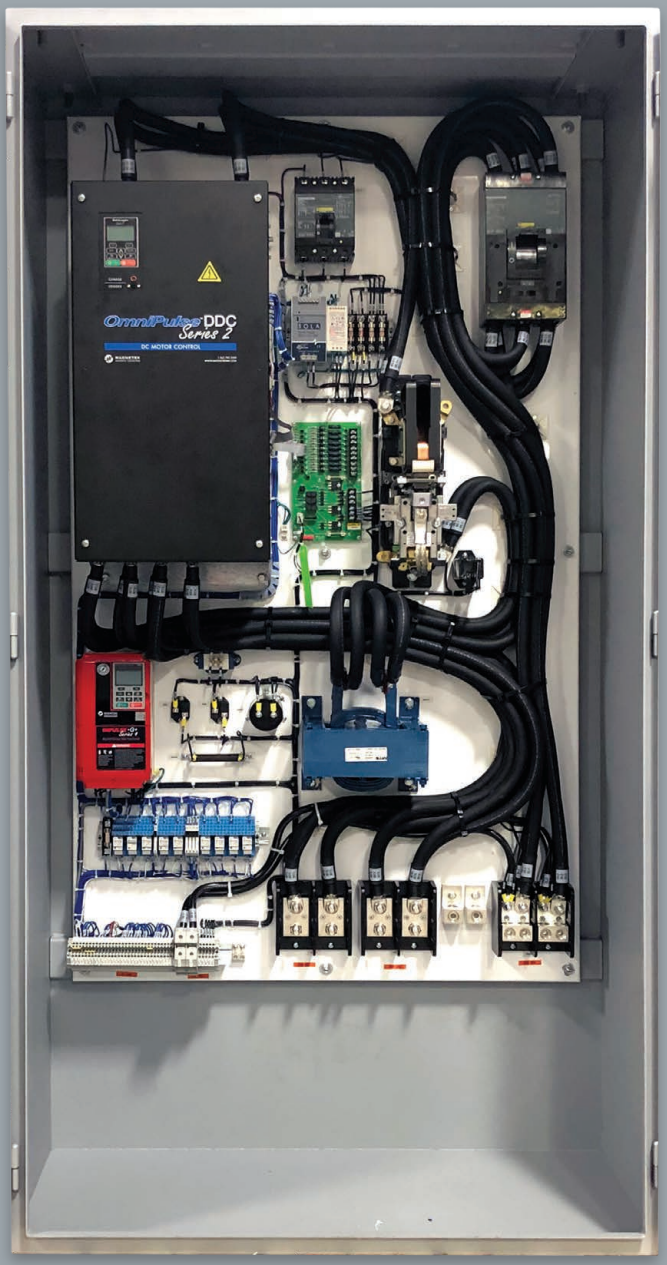
MAGNETEK

OMNIPULSE™ DDC SERIES 2

DC MOTOR CONTROL

COLUMBUS McKINNON CORPORATION

Modernize your DC cranes with state-of-the-art OmniPulse™ DDC Series 2 Drives. Designed to outperform traditional DCCP crane controls, energy efficient Magnetek® OmniPulse DDC Series 2 drives improve the performance, safety, and reliability of your DC-operated material handling applications. Energy Engineered®, this drive is an efficient, modern solution designed for quick setup, easy data access, and remote monitoring. Rely on the OmniPulse DDC Series 2 to increase uptime, minimize expenses, and lower energy costs.



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FEATURES & BENEFITS

EFFICIENT OPERATION

OmniPulse DDC Series 2 employs semiconductor technology, which provides more advanced 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 DC motors.

IDEAL FOR CONTACTOR CONTROL REPLACEMENT

OmniPulse DDC Series 2 is the ideal drop-in replacement for traditional electromechanical control. 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 Series 2 will improve safety in your facility. It provides failsafe torque proving and load control firmware, ensuring operators always have control of material.

MINIMIZED DOWNTIME AND IMPROVED SERVICEABILITY

OmniPulse DDC Series 2 is designed with comprehensive firmware that provides superior customization and allows for quick parameter changes to meet changing production needs. These parameters allow the drive to compensate for the mechanical timing of the crane or DC application, increasing brake life and plant efficiency. Free firmware upgrades, which are easily flashed from a PC, are available on columbusmckinnon.com/magnetek.

EASY DATA ACCESS AND CONFIGURATION

OmniPulse DDC Series 2 comes standard with Magnetek's DataLogger Series 4 (DLS4) keypad, which allows you to easily access run, alarm, and fault histories, drive parameters, and drive trending data. Compatible with IMPULSE®•Link 5 Software, the DLS4 makes setup and troubleshooting simple.

Setup and parameter structures use familiar terminology, and the DLS4 allows you to configure drives and record data all in one device.

X-PRESS PROGRAMMING™

X-Press Programming automatically configures several commonly used parameters and features when a motion or speed reference is selected. The DataLogger keypad, plus X-Press Programming, provides quick and easy setup similar to our IMPULSE variable frequency drives.

FLEXIBLE CONTROL AND REMOTE MONITORING WITH ETHERNET/IP CONNECTIVITY

Ethernet/IP communications make it easy for you to control and remotely monitor one or multiple drives simultaneously. OmniPulse DDC Series 2 gives you the flexibility to control your drive via Ethernet and remotely monitor your drive anytime, anywhere. This gives you complete control of the drives in your facility, along with easy access to real-time monitoring. The Ethernet/IP assembly and class objects are easy to understand and fully detailed in the technical manual.

24/7 SERVICE AND SUPPORT

OmniPulse DDC Series 2 is backed by superior application expertise and aftermarket support --available 24/7/365!

COMPACT, MODULAR DESIGN

- Nearly 50% smaller volume than typical contactor controls
- Eliminates the need for acceleration resistors and contactors, reducing space and weight on the crane
- Flexible construction offers easily accessible front wired components
- OmniPulse DDC Series 2 has the same footprint as previous models

FLEXIBILITY AND PERFORMANCE

- DataLogger monitors performance and keeps your system up and running:
  - Logs 5000 Run events, 400 Alarm events, and 400 Fault events
  - Monitors over 50 items (Amps, Volts, RPMs, hours, etc.)
- Diagnostic LEDs
- Optional closed loop with tachometer feedback - 0.1% speed regulation
- Programmable smooth acceleration and deceleration for repeatable speed control
- Numerous safety circuits provide maximum protection of personnel and components
- Solid-state design eliminates wearable parts and reduces maintenance time
- Programmable digital inputs for travel limits (slowdown and stop)
- Encoder feedback allows for electronically programmable limit switches (EPLS)

GENERAL SPECIFICATIONS

DESCRIPTION	SPECIFICATIONS
POWER	
Continuous Current Rating	67-2000 Amps (Down to 2.5 Amps with external CT board)
Input Voltage	200-320 VDC (low voltage), 360-600 VDC (high voltage) -20%/+10%
Current Overload Capability	150% for one minute, 200% for three seconds
Motor Circuit Standard Configurations	Single, duplex, or quadruplex
CONTROL	
Digital Inputs	(12) 24 VDC (standard) or (8) 230 VDC (optional)
Analog Inputs	(2) 0-10 VDC, -10 to 10 VDC, or 4-20 mA
Analog Outputs	(1) 0-10 VDC, -10 to 10 VDC, or 4-20 mA
Digital Outputs	(4) 120 VAC/30 VDC, 5A (standard) or (3) 230 VDC 1A (optional)
Communication Ports	RS-485 Modbus RTU, Ethernet/IP
PROTECTION	
Power Loss Capability	Up to one second ride-through, depending on load
Undervoltage/Overvoltage	Trip at 50%/135% Vin when >1 second, up to 420 V (low voltage) or 840 V (high voltage)
Motor Overload	Electronic timed overload protects the motor from overheating
Motor Continuity {Hoist Mode}	Motor connections are verified at the start of each run before brake is released
Emergency Power Loss Dynamic Braking	Standard for hoist applications; optional for traverse applications
Fuse	Control interface board; DC bus fuse on the drive
Motor Ground Fault Detection	Monitors the current output to the motor and can detect a ground fault based on the current flowing back to the drive. Trip level is hardware set and adjustable.
Charge Indicator	LED indicator on drive indicating a charged state of the DC bus capacitors
Drive Thermal	Heatsink over-temperature alarm and shutdown; drive enclosure over-temperature shutdown
Alarm and Fault History	Last 400 faults and alarms are stored
ENVIRONMENTAL	
Ambient Temperature Range	14°F to 149°F (-10°C to +65°C) enclosed in air handling system
Altitude	3300 feet (1000 meters) without derate; 9843 feet (3000 meters) max. with derate
Humidity	<90% non-condensing

IMPULSE®•LINK 5 PROFESSIONAL INTERACTIVE DRIVE SOFTWARE PACKAGE

IMPULSE•Link 5 Professional is a Windows-based drive software, which allows you to upload, download, and monitor parameters using a hard-wired cable connection via the serial port on the drive.

- Upload and download drive parameters
- Modify drive parameters
- Save or create new parameter files
- View and print detailed or compact drive parameters
- View complete parameter descriptions
- Monitor operation and drive status
- Compare drive parameter files to quickly identify differences
- Display all parameter values that have been modified from their factory defaults

OMNIPULSE DDC S2 OUTPERFORMS

	OMNIPULSE™ DDC SERIES 2 DIGITAL CRANE CONTROL	DCCP ELECTROMECHANICAL CRANE CONTROLS
SUPERIOR MOTOR SPEED AND TORQUE CONTROL		
Speed Transitions	Digital microprocessor control enables adjustable 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 even 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
MINIMIZE DOWNTIME AND IMPROVE SERVICEABILITY		
Programming Flexibility	Control firmware is capable of supporting various material handling applications. Remote monitor and parameter modifications can be made via IMPULSE•Link PC software	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, requiring intensive maintenance (A DDC drive can eliminate numerous contactors)
Spare Parts	Inventory minimized due to modular design, common PCB hardware, and universal firmware	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
REDUCE 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	Dynamic braking, which allows the brakes to set at low or zero speed, reduces 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 motor 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 with low-power diode rectifiers, recovers energy from the motor and returns it to the DC supply**	Substantial energy lost across resistors
IMPROVE SAFETY		
Continuity Check at Start	Verifies control of the load. In hoist applications, motor armature circuit is checked when raise/lower command is given, before brake is released	Requires an additional collector for redundancy; capable of checking for armature continuity
Motor Series and Field Loss Detection	Detection of a motor field loss 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	Will shut down and set the brake if DC power is lost while lowering the load	Load may continue lowering due to motor-regenerated power
Failsafe Pre-Charge Circuit Design	Unique to Magnetek DC drives. Eliminates the possibility of applying direct DC line voltage to the capacitor bank	Load may continue lowering due to motor-regenerated power
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 — contact us for more information.

COLUMBUS McKINNON
PARTNERS IN MOTION CONTROL

CRANE SOLUTIONS

STAHL CraneSystems · MAGNETEK · Yale · UNIFIED

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MH2486_OmniPulse DDC Series 2 Brochure
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