WOODWARD

Product Specification
37292D

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

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

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

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

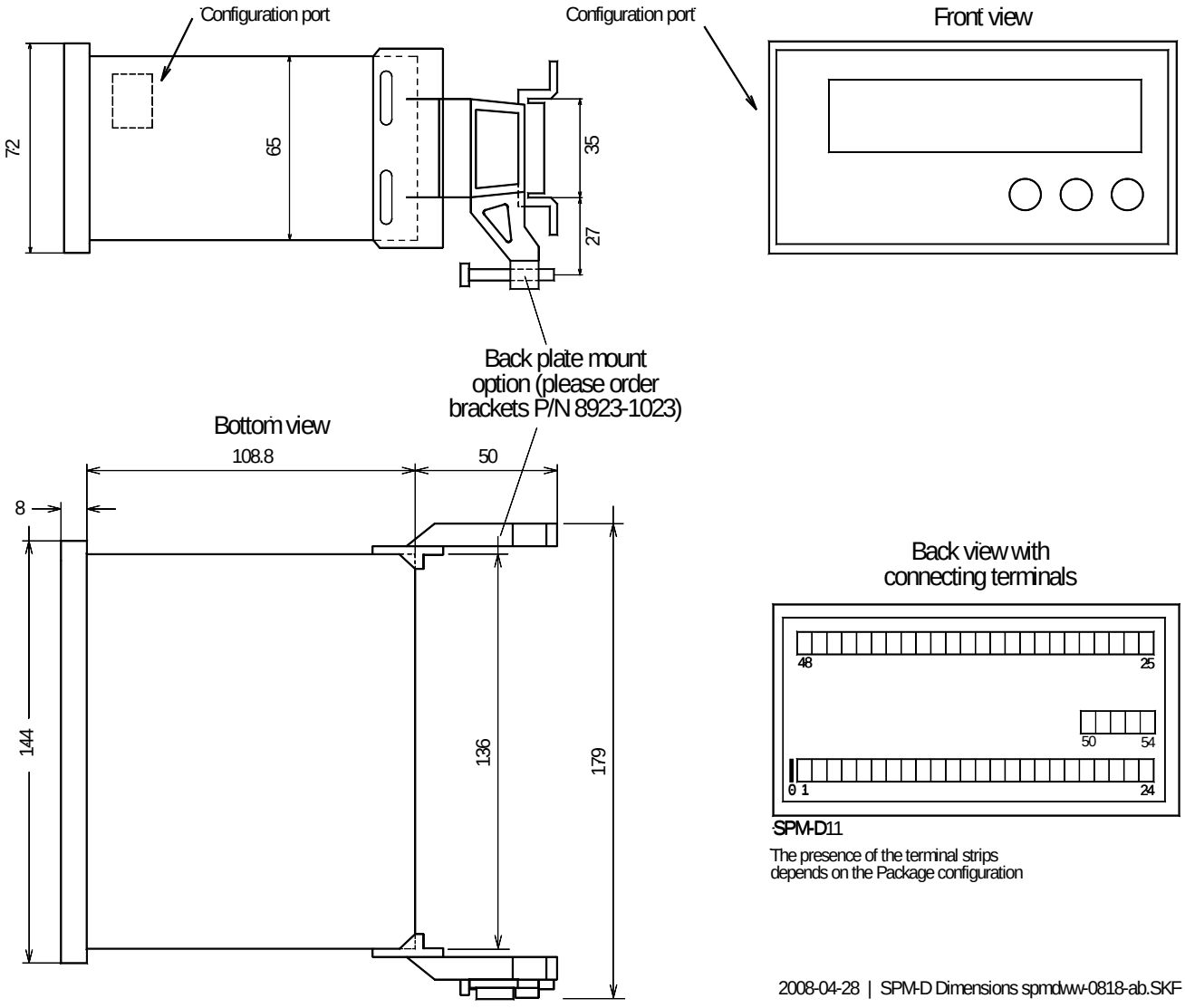
- Load/var sharing
- Generator protection
- Synchronization for one circuit breaker
- Frequency, phase, and voltage matching
- Selectable types of control output
- Digital display of generator and bus values
- Real power control
- Power factor control
- PC and front panel configurable
- Microprocessor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

SPECIFICATIONS (for more see specific manuals)

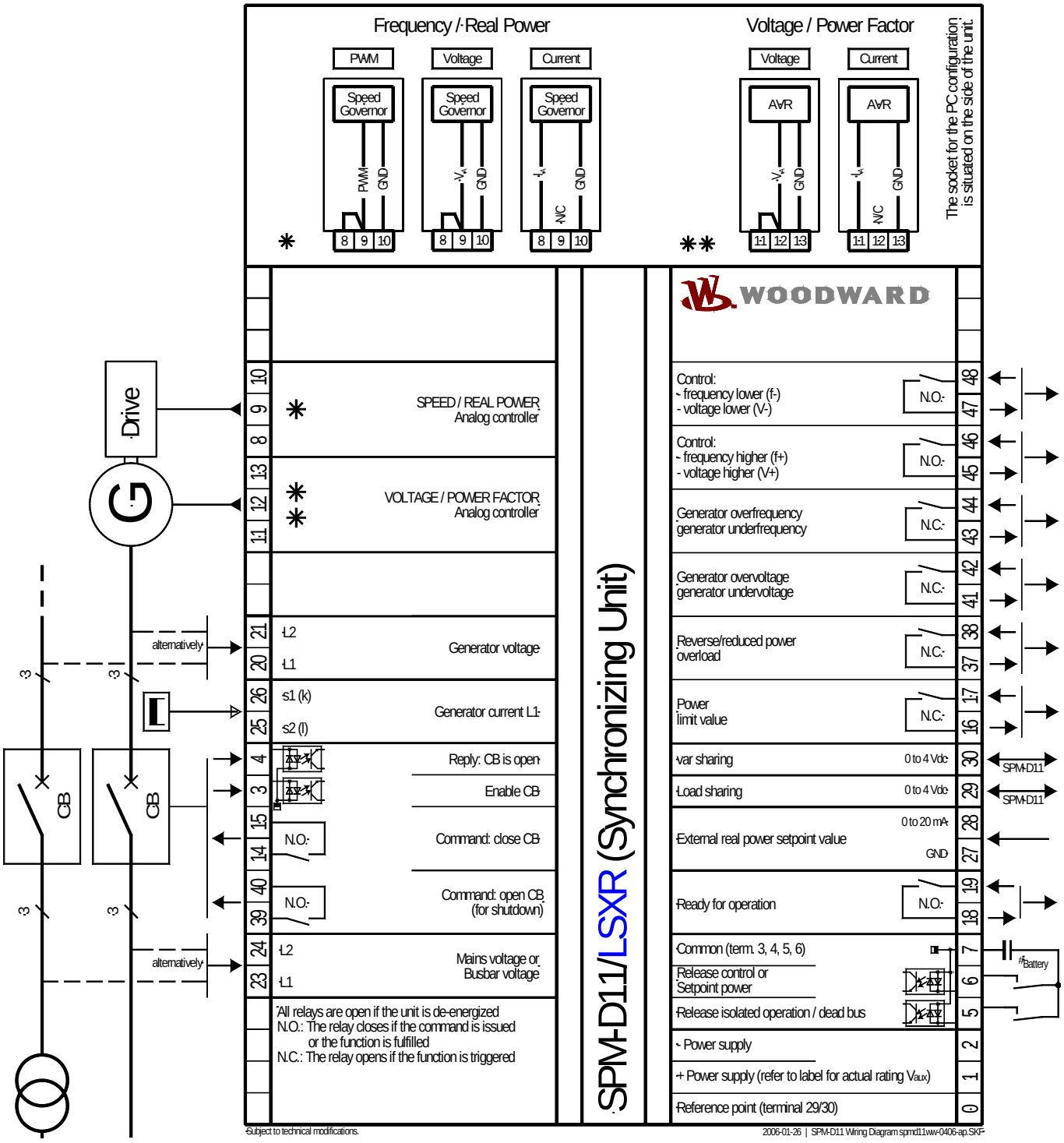
Accuracy ..... Class 1
Power supply ..... 12/24 Vdc (9.5 to 32 Vdc)
Intrinsic consumption ..... max. 10 W
Ambient temperature ..... -20 to 70 °C
Ambient humidity ..... 95 %, non-condensing
Voltage ..... Rated ⅄/D: [1] 66/115 Vac or [4] 230/400 Vac
Maximum value (V_{max}): [1] 150 Vac or [4] 300 Vac
Rated voltage $V_{ph\text{-}ground}$: [1] 150 Vac or [4] 300 Vac
Rated surge voltage: [1] 2.5 kV or [4] 4.0 kV
Measuring frequency ..... 40 to 70 Hz
Linear measuring range up to ..... $1.3 \times V_{rated}$
Input resistance ..... [1] 0.21 MW, [4] 0.696 MW
Max. power consumption per path ..... < 0.15 W
Current (I_{rated}) ..... [1] ../1 A, [5] ../5 A
Linear measuring range up to ..... $3.0 \times I_{rated}$
Load ..... < 0.15 VA
Rated short-time current (1 s) ..... [1] $50 \times I_{rated}$, [5] $10 \times I_{rated}$
Discrete inputs ..... isolated
Input range ..... 12/24Vdc *or* 18 to 250 Vac/dc
Input resistance ..... approx. 6.8 kW or 68 kW

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)

DIMENSIONS



WIRING DIAGRAM



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www.woodward.com

For more information contact:

AUTOMATION CONTROL SYSTEMS SDN. BHD.

FEATURES OVERVIEW

SPM-D Series Synchronizer		SPM-D11/LSXR 12/24 Vdc
Measuring/Display		
Generator voltage, 2phase		ü
Generator current, 1phase		ü
Busbar voltage, 2phase		ü
Control		
Breaker		1
Synchronization, 2phase		ü
Isolated operation		ü
Mains parallel operation #1		ü
SPM-A synchronization modes		ü
Dead bus operation		ü
Protection		
Generator: over-/undervoltage	(59/27)	ü
Generator: over-/underfrequency	(81O/U)	ü
Generator: overload	(32)	ü
Generator: reverse power	(32R)	ü
Generator: reduced power	(32F)	ü
Controller		
Discrete raise/lower: speed/load		ü #2
Discrete raise/lower: voltage/power factor		ü #2
Analog output: speed & load		ü
Analog output: voltage & power factor		ü
PMW output: speed & load		ü
Active power setpoint: 0/4 to 20 mA		ü
Load/var sharing		ü
I/O's		
Alarm relays		3
Signalling relays		3
Listings/Approvals		
CE marked		ü
UL/cUL listed		ü
Accessories		
Configuration via PC #3		ü
Manuals (for other languages please refer to the Woodward homepage)		
	English	37259
	German	GR37259
Voltage ratings		
Power supply		12/24 Vdc
Discrete inputs		12/24 Vdc
Part numbers P/N		
	Measuring inputs 100 Vac, ../1 A	8440-1705
	Measuring inputs 100 Vac, ../5 A	8440-1706
	Measuring inputs 400 Vac, ../5 A #4	8440-1666

#1 Additional mains decoupling relay like MFR11 required
#2 Configurable to either speed/load or voltage/power factor
#3 Configuration software 'LeoPC' available free at Woodward.com, RS232 connection requires Woodward DPC cable P/N 5417-557
#4 All units with 400V measuring inputs can also be used for 100V system voltage

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