

## GENERATOR CONTROL

### T2600 Dual-Current Relay

CE

#### Features/Benefits

- Start or stop the standby diesel generator according to the load situation
- Accepts high supply voltage variation to ensure correct operation in spite of voltage supply fluctuations
- Visual indication of power, pick-up and output trip provides quick and concise status information



#### Specifications

**Max. Voltage** 600 V  
**Voltage Range** 70-110%  
**Dimensions**  
 H 70 mm (2.8")  
 W 150 mm (5.9")  
 D 115 mm (4.5")

#### Web Resources

[littelfuse.com/t2600](http://littelfuse.com/t2600)

ORDERING NUMBER	TERMINALS 1-3	TERMINALS 2-3	I <sub>N</sub>	FUNCTION
T2600.0010	230 V		5 A	30 sec. or 1 sec.*
T2600.0020	450 V	400 V	5 A	30 sec. or 1 sec.*
T2600.0030	480 V	415 V	5 A	30 sec. or 1 sec.*
T2600.0040	450 V	400 V	5 A	30 sec.*; bridge 17-18 = stop current increased 34%
T2600.0050	480 V		5 A	30 sec.*; bridge 17-18 = stop current increased 34%
T2600.0060	110 V	100 V	5 A	30 sec. or 1 sec.*
T2600.0070	110 V	100 V	5 A	30 sec. or 1 sec.*; start current delay 1.0-10 secs
T2600.0080	230 V		5 A	30 sec. or 1 sec.*; normally de-energized start relay
T2600.0090				Extension Unit

### T4500 Auto Synchronizer for Conventional Governors

CE

#### Features/Benefits

- Provides automatic synchronization of a generator to a busbar quickly via speed controller
- Inputs for disabling internal frequency control enables synchronization to external setpoint from other busbar sections, generators or the main grid
- Visual indication of signals provides quick and concise status information



#### Specifications

**Max. Voltage** 600 V  
**Voltage Range** 70-110%  
**Dimensions**  
 H 70 mm (2.8")  
 W 100 mm (3.9")  
 D 115 mm (4.5")

#### Web Resources

[littelfuse.com/t4500](http://littelfuse.com/t4500)

ORDERING NUMBER	TERMINALS 1-3, 5-7	TERMINALS 2-3, 6-7
T4500.0010	450 V	400 V
T4500.0020	230 V	
T4500.0030	480 V	415 V
T4500.0040	110 V	63 V
T4500.0050	127 V	120 V
T4500.0060	110 V	100 V
T4500.0070	600 V	

### T4800 Load Sharer for Conventional Governors

CE

#### Features/Benefits

- Provides automatic load sharing and frequency control for parallel running generators
- Inputs for disabling internal frequency control enables operation where system frequency is set externally such as in grid-parallel operation
- Visual indication of signals provides quick and concise status information



#### Specifications

**Max. Voltage** 600 V  
**Voltage Range** 70-110%  
**Dimensions**  
 H 70 mm (2.8")  
 W 150 mm (5.9")  
 D 115 mm (4.5")

#### Web Resources

[littelfuse.com/t4800](http://littelfuse.com/t4800)

ORDERING NUMBER	TERMINALS 1-3	TERMINALS 2-3	I <sub>N</sub>
T4800.0010	450 V	400 V	5 A
T4800.0020	230 V		5 A
T4800.0030	480 V	415 V	5 A
T4800.0040	110 V	100 V	1 A
T4800.0050	450 V	400 V	1 A
T4800.0060	127 V	120 V	5 A
T4800.0070	110 V	100 V	5 A

# GENERATOR CONTROL

## T4900 VAR Load Sharer

CE

### Features/Benefits

- Provides automatic load sharing of reactive power and voltage control for parallel running generators
- Inputs for disabling internal voltage control enables operation where system voltage is set externally such as in grid-parallel operation
- Visual indication of voltage increase/decrease provides quick and concise status information

### Specifications

<b>Max. Voltage</b>	660 V
<b>Voltage Range</b>	110%
<b>Dimensions</b>	<b>H</b> 70 mm (2.8") <b>W</b> 150 mm (5.9") <b>D</b> 115 mm (4.5")

### Web Resources

[littelfuse.com/t4900](http://littelfuse.com/t4900)



ORDERING NUMBER	TERMINALS 1-3	TERMINALS 2-3	I <sub>N</sub>	ACCESSORIES
T4900.0010	450 V	400 V	5 A	T4910-07 Potentiometer with Cable for External Power Factor Setting
T4900.0020	230 V	—	5 A	
T4900.0030	480 V	415 V	5 A	
T4900.0040	110 V	63 V	5 A	
T4900.0050	127 V	120 V	1 A	
T4900.0060	110 V	100 V	1 A	

## T5000 Paralleling Relay

CE

### Features/Benefits

- Inhibits closure of circuit breaker if synchronizing parameters such as voltage, frequency and phase angle are outside limits
- Prevents generator damage and disturbance to busbar
- Visual indication of voltage and closing signal provides quick and concise status information

### Specifications

<b>Max. Voltage</b>	600 V
<b>Voltage Range</b>	70-110%
<b>Dimensions</b>	<b>H</b> 70 mm (2.8") <b>W</b> 100 mm (3.9") <b>D</b> 115 mm (4.5")

### Web Resources

[littelfuse.com/t5000](http://littelfuse.com/t5000)



ORDERING NUMBER	TERMINALS 1-3	TERMINALS 2-3	FUNCTION
T5000.0010	450 V	400 V	
T5000.0020	230 V		
T5000.0030	480 V	415 V	
T5000.0040	110 V	100 V	
T5000.0050	127 V	120 V	
T5000.0060	480 V	415 V	$\Delta\phi=9-13.5^\circ, \Delta F=0.2-0.3$ Hz
T5000.0070	450 V	400 V	$\Delta U=15-20\%, \Delta\phi=9-13.5^\circ, \Delta F=0.2-0.3$ Hz
T5000.0080	110 V	100 V	$\Delta U=15-20\%, \Delta\phi=9-13.5^\circ, \Delta F=0.2-0.3$ Hz
T5000.0090	450 V	400 V	$\Delta\phi=9-13.5^\circ, \Delta F=0.2-0.3$ Hz
T5000.0100	660 V		

## E7800 Motorized Potentiometer

UL SF

### Features/Benefits

- Interface between increase/decrease contacts and a device requiring control/adjustments by an external potentiometer
- Can be used as speed trim of an electric speed governor in generator applications
- Wire would for longer life than carbon potentiometers

### Specifications

<b>Voltage Range</b>	AC: 90-120% DC: 75-125%
<b>Consumption</b>	AC: 2.5 VA DC: 2 W
<b>Dimensions</b>	<b>H</b> 96 mm (3.8") <b>W</b> 96 mm (3.8") <b>D</b> 80 mm (3.1")

### Web Resources

[littelfuse.com/e7800](http://littelfuse.com/e7800)



ORDERING NUMBER	VOLTAGE	RPM	POTENTIOMETER
E7800.00.xx	230 V-240 Vac	1.0 (50 Hz)	5 k $\Omega$ -1 turn
E7800.01.xx	220 V-240 Vac	2.0 (50 Hz)	5 k $\Omega$ -10 turn
E7800.02.xx	100 V-110 Vac	1.0 (50 Hz)	5 k $\Omega$ -1 turn
E7800.03.xx	24 Vac	2.0 (50 Hz)	5 k $\Omega$ -10 turn
E7800.04.xx	100 V-110 Vac	2.0 (50 Hz)	5 k $\Omega$ -10 turn
E7800.05.xx	220 V-240 Vac	2.0 (50 Hz)	5 k $\Omega$ -1 turn
E7800.09.xx	24 Vac	1.0 (50 Hz)	5 k $\Omega$ -1 turn
E7800.23.xx	24 Vdc	0.8-6 Adj.	5 k $\Omega$ -1 turn
E7800.24.xx	24 Vdc	0.8-6 Adj.	5 k $\Omega$ -10 turn
E7800.90.00	24 Vdc	0.8-6 Adj.	DC output voltage, 0-1.0 V (0-100%)

# GENERATOR CONTROL

## T7900 Electronic Potentiometer



### Features/Benefits

- Used as a converter between pulse contacts and a device requiring control adjustment by a voltage or current signal
- Wide selection of output ranges including PWM which ensures possible use with a broad variety of speed governors and voltage regulators
- Independent ramp-up and ramp-down time setting provides optimum controllability

### Specifications

**Supply Consumption** 8-36 Vdc/Vac  
Max. 120 mA at 24 Vdc  
**Dimensions** H 70 mm (2.8")  
W 100 mm (3.9")  
D 115 mm (4.5")

### Web Resources

[littelfuse.com/t7900](http://littelfuse.com/t7900)

ORDERING NUMBER	TERMINALS 11-12	TERMINALS 1-3
T7900.0010	24 Vdc/Vac	
T7900.0030		250 Vac

## M8100 Synchroscope



### Features/Benefits

- Provides illuminated indication of the phase and frequency difference between voltages on two separate AC systems
- High resolutions visual indications by 38 LEDs
- Available with check synchronizer relay which enables use as manual synchronizing unit, or as auto -synchronizing back-up

### Specifications

**Max. Voltage** 600 V  
**Voltage Range** 70-110%  
**Consumption** 2x3 VA max.  
**Dimensions** H 96 mm (3.8")  
W 96 mm (3.8")  
D 80 mm (3.1")

### Web Resources

[littelfuse.com/m8100](http://littelfuse.com/m8100)

ORDERING NUMBER	TERMINALS 1-1, 5-7	TERMINALS 1-3, 6-7	FUNCTION
M8100.0010	450 V	400 V	
M8100.0020	230 V		
M8100.0030	480 V	415 V	
M8100.0040	110 V	100 V	
M8100.0050	450 V	400 V	With check synchronizer relay
M8100.0060	230 V		With check synchronizer relay
M8100.0070	480 V	415 V	With check synchronizer relay
M8100.0080	110 V	100 V	With check synchronizer relay

## T8400 Blackout Limiter



### Features/Benefits

- Enables fast clearing of a blackout
- Monitors up to four generators or eight generators with two units
- Independent 24 Vdc supply with wide tolerance operates regardless of system voltage failure

### Specifications

**Supply Voltage** 24 Vdc 30%  
**Max. Voltage** 660 Vac  
**Frequency Range** 35-70 Hz  
**Dimensions** H 70 mm (2.7")  
W 150 mm (5.9")  
D 115 mm (4.5")

### Web Resources

[littelfuse.com/m8400](http://littelfuse.com/m8400)

ORDERING NUMBER	TERMINALS 1-3, 8-10, 17-19, 24-26	FUNCTION
T8400.0010	400 V	1-1.5-2-2.5 sec.
T8400.0020	400 V	3-3.5-4-4.5 sec.
T8400.0030	230 V	1-1.5-2-2.5 sec.
T8400.0040	230 V	3-3.5-4-4.5 sec.
T8400.0050	415 V	1-1.5-2-2.5 sec.
T8400.0060	415 V	3-3.5-4-4.5 sec.

## GENERATOR CONTROL

### C6200 FlexGen Standard Generator Control



#### Description

FlexGen controllers are intended for paralleling of generators with each other or with the grid. One FlexGen controller is installed for each generator in the installation and handles all electrical control. Both Basic and Advanced versions include basic functions such as auto-synchronizing, frequency control, active load sharing, dead bus monitoring and reverse power protection. In addition the FlexGen Advanced contains reactive load sharing, voltage matching, power factor control, grid-parallel operation control, and protection against excitation loss, RoCoF (df/dt), and vector shift.

#### Features/Benefits

- 3-phase true RMS measurement is more reliable and immune to high noise
- Analog outputs for speed and voltage control fit most electronic governors and
- 10 programmable inputs and outputs for flexible configuration on wide range of applications

#### Specifications

<b>Auxiliary Supply</b>	10 Vdc to 36 Vdc (24 Vdc-58%/+50%)
<b>Generator Voltage</b>	63 V-690 V
<b>Generator Rated Frequency</b>	50 Hz/60 Hz
<b>C/T Secondary Current</b>	5 A
<b>Consumption</b>	7 W
<b>Ambient Temp Range</b>	-20°C to +70°C
<b>Dimensions</b>	<b>H</b> 182 mm (7.2") <b>W</b> 282 mm (11.1") <b>D</b> 50 mm (2.0")

#### Web Resources

[littelfuse.com/c6200](http://littelfuse.com/c6200)

ORDERING NUMBER	MODEL NAME	ACCESSORIES
C6200.0060	FlexGen Basic	C6500 FlexGen UI User Interface Module
C6200.0100	FlexGen Advanced	

### S6000 Sigma Advanced Protection Module



#### Description

The SIGMA Generator Control and Protection System is a range of integrated modules for protection and control of marine and land based generators. The modules are marine approved and include all relevant functions, such as protection of generators, synchronizing and active/reactive load sharing and Power Management.

#### IO/P Module S6000 Input/ Output and Protection Module

The SIGMA S6000 performs all measurements on the generator side (voltages, currents, frequency), does the generator protection, includes a non-essential load trip in two steps and includes three measurement transducers.

#### S/LS Module S6100 Synchronizing and Load-Sharing Module

This module performs the control functions like synchronizing and active and reactive load sharing. It performs the measurements on the busbar side.

#### Features/Benefits

- 3-phase true RMS measurement is more reliable and immune to high noise
- Analog outputs for speed and voltage control fit most electronic governors and
- Large consumer request inputs with load feedback optimizes quantity of running generators and saves fuel

#### Specifications

<b>Primary Supply</b>	+24 Vdc (-30%/+30%) Isolated, 500 mA
<b>Backup Supply</b>	+24 Vdc (-30%/+30%) Isolated, 500 mA
<b>Environmental</b>	
<b>Temp Range</b>	-15°C to +70°C
<b>Dimensions</b>	<b>H</b> 145 mm (5.7") <b>W</b> 190 mm (7.5") <b>D</b> 64 mm (2.5")

#### Web Resources

[littelfuse.com/s6000](http://littelfuse.com/s6000)

ORDERING NUMBER	DESCRIPTION	ACCESSORIES
S6000.0010	Input/ Output and Protection Module— 5 A C/T	S6500.0010 Power Manager Module S6610.0010 User Interface Module
S6000.0020	Input/ Output and Protection Module— 1 A C/T	
S6100.0010	Synchronization and Load Sharing Module	