast Transient – IEC 255-22-4 Class IV

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

Conducted RFI – IEC 255-22-6

	Variation
0.15 to 1000MHz – 10V	≤ 5%

12.3 Emissions

Radiated Limits – IEC 255-25

Frequency Range	Limits dB (µV)	
	Quasi-peak	Average
30 to 230MHz	79	66
230 to 1000MHz	73	60

Conducted Limits – IEC 255-25

Frequency Range	Limits at 10m Quasi-peak dB ($\mu\text{V/m}$)
0.15 to 0.5MHz	40
0.5 to 30MHz	47

12.4 Mechanical

Vibration (Sinusoidal) – IEC 255-21-1 Class 1

		Variation
Vibration response	0.5gn	$\leq 5\%$
Vibration endurance	1.0gn	$\leq 5\%$

Shock and Bump – IEC 255-21-2 Class 1

		Variation
Shock response	5 gn 11ms	$\leq 5\%$
Shock withstand	15 gn 11ms	$\leq 5\%$
Bump test	10 gn 16ms	$\leq 5\%$

Seismic – IEC 255-21-3 Class 1

		Variation
Seismic Response	1gn	$\leq 5\%$

Mechanical Classification

Durability	In excess of 10^6 operations
------------	--------------------------------