# CHECK SYNCHRONISER RELAY & BUS/GENERATOR COUPLER

# KCQ332EJD12


- **Precision check synchroniser, sector principle**
- **Bus & Generator coupler, Dead-bus AND/OR dead generator facility**
- **Bi-directional synchronising**
- **Integral voltage differential protection, adjustable**
- **"Easy view" status presentation**
- **Generator speed reference (analogue output)**
- **System status output**

## Specifications

| | |
|---|---|
| Monitored Voltage Input: | 25-500VAC, 40-70Hz |
| Aux. Supply: | AC: 100-120, 200-240, 380-415, or 440-460VAC, 40-70Hz (Fuse 0,5A)<br>DC: 24 or 36-160V (Fuse 2A) |
| Voltage Tolerance: | ± 10% |
| Contact Rating: | AC: 100VA - 250V/2A max.<br>DC: 50W - 100V/1A max. |
| Adjustments: | |
| Phase angle: | 4-30 degrees |
| Retention time: | 100-600mS |
| High voltage: | 2-15% of net voltage |
| Low voltage: | 2-15% of net voltage |
| *Analogue output: | -10/0/+10mADC = -5/0/+5Hz max 400ohm |
| *Optional output: | -3/0/+3VDC (-3/0/+3Hz) min 50kohm<br>*Only active when Sync. mode is selected* |
| Temperature: | -20 to +70ºC |
| Weight: | 0.7kgs |
| Front protection: | IP21 |

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

**KCQ332EJD12 provides both visual speed rotation, phase angel relationship and relay signal necessary to permit check synchronising of two different system voltages or as bus/generator coupler. When used as a bus/generator coupler, the CB close relay will energise when either the bus and/or the generator is "dead" AND the enable signal is closed.**

The synchronising relay will close when the incomer (generator, busbar, etc.) voltage and phase angle have been within the limits during the set retention time.

A green lamp (CB close) will indicate the close command to the breaker.

There is lamp indication for reference source present (BUS PWR) and incomer status (GEN PWR).

A green lamp (VOLT OK) is lit when both voltages are within the set limits.

**KCQ332EJD12 is only available with separate AC or DC auxiliary supply.**

## Applications

KCQ332EJD122 can be used both for single and three phase systems. Any two phases (or phase-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, the KCQ104x2 "SPOT ON" principle should be used to obtain compensation for breaker closing delay.

User settable limits and retention time on the front of the unit.

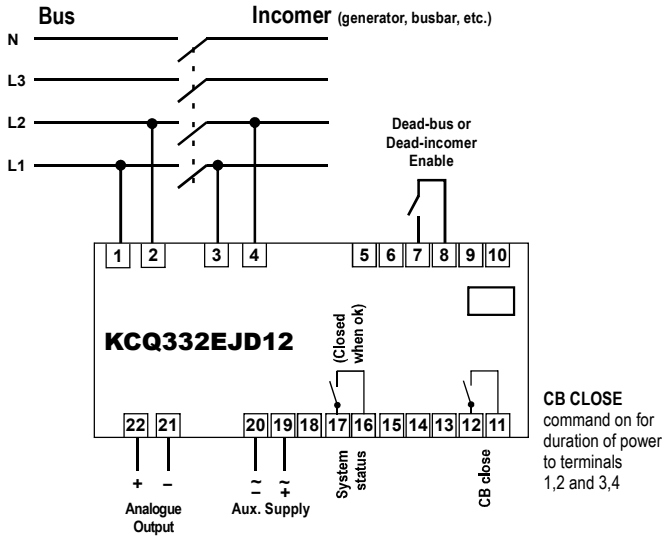
The analogue -10/0/+10mA output signal can be used as speed reference to a generator controller, with polarity and amplitude proportional to frequency difference between the two systems.

**System status:**
KCQ332EJD12 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 |

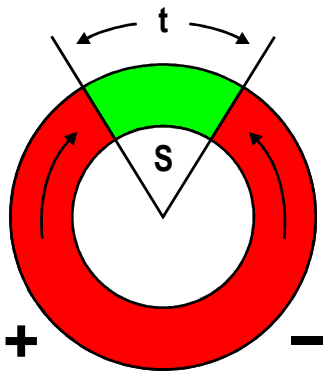
# KCQ332EJD12

## Connection




## System "S"

**Low-differential SECTOR synchronising**




## Description

**System "S" the sector synchronising principle:**

The KCQ332JD12 is a low differential bi-directional check synchronising relay. The synchronising relay closes when the incomer frequency is close enough (diff 0,018 - 0,83Hz) 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 speed of synchronisation to be interrelated. There is no compensation for the breaker closing time.

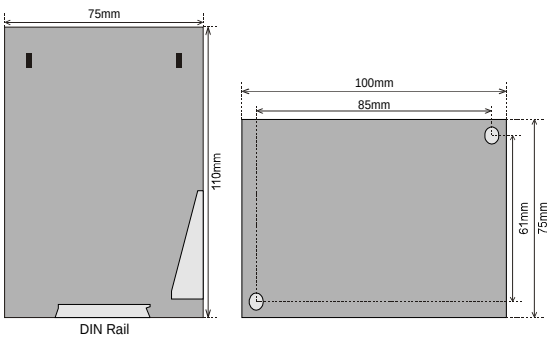
**Approximate synchronisation accuracy relative to 12 o'clock position (Df) can be calculated by the following formula:**

**Df = (S : 360) / t (secs)**
**Example: Set phase angle (S) to 10 degrees and retention time (t) to 500mS to obtain an accuracy of Df:**
**(10/360) / 0,5 = 0,055Hz**

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 a vessel is in rough weather), the KCQ104x2 "SPOT-ON" principle is more suitable.

The "phase angle" setting on the front of the unit refers to the total phase angle sector (S), centred about 0°. Hence a setting of 10° means the sector spanning from -5° to +5°.

## Dimensions




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

**ORDERING INFORMATION**

| | |
|---|---|
| Product type | : KCQ332EJD12 |
| Auxiliary supply | : 230VAC |
| Network voltage | : 450VAC |

IS range