

Current and Voltage Controls

3 Phase-neutral Max. and Min. Voltage Control

Types S 1721, SYY 155

CARLO GAVAZZI



- Monitoring relay for 3-phase upper/lower phase-phase neutral voltage control
- Measures if all 3 phase-neutral voltages are within set limits
- Measures on own power supply
- Operates irrespective of phase sequence
- Upper and lower limits separately adjustable
- Built-in adjustable timer function
- Output: 10 A SPDT relay
- Plug-in type module
- S-housing
- LED-indication for power supply and output ON
- Power supply is the 3-phase + N measuring voltage

Product Description

3-phase and neutral monitoring plug-in relay for separating upper and lower voltage control. Often used to control all 3 phases and neutral where the supplied electrical power

is unstable or varies in value in order to monitor that the attached motors are performing as required. The S 1721 features built-in time delay.

Ordering Key

S 1721 156 220

Housing _____
 Type _____
 Output _____
 Power supply _____

Type Selection

Plug	Output	Timer	Supply: 220 VAC	Supply: 380 VAC	Supply: 400 VAC	Supply: 415 VAC
Circular	SPDT	Yes	S 1721 156 220	S 1721 156 380	S 1721 156 400	S 1721 156 415
Circular	SPDT	No	SYY 155 220	SYY 155 380		SYY 155 415

Input Specifications

Input Pins 5, 6 & 7 Pin 11	Arbitrary phase sequence Neutral
Measuring ranges (VAC) Power supply (phase-phase)	3x220 +N 3x380 +N 3x400+N ± 18% ± 18% ± 18%
Range (phase-neutral)	104-150 180-260 188-271
Upper level	130-150 225-260 235-271
Scale	102-118% 102-118% 102-118%
Lower level	104-124 180-215 188-225
Scale	82-98% 82-98% 82-98%
Power supply (phase-phase)	3x415+N ± 18%
Range (phase-neutral)	204-276
Upper level	252-276
Scale	102-118%
Lower level	204-228
Scale	82-98%
	measures value of own supply. Range equals rms value of a sinusoidal voltage

Output Specifications

Output Rated insulation voltage	SPDT relay 250 VAC (rms) (cont./elect.)
Contact ratings (AgCdO) Resistive loads AC 1 DC 1 or Small inductive loads AC 15 DC 13	μ (micro gap) 10 A/250 VAC (2500 VA) 1 A/250 VDC (250 W) 10 A/25 VDC (250 W) 2.5 A/230 VAC 5 A/24 VDC
Mechanical life	≥ 30 x 10 ⁶ operations
Electrical life AC 1	≥ 2.5 x 10 ⁵ operations (at max. load)
Operating frequency	≤ 7200 operations/h
Dielectric strength Dielectric voltage Rated impulse withstand volt.	≥ 2 kVAC (rms) (cont./elect.) 4 kV (1.2/50 μs) (cont./elect.) (IEC 60664)



Supply Specifications

Power supply AC types	Overvoltage cat. III (IEC 60664) (IEC 60038)
Rated operational voltage	3 x 220 VAC $\pm$ 18%, 45 to 65 Hz
Through pins 5, 6, 7 & 11 220 (neutral)	380 3 x 380 VAC $\pm$ 18%, 45 to 65 Hz
	400 3 x 400 VAC $\pm$ 18%, 45 to 65 Hz
	415 3 x 415 VAC $\pm$ 18%, 45 to 65 Hz
Voltage interruption	$\leq$ 40 ms
Dielectric voltage	None (supply/elect.)
Rated impulse withstand volt.	4 kV (1.2/50 μ s) (line/neutral, line/line), direct connection to electronics
Internal measuring circuit is connected to pins 5 & 11	
Rated operational power	3.5 VA

General Specifications

Reaction time	$\tau = 2$ s, worst case reaction time may be up to $5 \times \tau$ Adjustable delay on release built-in (0.2s - 10s) Note: Reaction time + set time = real delay on release time
Accuracy OFF delay	10s, -1/+3 s on max. < 0.1 s on min.
Time function	Delay on release 0.2-10 s. adj.
Indication for Power supply ON Output ON	LED, green LED, red
Environment Degree of protection Pollution degree	(IEC 60947-1) IP 20 B (IEC 60529) (IEC 60664) 1: S 1721 380/400/415 SY Y 155 380/415 2: S 1721 220, SY Y 155 220
Operating temperature	-20° to +50°C (-4° to +122°F)
Storage temperature	-50° to +85°C (-58° to +185°F)
Weight	200 g
Approvals	UL, CSA

Mode of Operation

Connected to 3 phases and neutral, the S 1721 and SY Y 155 measure sinusoidal voltages. The phase sequence is arbitrary.

The relay operates as long as all 3 phase-neutral voltages are within the set upper and a lower limit. The two limits are set separately.

For S 1721 applies that if one or more of the phase-neutral voltages rises above the up-

per limit or drops below the lower limit, the relay releases after the set time period whereas SY Y 155 releases immediately.

The relay operates again when all 3 phase-neutral voltages are within set limits. Hysteresis on operate is 2%.

Example 1

Mains monitoring

The relay measures if the 3 phase-neutral voltages are

within the upper and lower limits. The limits are adjusted on the two built-in potentiometers.

Example 2

Monitoring load supply

The relay can protect loads, such as heating elements, against overvoltage and thereby against increase in current, which could otherwise destroy the heating elements. Undervoltage to ohmic loads causes insufficient heating

capacity, and this can also be monitored.

The relay cannot be used for load monitoring if the load is a motor, as the regenerated phase voltage at e.g. fuse blowing is indefinable and dependent on the mechanical performance when the failure occurs.

Time/Range Setting

Range setting	Time setting
Upper potentiometer:	Bottom potentiometer:
Adjustment of upper limit in percent.	Time setting on relative scale (not SY Y 155).
Middle potentiometer:	
Adjustment of lower limit in percent.	Time
	Adjustable delay on release: 0.2 to 10 s
Hysteresis	
1-3% of rms-value	

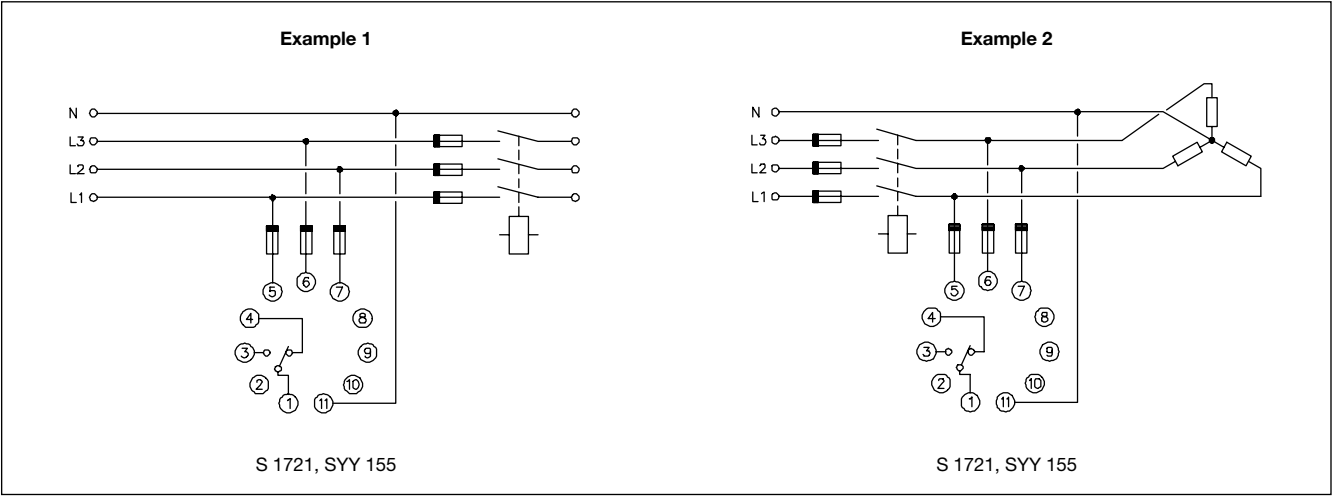
Accessories

Sockets◇	S 411
Hold down spring◇	HF
Mounting rack	SM 13
Socket covers	BB 4
Front mounting bezel	FRS 2
Potentiometer lock	PL 2

For further information refer to "Accessories".

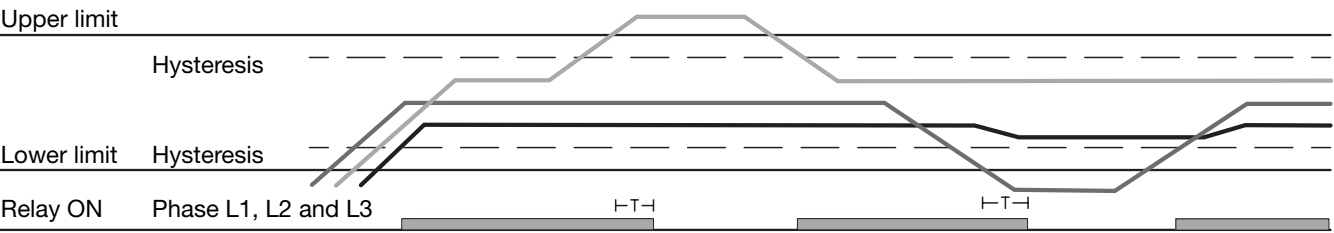


Wiring Diagrams



Operation Diagrams

S 1721



SY Y 155

