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WOODWARD

SPM-D2-10 Series

Product Specification
37622B**New Features**

- ✓ USB connectivity to PC
- ✓ ToolKit configuration support
- ✓ Password protection to all variants
- ✓ Same look & feel as SPM-D
- ✓ Drop-In replacement

Synchronizers for 2/3-phase AC Gen-Sets

DESCRIPTION

Woodward understands the time-intensive nature of Power Generation projects. Ensuring the longevity of components is one way we can make our customers successful. Woodward has supplied and supported the well-established SPM-D line of synchronizers for 20+ years. With the state of the art Drop-In replacement successor, SPM-D2 the life of this synchronizer line is now extended. All of the SPM-D2 synchronizers are password protected and are configurable either through HMI as before or through ToolKit configuration tool with USB connectivity.

The SPM-D2-10 series are microprocessor-based synchronizers designed for use on two or three phase AC generators equipped with Woodward or other compatible speed controls and automatic voltage regulators. The SPM-D2-10 synchronizers provide automatic frequency, phase and voltage matching using either analog- or discrete output bias signals. These synchronizers are applied to a wide range of prime movers and generators, as its control signals may be set to fit several types of gensets - from fast reacting diesel engines to soft reacting gas turbines.

The SPM-D2-10 synchronizers are available in 3 base models:

- **SPM-D2-10 ...** : provides 1-phase / 2-wire voltage measurement with options for analog and/or discrete biasing signals and wide range power supply
- **SPM-D2-10 .../YB**: provides 3-phase / 4-wire voltage measurement with discrete biasing signals and option for wide range power supply
- **SPM-D2-10 .../PSY5**: provides 1-phase / 2-wire voltage measurement with discrete biasing signals, option for wide range power supply and 2 sets of switchable parameter set.

FEATURES

- Phase match or slip frequency synchronization with voltage matching
- Two-Phase or three-phase true RMS voltage sensing of generator and bus with Class I accuracy
- Selectable operating modes like SPM-A (Run, Check, Permissive and Off)
- Synch-Check and synchronization time monitoring
- Dead bus closing of CB on demand
- 2 setting blocks, each containing 7 configurable parameters (in PSY5 variants) selectable through DI: Frequency/Voltage control dead-band, Frequency/Voltage control time pulse, Frequency/Voltage control gain, Circuit breaker time compensation
- Control outputs: Discrete raise/lower for speed and voltage in all variants, | X and XN variants: also configurable analog signals (Voltage, Current and PWM)
- Voltage and frequency control in isolated operation
- Two line bright liquid crystal display for operation, alarm, measuring values visualization and parametrization
- Front face with synchronoscope and indication of breaker state/control activity
- Multi-level password protection of parameters
- Woodward ToolKit™ software for configuration via USB
- Two built-in languages: English, German

- Synchronization for one or two circuit breakers
- Frequency, Phase and Voltage Matching
- Selectable control outputs for speed and voltage biasing
- Compatible with a wide range of GOVs and AVR's
- Circuit breaker time compensation
- Two lines bright LCD display for generator and bus values
- Front face synchronoscope for easy commissioning
- True RMS measurement for reliable operation
- Configurable through HMI or PC
- Wide range power supply available
- Switchable parameter sets available
- CE Marked (RoHS 2 compliant)
- UL/cUL Listed

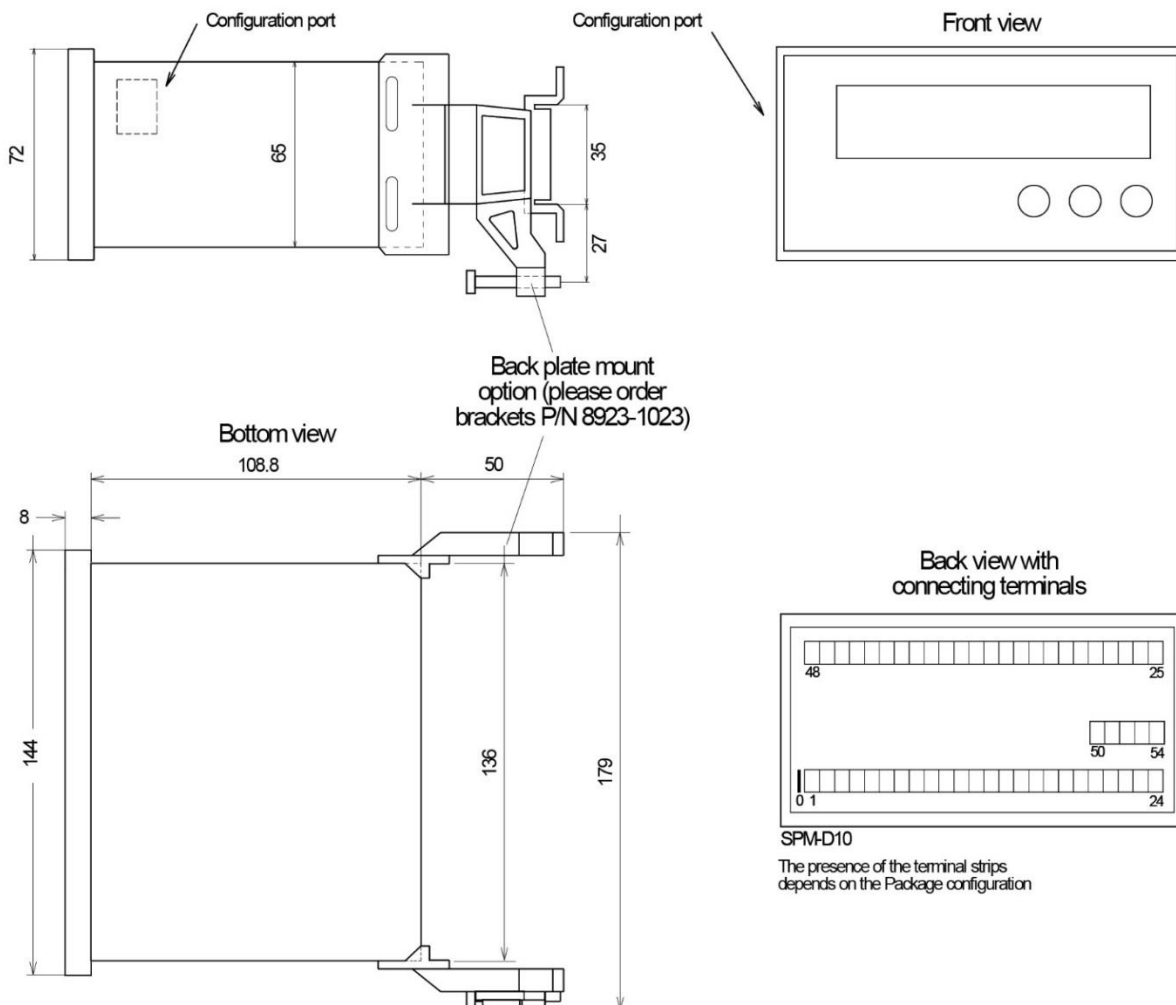
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SPECIFICATIONS

Power supply	12/24 V _{DC} (9.5 to 32 V _{DC})
[Standard]	90 to 250Vac / 120 to 375 Vdc;
[N, XN and NYB Packages]	100 to 240 Vac -15%/+10% (UL rating only)
Intrinsic consumption	max. 10 W
Ambient temperature (operation)	-20 to 70 °C
[N, XN and NYB Packages]	-20 to 60 °C
Ambient temperature (storage)	-30 to 80 °C
Ambient humidity	95%, non-condensing
Voltage	(λ/Δ)
[1] 100 Vac	Rated (V _{rated}) 66/115 V _{AC}
	Max. value (V _{max}) 150 V _{AC}
or [4] 400 Vac	Rated (V _{rated}) 230/400 V _{AC}
	Max. value (V _{max}) 300 V _{AC}
	Rated surge volt. (V _{surge}) [1] 2.5kV, [4] 4.0 kV
Accuracy	Class 1
Measuring frequency	50/60 Hz (40 to 70 Hz)
Linear measuring range	1.3 x V _{rated}
Input resistance	[1]0.21 MOhms, [4]0.696 MOhms
Current	Rated (I _{rated}) [1].../1A, [5] ... /5A
Linear measuring range	3.0 x I _{rated}
Burden	< 0.15 VA
Rated short-time overcurrent (1 s)	[1] 50 x I _{rated} , [5] 10 x I _{rated}
Discrete inputs	isolated
Input range	12/24 V _{DC} or 18 to 250 Vac/dc
Input resistance	approx. 6.8 kOhms or 68 kOhms

Relay outputs	isolated
Contact material	AgCdO
Load (GP) (V _{cont, relay output}) AC:	2.00 A _{AC} @250 V _{AC}
DC:	2.00 A _{DC} @24 V _{DC} / 0.36 A _{DC} @125 V _{DC} / 0.18 A _{DC} @250 V _{DC}
Pilot Duty (PD) AC:	B300
DC:	1.00 A _{DC} @24 V _{DC} / 0.22 A _{DC} @125 V _{DC} / 0.10 A _{DC} @250 V _{DC}
Analog Outputs (isolated)	freely scalable
Type	± 10 V / ± 20 mA / PWM
Insulation voltage (continuously, AVR out)	300 V _{AC}
Insulation voltage (continuously, Gov out)	100 V _{AC}
Resolution	12 Bit
± 10 V (scalable)	internal resistance 500 Ohms
± 20 mA (scalable)	maximum load 500 Ohms
Housing	Front panel flush mounting..... Type APRANORM DIN 43 700
Dimensions	WxHxD..... 144 x 72 x 122 mm
Front cutout	WxH..... 138 [+1.0] x 68 [+0.7] mm
Connection (screw/plug terminals depending on connector)	1.5 mm ² or 2.5 mm ²
Front	insulating surface
Protection System / Sealing	
Front	IP42 with correct installation
Front	IP54 (with gasket P/N 8923-1037)
Back	IP20
Weight	approx. 800 g
Listings tested	according to applicable IEC standards
	CE, UL/cUL listing for ordinary locations
Marine (Pending)	LR (Type Approval), ABS (Type Approval)

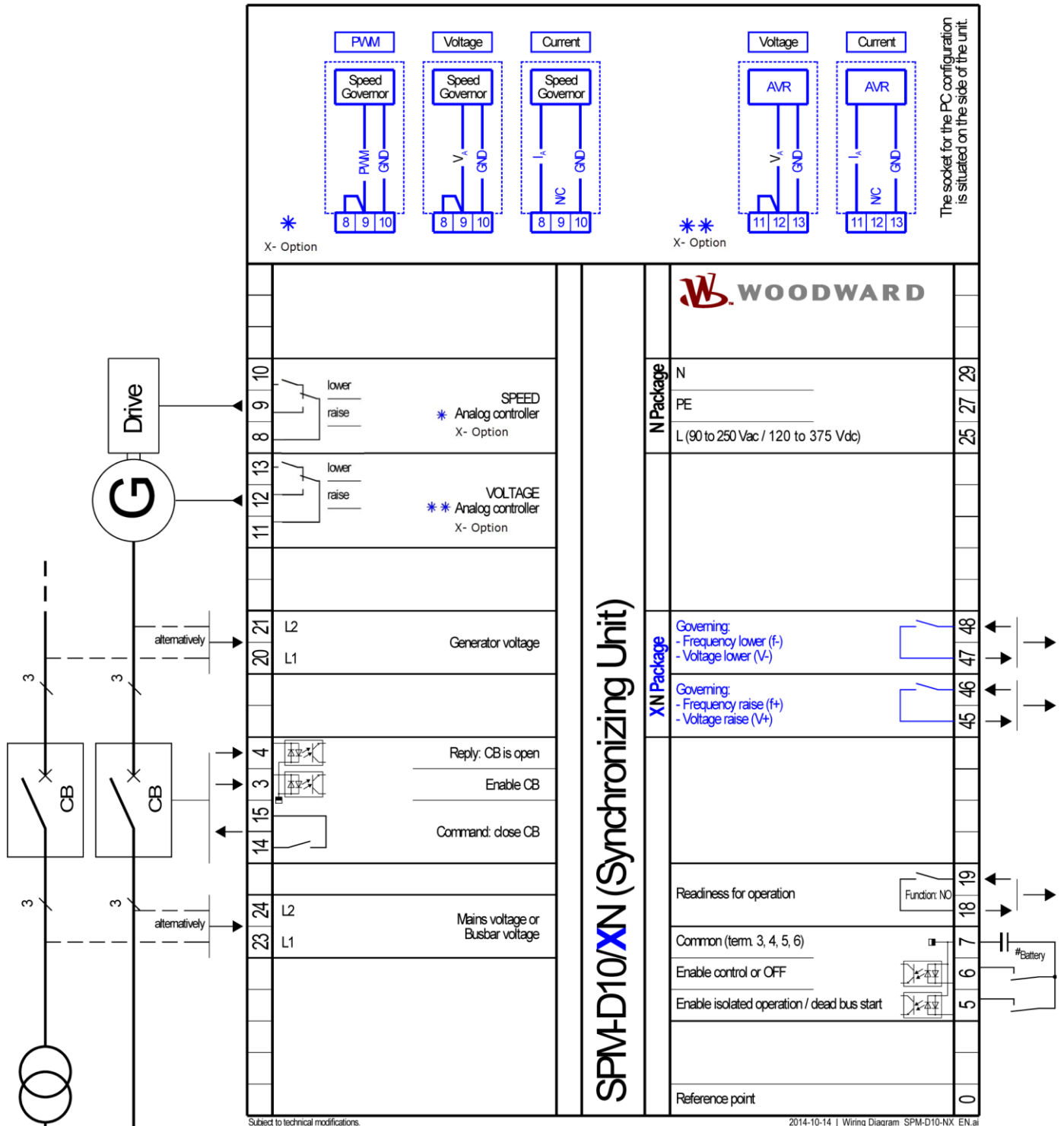
DIMENSIONS



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TERMINAL DIAGRAM

NOTE The terminals used for connection depend on the implemented functionality of each package. The drawing below gives an overview with sample package **XN** – for details please see the dedicated Technical Manual listed in the features table at the rear page.



RELATED PRODUCTS

- Load Share Synchronizer **SPM-D2-11** (Product Specification # 37623)
- Digital Synchronizer and Load Control **DSL-2** (Product Specification # 37493)
- Master Synchronizer and Load Control **MSLC-2** (Product Specification # 37494)
- Load Share speed control **2301E** (Product Specification # 03404)
- Load Sharing Module **LSM** (Product Specification # 82686)
- **SPM-A** Synchronizer (Product Specification # 82383)
- **Power Generation Learning Module** (Product Specification # 03412): P/N 8447-1012

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For more information contact:

FEATURES OVERVIEW

SPM-D2-10 Series	SPM-D2-10 Series								
	Package	-	X	N	XN	PSY5	PSY5...W	YB	NYB
Measuring / Display									
Generator/System A voltage	2-ph	2-ph	2-ph	2-ph	2-ph	2-ph	2-ph	3/2-ph	3/2-ph
Busbar/System B voltage	2-ph	2-ph	2-ph	2-ph	2-ph	2-ph	2-ph	3/2-ph	3/2-ph
Control									
Breaker	1	1	1	1	1 or 2	1 or 2	1	1	1
Synchronization	2-ph	2-ph	2-ph	2-ph	2-ph	2-ph	2-ph	3/2-ph	3/2-ph
Isolated Operation	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dead bus start functionality#1	On-demand	On-demand	On-demand	On-demand	Enhanced	Enhanced	Enhanced	Enhanced	Enhanced
Switchable parameter#2	-	-	-	-	✓	✓	-	-	-
Controller									
Discrete raise/lower: Speed	✓	✓#3	✓	✓#3	✓	✓	✓	✓	✓
Discrete raise/lower: Voltage	✓	✓#3	✓	✓#3	✓	✓	✓	✓	✓
Analog Output: Speed#4	-	✓	-	✓	-	-	-	-	-
Analog Output: Voltage#4	-	✓	-	✓	-	-	-	-	-
PWM Output: Speed#5	-	✓	-	✓	-	-	-	-	-
I/Os									
Discrete alarm inputs	4	4	4	4	4	4	4	5	5
Discrete outputs	2	2	2	2	3	3	3	3	3
Analog outputs: +/- 10 V, +/- 20 mA, PWM; configurable	-	2	-	2	-	-	-	-	-
USB Serial interface	1	1	1	1	1	1	1	1	1
Power Supply									
24 Vdc	✓	✓	-	-	✓	-	✓	-	-
Wide Range: 90 to 250 V _{AC} / 120 to 375 V _{DC}	-	-	✓	✓	-	✓	-	-	✓
Accessories									
Configuration via PC (ToolKit)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Listings/Approvals									
UL / cUL Listing (61010, 6200)	✓	✓	✓	✓	✓	✓	✓	✓	✓
CE Marked	✓	✓	✓	✓	✓	✓	✓	✓	✓
Part Numbers									
Measuring inputs 100 Vac:	8440-...	...-2166	...-2168	...-2174	...-2172	-	-	...-2167	...-2177
Measuring inputs 400 Vac#6:	8440-...	...-2164	...-2171	...-2175	...-2190	...-2170	...-2173	...-2176	...-2189
	Technical Manual	B37615				B37616		B37617	

- #1 Dead bus start functionality
 On-Demand: Closing of CB on demand
 Enhanced: Black start (closing to de-energized second side of a breaker for following conditions):
 - dead system 1 - live system 2
 - live system 1 - dead system 2
 - dead system 1 - dead system 2
- #2 Switch from Parameter set #A to #B by activating DI #6
- #3 Configurable to either speed or voltage
- #4 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)
- #5 Speed bias output configurable as 500 Hz PWM output with adjustable voltage level
- #6 All units with 400 V measuring inputs can also be used for 100 V system voltage

CONTACT US & SUPPORT

NEED A QUOTE OR TECHNICAL PARTS REPLACEMENT?

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