



# Measurement and Instrumentation Synchronization instruments

Synchronization instruments  
SYNCHRO COUPLER range

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ENERGY  
PERFORMANCE

2  
NETWORK  
QUALITY

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MEASUREMENT AND  
INSTRUMENTATION



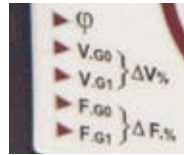
# SYNCHRO COUPLER Range

Synchronization instruments for LV networks

Synchronization instruments

**PRODUCT ADVANTAGES**

- + INTEGRATED IN A 96 X 96 FORMAT
- + 1 synchronization command
- + 1 control command
- + 3 command modes for synchronization
- + Adjustment in just a few seconds (PID model)



Display of deviations between setpoint and measurement



LED display of 3 measurements: phase, frequency and voltage



User-programmable

## ► Description

The **SYNCHRO COUPLER** is an automatic synchronization instrument for generator sets. It includes:

- a control relay for assisted manual coupling or automatic coupling with time delay control
- two control relays (fast/slow) for speed adjustment
- an external control loop for opening the coupling relay
- four front panel keys for programming, display and messages (password option included)

## SYNCHRO COUPLER



### Display:

- phase angle variations by 30 LEDs arranged in a circle
- voltages, frequencies, variations (in%) on 4 digits
- frequency variations  $\pm$ , status of coupler relay, conditions obtained in phase, frequency and voltage

Power Supply	Reference
24 VDC	LS9N 421X
48 VDC	LS9N 422X
110 VAC	LS9N 423X
230 VAC	LS9N 424X
400 VAC	LS9N 425X

## SYNCHRO COUPLER PID



### Display: as for synchro coupler

**PID adjustment method** (Proportional Integral Derivative) for synchronization that is faster and more accurate than with conventional synchronous couplers

- **Proportional:** proportional correction of measurement errors
- **Integral:** guarantees reduction of adjustment error to 0
- **Derivative:** brings greater stability to the system, enabling you to anticipate the inertia of generator sets (e.g. hydroelectric)

Power Supply	Reference
24 VDC	LS9N 441X
48 VDC	LS9N 442X
110 VAC	LS9N 443X
230 VAC	LS9N 444X
400 VAC	LS9N 445X



# SYNCHRO COUPLER Range

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Measurement and instrumentation Synchronization instruments

## ► Electrical specifications

Measurements	
Rated voltage range	110 to 600 V
Frequency	35 Hz...80 Hz
Permanent overvoltage	800 V
Consumption	< 500 $\mu$ A
Relay output	
With sealed inverter contact	8 A - 250 Vac / 5 A - 30 Vdc
Multi-measurement (accuracy)	
Phase angle deviation	$\pm 0.5^\circ$
Frequency	$\pm 0.01$ Hz
Voltage (RMS)	Class 1 $\pm 2$ digits
Auxiliary power supply	
AC voltage	-10% / +15%
Frequency	35 Hz...450 Hz
Consumption	10 VA

## ► Environment

Operating temperature	-10°C to +65°C
Storage temperature	-40°C to +70°C
Relative humidity	< 90% at 40°C
Protection rating	3
Pollution level	2

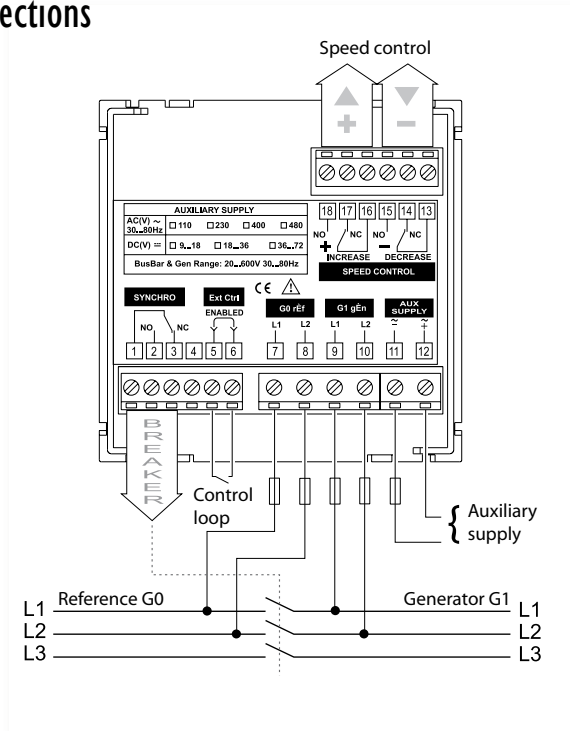
## ► Mechanical specifications

Casing materials	
Casing and flange	Self-extinguishing black ABS
Front panel	Light grey polycarbonate
Protection rating	IP 54 front panel (IP65 optional)
Weight	350 g
Connection	Holder for 2.5 mm wire
Fitting	Mounting on 8 mm front panel

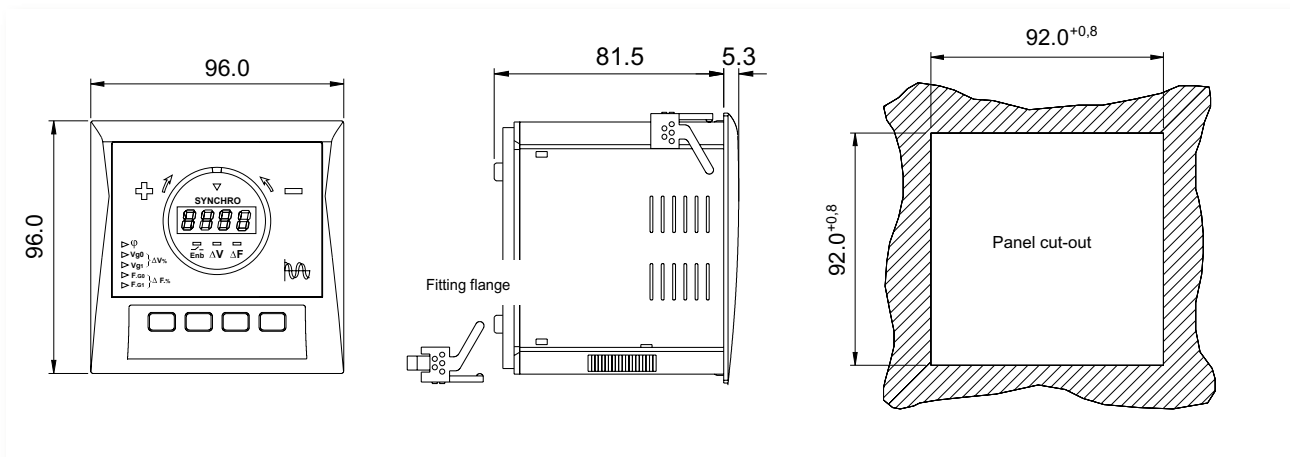
## ► Standards

Reference standards	
Safety	IEC 61010-1
Dimensions	DIN 43700
EMC	EN 61326-1
ANSI function	Nos. 25 and 90
Resistance to shock	IEC 60068-2-27
Resistance to vibrations	IEC 60068-2-6
Environment	IEC 60068-1

### ► Electrical connections



### ► Dimensions and drilling specifications (mm)





# Notes

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► Measurement and instrumentation Notes

A large rectangular area with a light gray background and a repeating pattern of small, light gray circles. This area is divided into horizontal lines, serving as a template for taking notes.