



SPM-D11 Series

Load Share Synchronizer

APPLICATIONS

The SPM-D11 is a microprocessor-based synchronizer designed for use on one or three-phase AC generators equipped with Woodward or other compatible speed controls and automatic voltage regulators. The SPM-D11 synchronizer provides automatic frequency, phase and voltage matching using either analog- or discrete output bias signals.

It combines synchronizing for one circuit breaker, load and power factor control or isochronous load sharing and generator protection.

DESCRIPTION

Synchronizing

- Phase match or slip frequency synchronization with voltage matching
- Two-phase sensing of generator and bus
- Selectable operating modes like SPM-A (Run, Check, Permissive, and OFF)
- Synchro-check possible
- Synchronization time monitoring
- Load/var sharing

Mains parallel operation

- Real power control
- True RMS power calculation
- Generator real power setpoint by parameter (2 values) or via 0/4 to 20 mA
- Soft unloading
- Power factor control
- Power factor setpoint by parameter
- Power limit value with relay output

Isolated operation

- Frequency control
- Voltage control

Dead bus operation

- Closing of breaker on demand

FURTHER SPM-D SYNCHRONIZERS

- The SPM-D10 Series provides two-phase generator and bus measurement refer to product specifications 37297 for more information
- The SPM-D10/YB Series provides three-phase generator and bus measurement refer to product specifications 37298 for more information
- The SPM-D21 Series provides synchronizing for two circuit breakers and load control refer to product specifications 37293 for more information

DESCRIPTION

Protection

ANSI

- Single-phase CT sensing for generator
- Two-phase sensing of generator voltage
- Generator over-/undervoltage (59/27)
- Generator over-/underfrequency (81O/U)
- Generator reverse/reduced power (32R/F)
- Generator overload (32)

Control outputs

Standard

- Discrete raise/lower for speed/load
- Discrete raise/lower for voltage/power factor

LSXR Package

- Analog bias outputs for voltage and speed freely configurable for all levels (+/-1 V, +/-3 V, 0 to 5 V, 0.5 to 4.5 V, +/-10 V +/-5 V, 0 to 20 mA, +/-20 mA, and much more configurable)
- Speed bias output configurable as 500 Hz PWM output and adjustable voltage level
- Two raise/lower outputs configurable for either speed or voltage

Operating Features

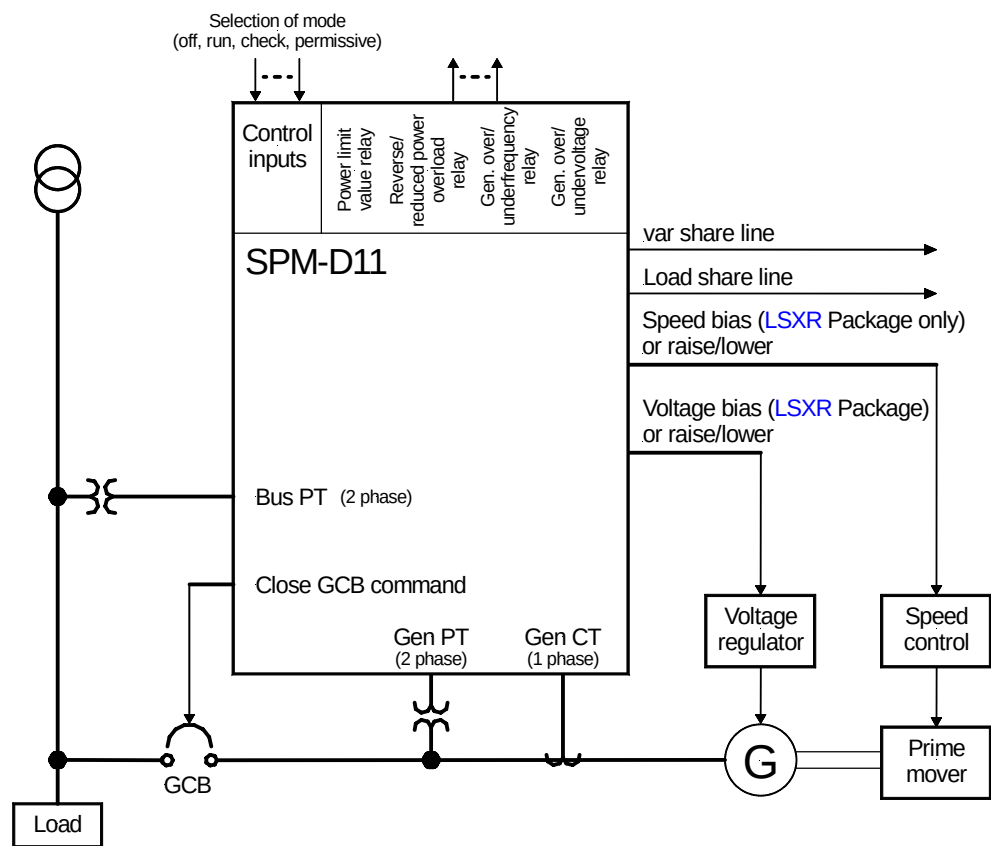
- Two-line Liquid Crystal display for operation and alarm indication
- Synchroscope
- Indication of control activity and breaker state
- Multi-level password protection for parameters
- Configuration directly or via PC
- English or German language adjustable

- Load/var sharing
- Generator protection
- Synchronization for one circuit breaker
- Frequency, phase, and voltage matching
- Selectable types of control output
- Digital display of generator and bus values
- Real power control
- Power factor control
- PC and front panel configurable
- Microprocessor technology for flexible and reliable operation
- CE marked
- UL/cUL listed

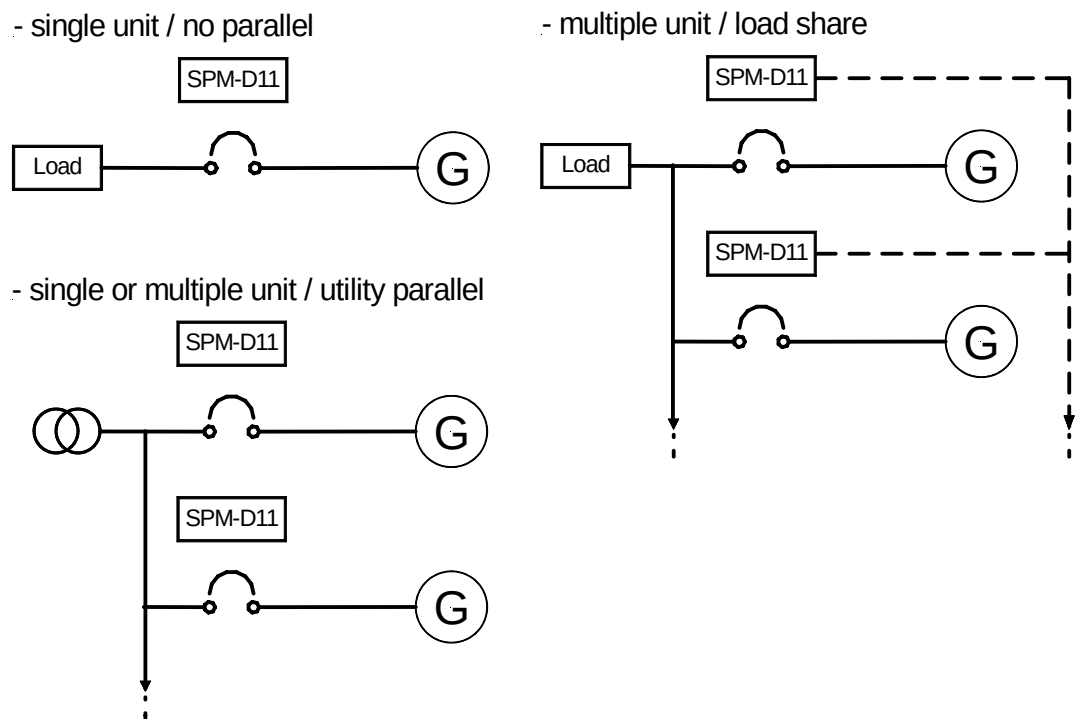
Relay outputs	isolated
Contact material	AgCdO
Load (GP).....	2.00 Aac@250 Vac
	2.00 Adc@24 Vdc / 0.36 Adc@125 Vdc / 0.18 Adc@250 Vdc
Pilot duty (PD)	
	1.00 Adc@24 Vdc / 0.22 Adc@125 Vdc / 0.10 Adc@250 Vdc
Housing.....	Type APRANORM DIN 43 700
Dimensions	144×72×122 mm
Front cutout	138[+1.0]×67[+0.7] mm
Connection	screw/plug terminals depending on connector 1.5 mm² or 2.5 mm²
Front.....	insulating surface
Protection system.....	with correct installation
	Front..... IP42 (sealed IP54; gasket kit = P/N 8923-1037)
	Back..... IP21
Weight.....	depending on version, approx. 800 g
CE approval	tested according to applicable EN guidelines
Listings	UL/cUL listed (voltages up to 300 Vac)



APPLICATION DIAGRAM



APPLICATION EXAMPLES



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37292C - 06/3/S

FEATURES OVERVIEW

SPM-D Series Synchronizer	SPM-D11/LSR 12/24 Vdc	SPM-D11/LSXR 12/24 Vdc	SPM-D11/LSR 24 Vdc	SPM-D11/LSXR 24 Vdc
Measuring/Display				
Generator voltage, 2phase	✓	✓	✓	✓
Generator current, 1phase	✓	✓	✓	✓
Busbar voltage, 2phase	✓	✓	✓	✓
Control				
Breaker	1	1	1	1
Synchronization, 2phase	✓	✓	✓	✓
Isolated operation	✓	✓	✓	✓
Mains parallel operation #1	✓	✓	✓	✓
SPM-A synchronization modes	✓	✓	✓	✓
Dead bus operation	✓	✓	✓	✓
Protection				
Generator: over-/undervoltage (59/27)	✓	✓	✓	✓
Generator: over-/underfrequency (81O/U)	✓	✓	✓	✓
Generator: overload (32)	✓	✓	✓	✓
Generator: reverse power (32R)	✓	✓	✓	✓
Generator: reduced power (32F)	✓	✓	✓	✓
Controller				
Discrete raise/lower: speed & load	✓	✓#2	✓	✓#2
Discrete raise/lower: voltage & power factor	✓	✓#2	✓	✓#2
Analog output: speed & load		✓		✓
Analog output: voltage & power factor		✓		✓
PMW output: speed & load		✓		✓
Active power setpoint: 0/4 to 20 mA	✓	✓	✓	✓
Load/var sharing	✓	✓	✓	✓
I/O's				
Alarm relays	3	3	3	3
Signalling relays	3	3	3	3
Listings/Approvals				
CE marked	✓	✓	✓	✓
UL/cUL listed	✓	✓	✓	✓
Accessories				
Configuration via PC #3	✓	✓	✓	✓
Manuals (for other languages please refer to the Woodward homepage)				
English	37259	37259	37259	37259
German	GR37259	GR37259	GR37259	GR37259
Voltage ratings				
Power supply	12/24 Vdc	12/24 Vdc	24 Vdc	24 Vdc
Discrete inputs	12/24 Vdc	12/24 Vdc	18 to 250 Vac/dc	18 to 250 Vac/dc
Part numbers P/N				
Measuring inputs 100 Vac, ..1 A			8440-1708	
Measuring inputs 100 Vac, ..5 A	8440-1703	8440-1706		8440-1713
Measuring inputs 400 Vac, ..1 A #4				
Measuring inputs 400 Vac, ..5 A #4	8440-1686	8440-1666		8440-1715

#1 Additional mains decoupling relay like MFR11 required

#2 configurable to either speed/load or voltage/power factor

#3 Cable incl. software necessary (DPC)

#4 All units with 400V measuring inputs can also be used for 100V system voltage