



-power in control



DATA SHEET



Read Synchroscope, RSQ-3

- Precision LED synchroscope
- High immunity to harmonic distortion



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1. General information

1.1 Application and measuring principle

1.1.1 Application

The RSQ-3 is a microprocessor-based synchronising unit, providing visual indication of relevant values for synchronising a generator to a net (busbar). It can be used in any kind of installation where manual synchronising is required.

1.1.2 Measuring principle

The unit measures the busbar (U_{BUSBAR}) and generator (U_{GEN}) voltages and frequencies and compares these, plus compares the phase angle relationship.

Operation:

The rotation of the red LED circle indicates the frequency difference. The faster the rotation, the larger the frequency difference. One rotation per second equals 1 Hz difference.

The position of the lit red LED indicates the phase difference between U_{GEN} and U_{BUSBAR} . The circle represents a degree scale from 0 to 360 degrees with zero degree at the 12 o'clock position. With 36 LEDs the resolution on the reading is 10 degrees.

If the frequency difference between U_{GEN} and U_{BUSBAR} is higher than 3 Hz, the rotation of the LED circle stops. If it stops with a lit red LED at "TOO SLOW", the frequency of the U_{GEN} is lower than U_{BUSBAR} . If it stops with a lit red LED at "TOO FAST", the frequency of the U_{GEN} is higher than U_{BUSBAR} .

2. Technical information

2.1 Technical specifications and dimensions

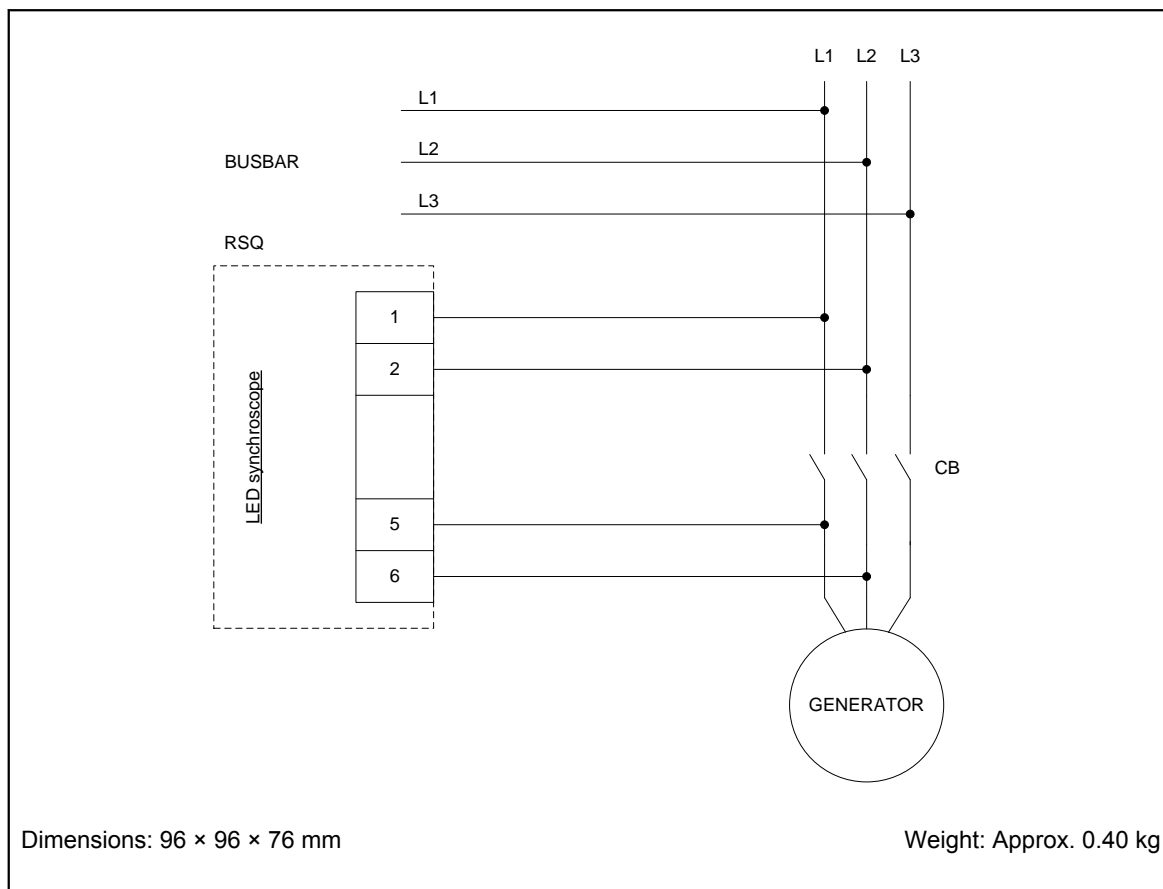
2.1.1 Technical specifications

Accuracy	±2 electrical degrees
Resolution	10 electrical degrees
Max. frequency difference	No limit
Frequency range	40 to 70 Hz (supply)
Temperature	-25 to 70 °C (operating)
Temperature drift	Set points: Max. ±0.2 % of full scale per 10 °C
Shock test	15 g - 6 times - 3 directions 50 g/6 ms 22 g/20 ms
Galvanic separation	Between inputs and ground: 3750 V - 50 Hz - 1 min
Input range (U_N)	100 to 127 V _{ac} ±20 % 220 to 240 V _{ac} ±20 % 380 to 415 V _{ac} ±20 % 440 to 480 V _{ac} ±20 % (Note: Above 450 V _{ac} : Only +10 %)
Busbar input	Load: 2 kΩ/V
Generator input	(Max. 3.0 VA at nominal voltage) Supply for the unit
Max. input voltage	1.2 × U _N , continuously Above 450 V: 1.1 × U _N , continuously 2 × U _N , for 10 sec
Climate	HSE, to DIN 40040
EMC	CE-marked according to EN 50081-1/2, EN 50082-1/2 and IEC 255-3
Safety	To EN 61010-1. Installation cat. III, 600 V. Pollution degree 2
Connections	Max. 2.5 mm ² (single-stranded) Max. 1.5 mm ² (multi-stranded)
Materials	All plastic parts are self-extinguishing to UL94 (V0)
Protection	Front: IP52. Terminals: IP20, to IEC 529 and EN 60529
Type approval	For current approvals see www.deif.com or contact DEIF A/S
UL listing	On request, the instrument can be delivered according to UL listing: UL508, E230690

2.1.2 Indication

LEDs	Light
TOO FAST	Red LED stopped. Frequency difference too high. GEN too high
TOO SLOW	Red LED stopped. Frequency difference too high. GEN too low

2.1.3 Connections/dimensions



3. Ordering information

3.1 Order specifications and disclaimer

3.1.1 Available variants

Item no.	Variant no.	Variant description
2918080010	01	RSQ-3, all measuring voltages

3.1.2 Order specifications



There are no additional options to the standard variant.

Variants

Mandatory information				
Item no.	Type	Variant no.	Version	Measuring voltage

Example:

Mandatory information				
Item no.	Type	Variant no.	Version	Measuring voltage
2918080010-01	RSQ-3	01		230 V _{ac}
2918030010-01	RSQ-3	01	UL Listed	230 V _{ac}

3.1.3 Disclaimer

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