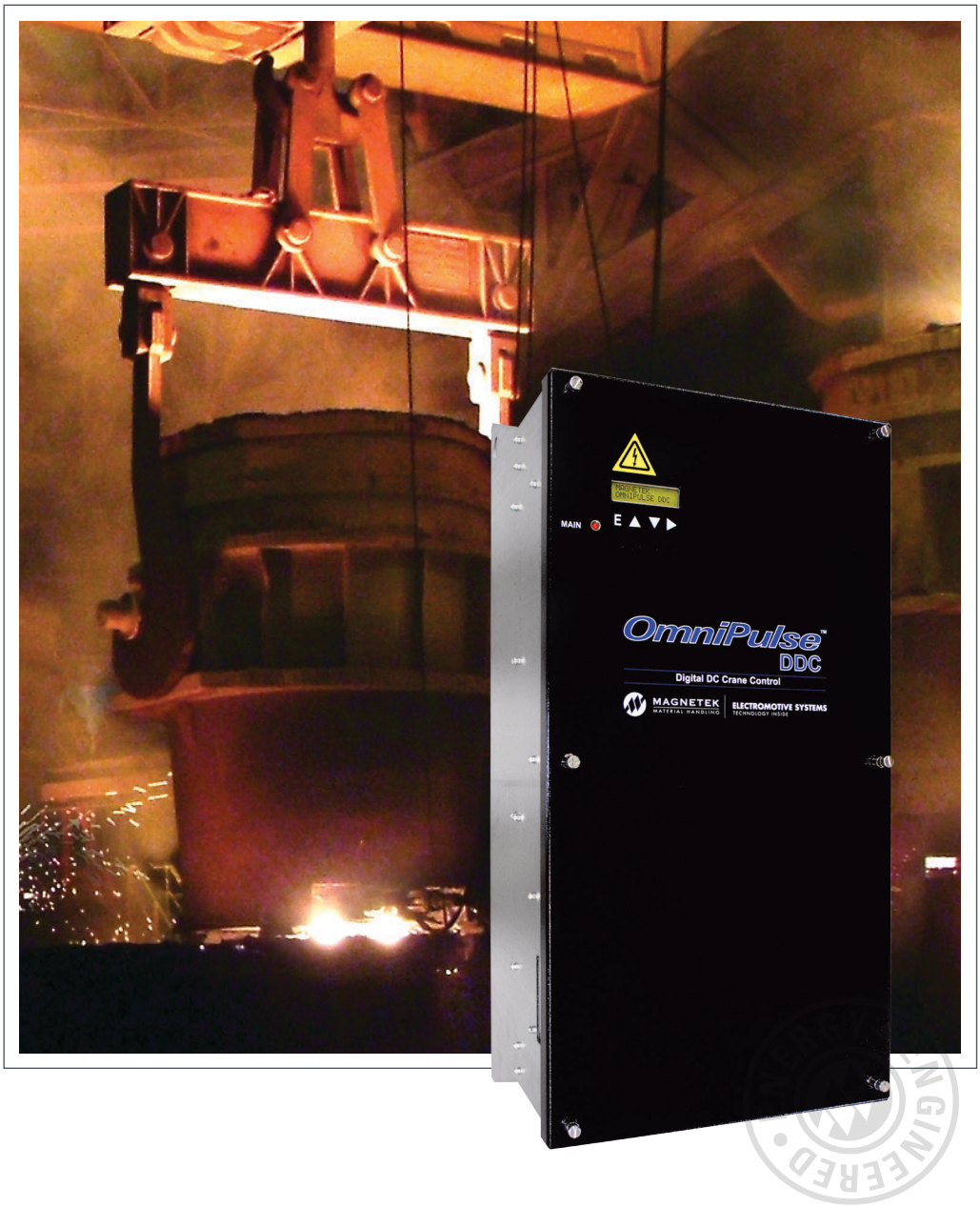
Electromotive Systems

OmniPulse™ DDC Digital DC Drive

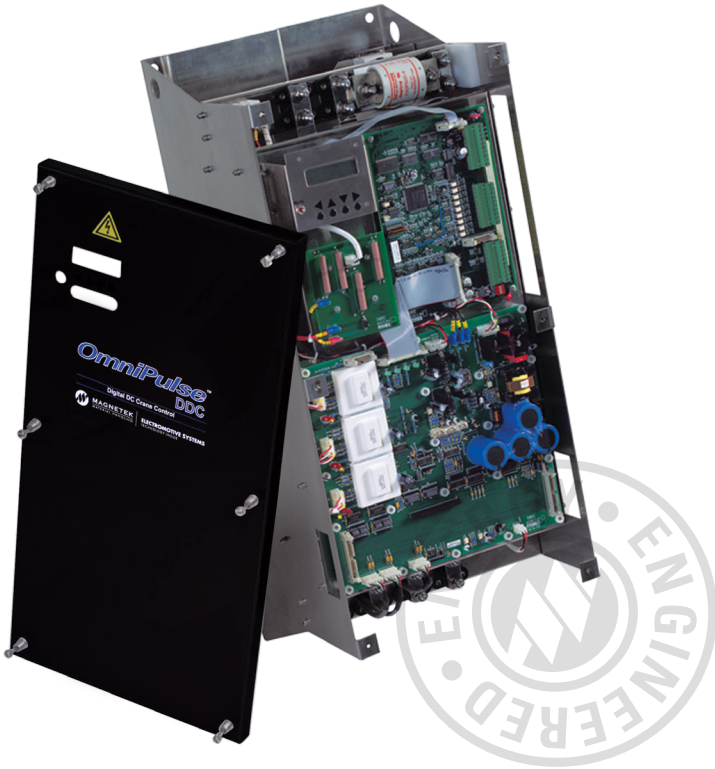


MAGNETEK
MATERIAL HANDLING
ELECTROMOTIVE SYSTEMS

INCREASE YOUR COMPETITIVE ADVANTAGE

CONVERT YOUR DC CONTROLS TO STATE-OF-THE-ART ENERGY EFFICIENT OMNIPULSE DDC DIGITAL DC DRIVES

Magnetek, the leader in crane and hoist motor control, brings you the OmniPulse DDC Digital DC Drive. The Energy Engineered™ OmniPulse will improve the performance and reliability of your DC operated crane or hoist, while minimizing downtime, maintenance expenses and energy costs. It's the smart choice in crane control that will pay dividends and provide your facility with a competitive advantage for years to come.



EFFICIENT OPERATION

OmniPulse DDC employs semiconductor technology, which provides better control of motor speed and torque than costly, inefficient DCCP control. This microprocessor based, solid-state, four-quadrant DC-to-DC control is designed for series, shunt, or compound wound motors.

IDEAL DROP-IN REPLACEMENT

OmniPulse DDC is the perfect drop-in replacement for traditional electromechanical controls. It eliminates routine and costly contactor tip replacement and reduces energy expenses. It easily interfaces to existing power and control circuitry using the same connection points in a smaller footprint.

IMPROVED CONTROL AND SAFETY

Most importantly, Omnipulse DDC will also improve safety in your facility. The OmniPulse DDC provides failsafe torque proving and load control software, ensuring the operator always has control of the material.

MINIMIZED DOWNTIME AND IMPROVED SERVICEABILITY

We know production needs change. That's why OmniPulse DDC was designed with comprehensive software that provides superior flexibility and allows for quick parameter changes. (Software upgrades can be flashed from a PC). These parameters allow the drive to compensate for the mechanical timing of the crane, increasing brake life and plant efficiency. The OmniPulse DDC also interfaces with IMPULSE•Link 4.1 Basic or WDS (wired or wireless), offering remote parameter modification and diagnostic capability.

THE OMNIPULSE DDC DRIVE OUTPERFORMS TRADITIONAL DCCP CRANE CONTROLS

	OMNIPULSE DDC DIGITAL CRANE CONTROL	DCCP ELECTROMECHANICAL CRANE CONTROLS
	BETTER MOTOR SPEED AND TORQUE CONTROL	
Speed Transitions	Digital microprocessor control with flexible software enables smooth acceleration and deceleration, reducing current spikes and excess mechanical torque	Contactor, relay and resistor based control means more rigid transitions between speed points and no reduction of mechanical torque
Load Positioning	Repeatable and accurate speed settings mean precise load positioning	Use of resistors for speed points, which are subject to alterations over time due to heat, results in inconsistent load positioning
Light Load High Hook Speeds	Reduces cycle time by increasing no-load speeds in both up and down motions. Micro Speed feature offers still finer load positioning accuracy	No load/high speed lowering is not possible with DCCP control
Controlled Plugging	Digital technology provides controlled, repeatable, accurate and variable plugging to stop or reverse	Plugging torque inconsistent
Speed Regulations	Software provides 5% speed regulation, no load to full load (0.1% with tachometer feedback)	Due to load changes and the effect that heat has on the repeatability of resistors, speed regulation varies greatly
	MINIMIZED DOWNTIME AND IMPROVED SERVICEABILITY	
Programming Flexibility	Control software is capable of supporting various material handling applications. Remote monitor and parameter modifications can be made via IMPULSE•Link 4.1	Not possible—need to change hardware
Number of Components	Solid-state design consists of fewer electromechanical components that wear and fail.	Many moveable components wear and fail over time needing intensive maintenance (A DDC drive can replace up to 9 contactors)
Spare Parts	Inventory minimized due to modular design, common PCB hardware and universal software	Must stock directional contactors, speed control contactors, contactor tips, interface relays, and power resistors
Troubleshooting	Built-in diagnostics help troubleshoot crane performance and keep your system up and running	No diagnostics available
	REDUCED ONGOING MAINTENANCE EXPENSES AND ENERGY COSTS	
Maintenance of Components	Solid state design means no contactor tips, coils, auxiliary contacts, mechanical interlocks, directional contactors or power resistors to replace*	Must maintain contactor tips, coils, auxiliary contacts, mechanical interlocks, directional contactors or power resistors
Brake and Brake Shoe Life	Brakes may be set at much lower speeds, reducing stress on brake parts while increasing lining life	Normally set at higher speeds as brakes are used to decelerate and stop
Brush, Commutator and Field Insulation Life	Armature current restricted to a maximum of 200% of the motor rating, and a maximum of 150% of motor rated field current, CEMF restricted to 110%	No restrictions with DCCP control
Shock Loads on Mechanical Power Train	Reduces shock loads on mechanical power train through smooth speed acceleration and deceleration	Deceleration control through plugging and acceleration is dependent on changing resistors
Energy Costs	State-of-the-art semiconductors regulate motor current and reduce line power demand resulting in energy savings	DCCP utilizes resistors that require additional line power
Energy Recovery/Regeneration	Highly efficient OmniPulse DDC, with low power diode rectifiers, recovers energy from the load and returns it to the DC supply**	Substantial energy lost across resistors
	IMPROVED SAFETY	
Continuity Check at Start	Verifies control of the load. In hoist applications, motor armature circuit is checked when raise/lower command given, before brake released	Requires an additional collector for redundancy; capable of checking for armature continuity
Motor Series & Field Loss Detection	Protection feature that provides a fault to the drive and sets the brake	Series field detection available using a series brake on the hoist, but no check on the armature
Loss of Speed Input	When speed input is lost, the drive will operate up to the lower speed inputs.	Loss of speed input could result in skipped speed points and high current and torque transitions
Emergency Power Loss Shut Down	OmniPulse DDC will shut down and set the brake if DC power is lost while lowering the load	Load could continue with a controlled lower if power is lost since the motor is generating
Failsafe Pre-charge Circuit Design	Unique to OmniPulse DDC; eliminates the possibility of applying direct DC line voltage to the capacitor bank	Not applicable
Four-quadrant Design	Efficiently controls the motor at all times	Operates in two-quadrants, and relies on inefficient resistors to achieve performance

*No power resistors required except DB for all hoist applications to meet industry standard and regen resistor depending on power source type.
** DC supply must be compatible to realize energy savings from regenerative capabilities–consult Magnetek for more information.

OMNIPULSE DDC DRIVE GENERAL SPECIFICATIONS

DESCRIPTION	SPECIFICATION
POWER	
Horsepower Range	5-500 HP
Continuous Current Rating	30-2000 Amps
Input Voltage	230-360VDC (standard) 400-600VDC (optional) -20%/+10%
Current Overload Capability	150% for one minute 200% for three seconds
Motor Circuit Standard Configurations	Single, Duplex, or Quadruplex
CONTROL I/O	
Discrete Control Inputs	(8) 230VDC (standard); other voltages are optional
Analog Inputs	(2) 0-10VDC or 4-20mA
Programmable Analog Outputs	(1) 0-10VDC or 4-20mA
Programmable Discrete Outputs	(2) 230VDC; (3) 24V DC 50mA
Communication Ports	RS-232/485
PROTECTION	
Reverse Polarity	Software and hardware detection
Power Loss Capability	One second ride-through
Undervoltage/Overvoltage	Trip at 50%/140% Vin when > 1 second
Motor Overload	Electronic time trip
Motor Continuity (Hoist Mode)	Motor connections are verified at the start of each cycle before brake is released
Emergency Power Loss Dynamic Braking	Standard for hoist applications Optional for traverse applications
Fuse	DC Bus Control Interface Board
Motor Ground Detection (can be disabled)	Motor armature and series field detected for hoist applications. Motor armature detected for traverse applications. Trip level is hardware set and non-adjustable.
Charge Indicator	Visual indicator on drive unit indicating charge state on the capacitor bank
Drive Thermal	Heatsink over temperature alarm and shutdown; drive enclosure over temperature shutdown
Fault History	Last 15 faults are stored.
ENVIRONMENTAL	
Ambient Temperature Range	-10°C to +50°C (enclosed)
Altitude	3300 feet (1000M) without derating
Humidity	<90% non-condensing

OMNIPULSE™ DDC FEATURES

VERSATILE SOFTWARE

- Designed with software that provides superior flexibility during start-up
- Allows for quick parameter changes as needed
- Software upgrades or future releases can be flashed from a PC
- Provides optimal performance and speed regulation while adjusting to meet your changing operational requirements—without the need for additional hardware

FLEXIBILITY AND PERFORMANCE

- Software adjustable for various application and production needs
- Built-in diagnostics to troubleshoot crane performance and keep your system up and running:
  - Monitor 32 items (amps, volts, rpm, hours, etc.)
  - Diagnostic LEDs
  - Records 15 most recent faults
- Standard closed loop with sensorless feedback—5% speed regulation
- Optional closed loop with tachometer feedback—0.1% speed regulation

COMPACT, MODULAR DESIGN

- 33% smaller footprint than typical contactor control
- Nearly 50% smaller volume than typical contactor control

OMNIPULSE DDC TECHNOLOGY MAY BE APPLIED IN A VARIETY OF MATERIAL HANDLING APPLICATIONS

- Crane & Hoist
- Larry Cars
- Quench Cars

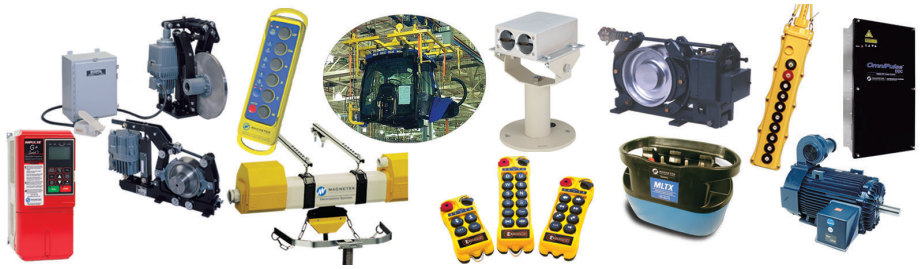
OmniPulse DDC is backed by Magnetek Material Handling's superior application expertise and aftermarket support—available 24/7/365!

For more information, contact Magnetek Material Handling or your local Magnetek Sales Representative.

MAGNETEK
MATERIAL HANDLING

ELECTROMOTIVE SYSTEMS
TELEMOTIVE
ENRANGE
MONDEL

YOUR ONE-STOP SOURCE FOR MATERIAL HANDLING CONTROL SOLUTIONS



ENGINEERED SYSTEMS & SOLUTIONS
Project Evaluation
Project Management
Engineering Design
System Manufacturing and Testing
Field Startup, Testing, Training and Support
Customer Training and Maintenance Support
Application Solutions
PLC/PC Program Development

IMPULSE™ AC ADJUSTABLE FREQUENCY DRIVES
230, 460 and 575 Volt Power Platforms
0.25–1,500 HP
Exclusive Application Software
Specific Crane & Hoist Software

OMNIPULSE™ DIGITAL DRIVES
DSD – AC in/DC out
15–800 HP
DDC – DC in/DC out
5–500 HP

MAGNEPULSE™ DIGITAL MAGNET CONTROL

MAC™•2000 MOTOR ACCELERATION CONTROL
Single & 2 Speed — up to 15.2 Amps
Contactor Panels

VARIABLE SPEED MOTOR CONTROL PANELS
Standard Pre-Engineered Systems
Custom Engineered Systems

MOTORS & ACCESSORIES
Standard Inverter Duty AC Induction Motors
Flux Vector Designed Motors

POWER DELIVERY SYSTEMS
ELECTROBAR® ELITE — 20, 60, 100, 130, 200 Amps
FABA® Conductor Bar Systems — 100 Amps
ELECTROBAR® HX — 400, 700, 1000 Amps
ELECTROBAR® FS — 90, 110, 125, 250, 400 Amps
ELECTROBAR® 8-Bar — 90, 110, 250, 350 Amps

ELECTROMOTIVE™ FESTOONING SYSTEMS
Standard Duty
Heavy Duty
Mill Duty

PENDANT PUSHBUTTON STATIONS
Standard, Custom and Wired

TELEMOTIVE & ENRANGE RADIO REMOTE CONTROL SYSTEMS
Flex EX
*tele*Pendant™
300T
Pendant™
*tele*Pilot™
100T
PGT
DTX
MLTX™
MLTX2™
SLTX™
700T
JLTX™
Locomotive Control Systems

COLLISION AVOIDANCE SYSTEMS
LaserGuard™
ReFlx™

MONDEL BRAKES
200S Industrial Shoe Brakes
4"–19" Diameter
6–2,250 Lb. Ft. Torque
AC, DC, Hydraulic Actuators
AC Explosion Proof Actuators

AIST-NEMA 300M Mill Duty Shoe Brakes
5"–30" Diameter
10–11,000 Lb. Ft. Torque
AC, DC, Hydraulic Actuators
AC Explosion Proof Actuators

400D Heavy Duty Disc Brakes
8"–50" Diameter
50–30,000 Lb. Ft. Torque
AC, DC, Hydraulic Actuators
AC Explosion Proof Actuators

Braketronic™ Control System
Braketronic Controller
Standard Pre-engineered Panel
Mill Duty Foot Pedal (optional)

N49 W13650 Campbell Drive
Menomonee Falls, WI 53051
Toll-Free Phone 800.288.8178
Toll-Free Fax 800.298.3503
Phone 262.783.3500
Fax 262.783.3510

4090B Sladeview Crescent
Mississauga, Ontario, Canada L5L 5Y5
Toll-Free Phone 800.792.7253
Phone 905.828.1526
Fax 905.828.5707

WWW.MAGNETEKMH.COM

Pub No. OmniPulse_08/12