

Check Synchronising Relays

Series 400
Relays

Types 400-CSN and 400-CSD

Function

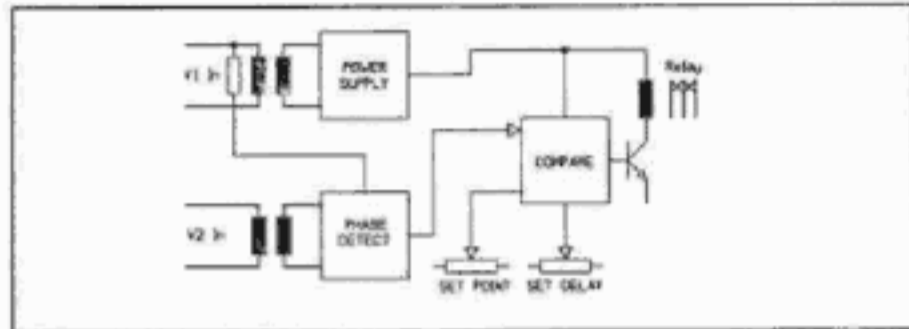
To measure the electrical phase angle between two a.c. voltages and offer a relay change of state when they are exactly or almost in phase.

Description

The 400-CSN & 400-CSD offer safe supervision of the manual or semiautomatic paralleling of electrical generators.

Operating Principle

The Generator input voltage and the bus input voltage is fed to an Exclusive OR GATE. The output is then compared to the reference (set point) of the relay. The relay operates when the set differential frequency is obtained.



Specifications

Voltage (Vn)	400V (380/415V) +/-20%
Optional Volts (Vn)	110V (100/120V) 230V (220/240V)
Differential Volts	Approx +/- 10% of Vn
Frequency	45-65Hz
Burden	Gen. 2.0 VA Bus Bar 1.0 VA
Range	0-30° Electrical
Accuracy	+/-3° Electrical
Time Delay	0-2 seconds
Relay Contacts	2 Pole Changeover
Contact Rating	2A @ 240V ac 30V dc
EMC (one off peak)	5% @ 80MHz
Temperature Range	-10°C to +60°C
Weight	480 gms

Standards

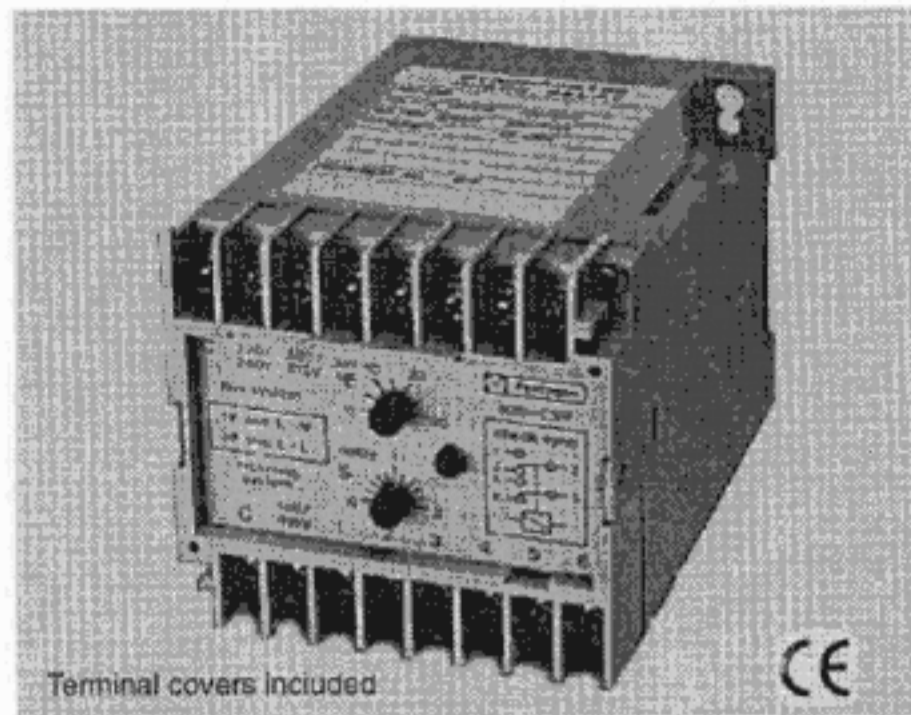
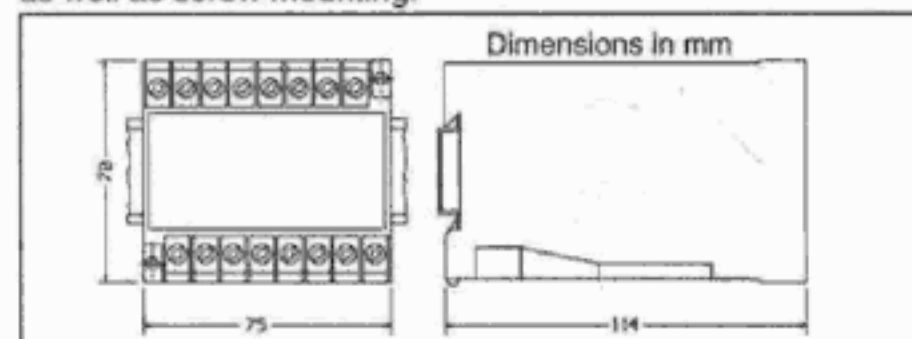
IEC 255-4 - Designed to comply with Single input energizing quantity measuring relays with dependent specified time.

CE Conforms to Low Voltage Directive 73/23/EEC

EN50081-1	Emissions:- Radiated 30-1000MHz
EN55022:1987	Emissions:- Domestic, Class B
	Emissions:- Mains Terminal, Class B.
EN50082-2	Immunity:- Industrial, Class B
IEC801-2	immunity:- Electrostatic discharge 8kV
IEC801-4	Immunity:- Transients 2kV 5/ 50nS, Class B.

Housings

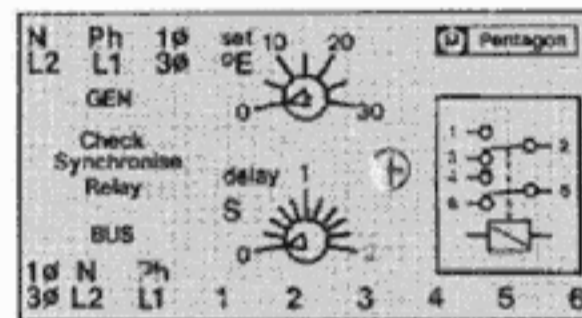
The housings used in this series have a moulded grey ABS plastic case self extinguishing to VDE0304 Degree 1, with a moulded polycarbonate terminal assembly. The case is snap mounting on top hat rail DIN 46277-3 (CENELEC EN 50-022) as well as screw mounting.



Terminal covers included

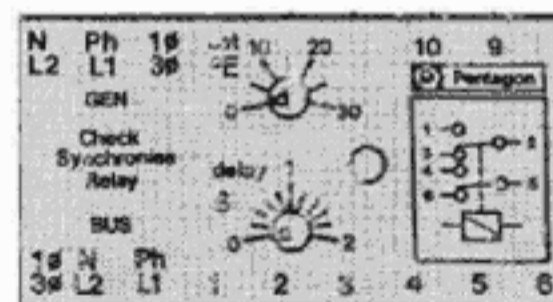
Type 400-CSN for Live Bus Bar

This relay is used for synchronising two voltages.



Type 400-CSD for Dead Bus Bar

This relay is used when the Bus Bar has no volts (Dead Bar). The relay is powered by the generator voltage and providing the dead bar is less than 3V relative to earth the relay will energise. On synchronising, the dead bar immediately becomes live and the voltage is presented to the relay, so it reverts to the live bar operation. The relay will instantaneously reset (de-energise) as it is now measuring its own generated voltage. It now responds as the 400-CSN and the relay will only close when it is within the preset limits. Depending upon how the individual customer has engineered his panel, this operation may reset the MCB. To overcome this the relay has an option of a 2 second delay on the changeover mode.



Differential Frequency

To calculate Differential Frequency using the Dials "E" and "DELAY", use the following formula:

$$\text{Diff Frequency} = \frac{2 \times \text{range setting (}^{\circ}\text{E)}}{\text{Contact Delay (sec)} \times 360} \text{ Hz}$$

Stock Items

400-CSN : 400V
400-CSD : 400V



PENTAGON INSTRUMENTS LIMITED

4 Wayside, Commerce Way, Lancing, West Sussex. BN15 8SW

Telephone: +44 (0) 1903 765225 Fax: +44 (0) 1903 765547

We reserve the right to alter specifications without prior notification