

Smart!wind

3-phase feed-in converter for small wind turbines (SWT) with 5.5, 7.5 and 10 kW, with additional system control functions as standard.



The multi-talent among the feed-in converters
for small wind turbines – up to 20 kW!

MODERN – FLEXIBLE – EFFICIENT

- Max. load of wind turbine with 20 kW (SW-10)
- 3-phase grid-coupling with 10 kW (SW-10)
- flexible, intelligent own energy consumption management of feed-in, water heating, battery and dump-load via 4 separated DC-energy-outlets
- Energy meter for feed-in and heat energy
- Idle power control system

FERTILE – SAFE

- Integrated control system for a wind turbine
- Intelligent, accurately dispersed characteristic curve control for optimal use of prevailing wind
- 20 point profile, voltage control or rotor speed control selectable
- Various control mechanisms, e.g. rotor speed, wind speed
- Switch to shut down the SWT with additional safety functions

COMPACT

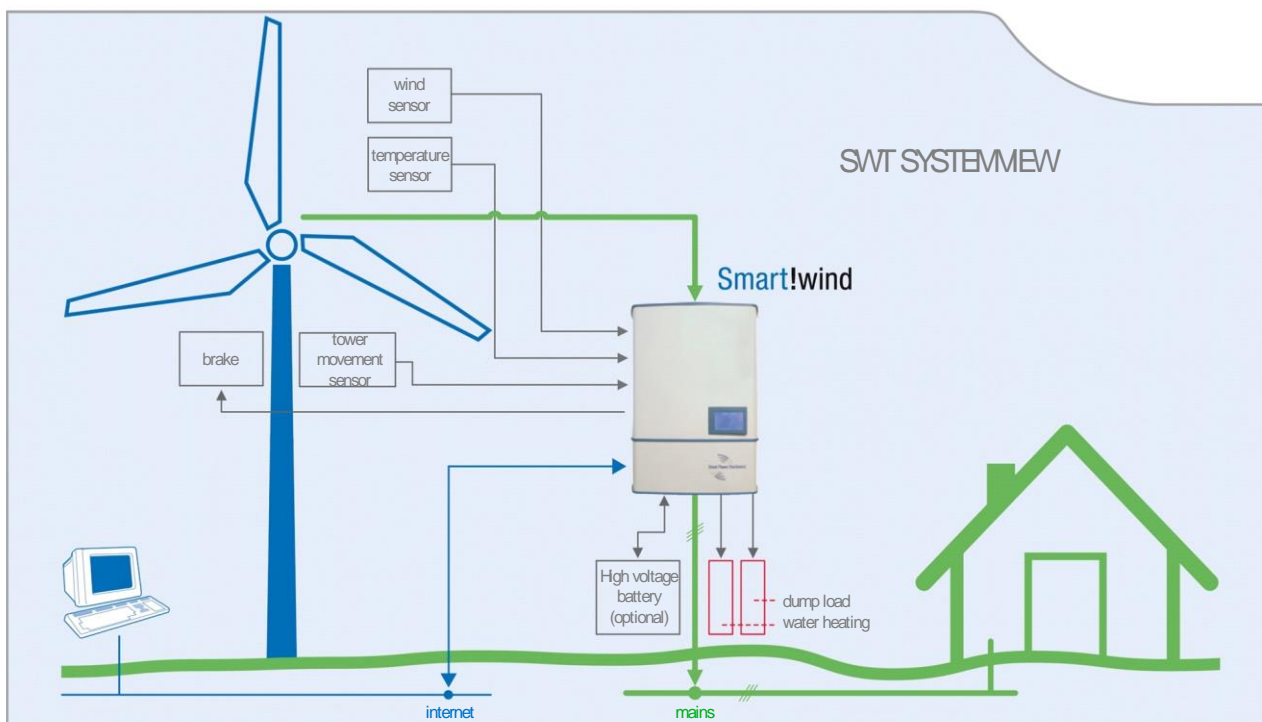
- Direct connection of the PM generator without additional devices
- Wide input voltage range for PM generators
- Compact housing with terminal compartment to open separately
- Passive convection cooling due to a wide output range
- Integrated grid and plant protection according to VDE AR-N 4105 (ENS)

COMMUNICATIVE

- Integrated graphic display
- Easy to use PC Software „Smart!wind Explorer“ for parameterising etc.

APPLICATIONS

- Small wind turbines
- Small hydroelectric power generators
- Mini thermal power generators



TECHNICAL DATA I

General details	SW-5.5
Size	656 x 472 x 234 mm
Wight	42 kg
Protection type	IP54
Cooling	Air passiv / fan controlled need-based
Temperature range operation	-25°C ... +40°C – automatic derating
Total efficiency	max. 94 %
Own consumption	< 18 W – stand-by < 83 W – active feed-in

Input generator side	SW-5.5
Generator type	PM generator / 3-phase
Rectifier generator side	B6
Input voltage range (conductor-conductor)	60...500 V _{LL} 180 ... 500 V _{LL} – for full power 5.5 kW 600 V _{LL} – maximum value
Input current (nominal value)	20 A – nominal value t 40 A – max. 5 s
Input capacity	12 kW – nominal value
Maximum value limited by dump load	24 kW – max. 5 s
Input frequency	0 Hz ...300 Hz
Generator monitoring	Isolations monitoring Temperature monitoring RPM monitoring

Output mains	SW-5.5
Inverter mains side	IGBT B6
Phases	3
Output power (nominal value)	5,5 kW
Output voltage	400 V _{LL} – nominal value 318 ...460 V _{LL} – permitted range
Output current (nominal value)	0 ...8 A
Output frequency	50 Hz ...60 Hz
Isolation concept	no transformer, no galvanic isolation
Distortion factor current	< 3 %
Power factor – cos φ	regulated on 1 – regulation after VDE AR-N 4105
Overcurrent protection	Current control
Grid / plant protection – ENS	integrated according to VDE AR-N 4105

TECHNICAL DATA II

Output - DC	SW-5.5
Number of outputs	3
Output power	max. 10 kW – per output
Output voltage	0 ... 800 V _{DC} – permitted range 100 ... 600 V _{DC} – typ. value
Output current	max. 17 A
Load resistance	min. 25 Ω – 5,5 kW depending on generator voltage

Communication - Operating	SW-5.5
Operation – parameterisation	Graphic display PC-software – Smart!wind Explorer (via CAN)
Communication	Systembus CAN-open, ethernet
Additional interfaces	Temperature sensor generator & load resistance
Analog input (4x)	e.g. wind direction, windspeed
Digital input (3x)	freely configurable – e.g. rotor RPM
Relay output (3x)	e.g. brake (fail-safe), signal „ready“
Digital output (3x)	

Standards	SW-5.5
Mains conformity	EN 61000-3-2, EN 61000-3-3, VDE AR-N 4105, EN 50438
EMC standards	EN 61000-6-1, EN 61000-6-2, EN 61000-6-4

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TECHNICAL DATA III

General details	SW-7.5	SW-10
Size	656 x 472 x 234 mm	
Wight	42 kg	
Protection type	IP54	
Cooling	Air passiv / fan controlled need-based	
Temperature range operation	-25°C ... +40°C – automatic derating	
Total efficiency	max. 94 %	
Own consumption	< 18 W – stand-by < 83 W – active feed-in	

Input generator side	SW-7.5	SW-10
Generator type	PM generator / 3-phase	
Rectifier generator side	B6	
Input voltage range (conductor-conductor)	60...500 V _{LL} 310 ... 500 V _{LL} – for full power 10 kW 600 V _{LL} – maximum value	
Input current (nominal value)	20 A – nominal value t 40 A – max. 5 s	30 A – nominal value 60 A – max. 5 s
Input capacity	15 kW – nominal value	20 kW – nominal value
Maximum value limited by dump load	30 kW – max. 5 s	40 kW – max. 5 s
Input frequency	0 Hz ...30 Hz	
Generator monitoring	Isolations monitoring Temperature monitoring RPM monitoring	

Output mains	SW-7.5	SW-10
Inverter mains side	IGBT B6	
Phases	3	
Output power (nominal value)	7,5 kW	10kW
Output voltage	400 V _{LL} – nominal value 318 ...460 V _{LL} – permitted range	
Output current (nominal value)	0 ...11 A	0 ...16 A
Output frequency	50 Hz ...60 Hz	
Isolation concept	no transformer, no galvanic isolation	
Distorsion factor current	< 3 %	
Power factor – cos φ	regulated on 1 – regulation after VDE AR-N 4105	
Overcurrent protection	Current control	
Grid / plant protection – ENS	integrated according to VDE AR-N 4105	

TECHNICAL DATA IV

Output - DC	SW-7.5	SW-10
Number of outputs	3	
Output power	max. 10 kW – per output	
Output voltage	0 ... 800 V _{DC} – permitted range 100 ... 600 V _{DC} – typ. value	
Output current	max. 17 A	max. 25 A
Load resistance	min. 35 Ω – 7,5 kW typ. 40 Ω – 7,5 kW	min. 25 Ω – 10 kW typ. 30 Ω – 10 kW

Communication - Operating	SW-7.5	SW-10
Operation – parameterisation	Graphic display PC-software – Smart!wind Explorer (via CAN)	
Communication	Systembus CAN-open, ethernet	
Additional interfaces	Temperature sensor generator, load resistance	
Analog input (4x)	e.g. wind direction, windspeed	
Digital input (3x)	freely configurable – e.g. rotor RPM	
Relay output (3x)	e.g. brake (fail-safe), signal „ready“	
Digital output (3x)		

Standards	SW-7.5	SW-10
Mains conformity	EN 61000-3-2, EN 61000-3-3, VDE AR-N 4105, EN 50438	
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