

PRODUCT CATALOG



A DRIVING FORCE IN POWER

About Us...

Saminco has been a leader in the underground mining industry since 1992. We supply traction drives and accessories to the coal and hard rock industries, specializing in electric traction control. As the industry has become more sensitive to reducing diesel emissions in the closed mine atmosphere, we have risen to the forefront with our battery systems. We deliver directly to the mine owner who needs to refurbish and update vehicles, or to small and large OEMs looking for electrical systems for new or refurbished vehicles. Our systems are designed to work with most motors, and custom engineering is available when needed. We will supply the electric drives, paneling work and motors required for your project, with many of our products meeting or exceeding MSHA requirements. Purchase and install your system or let us do the full install for you.

We have multiple locations to serve you, from our headquarters and production facility in Fort Myers, FL, to our Service/ Panel Shop in Huntington, WV. We also offer service/repairs from additional sites in South Carolina and Colorado. In 2011 we went global, opening up our Saminco SA branch in Johannesburg, South Africa.



Our Fort Myers location includes the main facility for R&D, production and testing (the light gray building) as well as our testing yard in the background with the white structures and test hill .



Our Huntington, WV facility includes our panel shop, rebuild /repair workshop, and motor warehouse.



Saminco Fort Myers proving ground with mining equipment.



Our South Africa facility located in Johannesburg.

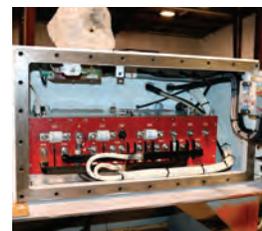
The Saminco Mission

“To create delighted customers by providing exceptional products and services.”

This is our promise to you. Everything we do is to provide products that are built with quality design and engineering, with exacting workmanship and testing, and delivered in a timely manner. We are a small company with a big promise.



CEO and owner, Bonne Posma stands by our Mission Statement.



Our Philosophy

We believe in constant improvement. Research and Development in new products is as important as constantly looking for ways to improve our current product lines. We have the latest technology in auto cad design, and use on-site or qualified testing facilities for shock/vibration as well as thermal testing. Our proving grounds, which include a hill with a 18° slope track and various mining vehicles, give us the opportunity to put our equipment to extreme tests. Our team of engineers are well trained with diversified backgrounds and abilities, and are available for consultations if needed.

All of our products for underground coal mining are MSHA approved. Many of our products are also approved by the Bureau of Mine Safety for Pennsylvania DEP. Contact your Saminco representative for specific product information.

Training is available on-site or at our facilities. Our goal is to get you up and running as quickly as possible. Training materials and user manuals are available.

Our Florida headquarters and manufacturing facility is ISO 9001:2015 certified for Quality Management System in the design and manufacture of electric traction drives and battery chargers for the mining and rail industry. This is our ongoing commitment to our customers to continually improve the processes that bring quality products to the market.

Applications

Underground Mining Vehicles

- Battery LHD Systems
- Shuttle Car Systems
- Rail Systems
- Scoop Systems
- Battery & Shield Hauler Systems
- Jumbo Drill Systems
- Rubber Tire Man Carriers
- Continuous Miner Systems
- Shearers & Roadheaders

Feeder Breakers

Conveyors

Highwall Miners

Industrial Controls

- Pumping & Irrigation
- Material Handling
- Fan & Ventilation
- Crushing

Our Locations



 Headquarters
Fort Myers, FL

 Service Branch
Huntington, WV

 Service Branch
Anderson, SC

 Service Branch
Cedaredge, CO

Our Florida Headquarters and Manufacturing Facility is ISO 9001:2015 Certified

ISO 9001:2015
CERTIFIED COMPANY

 **PRI Registrar**
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Our Partners

NAUTITECH

YASKAWA



A few of our accomplishments

Over 13,000 Electric Traction Drives sold since 1992!



1998
A750 120V DC Controller
Introduced for scoops and coal haulers, and still working in the field today.



1999
N10 240V AC/DC Drive
Introduced the shuttle car tram controller with regenerative braking.



2000
N7 550V AC/DC Drive
Introduced for shuttle cars, continuous miners and shearer haulage drives.



2001
A400 DC Traction System
Introduced in 2001, we delivered our 400th A400 DC traction system for shuttle cars in 2005.



2002
A375 DC/DC 375A Controller
Introduced the A375 dual motor output shuttle car tram controller.



2003
JD400 240V -550V AC Digital Drive
One of our most popular products still used in shuttle cars and continuous miners.



2005
Q750 120V DC Drive
Our compact digital DC/DC drive is still used in scoops today.



2005
Q800 Digital System
For mining locomotives, this system, still used today, is for single or dual motor use, 128V or 240V DC/DC systems.



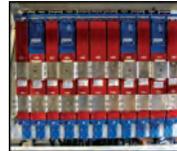
2006
A777 / FC1200 DC System
Introduced the 180V - 340V DC system for scoops and shuttle cars.



2007
VF1-75 550V DC/AC VFD System
Introduced the DC to AC shuttle car system.



2008
120V/ 240V/ 320V Battery AC System
Introduced first battery powered AC system for LHDs and scoops in hard rock mining.



2009
VX1 Modular 999V AC VFD System
Introduced for ventilation fans, conveyors and feeder breakers.



2010
Diesel Electric 440V - 550V AC/AC VFD
Introduced for shuttle cars using AC motors.



2012
JR1000 1000V AC Inverter System
Introduced for continuous miners, shuttle cars and feeder breakers.



2015
Pure Electric eLHD 630V System
Developed the first of its kind with Smart Battery (Sodium Nickel) and charger for hard rock mining.



2016
Add-ON Battery Charger
Dual purpose for 128V batteries with single or dual connections.



2017
eLHD System with Smart Battery
Introduced the hydrostatic electric eLHD system with Smart Battery.



2018
VF6-110 620V DC/AC VFD Battery System
Developed for jumbo drills.



2020
VFD-3 550V DC/AC System
Inverter functions for traction, pump or convey, using CAN bus communications and includes a 24V power supply.

VFD Drive Systems

Pages 6 - 23

DC to AC VFD

- VF Series Systems (Battery)
- VF Series Systems (Cable)
- VF1 Series (128V Battery)
- VF2 Series (240V Battery)
- VF Series (Rail)

AC to AC VFD (Rectified)

- VFD-3 System (Rectified - Cable)
- VF1-75 System (Rectified - Cable)
- Hermes Traction Inverter
- JR1000 System

DC Drive Systems

Pages 24 - 30

AC to DC

- JD400 System

DC to DC

- Q800 Systems
- Q750 Systems
- A777 System

Motors

Pages 31 - 34

- InWheel Motors
- Traction Motors
- Pump Motors
- Conveyor Motors

Mining System Accessories

Pages 35 - 55

- Master Control Modules
- Displays
- Handheld Programmer
- Switches
- Light Supply
- Pump Starters
- Down Chopper
- Inductor

- Capacitor Bank
- Brake Modules
- Battery Chargers
- Ground Fault / Cable Break Detection
- EMI Filters
- Radio Control Systems
- Vehicle Control Systems

Services & Partner Products

Pages 56 - 57

- ELITE Rebuild / Refurbish Installations
- Product Partner: Nautitech Mining Systems
- System Integrator: FZSoNick Battery Systems

Industrial Controls

Pages 58 - 60

- Pumping & Irrigation
- Material Handling
- Fan & Ventilation
- Crushing

- VFD Controllers
- Soft Starters
- VX2 (AC to AC rectified)
- Product Partners and Providers

VFD-3 System

Applications:

- Shuttle Cars

This system is comprised of standard inverters capable of functioning as traction, pump, or conveyor drives when paired with the VCU (Vehicle Control Unit), and includes a 24V power supply, a soft charge with EMC filter, upgraded CAN foot switch and CAN conveyor switch.

Specific drive functionality is determined by parameter setup on the VCU, allowing full function flexibility. Control Command uses SamCANII command messaging and hardware I/O control.

The VFD-3 system is a drop-in replacement for the VF1-75 drive system, using the same or similar power components.

Features

- All drives are identical and interchangeable (spares can be used in any position: pump, motor 1, motor 2, conveyor).
- Installation is simplified with high power pre-wired in the back of the XP enclosure, and low voltage kept in the front. A hinged back panel assembly holds the heavy wire connections and the inverter is slid into it.
- Power and control are separated for better signal isolation and noise immunity.
- Control voltages are consolidated to a single 24V DC supply.
- Control and communications are simplified by daisy chain connections across the front.
- Lower drive profile allows for more enclosure space.
- Soft-charge module is incorporated within the EMC filter assembly for easy access.
- Auto tune is based on nameplate information.
- Volts to Hertz, torque control, speed control, encoder feedback and sensor-less control methods are all supported.
- Flying Start is in both sensor-less control and Volts to Hertz control methods, including opposite direction restart.
- DC injection braking.
- Dynamic braking capability with programmable I/O to disable regeneration.
- Drive addressing has been expanded up to 13 devices using easily accessible selector switch located on the front of each module.
- ETM is enhanced with date and time stamp event log.
- All circuits leaving the XP enclosure have been designed to meet MSHA 30 CFR § 18.51 (a), to eliminate most, if not all, external fuse blocks for control wiring.

VFD-3 Inverter
Part # A801244



VCU Interface Module
Part # A801245



Electrical Specifications

Specifications	VFD-3 Inverter (IP00)		VCU Interface Module (IP00)		Power Supply (IP00)	
	Rectified Input (DC)	Output (AC)	Rectified Input (DC)	Output (AC)	Rectified Input (DC)	Output (AC)
Rated Power @ Rated Volts	72kW @ 550V	75kVA @ 440V	-	-	1.13kW @ 650V	1.04kW @ 26V
Frequency Range	DC	0 - 125 Hz	-	-	DC	DC
Voltage Range	500 - 750V	0 - 525V	-	-	450 - 1000V	26V DC
Amps @ Rated Power	110A	100A (250A peak)	-	-	1.75A @ 1.13kW	40A @ 1.04kW
Dimensions (H x W x D)	208mm x 198mm x 336mm (8.2" x 7.8" x 13.2")		97mm x 147mm x 239mm (3.8" x 5.8" x 9.4")		141mm x 206mm x 309mm (5.6" x 8.1" x 12.2")	
Weight	12.7kg (28 lbs)		2.7 kg (6 lbs)		8.2kg (18 lbs)	

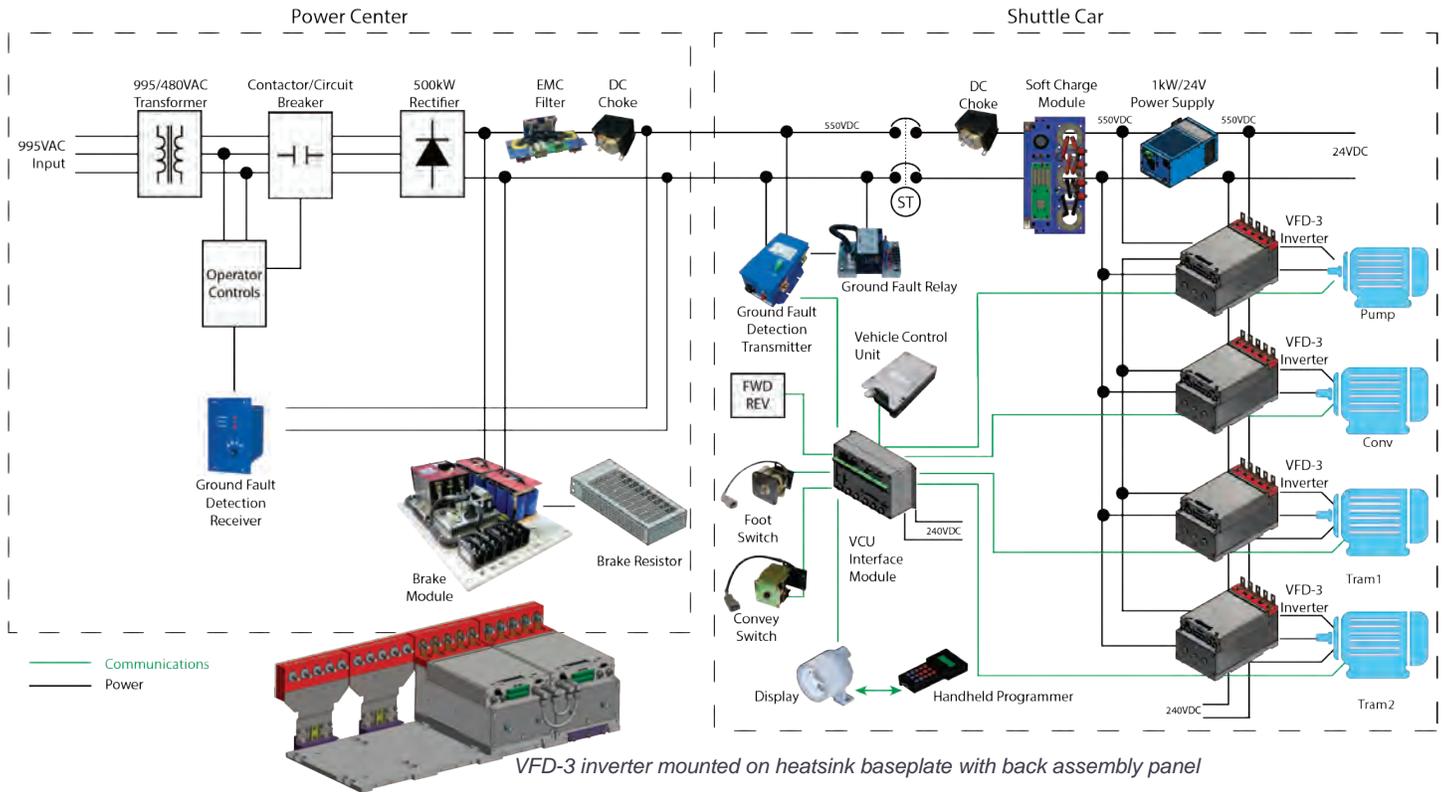
For additional information on other parts in the VFD-3 System:
Soft Charge with EMC Filter page 44
24V Power Supply page 42
CAN Foot Switch and CAN Conveyor Switch page 39

Environmental Specifications (IP00)

Description	Specifications
Ambient Operating Temperature	-20°C (no frost) to +50°C (-4°F to 122°F)
Relative Humidity	100% non-condensing
Altitude	3300 feet (1000 meters) - de-rate above 3000 meters



Sample Diagram of Shuttle Car



Options for the VFD-3 System

Part Name	Description	Part Number
VFD-3 Inverter	Rectified DC / AC inverter for traction, pumps, conveyors	A801244
VCU IF Module	Vehicle Control Unit Interface Module	A801245
VCU	Vehicle Control Unit	A801248-A
Soft Charge	VFD-3 Soft Charge Module and EMC Filter	A801246
Power Supply	24V Mining Voltage Power Supply	A801243
VFD-3 Back Panel Assembly	Hinged back panel for inverter insertion	A801247
Baseplate	Heatsink baseplate for 4 drives	Y905441
GFM Tone Generator	Ground Fault Module Tone Generator	A800390
GFM Diode Circuit	Ground Fault Module Diode Circuit	A800203
Diagnostic Display	With programming port	A800348
Handheld Programmer	Allows setting and viewing of system parameters and logs	A800220-1
Foot Switch	CAN Foot Switch Rotary Hall	A801260
Convey Switch	CAN Convey switch Rotary Hall	A801259
DC Choke	Choke DC .5mh 150 AMP with NOMEX	I9001-050
Flash Drive	8GB USB Flash Drive	U1002-001
VCU Cable Assembly	Assembly Cable for Vehicle Control Unit	W6004-083
Antenna Cable	Antenna Cable N-Male and N-Female	W6004-463
Antenna	WiFi 2.4GHz N-Male TC1	A801237
Motor and Encoder Parts (see page 32 for more information)		
Tram Motor	XV55 - 1000Nm XP torque tram motor	M6005-010
<i>Additional XP and non-XP motors are available. Please see your salesperson for all available options.</i>		
Motor Encoder Assembly	Contains encoder and wheel	M6006-020
Encoder	Encoder sensor	M6006-023
256 Magnetic Wheel	For use with the ST50 sensor head (<i>more bore sizes available- see Saminco rep</i>)	M6006-021
Encoder Backplate	Universal backplate	M6006-022

****Partial list shown. Please see your salesperson for all available options and configurations**

VF Series DC/AC VFD Battery System

Saminco Pure Electric System

Applications:

- LHDs
- Jumbo Drills
- Rubber Tire Man Carriers

Advantages

- Separate tramping and hydraulic pump functions
- Reduces idling energy consumption rate to less than 2kW.
- Produces less heat than competitor's single motor drives.
- Allows for optimum hydraulic pressure under demanding mucking conditions without affecting tramping motor operation.
- Hydraulic pump RPM is reduced during idling and tramping under light hydraulic duty to reduce energy consumption.
- Rugged copper-barred rotor induction motor for tramping is capable of providing 3x rated torque to provide adequate torque at all speeds without requiring a torque converter or gearbox.
- Turbo Torque™ feature provides controlled force minimizing tire spinning.
- Rugged, short circuit proof power circuit provides excellent long term reliability.
- Whisper Pump™ feature reduces machine noise levels to below 85dB and reduces hydraulic fluid temperature to prolong hydraulic hose life. Decibel levels reduced during idle periods, extending exposure time.

Features

- Battery system with regenerative drive and pre-charge/ pump starter.
- Proximity ready
- Variable speed and reversible control
- Multiple control options: standard analog foot switch, radio remote control, master control module
- Tram Controller
 - Flux Vector torque control provides differential traction control for superb cornering.
 - PWM Flux Vector inverter
 - Pre-Charge / Pump Controller
 - Dual function: soft charge of 650V DC power bus DC Bus by-pass contactor or pump motor soft start inverter 25kW @ 460V AC programmable pump motor current limit setting.



Battery Management System

Able to monitor battery levels from display
"Low Battery" warning allows for:

- Automatic slow down of some functions
- Torque retained, speed reduced to conserve energy
- Enables vehicle limited time to return to power center for recharging.

Available batteries:

- FZSoNik molten salt battery
- Spear® Power Bore™ Lithium Battery
- Other batteries: Contact Saminco for additional options.

VF6-75
Part # A800374M



VF6-110
Part # A801118



Environmental Specifications

Description	Specifications
Ambient Operating Temperature	-10°C (no frost) to + 50°C (14°F to 122°F)
Storage Temperature	-40°C to +60°C (-40°F to 140°F)
Relative Humidity	<90% No Condensation
Altitude	3300 Feet (1000 meters) - de-rate above 3000 meters.

Dimensions (IP00)

Height	210mm (8.25")
Width	203mm (8")
Depth	356mm (14")
Weight	14.5 kg (32 lbs)

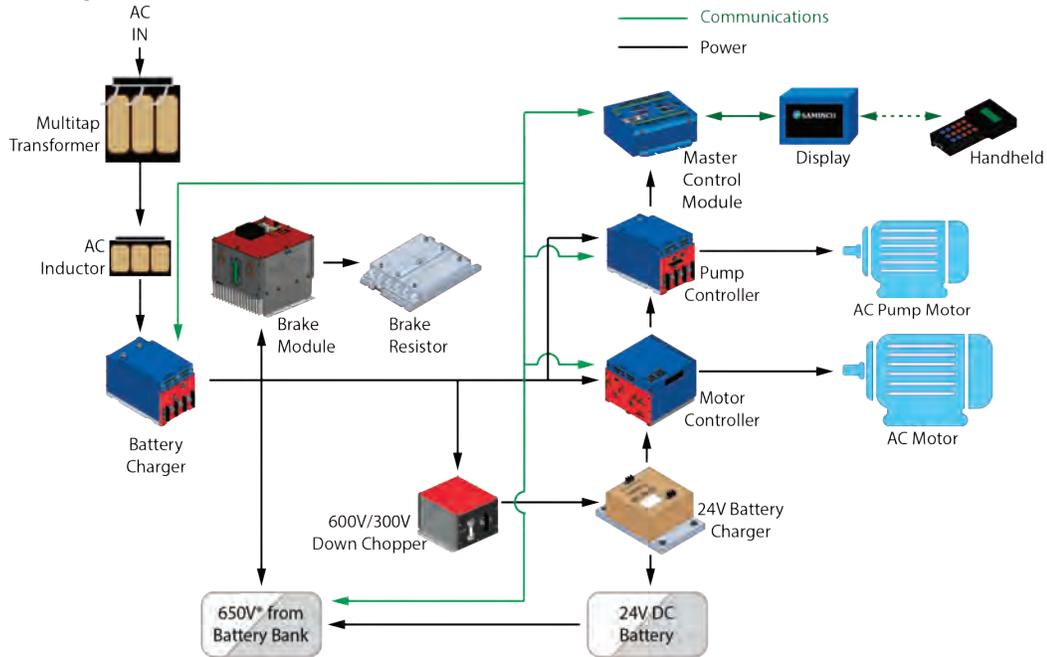
Dimensions (IP00)

Height	249mm (9.8")
Width	330mm (13")
Depth	378mm (14.9")
Weight	21kg (46 lbs)

Electrical Specifications

Specifications	VF6-75 Motor Controller		VF6-110 Motor Controller		Pump Controller	
	Rectified Input (DC)	Output (AC)	Rectified Input (DC)	Output (AC)	Rectified Input (DC)	Output (AC)
Rated Power @ Rated Volts	72kW @ 650V	75kVA @ 440V	130kW @ 650V	150kVA @ 440V	98kW @ 650V	39kVA @ 460V
Frequency Range	DC	0 - 125 Hz	DC	0 - 120 Hz	DC	0 - 125 Hz
Voltage Range	500 - 750V	0 - 525V	500 - 750V	0 to V in x 0.7	500 - 750V	0 - 525V
Amps @ Rated Power	110A	100A (250A peak)	200A	200A (600A peak)	150A	50A (125A peak)

Sample Diagram of LHD or Mining Truck



Options for the VF DC/AC VFD Battery System

Part Name	Description	Part Number
VF6-75 Motor Controller	Traction Drive	A800374M
VF6-110 Motor Controller	Traction Drive	A801118
Pre-Charge / Pump Start	VFD Precharge / Pump Controller	A800376M
Down Chopper	600V DC to 300V DC Down Chopper	A800381
VFD Master Control Module	Master Control Module	A800368
VFD Installation Kit	Installation kit	A800383
Battery Charger	300V DC in, 28V DC 17.8A out	A800329
LU300b	12V DC 300W Light Supply, 90V to 360V DC input	A800966
Diagnostic Display	With programming port	A800348
Handheld Programmer	Allows setting and viewing of system parameters and logs	A800220-1
Foot Switch	FS400 foot switch assembly	A800498
Capacitor Bank	1620µF / 1200V	A800499
Contactors	225A/750V DC 24V Coil	K9009-056
DCCT	1000A Hall Effect +15V	T9003-018
DCCT Cable	BDI	W6004-188
Cable	25Con Sub-D right angle 36"	W6004-281
TC3 Radio Control System	MSHA APPROVED (see page 54 for more information)	
Docking Station	TC3-LHD docking station	A700108
Charger	TC3-LHD charger	A700108
Remote Control	TC3-LHD handheld radio transmitter	A700109
Antenna	900M Hz mine duty antenna	A700118
Relay Receiver	RVU AGS ready relay receiver	A700114
Motor and Encoder Parts (see page 32 for more information)		
Tram Motor	XV55 - 1000Nm XP torque tram motor	M6005-010
<i>Additional XP and non-XP motors are available. Please see your salesperson for all available options.</i>		
Motor Encoder Assembly	Contains encoder and wheel	M6006-020
Encoder	Encoder sensor	M6006-023
256 Magnetic Wheel	For use with the ST50 sensor head (more bore sizes available- see Saminco rep)	M6006-021
Encoder Backplate	Universal backplate	M6006-022

****Partial list shown. Please see your salesperson for all available options and configurations**

VF1-75 DC/AC VFD System

Applications:

- Shuttle Car

Description

This is a 550V DC/AC VFD System for shuttle cars using AC motors and is powered via cable from a power center.

Features

Tram and Conveyor Drive:

- Regenerative drive
- PWM Flux Vector inverter
- Flux Vector torque control provides differential traction control for superb cornering.
- Rugged, short circuit proof power circuit provides excellent long term reliability.
- Multiple control options: standard analog foot switch, radio remote control, operator station
- Proximity ready

Pre-charge / Pump Start Controller

- Dual Function:
 - Soft charge of 550V DC power Bus DC Bus by-pass contactor
 - Pump motor soft start inverter 25kW @ 460V AC programmable pump motor current limit setting

Ground Fault and Cable Break Detection System

Removes high voltage from DC trailing cable.

For more information, see page 53.

Shuttle Car Controller Advantages

- Less heat in XP box
- No front end losses
- System programming via port in display - no need to open XP enclosure

Performance Advantages

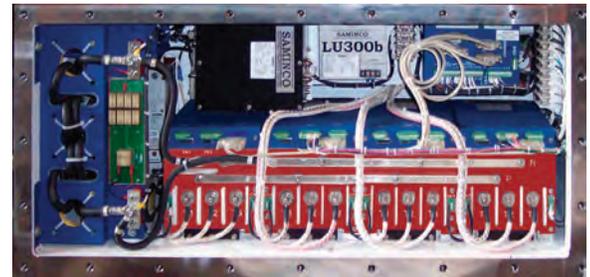
- Load sharing tram motors
- Smooth and reliable electrical braking
- Variable speed / reversible conveyor control
- Approximately two times more power can be delivered to the shuttle car via the 550V DC cable.

Safety Advantages

- Detects trailing cable faults
- No live open wires on ground with cut cable
- Motor and drive ground faults detected immediately
- Power center instantly shuts down in case of cable break

Trailing Cable Advantages

- DC cable is more reliable
- Can get more cable on the reel
- DC cable quicker and easier to troubleshoot and repair
- Longer lengths allowed by MSHA - 850 feet of #2/0 is common
- Less trailing cable heat - up to 75% less heat than 250V DC trailing cables



System setup in explosion proof box.

Tram Drive
Part # A800374



Pre-charge/ Pump Start
Controller
Part # A800376

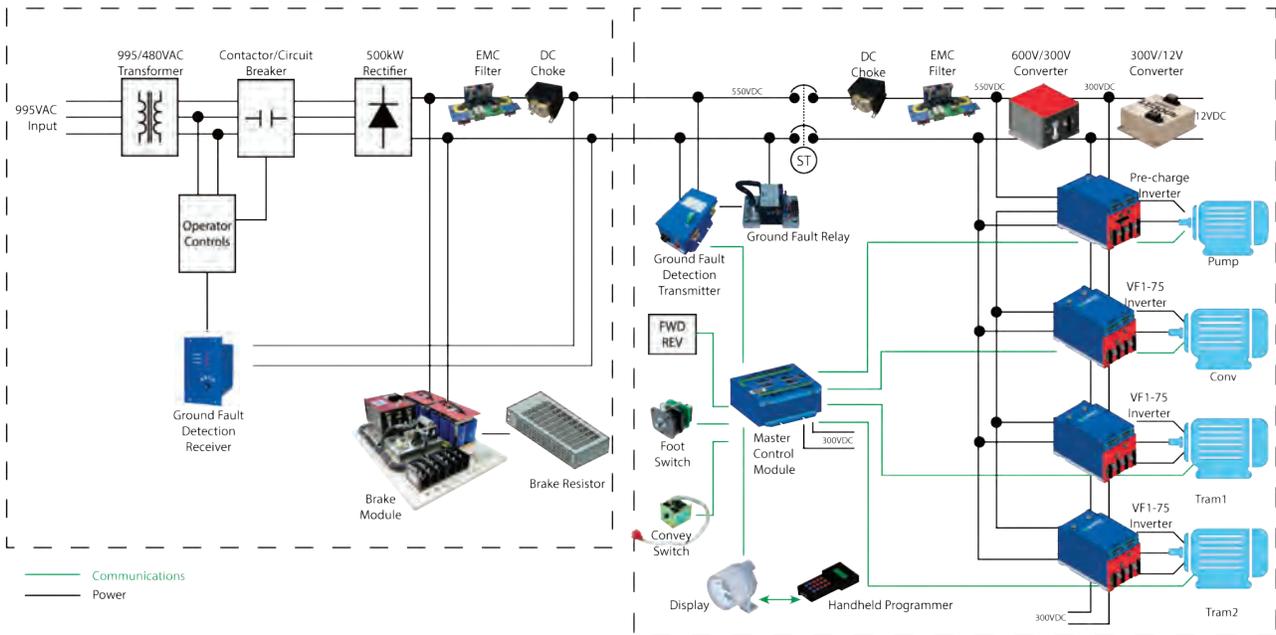


Environmental Specifications	
Description	Specifications
Ambient Operating Temperature	-10°C (no frost) to +50°C (14°F to 122°F)
Storage Temperature	-40°C to +60°C (-40°F to 140°F)
Relative Humidity	<90% No Condensation
Altitude	3300 Feet (1000 meters) - de-rate above 3000 meters.

Electrical Specifications

Specifications	Tram Drive		Pre-charge/ Pump Starter Inverter	
	Rectified Input (DC)	Output (AC)	Rectified Input (DC)	Output (AC)
Rated Power @ Rated Volts	72kW @ 650V	75kVA @ 440V	98kW @ 650V	39kVA @ 460V
Frequency Range	DC	0 - 125 Hz	DC	0 - 125 Hz
Voltage Range	500 - 750V	0 - 525V	500 - 750V	0 - 525V
Amps @ Rated Power	110A	100A (250A peak)	150A	50A (125A peak)

VF1-75 DC/AC System Diagram for Shuttle Cars
Power Center



Options for the VF1-75 DC/AC VFD Battery System

Part Name	Description	Part Number
VF1-75 Motor Controller	Traction Drive	A800374
Pre-Charge / Pump Start Inverter	VFD Precharge / Pump	A800376
Down Chopper	600V DC to 300V DC Down Chopper	A800381
VFD Master Control Module	Master Control Module	A800368
LU300b	12V DC 300W Light Supply, 90V to 360V DC input	A800966
Diagnostic Display	With programming port- aluminum enclosure	A800348
Diagnostic Display	With programming port- stainless steel enclosure	A800406
Handheld Programmer	Allows setting and viewing of system parameters and logs	A800220-1
Foot Switch	FS-400 foot switch assembly	A800498
Conveyor Switch	CS305 Controls forward/ reverse operation, precise speed control of conveyor chain, 13 position detent	A800305
Conveyor Switch	CS300 Controls forward/ reverse operation	A800300
Panic Switch	PS300 Panic Switch	A800190
DC Choke	.5mh, 150AMP, NOMEX insulation, U Barrier Guards	I9001-050
EMC Filter	170A @ 550V DC, 100kW @ 550V DC	A800393
Ground Fault Diode/ Relay	200V- 750V DC, sensing current: 15A max	A800203
Ground Fault Detector	Monitors ground fault relay and trailing cable	A800390
Power Center Components (see page 53 and page 47 for more information)		
EMC Filter	170A @ 550V DC, 100kW @ 550V DC	A800393
Ground Fault Receiver	Input supply: 120V AC	A800392
DC Choke	.5mh, 150AMP, NOMEX insulation, U barrier guards	I9001-050
Brake Resistor	VFD brake resistor assembly, 2.8 Ohms 7000W	R8000-024
Brake Module Panel Assembly	Adjustable brake voltage (includes A800993)	A800994
BM601 Brake Module Only	256V to 800V DC selectable	A800993
Motor and Encoder Parts (see page 32 for more information)		
Tram Motor	XV55 - 1000Nm XP torque tram motor	M6005-010
Conveyor Motor	XV25 - 26kW 440V AC XP conveyor motor	M6005-020
Motor Encoder Assembly	Contains encoder and wheel	M6006-020
Encoder	Encoder sensor	M6006-023
256 Magnetic Wheel	For use with the ST50 sensor head (more bore sizes available- see Saminco rep)	M6006-021
Encoder Backplate	Universal backplate	M6006-022

****Partial list shown. Please see your salesperson for all available options and configurations**

VF1 Series Battery VFD System for 128V Systems

Description

The VF1 Series is for 128V systems used for large or medium sized motors. This is a lead acid battery system.

Features

- Easily retrofitted into current equipment
- Failsafe - motor rotation will stop if drive fails
- Low maintenance with AC motor

Turbo Torque™ Traction Drive

- Better stall torque and higher top speed than the equivalent 36kW (50HP) DC drive
- Speed governor
- Effective regenerative braking; minimizes the use of mechanical brakes

Whisper Pump™ On-Demand Hydraulic Pump Drive

- Reduced noise in pump idle mode, from 80 to 70 decibels
- Significant battery energy reduction during idle
- Smoother steering at pump idle

Applications:

- Scoop Systems
- Battery & Shield Haulers
- Rubber Tire Man-Carriers

Battery Management System

Able to monitor battery levels from display "Low Battery" warning allows for:

- Automatic slow down of some functions
- Torque retained, speed reduced to conserve energy
- Enables vehicles limited time to return to power center for recharging.



Tram Drive
VF-1200 Series
(for large motors)

Dimensions (IP00)

Height	230mm (9")
Width	604mm (23.8")
Depth	363mm (14.3")
Weight	45 kg (99 lbs)



Tram Drive
VF-700 Series
(for medium motors)

Dimensions (IP00)

Height	249mm (9.8")
Width	330mm (13")
Depth	347mm (13.7")
Weight	26.3 kg (57 lbs)



Pump Drive
VF-400 Series

Dimensions (IP00)

Height	230mm (9")
Width	199mm (7.8")
Depth	354mm (13.9")
Weight	14.5 kg (32 lbs)

Electrical Specifications

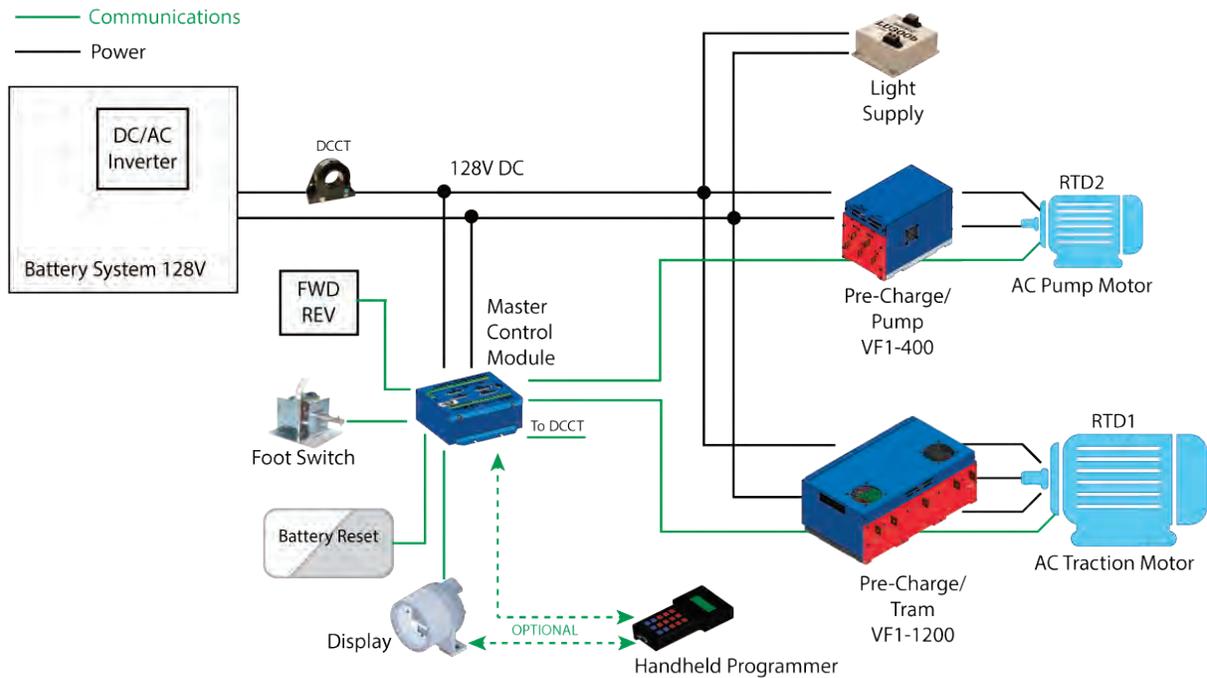
	Model	Part Number		Power @ Rated Volts	Frequency Range	Voltage Range	Amps @ Rated Power
Tram Drive (for large motors)	VF1-1200	A800682	Input	62kW @ 128V	DC	100 - 150V DC	485A
			Output	58kW @ 80V AC	0 - 125 Hz	0 - 100V AC	495A / 1200A peak
Tram Drive (for medium motors)	VF1-700	A801018	Input	30kW @ 128V	DC	80 - 150V DC	235A
			Output	39kVA @ 80V AC	0 - 120 Hz	0 to V in x 0.7	285A / 700A peak
Pump Drive	VF1-400	A800679	Input	23kW @ 128V DC	DC	100 - 150V DC	180A
			Output	21kW @ 70V AC	0 - 125 Hz	0 - 100V AC	200A / 400A peak

Environmental Specifications

Description	Specifications
Ambient Operating Temperature	-10°C (no frost) to + 50°C (14°F to 122°F)
Storage Temperature	-40°C to +60°C (-40°F to 140°F)
Relative Humidity	<90% No Condensation
Altitude	3300 Feet (1000 meters) - de-rate above 3000 meters.



Sample Diagram of 128V VFD Scoop System



Options for the VF1-75 DC/AC 128V VFD Battery System

Part Name	Description	Part Number
128V System	128V Battery / AC VFD System - single motor	A800659
System specific parts		
VF1-1200	128V DC Variable Frequency Drive precharge / tram	A800682
VF1-700	120V DC 300A Variable Frequency Drive	A801018
VF1-400	128V DC Variable Frequency Drive precharge / pump	A800679
VFD Master Control Module	128V VFD Master Control Module	A800468
Parts available for both systems		
LU300b	12V DC 300W Light Supply, 90V to 360V DC input	A800966
Diagnostic Display	With programming port - aluminum enclosure	A800348
Diagnostic Display	With programming port - steel enclosure	A800406
Foot Switch	SR300 foot switch assembly	A800281
DCCT	1000A HALL EFFECT ±15V	T9003-018
Cable 4CON	22AWG 30 ft, Diagnostic out xp box	W6004-181
Cable 25CON	25CON Sub-D 72	W6004-184
DCCT Cable	DCCT Cable for BDI	W6004-188
Base Plate	Base plate for tram and pump drives	Y9005300
Clamp	Clamp Steel (black oxide)	Y9007163
Handheld Programmer	Universal Drive Programmer	A800220-1
Battery Fuel Gauge	Battery Fuel Gauge	A600104
TC3 Radio Control System	MSHA APPROVED (see page 54 for ordering information)	
Motor and Encoder Parts (see page 32 for more information)		
Tram Motor	1000Nm 55kW 3 Phase 50 Hz 80 - 138V AC	M6005-016-1
Pump Motor	18 kW 3 Phase 60 Hz 80 - 138V AC	M6005-019
Motor Encoder Assembly	Contains encoder and wheel	M6006-020
Encoder	Encoder sensor	M6006-023
256 Magnetic Wheel	For use with the ST50 sensor head (more bore sizes available- see Saminco rep)	M6006-021
Encoder Backplate	Universal backplate	M6006-022

**Partial list shown. Please see your salesperson for all available options and configurations

VF2 Series Battery VFD System for 240V Systems

Description

The VF2 Series is for 240V systems used for large or medium sized motors. This is a lead acid battery system.

Features

- Easily retrofitted into current equipment
- Failsafe - motor rotation will stop if drive fails
- Low maintenance with AC motor
- Uses lead-acid batteries

Turbo Torque™ Traction Drive

- Better stall torque and higher top speed than the equivalent 36kW (50HP) DC drive
- Speed governor
- Effective regenerative braking: minimizes the use of mechanical brakes

Whisper Pump™ On-Demand Hydraulic Pump Drive

- Reduced noise in pump idle mode, from 80 to 70 decibels
- Significant battery energy reduction during idle
- Smoother steering at pump idle

Applications:

- Scoop Systems
- Battery & Shield Haulers
- Rubber Tire Man-Carriers

Battery Management System

Able to monitor battery levels from display "Low Battery" warning allows for:

- Automatic slow down of some functions
- Torque retained, speed reduced to conserve energy
- Enables vehicles limited time to return to power center for recharging.



Tram Drive
VF-1200 Series
(for large motors)

Dimensions (IP00)

Height	230mm (9")
Width	604mm (23.8")
Depth	363mm (14.3")
Weight	45 kg (99 lbs)



Tram Drive
VF-700 Series
(for medium motors)

Dimensions (IP00)

Height	249mm (9.8")
Width	330mm (13")
Depth	347mm (13.7")
Weight	26.3 kg (57 lbs)



Pump Drive
VF-400 Series

Dimensions (IP00)

Height	230mm (9")
Width	199mm (7.8")
Depth	354mm (13.9")
Weight	14.5 kg (32 lbs)

Electrical Specifications

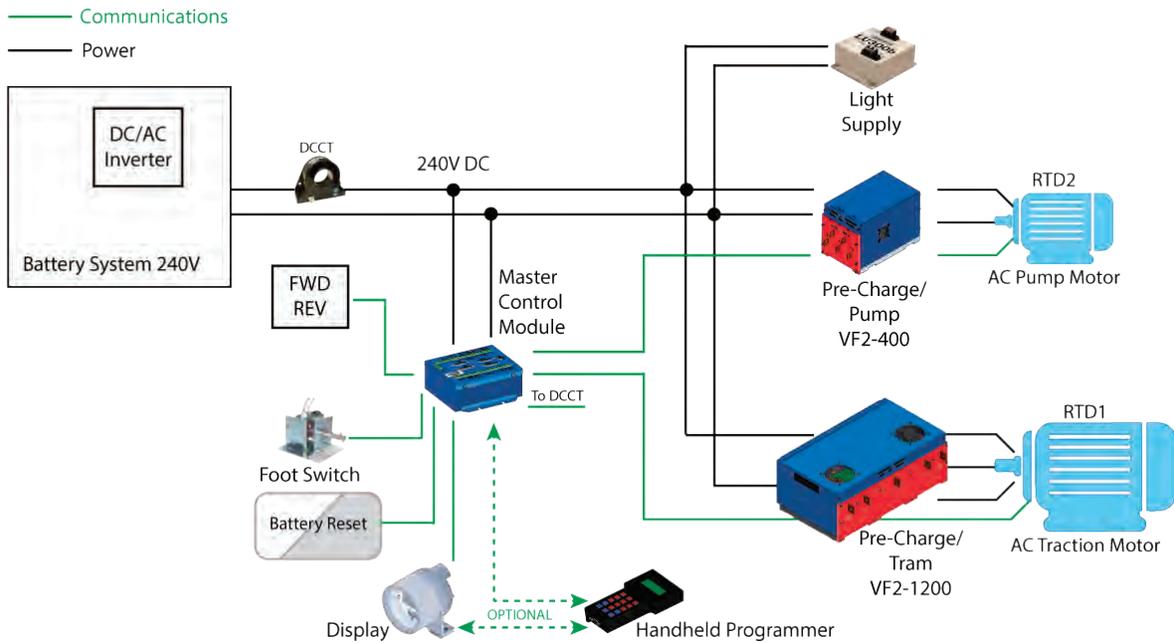
	Model	Part Number		Power @ Rated Volts	Frequency Range	Voltage Range	Amps @ Rated Power
Tram Drive (for large motors)	VF2-1200	A800782	Input	105kW @ 240V	DC	160 - 300V DC	440A
			Output	100kW @ 138V	0 - 125 Hz	0 - 170V AC	500A / 1200A peak
Tram Drive (for medium motors)	VF2-700	A801019	Input	56kW @ 240V AC	DC	160 -300V	235A
			Output	78kVA @ 160V	0 - 125 Hz	0 to V in x 0.7	285A / 700A peak
Pump Drive	VF2-400	A800781	Input	43kW @ 240V	DC	160 - 300V	180A
			Output	41kW @ 138V	0 - 125 Hz	0 - 170V	200A / 400A peak

Environmental Specifications

Description	Specifications
Ambient Operating Temperature	-10°C (no frost) to + 50°C (14°F to 122°F)
Storage Temperature	-40°C to +60°C (-40°F to 140°F)
Relative Humidity	<90% No Condensation
Altitude	3300 Feet (1000 meters) - de-rate above 3000 meters.



Sample Diagram of 240V VFD Scoop System



Options for the VF1-75 DC/AC VFD Battery System

Part Name	Description	Part Number
240V System	240V Battery / AC VFD System - single motor	A800786
System specific parts		
VF2-1200	240V DC Variable Frequency Drive precharge / tram	A800782
VH2-700	240V DC 300A Variable Frequency Drive	A801019
VF2-400	240V DC Variable Frequency Drive precharge / pump	A800781
VFD Master Control Module	240V VFD Master Control Module	A800368
Parts available for both systems		
LU300b	12V DC 300W Light Supply, 90V to 360V DC input	A800966
Diagnostic Display	With programming port - aluminum enclosure	A800348
Diagnostic Display	With programming port - steel enclosure	A800406
Foot Switch	SR300 foot switch assembly	A800281
Panic Switch	PS300 panic switch	A800190
DCCT	1000A HALL EFFECT ± 15V	T9003-018
Cable 4CON	22AWG 30 ft, Diagnostic out xp box	W6004-181
Cable 25CON	25CON Sub-D 72	W6004-184
DCCT Cable	DCCT Cable for BDI	W6004-188
Base Plate	Base plate for tram and pump drives	Y9005300
Clamp	Clamp Steel (Black Oxide)	Y9007163
Handheld Programmer	Universal Drive Programmer	A800220-1
Battery Fuel Gauge	Battery Fuel Gauge	A600104
TC3 Radio Control System	MSHA APPROVED (see page 54 for ordering information)	
Motor and Encoder Parts (see page 33 for more information)		
Tram Motor	1000Nm 55kW 3 Phase 50 Hz 80 - 138V AC	M6005-016-1
Tram Motor	1500Nm 80kW 3 Phase 50 Hz 160 - 277V AC	M6005-036
Pump Motor	18 kW 3 Phase 60 Hz 80 - 138V AC	M6005-019
Motor Encoder Assembly	Contains encoder and wheel	M6006-020
Encoder	Encoder sensor	M6006-023
256 Magnetic Wheel	For use with the ST50 sensor head (more bore sizes available- see Saminco rep)	M6006-021
Encoder Backplate	Universal backplate	M6006-022

**Partial list shown. Please see your salesperson for all available options and configurations

VF Series Battery VFD System for Rail

Description

The VF Series can be used for large or medium sized motors, 128V - 240V, used in 10 ton locomotives, monorail and rubber tire man carriers. This is a lead acid battery system.

Features

- Easily retrofitted into current equipment
- Failsafe - motor rotation will stop if drive fails
- Low maintenance with AC motor

Turbo Torque™ Traction Drive

- Better stall torque and higher top speed than the equivalent 36kW (50HP) DC drive
- Speed governor
- Effective regenerative braking; minimizes the use of mechanical brakes

Whisper Pump™ On-Demand Hydraulic Pump Drive

- Reduced noise in pump idle mode, from 80 to 70 decibels
- Significant battery energy reduction during idle
- Smoother steering at pump idle

Applications:

- Mining Locomotives
- Railrunners
- Rubber Tire Man Carriers

Battery Management System

Able to monitor battery levels from display
“Low Battery” warning allows for:

- Automatic slow down of some functions
- Torque retained, speed reduced to conserve energy
- Enables vehicles limited time to return to power center for rechargings.



Tram Drive
VF-1200 Series
(for large motors)

Dimensions (IP00)	
Height	230mm (9")
Width	604mm (23.8")
Depth	363mm (14.3")
Weight	45 kg (99 lbs)



Tram Drive
VF-700 Series
(for medium motors)

Dimensions (IP00)	
Height	249mm (9.8")
Width	330mm (13")
Depth	347mm (13.7")
Weight	26.3kg (57 lbs)

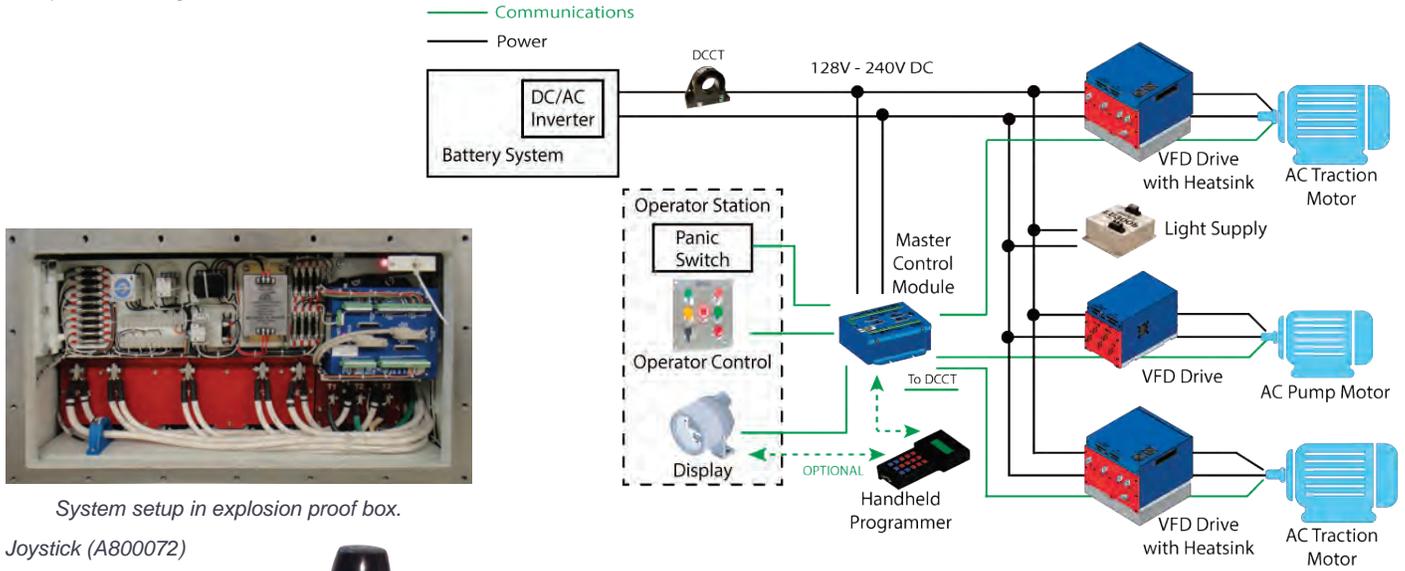


Pump Drive
VF-400 Series

Dimensions (IP00)	
Height	230mm (9")
Width	199mm (7.8")
Depth	354mm (13.9")
Weight	14.5kg (32 lbs)

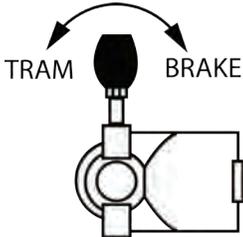
Electrical Specifications								
	Model	Part Number	System Description		Power @ Rated Volts	Frequency Range	Voltage Range	Amps @ Rated Power
Tram Drive (for large motors)	VF1-1200	A800682	128V	Input	62kW @ 128V	DC	100 - 150V DC	485A
				Output	58kW @ 80V AC	0 - 125 Hz	0 - 100V AC	495A / 1200A peak
	VF2-1200	A800782	240V	Input	105kW @ 240V	DC	160 - 300V DC	440A
				Output	100kW @ 138V	0 - 125 Hz	0 - 170V AC	500A / 1200A peak
Tram Drive (for medium motors)	VF1-700	A801018	128V	Input	30kW @ 128V	DC	80 - 150V DC	235A
				Output	39kW @ 80V	0 - 120 Hz	0 to V in x 0.7	285A / 700A peak
	VF2-700	A801019	240V	Input	70kW @ 240V AC	DC	160 - 300V	290A
				Output	68kVA @ 138V	0 - 125 Hz	0 to V in x 0.7	285A / 700A peak
Pump Drive	VF1-400	A800679	128V	Input	23kW @ 128V DC	DC	100 - 150V DC	180A
				Output	21kW @ 70V AC	0 - 125 Hz	0 - 100V AC	200A / 400A peak
	VF2-400	A800781	240V	Input	43kW @ 240V	DC	160 - 300V	180A
				Output	41kW @ 138V	0 - 125 Hz	0 - 170V	200A / 400A peak

Sample Block Diagram of VF Series for Rail



System setup in explosion proof box.

Joystick (A800072)



Environmental Specifications

Description	Specifications
Ambient Operating Temperature	-10°C (no frost) to + 50°C (14°F to 122°F)
Storage Temperature	-40°C to +60°C (-40°F to 140°F)
Relative Humidity	<90% No Condensation
Altitude	3300 Feet (1000 meters) - de-rate above 3000 meters.

Options for the VF1-75 DC/AC VFD Battery System

Part Name	Description	Part Number
VF1-1200	128V DC Variable Frequency Drive precharge / tram (standalone)	A800792
VF1-700	120V DC 300A Variable Frequency Drive	A801018
VF1-400	128V DC Variable Frequency Drive precharge / pump	A800679
VFD Master Control Module	128V VFD Master Control Module	A800468
VF2-1200	240V DC Variable Frequency Drive precharge / tram (standalone)	A800793
VH2-700	240V DC 300A Variable Frequency Drive	A801019
VF2-400	240V DC Variable Frequency Drive precharge / pump	A800781
VFD Master Control Module	240V VFD Master Control Module	A800668
Parts available for both systems		
LU300b	12V DC 300W Light Supply, 90V to 360V DC input	A800966
Diagnostic Display	With programming port - aluminum enclosure	A800348
Diagnostic Display	With programming port - steel enclosure	A800406
Operators Station	Operator station with shunt kit	A800291
Joystick	MSHA approved	A800072
DCCT	1000A HALL EFFECT ± 15V	T9003-018
Cable 4CON	22AWG 30 ft, Diagnostic out xp box	W6004-181
Cable 25CON	25CON Sub-D 72	W6004-184
DCCT Cable	DCCT Cable for BDI	W6004-188
Base plate	Spreader plate 857mm x 483mm x 51mm (33.75" x 19" x 2")	Y9005300
Motor and Encoder Parts (see page 32 for more information)		
Tram Motor	15kW 20HP 3Phase 50 Hz 80 - 140V AC	M6005-021
Motor Encoder Assembly	Contains encoder and wheel	M6006-020
Encoder	Encoder sensor	M6006-023
256 Magnetic Wheel	For use with the ST50 sensor head (more bore sizes available- see Saminco rep)	M6006-021
Encoder Backplate	Universal backplate	M6006-022

**Partial list shown. Please see your salesperson for all available options and configurations

AC/AC VFD System for Trailing Cables

AC/AC VFD System

This system is designed for shuttle cars using AC trailing cables. Two options are available:

- The 440V system with input voltages of 440-480V
- The 550V system with input voltages of 500-660V

Features

Tram and Conveyor Drive:

- Regenerative drive
- PWM flux vector inverter
- Flux vector torque control provides differential traction control for superb cornering
- Rugged, short circuit proof power circuit provides excellent long term reliability
- Multiple control options: standard analog foot switch, radio remote control, operator station

Pre-charge/ Pump Start Inverter:

- Dual function: soft charge for 550V DC power bus / DC bus by-pass contactor OR pump motor soft start inverter 25kW @ 460V AC programmable pump motor current limit setting

Rectifier Brake Module:

- SCR rectifier with soft charge
- Absorbs high voltage surges on DC voltage supplies due to regenerative braking of AC drive
- Compact, single enclosure houses all components, including internal isolated power supply

See individual electrical specifications for the Tram Drive and Pre-charge/Pump Start Inverter on page 10.

Electrical Specifications	
Description	Specifications
Power	
Output Current	135A AC continuous
Starting Torque	200% of motor nominal rating
Grounding Configuration	Full floating, grounded positive, or grounded negative
Switching Frequency	2.5 k Hz
Control I/O	
Eight digital inputs	24V DC rating
Analog reference input	0 to 4V DC
Communication	
CAN-BUS	System communication, Handheld programmer
RS-232	Firmware update programming port (CN10 on the VF1-75)
Protective Functions	
Reverse Polarity	Software and hardware detection
Power Loss	One second ride-through capability
Load Short Circuit	Current control overload trip IGBT individual overload trip IGBT over-current safe failure mode
Thermal Protection	Heatsink over-temperature alarm at 75°C Shutdown at 90°C
Motor Overload	Electronic time trip
Overcurrent Protection	Programmable
Environmental Specifications	
Description	Specifications
Ambient Operating Temperature	-20°C to +50°C (-4°F to 122°F)
Storage Temperature	-40°C to +65°C (-40°F to 149°F)
Relative Humidity	<90% No condensation
Altitude	3300 feet (1000 meters) - de-rate above 3000 meters

Applications:

- Shuttle Cars

Tram Drive
Part # A800374



Dimensions (IP00)

Height	210mm (8.25")
Width	203mm (8")
Depth	356mm (14")
Weight	14.5kg (32lbs)

Pre-charge/ Pump Start Inverter
Part # A800376



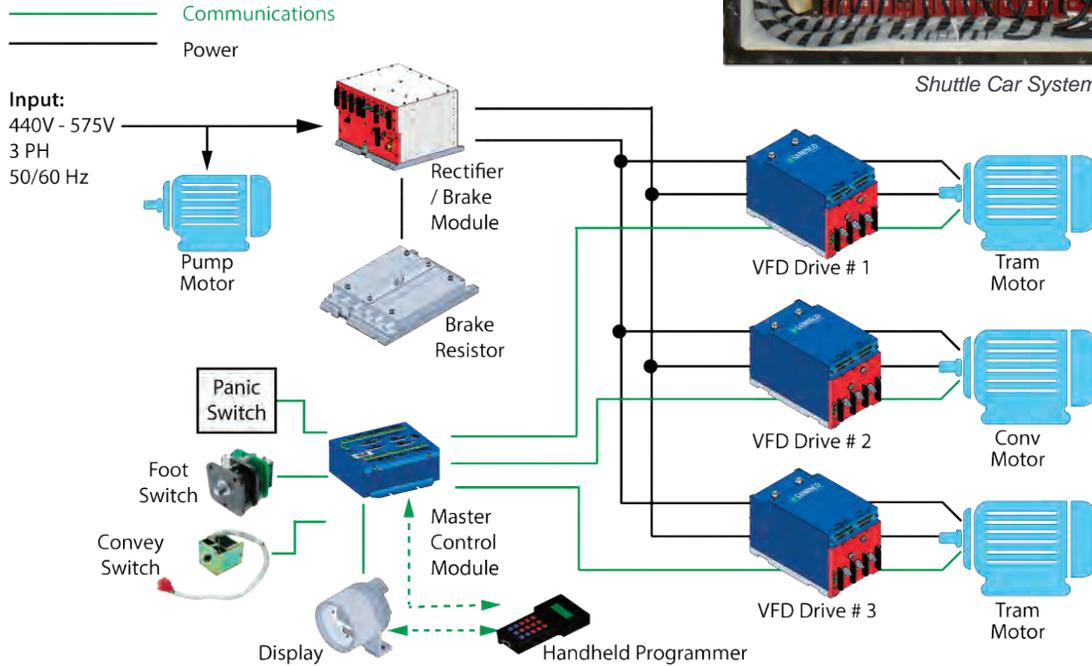
Dimensions (IP00)

Height	210mm (8.25")
Width	203mm (8")
Depth	356mm (14")
Weight	14.5kg (31 lbs)

Rectifier / Brake Module
Part # A800497 / A800497A
(See page 48 for more information)



Sample Block Diagram of AC/AC Shuttle Car



Shuttle Car System setup in XP box.

Options for the VF1-75 AC/AC VFD System

Part Name	Description	Part Number
440V AC/AC System	440 - 550V AC/AC VFD Shuttle Car System	A800661
550V AC/AC System	550 - 600V AC/AC VFD Shuttle Car System	A800662
Parts available for both systems		
VF1-75 Motor Controller	75kW 480V AC traction and conveyor drive	A800374
Rectifier / Brake Module	480V AC rectifier/ brake module (use with 440V AC/AC system)	A800497A
Rectifier / Brake Module	660V AC rectifier/ brake module (use with 550V AC/AC system)	A800497
Pre-Charge / Pump Start Inverter	VFD precharge / pump	A800376
VFD Master Control Module	Master Control Module	A800368
VFD Installation Kit	Includes baseplate, bus bar and clamps	A800383
Diagnostic Display	With programming port - aluminum enclosure	A800348
Diagnostic Display	With programming port - stainless steel enclosure	A800406
Handheld Programmer	Allows setting and viewing of system parameters and logs	A800220-1
Foot Switch	FS-400 foot switch assembly	A800498
Conveyor Switch	Controls forward/ reverse operation, precise speed control of conveyor chain	A800305
DC Choke	.5mh, 150AMP, NOMEK insulation, U Barrier Guards	I9001-050
Resistor	10 OHMS 1500W brake resistor assembly (3 required)	A800675
Cable Kit	1 qty - 4CON, 1 qty - 2CON, 3 qty - 25CON Sub-C	W6100033
Motor and Encoder Parts (see page 32 for more information)		
Tram Motor	XV55 - 1000Nm XP torque tram motor	M6005-010
Conveyor Motor	XV25 - 26kW 440V AC XP conveyor motor	M6005-020
Motor Encoder Assembly	Contains encoder and wheel	M6006-020
Encoder	Encoder sensor	
256 Magnetic Wheel	For use with the ST50 sensor head (more bore sizes available- see Saminco rep)	M6006-022
Encoder Backplate	Universal backplate	M6006-023

****Partial list shown. Please see your salesperson for all available options and configurations**

Hermes Traction Inverters

Applications:

- LHDs

Description

The Traction Inverter is designed to control permanent magnet or AC induction motors and is suitable for propulsion and auxiliary motor applications.

Adaptive Torque Control

The motor control algorithm, Adaptive Torque Control (ATC) is a more accurate Field-Oriented Control (FOC) capable of operating in a wide range of power factors. ATC optimizes performance (torque and power) by accounting for a varying supply voltage, motor inductances, motor resistances, motor temperature, motor speed, and slip. In induction motors, this enables operation at or near the breakdown torque of the motor and in PM motors, it utilizes the synchronous reluctance effect to maximize torque. ATC uses models based on the physics of the motor — not lookup tables. With 150+ programmable parameters for setup and tuning, the inverter can operate many different motors.

Features

- Permanent Magnet or Induction motor control (DPWM)
- Adaptive Torque Control — No look-up tables required
- Torque and Speed Control Modes
- Generator Mode with programmable cranking and idle speeds
- Automated Resolver Offset Calibration Mode
- DC Capacitor Discharge Feature
- Up to 1,400 Hz output frequency
- Continuously Variable Switching Frequency—Increases with motor RPM and reduces losses (2 to 14 kHz — Double-edge PWM)
- Discontinuous Pulse Width Modulation
- Smart OV, UV, and Temperature Power Limiting
- Four-quadrant operation
- Validated on motors with up to 40 poles
- Up to 15 inverters on one CAN control bus
- IP67 aluminum enclosure
- Built-in DC bus voltage pre-charge circuitry (Optional)
- Embedded Y-Capacitor
- Motor Select parameter for easy setup
- 150+ programmable parameters via CAN for advanced users
- 10 slot fault log with time stamp information



Hermes Inverter
Part # A300847, A300848,
A300832

Dimensions (IP67)

Height	207mm (8.2")
Width	583mm (23")
Depth	434mm (17")
Weight	38.5kg (85 lbs)



Hermes Inverter
Part # A300835

Dimensions (IP67)

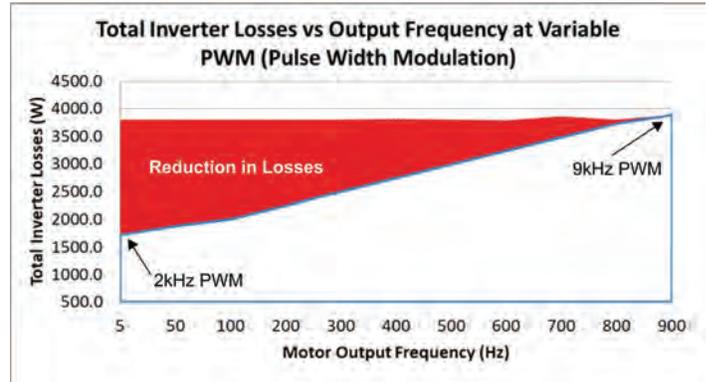
Height	207mm (8.2")
Width	583mm (23")
Depth	434mm (17")
Weight	38.5kg (85 lbs)

Electrical Specifications

	Part #	Description	Minimum	Nominal	Maximum
DC Bus Voltage (V)	A300835	8 glands, PMAC control			
	A300847	6 glands, ACIM control	-	700	800
	A300848	6 glands, PMAC control			
	A300832	6 glands, PMAC control	-	1000	1100
Output Voltage (V_{RMS})				0 - 0.7 x DC Bus Voltage	
Continuous Output Current (A_{RMS})	A300835	8 glands, PMAC control		600 @ $f_{sw} = 2$ kHz	-
	A300847	6 glands, ACIM control	-	400 @ $f_{sw} = 14$ kHz	
	A300848	6 glands, PMAC control			
	A300832	6 glands, PMAC control		550 @ $f_{sw} = 2$ kHz 350 @ $f_{sw} = 14$ kHz	
Peak Output Current (A_{RMS})				600	
Continuous Output Power	A300835	8 glands, PMAC control			
	A300847	6 glands, ACIM control	-	375	-
	A300848	6 glands, PMAC control			
	A300832	6 glands, PMAC control	-	490	-
DC Control Volts			22	24	28
Control Supply Current (A)			2	-	-
Logic Input Supply Voltage (V)			6	12	26

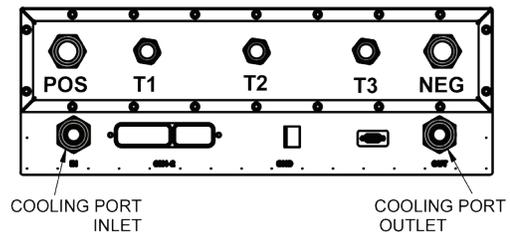
Variable Switching Frequency

By continuously varying the switching frequency proportional to speed, the inverter achieves an optimal balance of switching losses in the inverter and current ripples in the motor. Particularly at lower speeds, the reduced PWM frequency yields improved efficiency as shown in the red area of the following chart.



Hardware Description

- Double isolation between power components and control interface
- 12V emergency stop input
- 1 NTC input
- 2 RTD inputs
- 2 12V analog inputs
- 8 logic inputs
- Normally open/closed fault outputs
- RS-232 serial interface for programming and debugging
- Resolver and 5/15V encoder feedback
- CAN-bus control and diagnostics



Environmental Specifications	
Description	Specifications
Ambient Operating Temperature	-20°C to +60°C (-4°F to 140°F)
Inlet Cooling Temperature	-40°C to +50°C (-40°F to 122°F)
Coolant Type	50/50 WEG
Coolant Flow	3 l/min (11.3 gal/min)
Coolant Pressure Drop	0.6 psig @ 3 gal/min (0.04 bar)
Storage	-40°C to +85°C in a clean, non-condensing environment
Altitude	3300 feet (1000 meters) - de-rate above 3000 meters

Options for the Hermes Inverters		
Part Name	Description	Part Number
Hermes Traction Inverter	1100V 600A Liquid Cooled Inverter	A300832
Hermes Traction Inverter	800V 600A Liquid Cooled Inverter with 8 glands	A300835
Hermes ACIM Traction Inverter	800V 600A AC Induction Motor Inverter	A300847
Hermes PMAC Traction Inverter	800V 600A Permanent Magnet AC Motor Inverter	A300848
Hermes Control Wire Harness	20 ft flying lead	A541001
Hermes Resolver Wire Harness	15 ft Flying Lead, 2x RTD, NTC Resolver	A541003
Hermes Encoder Wire Harness	15 ft Flying Lead, 2x RTD, NTC 15V	A541004
Handheld Programmer	Universal Drive Programmer (see page 38 for more info)	A300220-1

**Partial list shown. Please see your salesperson for all available options and configurations

JR1000 Family of 1000V AC VFD Systems

Description

This system can be configured for large and small shuttle cars, continuous miners, shearers and feeder breakers with each drive able to serve multiple functions.

Features

- Voltage ranges of 850V to 1260V, 3PH, 50/60 Hz available to accommodate most international customers.
- Multiple voltage outputs
- Smart rectifier modules provide energy-saving regenerative braking down to stall which can be held indefinitely without inverter or motor overheating.
- Systems can be designed for air contact cooled or liquid cooled base plate
- Closed loop flux vector and open loop flux vector modes for unsurpassed accuracy to allow low speed holding when descending, especially when proximity detection system requested.
- Analog reference input and/ or CAN Bus Communications is available.
- Maximum output frequency of 150 Hz
- Adaptive under-voltage and overvoltage control
- Radio controlled option is available.
- Cutter motor feedback to optimize tram speed.
- Full motor protection (overload, short circuit, lock rotor, Motor RTD, online, jam, phase loss, ground fault).
- Our AC drive has up to 2X starting torque compared to a DC motor.
- Infinitely variable speed tramping.

Applications:

- Shuttle Cars
- Continuous Miners
- Feeder Breakers
- Shearers
- Road Headers

Samenco Cool-Torque Motors are available:

- AC or DC input
- 120V DC to 500V DC
- 230V AC to 1000V AC
- Air-cooled or liquid-cooled
- Internal encoders give closed loop control down to zero speed
- Low current draw of motor (low AMPS) will extend life of motor
- Torque and speed-sharing between motors with greater starting torque
- Proximity detection ready



VF1001
Part # A801001



Dimensions (IP00)

Height	202mm (8")
Width	372mm (14.6")
Depth	483mm (19")
Weight	55kg (121 lbs)

VF1002
Part # A801002



Dimensions (IP00)

Height	215mm (8.5")
Width	472mm (18.6")
Depth	314mm (12.4")
Weight	65kg (143 lbs)

Electrical Specifications

Model and Part Number	Application	Description	Power @ Rated Volts	Frequency Range	Voltage Range	Amps @ Rated Power	
VF1001 Part # A801001	Inverter/ Rectifier	Single Inverter with Regenerative Input 110kW / 1140V	Input	113kW @ 1140V AC	47 - 63 Hz, AC	855 - 1254V AC rms	
			Output	110kW	0 - 150 Hz	0 - 95% of input	85A AC rms
	Inverter/ Inverter	Dual Inverter 110kW / 1140V	Input	180kW @ 1500V DC	DC	1120 - 1773V DC	120A DC
			Output	2 x 87kW	0 - 150 Hz	0 - 70% of input	2 x 63AAC rms
VF1002 Part # A801002	For large shuttle cars, large continuous miners, feeder breakers, shearers	Regenerative Rectifier	Input	223kW @ 1140V AC / 1500V DC	47 - 63 Hz	855 - 1254V AC rms	136AAC rms
			Output	220kW	DC	135% of input	150A DC

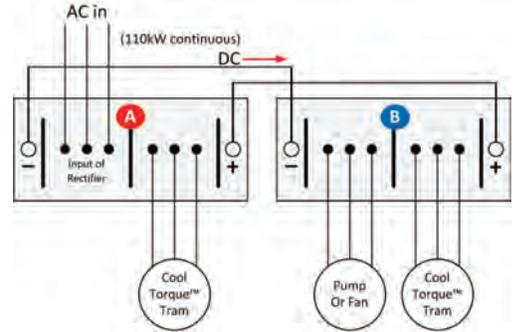
Environmental Specifications

Description	Specifications
Ambient Operating Temperature	-20°C to +50°C (-4°F to 122°F)
Storage Temperature	-40°C to +65°C (-40°F to 149°F)
Relative Humidity	<90% No condensation
Altitude	3300 feet (1000 meters) - de-rate above 3000 meters

Example of Continuous Miner Configuration



14CM Continuous Miner installation



This set up is for small continuous miners and small shuttle cars.

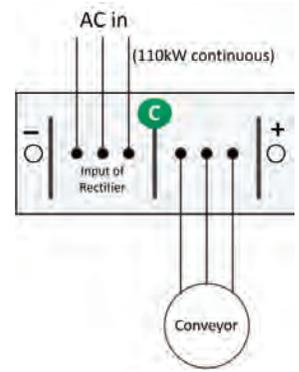
A VF1001 is configured as a single inverter to run a tram motor with encoder and as a rectifier receiving power from an AC trailing cable.

B VF1001 is configured as a dual inverter to run two motors independently; for example, a pump motor and a tram motor with encoder.

Example of Feeder Breaker Configuration



Feeder Breaker Controller Installation



This set up is for a feeder breaker running only the conveyor.

C VF1001 is configured as a single inverter to run a conveyor motor and as a regenerative rectifier receiving power from an AC source.

Options for the VF1-75 AC/AC VFD System

Part Name	Description	Part Number
VF1001 Inverter	Single Inverter with Regen Input or Dual Inverter	A801001-1
VF1002 Regenerative Rectifier	Regen Rectifier or Inverter with DC Input	A801002
Inductor	.6mH / 95A 3PH 1140V (see page 45 for more info)	A801000
Inductor	.3mH / 190A 3PH 1140V (see page 45 for more info)	A801006
Inductor	0.36mH / 150A 3PH 1200V (see page 45 for more info)	A801015
EMC Filter	1260V AC 120A 50/60 Hz (see page 52 for more info)	A801016
MOV-Varistor	3PH 1200V 1500Joule	A801017
Graphic Display	Digital Display - see page 37 for more info	A800810
Fan Control	VFD Scrubber Fan - Fan Speed Switch Assembly	A801054
Mini Heat Spreader	VFD Scrubber Fan - Mini Heat Spreader	Y9005404A
Handheld Programmer	Universal Drive Programmer (see page 38 for more info)	A800220-1
Cable	Cable 25CON Sub-D 72	W6004-004
Cable Assembly	Cable Assembly 15 PIN 36"	W6004-356
Cable Kit	Cable Kit for continuous miner	W6100035
Wire Harness	SAMCAN Wire Harness	W6100037
TC3 Radio Control System	MSHA APPROVED (see page 54 for more information)	
Motor and Encoder Parts (see page 32 for more information)		
TM1200 Cool-Torque Motor	1200Nm 950V AC 3PH (TM1200 Cool Torque for CM-water cooled)	M6005-037
TM1000 Cool-Torque Motor	1000Nm 55kW 1193V AC XP (TM1000 Cool Torque for SC-air cooled)	M6005-034
Pump Motor	18kW 3Phase 60 Hz 80 -138V AC	M6005-019
Motor Encoder Assembly	Contains encoder and wheel	M6006-020
Encoder Backplate	Universal backplate	M6006-022
Encoder	Encoder sensor	M6006-023

**Partial list shown. Please see your salesperson for all available options and configurations

JD400 Digital Drive System

Saminco Part # various

(See your Sales Rep for specific ordering information)

Description

Microprocessor controlled DC motor drive with advanced diagnostics and programmable features.

Features

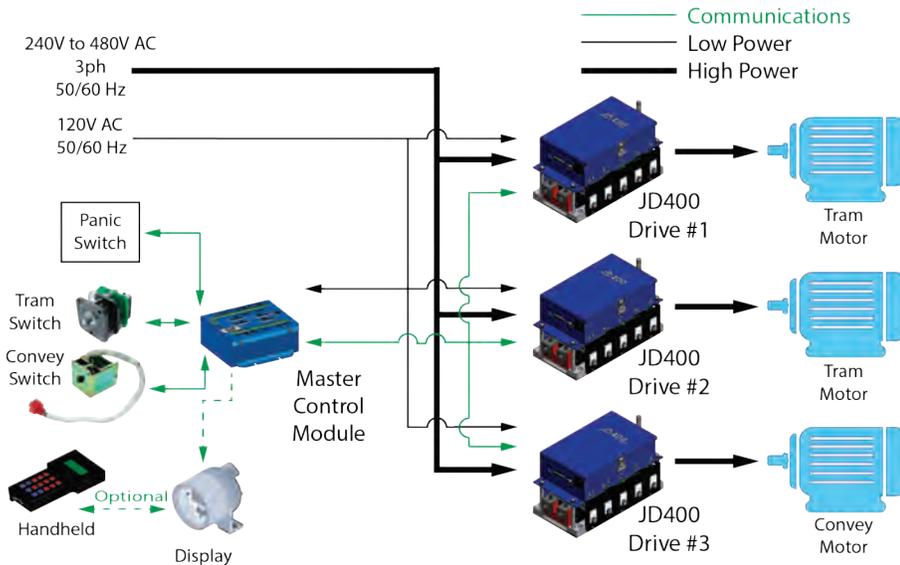
- Two drive system available for continuous miners (left tramming and right tramming).
- Three drive system available for shuttle cars (left tramming, right tramming and conveyor control).
- Regenerative braking capability and solid state reversing included in compact module.
- Dual mode operation:
 - Current control for torque sharing (shuttle cars)
 - Voltage control for dual traction (continuous miners)
- CANbus communication

Applications:

- Continuous Miners
- Shuttle Cars



Example block diagram of shuttle car system setup



Three drive system for shuttle cars

Electrical Specifications

Specifications	Continuous Miners (A800843)		Shuttle Cars (A800815)	
	Input (AC)	Output (DC)	Input (AC)	Output (DC)
Rated Power @ Rated Volts	68kVA @ 480V	50kW @ 500V	68kVA @ 480V	50kW @ 500V
Frequency Range	50 - 60 Hz	DC	50 - 60 Hz	DC
Voltage Range	3PH 480V AC	0 - 500V DC	3PH 480V AC	0 - 500V DC
Amps @ Rated Power	82A @ 68kVA	100A @ 50kW (400 peak)	82A @ 68kVA	100A @ 50kW (400 peak)

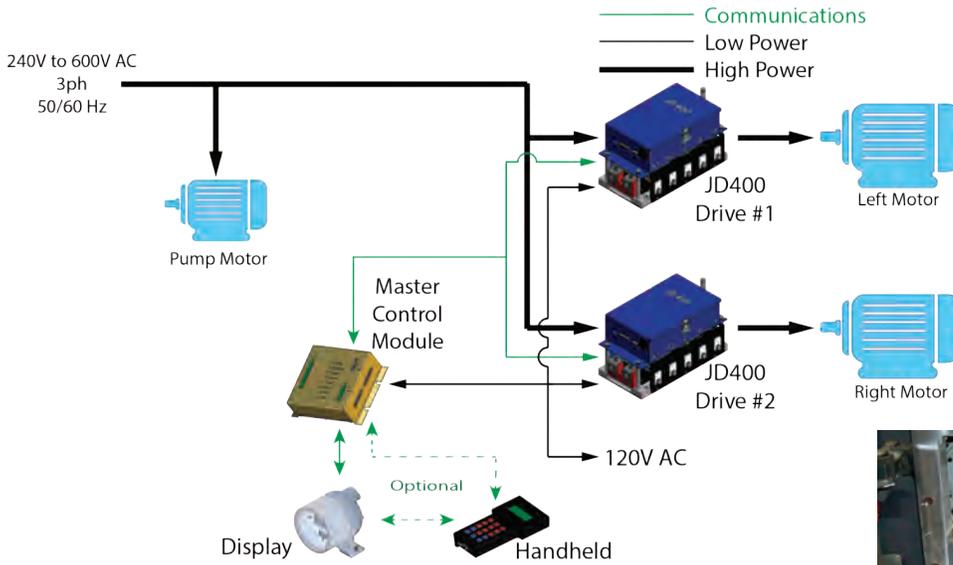
Environmental Specifications

Description	Specifications
Ambient Operating Temperature	-10°C (no frost) to +50°C (14°F to 122°F)
Storage Temperature	-40°C to +60°C (-40°F to 140°F)
Relative Humidity	<90% no condensation
Altitude	1000 meters (3300 feet) - de-rate above 3000 meters

Dimensions (IP00)

Height	219mm (8.6")
Width	214mm (8.4")
Depth	386mm (15.2")
Weight	22kg (49 lbs)

Example block diagram of continuous miner system setup



Two drive system for continuous miners

Options for the JD400 Series

Part Name	Description	Part Number
JD400 Continuous Miner		System # A800822
Drive	Digital 240-550V AC	A800843
Interface	Master Control Module	A800817
Diagnostic Display	Diagnostic Display with programming port	A800348
Cable	Cable JD400 to MCM	W6004-067
Cable	Cable 25CON Sub-D 36"	W6004-001
Cable	Cable 25CON Sub-D 72"	W6004-067
JD400 Shuttle Car		System # A800821
Traction Drive	Digital 240-550V AC	A800815
MCM	Master Control Module	A800816
MCM	Master Control Module with Proximity Detection Feature	A800825
MCM with joystick	Optional Master Control Module with joystick	A800826
Cable	Cable 25CON Sub-D 36"	W6004-001
Cable	Cable Foot Switch to MCM 4CON 22AWG 30'	W6004-181
Cable	If replacing JS400 system: CM to JD400 drive 18CON 22AWG 16pin 72"	W6004-160
Cable	If replacing JS400 system: MCM to JD400 18CON 22AWG 16pin 72" with flying leads	W6004-161
Fuse	Fuse 600A 300V DC	F9002-086
FS400	Foot Switch	A800498
CS300	Conveyor speed control hand switch (speed reference + FWD/REV + Neutral)	A800300
CS305	Conveyor speed control hand switch detented travel 13 position	A800305
Diagnostic Display	Diagnostic Display with programming port	A800115
Parts available for both systems		
Handheld Programmer	Provides read and write access to firmware parameter sets	A800220-1

****Partial list shown. Please see your salesperson for all available options and configurations**

Q800 Digital System for Mining Locomotives

Saminco Part # various

(See your Sales Rep for specific ordering information)

Description

Compact, digital DC/DC traction drive for either single motor or dual motor system applications.

Features

- Single motor drive for portal buses and tandem motor drive for locomotives
- Dual motors can be easily operated in tandem using two Q800 drives (4 x 40HP motors)
- Microprocessor based drive system
- Sensor-less motor speed indication and automatic over-speed protection
- Compact enclosure houses all power control devices, capacitor bank and soft start devices
- Torque control mode provides superb traction and acceleration
- Rugged, short-circuit proof power circuit provides excellent long term reliability
- Comprehensive display housed in XP headlight enclosure
- Multiple control options: standard analog foot switch, radio remote control, operator station, PLC
- Regenerative braking provides smooth, powerful braking down to almost standstill. This feature greatly prolongs life of mechanical brakes.
- Solid state reversing eliminates directional contactors from the system.

Applications:

- Mining locomotives
- Man-trips
- Utility vehicles



Q800 drive installation (also shown with digital display and operator station)



Operator station



Brake module installation

Electrical Specifications

Model	Part Number	Description		Power @ Rated Volts	Frequency Range	Voltage Range	Amps @ Rated Power
Q812	A800345	Single Motor 40HP 128V	Input	32kW @ 120V	DC	80 - 160V DC	267A @ 32kW
			Output	30kW @ 120V	DC	0 - 98% V in	250A @ 30kW
Q820	A800359	Dual Motor 20HP 128V	Input	62kW @ 120V	DC	80 - 160V DC	517A @ 62kW
			Output	60kW @ 120V	DC	0 - 98% V in	2 x 250A @ 60kW
Q826	A800346	Single Motor 80HP 240V	INPUT	77kW @ 300V	DC	160 - 360V DC	257A @ 77kW
			Output	75kW @ 300V	DC	0 - 98% V in	250A @ 75kW
Q826-RB	A800347	Single Motor 80HP 240V with Emergency Braking	Input	77kW @ 300V	DC	160 - 360V DC	257A @ 77kW
			Output	75kW @ 300V	DC	0 - 98% V in	250A @ 75kW
Q826-LC	A800328	Single Motor 80HP 240V with Emergency Braking and Liquid Cooling	Input	105kW @ 300V	DC	160 - 360V DC	350A @ 105kW
			Output	103kW @ 300V	DC	0 - 98% V in	350A @ 103kW
Q821	A800314	Dual Motor 40HP 240V	Input	152kW @ 300V	DC	180 - 360V DC	506A @ 152kW
			Output	150kW @ 300V	DC	0 - 98% V in	2 x 250A @ 150kW

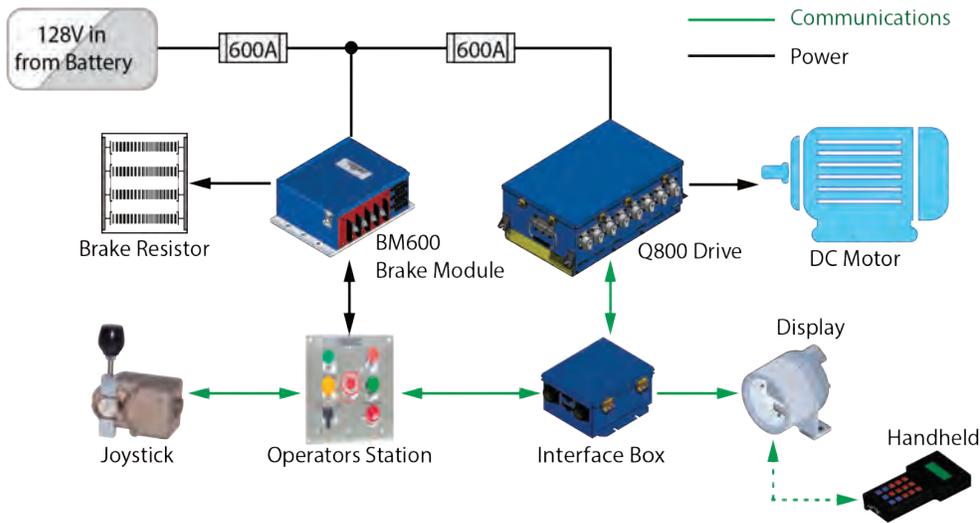
Environmental Specifications

Description	Specifications
Ambient Operating Temperature	-10°C to +40°C (14°F to 104°)
Storage Temperature	-40°C to 65°C (-40°F to 149°F)
Relative Humidity	<90% no condensation
Altitude	3300 feet (1000 meters) - de-rate above 3000 meters

Dimensions (IP00)

Height	356mm (14")
Width	661mm (26")
Depth	456mm (18")
Weight	54kg (119 lbs)

Example of diagram of dual motor system setup



Options for the Q800 Series

Part Name	Description	Part Number
Q812	For Single Motor 40HP 128V	A800345
Q820	For Dual Motor 20HP 128V	A800359
Q826	For Single Motor 80HP 240V	A800346
Q826-RB	For Single Motor 80HP 240V with emergency braking	A800347
Q826-LC	For Single Motor, liquid cooled with emergency braking	A800328
Q821	For Dual Motor 40HP 240V	A800314

Parts available for all systems

Dual Joystick	Q800 series IFB Dual Joystick	A800362
Interface box	Wired Remote Control IF box - universal	A800364
Op-Station	Operator's Station with shunt / k1 / BM PCB	A800291
Joystick	MSHA approved	A800072
Diagnostic Display	With programming port	A800348
Handheld Programmer	Allows setting and viewing of system parameters and logs	A800220-1
LU300b	12V DC 300W light supply, 90V to 360V DC input	A800966
LU301	14.4V DC, power supply, 120-300V DC input	A800904B
Choke box	.7mH	A800501
Dual Diode Module	800AMP	A800508
Power Supply	200-400V 24 75W	G9002-042
Resistor	1900W .12 OHM 105A (Qty 16 required)	R8000-019
Resistor Bank	Resistor Bank .48Ohm for 128V battery systems	A800130
Resistor Bank	Resistor Bank 1 Ohm for 300V DC systems (Tappable)	A800131
DC Brake Module	(BM600) 600A, 360V Threshold for Q826	A800992
DC Brake Module	(BM600) 600A, 300V Threshold	A800991
DC Brake Module	(BM600) 600A, 155V Threshold	A800990
Braking Diode	Power diode 600A, 1600V	D9002-032
Battery Charger	BC151 / 240N, 240V, 150A, 270-360V in, 250V out	A800636
Battery Charger	BC151 /120N, 120V, 150A, 270-360V in, 146V out, 10k Hz	A800639
Cable	For joystick to OP-Station, 6CON, 22AWG, 6PIN, F 270"	W6004-026
Cable	For PB to drive, 18CON, 22 AWG, 24PIN, 336"	W6004-023
Cable	For IFB to drive, 25CON, Sub-D, 336"	W6004-070
Cable	Cable, 25CON, Sub-D, 72"	W6004-071
Cable	For Op Station to IFB, 18CON, 22AWG, 24Pin, 120"	W6004-120

****Partial list shown. Please see your salesperson for all available options and configurations**

Q750 for Scoops

Saminco Part # *various*

(See your Sales Rep for specific ordering information)

Description

The Q750 is a compact, digital DC/DC traction drive available for single motor or dual motor operation.

Features

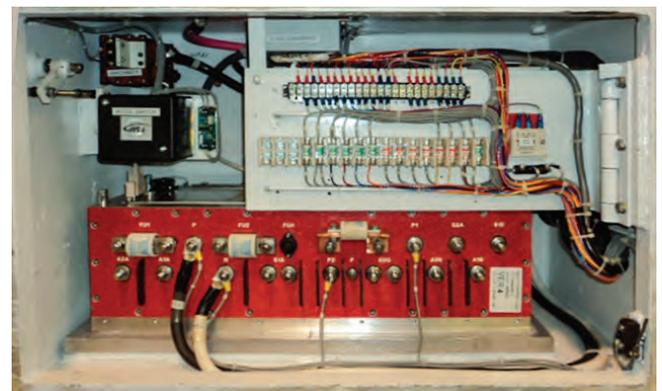
- Microprocessor based drive system
- Automatic motor speed-limiting
- Compact enclosure houses all power control devices, capacitor bank and soft start devices.
- Torque control mode provides superb traction and acceleration.
- Rugged, short circuit proof power circuit provides excellent long term reliability.
- Comprehensive display housed in explosion proof headlight enclosure.
- Uses the same Handheld Programmer and user interface as our JD400, Q800 and VFD drive systems.
- Regenerative braking provides smooth, powerful braking down to almost standstill. This feature greatly prolongs life of mechanical brakes.
- Over-current protection: Magnetic circuit breaker in DC supply (customer supplied) instantaneous cut-out if motor current exceeds 2500A for 100HP.

Applications:

- Scoops
- Shield Haulers
- Utility Vehicles



Q750 system mounted in XP box with swinging panel open



Q750 system mounted in XP box with swinging panel closed

Electrical Specifications

Specifications	Single Drive (A800355-3)		Dual Drive (A800357-3)*	
	Input	Output	Input	Output
Rated Power @ Rated Volts	44kW @120V	42kW @ 120V	87kW @ 120V	84kW @ 120V
Frequency Range	DC	DC	DC	DC
Voltage Range	80 - 160V DC	0 - 98% of V in	80 - 160V DC	0 - 98% of V in
Amps @ Rated Power	370A @ 44kW	350A @ 42kW	725A @ 87kW	2 x 350A

*NOTE: With J9002-201 address plug on MCM CN2 connector, Q750 parameter will automatically change to dual motor mode.

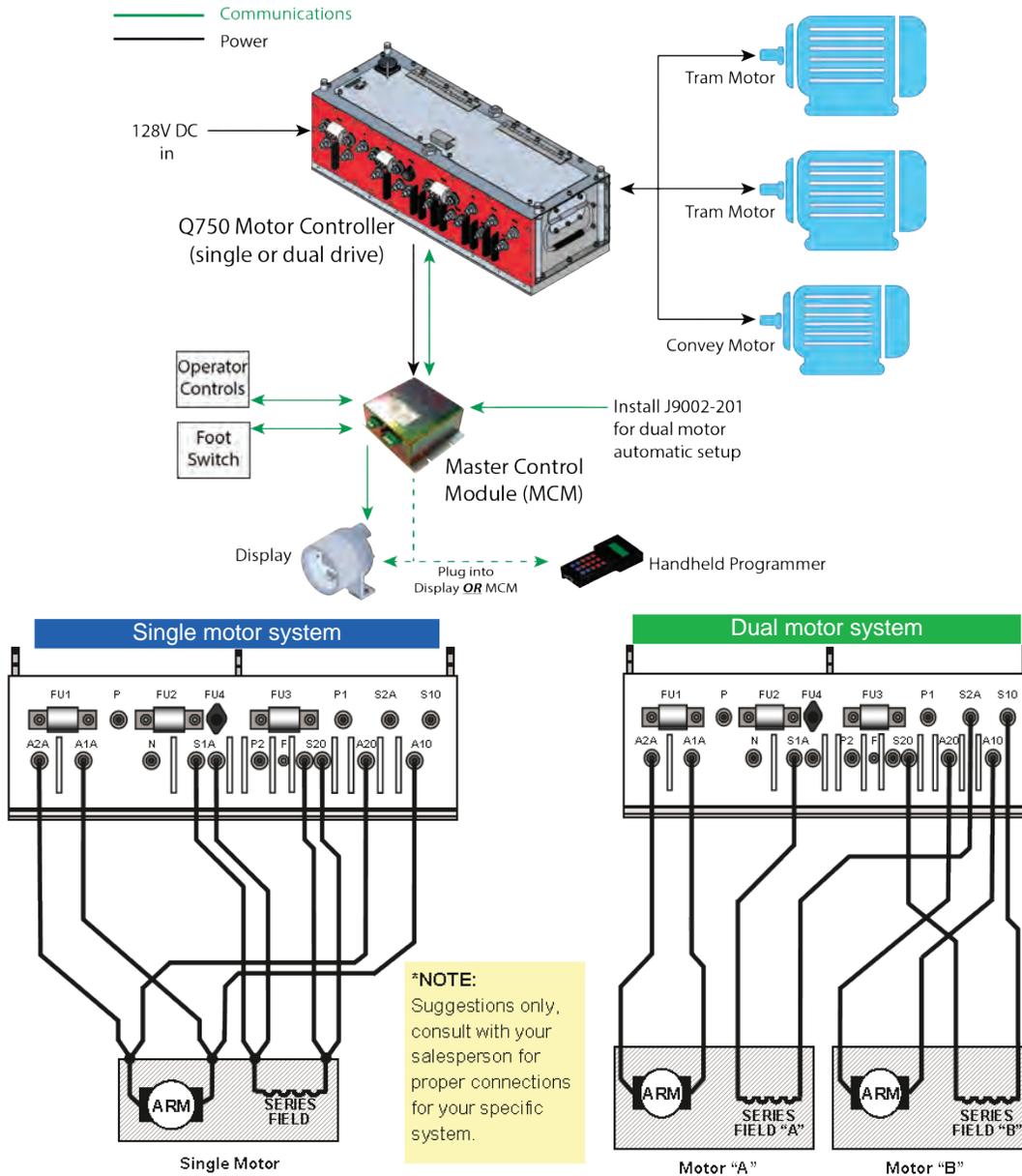
Environmental Specifications

Description	Specifications
Ambient Operating Temperature	-10°C (no frost) to +50°C (14°F to 122°F)
Storage Temperature	-40°C to +60°C (-40°F to 140°F)
Relative Humidity	<90% no condensation
Altitude	3300 Feet (1000 meters) - de-rate above 3000 meters.

Dimensions (IP00)

Height	230mm (9.1")
Width	705mm (27.8")
Depth	290mm (11.5")
Weight	50kg (110 lbs)

Example diagram of Q750 scoop system setup



Options for the Q750 System		
Part Name	Description	Part Number
Q750	Single 40kW (53HP) / 120V DC Drive	A800355-3
Q750	Dual 80kW (100HP) / 120V DC Drive	A800357-3
Parts available for both systems		
Master Control Module	Interface Box	A800365
SR-300	Option #1 Foot-switch	A800281
FS400	Option #2: Foot-switch	A800498
Diagnostic Display	With programming port	A800348
Handheld Programmer	Provides read and write access to firmware parameter sets	A800220
Cable Kit	Cable kit for the Q750	W6005-121
Cable	Cable 18CON 16Pin 72in, MCM to terminal C1	W6004-048
Cable	Cable 25CON Sub-D 36in, drive to MCM	W6004-001

**Partial list shown. Please see your salesperson for all available options and configurations

A777 for Scoops

Saminco Part # A800215

(See your Sales Rep for specific ordering information)

Description

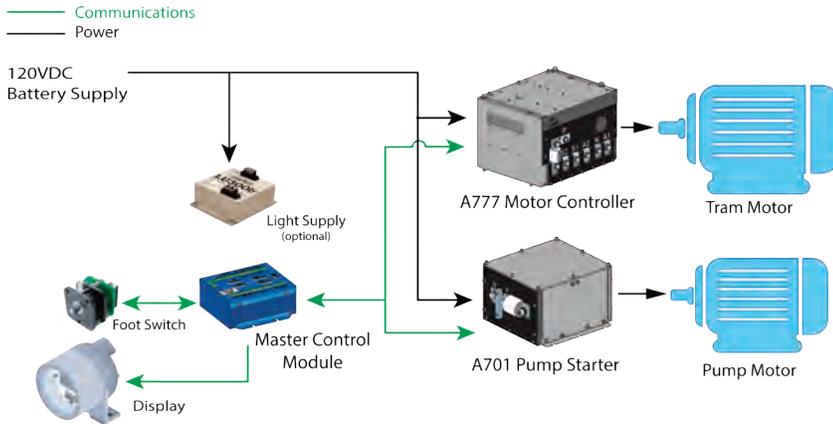
The A777 is a compact, self-contained unit that includes a cap bank, pre-charge circuit and DC-rated input contactor.

Applications:

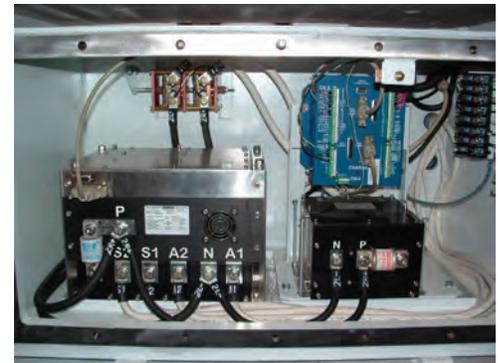
- Scoops

Features

- 50HP digital DC drive for 80V DC to 160V DC input
- Provides infinitely variable, reversible speed control for DC series wound motors up to 50HP
- Programmable setup and control parameters via Handheld Programmer
- Solid State reversing eliminates problems associated with contactors
- Diagnostics and data-logging
- Built in motor thermal overload circuit with inverse time characteristic
- Neutral position starting: the A777 can not operate unless all controls are in "off" or neutral position.
- "Differential" action during cornering - Both tram motors have independent torque control ensuring excellent handling
- Real time readings of input power, energy consumed, motor current, output power, control status and drive condition



Example diagram of single-motor A777 scoop system setup



A777 single-motor panel layout

Electrical Specifications			Environmental Specifications	
Specifications	Input (DC)	Output (DC)	Description	Specifications
Rated Power @ Rated Volts	42kVA @ 120V	41kW @ 120V	Ambient Operating Temperature	-10°C (no frost) to +50°C (14°F to 122°F)
Frequency Range	DC	DC	Storage Temperature	-40°C to +60°C (-40°F to 140°F)
Voltage Range	80V - 160V	0 - 98% of V in	Relative Humidity	<90% no condensation
Amps @ Rated Power	350A @ 42kW	340A @ 41kW	Altitude	1000 meters (3300ft) de-rate above 3000 meters

Options for the A777 System			Dimensions (IP00)	
Part Name	Description	Part Number	Height	241mm (9.5")
Motor Controller	A777 Traction Drive 1000A / 120V DC	A800215	Width	353mm (13.9")
Pump Starter	A701 Pump Starter - Gen II	A800216	Depth	312mm (12.3")
Master Control	Master Control Module - Gen II	A800227	Weight	29 kg (65 lbs)
Digital Graphic Display	Digital Display in aluminum enclosure	A800229		
Bus Bar Assembly	FC1200 bus bar assembly	A800212		
Cable	Cable 25CON Sub-D 36" (914mm)	W6004-001		
Cable	Cable 4CON 22AWG 30 ft (9m)	W6004-181		
Handheld Programmer	Provides read and write access to firmware parameter sets	A800220-1		

****Partial list shown. Please see your salesperson for all available options and configurations**

InWheel Motor with Brake

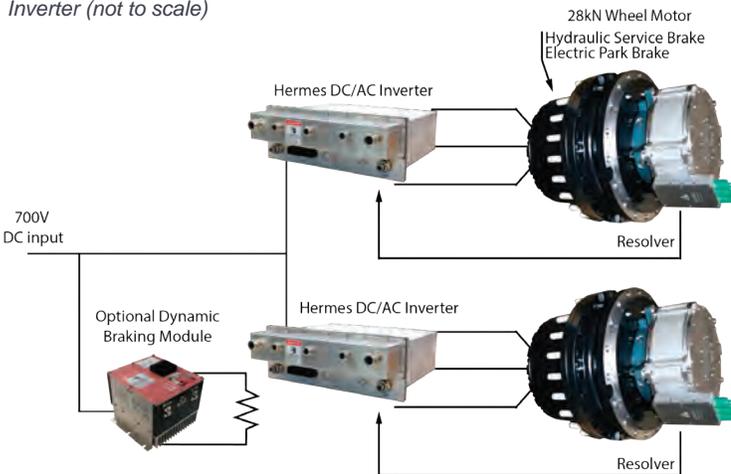
Description

For off-road vehicles up to 32 tons and 700V DC input power

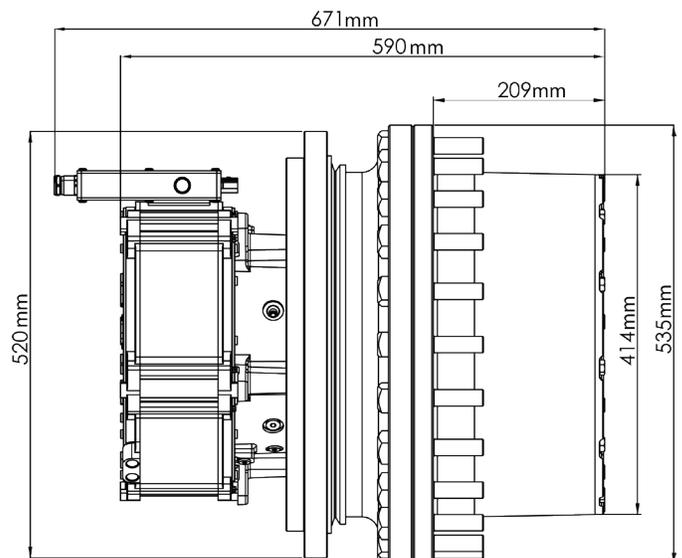
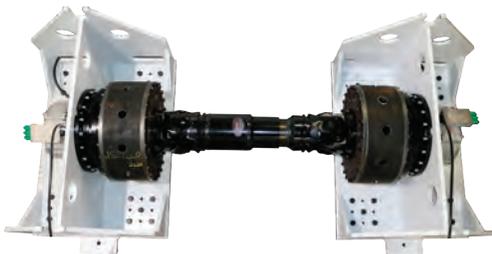
Features

- Power source: 700V battery, trailing cable, third rail, trolley line, or rectified 500V, 3 PH, AC
- Powered by the Hermes Inverter, page 20, or the VFD-3 inverter, page 6.

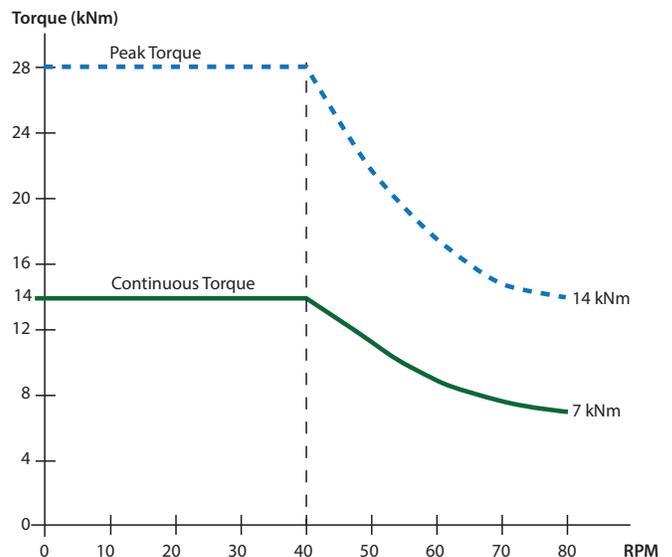
Sample Diagram of 28kN Drive System with the Hermes Inverter (not to scale)



Two InWheel motors setup on shared axle.



Speed Torque Performance



Specifications

Part Number	M6005-074
Model Number	WM 28kN
Maximum speed with 1m diameter tires	13.2 km/h (8.25 mph)
Peak torque	0 to 40 RPM: 28 kNm
Continuous torque	0 to 40 RPM: 14 kNm
Peak power	@ 40 RPM: 120 kW
Continuous power	@ 40 RPM: 60 kW (liquid cooled)
Maximum radial load	10,000 kg
Operating temperature range	-20°C to +60°C (-4°F to 140°F)
Braking:	
Hydraulic service brake	maximum 50kN
Electric park brake	24V DC (SPRING SET)
Dimensions:	
Height x Width x Length	520mm (20.5") x 520mm (20.5") x 671mm (26.4")
Weight	44 kg (97 lbs)

Saminco AC Traction Motors

Advantages

AC motors do not have the brushes used in DC motors, which means there are fewer moving parts to break and wear out, less required maintenance, a more rugged build and a longer life expectancy. Our motors are custom manufactured for Saminco to our specifications.

Features

- Some of the motors have dual voltage depending on Delta or Wye configuration.
- Flexibility to adapt to individual load requirements.
- Substantial increase in torque as compared to competitive motor.
- Robust all steel “mine-duty” round barrel construction.
- Fabricated copper rotor
- Low-loss copper-barred rotors are a copper alloy fabricated design for high efficiency, less slip and lower rotor losses (compared to equivalent aluminum die-cast rotors).
- RTD’s in windings to monitor motor temperature
- Saminco encoder has 120°C thermal rating

Water Cooled Motors

Water cooled motors by Saminco have two water connections (inlet and outlet) to a fully integrated wraparound water jacket design.

- 100% water cooled coverage over active core material.
 - Inner jacket can last 10+ years.
 - Optimized thermal circuit design with minimum thermal path length to cooling medium and epoxy resin in stator winding to ensure minimum optimum heat transfer from stator slot to stator back.
 - Machine runs cool - no water cooling required during extended tramping for place changes.
- Low current draw of motor (low AMPS) = extended LIFE.**
- Torque and speed-sharing between motors with greater starting torque.
 - Proximity detection system ready for reliable stopping and creep speed control.

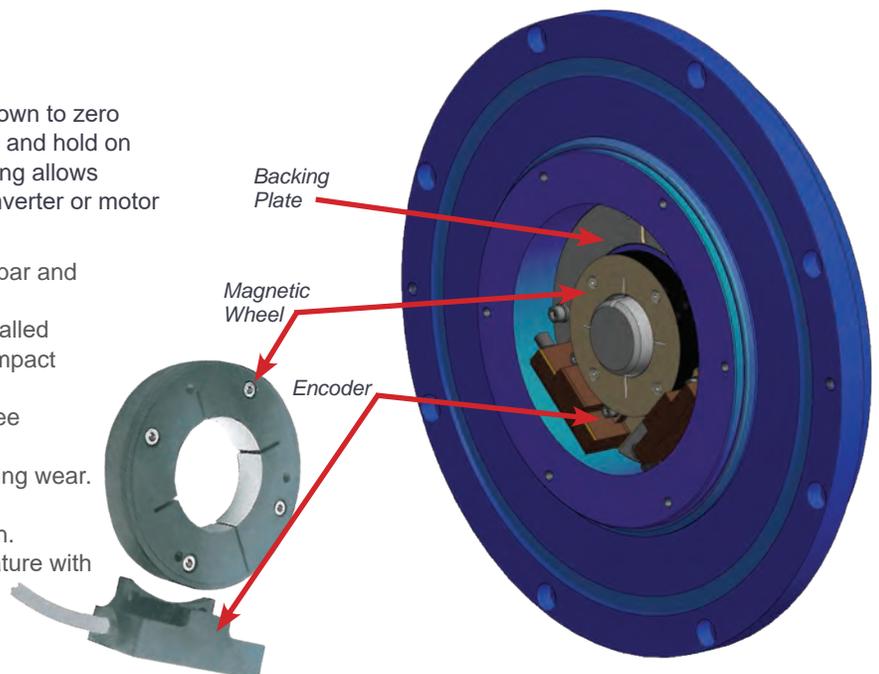


Inner jacket with steel water guides

Encoder Design

Internal encoder on motor gives Closed Loop Control down to zero speed. This gives full control of machine to slow, creep and hold on any mining grade. Energy saving full regenerative braking allows slowing and stopping the machine indefinitely without inverter or motor overheating.

- Specially designed, with collaboration between Dynapar and Saminco, to exceed the needs of the mining industry.
- Easily replaceable. It is internal to the motor, but installed through a bolt-on cover with a modular design for compact mounting.
- Wide-gap magnetic sensing technology for trouble-free operation.
- Greater gap tolerance results in more allowable bearing wear.
- 5-26V signal yields greater precision and accuracy.
- Encapsulated electronics for environmental protection.
- Drive is able to perform with full control at 90° quadrature with the added benefits of:
 - Proximity - slowdown and stop
 - Full proportional torque at full speed range.



Applications:

- Scoops
- Shuttle Cars
- Mining Locomotives
- Shield Haulers
- Continuous Miners

Retrofit Capabilities



Saminco offers the engineering capabilities to retrofit any model of machine and assist with the MSHA machine approval.

Rotor Design

The Saminco Cool-Torque™ motor is made with a copper alloy fabricated rotor design that is highly efficient with less slip and lower rotor losses when compared to the equivalent aluminum die-cast rotor. It has the flexibility to adapt to individual load requirements. Fault detection is normally visually detectable and can also be detected by a Growler test.



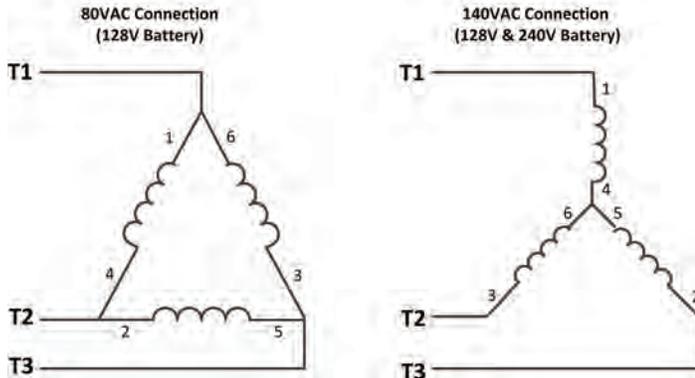
Mining Traction Motors

Samenco offers several traction motors with dual voltage options for battery vehicles, depending on wiring connections. Contact your Samenco representative for more information.

Applications:

- Scoops
- Shuttle Cars
- Shield Haulers
- Continuous Miners
- Mining Locomotives
- Jumbo Drills
- LHDs
- Battery Haulers

Dual Voltage Traction Motors for Battery Vehicles



TM1500



Mining locomotive motor installed



TM1200 continuous miner tram motor installed



TM1200 continuous miner tram motor

Motor Specifications - AC Traction

Motor Part Number	M6005-010-1	M6005-016-2	M6005-021	M6005-034	M6005-036	M6005-037	M6005-066
Model Number	XV55			TM1000	TM1500	TM1200	non-XP
Peak Torque	1000Nm	1000Nm	500Nm	1000Nm	1500Nm	1200Nm	1500Nm
Power Rating	55kW/ 75HP	55kW	15kW/ 20HP	55kW	80kW/ 108HP	40kW	80kW
Voltage	440V AC	80V / 140V AC	80V/ 140V AC	1193V AC	160V AC Δ 277V AC Wye	1140V AC	440V AC
Phase	3	3	3	3	3	3	3
Poles	4	4	6	4	4	4	4
Frequency - Base	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz	29 Hz	50 Hz
Current	93A	495A/ 280A	159A/ 92A	34A	370A/ 214A	42A	145A
RPM	1478	1478	974	1678	1484	849	1490
Duty	60 min	60 min	S4	60 min	60 min	60 min	60 min
Frame	15190C	27450 B (1c)	31280Aa	15190 Cc	33850 Aa	35200Aa- Ex d	XL 3698AY
Mounting	Flange	Foot	Flange	Flange	Flange	Flange	Foot
Temperature Rise	120°C	120°C	100°C	120°C	120°C	100°C	120°C
Insulation	H	H	F	H	H	H	H
Cooling	Non-ventilated	Non-ventilated	Non-ventilated	Non-ventilated	Non-ventilated	Water-cooled	Non-ventilated
Enclosure	T.E.X.P.	T.E.X.P.	T.E.	T.E. N.V. - IM B5	T.E.X.P.	T.E.-IM B5-IC 70 W	T.E.N.V.
Encoder	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MSHA Approval #	07-JA050005-0	07-JA050005-0	Non-XP	07-JA050005-0	07-JA130001-0	07-JA150001-0	Non-XP
Height	450mm (17.7")	508.1mm (20")	351mm (13.8")	450mm (17.7")	549mm (21.6")	451mm (17.75")	452mm (17.8")
Width	384mm (15.1")	444mm (14.5")	403mm (15.9")	384mm (15.1")	450mm (17.8")	410mm (16.1")	450mm (17.7")
Length	799mm (31.4")	759.1mm (30")	683mm (26.9")	799mm (31.4")	910mm (35.8")	721mm (28.4")	946mm (37.25")
Weight	635kg (1400 lbs)	630kg (1389 lbs)	250kg (551 lbs)	630kg (1390 lbs)	800kg (1763 lbs)	452kg (997 lbs)	644kg (1420 lbs)
Application	Shuttle Car Tram, LHD, Jumbo Drill	Scoop Tram, Mining Loco	Mining Locomotive	Shuttle Car	Scoop Mining Loco	Continuous Miner	LHD, Jumbo Drill

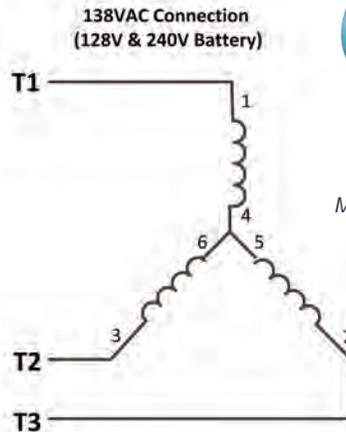
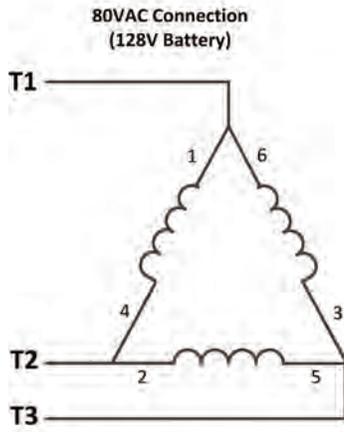
Pump and Conveyor Motors

Samenco offers several pump motors with dual voltage options for battery vehicles, depending on wiring connections. Contact your Samenco representative for more information.

Dual Voltage Pump Motors for Battery Vehicles

Applications:

- Scoops
- Shuttle Cars
- Shield Haulers
- Continuous Miners



M6005-019 Scoop Pump Motor



Conveyor Motor

Motor Specifications - Pumps		
Motor Part Number	M6005-019	M6005-028
Model Number	AC Pump Motor	AC Pump Motor
Power Rating	18kW / 24HP or 45HP	24HP
Voltage	Dual Voltage: 80V AC Δ connection 138V AC Wye connection	80V AC
Phase	3	3
Poles	4	4
Frequency	60 Hz	60 Hz
Current	175A/ 101A or 303A/ 175A	194A
RPM	1763 or 1730	1800
Duty	Continuous or 60 min	Continuous
Frame	29400Aa	XRL 2586AY
Mounting	Foot	Foot
Temperature Rise	100°C	100°C
Ambient Temperature	20°C	20°C
Insulation	H	H
Cooling	Fan cooled	Non-ventilated
Enclosure	T.E.X.P. IP55	T.E.X.P.
Encoder	No feedback	No feedback
MSHA ASSY #	29400Aa	617505-001
MSHA Approval #	07-JA110005-0	XP 3796-5
Height	406mm (16")	406mm (16")
Width	360mm (14.2")	356mm (14")
Length	654mm (25.7")	752mm (29.6")
Weight	260kg (573 lbs)	365kg (805 lbs)
Application	Scoop	Scoop

Motor Specifications - Conveyors	
Motor Part Number	M6005-020
Model Number	XV25
Power Rating	26kW / 35HP
Voltage	440V AC
Phase	3
Poles	4
Frequency	50 Hz
Current	50.6A
RPM	1478
Duty	60 min
Frame	13290F
Mounting	Flange
Temperature Rise	120°C
Ambient Temperature	20°C
Insulation	H
Cooling	Non-ventilated
Enclosure	T.E.X.P.
Encoder	No feedback
MSHA ASSY #	13290F
MSHA Approval #	07-JA060014-0
Height	388mm (15.3")
Width	360mm (14.2")
Length	691mm (27.2")
Weight	377kg (831 lbs)
Application	Conveyor

Vehicle Control Unit (VCU)

Samenco Part # Various
(See your Sales Rep for specific ordering information)

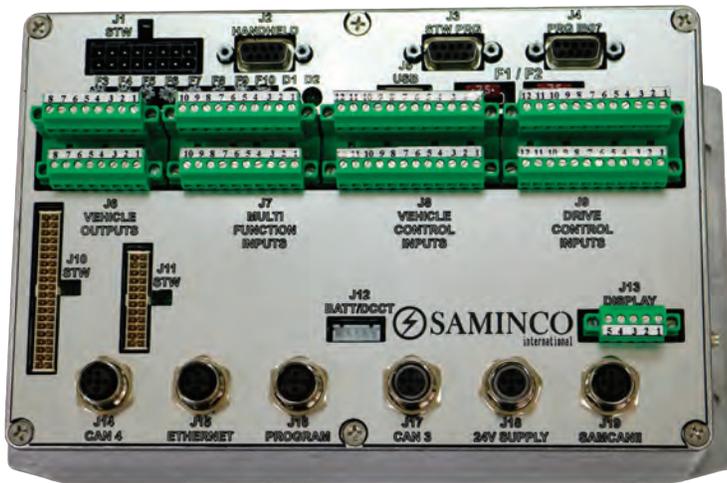
Description

The VCU uses CAN Bus to communicate with the VFD-3 drives, controlling the drive functions of the inverters, including communications with all other vehicle equipment. A simple selector switch located on the front of the VFD-3 drive will tell the VCU what function is intended for the drive.

Features

- Multiple CAN ports for diagnostics/ programming, CAN protocol, device CAN and auxiliary customer equipment.
- Industrial Ethernet port and Wifi support via bridge/ router
- USB flash drive programming and data logging with 1 GB flash internally used for logging
- CAN based I/O control reduces wires required
- Automated inverter configurations: store/ load parameter sets
- Multiple parameter configurations
- Hardware diagnostic ports available

Front cover of VCU Interface Module



VCU Interface Module
Part # A801245

Dimensions (IP00)	
Height	97mm (3.8")
Width	147mm (5.8")
Depth	239mm (9.4")
Weight	2.7 kg (6 lbs)

Specifications for the Vehicle Control System

Electrical Specification	Description	Specification
Power	Supply Voltage	8...32VDC (24VDC nominal)
	Supply Current	~500 mA + Output Current (8A max)
	Ignition Signal	7.0V min
Control I/O	33x Digital Inputs	40 VDC max
	6x Analog Inputs	40 VDC max
	8x digital Outputs (7 external, 1 internal VCU E-Stop)	Supply Voltage @ 2.5 A max each
	1x CAN-BUS	Can Bus based I/O control
Communication	3x CAN-Bus, 1x Ethernet, 1x WiFi, 1x USB, 2x RS232, 2x LED	
Logging	On board FLASH	1GB storage



Vehicle Control Unit
Part # 801248-A

Environmental Specifications

Description	Specifications
Ambient Operating Temperature	-20°C (no frost) to +50°C (-4°F to 122°F)
Typical Operating Temperature	45°C (113°F)
Baseplate Temperature Range (@2kHz PWM)	-20°C to +80°C (-4°F to 176°F)
Typical Baseplate Temperature Range (@2kHz PWM)	350°C (122°F)
Relative Humidity	100% non-condensing

Dimensions (IP00)	
Height	51mm (2")
Width	138mm (5.4")
Depth	217mm (8.5")
Weight	1.4 kg (3 lbs)

VFD Master Control Modules

Saminco Part # Various
(See your Sales Rep for specific ordering information)

Description

Provides interface for all the functions of the Saminco various systems.

Features

- Internal isolated power supply, self powered from DC line voltage (battery or DC Bus).
- Three programmable logic outputs
- Built in CANbus and RS-485 communication ports
- Removable wire harness for system interface wiring
- Voltage charge LED
- Optional shunt trip output
- Polarity protection
- System includes:
 - Battery discharge indicator
 - Motor temperature sensors
 - Motor speed sensors



Master Control Module Specifications (IP00)						
MCM Part Number	A800227-1	A800368	A800468	A800668	A800825	A800868
System used with	A777	VFD	120V Battery (A800788)	240V Battery (A800789)	JD400 with Proximity Detection	120V Battery (with joystick)
Application	Scoops	Shuttle Car	Scoops Shield Haulers	Scoops Shield Haulers	Shuttle Car	Mining Locomotives
Input Supply	80V to 160V DC	180V to 340V DC	128V	240V	120V AC	120V AC

Cables available for VFD Master Control Modules					Dimensions (IP00)	
Cable Part Number	Connects to	Description	Length	Quantity Needed	Height	Width
W6004-281	MCM to tram drive	Controls right or left tram motor	91cm (36")	2	208mm (8.2")	208mm (8.2")
W6004-184	MCM to tram drive	Optional extended cable to tram drives	183cm (72")	2	89mm (3.5")	
W6004-181	MCM to diagnostic display	Sends information to/from Diagnostic Display	91cm (36")	1	2.73kg (6lbs)	

Digital Master Control Modules

Saminco Part # Various
(See your Sales Rep for specific ordering information)

Description

Provides interface for all the functions of the Saminco various digital drive systems.

Features

- CANbus communication protocols
- Removable wire harness for system interface wiring
- Polarity protection

Master Control Module Specifications		Dimensions (IP00)	
MCM Part Number	A800817	Height	208mm (8.2")
System used with	JD400	Width	203mm (8")
Application	Continuous Miner	Depth	107mm (4.2")
Input Supply	120V AC	Weight	1.8kg (4lbs)



MCM for JD400 Part # A800817

Cables available for Digital Master Control Modules				
Cable Part Number	Connects to	Description	Length	Quantity Needed
W6004-004	MCM to tram drive	25 pin connector Sub-D	183cm (72")	2
W6004-181	MCM to digital display	4 pin connector 22AWG	9m (30')	1

Digital Displays

Samincos Part # Various

(See your Sales Rep for specific ordering information)

Description

Universal diagnostic display available for shuttle cars, scoops and LHDs. VGA color display with multi-line, multi-page options and touchscreen capability. 24V DC input via the master control module.

Features

- Operating voltage range: 9...36V DC
- Protection: Short Circuit Protection
- Overvoltage resistance: 48V for max. 5 minutes
- Inverse polarity: Up to -48V DC for max. 5 minutes

Sample screens for:



Cables available for Diagnostic Display			
Part Number	Application	Description	Length
W6004-417	Display Cable	1.5m length	1.5m (59")

Dimensions	
Height	260.5mm (10.3")
Width	171.5mm (6.75")
Depth	356mm (14")
Weight	2.72kg (16 lbs)

Diagnostic Displays

Samincos Part # Various

(See your Sales Rep for specific ordering information)

Description

The Diagnostic Display shows vital system status, warning, and fault messages in real time. Display consists of a graphical display in communication with each of the vital system components.

Features

- Real time display showing the status and instantaneous condition of the system
- Displays information: directional, motor temperature, faults
- Four modes of operation: Status, Fault, Warning and No Connection
- PA and MSHA approved



Digital Display Specifications			
Part Number	A800101-E	A800348	A800406
Description	Diagnostic Digital Display - board ONLY	Adaptive Digital Display	
Application	Mining	Mining	
Input Supply	24V DC via the Master Control Module		
Enclosure Type		Aluminum	Steel
Explosion Proof	Yes	Yes	Yes

Dimensions	
Height	183mm (7.2")
Width	152mm (6")
Depth	170mm (6.7")

Cables available for Diagnostic Displays		
Part Number	Description	Length
W6004-145	Cable 4con 22AWG 4 pin	3.6m (12')
W6004-156	Diagnostic Cable	5.5m (18')
W6004-181	Cable 4con 22AWG	9.1m (30')
W6004-183	Cable 4con 22AWG	7.6m (25')

Saminco Part # A800220-1

Handheld Programmer

Description

The Handheld Programmer provides read and write access to the parameter sets for Saminco drives. Only one Handheld Programmer is needed for a fleet of machines.

Attaches to Saminco equipment via a 9 pin Sub-D connector. The connecting cable MUST be a proper Saminco cable. See ordering information below.

Features

Used to access the following information from a Saminco drive or system:

- Analog inputs: current, voltage, temperature, reference
- Digital inputs: control signals, fault switches
- Status: current run status, fault status
- Calculations: rpm, speed, counters, timers
- Parameter settings: drive settings, motor settings
- Fault history



Electrical Specifications

Input 24V DC via digital display

Part # Specifications

Description	Saminco Part #
Handheld Programmer	A800220-1
Cable	W6004-003

Dimensions (IP61)

Height	244mm (9.6")
Width	130mm (5.1")
Depth	35mm (1.4")
Weight	.45kg (1 lb)

Panic Switch

Description

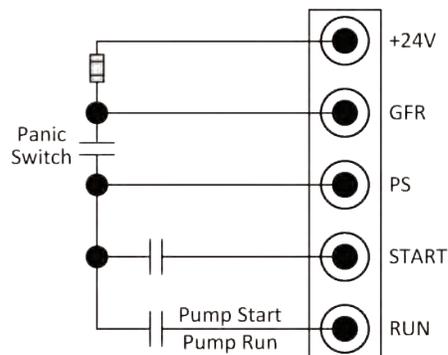
Panic switch for mining traction systems.

Features

- **NOT FOR HIGH VOLTAGE USE**
- Signal contacts
- Logic level operation
- 24V gold contact

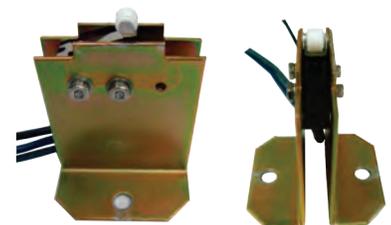
Competitive panic switch contacts are often made of copper or silver cadmium oxide. These contacts do not provide repeatable, consistent conduction for low voltage/ low current operation of the panic switch.

The Saminco PS300 panic switch uses sealed micro-switches with "gold cross point contacts" rated for currents and voltages as low as 10µ/ 5V DC up to 100mA/ 250V AC.



Suggested wiring for the panic switch

Saminco Part # A800190



PS300 Panic Switch (IP000)

Specifications

Part Number	A800190
Model Number	PS300
Input Supply	20V to 26V DC @ 20mA
Height	48mm (1.9")
Width	42mm (1.7")
Depth	38mm (1.5")

CAN Foot Switch and CAN Convey Switch

Saminco Part #
A801260 - CAN Foot Switch
A801259 - CAN Convey Switch

Description

The CAN foot switch and the CAN convey switch work with the new Saminco VFD-3 system for mining vehicles. With a similar footprint to our older model foot and convey switches, these models have upgraded communications with the same ease of use you are already familiar with. The foot switch is available for shuttle cars, continuous miners, battery haulers, scoops and other mining utility vehicles. The convey switch is for shuttle cars.

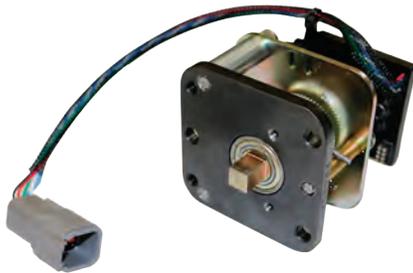
Saminco's CAN Bus Actuators dramatically improve performance and reliability over the traditional analog actuators used to control variable speed drives. The new design replaces the mechanical potentiometer with a magnetic hall effect sensor, and communication is digital via CAN Bus. The actuator is bidirectional, providing separate forward, reverse, and neutral signals. Digital signaling guarantees neutral switch validation is never coincidental with direction signals.

Common Features

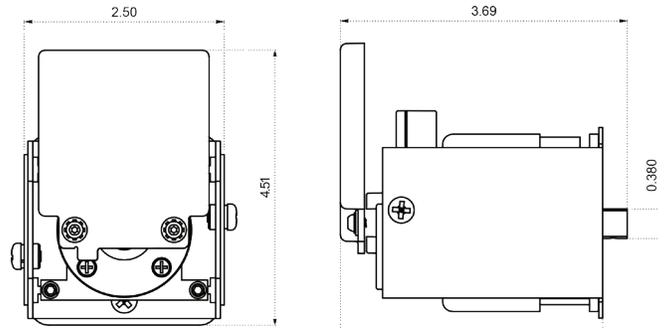
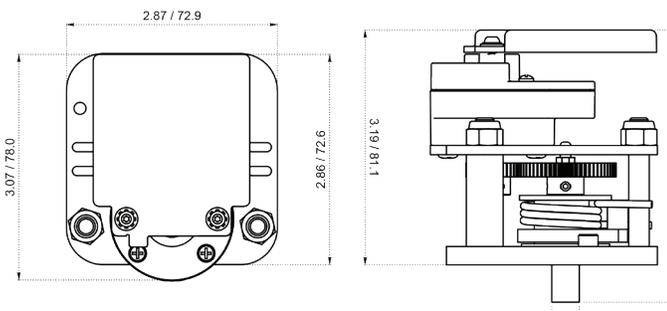
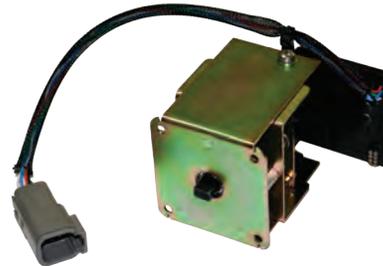
- Communications: CAN Bus, J1939 compatible, less wiring for multiple sensors
- Safety features include guaranteed neutral validation sensing and missing ground/ common wire protection
- Mounts inside commonly available explosion-proof housing used for shuttle cars
- Improved position accuracy with contactless position-sensing
- Hall Effect technology
- EMI and RFI resistant
- Troubleshooting is easily diagnosed through the VCU (Vehicle Control Unit)

Specifications	CAN Foot Switch	CAN Convey Switch
Part Number	A801260	A801259
Input Supply	10 - 30V DC @ 20mA	10 - 30V DC @ 20mA
Power Rating	20mA @ 12V DC	0.24W
Operating Temperature	-40°C to +85°C	-40°C to +85°C
Neutral	CAN	CAN
Forward/ Reverse	CAN	CAN
Operating Temperature	-40°C to +85°C	-40°C to +85°C
Height	94mm (3.7")	61mm (2.4")
Width	72.9mm (2.87")	61mm (2.4")
Depth	78mm (3.07")	87mm (3.4")
Weight	.62kg (1.38 lbs)	.45kg (1 lbs)

CAN Foot Switch (IP15)
Saminco Part # A801260



CAN Convey Switch (IP15)
Saminco Part # A801259



Features - Foot Switch

- Rugged foot-switch assembly for off-road electric vehicles
- Configured for symmetrical forward/ reverse operation
- Gear-less construction allows CAN output variation for 0° to 45° foot pedal movement from either direction
- DC supply input reverse polarity protected. Mis-connection to other terminals will not damage foot-switch circuit.

Features - Convey Switch

- 5-Position Detent with four control modes: forward, reverse, neutral, reference
- Mounts inside commonly available, explosion-proof housings
- Ruggedly built to last

Foot Switches

Saminco Part # A800498 (FS400)
A800281 (SR300)

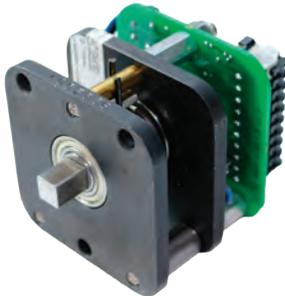
Description

Foot switch assembly for shuttle cars, continuous miners, battery haulers, scoops and other mining utility vehicles. See table below to select correct foot switch for vehicle.

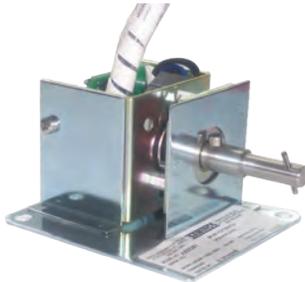
Features

- Rugged foot switch assembly for off-road electric vehicles
- Configured for symmetrical forward/ reverse operation
- Mounts inside commonly available, explosion-proof housings
- Safety features: neutral sensing contact and missing ground/ common wire protection
- Gear-less construction allows full 0 to 4V output variation for 0° to 45° foot pedal movement from either direction
- Buffered, low impedance output allows use with many different solid-state controllers
- DC supply input reverse polarity protected. Mis-connection to other terminals will not damage foot-switch circuit.

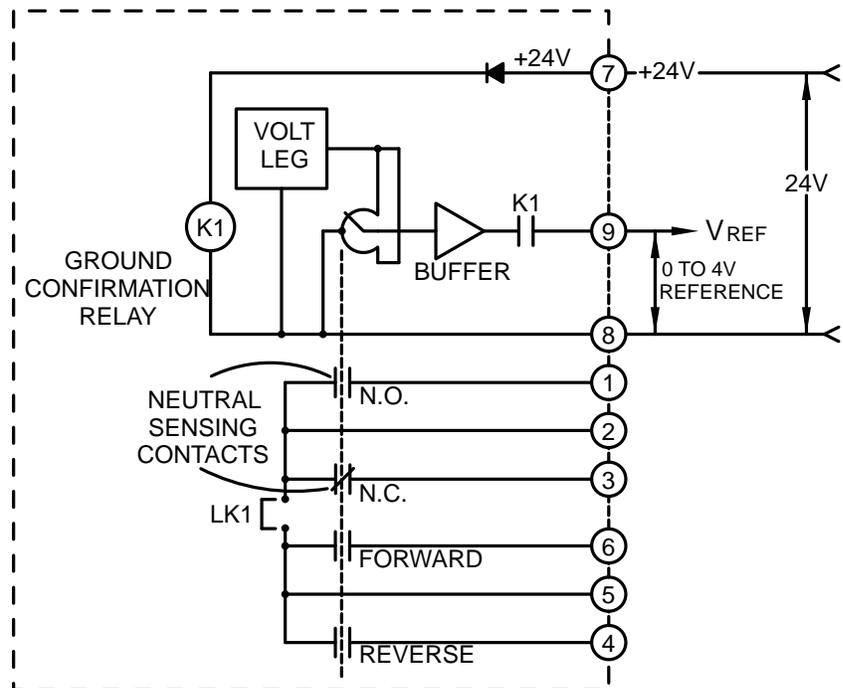
FS400 Foot Switch (IP00)
Saminco Part # A800498



SR300 Foot Switch (IP00)
Saminco Part # A800281



Electronic tram reference with built in safety features



Specifications

Part Number	A800498	A800281
Model Number	FS400	SR300
Input Supply	20V to 26V DC @ 20mA	20V DC to 30V DC @ 20mA
Output Voltage	0V to 4V DC = 0 - 100% Reference	0V to 4V DC for 0 - 90° rotation
Output Current	Up to 10mA	Up to 10mA
Height	86mm (3.4")	60mm (2.4")
Width	73mm (2.9")	95mm (3.8")
Depth	73mm (2.9")	118mm (4.7")
Neutral	N.O. (normally open) and N.C. (normally closed) contacts at "0" position rated 1A @ 30V DC	
Forward/ Reverse	N.O. contact for reverse; N.O. contact for forward (Each rated 1A @ 30V DC)	
Where used	Shuttle Cars	Scoops and Coal Haulers

Conveyor Switches

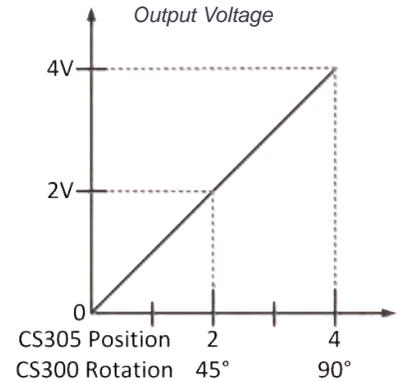
Saminco Part # A800300 (CS300)
A800305 (CS305)

Description

Conveyor speed control switch assembly for shuttle cars.

Features

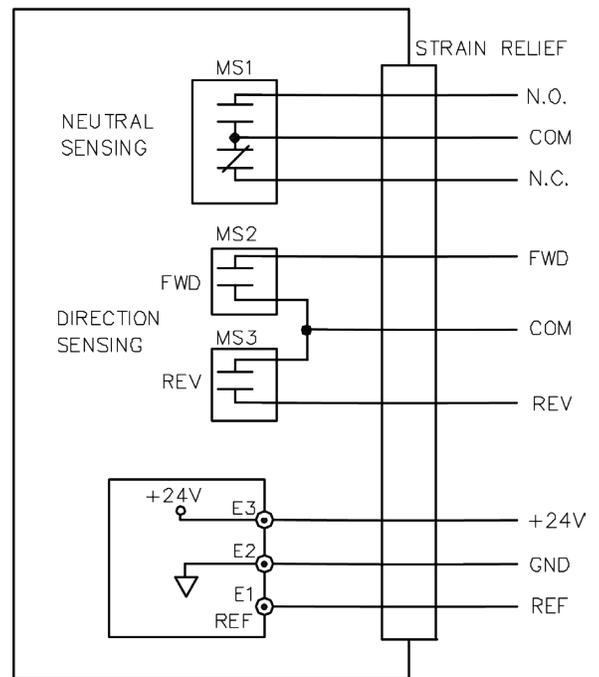
- Ruggedly built to last.
- Configured for symmetrical forward/ reverse operation
 - CS300 with spring return to 0 (off)
 - CS305 with 6 step retained position in both directions
- Mounts inside commonly available explosion-proof housings used for shuttle cars
- Safety features: neutral sensing contact and missing ground/ common wire protection
- Gear-less construction allows full 0 to 4V output variation for 0° to 90° rotation in either direction
- Buffered, low impedance output allows use with many different solid-state controllers
- DC supply input reverse polarity protected. Mis-connection to other terminals will not damage circuit.



CS300 Conveyor Switch (IP00)
Saminco Part # A800300



CS305 Conveyor Switch (IP00)
Saminco Part # A800305



NOTE:
FORWARD DIRECTION IS CW SHAFT ROTATION

Specifications		
Part Number	A800300	A800305
Model Number	CS300	CS305
Input Supply	20V to 26V DC @ 20mA	20V DC to 26V DC @ 20mA
Output Voltage	0V to 4V DC for 0° - 90° rotation	0V to 4V DC for 0° - 90° rotation
Output Current	Up to 10mA	Up to 10mA
Height	60mm (2.4")	60mm (2.4")
Width	64mm (2.5")	64mm (2.5")
Depth	70mm (2.8")	83mm (3.3")
Other	Speed reference, forward/ reverse, neutral	De-tented travel, 13 positions
Neutral	N.O. (normally open) and N.C. (normally closed) contacts at "0" position rated 1A @ 30V DC	
Forward/ Reverse	N.O. contact for reverse; N.O. contact for forward (Each rated 1A @ 30V DC)	

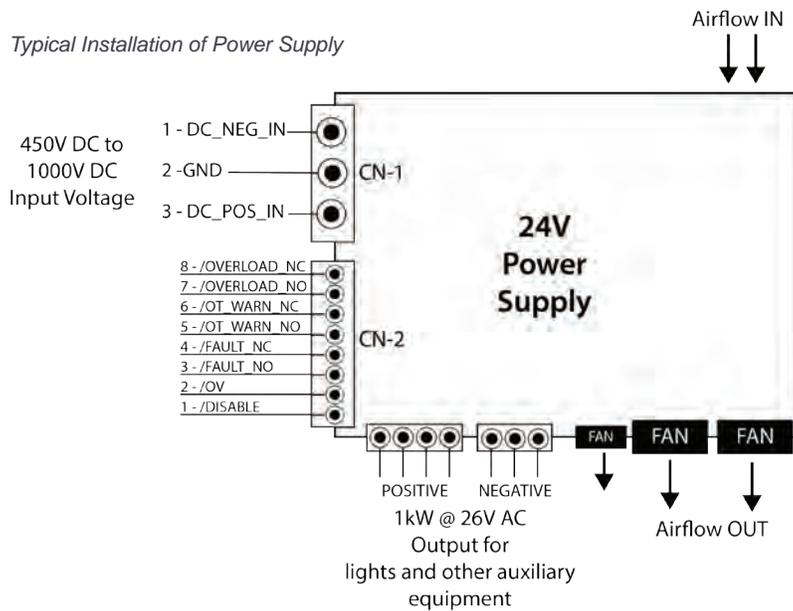
24V Power Supply

Description

This module is designed to work with the new VFD-3 system and provide 24V, 1kW power supply for lights and other auxiliary equipment on the vehicle.

Features

- Input OV and UV protection
- Input reverse polarity protection
- Output OV protection
- Over temperature warning
- Over temperature trip
- Output overload warning
- Fan auto start at power up



Dimensions

Height	141mm (5.6")
Width	206mm (8.1")
Depth	309mm (12.2")
Weight	8.6 kg (19 lbs)

Power Supply input side



Electrical Specifications

Specifications	Rectified Input (DC)	Output (AC)
Rated Power @ Rated Volts	1.13kW @ 650V DC	1.04kW @ 26V
Frequency Range	DC	DC
Voltage Range	450 - 1000V	26V DC
Amps @ Rated Power	1.75A @ 1.13kW	40A @ 1.04kW

Environmental Specifications

Description	Specifications
Ambient Temperature Range	-40°C (no frost) to +60°C (-40°F to 140°F)
Typical Operating Temperature	45°C (113°F)
Relative Humidity	100% non-condensing

LU300b Light Supply

Saminco Part # A800966

Description

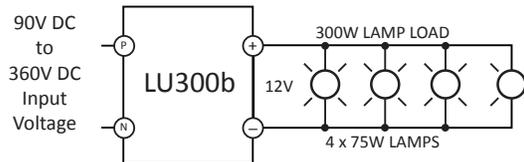
The LU300b is a compact, 12V, 300W light supply for use in battery or trolley-operated vehicles such as scoops, shuttle cars, battery/ shield haulers and LHDs.

Features

- Wide input voltage range of 90V DC to 360V DC.
- Can be used with positive or negative grounded systems.
- Output is fully isolated from input and is short-circuit protected.
- Input is reverse polarity protected
- Can be connected in series to provide 24V @ 25A or +/- 24V @25A.
- Mount the unit on a solid metal frame to help dissipate heat generated at maximum output.
- Approved for use in Pennsylvania mines (Bote:1754-99)

Isolation Rating

Input to base plate: 2500V AC, RMS
 Input to output: 2500V AC, RMS
 Output to baseplate: 500V AC, RMS



Typical Installation of LU300b Light Supply



Dimensions (IP00)	
Height	76mm (3")
Width	178mm (7")
Depth	146mm (5.75")
Weight	.91kg (2 lbs)

Electrical Specifications

Specifications	Input	Output
Rated Power @ Rated Volts	330VA @ 300	300W
Frequency Range	DC	DC
Voltage Range	90 - 360V	12V
Amps @ Rated Power	1.1A/ 300	25A
Efficiency @ 300W	83% (maximum heat loss is 51W)	

Environmental Specifications

Description	Specifications
Operating Temperature Range	-20°C to 60°C (12°F to 140°F)
Thermal Impedance (baseplate to ambient)	0.6°C/ W
Maximum Heatsink Temperature	85°C (185°F)

LU600 Light Supply

Saminco Part # A800541-1

Description

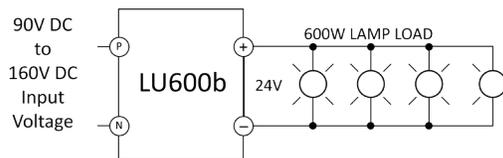
The LU600b is a compact 24V DC, 600W DC, 75A isolated power supply for auxiliary equipment.

Features

- Wide input voltage range: 130V DC to 280V DC. Can be used with positive as well as negative grounded systems.
- Output is fully isolated from input and is short circuit protected.
- Input is reverse polarity protected.

Isolation Rating

Input to base plate: 2500V AC, RMS
 Input to output: 2500V AC, RMS
 Output to baseplate: 500V AC, RMS



Typical Installation of LU600b Light Supply



Dimensions (IP00)	
Height	76mm (3")
Width	178mm (7")
Depth	150mm (5.9")
Weight	.91kg (2 lbs)

Electrical Specifications

Specifications	Input	Output
Rated Power @ Rated Volts	720W @ 160V DC	600W
Frequency Range	DC	DC
Voltage Range	90 - 160V	24 - 28V DC
Amps @ Rated Power	4.5A	22 - 26V DC
Efficiency @ 600W	83% (maximum heat loss is 51W)	

Environmental Specifications

Description	Specifications
Operating Temperature Range	-20°C to 60°C (12°F to 140°F)
Thermal Impedance (baseplate to ambient)	0.6°C/ W
Maximum Heatsink Temperature	85°C (185°F)

Saminco Part # A801246

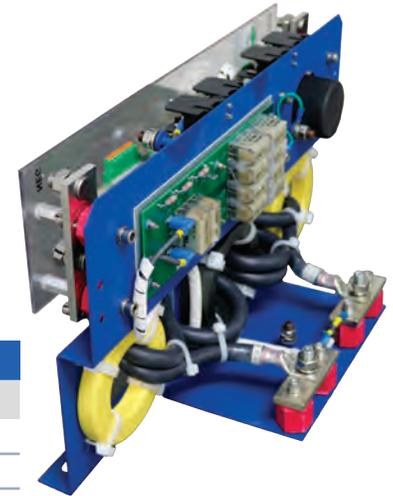
Soft Charge Module with EMC Filter

Description

Soft Charge Module (SCM) with EMC filter is designed to work with the VFD-3 system. EMC filter is easily accessible for maintenance.

Features

- Compact and easy to install with only 6 bolts required to attach to frame of XP box.
- All logic in the SCM is implemented using discrete hardware logic components.



Electrical Specifications		
Specifications	Input	Output
Rated Power @ Rated Volts	114kW @ 650V DC	114kW @ 650V DC
Frequency Range	DC	DC
Voltage Range	400V - 1200V DC	400V - 1200V DC
Amps @ Rated Power	175A	175A

Environmental Specifications IP00	
Description	Specifications
Ambient Operating Temperature	-20°C (no frost) to +50°C (-4°F to 122°F)
Storage Temperature	-40°C to +60°C (-40°F to 140°F)
Relative Humidity	<90% No Condensation
Altitude	3300 Feet (1000 meters) - de-rate above 3000 meters

Dimensions	
Height	445mm (17.5")
Width	233mm (9.2")
Depth	181mm (7.1")
Weight	7.3kg (16 lbs)

Down Chopper 850V DC / 300V DC

Saminco Part # A800492

(See your Sales Rep for specific ordering information)

Description

- Self powered, self starting 300V DC control and auxiliary power supply
- With 15A fuse, 1000V DC
- Replacement for the A800381 Down Chopper

Electrical Specifications		
Specifications	Input	Output
Rated Power @ Rated Volts	1275W @ 850V	1200W @ 300V
Frequency Range	DC	DC
Voltage Range	350V - 1000V DC	300V DC
Amps @ Rated Power	1.5A @ 1275W	4A @ 1200W



Environmental Specifications for Down Chopper and Pump Starter	
Description	Specifications
Ambient Operating Temperature	-10°C (no frost) to +50°C (14°F to 122°F)
Storage Temperature	-40°C to +60°C (-40°F to 140°F)
Relative Humidity	<90% no condensation
Altitude	1000 meters (3300ft) de-rate above 3000 meters

Dimensions (IP00)	
Height	157mm (6")
Width	236mm (9.3")
Depth	268mm (10.5")
Weight	5.4kg (12 lbs)

Inductors

Saminco Part # Various

(See your Sales Rep for specific ordering information)

Description

Used with the 1000V AC System as a line reactor for rectifier AC input in an XP enclosure environment.

Features

- Copper windings
- Open core and coil
- Connections for ring-crimp termination



Electrical Specifications			
Part Number *	A801000	A801006	A801015
Rated Power @ Rated Volts Input	150kW @ 1140V	300kW @ 1140V	240kW @ 1140V
Frequency Range Input	50 Hz	50/60 Hz	50/ 60 Hz
Amps @ Rated Power Input	100A	190A	150A
Voltage Range Input	855 - 1254V	855 - 1254V	855 - 1254V
Inductance	.6mH	0.3mH	0.36mH
Environmental Specifications			
Storage Temperature Range	-40°C to 85°C (-40°F to 185°F)		
Ambient Air Operating Temperature Range	-20°C to 50°C (-4°F to 122°F)		
Dimensions (IP00)			
Height	212mm (8.3")	279mm (11")	212mm (8.3")
Width	273mm (10.7")	235mm (9.25")	273mm (10.7")
Length	235mm (9.3")	368mm (14.5")	235mm (9.3")
Weight	50kg (110 lbs)	72kg (160 lbs)	50kg (110 lbs)

*Partial list shown. Please see your salesperson for all available options and configurations.

Capacitor Bank

Saminco Part # A800499

(See your Sales Rep for specific ordering information)

Description

For use in AC/AC Shuttle Car systems, with the Rectifier Brake Module on page 48.

Features

Adds shared capacitance to DC bus when less than three drives are used in the system.

Specifications

1620µF, 1200V



Environmental Specifications for all products above	
Description	Specifications
Ambient Operating Temperature	-20°C to +50°C (-4°F to 122°F)
Storage Temperature	-40°C to +65°C (-40°F to 149°F)
Relative Humidity	<90% No condensation
Altitude	3300 feet (1000 meters) - de-rate above 3000 meters

Dimensions (IP00)	
Height	216mm (8.5")
Width	240mm (9.4")
Depth	344mm (13.6")
Weight	12.7kg (28 lbs)

BM600 DC Braking Module

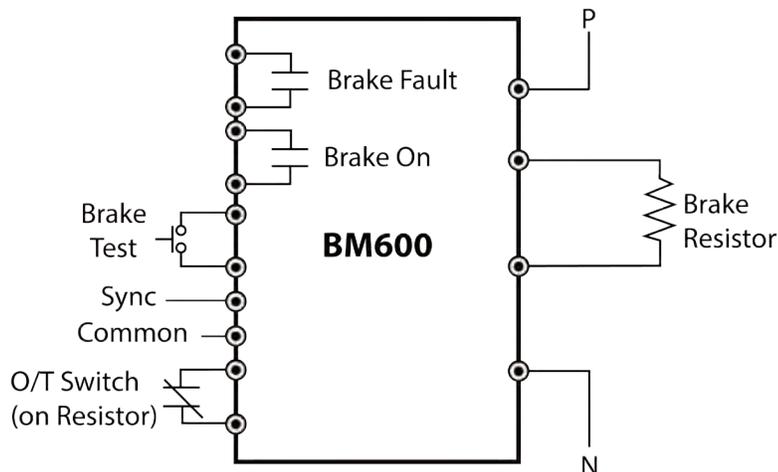
Samenco Part # A800990 (155V Threshold)
A800991 (317V Threshold)
A800992 (360V Threshold)

Description

Used with the Q800 or A800 series, this DC Braking module absorbs high voltage surges on DC voltage supplies due to regenerative braking of DC or AC traction drives.

Features

- Adjustable from 150V to 400V
- Capable of dumping up to 600A into braking resistor
- 10% duty cycle (for example: 6 seconds on, every 60 seconds)
- Contains provision for resistor over-temperature protection via resistor OT sensor
- Compact, single enclosure houses all components, including internal isolated power supply
- Brake On and Brake Fault output via relay contact
- Able to sync up to 5 modules with "first triggers all" concept (no master unit required) for a total of 3000A braking current
- Battery condition monitoring feature sends signal to operator indicating repeated brake cycles, warning the operator to check the battery condition
- Braking resistor rating:
 - 150V threshold: 0.25 Ω , 5kW continuous (battery system)
 - 360V threshold: 0.6 Ω , 12kW continuous



Brake module installation in Q800 system on mining locomotive

Electrical Specifications

Part #	A800990		A800991		A800992	
Model #	BM600 155V Threshold		BM600 317V Threshold		BM600 360V Threshold	
Specifications	Input	Output	Input	Output	Input	Output
Rated Power @ Rated Volts	90kW @ 150V	90kW @ 150V	190kW @ 317V	190kW @ 317V	210kW @ 360V	210kW @ 360V
Frequency Range	DC	DC	DC	DC	DC	DC
Voltage Range	110 to 155V DC	0 to input	180 to 360V	0 to input	180 to 360V	0 to input
Amps @ Rated Power	600A Peak	600A Peak	600A Peak	600A Peak	600A Peak	600A Peak

Environmental Specifications

Description	Specifications
Ambient Operating Temperature	-10°C to 40°C (14°F to 104°F)
Storage Temperature	-40°C to 65°C (-40°F to 149°F)
Relative Humidity	<90% no condensation
Altitude	3300 feet (1000 meters) - de-rate above 3000 meters

Dimensions (IP00)

Height	141mm (5.7")
Width	254mm (10")
Depth	356mm (14")
Weight	15.8kg (35 lbs)

BM601 Regenerative Protection Module

Samenco Part # A800993

Description

Brake module is mounted on vehicle.

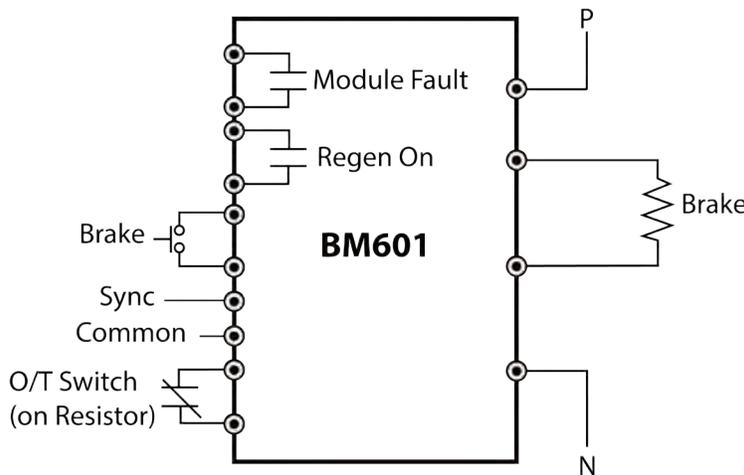
Features

- Absorbs over voltage surges on DC voltage supplies due to regenerative braking of DC or AC propulsion drives — adjustable from 272V DC to 768V DC.
- Capable of dumping up to 600A into braking resistor.
- 10% duty cycle (for example: 6 seconds on, every 60 seconds)
- Contains provision for resistor over-temperature protection via resistor OT sensor.
- Compact, single enclosure houses all components, including internal isolated power supply.
- Brake On and Brake Fault output via relay contacts
- Able to sync up to 5 modules with “first triggers all” concept (no master unit required) for a total of 3000A braking current.



Dimensions (IP00)

Height	152mm (6")
Width	356mm (14")
Depth	254mm (10")
Weight	5.9kg (13 lbs)



BM601 Brake Module Panel Assembly

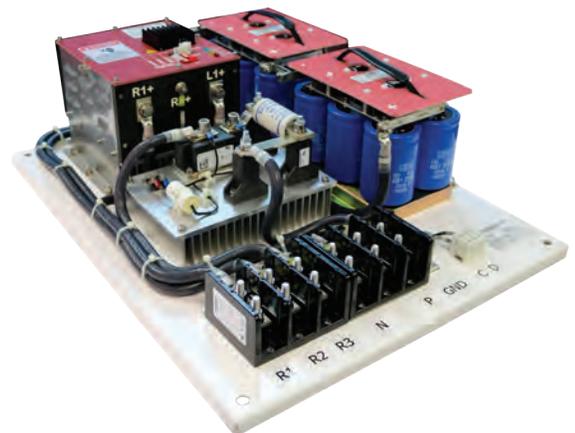
Samenco Part # A800994

Description

This panel is located in the power center for shuttle car applications.

Features

- Selectable voltage threshold
- Adjustable brake current
- 250A / 175kW peak braking power
- 2.8Ω 120kW brake resistor with over-temperature protection.
- Panel includes:
 - Capacitor banks (quantity 2)
 - BM601 brake module (quantity 1)
 - Capacitor diodes, fuses, resistors



Dimensions (IP00)

Height	220mm (8.7")
Width	686mm (27")
Depth	233mm (21")

Electrical Specifications (A800993 and A800994)

Specifications	Input	Output
Rated Power @ Rated Volts	120kW @ 750V	-
Frequency Range	DC	-
Voltage Range	256 to 800V	-
Amps @ Rated Power	200A Peak	-

Rectifier Brake Module (440V or 550V AC)

Samincos Part # A800497 and A800497A

Description

For use in AC/AC Shuttle Car systems.

Features

- SCR rectifier with soft charge
- Absorbs high voltage surges on DC voltage supplies due to regenerative braking of AC drive
- Compact, single enclosure houses all components, including internal isolated power supply



Electrical Specifications for Rectifier Brake Module (A800497 and A800497A)				
Part Numbers	A800497A (440V System)		A800497 (550V System)	
Specifications	Input	Output	Input	Output
Rated Power @ Rated Volts	160kVA @ 575V	115kW @ 750V	190kVA @ 660V	139kW @ 900V
Frequency Range	47 to 63 Hz	DC	47 to 63 Hz	DC
Voltage Range	440 to 480V	600 to 770V	500 to 660V	700 to 1060V
Amps @ Rated Power	168V	154A	168A	154A

Dimensions (IP00)	
Height	261mm (10.3")
Width	356mm (14")
Depth	364mm (14.3")
Weight	28.6kg (63 lbs)

VFD Brake Resistor Assembly

Description

For use in AC/AC Shuttle Car systems, with the Rectifier Brake Module above.

Specifications

- 30 OHM, 1500W

Dimensions (IP00)	
Height	76.5mm (3")
Width	241mm (9.5")
Depth	342mm (13.5")
Weight	9.53kg (21 lbs)

Samincos Part # A800675
 (See your Sales Rep for specific ordering information)



VFD Dynamic Brake Resistor

Description

For use in AC/AC Shuttle Car systems, with the Rectifier Brake Module above.

Specifications

- Type: R-11-4423
- 9.84 OHM dynamic brake resistor
- Each coil rated at 1.41 OHM/ 500W

Dimensions (IP00)	
Height	297mm (11.7")
Width	140mm (5.5")
Depth	400mm (15.8")

Samincos Part # A800683
 (See your Sales Rep for specific ordering information)



Resistors inside *xp box (left) and as stand alone (right)
***NOTE: ENCLOSURE IS NOT INCLUDED**

Environmental Specifications for all products above	
Description	Specifications
Ambient Operating Temperature	-20°C to +50°C (-4°F to 122°F)
Storage Temperature	-40°C to +65°C (-40°F to 149°F)
Relative Humidity	<90% No condensation
Altitude	3300 feet (1000 meters) - de-rate above 3000 meters

Rectifier / Brake Module (950V AC)

Samenco Part # A800673

(See your Sales Rep for specific ordering information)

Description

As a Rectifier:

- SCR rectifier with soft charge
- Supply Line Voltage of 850V to 1150V (1000V \pm 15%)
- DC Bus Voltage 1200V to 1600V
- Rated Output 65A / 55kW / 75 HP
- Short Time Output 92A / 75kW / 100HP

As a Brake:

- Absorbs high voltage surges on DC voltage supplies due to regenerative braking of DC or AC traction drives (adjustable from 1600V to 1900V)
- Capable of dumping up to 1500W into braking resistor
- 10% duty cycle (for example, 6 seconds on, every 60 seconds)
- Contains provision for resistor over temperature protection via resistor OT sensor
- Compact, single enclosure houses all components, including internal isolated power supply



Dimensions (IP00)

Height	261mm (10.3")
Width	356mm (14")
Depth	364mm (14.3")
Weight	28.6kg (63 lbs)

Electrical Specifications

Specifications	Input	Output
Rated Power @ Rated Volts	219kw	218kW
Frequency Range	47 to 63 Hz	DC
Voltage Range	50 to 1100V	700 to 1540V
Amps @ Rated Power	168A	154A

Environmental Specifications for all products above

Description	Specifications
Ambient Operating Temperature	-20°C to +50°C (-4°F to 122°F)
Storage Temperature	-40°C to +65°C (-40°F to 149°F)
Relative Humidity	<90% No condensation
Altitude	3300 feet (1000 meters) - de-rate above 3000 meters

BM1200 Braking Module

Samenco Part # A801030

(See your Sales Rep for specific ordering information)

Description

The braking module absorbs high voltage surges on DC voltage supplies due to regenerative braking of DC or AC traction drives.

Features

- Adjustable from 825V to 950V DC
- Capable of dumping up to 1200A into braking resistor
- Input fuse health monitoring feature
- 10% duty cycle



Electrical Specifications

Specifications	Input	Output
Rated Power @ Rated Volts	1160kW @ 950V	1160kW @ 950V
Frequency Range	DC	DC
Voltage Range	650 to 975V DC	-
Amps @ Rated Power	1200A	1200A @ 0.78 Ω

Dimensions (IP00)

Height	351mm (13.8")
Width	196mm (7.7")
Depth	790mm (31.1")
Weight	6.8 kg (15 lbs)

Environmental Specifications

Description	Specifications
Ambient Operating Temperature Range	-10°C to 40°C (14°F to 104°)
Heatsink Temperature	85°C (185°F)
Heatsink Thermal Resistance	0.016

USA Battery Charger

Universal Source Active Battery Charger

Saminco Part # various
(See your Sales Rep for specific ordering information)

Description

The Universal Source Active (USA) Battery Charger converts 3-phase AC voltage input to a controlled DC charging power source. Its novel control algorithm regulates the input current, output current and output voltage to either preset programmable limits or to "on-the-fly" limits received from the Battery Management System.

Features

- Accepts wide range of 3-phase AC sources with multi-tap auto-transformer
- Smart OV and Temperature Power Limiting
- Up to 15 chargers on one CAN control bus
- Built-in DC bus voltage pre-charge circuitry
- Battery Select parameter for selection between multiple manufacturer communication protocols
- 50+ programmable parameters via CAN for advanced users
- 10 slot fault log with time stamp information

Hardware Description

- Double-isolation between power components and user control interface
- Dual Range DC Current Sensor for full-load and precision trickle current measurements mounted externally to isolate battery current from other loads
- Enable and HV interlock 24V digital inputs
- RS-232 serial interface for programming and troubleshooting
- CAN bus control and diagnostics
- Universal control power (120/240V AC, 150-300V DC)

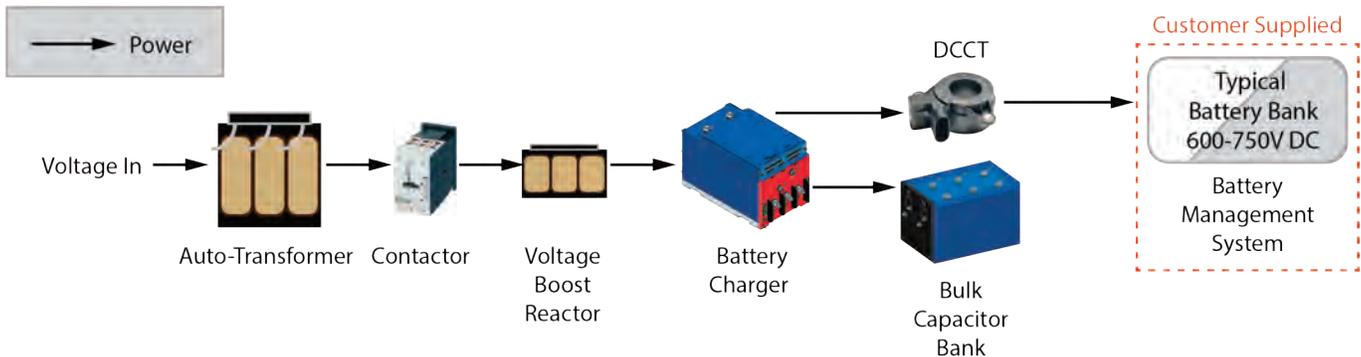


USABC 75
Part # A801116



USABC 110
Part # A801114

Example block diagram of battery system setup



Specifications for USABC				
Part Numbers	A801114 (USABC 110)		A801116 (USABC 75)	
Electrical Specifications	Input	Output	Input	Output
Rated Power @ Rated Volts	34kW @ 315V	32.5kW @ 650V	34kW @ 315V	32.5kW @ 650V
Frequency Range	47 to 65 Hz	DC	47 to 65 Hz	DC
Voltage Range	440 to 480V	600 to 770V	300 - 400V AC	600 - 700V DC
Amps @ Rated Power	100A @ 34kW	80A @ 32.5kW	70A @ 34kW	50A @ 32.5kW
Environmental Specifications				
Ambient Operating Temperature	-10°C (no frost) to + 50°C (14°F to 122°F)			
Storage Temperature	-40°C to +60°C (-40°F to 140°F)			
Relative Humidity	<90% No Condensation			
Altitude	3300 Feet (1000 meters) - de-rate above 3000 meters.			

Dimensions (IP00)		
Part Numbers	A801114 (USABC 110)	A801116 (USABC 75)
Height	249mm (9.8")	210mm (8.3")
Width	330mm (13")	203mm (8")
Depth	378mm (14.9")	356mm (14")
Weight	21kg (46 lbs)	14.5kg (31 lbs)

Add-On for Battery Charger

Saminco Part # A800700-01

Description

The Saminco Add-On box for battery chargers allows a dedicated 128V DC charger to be modified for charging batteries with single or dual connections, without the expense of having a separate charger for each or having to use a potentially dangerous jumper. Once connected to a charger and battery, the Add-On box automatically determines if the battery connected is using a single 128V or dual 64V plugs. Once the voltage is detected at the plugs and a ground is sensed through each battery, the user is able to select dual or single on the touch screen interface. This will close a relay and contactors, and will tell the charger a battery is connected. The charger will then begin charging.

Features

- Allows a single output 128V DC battery charger to safely charge batteries that have either a single 128V plug or dual 64V plugs.
- Eliminates need for dangerous Y jumper (known to short circuit the battery).
- Can be installed in existing charger enclosure or on external mount.
- Field installable and can be moved from location to location as needed.
- Controlled with touch screen interface, mounted on top of unit.
- Connects to existing single output battery charger.



Dimensions (IP00)

Height	216mm (8.5")
Width	442mm (17.4")
Depth	305mm (12")
Weight	13kg (29 lbs)

Electrical Specifications

Rated Power @ Rated Volts	128V DC
Frequency Range	DC
Voltage Range	0 - 128V DC
Amps @ Rated Power	250 A, continuous
Control Supply Voltage	120V AC, 60 Hz
Control Supply Current	3A

Environmental Specifications

Description	Specifications
Ambient Operating Temperature	0 to +60°C (32°F to 140°F)
Storage Temperature	-40°C to +60°C (-40°F to 140°F)
Relative Humidity	<90% no condensation
Altitude	1000 meters (3300ft) de-rate above 3000 meters

BC-28-20 Battery Charger

Saminco Part # A800329

(See your Sales Rep for specific ordering information)

Description

DC/DC battery charger converts 150 - 350V DC to 27V used for on-board 24V lead acid battery charging. The 24V on-board auxiliary battery is used to control the new smart battery or other accessories on board like lights, cameras or proximity systems.

Similar to how an alternator is used for diesel machines, the DC/DC battery charger will recharge the auxiliary battery after the main battery is activated.

Features

- 24V supply



Electrical Specifications

Part #	A800329	
Model #	BC-28-20	
Specifications	Input	Output
Rated Power @ Rated Volts	540W @ 300V DC	480W @ 27V DC
Frequency Range	DC	DC
Voltage Range	180 to 350V DC	27V DC
Amps @ Rated Power	1.8A @ 540W	17.8A @ 480W

Dimensions (IP00)

Height	76mm (3")
Width	222mm (8.75")
Depth	178mm (7")
Weight	1.4kg (3 lbs)

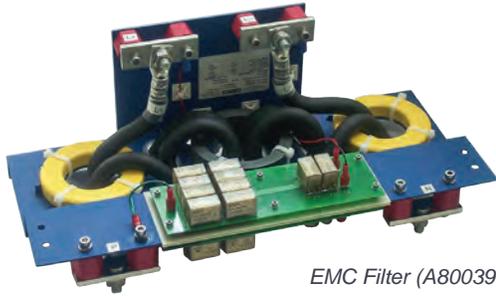
EMC Filters

Saminco Part # Various

(See your Sales Rep for specific ordering information)

Description

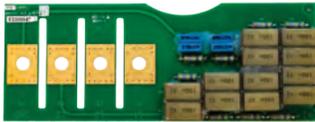
Reduces electromagnetic noise between the main power supply and the Saminco drive.
See also the Soft Charge Module with built in EMI Filter, page 44.



EMC Filter (A800393)



EMC Filter (A801016)



Additional boards required for A801016A when needed to be placed separately from EMC Filter



EMC Filter (A800396)

EMC Filters				
Part Name	EMC Filter	EMC Filter	EMC Filter	EMC Filter
Part Number	A800393	A800396	A801016	A801016A*
Where Used	At the DC power center	At the DC power center	On vehicle	On vehicle
Description	For Shuttle Cars		For Continuous Miners	For Continuous Miners (*Requires quantity of 2 - MA2507)
Electrical Specifications				
Rated Power @ Rated Volts				
Input	100kW @ 550V DC	50kW	265kVA @ 1140V	265kVA @ 1140V
Output	100kW	50kW	-	-
Frequency Range				
Input	DC	DC	50/ 60 Hz	50/ 60 Hz
Output	DC	DC	-	-
Amps @ Rated Power				
Input	170A	170A	120A	120A
Output	170A	170A	-	-
Voltage Range				
Input	550V DC	300V DC	800 - 1260V AC	800 - 1260V AC
Output	550V DC	300V DC	-	-
Environmental Specifications (IP00)				
Ambient Operating Temperature	-10°C (no frost) to + 50°C (14°F to 122°F)			
Storage Temperature	-40°C to +60°C (-40°F to 140°)			
Relative Humidity	<90% No Condensation			
Altitude	3300 Feet (1000 meters) - de-rate above 3000 meters.			
Dimensions				
Width	445mm (17.5")	495mm (19.5")	264mm (10.4")	264mm (10.4")
Height	208mm (8.2")	166mm (6.5")	192mm (7.5")	192mm (7.5")
Depth	166mm (6.5")	114mm (4.5")	159mm (6.3")	159mm (6.3")

**Partial list shown. Please see your salesperson for all available options and configurations

Ground Fault and Cable Break Detection System

Saminco Part # various
(See your Sales Rep for specific ordering information)

Description

This system is designed for DC trailing cables to detect cable breaks and dangerous ground fault conditions.

Features

- Only system that removes high voltage from DC trailing cable
- Instantly detects cable break - no exposed live conductors on mine floor
- Detects ground fault condition at the shuttle car, power center and trailing cable
- Grounding diode/ relay assembly for negative ground DC shuttle
- Sensing current 15A DC maximum
- If vehicle shunt trip/ circuit breaker does not clear the ground fault, the power center will be shut down.



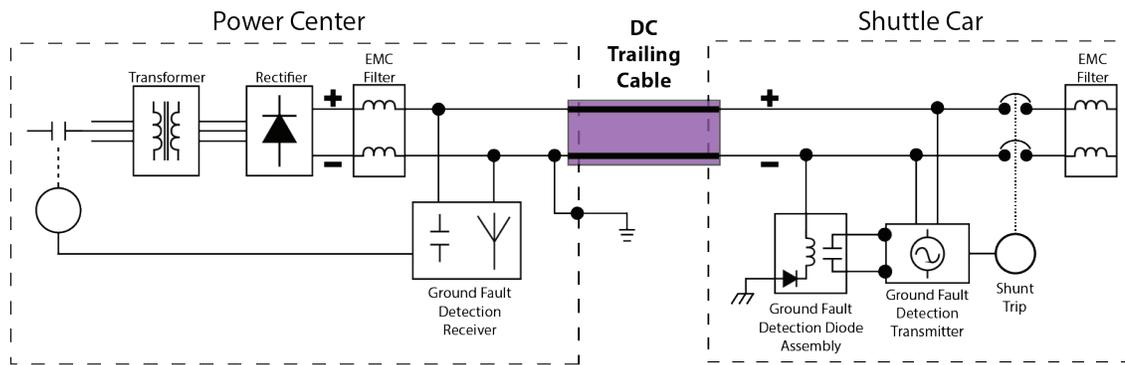
Ground Fault Detector (A800390)



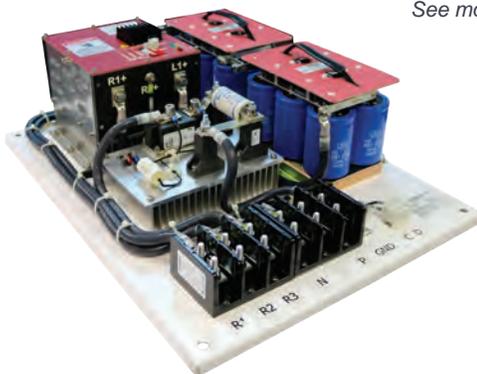
Ground Fault Receiver (A800392)



DC Choke (I9001-050)



See more on page 47.



Brake Module Panel Assembly (A800994)



BM601 Brake Module only (A800993)



Ground Fault Diode/Relay (A800203)



EMC Filter (A800393)

Options for the Ground Fault and Cable Break Detection System		
Part Name	Description	Part Number
Mining Vehicle Components		
EMC Filter	170A @ 550V DC, 100kW @ 550V DC	A800393
Ground Fault Diode/ Relay	200 - 750V DC, sensing current: 15A max	A800203
Ground Fault Detector	Monitors ground fault relay and trailing cable	A800390
Power Center Components		
EMC Filter	170A @ 550V DC, 100kW @ 550V DC	A800393
Ground Fault Receiver	Input supply: 120V AC	A800392
DC Choke	.5mh, 150AMP, NOMEX insulation, U barrier guards	I9001-050
Brake Resistor	VFD brake resistor assembly, 2.8 Ohms 7000W	R8000-024
Brake Module Panel Assembly	Adjustable brake voltage (includes A800993)	A800994
BM601 Brake Module Only	256 to 800V DC selectable	A800993

**Partial list shown. Please see your salesperson for all available options and configurations

Radio Control Systems

TC3 Radio Control System **MSHA APPROVED** Description **# 18-A160002-0**

Radio remote control system for underground mining designed to work cohesively with Saminco VFD systems.

Features

- Easily able to automate to different vehicle RVU with supervisor code
- Specifically recognizes Vehicle ID
- Proximity Detection *OPTIONAL*
- Video feedback available with tablet screen attachment *OPTIONAL*
- Compact, wireless controller with on-screen display that is fully water submersible
- Capable of cruise control
- Fully proportional control via eight independent toggle switches
- With data logging and data storage capability
- Designed for easy thumb control maneuverability

Applications:

- Continuous Miners
- LHD

Radio Transmitter for Continuous Miner with 24 hours of operating time



Radio Transmitter for LHD with 63 hours of operating time



Radio Control System for Feeder Breakers

Description

Radio remote control system for feeder breakers in a non-XP location.

Features

- Compact keypad control unit
- Advanced dual processor electronics with safety critical software located inside protected, ergonomic, extremely rugged housing
- Compact, watertight, impact resistant housing
- Controller will work with Relay or CAN-bus communication
- Approval and frequencies for worldwide deployment
- CE compliant
- Numerous frequency ranges available
- Uses two rechargeable batteries
- Radio guard attached to protect switches in case of fall and improve handling ability

Applications:

- Feeder Breakers



	TC3 Radio Control System for LHDs and Continuous Miners				Radio Control System for Feeder Breakers			All systems	
Part Name	Handheld Transmitter	Relay Receiver	Vehicle ID Device	Docking Station / Power Supply	Feeder Breaker Radio Control	Radio Receiver	CANbus Controller	Antenna (for ALL Radio Systems)	
Part Number	*Various	A700114	A700142	A700107 / A700108	A700122	A700134	A700121	A700118	
									
Description	Handheld radio transceiver with data storage capability	RVU AGS ready	Used with RVU or Relay Receiver	Docking station and charger for handheld transmitter	Radio Machine Control Unit	Receiver/decoder MMCU - relay radio control	Receiver/decoder CMCU - radio control	900M Hz Mine Duty Antenna for all radio systems	
Dimensions									
Height	121mm (4.75")	292mm (11.5")	38mm (1.5")	127mm (5")	160mm (6.3")	57mm (2.25")	48mm (1.9")	150mm (5.9")	
Width	197mm (7.75")	241mm (9.5")	95mm (3.75")	102mm (4")	207mm (8.2")	197mm (7.75")	144mm (5.7")	32mm (1.25")	
Depth	57mm (2.25")	152mm (6")	70mm (2.75")	95mm (3.75")	274mm (10.8")	121mm (4.47")	122mm (4.8")	32mm (1.25")	
Weight	0.86kg (1.89lbs)	3.86kg (8.5 lbs)	0.95kg (2.1 lbs)	0.4kg (.89 lbs)	1.6kg (3.5 lbs)	1.6kg (3.5 lbs)	0.4kg (.89 lbs)	0.48kg (1.06 lbs)	
**Partial list shown. Please see your salesperson for all available options and configurations									

Vehicle Control System

Description

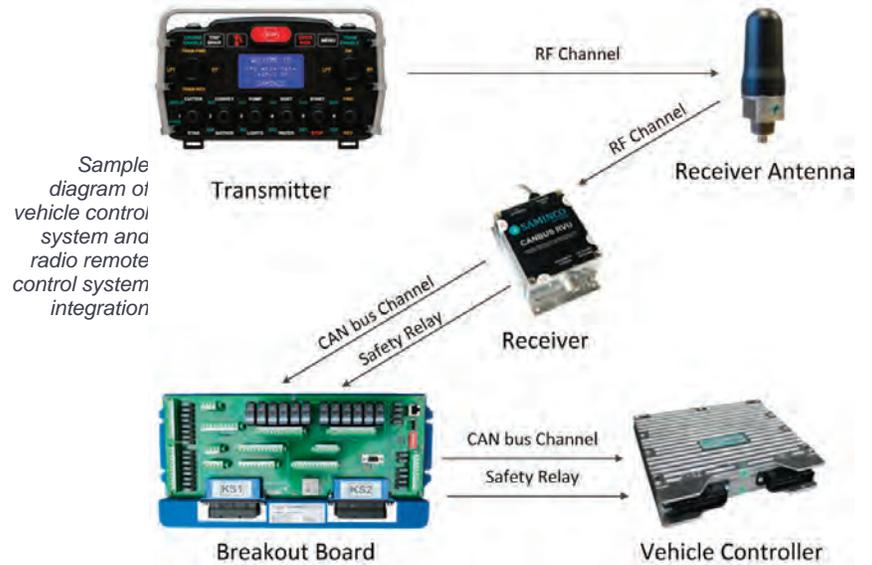
The Vehicle Control system, when used with the Radio Remote Control System, is able to provide remote access to all traction, hydraulic and ancillary control functions of the vehicle.

Features

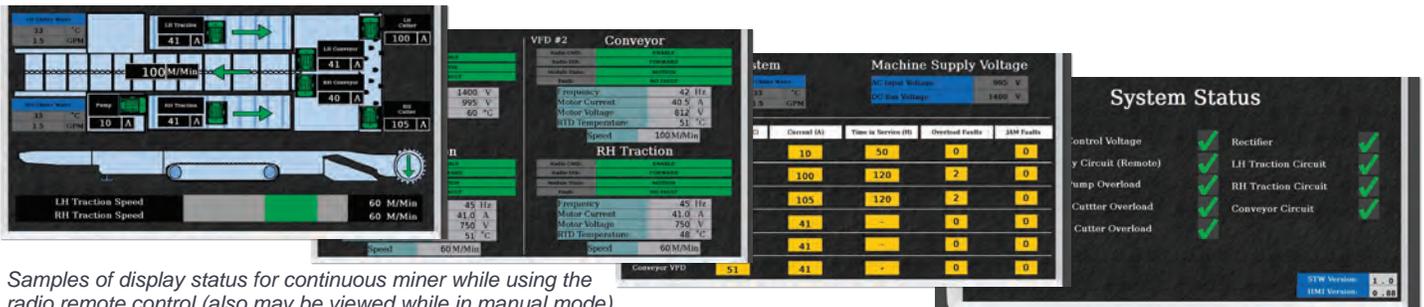
- 32-bit, 150 M Hz
- Uses CAN bus
- Stable internal power supply with load dump protection (70V) and over-voltage protection
- 162 connector pins and 2 separate cable looms
- Configurable I/O
- Impact and torsion resistant die-cast aluminum housing that meets IP67 and IP6K9K
- Operating Temperature: -40°C to 85°C chassis temp (-40°F to 185°F)

Applications:

- Continuous Miners



Sample of Display Screens



Samples of display status for continuous miner while using the radio remote control (also may be viewed while in manual mode)

Vehicle Control System

Part Name	Vehicle Controller	CANbus Proximity/ Radio RVU	Breakout/ Relay Box	Miner Data Logger	Data Logger Harness	Display for Continuous Miner
Part Number	A800860	A700110	*Various	A800841-A	W6004-438	A800811



Description	Master Control Module	Remote Vehicle Unit (RVU) mounts on vehicle. Includes proximity detection.	Used between RVU and Machine Controller	Connects the Master Control Module to the radio antenna	Connects Data Logger to Breakout/ Relay Box	Display with operating voltage range of 9-36V DC
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Dimensions

Height	217mm (8.5")	159mm (6.25")	411mm (16.2")	74mm (6.8")	-	214mm (8.4")
Width	248mm (9.8")	104mm (4.1")	189mm (7.44")	117mm (4.6")	-	330mm (13")
Depth	51mm (2")	95mm (3.75")	57mm (2.26")	36mm (1.4")	610mm (24")	60mm (2.4")
Weight	2.5kg (5.5 lbs)	1.08kg (2.38 lbs)	2.3kg (5 lbs)	0.3kg (.67 lbs)	-	-

****Partial list shown. Please see your salesperson for all available options and configurations**

ELITE Services

We can rebuild and refurbish your mining equipment in our West Virginia facility. Using the latest technology, we design, install and test your system to get you up and running as quickly as possible.

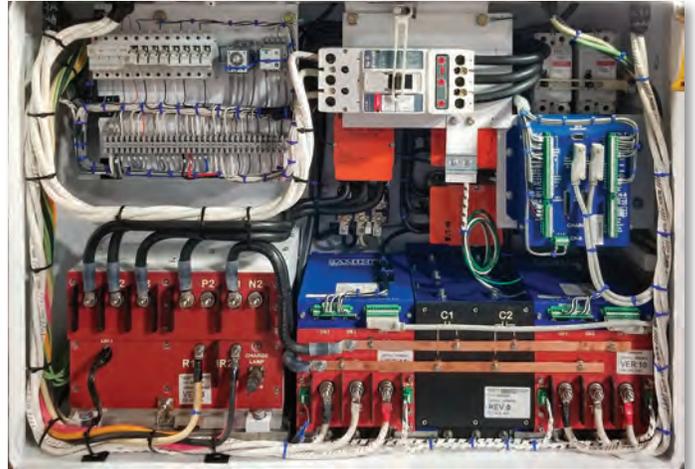
Service includes:

- Clean and repaint xp box
- All new parts
- Wiring diagram provided with final build
- Complete quality check and testing
- Warranty

Scoop rebuild:



Shuttle Car rebuild:



Partner Product: Nautitech

Nautitech is Saminco's Sales and Service partner for Australia and New Zealand.



They design and manufacture electronic equipment for hazardous areas for underground mining applications. Their most popular products include methane safety systems, thermal cameras, lights, and underground broadband communications.

See their website for more information: <https://nautitech.com.au/>

NAUTITECH OFFICE 111 TULLY ST | MANDALAY PARK

I.S. LIGHTS

CUBEX LIGHTS

Light up hazardous areas underground without the need for flameproof enclosures

Over 1000 and 12 solutions could increase significant cost savings due to a reduction in equipment, maintenance, and emergency shut-down.

Intrinsically safe LED lights

- Safe in 0/20/100% and ZONE 2 hazardous environments
- Flexible use as remote call, headlights, indicators, hazard work area or lighting
- Independent light banks allow flexibility such as independent and wide area lighting, individual On/Off control, and high/low beam
- Multiple colors, intensity & beam angle options
- Rugged stainless steel IP67

Full 1-Year Warranty backed with post-purchase support

NAUTITECH + 612 9099 6807 | nautitech.com.au

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UNDERGROUND COMMUNICATIONS

SPITFIRE

Reliable underground communications using pilot and power cores

Powered by Combined Frequency System (CFS) single or dual channel, licensed frequencies and a dedicated mining operation frequency

SPITFIRE **SUPER SPITFIRE**

WINGMAN **PRO-FLEX** **HYDROBULL**

Simple "plug and play" installation supported by a full 2-year warranty

NAUTITECH + 612 9099 6807 | nautitech.com.au

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METHANE MASTER

METHANE MASTER

Leading shut-down & start up system in Australia

Designed to monitor and process isolation of the concentration of methane in hazardous environments. Applications include safe start-up or shut-down on methane gas built on Diesel Powered Vehicles and other mining machinery.

- ✓ Intrinsically Safe sensor
- ✓ Shock resistant to Temperature and Humidity
- ✓ Rugged stainless steel construction
- ✓ Robust ingress protection
- ✓ Infrared sensing technology
- ✓ Fast warm-up times
- ✓ Not susceptible to 'jostling'
- ✓ Manual and automated tone response and memory testing to A23200, I2018 standards

Full 1-Year Warranty

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NAUTITECH OFFICE 111 TULLY ST | MANDALAY PARK

CAMERAS

EXTREMECAM

Get better vision for higher productivity and safety

Thermal, HD and IR cameras by Nautitech are self-contained devices for visual monitoring within the mine and can be used on mobile or stationary applications including Longwall, Development, haulage, mobile machinery, belt conveyor and other heavy industrial use.

Fully compatible with Nautitech's Remote Diagnostics

Thermal Camera

- Facilitate critical decision-making in low-visibility areas with improved visibility clear to the dark heat signature
- Display warnings, cables, machines and other heat sources

HD and IR Camera

- Monitor and control with wide selection of video compression and resolution
- Available with IR or built-in white LED lights for additional illumination

Full 1-Year Warranty

NAUTITECH + 612 9099 6807 | nautitech.com.au

System Integrator for FZSoNick SA Switzerland

Samenco International is a system integrator for FZSoNick's battery systems for the mining and tunneling industries for South America, South Africa, Europe, Australia and the United States (for mining, marine and rail).

FZSoNick produces batteries based on the innovative Sodium Nickel Chloride Technology (Sodium Nickel Technology). This battery is maintenance free in all environments and energy is supplied in all climate conditions.



SODIUM NICKEL TECHNOLOGY

Performance

- Internal temperature can safely rise to 270°C (518°F)
- Temperature range: -40°C to +60°C (-40°F to +140°F) without extra cooling needed
- Cycling Capability: (for mobile applications) > 1,500 cycles (80% DOD)
- Battery energy density: 100 to 120Wh/kg, 150 to 90Wh/lt
- Shelf life: >20 years
- No memory effect

Safety

- Intrinsically safe, electrochemical safety
- No gas emissions
- No flammable materials
- No fire/water flood reaction
- Industrial Process Control
- Tested in the field (EV, TLC, ESS,...)
- BMS control
- Cell/Battery mechanical case

Zero impact Battery

- NO dangerous materials
- NO pollution materials
- NO gas emissions
- 100% recyclable

Sodium Nickel Technology

- Use of sodium and nickel as active materials, with solid ceramic electrolyte
- Cells with hermetically sealed steel case, packed in double-thick mica to insulate each cell and prevent electrical shorting
- Internal operating temperature around 270°C / 518°F, with external surface temperature only few degrees above ambient
- Made with 2.58V cells with 140Wh/kg or 310Wh/lb and 280 Wh/liter specific density
- Proven technology for energy storage and clean powering of electric vehicles

Along with the production plant and R&D center located in Switzerland, FZSoNick has sales offices in Italy and the US for global distribution. They are a worldwide company leader in the design and production of innovative storage systems for reserve power, energy backup, sustainable mobility and energy storage applications.

See their website for more information: <http://www.fzsonick.com>

SoNick Battery in operation on the LHD. See video of it running on our website: <http://samincoinc.com/video-gallery>



- 141 kWh battery
- Weight: 1200kg (2,640 lbs)
- 6 x 620V / 38Ah



Industrial Controls for:

- Pumping and Irrigation
- Material Handling
- Fan and Ventilation
- Crushing
- Retrofit/ Upgrades
- Lift Stations
- Remote SCADA

We are a value-added distributor and manufacturer of industrial controls and integrated solutions. We will come to your site to assess your needs, design a fully integrated system to your specifications, retrofit and install as needed, and offer complete start-up and commissioning. We are here 24/7/365 to support our products and service long after the install. From start to finish, we want you to be satisfied with the process and the product.



Pumping & Irrigation	Material Handling	Fan & Ventilation	Crushing
<p>Typical Applications</p> <ul style="list-style-type: none"> Centrifugal pumps Submersible pumps Vertical turbine pumps Pump systems starting from limited power sources like generators: <ul style="list-style-type: none"> Irrigation Booster pumps Lift stations Tank fill Water treatment <p>Special Functions</p> <ul style="list-style-type: none"> Remotely monitor your system from any location at any time. Operation Status Alarm notification Data logging with export function 	<p>Typical Applications</p> <ul style="list-style-type: none"> Conveyors Slope belts Food and beverage packaging Process, container and overhead cranes <p>Special Functions</p> <ul style="list-style-type: none"> Reduced inrush currents and mechanical shock Load sharing, positioning and synchronization capabilities Common DC bus and dynamic braking capabilities Fully regenerative front end available Harmonic and EMI / RFIO mitigation options available 	<p>Typical Applications</p> <ul style="list-style-type: none"> Mineshaft ventilation Tunneling ventilation HV AC systems Smoke ventilation Fire control ventilation <p>Special Functions</p> <ul style="list-style-type: none"> Reduced inrush currents and mechanical shock Compatible with all building automation systems: <ul style="list-style-type: none"> BACnet Metasys N2 Siemens APOGEE™ FLN Modbus Ethernet / IP Stand alone, 2 contactor, 3 contactor, dual motor, etc. Package options available. Harmonic mitigation to fully comply with IEEE 519 levels EMI / RFI control 	<p>Typical Applications</p> <ul style="list-style-type: none"> Aggregates Quarry Coal mining Asphalt and concrete recycling <p>Special Functions</p> <ul style="list-style-type: none"> Reduced inrush currents and mechanical shock Allows generator or soft line supplies Load sensing to reduce shear pin



VFD Drive Controls

Low Voltage

240V for .5 - 175 HP
 480V for 1 - 1000 HP
 600V for 1 - 250 HP
 Single phase input with three phase output available on all voltages. Please consult Saminco for details.

Medium Voltage

3.3kV for 175 - 4,000 HP
 4.16kV for 300 - 10,000 HP
 6.6kV for 330 - 16,000 HP
 11+kV for 700 - 13,200 HP

All enclosure options available, NEMA 1, 12, 3R, 4X as well as custom configured packaged control.



Soft Starter Controls

Voltages Available

208V - 600V, 8A - 1100A, with built in by-pass
 230V - 600V, 72A - 1100A, heavy duty rated with provisions for external by-pass
 1000V, 105A - 460A, heavy duty rated with provisions for external by-pass
 2.3kV - 15kV, up to 50MW

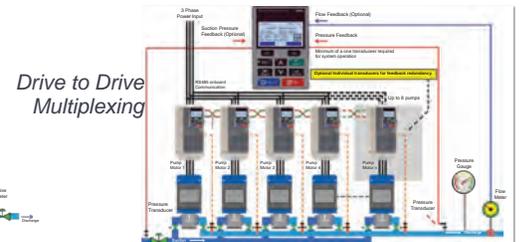
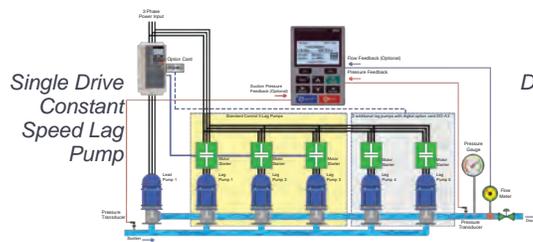
All enclosure options available, NEMA 1, 12, 3R, 4X as well as custom configured packaged control.



Remote SCADA Systems for Industrial Controls

The SCADA server allows you to access your control system by using a PC, tablet or mobile device via mobile or direct internet connection. Used to connect to:

- VFDs
- Soft Starts
- Motor Protection Devices
- Measurement Devices
- ANY device with a Modbus RTU or Modbus TCP port
- ANY device with discrete I/O analog or digital outputs



VFD and Soft Starter Controls Provided by:



We are an Authorized Service Provider and Systems Integrator for Yaskawa's VFD products.

VFD Controls:
 Low Voltages (240V - 600V)
 Medium Voltages (3.3V - 11+kV)

Intelligent Pump Control
 NEMA packages available



We are a Preferred Partner and System Integrator for Solcon.

Soft Starter Controls:
 08V - 15kV
 NEMA enclosures available

VX2 System

Description

This 1140V AC Variable Frequency Drive system is available as liquid or air-cooled VFD modules designed for various mining applications, including highwall miners. Modules can be connected to extend flexibility.

Features

- Speed can be controlled manually, remotely or automatically using internal or external controls.
- Rate of acceleration and deceleration is controlled allowing a perfect soft start or soft stop.
- Controlled soft starts reduce the mechanical stress on the motor shaft and load.
- Reduced starting current and improved power factor lessens demand on the electrical infrastructure and can reduce the size of standby generators.
- Flexible design:
 - Four axis mounting orientation
 - Ease of remote monitoring / control
 - Over-voltage / under-voltage protection
 - PID control, signal follower control
 - Separation of high and low voltage
 - Quick disconnect I/O terminals
 - O/L, GF and over current protection
 - Torque control, load sharing control

Applications:

- Conveyors (above or below ground)
- Fans
- Pumps
- Compressors
- Crushers

Control Module with Operator Station



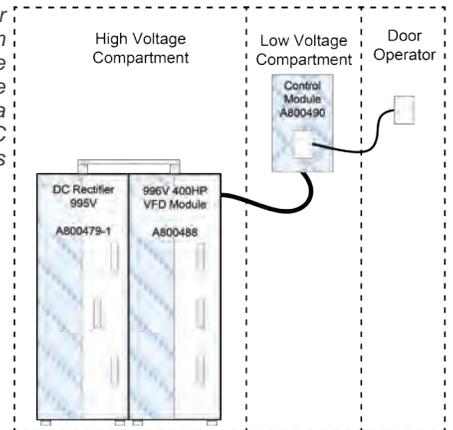
DC Rectifier (left) and VFD liquid cooled module (right)



Typical five VFD module configuration (shown inside cabinet and with doors closed)



Modular design expandable with multiple VFDs via common DC bus



Specifications

Electrical Specifications	VX2 VFD Module (A801225) Liquid Cooled VFD 525HP		VX2 VFD Module (A801226) Liquid Cooled VFD Dual 200HP		VX2 DC Rectifier (A801227) Regenerative Rectifier	
	Input	Output	Input	Output	Input	Output
Rated Power @ Rated Volts	425kW	400kW	337kW	2 x 166kW	842kW @ 995V AC	840kW @ 1360V AC
Frequency Range	DC	0.5 - 120 Hz	DC	0.5 - 120 Hz	50 / 60 Hz	DC
Voltage Range	1013 - 1550V DC	0 - 1000V	1013 - 1550V DC	0 - 1000V	800 - 1200V AC	1100 - 1600V DC
Amps @ Rated Power	315A	304A	250A	2 x 120A	532A AC	650A DC
Dimensions	VX2 VFD Module				VX2 DC Rectifier	
Height	931.6mm (36.7")				931.6mm (36.7")	
Width	342.9mm (13.5")				342.9mm (13.5")	
Depth	309.6mm (12.2")				306.7mm (12.1")	
Weight	72 kg (159 lbs)				45.4 kg (100 lbs)	
Environmental	VX2 System					
Ambient Operating Temperature	-10°C to 40°C (14°F to 104°F)					
Storage Temperature	-20°C to +60°C (-4°F to 140°F)					
Relative Humidity	<90% no condensation					
Altitude	1000 meters (3300 feet) - de-rate above 3000 meters					



Saminco is at the forefront of developing technology for electric mining vehicles. It has been our driving force since our inception in 1992 and constantly improving on that technology is what pushes us to expand our capabilities and products.

**Our Florida Headquarters and Manufacturing Facility is now
ISO 9001:2015 Certified.**



A DRIVING FORCE IN POWER

Product designs, specifications and/or data in this document are provided for informational purposes only and are not warranties of any kind. Product designs and/or specifications may be changed at any time without notice. The only warranties that apply to sales of products and services are Saminco's standard written warranties, which will be furnished upon request.

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