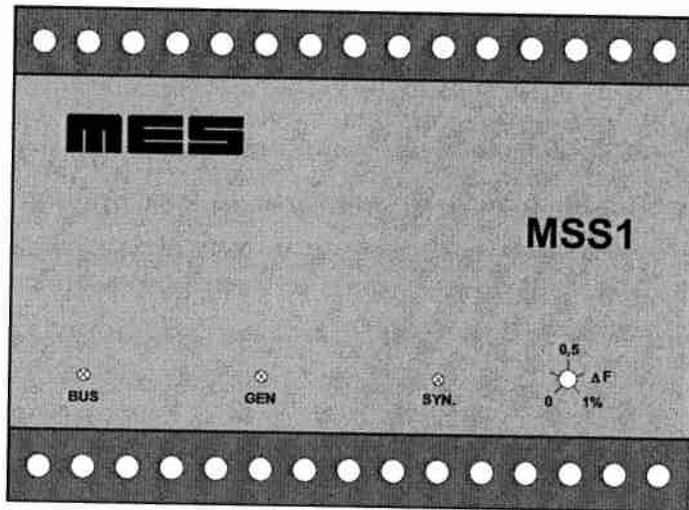


## Check Synchronizer

## MSS1

Vision08 31.10.2007



### FEATURES

- Measuring of voltage and frequency of two grids
- optical indication of the two voltages by LED
- optical indication of synchronism
- Setting of a frequency window
- compact design

Figure 1

### 1.0 SCOPE OF APPLICATION

The MSS1 check synchronizer allows the connection of two rotating AC systems at synchronism only.

For manual synchronizing it is recommended to have synchronizing instruments, such as double voltmeter, double frequency meter and zero voltmeter or synchronoscope available to compare the voltages, the frequencies and the phase angles of the two systems.

The use of this unit is especially recommended for inexperienced operators.

## 2.0 METHOD OF OPERATION

The MSS1 measures voltage and frequency difference. The voltage difference is internally preset to 15%. The frequency difference is settable on the unit front between 0 and 1%.

If the values are within the preset values the output relay is energized (Terminals 9-10-11 or 13-14-15). The pulse length is limited, depending on the frequency difference. The "SYN" LED on the unit front is lit at the same time as the output relay is energized.

## 3.0 FUNCTION

### 3.1 Commissioning

The check synchronizer must be connected according to the connection plan (figure 2).

Two seconds after connecting both voltages, the measuring circuit is energized. The two LED's "BUS" and "GEN" on the front of the unit show which of the two voltages is present.

### 3.2 Synchronizing

*Pre-requisite for synchronizing is that both 3-phase systems have the same rotating field and the same phase sequence.*

By means of the double voltmeter and the double frequency meter, a null voltmeter or a synchroscope, the generator values can be compared to the second 3-phase system.

By means of the speed control switch or the speed control potentiometer the engine speed has to be regulated in a manner that the synchroscope LED light requires approximately 8 seconds for one circulation or a null voltmeter tends slowly to zero.

*Examples of turning direction on the synchroscope:*

"TOO FAST"	= gen. frequency too high	= genset too fast	= decrease revolutions
"TOO SLOW"	= gen. frequency too low	= genset too slow	= increase revolutions

After successful paralleling the synchronizing instruments at hand should be switched off again.

### 3.3 "dead bus"-contact

The MSS1 also contains a contact, terminals 14-15, which is closed when there is no voltage present on the "BUS" input, terminal 1-3 or 2-3 respectively. It opens 500 ms after the busbar voltage is applied. In this way the contact permits the initial switching of a generator onto a dead (voltage-free) busbar.

## 4.0 CONNECTING DIAGRAM

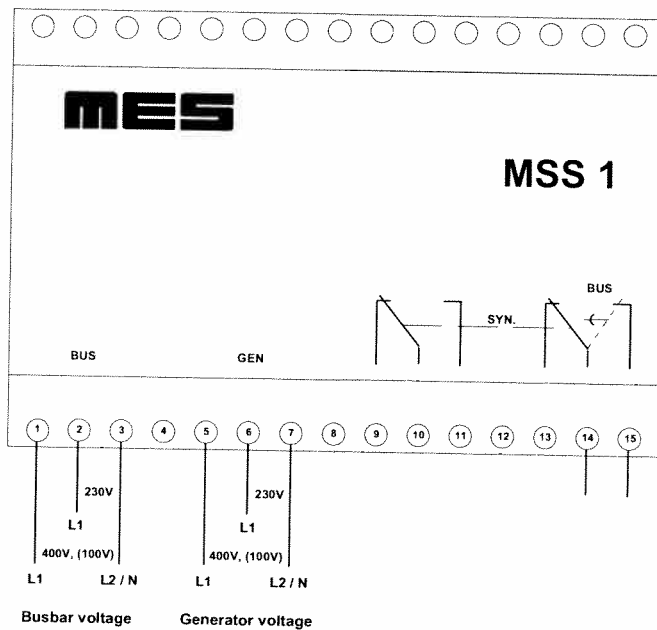


Figure 2

## 4.1 Connection examples

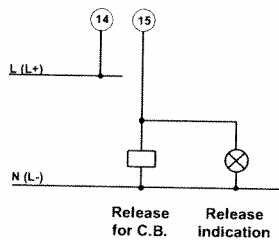


Figure 3

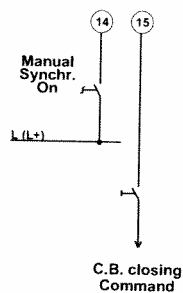


Figure 4

## 5.0 DIMENSIONS

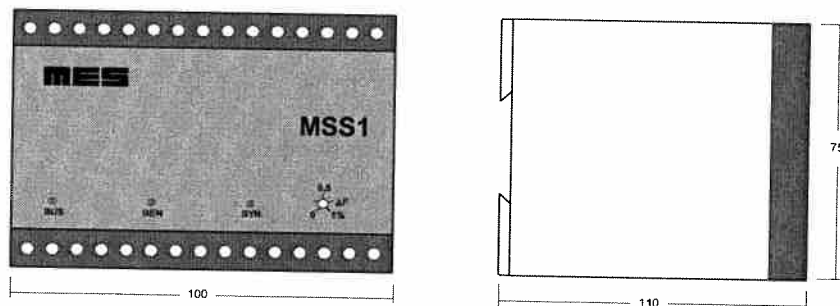


Figure 5

## 6.0 TECHNICAL DATA

Voltage generator/mains	230 VAC and 400 VAC or 100 VAC, (+/- 10%)
Auxiliary voltage	-
Inputs	galvanically separated
Power consumption	ca. 3 VA
Relay outputs	230 VAC / 2 A 2 pot.- free change over (Normal operation)
Test voltage	2,5 kV
Ambient temperature	0 ... +55 °C
Enclosure	Plastic Makrolon 8020 grey / VDE 0100 / VBG4
Dimensions	B100 x H110 x T75 mm
Fixing	DIN rail/ Screw fixing
Protection class	IP 20
Rules	VDE 0160 / EN50178 VDE 0435 part 303 VDE 0110 IEC 255-6

*Subject to technical changes!*

This unit is the replacement for previous types MSG -1 or MCS1-4.



**Cargofresh AG**  
**Business Unit Energy Systems**  
**Brahmkoppel 4**  
**D - 24558 Henstedt – Ulzburg**  
**Tel. : + 49 4193 907 - 0**  
**Fax : + 49 4193 907 – 201 distribution**  
**E-mail : .@mes-energiesysteme.de**  
**Internet : <http://www.mes-energiesysteme.de>**