WINDINVERT

WIND INVERTER

WIND INVERTER SMALL WIND TURBINES

The wind inverters specially developed for 24 to 120 volt small wind turbines convert the three-phase current generated by the 300 to 2400 watt small wind turbine directly into 230 volt alternating voltage for feeding into the domestic grid. Even at locations with weak to medium wind, direct wind energy feed-in into the domestic and public grid is possible.

The grid-independent protection devices of the inverter and the electronic brake for the wind turbine provide safety during storms. Due to the integrated rectifier, the system requires only a small installation effort and saves costs.

All WindInvert models score with a wide characteristic voltage range. Operational safety is provided by the integrated overvoltage braking module and the storm protection circuit. If the wind power output remains below the maximum peak power of the wind inverter and the wind generator is permanently short-circuit proof, the wind turbine and its surroundings are reliably and permanently protected. Overvoltage and mains failure protection is integrated in the WindInvert. The WindInvert operates with a power-dependent voltage characteristic with 16 interpolation points. In order to achieve maximum yields, this characteristic curve can be flexibly adapted to the power curve of the wind generator via the SI modbus.

Highlights WindInvert

- Made in Germany
- Comprehensive safety concept: integrated overvoltage and mains failure protection with short-circuit brake
- Complete system for grid feeding with integrated rectifier
- Characteristic control for optimum wind utilization,
- Characteristic flexibly adjustable
- Safety through galvanic isolation
- RS485 interface for data transmission and monitoring
- Wind turbine connection available as type AC and DC

Member of: Bundesverband Kleinwindanlagen

WIND TUNNEL TEST FOR OPTIMAL RESULTS

In order to optimally adjust the WindInvert inverters to a small wind turbine as well as upcoming series productions, we measure your wind turbines in a wind tunnel and thereby determine the real measured power characteristic curve, which is stored in the WindInvert inverters. In addition, the braking behaviour can also be tested. The wind tunnel can measure small wind turbines up to 2.2 m high and 3.2 m wide.

Advantages wind tunnel test

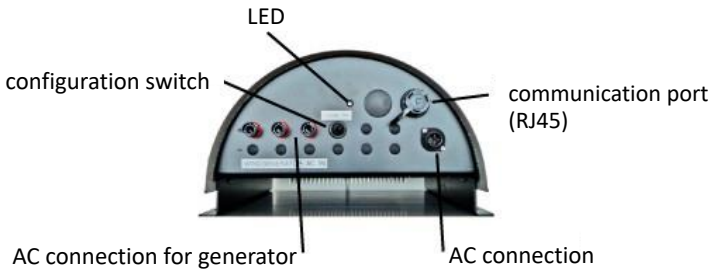
- Determination of the power curve
- Measurement of torque and nominal
- Speed test of braking and overload behaviour

To determine the wind conditions, we offer various wind measuring systems with wind data loggers. Usable for the optimal design of the small wind turbine as well as for the calculation of the expected yield.

DC AND AC CONNECTION VERSION AVAILABLE

Two wind turbine input connections + and - of the type Tyco SOLARLOK are integrated in the DC wind inverter. The DC output of the wind turbine is connected here. In addition, the DC version of the wind inverter contains an electronic brake and a decoupling diode.

The AC wind inverter has three wind turbine input connections of type Tyco SOLARLOK. The three-phase output of the wind turbine is connected here. In addition, an electronic brake, storm protection by restart protection and a 3-phase rectifier are integrated into the overall system in the AC-WindInvert inverters.



On the mains connection side, a 4-pole Hirschmann CA3GS mains plug is used, which is connected to the single-phase 230 V mains L, N, PE at three terminals.

TECHNICAL DATA

WIN 600-12-NA-DE

Image similar

Efficiency	
Max. Efficiency	91,0 %
Own consumption with feed-in	4 W
Stand-by consumption	0,2 W

Input (AC/DC)	
Max. Input power	600 W
Rated voltage	12 V_{dc}
Characteristic voltage range	8 - 35 V_{ac} / 11 - 45 V_{dc}
Switch-on voltage	9 V_{ac} / 11.5 V_{dc}
Max. Input voltage[1]	42 V_{ac} / 54 V_{dc}
Max. Input current	21,0 A
Max. Current (180s / 10s) Short circuit brake	25 A / 50 A
Number of inputs[2]	3
Input connection type	Sunclix

Output (AC)	
Mains connection	single-phase (L/N/PE)
Connection type	Hirschmann CA3GS
Nominal power[3]	470 W
Rated voltage	230 V (+10/-20%)
Mains frequency	50 Hz (+1.5/-2.5 %)
Max. Output current	2,7 A
Max. Apparent power[4]	622 VA
Power factor	0.9...1...0.9; fixed or performance-based

General data	
Topology	galvanically isolated by LF protection transformer
Cooling	passive due to natural convection
Ambient temperature	-25 to 70 °C
Permissible humidity	0 - 95 %
Operating height	up to 2.000 m
Housing protection type	IP 54
Communication	SI-Modbus via RS485, galvanically isolated
Noise emission	35 db
Dimensions (HxWxD)	533 x 372 x 204
Weight	12,5 kg
Product warranty	10 years

Security	
Equipment protection class	Class I (protective grounding)
Overvoltage protection DC[5]	Type 2
Overvoltage protection AC[5]	Type 2
Overtemperature protection	Dynamic power management from 85°C; shutdown at 90°C

Conformity (more on request)	
Mains connection	DIN VDE 0126-1-1; AR-N 4105:2018-11
Security	DIN VDE 0126-14-1, VDE 0126-14-2, EN 61558-2-6, EN 60664-1
EMC	DIN VDE 0838, EN 60555, EN 50178, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3
Markings	CE

Speed limiter integrated (automatic short-circuit brake)

In the event of a mains fault or if the maximum input voltage is exceeded (e.g. overspeed due to insufficient load), the generator is automatically switched to short-circuit mode and disconnected from the inverter.

1) automatically limited by short circuit brake

2) for DC connection occupy only 2 inputs (+/-)

3) maximum active power in continuous operation under nominal conditions (T_U = 25°C, cosPhi = 1)

5) Short-term maximum power under nominal conditions (T_U = 25°C, cosPhi = 0.9i)

6) compatible with DIN EN 61643-11

TECHNICAL DATA

WIN 600-24-NA-DE

Image similar

Efficiency	
Max. Efficiency	92,0 %
Own consumption with feed-in	4 W
Stand-by consumption	0,2 W

Input (AC/DC)	
Max. Input power	600 W
Rated voltage	24 V_{dc}
Characteristic voltage range	14 - 48 V_{ac} / 18 - 62 V_{dc}
Switch-on voltage	15 V_{ac} / 19 V_{dc}
Max. Input voltage[1]	58 V_{ac} / 75 V_{dc}
Max. Input current	15,0 A
Max. Current (180s / 10s) Short circuit brake	25 A / 50 A
Number of inputs[2]	3
Input connection type	Sunclix

Output (AC)	
Mains connection	single-phase (L/N/PE)
Connection type	Hirschmann CA3GS
Rated power[3]	480 W
Rated voltage	230 V (+10/-20%)
Mains frequency	50 Hz (+1.5/-2.5 %)
Max. Output current	2,8 A
Max. Apparent power[4]	633 VA
Power factor	0.9...1...0.9; fixed or performance-based

General data	
Topology	galvanically isolated by LF protection transformer
Cooling	passive due to natural convection
Ambient temperature	-25 to 70 °C
Permissible humidity	0 - 95 %
Operating height	up to 2.000 m
Housing protection type	IP 54
Communication	SI-Modbus via RS485, galvanically isolated
Noise emission	35 db
Dimensions (HxWxD)	475 x 300 x 157
Weight	10.0 kg
Product warranty	10 years

Security	
Equipment protection class	Class I (protective grounding)
Overvoltage protection DC[5]	Type 2
Overvoltage protection AC[5]	Type 2
Overtemperature protection	Dynamic power management from 85°C; shutdown at 90°C

Conformity (more on request)	
Mains connection	DIN VDE 0126-1-1; AR-N 4105:2018-11
Security	DIN VDE 0126-14-1, VDE 0126-14-2, EN 61558-2-6, EN 60664-1
EMC	DIN VDE 0838, EN 60555, EN 50178, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3
Markings	CE

Speed limiter integrated (automatic short-circuit brake)

In the event of a mains fault or if the maximum input voltage is exceeded (e.g. overspeed due to insufficient load), the generator is automatically switched to short-circuit mode and disconnected from the inverter.

1) automatically limited by short circuit brake

2) for DC connection occupy only 2 inputs (+/-)

3) maximum active power in continuous operation under nominal conditions (T_U = 25°C, cosPhi = 1)

5) Short-term maximum power under nominal conditions (T_U = 25°C, cosPhi = 0.9i)

6) compatible with DIN EN 61643-11

TECHNICAL DATA

WIN 1000-24-NA-DE

Image similar

Efficiency	
Max. Efficiency	91,5 %
Own consumption with feed-in	5 W
Stand-by consumption	0,2 W

Input (AC/DC)	
Max. Input power	1000 W
Rated voltage	24 V_{dc}
Characteristic voltage range	14 - 48 V_{ac} / 18 - 62 V_{dc}
Switch-on voltage	15 V_{ac} / 19 V_{dc}
Max. Input voltage[1]	58 V_{ac} / 75 V_{dc}
Max. Input current	25,0 A
Max. Current (180s / 10s) Short circuit brake	30 A / 60 A
Number of inputs[2]	3
Input connection type	Sunclix

Output (AC)	
Mains connection	single-phase (L/N/PE)
Connection type	Hirschmann CA3GS
Nominal power[3]	780 W
Rated voltage	230 V (+10/-20%)
Mains frequency	50 Hz (+1.5/-2.5 %)
Max. Output current	4,5 A
Max. Apparent power[4]	1044 VA
Power factor	0.9...1...0.9; fixed or performance-based

General data	
Topology	galvanically isolated by LF protection transformer
Cooling	passive due to natural convection
Ambient temperature	-25 to 70 °C
Permissible humidity	0 - 95 %
Operating height	up to 2.000 m
Housing protection type	IP 54
Communication	SI-Modbus via RS485, galvanically isolated
Noise emission	35 db
Dimensions (HxWxD)	533 x 372 x 204
Weight	14,5 kg
Product warranty	10 years

Security	
Equipment protection class	Class I (protective grounding)
Overvoltage protection DC[5]	Type 2
Overvoltage protection AC[5]	Type 2
Overtemperature protection	Dynamic power management from 85°C; shutdown at 90°C

Conformity (more on request)	
Mains connection	DIN VDE 0126-1-1; AR-N 4105:2018-11
Security	DIN VDE 0126-14-1, VDE 0126-14-2, EN 61558-2-6, EN 60664-1
EMC	DIN VDE 0838, EN 60555, EN 50178, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3
Markings	CE

Speed limiter integrated (automatic short-circuit brake)

In the event of a mains fault or if the maximum input voltage is exceeded (e.g. overspeed due to insufficient load), the generator is automatically switched to short-circuit mode and disconnected from the inverter.

1) automatically limited by short circuit brake

2) for DC connection occupy only 2 inputs (+/-)

3) maximum active power in continuous operation under nominal conditions (T_U = 25°C, cosPhi = 1)

5) Short-term maximum power under nominal conditions (T_U = 25°C, cosPhi = 0.9i)

6) compatible with DIN EN 61643-11

TECHNICAL DATA

WIN 1200-24-NA-DE

Image similar

Efficiency	
Max. Efficiency	91,0 %
Own consumption with feed-in	6 W
Stand-by consumption	0,2 W

Input (AC/DC)	
Max. Input power	1200 W
Rated voltage	24 V_{dc}
Characteristic voltage range	17 - 48 V_{ac} / 22 - 62 V_{dc}
Switch-on voltage	18 V_{ac} / 23 V_{dc}
Max. Input voltage[1]	58 V_{ac} / 75 V_{dc}
Max. Input current	29,0 A
Max. Current (180s / 10s) Short circuit brake	30 A / 60 A
Number of inputs[2]	3
Input connection type	Sunclix

Output (AC)	
Mains connection	single-phase (L/N/PE)
Connection type	Hirschmann CA3GS
Nominal power[3]	930 W
Rated voltage	230 V (+10/-20%)
Mains frequency	50 Hz (+1.5/-2.5 %)
Max. Output current	5,4 A
Max. Apparent power[4]	1244 VA
Power factor	0.9...1...0.9; fixed or performance-based

General data	
Topology	galvanically isolated by LF protection transformer
Cooling	passive due to natural convection
Ambient temperature	-25 to 70 °C
Permissible humidity	0 - 95 %
Operating height	up to 2.000 m
Housing protection type	IP 54
Communication	SI-Modbus via RS485, galvanically isolated
Noise emission	35 db
Dimensions (HxWxD)	533 x 372 x 204
Weight	15,8 kg
Product warranty	10 years

Security	
Equipment protection class	Class I (protective grounding)
Overvoltage protection DC[5]	Type 2
Overvoltage protection AC[5]	Type 2
Overtemperature protection	Dynamic power management from 85°C; shutdown at 90°C

Conformity (more on request)	
Mains connection	DIN VDE 0126-1-1; AR-N 4105:2018-11
Security	DIN VDE 0126-14-1, VDE 0126-14-2, EN 61558-2-6, EN 60664-1
EMC	DIN VDE 0838, EN 60555, EN 50178, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3
Markings	CE

Speed limiter integrated (automatic short-circuit brake)

In the event of a mains fault or if the maximum input voltage is exceeded (e.g. overspeed due to insufficient load), the generator is automatically switched to short-circuit mode and disconnected from the inverter.

1) automatically limited by short circuit brake

2) for DC connection occupy only 2 inputs (+/-)

3) maximum active power in continuous operation under nominal conditions (T_U = 25°C, cosPhi = 1)

5) Short-term maximum power under nominal conditions (T_U = 25°C, cosPhi = 0.9i)

6) compatible with DIN EN 61643-11

TECHNICAL DATA

WIN 1000-48-NA-DE

Image similar

Efficiency	
Max. Efficiency	93,0 %
Own consumption with feed-in	5 W
Stand-by consumption	0,2 W

Input (AC/DC)	
Max. Input power	1000 W
Rated voltage	48 V_{dc}
Characteristic voltage range	22 - 73 V_{ac} / 28 - 95 V_{dc}
Switch-on voltage	22 V_{ac} / 29 V_{dc}
Max. Input voltage[1]	88 V_{ac} / 115 V_{dc}
Max. Input current	16,0 A
Max. Current (180s / 10s) Short circuit brake	25 A / 50 A
Number of inputs[2]	3
Input connection type	Sunclix

Output (AC)	
Mains connection	single-phase (L/N/PE)
Connection type	Hirschmann CA3GS
Nominal power[3]	800 W
Rated voltage	230 V (+10/-20%)
Mains frequency	50 Hz (+1.5/-2.5 %)
Max. Output current	4,5 A
Max. Apparent power[4]	1067 VA
Power factor	0.9...1...0.9; fixed or performance-based

General data	
Topology	galvanically isolated by LF protection transformer
Cooling	passive due to natural convection
Ambient temperature	-25 to 70 °C
Permissible humidity	0 - 95 %
Operating height	up to 2.000 m
Housing protection type	IP 54
Communication	SI-Modbus via RS485, galvanically isolated
Noise emission	35 db
Dimensions (HxWxD)	475 x 300 x 157
Weight	11,8 kg
Product warranty	10 years

Security	
Equipment protection class	Class I (protective grounding)
Overvoltage protection DC[5]	Type 2
Overvoltage protection AC[5]	Type 2
Overtemperature protection	Dynamic power management from 85°C; shutdown at 90°C

Conformity (more on request)	
Mains connection	DIN VDE 0126-1-1; AR-N 4105:2018-11
Security	DIN VDE 0126-14-1, VDE 0126-14-2, EN 61558-2-6, EN 60664-1
EMC	DIN VDE 0838, EN 60555, EN 50178, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3
Markings	CE

Speed limiter integrated (automatic short-circuit brake)

In the event of a mains fault or if the maximum input voltage is exceeded (e.g. overspeed due to insufficient load), the generator is automatically switched to short-circuit mode and disconnected from the inverter.

1) automatically limited by short circuit brake

2) for DC connection occupy only 2 inputs (+/-)

3) maximum active power in continuous operation under nominal conditions (T_U = 25°C, cosPhi = 1)

5) Short-term maximum power under nominal conditions (T_U = 25°C, cosPhi = 0.9i)

6) compatible with DIN EN 61643-11

TECHNICAL DATA

WIN 1500-48-NA-DE

Image similar

Efficiency	
Max. Efficiency	92,0 %
Own consumption with feed-in	7 W
Stand-by consumption	0,2 W

Input (AC/DC)	
Max. Input power	1600 W
Rated voltage	48 V_{dc}
Characteristic voltage range	22 - 73 V_{ac} / 28 - 95 V_{dc}
Switch-on voltage	22 V_{ac} / 29 V_{dc}
Max. Input voltage[1]	88 V_{ac} / 115 V_{dc}
Max. Input current	24,0 A
Max. Current (180s / 10s) Short circuit brake	30 A / 60 A
Number of inputs[2]	3
Input connection type	Sunclix

Output (AC)	
Mains connection	single-phase (L/N/PE)
Connection type	Hirschmann CA3GS
Nominal power[3]	1180 W
Rated voltage	230 V (+10/-20%)
Mains frequency	50 Hz (+1.5/-2.5 %)
Max. Output current	6,9 A
Max. Apparent power[4]	1578 VA
Power factor	0.9...1...0.9; fixed or performance-based

General data	
Topology	galvanically isolated by LF protection transformer
Cooling	passive due to natural convection
Ambient temperature	-25 to 70 °C
Permissible humidity	0 - 95 %
Operating height	up to 2.000 m
Housing protection type	IP 54
Communication	SI-Modbus via RS485, galvanically isolated
Noise emission	35 db
Dimensions (HxWxD)	533 x 372 x 204
Weight	19,4 kg
Product warranty	10 years

Security	
Equipment protection class	Class I (protective grounding)
Overvoltage protection DC[5]	Type 2
Overvoltage protection AC[5]	Type 2
Overtemperature protection	Dynamic power management from 85°C; shutdown at 90°C

Conformity (more on request)	
Mains connection	DIN VDE 0126-1-1; AR-N 4105:2018-11
Security	DIN VDE 0126-14-1, VDE 0126-14-2, EN 61558-2-6, EN 60664-1
EMC	DIN VDE 0838, EN 60555, EN 50178, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3
Markings	CE

Speed limiter integrated (automatic short-circuit brake)

In the event of a mains fault or if the maximum input voltage is exceeded (e.g. overspeed due to insufficient load), the generator is automatically switched to short-circuit mode and disconnected from the inverter.

1) automatically limited by short circuit brake

2) for DC connection occupy only 2 inputs (+/-)

3) maximum active power in continuous operation under nominal conditions (T_U = 25°C, cosPhi = 1)

5) Short-term maximum power under nominal conditions (T_U = 25°C, cosPhi = 0.9i)

6) compatible with DIN EN 61643-11

TECHNICAL DATA

WIN 2000-48-NA-DE

Image similar

Efficiency	
Max. Efficiency	92,0 %
Own consumption with feed-in	10 W
Stand-by consumption	0,2 W

Input (AC/DC)	
Max. Input power	2000 W
Rated voltage	48 V_{dc}
Characteristic voltage range	25 - 75 V_{ac} / 32 - 98 V_{dc}
Switch-on voltage	25 V_{ac} / 33 V_{dc}
Max. Input voltage[1]	88 V_{ac} / 115 V_{dc}
Max. Input current	30,0 A
Max. Current (180s / 10s) Short circuit brake	30 A / 60 A
Number of inputs[2]	3
Input connection type	Sunclix

Output (AC)	
Mains connection	single-phase (L/N/PE)
Connection type	Hirschmann CA3GS
Nominal power[3]	1580 W
Rated voltage	230 V (+10/-20%)
Mains frequency	50 Hz (+1.5/-2.5 %)
Max. Output current	9,1 A
Max. Apparent power[4]	2100 VA
Power factor	0.9...1...0.9; fixed or performance-based

General data	
Topology	galvanically isolated by LF protection transformer
Cooling	passive due to natural convection
Ambient temperature	-25 to 70 °C
Permissible humidity	0 - 95 %
Operating height	up to 2.000 m
Housing protection type	IP 54
Communication	SI-Modbus via RS485, galvanically isolated
Noise emission	35 db
Dimensions (HxWxD)	533 x 372 x 204
Weight	24,6 kg
Product warranty	10 years

Security	
Equipment protection class	Class I (protective grounding)
Overvoltage protection DC[5]	Type 2
Overvoltage protection AC[5]	Type 2
Overtemperature protection	Dynamic power management from 85°C; shutdown at 90°C

Conformity (more on request)	
Mains connection	DIN VDE 0126-1-1; AR-N 4105:2018-11
Security	DIN VDE 0126-14-1, VDE 0126-14-2, EN 61558-2-6, EN 60664-1
EMC	DIN VDE 0838, EN 60555, EN 50178, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3
Markings	CE

Speed limiter integrated (automatic short-circuit brake)

In the event of a mains fault or if the maximum input voltage is exceeded (e.g. overspeed due to insufficient load), the generator is automatically switched to short-circuit mode and disconnected from the inverter.

1) automatically limited by short circuit brake

2) for DC connection occupy only 2 inputs (+/-)

3) maximum active power in continuous operation under nominal conditions (T_U = 25°C, cosPhi = 1)

5) Short-term maximum power under nominal conditions (T_U = 25°C, cosPhi = 0.9i)

6) compatible with DIN EN 61643-11

TECHNICAL DATA

WIN 3200-48-NA-DE

Image similar

Efficiency	
Max. efficiency	93,0 %
Self-consumption with feed-in	12 W
Stand-by consumption	0,2 W

Input (AC/DC)	
Max. Input power	3200 W
Nominal voltage	48 V_{dc}
Characteristic voltage range	32-87 V / $_{ac}$ 40-110 V_{dc}
Switch-on voltage	33 V / $_{ac}$ 42 V_{dc}
Max. input voltage[1]	88 V / $_{ac}$ 115 V_{dc}
Max. Input current	60,0 A
Max. Current (180s / 10s) Short-circuit brake	30 A / 60 A
Number of inputs[2]	3
Input Connection type	Sunclix

Output (AC)	
Mains connection	single-phase (L/N/PE)
Connection type	Hirschmann CA3GS
Rated power[3]	2700 W
Nominal voltage	230 V (+10/-20%)
Mains frequency	50 Hz (+1,5/-2,5 %)
Max. Output current	14,9 A
Max. Apparent power[4]	3420 VA
Power factor	0,9...1...0,9; fix, cosPhi(P), Q(U)

General data	
Topology	galvanically isolate $_{d}$ by LF protection transformer
Cooling	passive $_{d}$ue to natural convection
Ambient temperature	-25 bis 70 °C
Permissible humidity	0 - 95 %
Operating height	up to 2,000 m
Enclosure protection type	IP 54
Communication	S/-Mo $_{d}$bus via RS485, galvanically isolate $_{d}$
Noise emission	35 db
Dimensions (HxWxD)	653 x 412 x 230
Weight	31,0 kg
Product guarantee	10 years

Security	
Device protection class	Class I (protective groun $_{d}$ing)
Surge protection DC[5]	Typ 2
AC overvoltage protection[5]	Typ 2+3
Overtemperature protection	$_{d}$ynamic power management from 85°C; shut $_{d}$own at 90°C

Conformity (more on request)	
Mains connection	DIN VDE 0126-1-1; AR-N 4105:2018-11; TOR/OVE R 25:2020-03-01
Security	DIN VDE 0126-14-1, VDE 0126-14-2, EN 61558-2-6, EN 60664-1
EMC	DIN VDE 0838, EN 60555, EN 50178, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3
Markings	CE

Integrated speed limiter (automatic short-circuit brake)

In the event of a mains fault or if the maximum input voltage is exceeded (e.g. overspeed due to insufficient load), the generator is automatically switched to short-circuit mode and disconnected from the inverter.

1) automatically limited by short-circuit brake

2) For DC connection, only assign 2 inputs (+/-)

3) Maximum active power in continuous operation under nominal conditions (T_U = 25°C, cosPhi = 1)

4) Short-term maximum power under nominal conditions (T_U = 25°C, cosPhi = 0.9i)

5) Compatible with DIN EN 61643-11

TECHNICAL DATA

WIN 1600-120-NA-DE

Image similar

Efficiency	
Max. Efficiency	94,0 %
Own consumption with feed-in	8 W
Stand-by consumption	0,2 W

Input (AC/DC)	
Max. Input power	1600 W
Rated voltage	120 V_{dc}
Characteristic voltage range	42 - 119 V_{ac} / 54 - 155 V_{dc}
Switch-on voltage	42 V_{ac} / 55 V_{dc}
Max. Input voltage[1]	135 V_{ac} / 175 V_{dc}
Max. Input current	15,0 A
Max. Current (180s / 10s) Short circuit brake	30 A / 60 A
Number of inputs[2]	3
Input connection type	Sunclix

Output (AC)	
Mains connection	single-phase (L/N/PE)
Connection type	Hirschmann CA3GS
Nominal power[3]	1290 W
Rated voltage	230 V (+10/-20%)
Mains frequency	50 Hz (+1.5/-2.5 %)
Max. Output current	7,5 A
Max. Apparent power[4]	1722 VA
Power factor	0.9...1...0.9; fixed or performance-based

General data	
Topology	galvanically isolated by LF protection transformer
Cooling	passive due to natural convection
Ambient temperature	-25 to 70 °C
Permissible humidity	0 - 95 %
Operating height	up to 2.000 m
Housing protection type	IP 54
Communication	SI-Modbus via RS485, galvanically isolated
Noise emission	35 db
Dimensions (HxWxD)	533 x 372 x 204
Weight	21,0 kg
Product warranty	10 years

Security	
Equipment protection class	Class I (protective grounding)
Overvoltage protection DC[5]	Type 2
Overvoltage protection AC[5]	Type 2
Overtemperature protection	Dynamic power management from 85°C; shutdown at 90°C

Conformity (more on request)	
Mains connection	DIN VDE 0126-1-1; AR-N 4105:2018-11
Security	DIN VDE 0126-14-1, VDE 0126-14-2, EN 61558-2-6, EN 60664-1
EMC	DIN VDE 0838, EN 60555, EN 50178, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3
Markings	CE

Speed limiter integrated (automatic short-circuit brake)

In the event of a mains fault or if the maximum input voltage is exceeded (e.g. overspeed due to insufficient load), the generator is automatically switched to short-circuit mode and disconnected from the inverter.

1) automatically limited by short circuit brake

2) for DC connection occupy only 2 inputs (+/-)

3) maximum active power in continuous operation under nominal conditions (T_U = 25°C, cosPhi = 1)

5) Short-term maximum power under nominal conditions (T_U = 25°C, cosPhi = 0.9i)

6) compatible with DIN EN 61643-11

TECHNICAL DATA

WIN 2000-120-NA-DE

Image similar

Efficiency	
Max. Efficiency	94,0 %
Own consumption with feed-in	10 W
Stand-by consumption	0,2 W

Input (AC/DC)	
Max. Input power	2000 W
Rated voltage	120 V_{dc}
Characteristic voltage range	42 - 119 V_{ac} / 54 - 155 V_{dc}
Switch-on voltage	42 V_{ac} / 55 V_{dc}
Max. Input voltage[1]	135 V_{ac} / 175 V_{dc}
Max. Input current	20,0 A
Max. Current (180s / 10s) Short circuit brake	30 A / 60 A
Number of inputs[2]	3
Input connection type	Sunclix

Output (AC)	
Mains connection	single-phase (L/N/PE)
Connection type	Hirschmann CA3GS
Rated power[3]	1610 W
Rated voltage	230 V (+10/-20%)
Mains frequency	50 Hz (+1.5/-2.5 %)
Max. Output current	9,3 A
Max. Apparent power[4]	2144 VA
Power factor	0.9...1...0.9; fixed or performance-based

General data	
Topology	galvanically isolated by LF protection transformer
Cooling	passive due to natural convection
Ambient temperature	-25 to 70 °C
Permissible humidity	0 - 95 %
Operating height	up to 2.000 m
Housing protection type	IP 54
Communication	SI-Modbus via RS485, galvanically isolated
Noise emission	35 db
Dimensions (HxWxD)	533 x 372 x 204
Weight	24,0 kg
Product warranty	10 years

Security	
Equipment protection class	Class I (protective grounding)
Overvoltage protection DC[5]	Type 2
Overvoltage protection AC[5]	Type 2
Overtemperature protection	Dynamic power management from 85°C; shutdown at 90°C

Conformity (more on request)	
Mains connection	DIN VDE 0126-1-1; AR-N 4105:2018-11
Security	DIN VDE 0126-14-1, VDE 0126-14-2, EN 61558-2-6, EN 60664-1
EMC	DIN VDE 0838, EN 60555, EN 50178, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3
Markings	CE

Speed limiter integrated (automatic short-circuit brake)

In the event of a mains fault or if the maximum input voltage is exceeded (e.g. overspeed due to insufficient load), the generator is automatically switched to short-circuit mode and disconnected from the inverter.

1) automatically limited by short circuit brake

2) for DC connection occupy only 2 inputs (+/-)

3) maximum active power in continuous operation under nominal conditions (T_U = 25°C, cosPhi = 1)

5) Short-term maximum power under nominal conditions (T_U = 25°C, cosPhi = 0.9i)

6) compatible with DIN EN 61643-11

TECHNICAL DATA

WIN 2500-120-NA-DE

Image similar

Efficiency	
Max. Efficiency	93,0 %
Own consumption with feed-in	12 W
Stand-by consumption	0,2 W

Input (AC/DC)	
Max. Input power	2500 W
Rated voltage	120 V_{dc}
Characteristic voltage range	31 - 119 V_{ac} / 40 - 155 V_{dc}
Switch-on voltage	32 V_{ac} / 41 V_{dc}
Max. Input voltage[1]	135 V_{ac} / 175 V_{dc}
Max. Input current	26,0 A
Max. Current (180s / 10s) Short circuit brake	30 A / 60 A
Number of inputs[2]	3
Input connection type	Sunclix

Output (AC)	
Mains connection	single-phase (L/N/PE)
Connection type	Hirschmann CA3GS
Nominal power[3]	1990 W
Rated voltage	230 V (+10/-20%)
Mains frequency	50 Hz (+1.5/-2.5 %)
Max. Output current	11,5 A
Max. Apparent power[4]	2656 VA
Power factor	0.9...1...0.9; fixed or performance-based

General data	
Topology	galvanically isolated by LF protection transformer
Cooling	passive due to natural convection
Ambient temperature	-25 to 70 °C
Permissible humidity	0 - 95 %
Operating height	up to 2.000 m
Housing protection type	IP 54
Communication	SI-Modbus via RS485, galvanically isolated
Noise emission	35 db
Dimensions (HxWxD)	653 x 412 x 230
Weight	32,0 kg
Product warranty	10 years

Security	
Equipment protection class	Class I (protective grounding)
Overvoltage protection DC[5]	Type 2
Overvoltage protection AC[5]	Type 2
Overtemperature protection	Dynamic power management from 85°C; shutdown at 90°C

Conformity (more on request)	
Mains connection	DIN VDE 0126-1-1; AR-N 4105:2018-11
Security	DIN VDE 0126-14-1, VDE 0126-14-2, EN 61558-2-6, EN 60664-1
EMC	DIN VDE 0838, EN 60555, EN 50178, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3
Markings	CE

Speed limiter integrated (automatic short-circuit brake)

In the event of a mains fault or if the maximum input voltage is exceeded (e.g. overspeed due to insufficient load), the generator is automatically switched to short-circuit mode and disconnected from the inverter.

1) automatically limited by short circuit brake

2) for DC connection occupy only 2 inputs (+/-)

3) maximum active power in continuous operation under nominal conditions (T_U = 25°C, cosPhi = 1)

5) Short-term maximum power under nominal conditions (T_U = 25°C, cosPhi = 0.9i)

6) compatible with DIN EN 61643-11

TECHNICAL DATA

WIN 3000-120-NA-DE

Image similar

Efficiency	
Max. Efficiency	93,0 %
Own consumption with feed-in	14 W
Stand-by consumption	0,2 W

Input (AC/DC)	
Max. Input power	3000 W
Rated voltage	120 V_{dc}
Characteristic voltage range	31 - 96 V_{ac} / 40 - 125 V_{dc}
Switch-on voltage	32 V_{ac} / 41 V_{dc}
Max. Input voltage[1]	102 V_{ac} / 132 V_{dc}
Max. Input current	36,0 A
Max. Current (180s / 10s) Short circuit brake	30 A / 60 A
Number of inputs[2]	3
Input connection type	Sunclix

Output (AC)	
Mains connection	single-phase (L/N/PE)
Connection type	Hirschmann CA3GS
Nominal power[3]	2390 W
Rated voltage	230 V (+10/-20%)
Mains frequency	50 Hz (+1.5/-2.5 %)
Max. Output current	13,9 A
Max. Apparent power[4]	3189 VA
Power factor	0.9...1...0.9; fixed or performance-based

General data	
Topology	galvanically isolated by LF protection transformer
Cooling	passive due to natural convection
Ambient temperature	-25 to 70 °C
Permissible humidity	0 - 95 %
Operating height	up to 2.000 m
Housing protection type	IP 54
Communication	SI-Modbus via RS485, galvanically isolated
Noise emission	35 db
Dimensions (HxWxD)	653 x 412 x 230
Weight	33,0 kg
Product warranty	10 years

Security	
Equipment protection class	Class I (protective grounding)
Overvoltage protection DC[5]	Type 2
Overvoltage protection AC[5]	Type 2
Overtemperature protection	Dynamic power management from 85°C; shutdown at 90°C

Conformity (more on request)	
Mains connection	DIN VDE 0126-1-1; AR-N 4105:2018-11
Security	DIN VDE 0126-14-1, VDE 0126-14-2, EN 61558-2-6, EN 60664-1
EMC	DIN VDE 0838, EN 60555, EN 50178, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3
Markings	CE

Speed limiter integrated (automatic short-circuit brake)

In the event of a mains fault or if the maximum input voltage is exceeded (e.g. overspeed due to insufficient load), the generator is automatically switched to short-circuit mode and disconnected from the inverter.

1) automatically limited by short circuit brake

2) for DC connection occupy only 2 inputs (+/-)

3) maximum active power in continuous operation under nominal conditions (T_U = 25°C, cosPhi = 1)

5) Short-term maximum power under nominal conditions (T_U = 25°C, cosPhi = 0.9i)

6) compatible with DIN EN 61643-11

TECHNICAL DATA

WIN 1000-160-NA-DE

Image similar

Efficiency	
Max. Efficiency	93,0 %
Own consumption with feed-in	5 W
Stand-by consumption	0,2 W

Input (AC/DC)	
Max. Input power	1000 W
Rated voltage	160 V_{dc}
Characteristic voltage range	42-154 V_{ac} / 54-200 V_{dc}
Switch-on voltage	42 V_{ac} / 55 V_{dc}
Max. Input voltage[1]	163 V_{ac} / 220 V_{dc}
Max. Input current	8,0 A
Max. Current (180s / 10s) Short circuit brake	30 A / 60 A
Number of inputs[2]	3
Input connection type	Sunclix

Output (AC)	
Mains connection	single-phase (L/N/PE)
Connection type	Hirschmann CA3GS
Nominal power[3]	810 W
Rated voltage	230 V (+10/-20%)
Mains frequency	50 Hz (+1.5/-2.5 %)
Max. Output current	4,7 A
Max. Apparent power[4]	1078 VA
Power factor	0.9...1...0.9; fixed or performance-based

General data	
Topology	galvanically isolated by LF protection transformer
Cooling	passive due to natural convection
Ambient temperature	-25 to 70 °C
Permissible humidity	0 - 95 %
Operating height	up to 2.000 m
Housing protection type	IP 54
Communication	SI-Modbus via RS485, galvanically isolated
Noise emission	35 db
Dimensions (HxWxD)	475 x 300 x 157
Weight	13,0 kg
Product warranty	10 years

Security	
Equipment protection class	Class I (protective grounding)
Overvoltage protection DC[5]	Type 2
Overvoltage protection AC[5]	Type 2
Overtemperature protection	Dynamic power management from 85°C; shutdown at 90°C

Conformity (more on request)	
Mains connection	DIN VDE 0126-1-1; AR-N 4105:2018-11
Security	DIN VDE 0126-14-1, VDE 0126-14-2, EN 61558-2-6, EN 60664-1
EMC	DIN VDE 0838, EN 60555, EN 50178, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3
Markings	CE

Speed limiter integrated (automatic short-circuit brake)

In the event of a mains fault or if the maximum input voltage is exceeded (e.g. overspeed due to insufficient load), the generator is automatically switched to short-circuit mode and disconnected from the inverter.

1) automatically limited by short circuit brake

2) for DC connection occupy only 2 inputs (+/-)

3) maximum active power in continuous operation under nominal conditions (T_U = 25°C, cosPhi = 1)

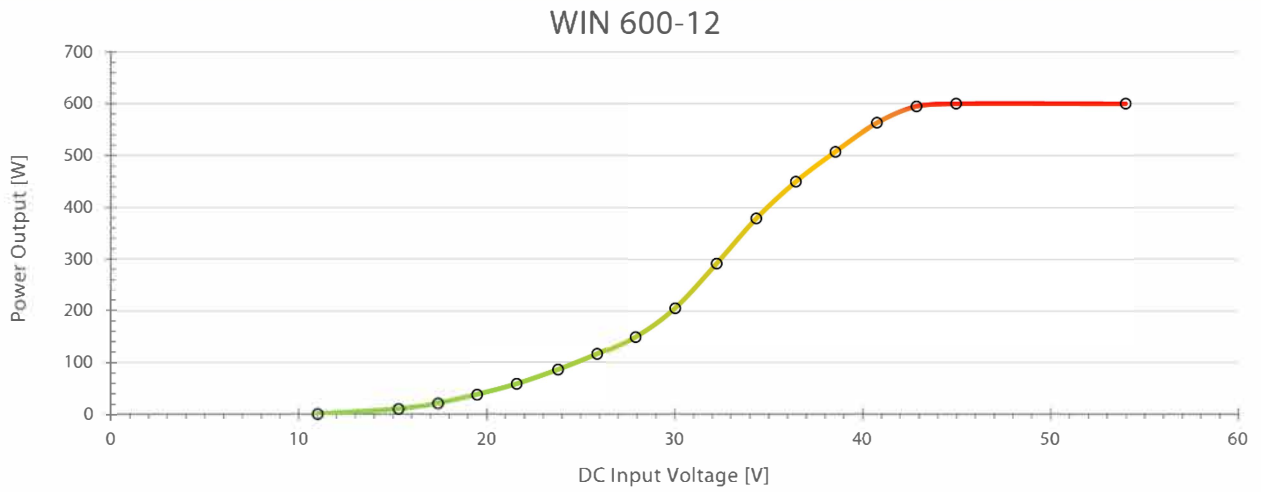
5) Short-term maximum power under nominal conditions (T_U = 25°C, cosPhi = 0.9i)

6) compatible with DIN EN 61643-11

Default Power Curves for Wind Inverters

WIN 600-12

Power Curve

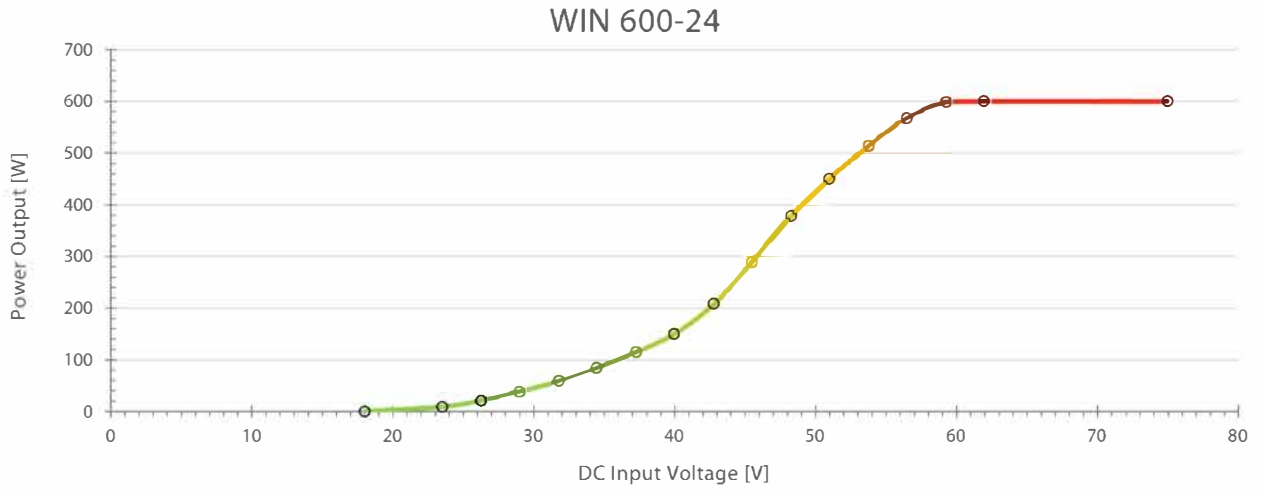


Data Set (U_WIND_KL)

Udc [V]	11	15.3	17.4	19.5	21.6	23.8	25.9	28	30.1	32.3	34.4	36.5	38.6	40.8	42.9	45
Pac [W]	3	12	24	40	60	86	116	150	206	292	379	450	508	563	595	600

WIN 600-24

Power Curve



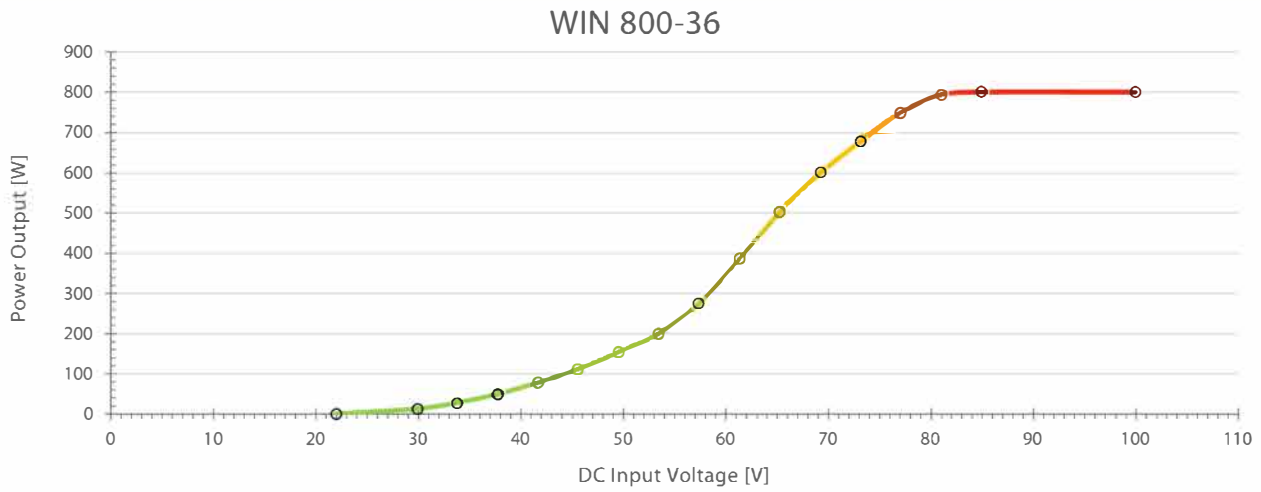
Data Set (U_WIND_KL)

Udc [V]	18	23.5	26.3	29	31.8	34.5	37.3	40	42.8	45.5	48.3	51	53.8	56.5	59.3	62
Pac [W]	3	12	24	40	61	86	116	150	208	289	378	450	513	567	598	600

Default Power Curves for Wind Inverters

WIN 800-36

Power Curve

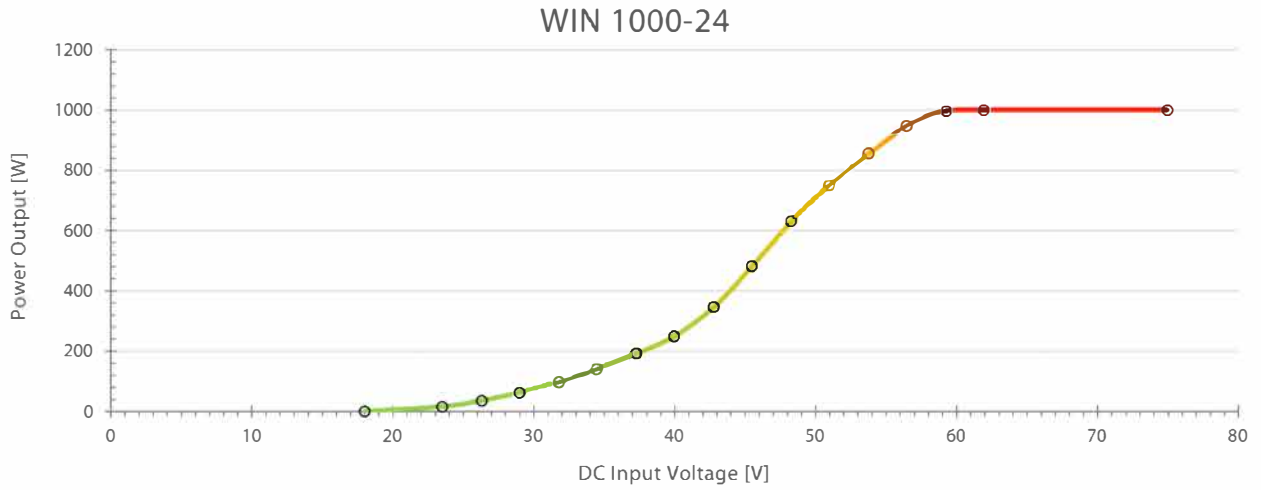


Data Set (U_WIND_KL)

Udc [V]	22	29.9	33.8	37.8	41.7	45.6	49.6	53.5	57.4	61.4	65.3	69.3	73.2	77.1	81.1	85
Pac [W]	4	16	32	53	81	114	154	200	275	387	503	601	679	749	794	800

WIN 1000-24

Power Curve



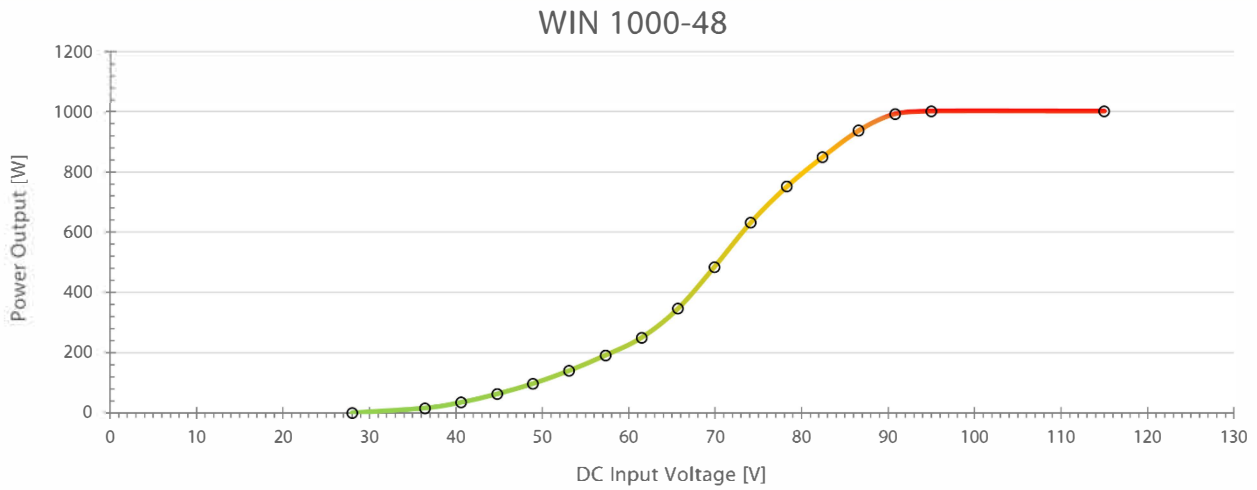
U_WIND_KL

Udc [V]	18	23.5	26.3	29	31.8	34.5	37.3	40	42.8	45.5	48.3	51	53.8	56.5	59.3	62
Pac [W]	5	20	40	66	101	143	194	250	346	481	631	750	855	946	997	1000

Default Power Curves for Wind Inverters

WIN 1000-48

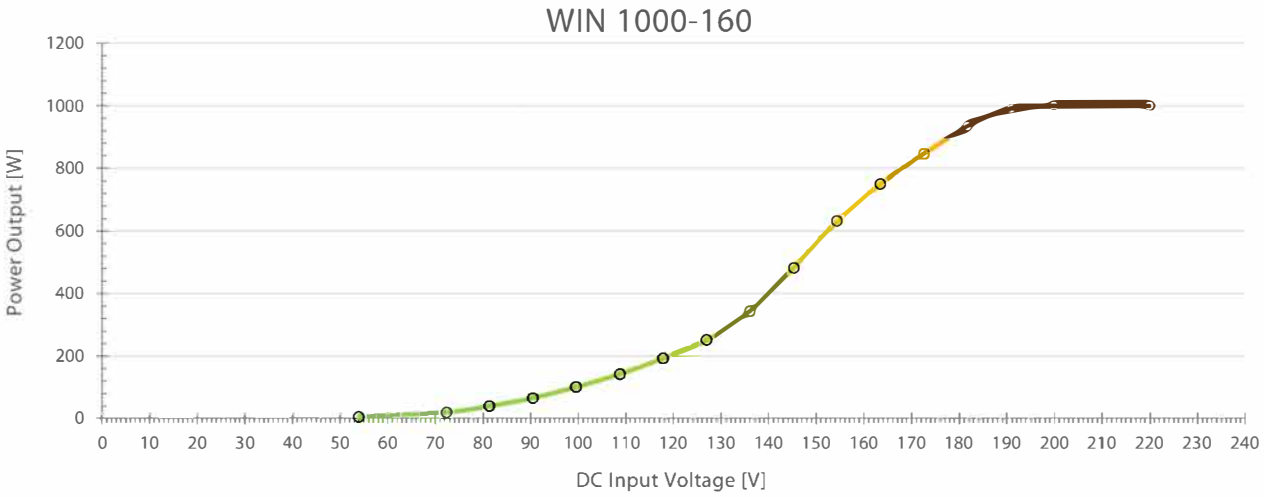
Power Curve



U_WIND_KL																
Udc [V]	28	36.4	40.6	44.8	48.9	53.1	57.3	61.5	65.7	69.9	74.1	78.3	82.4	86.6	90.8	95
Pac [W]	5	20	40	67	100	143	192	250	345	483	630	751	848	936	991	1000

WIN 1000-160

Power Curve

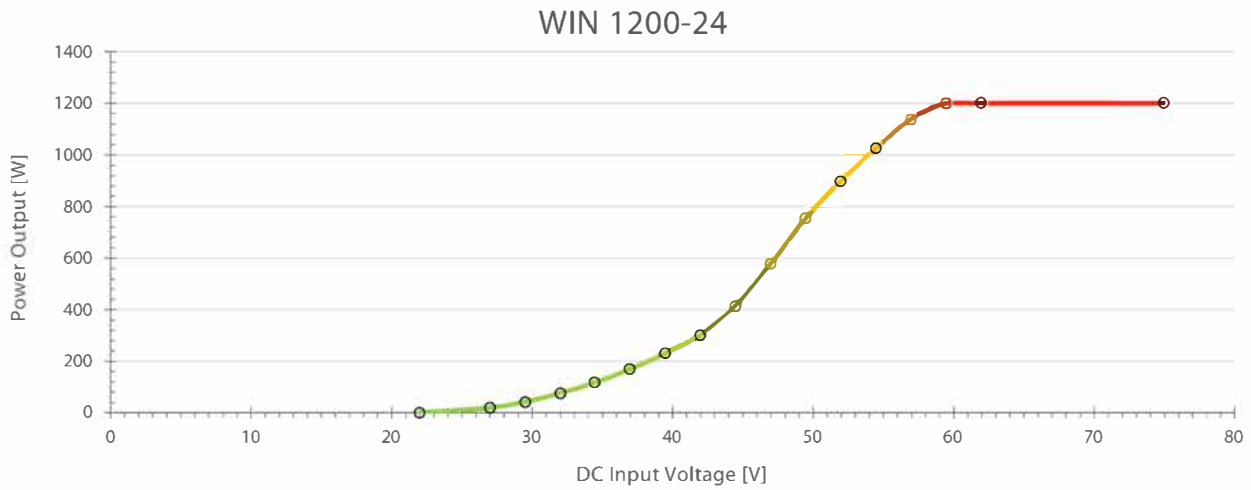


U_WIND_KL																
Udc [V]	54	72.3	81.4	90.5	99.6	108.8	117.9	127	136.1	145.3	154.4	163.5	172.6	181.8	190.9	200
Pac [W]	5	20	40	66	101	143	193	250	344	483	630	750	847	935	991	1000

Default Power Curves for Wind Inverters

WIN 1200-24

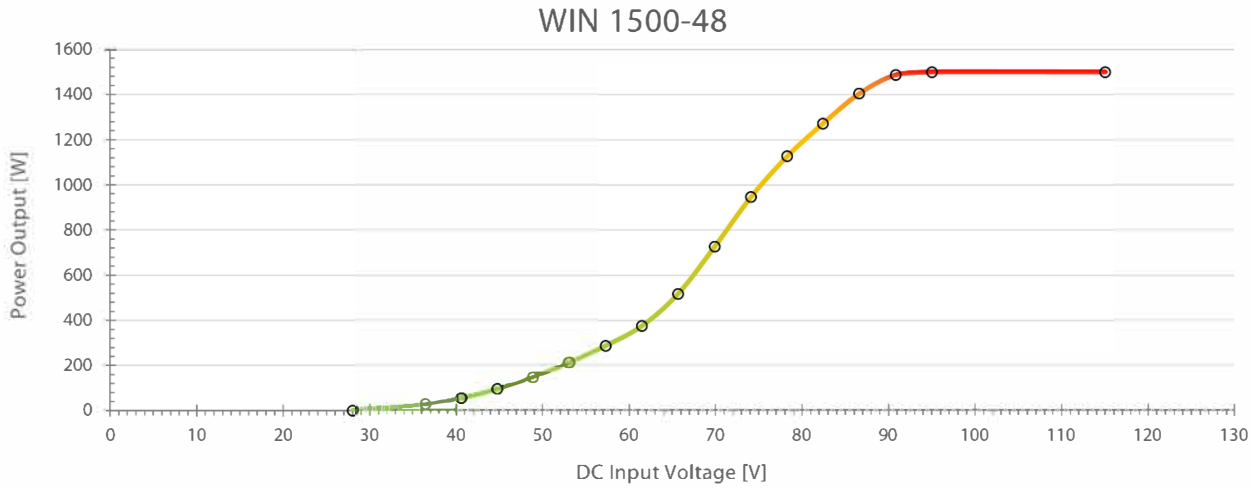
Power Curve



U_WIND_KL																
Udc [V]	22	27	29.5	32	34.5	37	39.5	42	44.5	47	49.5	52	54.5	57	59.5	62
Pac [W]	6	24	47	80	121	171	231	300	413	577	753	900	1026	1138	1198	1200

WIN 1500-48

Power Curve

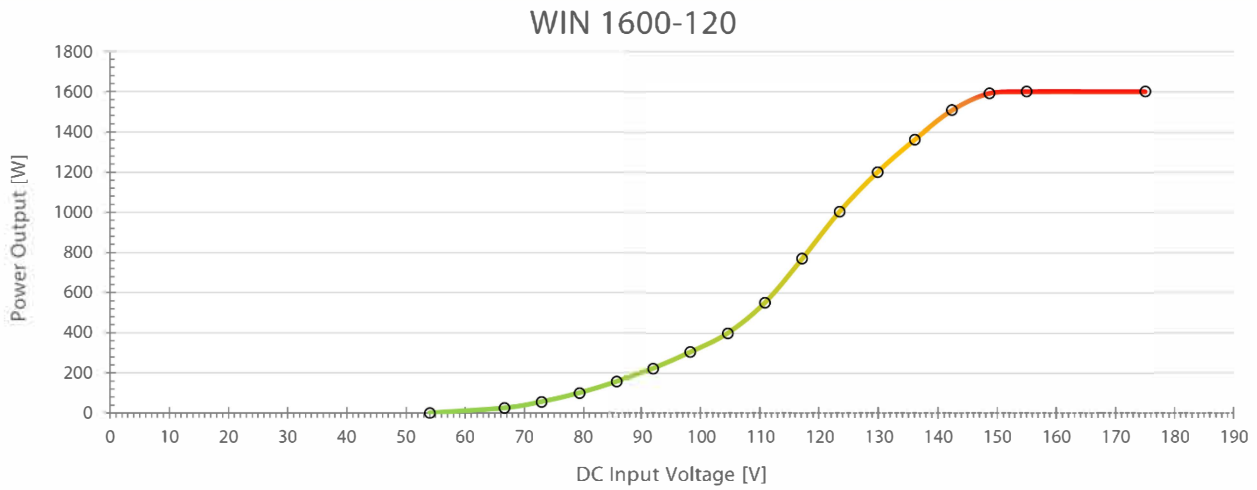


U_WIND_KL																
Udc [V]	28	36.4	40.6	44.8	48.9	53.1	57.3	61.5	65.7	69.9	74.1	78.3	82.4	86.6	90.8	95
Pac [W]	8	31	59	100	151	214	289	375	517	725	946	1127	1271	1404	1487	1500

Default Power Curves for Wind Inverters

WIN 1600-120

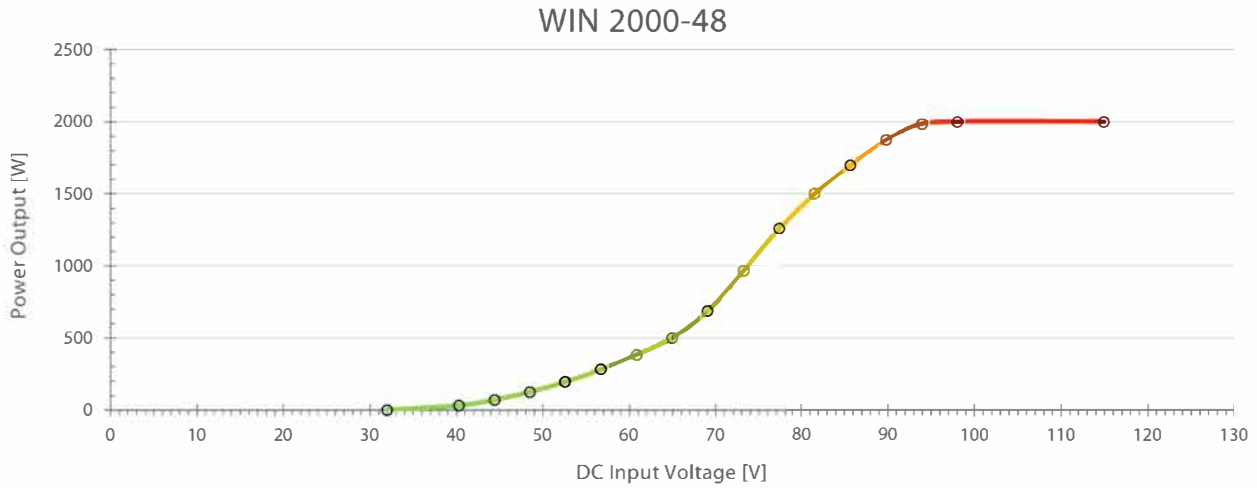
Power Curve



U_WIND_KL																
Udc [V]	54	66.6	72.9	79.3	85.6	91.9	98.2	104.5	110.8	117.1	123.4	129.8	136.1	142.4	148.7	155
Pac [W]	0	25	56	100	157	225	306	400	552	771	1005	1201	1363	1508	1592	1600

WIN 2000-48

Power Curve

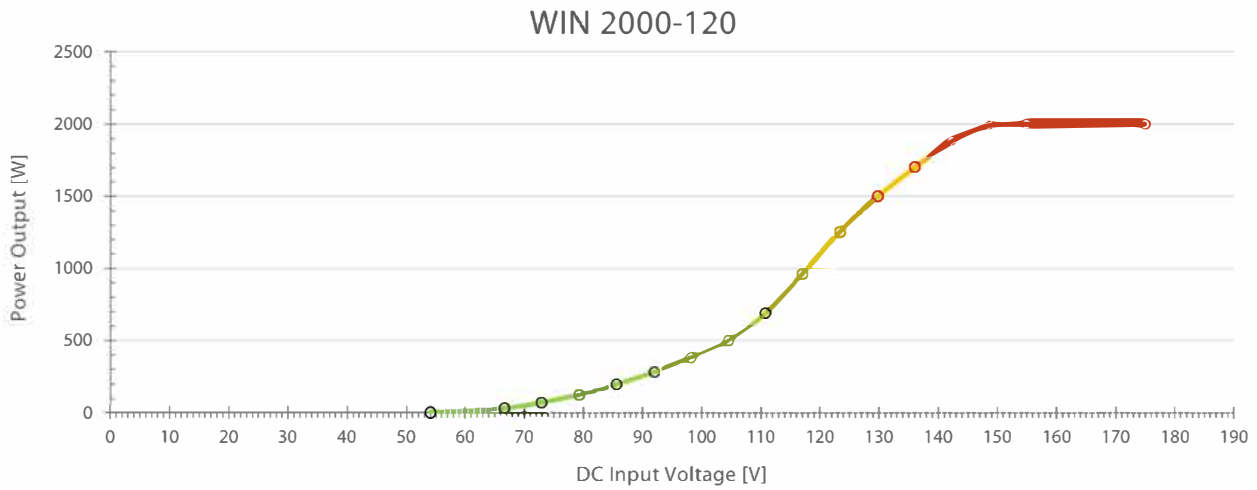


U_WIND_KL																
Udc [V]	32	40.3	44.4	48.5	52.6	56.8	60.9	65	69.1	73.3	77.4	81.5	85.6	89.8	93.9	98
Pac [W]	10	41	79	133	201	287	386	500	688	969	1260	1500	1696	1875	1984	2000

Default Power Curves for Wind Inverters

WIN 2000-120

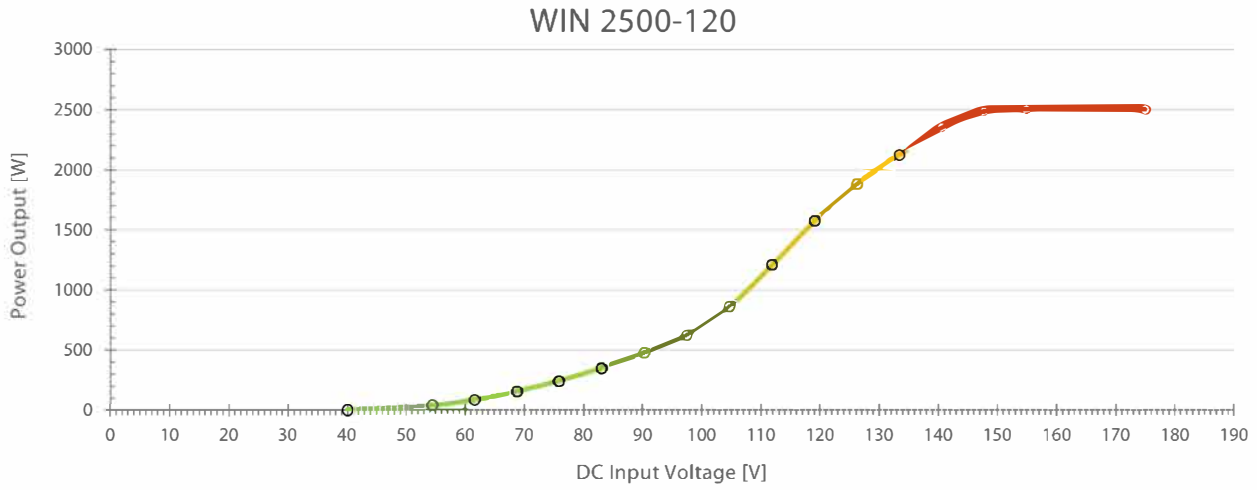
Power Curve



U_WIND_KL																
Udc [V]	54	66.6	72.9	79.3	85.6	91.9	98.2	104.5	110.8	117.1	123.4	129.8	136.1	142.4	148.7	155
Pac [W]	10	41	79	133	202	286	385	500	688	963	1255	1502	1704	1885	1991	2000

WIN 2500-120

Power Curve

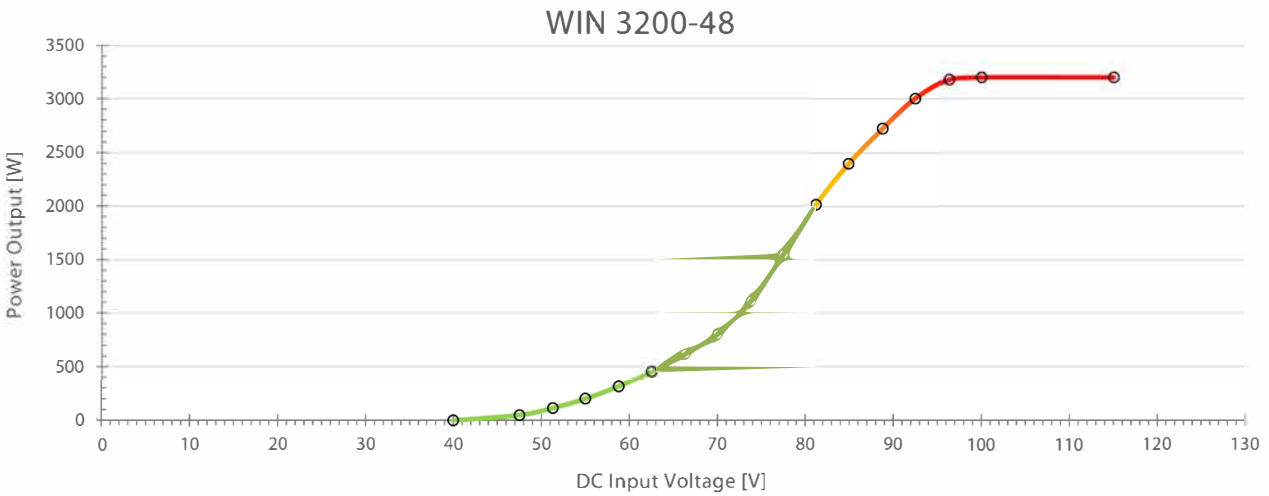


U_WIND_KL																
Udc [V]	40	54.4	61.6	68.8	75.9	83.1	90.3	97.5	104.7	111.9	119.1	126.3	133.4	140.6	147.8	155
Pac [W]	13	51	99	166	251	357	481	625	862	1207	1574	1877	2123	2347	2483	2500

Default Power Curves for Wind Inverters

WIN 3200-48

Power Curve

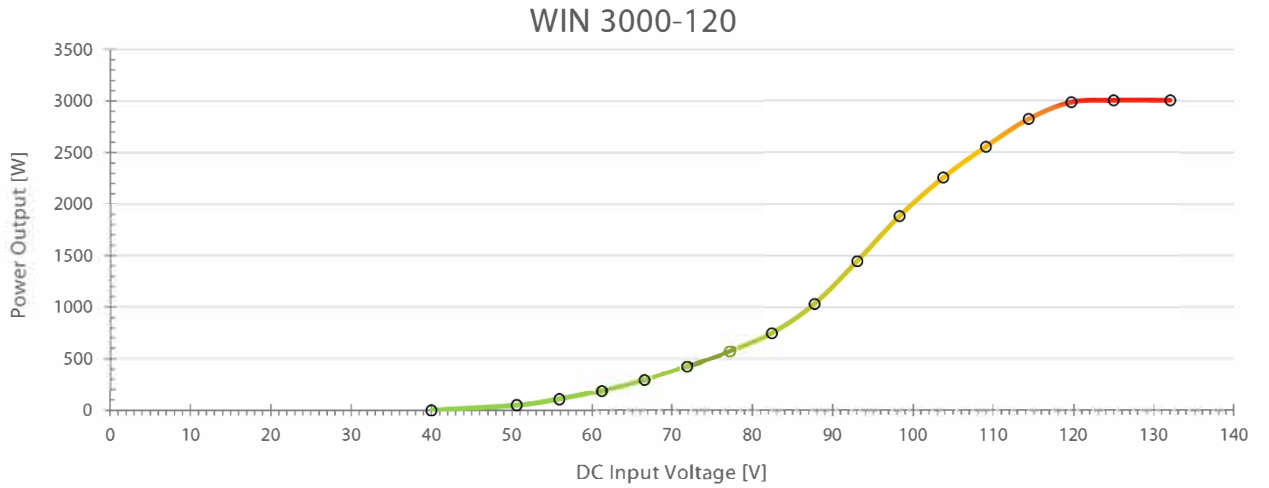


U_WIND_KL

Udc [V]	40	47,5	51,3	55	58,8	62,5	66,3	70	73,8	77,5	81,3	85	88,8	92,5	96,3	100
Pac [W]	15	64	126	211	323	457	618	800	1108	1543	2019	2400	2722	3002	3178	3200

WIN 3000-120

Power Curve



U_WIND_KL

Udc [V]	40	50.6	55.9	61.3	66.6	71.9	77.2	82.5	87.8	93.1	98.4	103.8	109.1	114.4	119.7	125
Pac [W]	15	61	118	200	303	429	578	750	1032	1444	1884	2253	2552	2819	2981	3000

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