- ★ Cost-effective and high reliable design.
- ★ Is available for all system voltages up to 660V.
- ★ Considering the operating time of the circuit breaker.
- ★ Limitations for differences in frequency and voltage.
- ★ Visual indication of bus voltage, generator voltage, closing signal, voltage difference, increase and decrease signals.
- ★ 50 hours burn-in before test.
- ★ Compact design with small dimensions H x W x D = 72 x 150 x 115mm.
- ★ Operates in ambient temperature from -20°C to +70°C.
- ★ Noise and radio interference immunity according to IEC 255.
- ★ Withstands 4g vibration test 5-100Hz.
- ★ Flame retardant.
- ★ DIN rail mounting.
- ★ Output contact rating:
  AC: 380V, 2A, 250VA,
  DC: 110V, 2A, 100W.

Description

The T4500 provides automatic synchronization of an incoming generator in a minimum of time, by controlling the frequency via the electric servomotor on the speed governor or a motorized potentiometer.

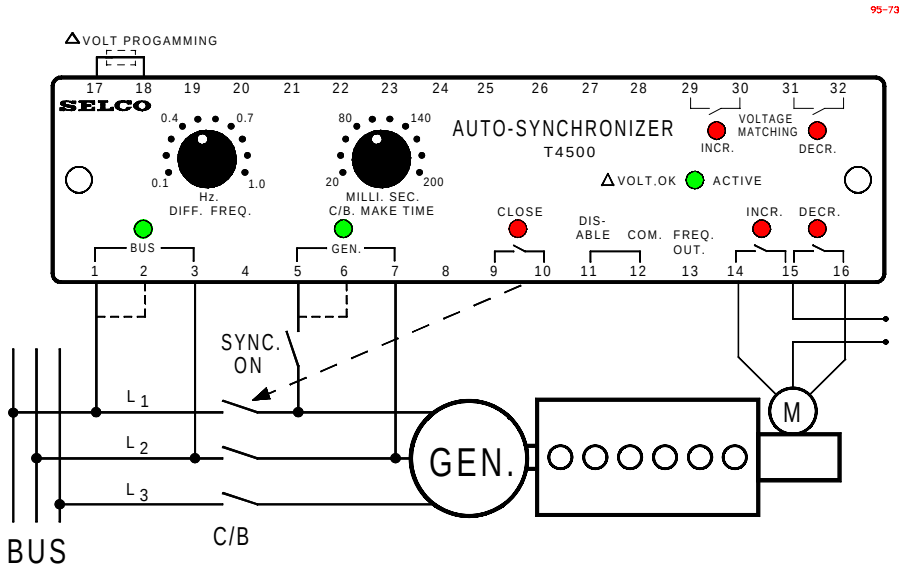
Contact signals for increase and decrease with proportional pulses regulates the frequency very accurately to a positive frequency difference which is half the set frequency difference.

If the positive frequency difference (adjustable +0.1 to +1.0Hz) and the voltage difference (selectable 2-10%, see scheme on next page for selecting the DVolt window value) are within limits, a closing signal (pulse 0.7sec.) is obtained. In order to have the circuit breaker to close exactly at zero phase the circuit breaker make time must be adjusted according to breakers actual make time (adjustable 20-200msec.)

The synchronizer is only active if the voltage is within limits, which is indicated on LED, “DVolt OK - Active”, meaning that the synchronizer can be disabled by disconnecting the supply from the generator or from the busbar.

A connection between 11 and 12 will disable the closing signal, but will not influence the automatic frequency alignment. An output from 12 and 13 to one or more SELCO load sharing units will allow the frequency to be aligned

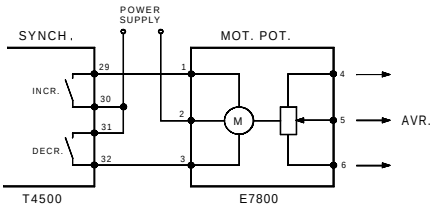
Fig 1



for synchronizing more parallel running generators with another busbar section, a shaft generator or the grid. See application diagram fig. 4.

When commissioning, it is recommended to disconnect the closing signal (terminal 9-10) and observe that the closing signal indicated on the LED is arriving at phase accordance before establishing the closing signal.

Fig 2



Voltage matching

Voltage matching

In situations where the voltage difference can be too high for obtaining synchronization, the voltage matching circuit can be used.

The function is as follows: When the generator comes on voltage and the bus voltage is present, a delay of 4 secs allows the generator voltage to stabilize before voltage adjustment takes place. Is the generator voltage outside limits, a contact for increase terminals 29, 30 or a contact for decrease terminals 31, 32 is activated until generator voltage is within limits.

For controlling the AVR the SELCO motorized potentiometer E7800 is convenient because the potentiometer supplied with the AVR can be built in.

Scheme for selecting the delta Volt Window value

Resistors to be connected between terminal 17 and 18.

10% = 0ohn default (link)

9% =10kohm

8% =18kohm

7% =33kohm

6% =82kohm

5% =100kohm

4% =270kohm

3% =470kohm

2% = no connection

Specifications

Voltage	: Max. 660V
Burden	: 4VA Freq: 35/70 Hz Range: 70-110%
Operating time C/B	: 20-200 msec.
Freq.difference	: 0,1-1,0 Hz
Voltage difference	: 10%
Operating temp.	: -20 +70 C
Contact rating	: AC: 380V, 2A, 250VA DC:110V, 2A, 100W

Type Selection Table

Type	Terminal 1-3	Terminal 2-3	Function Terminal 5-7 / 6-7
T4500-01	440V	380V	V.mat. / DVolt Window ±2% -10%
T4500-03	240V	220V	V.mat. / DVolt Window ±2% - 10%
T4500-05	480V	415V	V.mat. / DVolt Window ±2% - 10%
T4500-09	110V	63V	V.mat. / DVolt Window ±2% - 10%
T4500-10	127V	120V	V.mat. / DVolt Window ±2% - 10%
T4500-13	110V	100V	V.mat. / DVolt Window ±2% - 10%
T4500-15	600V		V.mat. / DVolt Window ±2% - 10%

Other supply voltages and combinations are available on request.

Fig 3

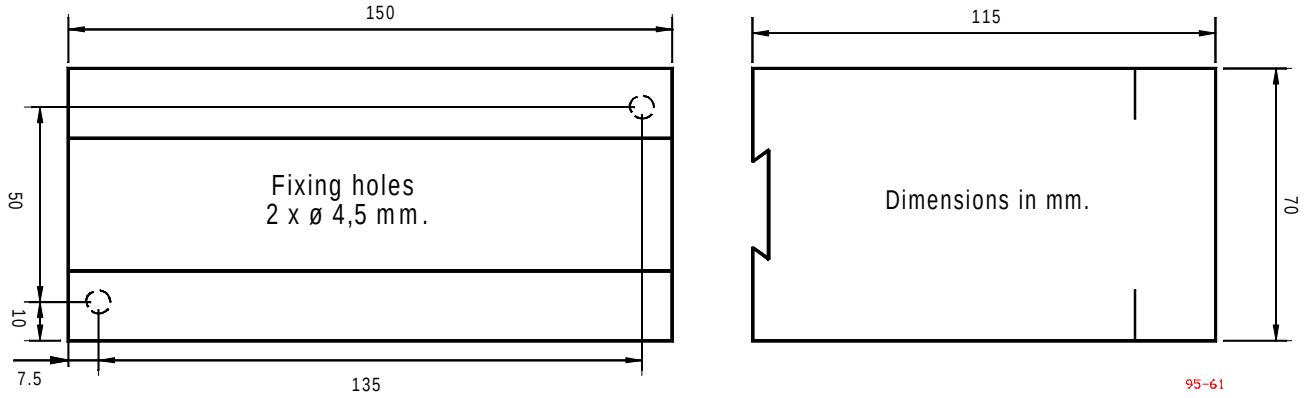


Fig 4

Application: Synchronizing two generators in load sharing to the grid with T4500

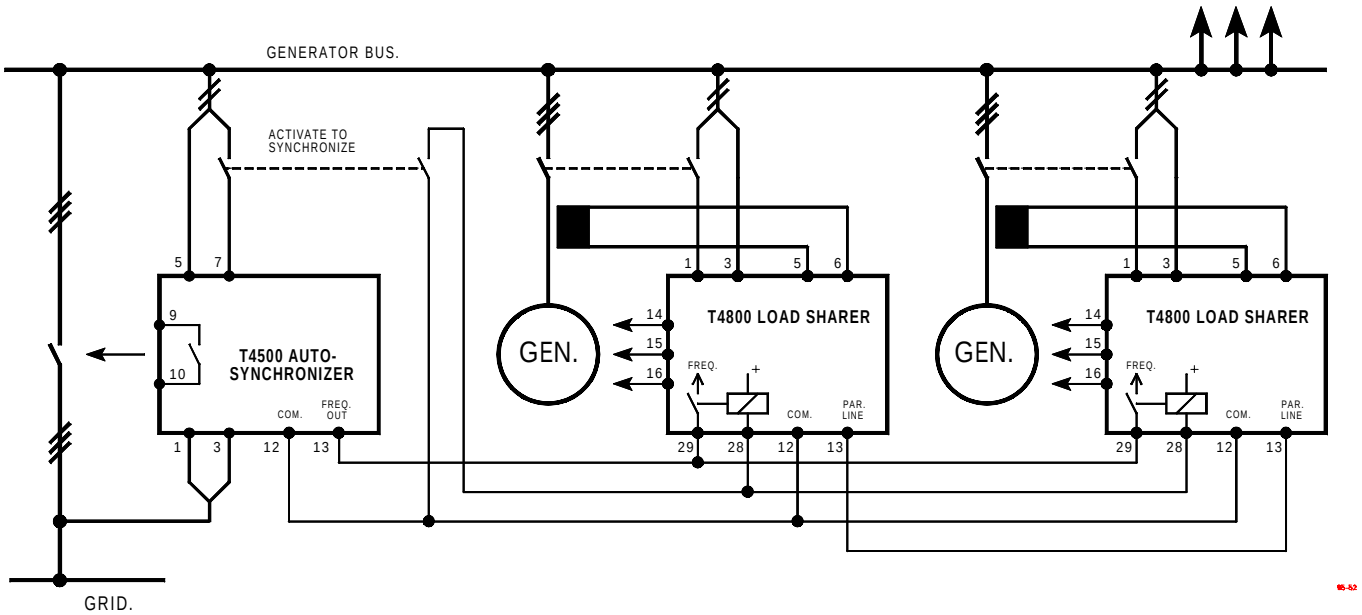
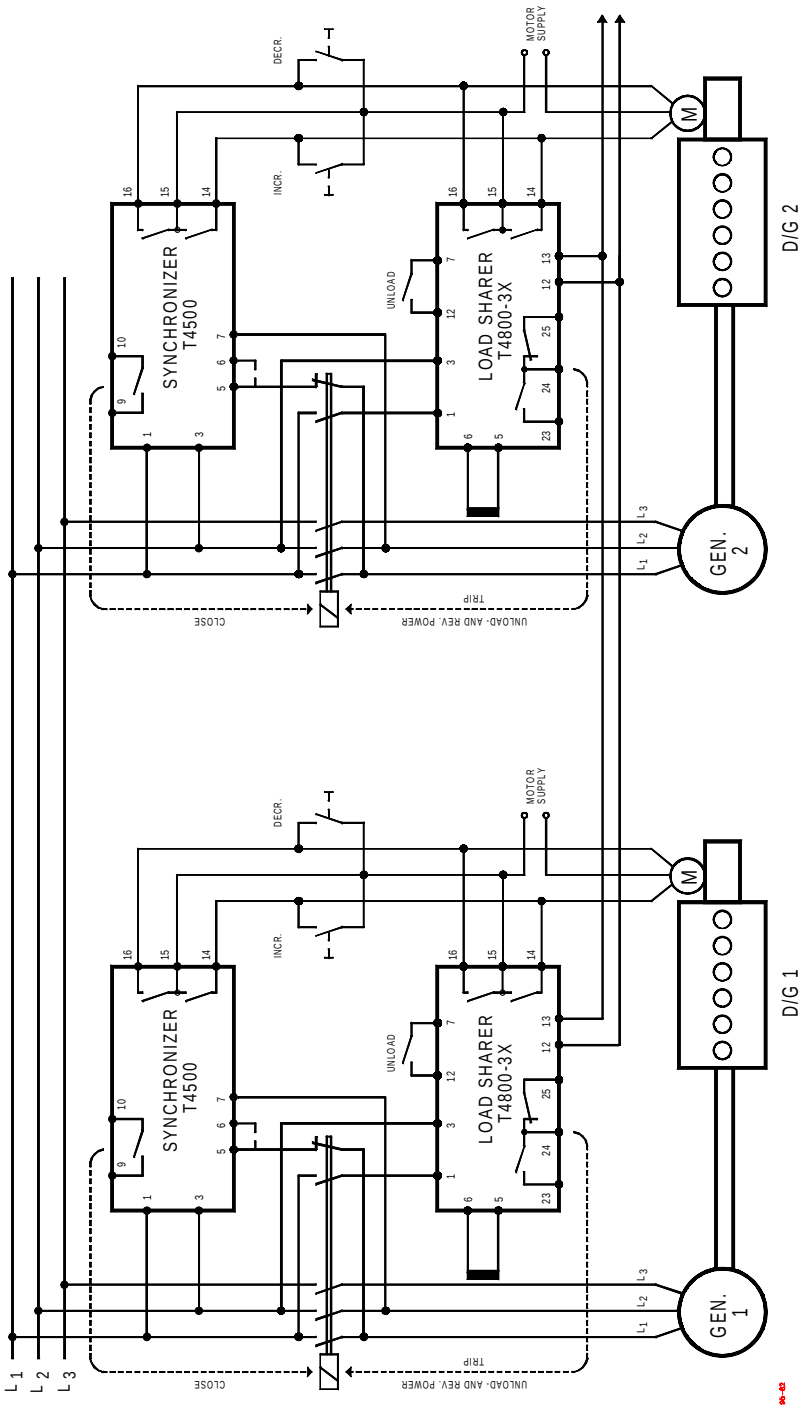


Fig 5

APPLICATION DIAGRAM
SYNCHRONIZATION AND LOAD SHARING
WITH T4500 AND T4800
OPTIONAL UNLOAD TRIP AND REVERSE POWER TRIP



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