Digital DC Drive

II and IV Quadrant
10A - 3500A (2.4 - 2205 kW)

Standard Features

- Self-calibration of current, speed and field (Reduce possibility of error and installation time)
- Internal field converter (for operation in constant torque or power)
- Field economy (reduce the field current when motor is stopped)
- Field boost (increase torque on motor start)
- Predictive control (increase the dynamic response of the motor)
- Integrated multimeter
- Adjustable Acce. and Dec. time from 0-300 sec.
- Speed multiramps
- "S" ramps
- Double speed ring with automatic adaptation
- Feedback from tachometric dynamo, from encoder and armature
- Automatic switching of the feedback in armature in the event of breakdown of dynamo/encoder (higher safety operation).
- Control of the current limit in steps or hyperbolic
- 7 levels of speed
- JOG commands
- Auto-reset alarms
- Integrated digital potentiometer
- Timer on digital outputs
- Local control from keyboard
- Sensitivity to phase-rotation (for easy connection)
- Independent supplies to control and power
- 8 programmable digital inputs
- 4 programmable analog inputs 0 ± 10V dc, 0 (4) -20mA
- Double encoder input
- Tacho input
- Auxiliary 24V dc, ± 10V dc,5V dc
- 5 programmable relay outputs
- 1 analog speed output ± 10V dc
- 1analog current output ± 10V dc
- 2 programmable analog outputs 0 ± 10V dc, 0 (4) -20mA
- EMC compliant with EN 61800-3 2ND ed.

Optional Features

- "Remote Drive" software
- Kit remote keyboard operation (5 meters)
- RS 232/485 interface
- MODBUS RTU 115,2kbps
- Profibus DP 12 Mbps-CanBus-Device Net etc.
- IP 20 kit protection degree
- Input chokes
- Kit for heatsink segregation
- Fast fuse
- CU400 Clamping unit for electromagnets

Special Features

- Full digital
- Full compatibility with teleservice "REMOTE DRIVE" on internet
- Compatibility

Converter Protections

- Protections against output short circuit (extra-rapid external fuses)
- Protections of dV/dT on thyristors (integrated R-C filters and varistors)
- Thermal protection of dissipater and against prolonged overload of converter
- Thermal protection of motor
- Protection from armature overcurrent
- Protection from field overcurrent
- Protection from armature overvoltage
- Protection from blackouts

DCREG2 and DCREG4 DC Drive

The AC/DC converters of the DCREG series, completely digitally controlled, are designed for the power supply to the armature and field circuits of direct current motors. They enable control over speed or torque, with bi-directional functioning in all four quadrants in the DCREG4 and unidirectional functioning in two quadrants for the DCREG2.

A complete power range

The totally-controlled AC/DC converters of the DCREG series are available in versions for 2 and 4 quadrants, with a current range from 10A to 3500A and three-phase power supply voltage from 200Vac to 690Vac.

Technology and performances

The DCREG series of converters, designed with innovative latest-generation microprocessor technology, offers high performance together with extremely easy programming. The high processing power and the innovative "predictive" type of control make it possible to reach previously unimaginable levels of performance in terms of speed and precision.

Application Flexibility

A complete software, with numerous integrated functions enables the management of the most complex processes of automation in a simple and economical manner without the use of external accessories. Thanks to the possibility of implementing dedicated software functions, by means of simple programming on a PC, the DCREG offers flexibility of use with no compromises.

Simplicity of installation and maintenance

The DCREG converters can be powered by different control and power voltages. Due to the "automatic recognition of the cycle direction", it is no longer necessary to worry about the sequential connection of the electric power supply phases.
With the control/programming keyboard, in just a few minutes the automatic calibration procedures can be started and the working parameters set. The inclusion of an EPROM on the control card makes maintenance of the program simple and safe. Moreover, in the event of an error a Backup can be made of the current parameters, while Restore Default re- establishes the factory settings.

Safety and protections

The numerous electrical protections, integrated as standard on the whole range, make the converters of the DCREG series extremely reliable. Moreover every protection is fully programmable and in some cases excludable, depending on the degree of safety.
The "automatic switching to armature feedback" function, in the event of breakdown of the dynamo/encoder, completely eliminates the extremely dangerous risk of racing motors, maintaining speed control for perfect working of the system.

Communication

The optional cards available in the DCREG series enable communication with the most important control and management systems. These comprise, in fact, RS485 and RS232 serial ports with MODBUS RTU protocol enabling a maximum speed of 132 Kbps and the PROFIBUS DP serial protocol with a maximum speed of 12 Mbps.

Control keyboard

The converters of the DCREG series are optionally equipped with a remotely-controllable control Keyboard consisting of a backlit 32-character alphanumeric LCD display, eight keys and eight signal LEDs.
Using this it is possible to :
- display and program all the data managed by the converter
- control the motor through start/stop, JOG and clockwise/anticlockwise rotation
- regulate the rotation speed.

Available onboard as standard as a 7-segment 2 digit LED display, on which to follow the operational state of the converter and see any alarm signals.

Controlled field

A controlled field to regulate the flow of excitation in direct current motors is integrated in the converter. This control permits the supply of power to the field of any motor, setting the levels of fixed current, discharge controls and flow economy and boosting functions.

Interface

The DCREG series of converters features an ample onboard interface consisting of numerous analog and digital inputs/outputs, encoder inputs of a line-driver, NPN, Open-Collector and Push-Pull type. All are fully configurable to guarantee control of any type of motor. All this make the DCREG line easy to use in the most complex automation systems.

Converter Specifications

Input

Control Voltage

200-240 Vac single phase +10% -20%
380 - 500 Vac single phase + 10% -20%
24 Vcc + 15% -10% leveled

Power Voltage

10-440 Vac three phase +10%
10-500 Vac three phase +10%
10-600 Vac three phase +10%
10-690 Vac three phase +10%

Field Voltage

10- 440 Vac max single phase +10%
10-500 Vac max single phase +10%

Frequency

50-60 Hz +/-10%

Output

Armature Voltage

(DCREG2 = power voltage Vac x 1.2)
DCREG4 = power voltage Vac x 1.05
0-530 Vcc max.
0-600 Vcc max.
0-720 Vcc max.
0-800 Vcc max.

Field Voltage

(Vdc = Field input voltage Vac x 0.9)
0-216 Vcc max
0-450 Vcc max

Current Overload

150% nominal current for 60 sec.

Environmental Specifications

Ambient Temperature

Operation : 0°C - 40°C, (50°C max.)

Storage : - 25°C - 65°C

Ambient Humidity : 20 - 90% in absence of condensation of water spray

Maximum Altitude

1000 metres m.a.s.l.

UL-CE Mark

Machines Directive (89/392/EEC - 91/368/EEC - 93/44/EEC - 93/68/EEC/ Low Voltage Directive (73/23/EEC-93/68/EEC)/ Electromagnetic Compatibility Directive (89/336/EEC-92/31/EEC-93/68/EEC-93/97/EEC)

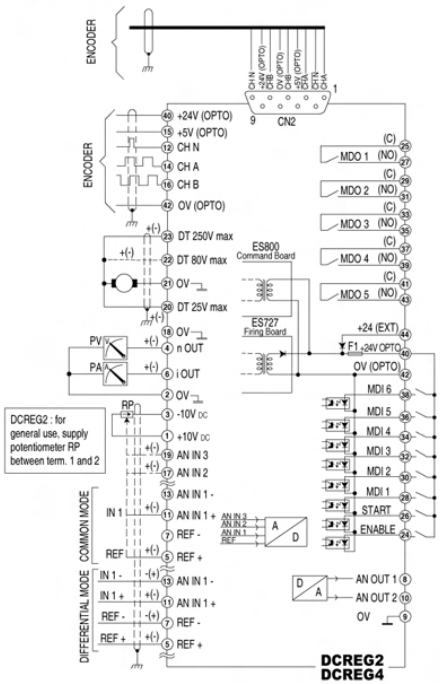
Immunity:

EMC conforms to EN61800-3 IEC 1800-3 norms, first - second environment (public-industrial network), EN61000-4-2-/IEC 1000-4-2, EN6100-4-3/IEC 1000-4-3, EN61000-4-4/IEC 1000-4-4, EN61000-4-5/IEC 1000-4-5, EN61800-4-8/IEC 1000-4-8 without the use of additional filters.

Emissions conducted and irradiated at radio frequencies.

EMC conforms to EN61800-3 IEC 1800-3 norms, second environment (industrial grid) without the use of additional filters, EMC conforms to IEC 1800-3/EN61800-3 norms, first environment (public grid), EN55011 and EN55022 classes A and B.

Connection Diagram



DCREG2-DCREG4 - Digital DC Drive Rating

DCREG2 (II-Quadrent)

MODEL	ARMATURE CURRENT (A)	FIELD CURRENT (A)	MOTOR POWER FOR ARMATURE 440Vdc (kW)	WEIGHT (kg)	DIMENSIONS WxDxH (MM)
DCREG2.10	10 A	5	4	15	214x244x440
DCREG2.20	20 A	5	8		
DCREG2.40	40 A	5	15,9		
DCREG2.70	70 A	5	28		
DCREG2.100	100 A	5	40		
DCREG2.150	150 A	15	60		
DCREG2.180	180 A	15	72		
DCREG2.250	250 A	15	99	18	
DCREG2.350	350 A	15	139		
DCREG2.410	410 A	35	163	39	333x360x596
DCREG2.500	500 A	35	198		
DCREG2.600	600 A	35	238		
DCREG2.900	900 A	35	357	42	
DCREG2.1200	1200 A	35	476	45	333x453x685
DCREG2.1600	1600 A	35	634	70	Control unit 214x244x440
DCREG2.2300	2300 A	35	911		Power unit 675x360x867
DCREG2.2700	2700 A	35	1070	106	Control unit 214x244x440
DCREG2.3500	3500 A	35	1386		Power unit 830x470x1280

The applicable motor power changes according to both power supply and armature voltage (Max power supply 690Vac, Max armature voltage 800Vdc)

DCREG4 (IV-Quadrent)

MODEL	ARMATURE CURRENT (A)	FIELD CURRENT (A)	MOTOR POWER FOR ARMATURE 440Vdc (kW)	WEIGHT (kg)	DIMENSIONS WxDxH (MM)
DCREG4.10	10 A	5	3.6	15	214x244x440
DCREG4.20	20 A	5	7.2		
DCREG4.40	40 A	5	14.4		
DCREG4.70	70 A	5	26		
DCREG4.100	100 A	5	36		
DCREG4.150	150 A	15	54		
DCREG4.180	180 A	15	65		
DCREG4.250	250 A	15	90	18	
DCREG4.350	350 A	15	126		
DCREG4.410	410 A	35	148	39	333x360x596
DCREG4.500	500 A	35	180		
DCREG4.600	600 A	35	216		
DCREG4.900	900 A	35	324	42	
DCREG4.1200	1200 A	35	432	45	333x453x685

Available on request up to 3500A
The applicable motor power changes according to both power supply and armature voltage (Max power supply 690Vac, Max armature voltage 800Vdc)

Applications :

Shifting and Lifting

- Bridge cranes
- Cranes
- Cableways
- Automatic stores
- Lifts
- Hoists

Performance

- Speed control with range from 0 to 100%
- Maximum torque from zero to nominal speed
- High overload in starting phase
- Absolute speed precision with closed ring
- Master-Slave control for management of coupled motors on the same drive shaft
- S-curves for use with lifts and hoists
- Very low noise levels
- Maximum conformity to EMC interference norms

Engineering Sector

- Stamping presses
- Palletisers
- Wire-drawing machines
- Winding machines
- Rolling mills
- Centrifuges
- Cutting frames
- Mills (ceramics, cement works, bricks, paper)
- Conveyor belts
- Paper mills
- Glass working
- Rotary presses
- Packaging

Performance

- High static torque for particularly heavy-duty applications
- Maximum torque from zero to nominal speed
- Absolute speed precision with closed ring
- Torque limitation control
- High response speed
- Highly-precise speed and positioning

Wood Sector

- Sanders
- Sawing machines
- Milling machines
- Drilling machines
- Presses
- Mills

Performance

- High static torque for particularly heavy-duty applications
- Maximum torque from zero to nominal speed
- Control for spindle motors
- High response speed
- Highly-precise speed and positioning

Textile Sector

- Spinning frames
- Carding machines
- Looms
- Doubling frames
- Industrial ironing machines
- Warping machines
- Rolling machines

Performance

- High static torque for particularly heavy-duty applications
- Maximum torque from zero to nominal speed
- Absolute speed precision with closed ring
- Torque limitation control
- High response speed
- Highly-precise speed and positioning

Plastics and Rubber

- Injection moulds
- Extruders
- Mixers
- Calenders
- Winders

Performance

- Energy saving
- Less noise
- Maximum torque from zero to nominal speed
- Maintenance of constant speed
- High overload in starting phase
- Absolute speed precision with closed ring