Electromotive Systems

IMPULSE G+/VG+ Series 3

Adjustable Frequency Crane Controls

Next Generation

MAGNETEK MATERIAL HANDLING

Electromotive Systems **Telemotive** **Mondel Engineering**

YOUR ONE-STOP SOURCE FOR MATERIAL HANDLING CONTROL SOLUTIONS

IMPULSE® G+/VG+ Series 3

Adjustable Frequency Crane Control

The next generation is here! Electromotive Systems' IMPULSE® Series 3 Crane Controls incorporate the latest in advanced control technology to maximize the performance and safety of your material handling system. Yet there's no need to learn complicated new programming. The Series 3 has been designed to mirror the programming of our IMPULSE Series 2 product line, making the move to Series 3 an easy transition.

With advanced technology and superior technical support, IMPULSE drives have long been the gold standard in crane controls for the material handling industry. Now these advanced safety and performance features make IMPULSE Series 3 drives even better:

- **Improved Keypad with Expanded Digital Display** — 5 lines of 16 characters makes it easier to navigate and read diagnostics.
- **Additional Alarm and Fault Codes** — make troubleshooting easier
- **Load Share** — allows you to run two motors on the same mechanical shaft
- **Snapped Shaft Detection** — improves safety by detecting a broken hoist shaft
- **Encoder Option Cards** — detect an improperly wired or failed encoder for added protection
- **Increased Current Carrying Capacities** — make for a more robust power section
- **One-Key Access** — simple one-key access to all parameters means no toggling between parameter types
- **Factory Default Setting Display** — every programming parameter now shows the factory default as a separate line included with the actual parameter setting
- **Smaller dimensional footprint** — allows it to easily fit into existing installations
- Surface mount technology
- Efficient 4th generation IGBT's

Plus, you still get the same great features you've come to rely on with our IMPULSE Series 2 drives, like:

- **Xpress Programming™** — allows programming initial setup in seconds
- **Safe Operating Windows™** — reduces the possibility of programming unsafe parameters
- **Load Check™** — reduces possibility of lifting an overload
- **Multi-level Password Protection** — limits unauthorized modification of drive parameters
- **Alarm and Fault Codes** — programmable alarm and fault codes are controlled by the same parameters as Series 2
- **IMPULSE•Link 4.1 Basic** — allows you to upload, download and monitor parameters to maximize the efficiency of your drive between your PC and your IMPULSE drives.
- **DataLogger® Data Collection Tool** — simplifies troubleshooting and provides detailed operational histories for preventive maintenance
- Compatible with Profibus, Modbus RTU, Modbus+, and Ethernet Communications
- Optional wireless communication packages for up to 31 drives (nodes) which allow operation monitoring, diagnostics and programming
- Custom software for bucket crane control and multiple hoist synchronization
- Additional custom software options available from our in-house software engineers

Keypad/Digital Display

Our improved keypad with an expanded digital display gives you 5 lines of 16 characters, making it easier to navigate and read diagnostics.

Allows for:

- Programming the various drive parameters
- Monitoring the functions of the drive
- Reading alpha-numeric fault-diagnostic indications
- Available in English, Spanish and French

The English readout makes programming, troubleshooting and diagnostics easy.

Capabilities

	IMPULSE® G+ Series 3 Adjustable Frequency/Open Loop Vector Controls	IMPULSE® VG+ Series 3 Flux Vector Controls
Ratings	200-240 VAC, 7 to 346 AMP (1 to 125 HP) 380-460 VAC, 2.1 to 590 AMP (1 to 500 HP)	200-240 VAC, 7 to 346 AMP (1 to 125 HP) 380-460 VAC, 2.1 to 590 AMP (1 to 500 HP)
Class of Service	CMAA Class A-F Service AISE TR6 Class 1 to 4 ASME HST–4M H1 to H5	CMAA Class A-F Service AISE TR6 Class 1 to 4 ASME HST–4M H1 to H5
Speed Range	40:1 in V/F 100:1 in Open Loop Vector	1000:1
Speed Control Methods	Up to 6 Distinct Speeds 2-Step Infinitely Variable 3-Step Infinitely Variable Analog Signal (0-10 VDC, 4–20 mA, ±10 VDC)	Up to 6 Distinct Speeds 2-Step Infinitely Variable 3-Step Infinitely Variable Analog Signal (0–10 VDC, 4–20 mA, ±10 VDC)
Programmable Terminals	8 Inputs, 6 Programmable—Standard (4 Additional Inputs Available) 2 Programmable Analog Outputs 3-Digital Outputs—Standard (8 Additional Outputs Available)	8 Inputs, 6 Programmable—Standard (4 Additional Inputs Available) 2 Programmable Analog Outputs 3-Digital Outputs—Standard (8 Additional Outputs Available)
Applications	Traverse Motions Worm Gear and Mechanical Load Brake Hoists	Traverse Motions Non-Mechanical Load Brake Hoists

For wiring diagrams, drive ratings and dimensions, please refer to the S3TECH Data Sheet

	Features	Benefits	IMPULSE Series 2	IMPULSE Series 3
Safety	Brake Test* — ***NEW***	Allows testing of available brake torque		✓
	Encoder Loss Detection* — ***NEW***	Signal loss detection at all times		✓
	Snapped Shaft Detection* — ***NEW***	Detects a broken coupling or shaft		✓
	Slack Cable Detection*	Identifies a slack cable condition and provides a selectable response (stop, slow down, alarm)	✓	✓
	Roll Back Detection*/Torque Proving at Start*/Brake Check at Stop*	Drive monitors brake functionality at start and stop	✓	✓
	Safe Operating Windows	Reduces the possibility of programming unsafe parameters	✓	✓
	Load Check™	Reduces the possibility of lifting an overload	✓	✓
	Quick Stop™	Reduces the possibility of crane collision	✓	✓
	Multi-Level Password Protection	Limits unauthorized modification of drive parameters	✓	✓
	Phase Loss Detection	In case of output phase loss, brake will set immediately, retaining load	✓	✓
	Control Interface	120V optically isolated-standard (Other voltages available as option)	✓	✓
	UL/cUL Rated	Tested and listed by Underwriters Laboratory	✓	✓
	Ground Fault Short Circuit Protection	Reduces damages to motor and drive	✓	✓
Performance	Indexing* — ***NEW***	Allows precise programmed motor movement		✓
	Loadshare* — ***NEW***	Allows use of two or more motors on the same drive shaft		✓
	Hook Height Measurement* — ***NEW***	Uses encoder signal to determine hook height from calibrated position		✓
	Motor Lead Reversal — ***NEW***	Electronically swaps motor leads for reverse operation		✓
	Keypad Copy — ***NEW***	Copy, store and write parameters from keypad		✓
	Communication — ***NEW***	Built-in RS485 communication		✓
	Static Auto Tune — ***NEW***	Allows auto tune without mechanical disconnection		✓
	Enhanced Keypad Display — ***NEW***	Easier to navigate and read diagnostics		✓
	Load Float™*	Allows a load to be held aloft at zero speed without setting the electric brake	✓	✓
	Weight Calculation*	Enables load weight to be calculated with an accuracy of ±5% of full load (0-10VD C Output)	✓	✓
	X-Press Programming™	Allows programming initial setup in seconds	✓	✓
	Swift-Lift™/Ultra-Lift™	Allows overspeeding with light loads or empty hook	✓	✓
	Reverse Plug Simulation™	Allows operator to smoothly and quickly stop and change directions without setting brake	✓	✓
	Stall Prevention	Extends acceleration time and prevents the motor torque limits from being exceeded	✓	✓
	Micro-Positioning™	Allows operator to make precise, slow moves	✓	✓
	Torque Limit at Accel/Deceleration	Allows for load dependent acceleration or deceleration	✓	✓
	Multi-Function Input Terminals	For end of travel/slow down. Limits stops or other options	✓	✓
	Flash ROM	Stores last four fault occurrences, even after power-down, for diagnostic purposes	✓	✓
	Elapsed Time Counter	Indicates actual time of operation (power on or run time)	✓	✓
	Hoist Synchronization*	Synchronize up to 8 motors in master-slave configuration	✓	✓
Reliability	Fault Storage — ***NEW***	Stores the last ten faults with trace data		✓
	Maintenance Timer — ***NEW***	Alerts operator when maintenance is required		✓
	Programmable Fan — ***NEW***	Cooling fan on/off control for longer life		✓
	Ambient Compensated Overload — ***NEW***	High ambient motor protection		✓
	Increased Drive Output Current Ratings — ***NEW***	Robust Power Section		✓
	Built-in Auto Tune	To maximize performance and life of motor	✓	✓
	Serial Communication	Provides reliable digital linkage among various crane system peripherals, including Modbus, Modbus+, Profibus and Ethernet	✓	✓
	Operation/Fault Display	Simplifies setup and troubleshooting	✓	✓

*Features only on VG+ Crane Controls

Magnetek's Superior Aftermarket Support

IMPULSE® Series 3 drives are backed by Electromotive Systems' unsurpassed aftermarket support:

- Two-year Warranty — unsurpassed in the industry!
- Highly trained team of Service Technicians
- 24-hour on-call service
- On-site technical support available
- Emergency crane control replacement
- On-site and in-house training program

MAGNETEK *Unsurpassed Service*

Options & Accessories

Custom Software

Electromotive Systems' Engineering Group can furnish custom drive software to meet your unique application requirements. Please consult factory.

DataLogger

Designed to simplify troubleshooting and gather information for preventive maintenance, the DataLogger is a recording device for IMPULSE Series 3 Crane Controls. This user-friendly device simply plugs into the keypad pocket of the drive and allows operators to easily access the run, alarm and fault histories. It includes enough memory to log the last 1400 drive run events and the last 400 alarm and fault events. A trace function is provided for viewing drive data that occurred prior to the alarm/fault condition.

Various screens on the DataLogger are completely intuitive.

IMPULSE•Link 4.1 Wireless Diagnostic System

Bridging the gap between your facility's IMPULSE Series 3 Crane Controls and Ethernet network

Designed to enhance productivity by allowing you to efficiently program, monitor and troubleshoot your IMPULSE Series 3 Crane Controls from a remote location.

IMPULSE•Link 4.1 WDS is a Windows-based, interactive drive software and hardware package that allows you to:

- Monitor drive parameters and status
- Modify and upload/download parameters
- Reset faults remotely
- Log fault, alarm and run events with DataLogger function

IMPULSE•Link 4.1 Basic

Your 1-to-1 link between your PC and your IMPULSE Series 3 drives

Designed to communicate with IMPULSE Series 3 Crane Controls, IMPULSE Link 4.1 Basic is a Windows-based interactive software package. This user-friendly software allows you to:

- Upload and download drive parameters
- Adjust drive parameters online or offline
- View and print drive parameters
- View complete parameter descriptions
- Compare drive parameters

Complete Control Panels

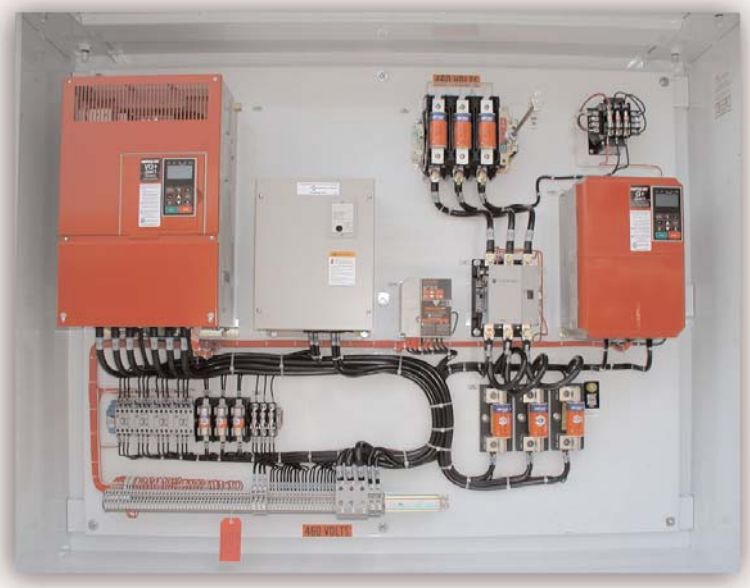
IMPULSE pre-engineered control panels are the perfect companion to Electromotive Black Max motors, particularly when short deliveries are required.

Pre-Engineered Panels

IMPULSE•G+ Series 3 and IMPULSE•VG+ Series 3 drives can be purchased as part of a complete, pre-engineered Motor Control System. These quick-ship, easy-to-install panels offer cost-effective and reliable operation using high quality components. Available in 1 to 30 HP at 230V and 1-60 HP at 460V, all panels are tested and quality-approved prior to shipment.

Standard Features Include:

- 120 Volt control voltage interface card
- Brake contactor
- Branch fusing
- Built-in electronic motor thermal overload protection
- Dynamic braking resistor(s)
- All wiring to a single terminal strip
- Clearly marked wires (at both ends)
- Basic wiring diagram
- NEMA 12 enclosure



This three-motion control panel features an IMPULSE VG+ Series 3 Crane Control on the hoist, IMPULSE G+ Series 3 control on the bridge and an IMPULSE P3 Series 2 control on the trolley motion.

Custom Panels

Custom Control Panels with IMPULSE Series 3 Crane Controls provide the ultimate solution for overhead material handling. Built and designed to your specifications, these panels include all the standard features plus a wide variety of other control options. In addition, our seasoned engineering staff can provide technical support and extensive overhead material handling expertise when quoting your project.

Specification	Specification Value and Information for All IMPULSE G+/VG+ Series 3 Models
Certification	UL, cUL (CE available upon request)
Rated input power supply volts & freq	3-phase 200-240 or 380-480 VAC; 50 or 60 Hz
Allowable input voltage fluctuation	+10% or -15% of nominal
Allowable input frequency fluctuation	±5% of nominal
Control method	Fully digital; sine-wave, pulse-width-modulated
Maximum output voltage (VAC)	Max output voltage 3-phase, 200/208/220/230/240V; 380/400/415/440/460/480V (proportional to input voltage)
Rated frequency (Hz)	0 to 150 Hz (consult factory for applications over 150 Hz)
Output frequency accuracy	.01%—with digital reference command, -10° to 40° C; .1%—with analog reference command; 10 bits/10V; 25° C, ±10°C
Frequency reference resolution	Digital: .01 Hz; analog: .03 Hz (at 60 Hz)
Output frequency resolution	.01 Hz
Overload capacity	150% of rated load for 1 minute
Remote frequency reference sources	0-10VDC (20kW); 4-20mA (250W); ±10VDC; serial (RS-485)
Accel/decel times	0.1 to 25.5 sec—4 sets; 8 parameters are independently adjustable
Braking torque	150% or more with dynamic braking (optional)
Motor overload protection	Electronic thermal overload relay; field programmable
Overcurrent protection level (OC)	200% of rated current
Circuit protection	Ground fault and blown-fuse protection
Overvoltage protection level	410/820VDC
Undervoltage protection level	190/380VDC
Heatsink over temperature	Thermostat trips at 105° C
Torque limit selection	Separate functions for FORWARD, REVERSE, REGEN; all selectable from 0-300%
Stall prevention	Separate functions for accel, at-speed and constant horsepower region
Other protection features	Speed deviation, overspeed, mechanical brake failure, lost output phase, failed-oscillator, PG-disconnect, mechanical overload, roll-back detection and internal braking transistor failure
DC bus voltage indication	Charge LED is on until DC bus voltage drops below 50VDC
Location	Indoors; requires protection from moisture, corrosive gases and liquids
Ambient operating temperature	14° to 113° F (-10° to 45° C) for open chassis
Storage temperature	-4° to 140° F (-20° to 60° C)
Humidity	95% relative; noncondensing
Vibration	1 G less than 20 Hz; 0.2 G for 20-50 Hz
Elevation	3300 ft. (1000m) or less

MAGNETEK MATERIAL HANDLING

Electromotive Systems **Telemotive** **Mondel Engineering**

YOUR ONE-STOP SOURCE FOR MATERIAL HANDLING CONTROL SOLUTIONS

Engineered Systems & Solutions
Project Evaluation
Application Solutions
Engineering Design
PLC/PC Program Development
System Manufacturing
Project Management
Installation Assistance
Field Startup and Test
Customer Training
Maintenance Support

IMPULSE® AC Adjustable Frequency Drives
230, 460 and 575 Volt Power Platforms
.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

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® — 90, 110, 250, 350 Amps
ELECTROBAR® FS — 90, 125, 250, 400 Amps
ELECTROBAR® ELITE — 60, 100, 130, 200 Amps
ELECTROBAR® HX — 400, 700, 1000, 1500 Amps
FABA® Conductor Bar Systems — 100 Amps

ELECTROMOTIVE™ Festooning Systems
Standard Duty
Heavy Duty
Mill Duty

SBP® & SBP2® Pendant Push Button Stations
Standard 2 through 12 Button Stations
Custom Configured Stations

Radio Remote Control Systems
Pre-Engineered Radio Control Systems
- MLTX™
- SLTX™
- JLTX™
- *tele*Pilot™
- *tele*Pendant™
- Pendant Style

Engineered Radio Control Systems
- MLTX™
- SLTX™
- JLTX™
- Locomotive Control Systems

Collision Avoidance Systems
Laser Guard®
Reflx®

Brakes
200S Industrial Shoe Brakes
- 4–19 In. Diameter
- 6–2,650 Lb. Ft. Torque
- AC, DC, Hydraulic Actuators
- AC Explosion Proof Actuators

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

400D Heavy Duty Disc Brakes
- 8–50 In. 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)

Brake Kit
- Remote Air/Hydraulic Bridge Brake Conversion Kit

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