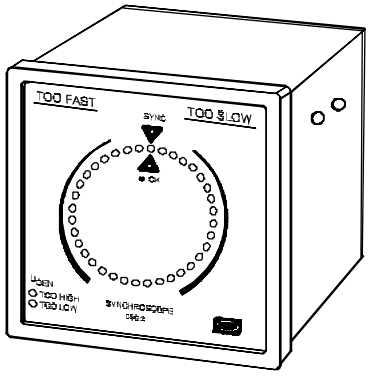
0809

Check Synchronising Relay

Type CSQ-2

4921240185B

- ***Multifunction precision LED synchronoscope***
- ***Easy push-button programming of all setpoints***
- ***Very high user safety***
- ***High immunity to harmonic distortion***
- ***Dead-bus functionality***



CSQ-2

Application
The CSQ-2 is a microprocessor based synchronising unit, providing measurement of all relevant values for synchronising a generator to a net (busbar). It can be used in any kind of installation where manual or semi-automatic synchronising is required.

Measuring principle
The unit measures the busbar (U_{BUSBAR}) and generator (U_{GEN}) voltages and frequencies and compares these, plus compares their phase angles.

Settings.
The unit is equipped with several user settings, hidden under the front foil. This placement gives a high degree of user safety because no hasard voltages are present, i.e. the unit can be programmed while running without the risk of electric shock or damage to installations.

Phase window, $\Delta\varphi$:
Here the phase window for synchronisation is chosen. It can be set both symmetrical and asymmetrical around ± 5 degrees.

Voltage difference, ΔU:
Here the allowed voltage difference between U_{GEN} and U_{BUSBAR} is set. It is measured relatively to U_{GEN}

SYNC relay delay, T_d:
Determines the time U_{GEN} and U_{BUSBAR} has to be within the phase window before the SYNC relay is activated.

Length of SYNC pulse, T_R:
Determines the lenght of the SYNC puls (SYNC relay activating time) This value must be matched to the time characteristic of the circuit breaker.

Dead-bus function/offset voltage, T_R:
Here the dead-bus option can be activated.
The allowed noise level voltage on U_{BUSBAR} can be set to determine dead-bus mode. It is measured relatively to U_{GEN}

Factory settings.
All the above mentioned settings are pre-set from the factory. At any time these factory defaults can be re-stored if necessary.

Sealing of settings.
If necessary the settings can be sealed when the wanted functionality is obtained. This is very easy because of the placement under the front foil/cover.

Operation.
The rotation of the red LED circle indicates the frequency difference. The faster the rotation, the larger the frequency difference. One rotation pr. second equals 1Hz 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 0-360 degree 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 3Hz, the rotation of the LED circle stops. If it stops with at lit red LED at "TOO SLOW", the frequency of the U_{GEN} is lower than U_{BUSBAR}. If it stops with at lit red LED at "TOO FAST", the frequency of the U_{GEN} is higher than U_{BUSBAR}.

When the phase angle between U_{GEN} and U_{BUSBAR} is within the preset $\Delta\varphi$ window, then the yellow LED "$\Delta\varphi$ OK" will be lit.

If the voltage difference between U_{GEN} and U_{BUSBAR} is outside the preset ΔU range, one of the two red LEDs will be lit and the SYNC relay cannot be activated. If the voltage on U_{GEN} is higher than U_{BUSBAR} LED "U_{GEN} TOO HIGH" will be lit. If the voltage on U_{GEN} is lower than U_{BUSBAR}, LED "U_{GEN} TOO LOW" will be lit.
If both the "U_{GEN} TOO LOW" and "U_{GEN} TOO HIGH" LEDs are lit simultaneous, it indicates an overvoltage error at the input.

When the phase angle has remained within the preset $\Delta\varphi$ window for the preset period of time T_d , the SYNC relay will be activated and the green LED "SYNC" will be lit. The SYNC output will stay activated in the preset time T_R to match the circuit breaker.

Dead-bus function.
When activated, the dead-bus function enables the SYNC relay to be activated, when no busbar voltage is present (i.e. during a power failure). When the generator voltage is within 80% of nominal level and the busbar voltage is under the preset busbar-offset level, the SYNC relay will be activated, regardless of all other parameters.
Therefore, be careful when using this feature!

DEIF A/S

Type CSQ-2

Technical specifications

Accuracy: ±2 electrical degrees

Resolution: 10 electrical degrees

Max. freq. diff. No limit.

Frequency range: 40...70Hz (supply).

SYNC output: 1 NO-contact

contact rating: 250V-8A-2000VA (AC).
24V-8A-200W (DC).
(200 x 10^3 change-overs at resistive load)

contact voltage: Max. 250V (AC). Max. 150V (DC).

Optocoupler output: System status off = failure.

Temperature: -25...70°C (operating).

Temperature drift: Set points:
max. ±0.2% of full scale per 10°C.

Galvanic separation: Between inputs and output:
2200V - 50Hz - 1 min.

Input range (U_n): 100...127VAC (115VAC)
220...240VAC (230VAC)
380...440VAC (415VAC)

Load: 2kΩ/V.

Max. Input voltage: 1.2 x U_N, continuously
2 x U_N, for 10 sec.

Climate: HSE, to DIN 40040.

EMC: To EN 50081-1/2, EN 50082-1/2, SS4361503 (PL4) and IEC 255-3.

Connections: Max. 2.5 mm² (single-stranded).
Max. 1.5 mm² (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.

Settings

	Setting of	Range
Δφ	Phase difference	±5...20° in 1° step or ±10...40° in 2° step
ΔU	Voltage difference	0...10% in 1% step
T_d	SYNC relay delay	0...1 sec. in 0.1 sec. step
T_R	Length of SYNC pulse	0...1 sec. in 0.1 sec. step or ∞
U_{OFFSET}	Dead-bus offset voltage	Off or 10...40% in 10% step

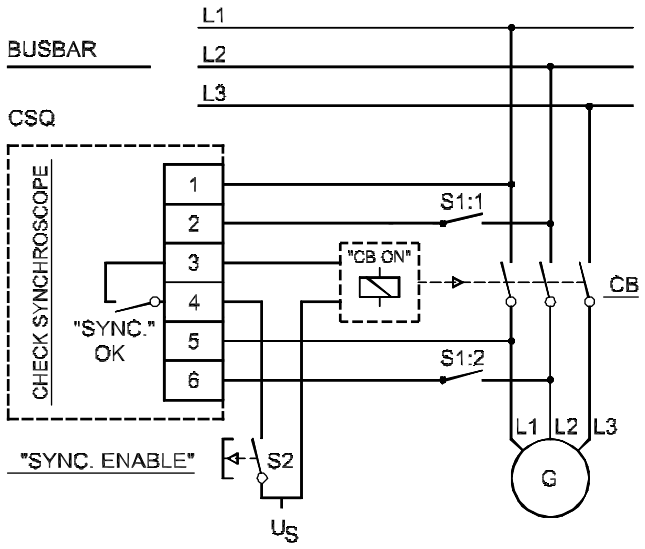
Indication

LEDs	Light
SYNC	Green, when the SYNC relay is activated.
Δφ OK	Yellow, when inside the phase window
TOO FAST	Red LED stopped . Frequency difference too high. GEN too high.
TOO SLOW	Red LED stopped . Frequency difference too high. GEN too low.
$U_{G\ TOO\ LOW}$	Red, when outside the ΔU level
$U_{G\ TOO\ HIGH}$	Red, when outside the ΔU level
$U_{G\ TOO\ LOW}$ $U_{G\ TOO\ HIGH}$	When both are red simultaneous, there is an overvoltage error on the input

Once the relay has been mounted and adjusted, the front cover may be sealed, preventing unwanted change of the setting.

For more information about the product a User's Guide (Item: 4189340218) is available on request.

Connections



Weight: approx 0.35 kg

Order specifications

Type - Input voltage
Example: CSQ-2 - 230V AC

Errors and changes excepted.

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