

Synchroscope for Varying and Steady Load 3-Phase Current

Data sheet

Narrow Bezel per DIN 43718, Dull Black

Front Dimensions Type	96 x 96 SY 96	144 x 144 SY 144
Weight in kg, approx. Nominal Frequencies Intrinsic Consumption (at 100V, 50 Hz) - Mains Side Active Component Reactive Component - Generator Side Active Component Reactive Component	0.6 kg 16.7 Hz, 50 Hz, 60 Hz approx. 4.5 W approx. 4.2 var cap. approx. 4 W approx. 0.2 var ind.	0.7 kg 16.7 Hz, 50 Hz, 60 Hz approx. 4.5 W approx. 4.2 var cap. approx. 4 W approx. 0.2 var ind.A
Working Voltage Test Voltage Front Housing-Panel Protection Fasteners Housing Material	300 V 3.5 KV IP 52 2 screws sheet steel, hot-dip galvanised	300 V 3.5 KV IP 52 2 screws sheet steel, hot-dip galvanised



Type SY 96

Description

Synchrosopes are circular scalemeters with step motor. The scale has an indicator mark, as well as a red arrow identified with „+“ and a black arrow identified with „-“. The pointer is capable of rotaring in both directions. It only points to the indicator mark if frequency and phase sequence are identical for both electrical circuits. If the pointer comes to rest on any other point, the frequencies may be identical but the voltages are not in phase. The direction of movement of the pointer varies depending upon how the circuit and the generator are connected to the synchroscope (pointer can be made to move clockwise or counterclockwise for higher generator frequency).

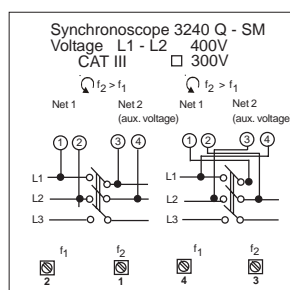
Display

Scale Labeling red arrow identified with “+” and
 black arrow identified with “-”
Pointer beam pointer
Accuracy class 1

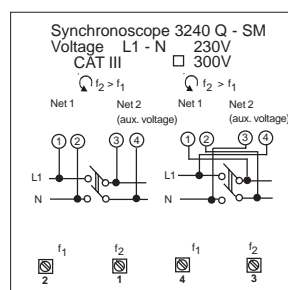
Mechanical Design

Housing Material sheet steel
Terminals square bolt with screw M4,
 clamping bracket C8
Mounting screw fastener for panel depth
 1 ... 15 mm,
Contact Protection included

Pin assignments for: 3-Wire-System



2-Wire-System



Reference Conditions

Ambient Temperature	23°C ± 2 K
Position of use	any
Input Voltage	Nominal Voltage ± 10%
Frequency	16.7 Hz: 16.4 ... 17.0 Hz 50 Hz: 48.5 ... 51.5 Hz 60 Hz: 58.5 ... 61.5 Hz

Standards

DIN EN 60051	Direct acting indicating analogue electrical-measuring instruments and their accessories
DIN 43802	Line scales and pointers for indicating electrical measuring instruments
EN 61010 1:2001	Safety requirements
EN 60529	SDegrees of protection provided by enlosures

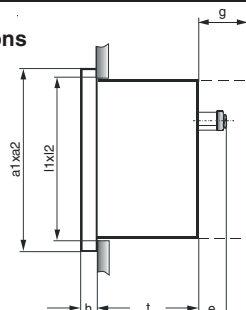
Environment Behaviour

Climatic demand	Standard	tropical resistant
Operating Temperature	-25°C ... 40°C	-25°C ... 55°C
Storage Temperature	-25°C ... 55°C	-25°C ... 65°C
Relative Humidity: Annual mean 30 Days per Year Remaining Days	≤ 65% (at 21°C) ≤ 85% (at 25°C) ≤ 75% (at 23°C)	≤ 75% (at 21°C) ≤ 95% (at 25°C) ≤ 85% (at 23°C)

Enhanced requirements

Mechanical Stress	Standard	Enhanced requirements
Shock	15 g, 11 ms	30 g, 11 ms
Vibration	1.5 g, 5 ... 55 Hz	2.5 g, 5 ... 55 Hz

Dimensions



Type	Nominal Dimension mm		Cutout mm	Inst. Depth mm	Terminals Depth mm	Contact Protection Depth mm
	a1 x a2	h	l1 x l2	t	e	g
SY 96	96 x 96	5	92 ^{+0,8} x 92 ^{+0,8}	102	14	23
SY144	144 x 144	8	138 ⁺¹ x 138 ⁺¹	57	14	23

Synchronoscope for Varying and Steady Load 3-Phase Current

		Front Dim. in mm	96 x 96	144 x 144
		Type	SY 96	SY 144
Order Example: Synchronoscope, 96 x 96 mm, Nominal Voltage: 208 ... 230 V, Nominal Frequency: 50 Hz Order-No.: 3240Q-SM IL735 IK20		Order-No. ⇒ + ↓	3240Q-SM	3290Q-SM
Nominal Voltage Range (phase-to-phase voltage)				
100 ... 120 V/√3	IL 302	●	●	
100 ... 120 V	IL 731	●	●	
208 ... 230 V	IL 735	●	●	
380 ... 400 V	IL 727	●	●	
415 V	IL 661	+	+	
440 V	IL 344	+	+	
500 V	IL 350	+	+	
others (>57,8 V... <500 V) ...	IL 999	+	+	
Nominal Frequency	nominal freq.: 16,7 Hz	IK 1	+	+
	nominal freq.: 50 Hz	IK 20	●	●
	nominal freq.: 60 Hz	IK 21	●	●
Applications	standard		●	●
	conditionally tropic-proof		+	+
Protection	front panel IP 52, terminals IP 00		●	●
	front panel IP 54, terminals IP 00		+	+
	front panel IP 56, terminals IP 00		+	+
Resistance to Vibration / Shock			●	●
	vibration resistance 1,5 g; shock resistance 15 g		+	+
	vibration resistance 2,5 g; shock resistance 30 g		+	+
Bezel	dull black		●	●
	dull grey RAL 7037		+	+
Glass Faceplate	flood glass (flat glass)		●	●
	anti-glare		+	+
Contact Protection	included in delivery		●	●
Mounting	2 screw clips		●	●
	2 screw clips B (DIN 43835)		+	+
Identification	none		●	●
	at rear:		+	+
Scale Inscription	none		●	●
	≤ 15 characters in German		+	+
	≤ 15 characters in other language		+	+
Scale / Pointer colours				
	scale white, inprint red-black, pointer black		●	●
	scale black, inprint red-white, pointer white		+	+
	scale black, inprint red-yellow, pointer yellow		+	+
Wall bracket ¹⁾	installed in wall bracket		on request	on request

1) see data sheet E1/32

- without extra charge
- + extra charge

Order Number Instructions:

- Select one model each for order numbers with the same sequence of letters.
- No additional entries are required for standard models (identified with bold typeface and “-“ in order no. column)
- An entry with “ ... “ in the order no. column means that the order number must be supplemented with written text