

GRID TIED BIDIRECTIONAL D.C. /A.C. POWER TRANSFER SYSTEM

Application: MGICS series of fast response grid interactive power transfer system are available in more than 10 different models (10 to10, 000 kilo watts) including some tailor made models practically offering readymade solution for power transfer/drawl (active/reactive power) from gas/steam based D.C. /A.C. generator (low/high rpm), thermoelectric generator, photo-voltaic cell, hydroelectric / wind generators, tidal energy etc in constant power /voltage or current mode. These fast responding power transfer system has ability to detect fast variation in grid status/ parameters on account of its ultra low constant due to low time constant of controller with robust control system with optimal power transfer during steady state/transient conditions.

Operating Principle:

These grid interactive power transfer system can operate in both absorbing mode as well in sourcing mode (four/two-quadrant) with smooth transition between each mode. While performing in regenerative mode, power is transferred into electricity main. With this type of controller an infinitely small variable power can be fed into grid in constant resistance/current/power mode or profiled in specific manner.

Active/reactive power transfer from grid interactive power transfers system to Grid.

$P = E_s \cdot V_t / X_s \cdot \sin\phi$ & $Q = V_t / X_s (E_s \cdot \cos\phi - V_t)$

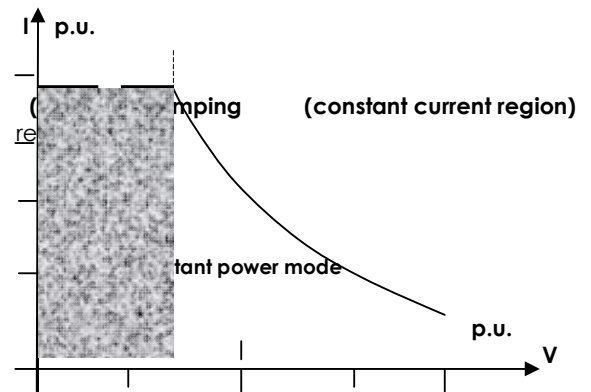
Where P,Q : active/reactive power, Xs : current limiting reactor /
Es : Source voltage, Vt : grid voltage

Feedback controlled power supply ensure fine resolution in loading i.e. 0.1% of torque/power or derived unite at any time, with a very high degree of stability and repeatability.

Technical specifications of GRID POWER TRANSFER CONTROLLER:

- Operating Power supply 220 volts/50 Hz
- Import/Export: 500 amps (max)
- Real Power /Reactive power 100 mva/10 mvar (max)
- Short circuit current/over current 10 times/3 three times rated current
- Conversion frequency of chopper 50 Hz-50 kHz
- Display Voltage/vurrent/power /frequency or
- Active/ reactive power/current/power factor
- Repeatability 100 percent
- Response time 0.5 –1.1 mill-seconds
- Accuracy of loading: 100% of power
- Interface Signal 0.0-12.0 volts D.C. (proportional to power)
- Control range 0.0-100%
- Step down ratio 0-100%
- Protection: over load/short circuit
- Interface: RS-232/USB

Control unit of controllers are equipped with voltage, current, power factor, Frequency meter



Grid interactive control system diemension:

MODEL	SIZE(inch)	MODEL	SIZE(inch)
MGICS00101L1	8x8x12	MGICS01001L1	24x24x72x2
MGICS00201L1	12x12x15	MGICS02001L1	24x24x88x2
MGICS00501L1	12x12x24	MGICS05001H1	24x24x108x2
MGICS00101L1	18x18x24	MGICS10001H1	30x30x108x2
MGICS00201L1	18x18x28	MGICS20001H1	30x30x108x4
MGICS00501L1	20x20x60	MGICS50001H1	24x24x108x4

Five numerals after MGICS indicates VA x100 of power supply and last alphabet L1/H2 Indicate 440 volt/H2 indicate 11/33/220.0 kv.

2.All dimensions are in inches.

Above models are in current range of production, however company Undertake any tailor made specification power supply.

MOTORON SEMICONDUCTORS CORPORATION

33, Shri nagar colony, Shakti nagar extension, DELHI-110052. Tel: 011-23655454//23644180
e.mail: motoron@hotmail.com

GRID TIED BIDIRECTIONAL D.C. /A.C. POWER TRANSFER SYSTEM



MGICS-10060
Grid interfaced controller
for steam based electricity



MGICS-50120
Grid interfaced controller
for wind power plant

General Technical specifications and selection chart (MGICS series)

P<1000 Kilo. watts

Model	Watts x 10 ³	Voltage. D.C.	Amps x 10 ³ D.C.	POWER FACTOR /TDH	Interface volt, A.C./ Frequency
MGICS15001	1500.0	2000/4000	0.75/0.37	<.85/3%	11000/50 Hz/option
MGICS10001	1000.0	1000/2000	10.0/0.5	<.85/3%	11000/50 Hz/option
MGICS07501	750.0	1000/2000	0.75/0.35	<.85/3%	11000/50Hz /option
MGICS05001	500.0	1000/2000	0.5/0.25	<.85/3%	11000/50hz/option
MGICS02501	250.0	0200/0400	1.0/0.5	<.85/3%	11000/440/50hz /option
MGICS01001	100.0	0100/0200	1.0/0.5	<.85/3%	11000/440/50 hz ,option
MGICS00501	50.0	050/0100	1.0/0.5	<.85/3%	11000/440/50 Hz/ option
MGICS00201	20.0	0025/0050	0.8/0.4	<.85/3%	11000/440/50 Hz/ option
MGICS00101	10.0	0012/0025	0.8/0.4	<.85/3%	440/50 Hz/option
MGICS00501	5.0	0012/0025	0.4/0.2	<.85/3%	440/50 Hz/option
MGICS00201	2.0	0012/0025	0.17/0.08	<.85/3%	220/1-P/50 Hz
MGICS00101	1.0	0012/0025	0.08/0.04	<.85/3%	220 /I-P//50 Hz

Last two numeral after MGICS indicates voltx100 an remaining numeral indicates power (kilo-watts)

MOTORON SEMICONDUCTORS CORPORATION

33, Shri nagar colony, Shakti nagar extension, DELHI-110052. Tel: 011-23655454//23644180
e.mail: motoron@hotmail.com

GRID TIED BIDIRECTIONAL D.C. /A.C. POWER TRANSFER SYSTEM



TRANSMISSION/DISTRIBUTION LINE



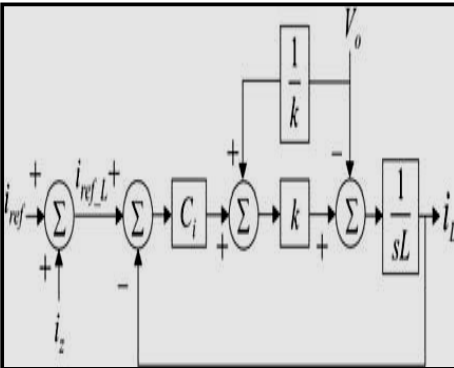
Wind power plant (DISTRIBUTION/TRANSMISSION)



Photovoltaic power plant (DISTRIBUTION/TRANSMISSION)



Hydroelectric power plant (DISTRIBUTION/TRANSMISSION)



Cascade control system for GIPS



Biogas based power plant



Micro hydroelectric power generation

MOTORON SEMICONDUCTORS CORPORATION

GRID TIED BIDIRECTIONAL D.C. /A.C. POWER TRANSFER SYSTEM

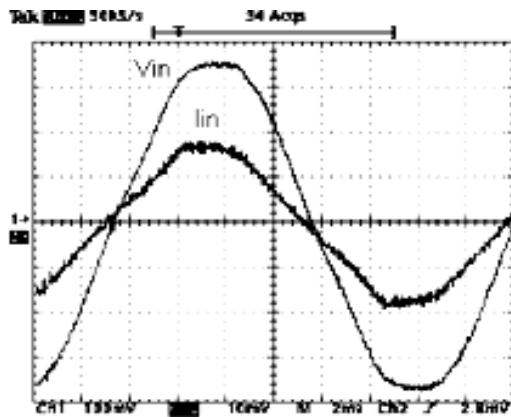


Fig. 8. Input voltage (50 V/div) and input current (0.5 A/div); time scale: 2 ms/div.

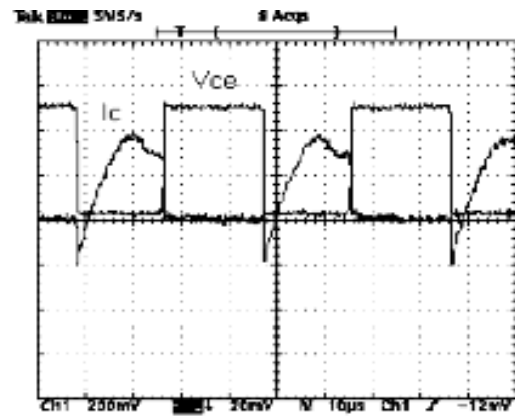


Fig. 11. Transistor Q_1 voltage VCE (100 V/div) and current (1 A/div); time scale: 10 μ s/div.

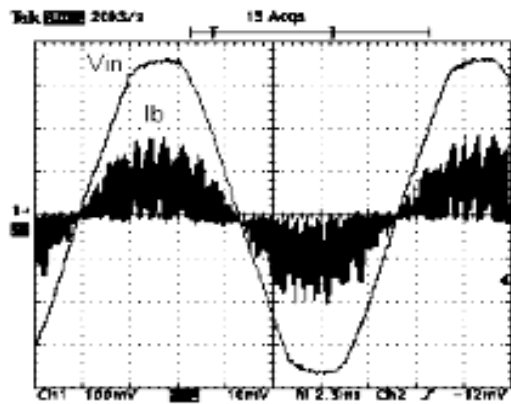


Fig. 9. Mains line voltage (50 V/div) and boost inductor current (1 A/div); time scale: 2.5 ms/div.

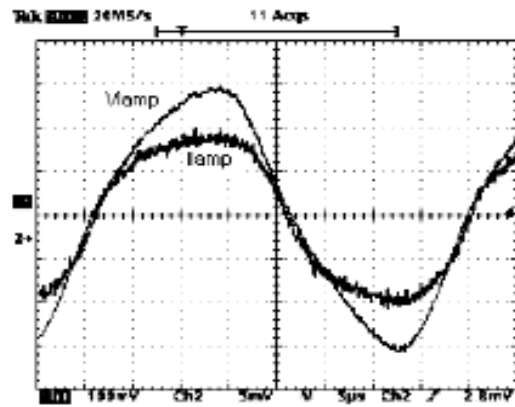


Fig. 12. High-frequency fluorescent lamp voltage V_{lamp} (50 V/div) and current I_{lamp} (250 mA/div); time scale: 5 μ s/div.

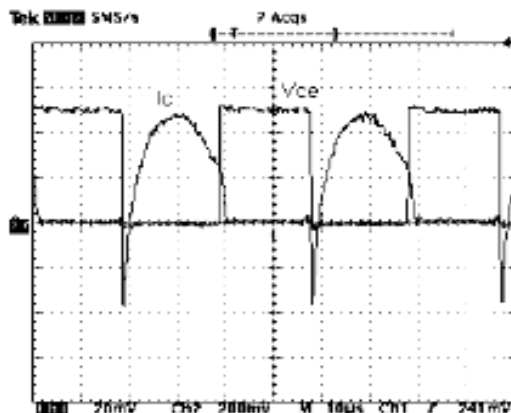


Fig. 10. Transistor Q_1 voltage VCE (100 V/div) and current (1 A/div); time scale: 10 μ s/div.

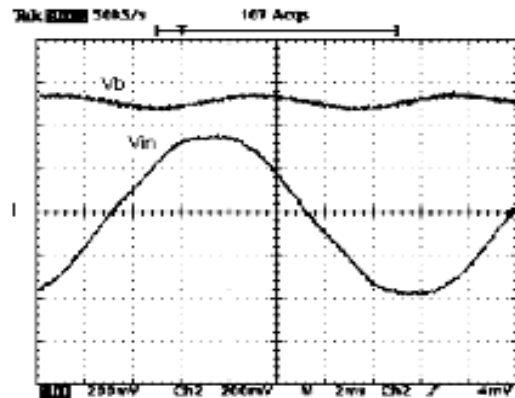


Fig. 13. DC-link voltage (100 V/div) and input voltage (100 V/div) for two fluorescent lamps; time scale: 2 ms/div.

MOTORON SEMICONDUCTORS CORPORATION

33, Shri Nagar Colony, Shakti Nagar Extension, Delhi-110052 Tel: 011-2365 5454/2364180

motoron@hotmail.com