SECTOR SYNCHRONISING RELAY WITH DEAD BUS FACILITY

KSQ332x2

- **Precision check synchronoscope, sector principle**
- **Dead-bus facility**
- **Bi-directional synchronising**
- **Integral voltage differential protection, adjustable**
- **"Easy view" status presentation**
- **System status output**

Specifications

Monitored Voltage Input:	100-120, 200-240, 380-415, or 440-460VAC, 40-70Hz, 2,3VA (Fuse 0,5A)
Optional Aux. Supply (Only for KSQ332G1)	AC: 100-120, 200-240, 380-415, or 440-460VAC, 40-70Hz 2,3VA (Fuse 0,5A) DC: 24, 48 or 110VDC (Fuse 2A)
Contact Rating:	AC: 100VA - 250V/2A max. DC: 50W - 100V/1A max.
Adjustments:	High voltage: 2-15% of net voltage Low voltage 2-15% of net voltage Phase angle : 4-30 degrees Retention time : 100-600ms
Temperature:	-20 to +70ºC
Weight:	0.7kgs
Front protection:	IP52 (IP65 optional)

Unit meets IEC60092-504 and relevant environmental and EMC tests specified in IEC60068/60092 and IEC61000/60533 respectively, to comply with Classification Societies requirements.

Megacon is the inventor of the original, now industry standard "rotating" LED display, and a trendsetter in modern synchronisation control.

Description

KSQ332x2 provides both visual speed rotation, phase angel relationship and relay signal necessary to permit check synchronising of two different system voltages.

KSQ332E2 is the standard and it takes the auxiliary voltage from the monitored voltage on terminal 3 & 4. KSQ332G2 have separate auxiliary supply on terminal 19 & 20.

The synchronising relay will close when the voltage and phase angle has been within the set limits for the set retention time. A green lamp will indicate the close command to the breaker.

There is lamp indication for reference source present (BUS PWR, only when generator is powered) and incomer status (GEN PWR). An additional lamp for the voltage comparator (Voltage OK), green LED is lit when generator voltage is within voltage set limits.

When used as a dead-bus relay, the CB close relay will energise when the busbar supply is "dead", gen. voltage is connected and the enable signal is closed.

Applications

KSQ332x2 can be used both for single and three phase systems. Any two phases (also neutral) can be used for synchronising as long as it is the same two phases on both side of the breaker.

The unit is meant for manual and semi-automatic synchronising only since there is no compensation for the breaker closing time.

For automatic synchronising then the KSQ104x2 "SPOT ON" principle should be used to get compensation for the breaker closing delay.

User settable limits and retention time.

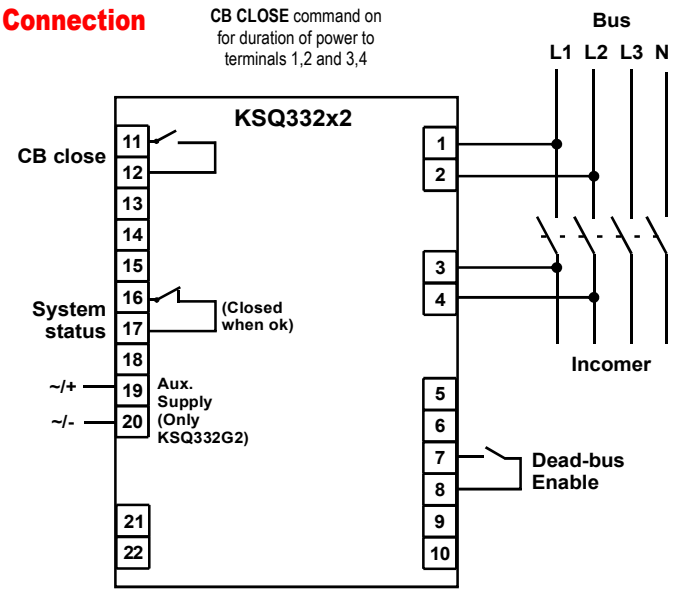
System status:
KSQ332x2 is fitted with a system status relay. As standard the unit is powered from generator side (terminal 3 & 4), when power is ok and unit is working correctly the relay activates. It will release on alarm or when unit is not powered. Separate auxiliary supply is needed for continuously system status.

Normal operation	: Closed contact
Alarm condition/unpowered	: Open contact

© All rights reserved to Megacon
Megacon reserves the right to make any changes to the information at any time

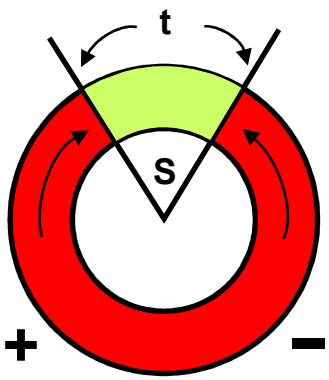
KSQ332x2

Connection



System "S"

Low-differential SECTOR synchronising



Description

System "S" the sector synchronising principle:

The KSQ332x2 is a low differential bi-directional check synchronising relay.

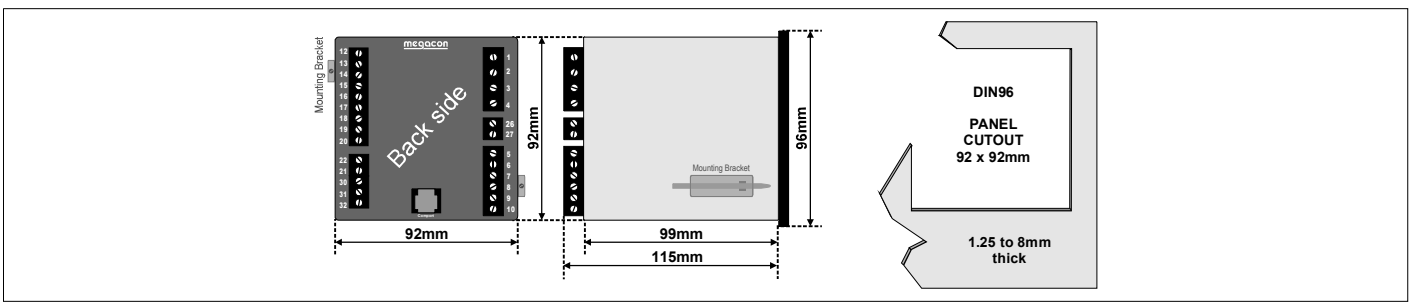
The synchronising relay closes when the incomer frequency is close enough (diff 0,01 - 0,5Hz) to stay within the phase angle sector (S) for the set retention period (t).

Sector synchronisation is the classical alternative for applications which allows synchronisation accuracy and duration of synchronisation process to be interrelated. There is no compensation for the breaker closing time.

Approximate synchronisation accuracy relative to 12 o'clock position (Df) can be calculated by the following formula:

Df = S : 360 x t
Example: Set phase angle (S) to 10 degrees and retention time (t) to 500mS to obtain an accuracy (Df) of 0,05Hz

If the phase angle limit is set too low and retention time too high for very low differential synchronising, it can be difficult to achieve synchronisation. If there is a continuously fluctuating load between the two systems (for example to synchronise against a shaft generator when vessel is in rough weather). The KSQ104x2 "SPOT-ON" principle is more suitable.



The MEGACON policy is one of continuous improvement, consequently equipment supplied may vary in detail from this publication.

ORDERING INFORMATION

Product type	:
Auxiliary supply	:
Network voltage	:
Example	: KSQ332G2 ,24VDC, 230VAC

IS range