DECKBLATT ZUM ORIGINAL-DOKUMENT DES HERSTELLERS

18KW | DATENBLATT GERÄTE

HERSTELLER Regatron AG
PRODUKTSERIE G5.IND-Serie [54kW_1000V]

Ihr direkter Ansprechpartner für Regatron-Produkte!

Die Ing. Erhard Fischer GmbH ist Ihr zuverlässiger Partner für die Produkte von Regatron AG. Wir bieten Ihnen nicht nur hochwertigen technischen Support, sondern auch kompetente Beratung und maßgeschneiderte Lösungen für Ihre individuellen Anforderungen.

Ob Standardprodukt, kundenspezifische Geräte oder Schaltschrankbau. Wir freuen uns, Sie bei Ihrer Lösungsfindung mit eingehender Kundenberatung kompetent unterstützen zu können.

Kontaktieren Sie uns für technische Beratung oder ein individuelles Angebot!

Wir freuen uns auf das Gespräch mit Ihnen.

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G5.IND.54.1000.162

Industrial Series Regenerative DC Source Sink

- 54 kW
- 1000 V
- 162 A

Features

- Bidirectional DC power supply
- Energy regeneration
- Designed for basic performance tests
- G5.Control operating SW + API

Key Values

Power		54 kW
Voltage DC	limited by P_{max}	1000 V
Current Range	short circuit proof limited by P_{max}	-162...162 A
Autoranging factor *see Figure 1*	$U_{max} \times I_{max} / P_{max}$	3
Master-slave / multi-device configuration		parallel only
Max. number of devices in system		20
Max. number of devices in parallel		20
Case		19" / 10 U

AC Lineside Rating

Mains connection type	delta	3L + PE (no neutral conductor)
Rated voltage		3× 380...480 VAC ±10%
Rated current	@nominal 3× 380 VAC	87 A_{rms}
	@nominal 3× 400 VAC	83 A_{rms}
	@nominal 3× 415 VAC	80 A_{rms}
	@nominal 3× 440 VAC	75 A_{rms}
	@nominal 3× 460 VAC	72 A_{rms}
	@nominal 3× 480 VAC	69 A_{rms}
Rated frequency		50/60 Hz
Power factor	@P_{max}	0.99
THDi	@90% P_{max}	≤3%
Inrush current		<99 A_{rms}
Efficiency	P_{max} @U_{max}	95%
	P_{max} @I_{max}	94%
Standby power	active / reactive @3× 400 V / 50 Hz	71 W / 3 kvar
Isolation	working voltage AC terminals to PE	900 VDC
	working voltage AC to DC terminals	1500 VDC
	test voltage AC terminals to PE	3100 VDC / 2 s
Protective earth conductor current	according to IEC 60990	≤10 mA @150 Hz
Touch current unweighted	output ON/OFF @3× 400 V / 50 Hz	≤1 mA / 4.6 mA (typ.)
Touch current weighted	output ON/OFF @3× 400 V / 50 Hz	≤0.9 mA / 4.4 mA (typ.)
Input filter discharge *to <60 V*	L-PE / L-L	<20 s
	with option XCD	<1 s

DC Operation

Operation modes		source, sink, bidirectional
Voltage regulation	CV	0…100% U_{max}
Current regulation	CC	-100…100% I_{max}
Power regulation	CP	-100…-5% / 5…100% P_{max}
Programmable load	CR, R_{max} @U_{max}; R_{min} @U_{min}	0.12…2222 Ω
Internal resistance simulation	programmable	0…12346 mΩ
Min. voltage normal sink mode *see Figure 2*	@I_{max} @10% I_{max}	30 V 15 V
Min. voltage LV sink mode *see Figure 2*	@I_{max} @10% I_{max}	5 V 2 V
Static accuracy *At 25 °C ambient temperature, constant line / load conditions, after 1h warm up time in voltage on state, normal distribution (k=2)*	power @I_{max} 1 kHz Filter voltage voltage sense current full range 1 kHz Filter @30% U_{max} resistance @I_{max} 1 kHz Filter	0.1% FS 0.05% FS 0.05% FS 0.1% FS 0.1% FS
Output capacitance	X-capacitor Y-capacitor @DC	333µF 219 nF
Ripple, voltage *output voltage ripple (10 Hz…3.8 MHz): Vrms 90% Pmax, 90% Umax, CV mode*	ohmic load	≤0.02% FS
Ripple, current	output current ripple (10 Hz…3.8 MHz): A_{rms} LowCap, ohmic load 90% P_{max}, CC mode	≤0.05% FS
Noise	noise (4.1 kHz…3.8 MHz): Vpp ohmic load 90% P_{max}, 90% U_{max}, CV mode	≤0.1% FS
Stability/drift *8h, after 1h warm up time in output on state, at constant line input, load and temp. conditions*	voltage voltage sense current current low range (-10%...10% FS)	≤0.01% FS ≤0.01% FS ≤0.01% FS ≤0.01% FS
Temperature coefficient *At constant line and load conditions*	voltage voltage sense current	≤0.005% FS/°C ≤0.007% FS/°C ≤0.005% FS/°C
Rise/fall time (10...90% of step) *Voltage set-value step, const. ohmic load*	voltage step (0...90% U_{max} / 90% P_{max})	2 ms
Rise/fall time (10...90% of step) *Current set-value step, const. voltage*	current step (-90...90% I_{max}, @33% U_{max}) 10…90% of step / settling time current step (-90...-10% I_{max}, @33% U_{max}) 10…90% of step / settling time current step (10…90% I_{max}, @33% U_{max}) 10…90% of step / settling time	1.5 ms / 3 ms 0.6 ms / 2.5 ms 0.6 ms / 2.5 ms
Transient response time *Load step, ohmic load*	CV, recovery within 0.5% set voltage 0...90% P_{max} @90% U_{max}	≤200 µs
Transient response time *Load step, ohmic load*	CC, recovery within 5% of set current 45...90% P_{max} @90% I_{max}	≤2 ms
Voltage drop *while load switching on*	-90...90% P_{max} @90% U_{max} -90...90% P_{max} @33% U_{max} 45...90% P_{max} @90% U_{max}	≤2% FS ≤4% FS ≤0.7% FS

DC Operation (continued)

Voltage overshoot *while load switching off*	90...-90% P_{max} @90% U_{max} 90...-90% P_{max} @33% U_{max} 90...45% P_{max} @90% U_{max}	≤2% FS ≤5% FS ≤0.7% FS
Pulsating load *max. allowed ripple Vrms sine*		≤80 Hz: 352 V_{rms} 100 Hz: 282 V_{rms} 150 Hz: 176 V_{rms} 200 Hz: 134 V_{rms} 250 Hz: 106 V_{rms} 300 Hz: 80 V_{rms} 400 Hz: 60 V_{rms} 500 Hz: 52 V_{rms} 1 kHz: 22 V_{rms} 2 kHz: 8 V_{rms}
Max. ripple *DC+ to PE / DC- to PE*	max. allowed ripple V_{rms} ≤1 kHz: 1050 V_{rms} >1 kHz: ((1.26×10^6)/f+5) V_{rms}	≤1kHz: 1050 V_{rms} 2 kHz: 630 V_{rms} 5 kHz: 250 V_{rms} 10 kHz: 130 V_{rms} 20 kHz: 65 V_{rms} 50 kHz: 30 V_{rms} 80 kHz: 20 V_{rms}
Protection	OVP (over voltage protection) OCP (over current protection) OPP (over power protection) OTP (over temperature protection)	programmable programmable programmable ✓
Output discharge *to <60V*	active discharge enabled active discharge disabled	<1 s <75 s
Sense voltage compensation		programmable Uout + Udrop limited by Uout $_{max}$
Sense input impedance	@operation @output off @output off "measurement at voltage-off" disabled	1212 kΩ 1212 kΩ open
Ballast resistor DC power port	@output off	51 kΩ
Resistance	DC+/DC- output to PE X713 jumper inserted DC+/DC- output to PE X713 jumper removed	22 MΩ open
Absolute maximum ratings	output voltage DC+ to DC- DC+/DC- output to PE	1100 VDC 1500 VDC
Output isolation	test voltage DC terminals to PE	2500 VDC / 2 s
Logic isolation	test voltage logic to PE	500 V (2 s)
Galvanic Isolation	AC input to DC output	✓

Various

Case dimensions *see Figure 3*	H × W × D without terminals	445 × 483 × 673 mm 17 1/2" × 19" × 26 1/2"
Weight		121 kg / 267 lbs
AC terminals	screw terminals	6...35 mm^2 (AWG 10...2) wires d ≤8.5 mm (11/16")
DC terminals		output bars for M8 bolts
Communication interface	speed depending on bus load (*) = optional	Ethernet (max. 800 × 16 bit/s), USB (max. 450 × 16 bit/s), (*) CANmp (20 × 16 bit/ms), (*) EtherCAT (100 Mbps)
Enclosure	rating	IP20 / NEMA 1
Option cards	# of free slots	2

Analog Inputs

Number of inputs	n.a.

Analog Outputs

Number of outputs	n.a.

Digital I/O

Number of digital inputs/outputs	n.a.

Relay Outputs

Number of relay outputs	n.a.

Ambient

Operating altitude	above sea level above 1000 m, slight temp. derating possible	≤2000 m (6562 ft)
Operating temperature		-5…40 °C
	with extended temperature option	-5…40 °C
	with airfilter	10 °C less
Storage temperature		-25…70 °C
Installation	IEC 60721-3-3	3K22, indoor, air-conditioned in protected 19" switch cabinet
Orientation	storage, installation, operation	upright
Absolute humidity max.		25 g/m^3
Relative humidity	non-condensing	≤85%
Vibration	IEC 60068-2-6	test Fc
Cooling		direct forced air, front to back
Acoustic noise level *1 m dist. front (typ.)*	90% P_{max}, 90% I_{max} @25 °C ambient	≤54 dB
	90% P_{max}, 90% I_{max} @40 °C ambient	≤71 dB

Standards

Protection class	EN 62477-1	1
Degree of pollution	EN 60664-1	2
Overvoltage category	mains input L-L / L-PE, EN 60664-1; EN 62477-1	II / III
	other interfaces	II
Area of application		industrial
Approval		CE Marking, UKCA
EN 62477-1:2012 *+ A11:2014 + A1:2017 + A12:2021*	Low Voltage Directive 2014/35/EU	✓
BS EN 62477-1:2012 *+ A11:2014 + A1:2017 + A12:2021*	Electrical Equipment (Safety) Regulations 2016	✓
EN 61010-1:2010	Low Voltage Directive 2014/35/EU	✓
BS EN 61010-1:2010	Electrical Equipment (Safety) Regulations 2016	✓
EN ISO 13849-1:2015	w/o ISR	-
	with ISR 2-channel	up to PL c
	with ISR 2-channel and external safety relay	up to PL e
EN 61000-6-4:2007 A1:2011 / EN61000-6-4:2019	Directive 2014/30/EU EMC emission (industrial)	✓
BS EN 61000-6-4:2007 A1:2011 / *BS EN61000-6-4:2019*	Electromagnetic Compatibility Regulations 2016 EMC emission (industrial)	✓
EN 61000-6-2:2005 / EN 61000-6-2:2019	Directive 2014/30/EU EMC immunity (industrial)	✓

Standards (continued)

BS EN 61000-6-2:2005 / BS EN 61000-6-2:2019	Electromagnetic Compatibility Regulations 2016 EMC immunity (industrial)	✓
EN 61000-3-11:2017	Electromagnetic compatibility (EMC). Part 3-11: Equipment rated ≤75A	✓
BS EN 61000-3-11:2017	Electromagnetic compatibility (EMC). Part 3-11: Equipment rated ≤75A	✓
EN 61000-3-12:2011	Electromagnetic compatibility (EMC) – Part 3-12: Equipment rated > 16 A and ≤ 75 A	✓
BS EN 61000-3-12:2011	Electromagnetic compatibility (EMC) – Part 3-12: Equipment rated > 16 A and ≤ 75 A	✓
EN 61326-1:2013	Directive 2014/30/EU EMC industrial level A	✓
BS EN 61326-1:2013	Electromagnetic Compatibility Regulations 2016 EMC industrial level A	✓
EN IEC 63000:2018	RoHS Directive	✓
BS EN IEC 63000:2018	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012	✓
EMV-ILA 01-03b	Emission 9...150 kHz test stand area	✓

Operating area

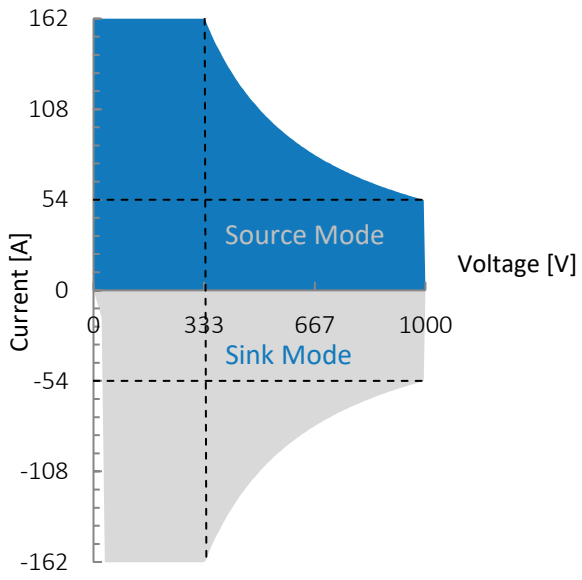

Figure 1: G5.IND.54.1000.162, voltage/current operating area.

X-axis zoom source-sink @low voltage

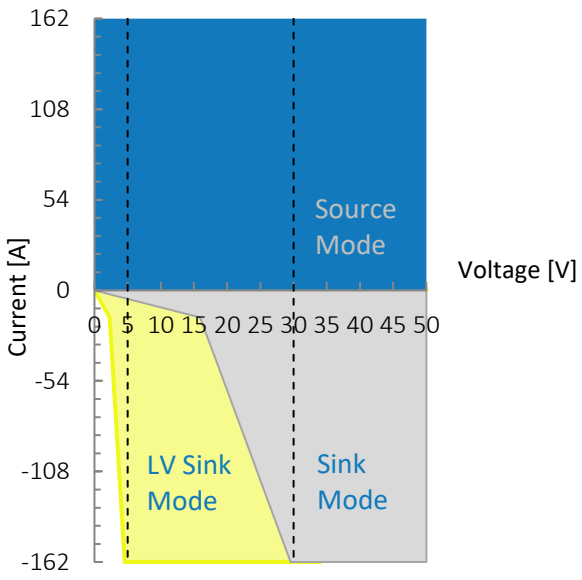

Figure 2: Normal sink mode in grey area down to 15(30) V.
To use the LV Sink mode (yellow area), the upper voltage limit has to be lowered,
- to 20 V for sink down to 2(5) V (yellow area)
- to 332 V or higher for sink down to 15(30) V (grey area)
- any other value between 20 V and 332 V
  will lead to a minimum sink voltage between 2(5) V and 15(30) V.

Dimensions

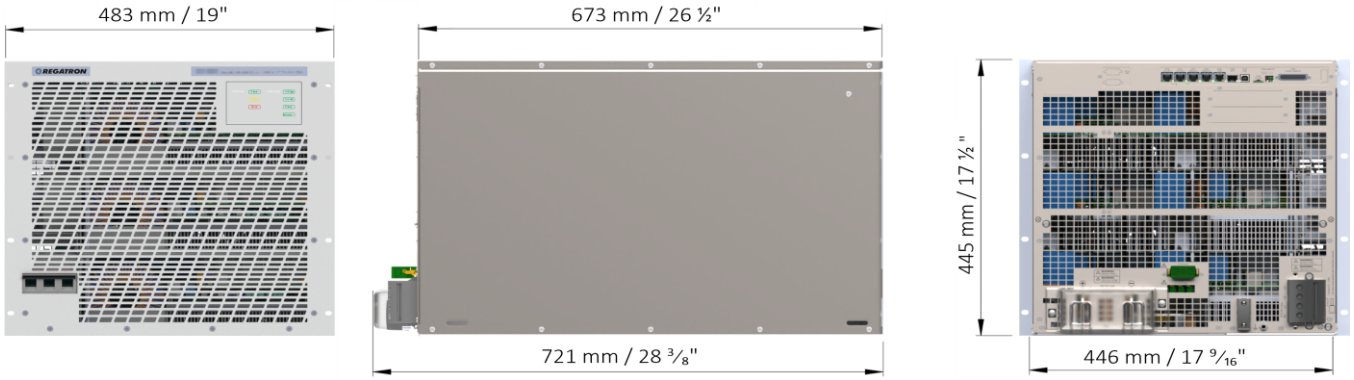

Figure 3: Front, right hand side and rear view. 19-inch module with 10 units in height.
Add 74 mm / 2 ⅞" to case depth for protective cover.

For further information to included features see related product description <PD_G5.IND….> on www.regatron.com

This product is developed, produced and tested according to ISO 9001 by REGATRON.

For detailed technical information, contact REGATRON or your local sales partner.

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