SAMINCO
international

PRODUCT CATALOG

A DRIVING FORCE IN POWER

We are an ISO 9001:2015 Certified Company

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. Eight years ago 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.

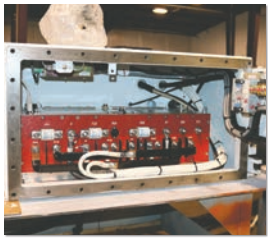
Our South Africa facility located in Johannesburg.

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.

In 2019, we were awarded an ISO 9001:2015 certification 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 Systers
- Shearers & Roadheaders

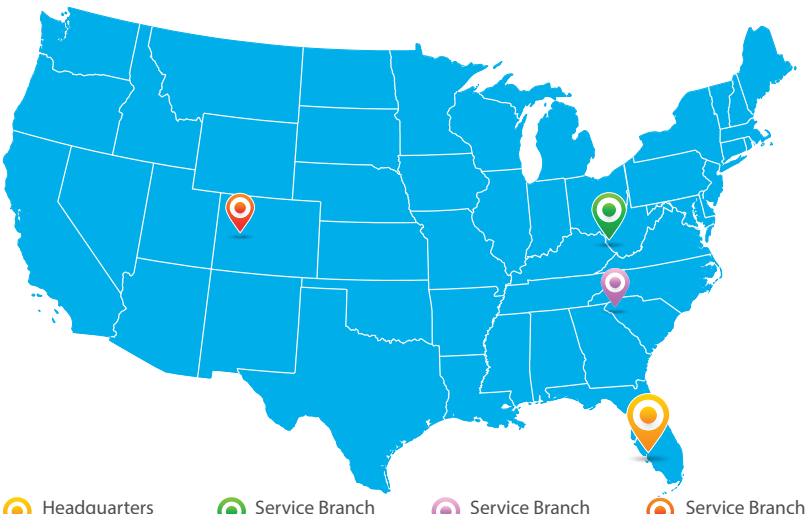
Feeder Breakers
Conveyors
Highwall Miners

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

We are an ISO 9001:2015 Certified Company

We are a UL 508A Listed Industrial Control Panel Shop for installations, panel wiring and enclosures.

Our Locations



Headquarters
Fort Myers, FL

Service Branch
Huntington, WV

Service Branch
Anderson, SC

Service Branch
Cedaredge, CO

Our Partners

NAUTITECH

YASKAWA

SOLCON™ POWERED

Danfoss Drives
DrivePro®
Service Partner

Authorized
Medium Voltage Partner

A few of our accomplishments

Over 12,000 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

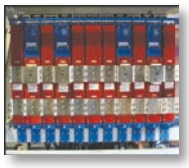
VF1-75 550V DC/AC VFD System

Introduced the DC to AC shuttle car system.

2008

120V/ 240V/ 320V Battery AC System

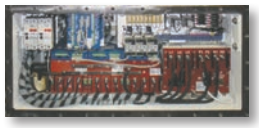
Introduced first battery powered AC system for LHDs and scoops in hard rock mining.



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.

VF Series DC/AC VFD Battery System

Saminco Pure Electric System

Applications:
- LHDs
- Jumbo Drills
- Rubber Tire Man Carriers

Advantages

- Separate tramming 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 tramming motor operation.
- Hydraulic pump RPM is reduced during idling and tramming under light hydraulic duty to reduce energy consumption.
- Rugged copper-barred rotor induction motor for tramming is capable of providing 3x rated torque to provide adequate torque at all speeds without requiring a torque converter or gearbox.
- Unlike permanent magnet rotor motors, internal temperature rise up to 150°C (302°F) will not cause any damage.
- 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

Dimensions (IP00)	
Height	210mm (8.25")
Width	203mm (8")
Depth	356mm (14")
Weight	14.5 kg (32 lbs)

VF6-110
Part # A801118

Dimensions (IP00)	
Height	249mm (9.8")
Width	330mm (13")
Depth	378mm (14.9")
Weight	21kg (46 lbs)

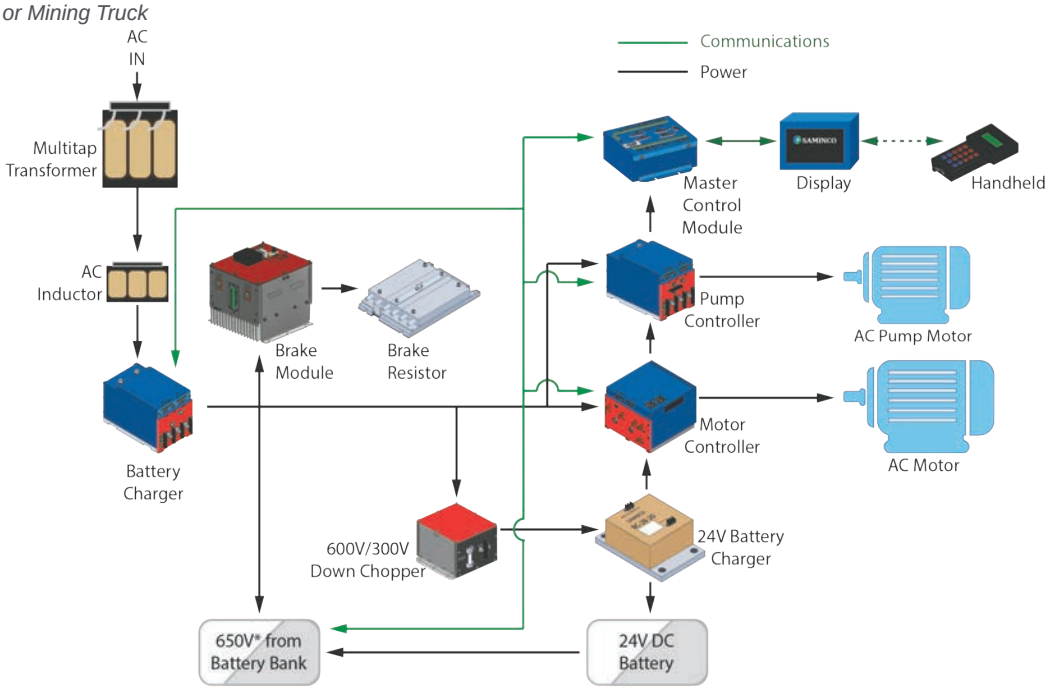
Environmental Specifications

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	VF6-75 Motor Controller		V6-110 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
Contactor	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 47 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 27 for more information)		
Tram Motor	XV55 - 1000Nm XP torque tram motor	M6005-010
Tram Motor	1500Nm non-XP	M6005-066
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

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.

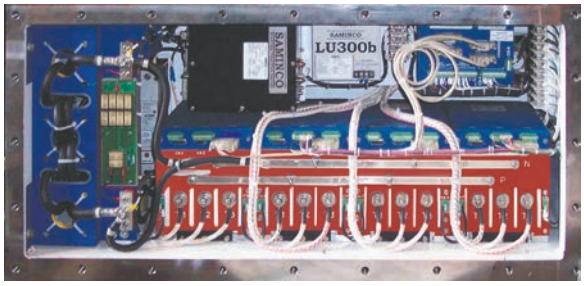
Safety Advantages
- Detects trailing cable faults
- No live open wires on ground with cut cable
- Motor and drive ground faults detected immediately
- Power center instantly shuts down in case of cable break

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

Ground Fault and Cable Break Detection System

Removes high voltage from DC trailing cable.

For more information, see page 45.



System setup in explosion proof box.

Tram Drive
Part # A800374

Dimensions (IP00)	
Height	210mm (8.25”)
Width	203mm (8”)
Depth	356mm (14”)
Weight	14.5 kg (32 lbs)

Pre-charge/ Pump Start Controller
Part # A800376

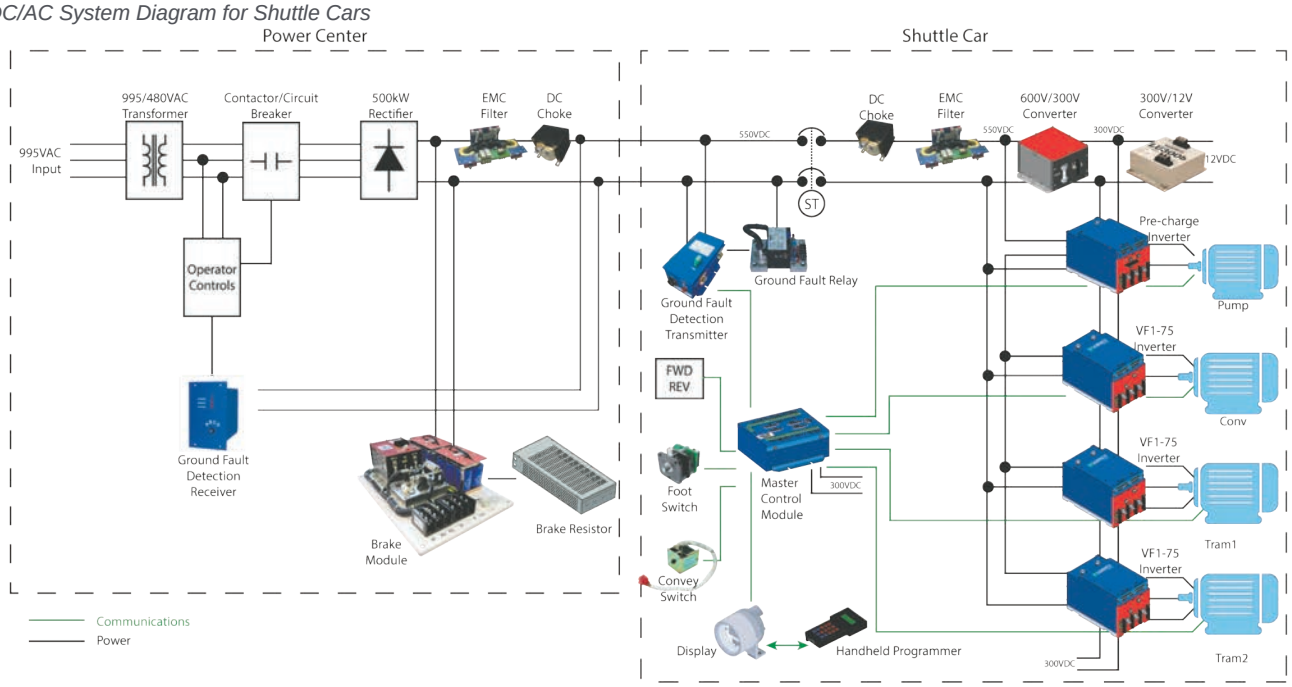
Dimensions (IP00)	
Height	210mm (8.25”)
Width	203mm (8”)
Depth	356mm (14”)
Weight	14.5 kg (32 lbs)

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

	Tram Drive		Pre-charge/ Pump Starter Inverter	
Specifications	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



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 45 and page 39 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 27 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

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

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

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	26.3 kg (57 lbs)

Pump Drive
VF-400 Series

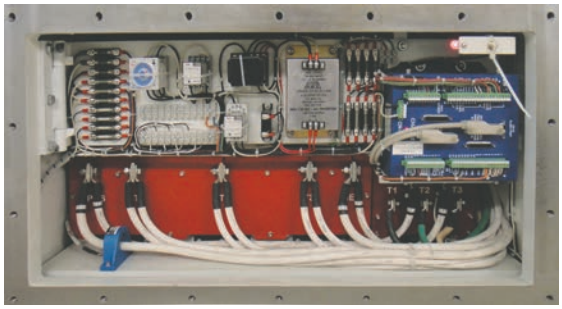
Dimensions (IP00)	
Height	230mm (9")
Width	199mm (7.8")
Depth	354mm (13.9")
Weight	14.5 kg (32 lbs)

Electrical Specifications

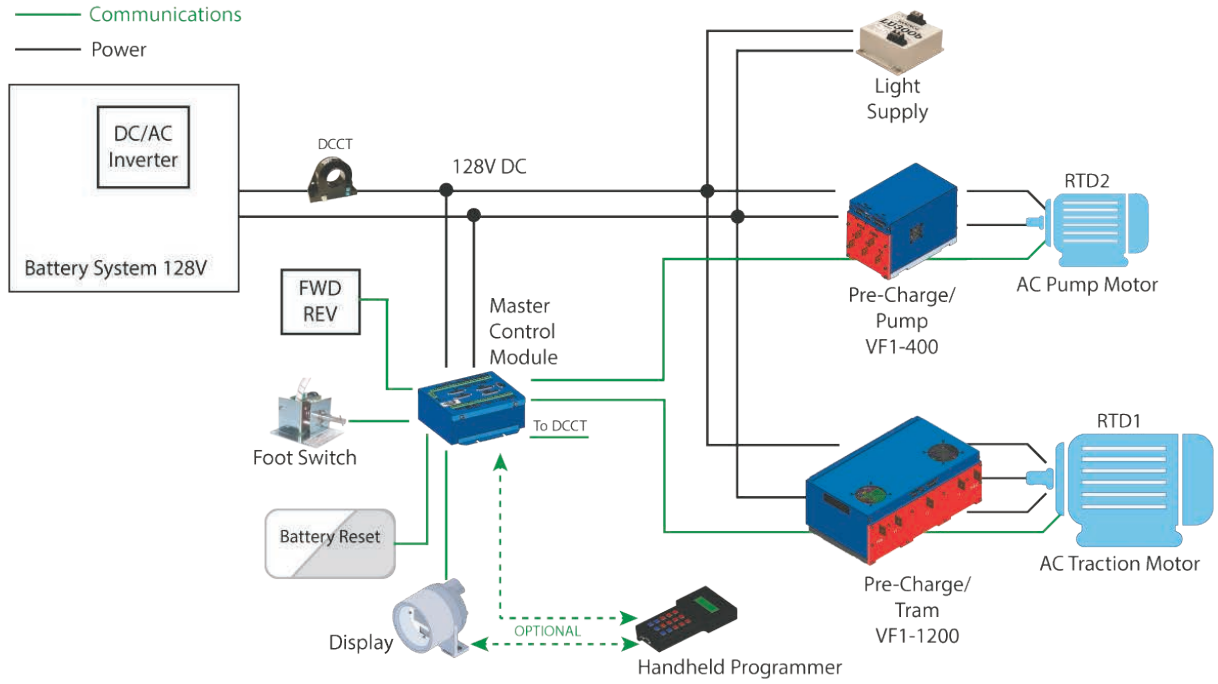
	Model	Part Number		Power @ Rated Volts	Frequency Range	Voltage Range	Amps @ Rated Power
Tram Drive (for large motors)	VF1-1200	A800682	Input	62kW @ 128V	DC	100 - 150V DC	485A
			Output	58kW @ 80V AC	0 - 125 Hz	0 - 100V AC	495A / 1200A peak
Tram Drive (for medium motors)	VF1-700	A801018	Input	30kW @ 128V	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 47 for ordering information)	
Motor and Encoder Parts (see page 27 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

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

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

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	26.3 kg (57 lbs)

Pump
Drive
VF-400 Series

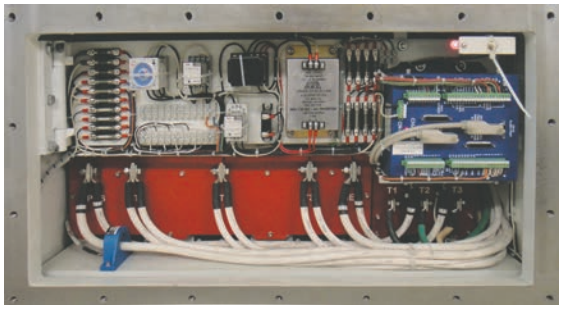
Dimensions (IP00)	
Height	230mm (9")
Width	199mm (7.8")
Depth	354mm (13.9")
Weight	14.5 kg (32 lbs)

Electrical Specifications

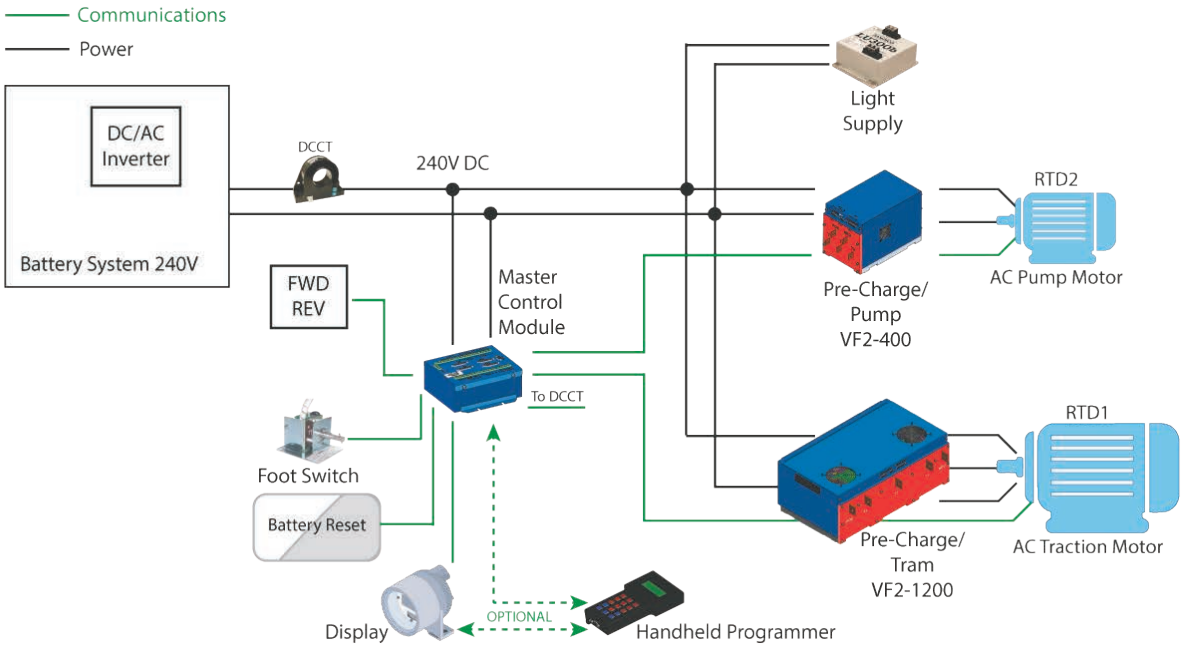
	Model	Part Number		Power @ Rated Volts	Frequency Range	Voltage Range	Amps @ Rated Power
Tram Drive (for large motors)	VF2-1200	A800782	Input	105kW @ 240V	DC	160 - 300V DC	440A
			Output	100kW @ 138V	0 - 125 Hz	0 - 170V AC	500A / 1200A peak
Tram Drive (for medium motors)	VF2-700	A801019	Input	56kW @ 240V 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 47 for ordering information)	
Motor and Encoder Parts (see page 28 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

Applications:
- Mining Locomotives
- Railrunners
- Rubber Tire Man Carriers

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

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)

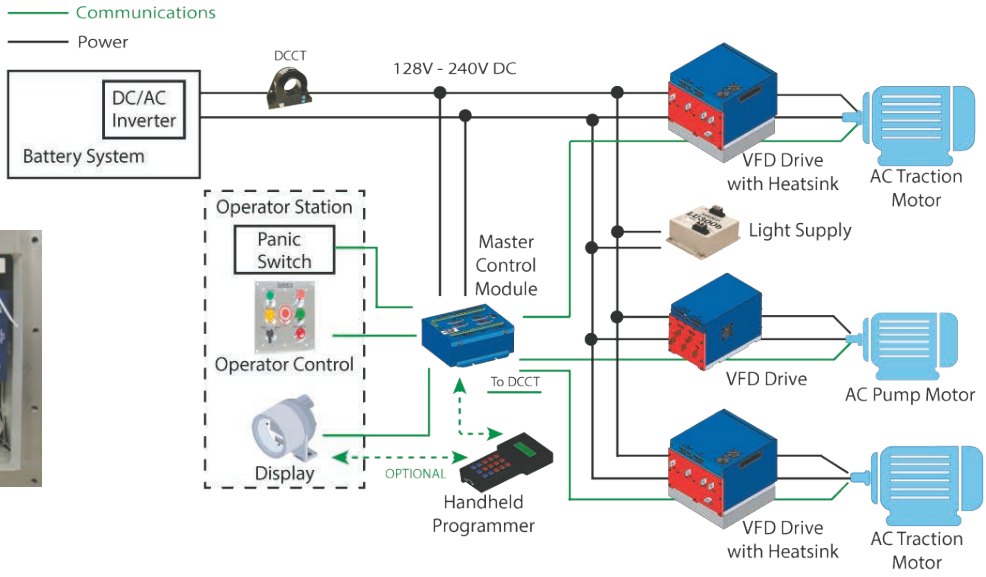
Pump
Drive
VF-400 Series

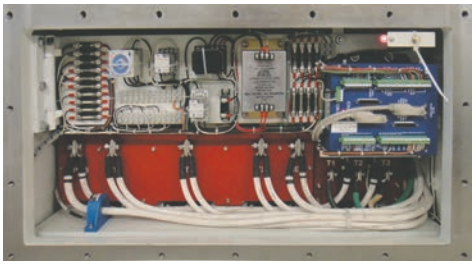
Dimensions (IP00)	
Height	230mm (9")
Width	199mm (7.8")
Depth	354mm (13.9")
Weight	14.5kg (32 lbs)

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

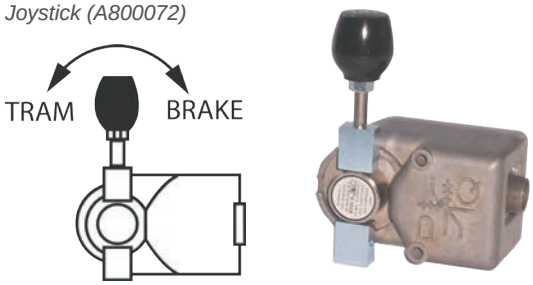
Sample Block Diagram of VF Series for Rail





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 27 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

Applications:
- Shuttle Cars

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 8.

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

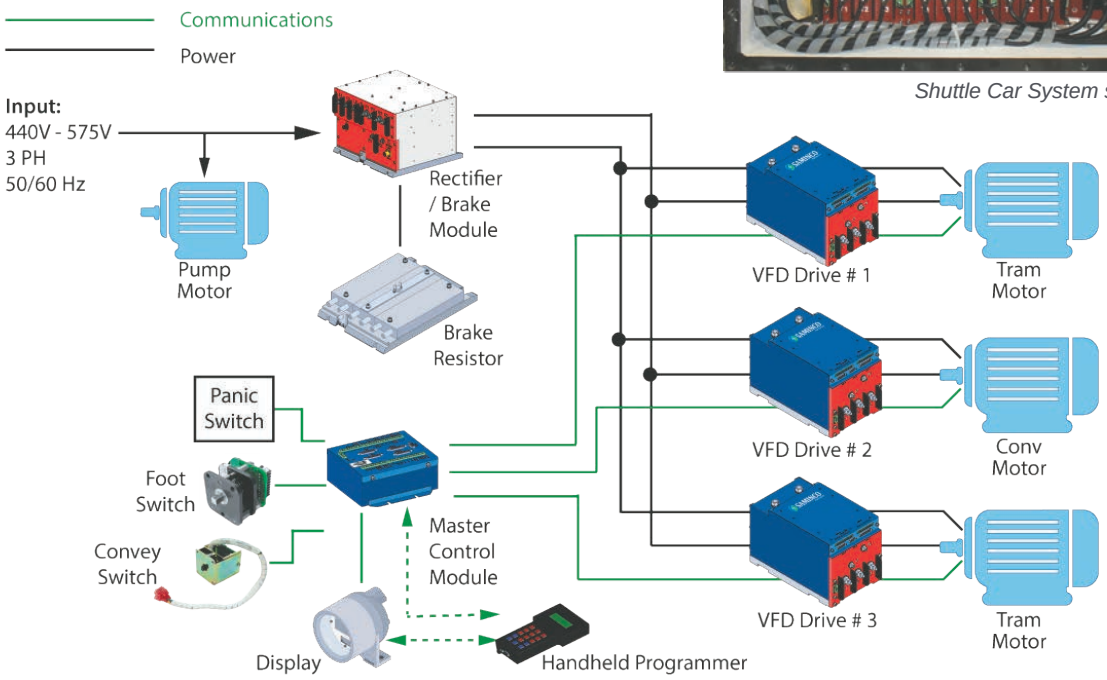
Dimensions (IP00)	
Height	210mm (8.25”)
Width	203mm (8”)
Depth	356mm (14”)
Weight	1 4.5kg (31 lbs)

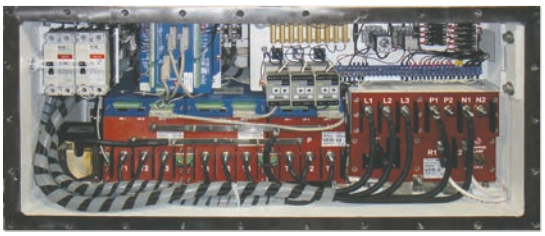
Rectifier / Brake Module
Part # A800497 / A800497A
(See page 40 for more information)

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

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, NOMEX 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 27 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**

JR1000 Family of 1000V AC VFD Systems

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

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 tramming.

Saminco 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)

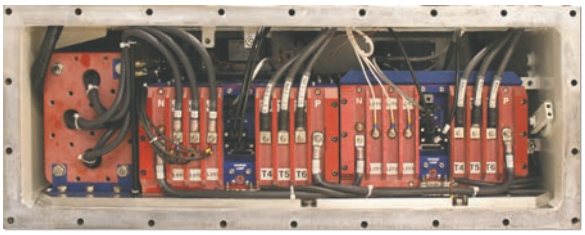
Electrical Specifications

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	83A 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 63A AC 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	136A AC rms
			Output	220kW	DC	135% of input	150A DC

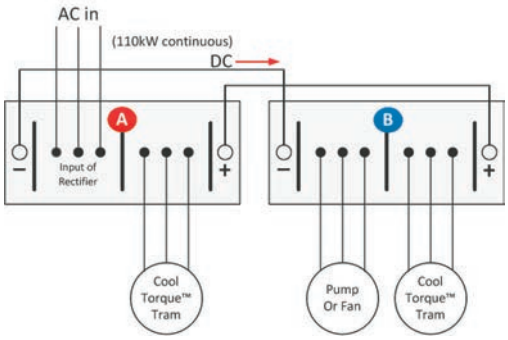
Environmental Specifications

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



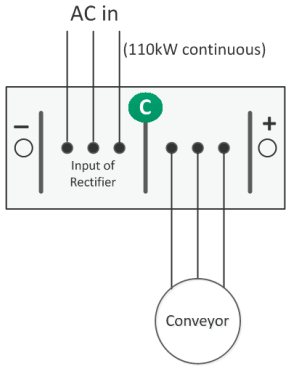
This set up is for small continuous miners and small shuttle cars.

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 37 for more info)	A801000
Inductor	.3mH / 190A 3PH 1140V (see page 37 for more info)	A801006
Inductor	0.36mH / 150A 3PH 1200V (see page 37 for more info)	A801015
EMC Filter	1260V AC 120A 50/60 Hz (see page 46 for more info)	A801016
MOV-Varistor	3PH 1200V 1500Joule	A801017
Graphic Display	Digital Display - see page 31 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 32 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 47 for more information)	
Motor and Encoder Parts (see page 27 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

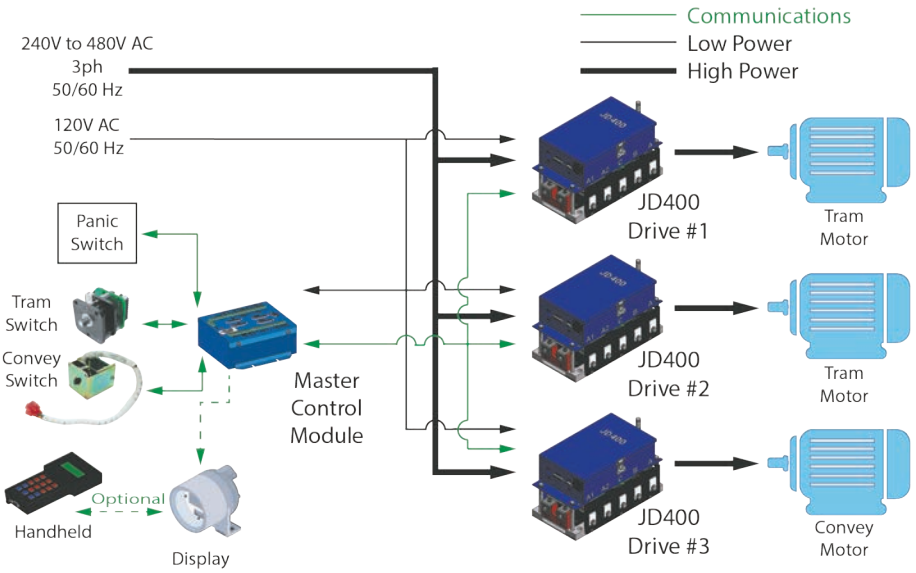
Saminco Part # *various*
(See your Sales Rep for specific ordering information)

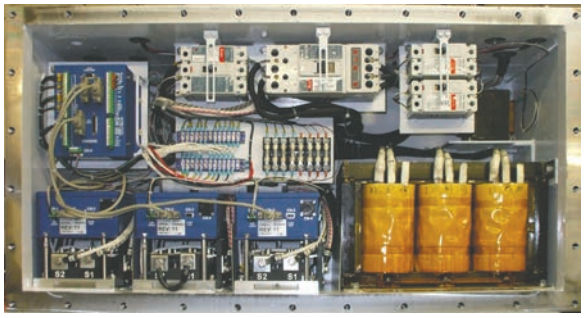
Applications:
- Continuous Miners
- Shuttle Cars

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

Example block diagram of shuttle car system setup





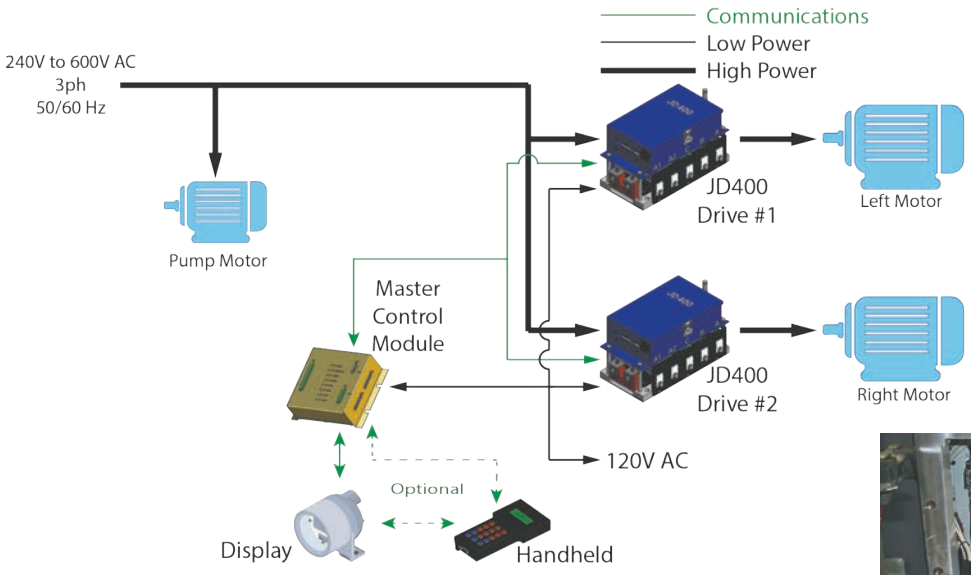
Three drive system for shuttle cars

Electrical Specifications				
	Continuous Miners (A800843)		Shuttle Cars (A800815)	
Specifications	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)

Applications:
- Mining locomotives
- Man-trips
- Utility vehicles

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.

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

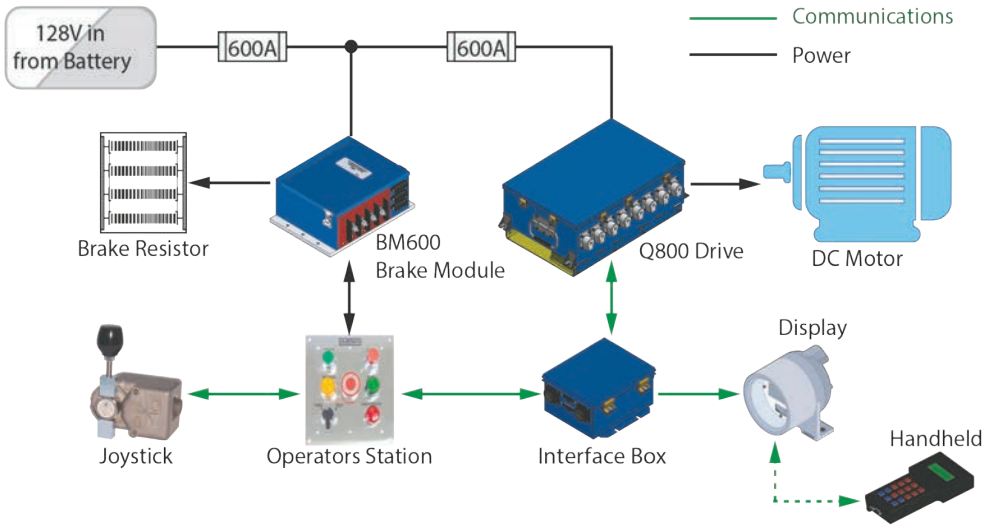
Environmental Specifications

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**

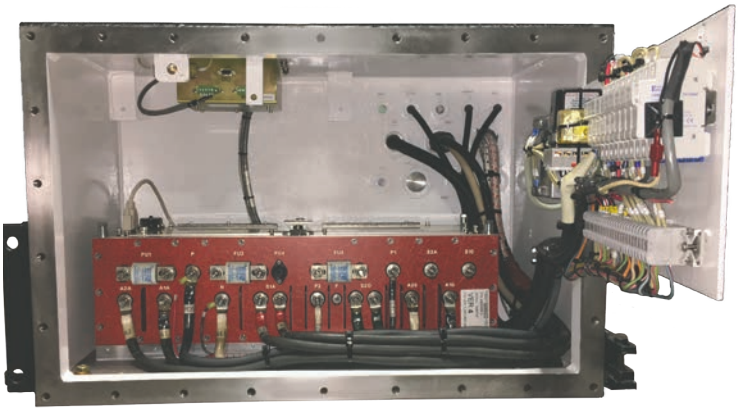
Q750 for Scoops

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

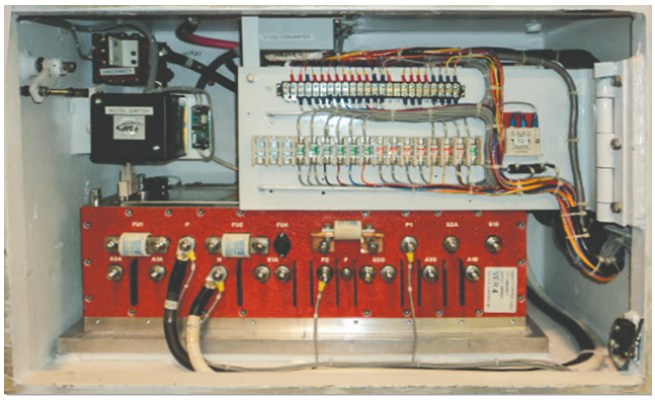
Applications:
- Scoops
- Shield Haulers
- Utility Vehicles

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.



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) Input	Single Drive (A800355-3) Output	Dual Drive (A800357-3)* Input	Dual Drive (A800357-3)* 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.

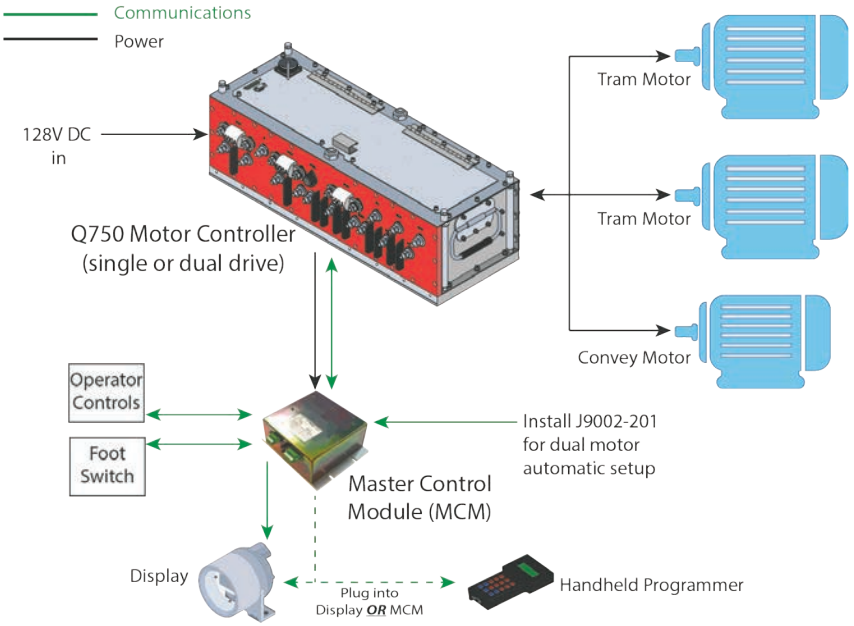
Environmental Specifications

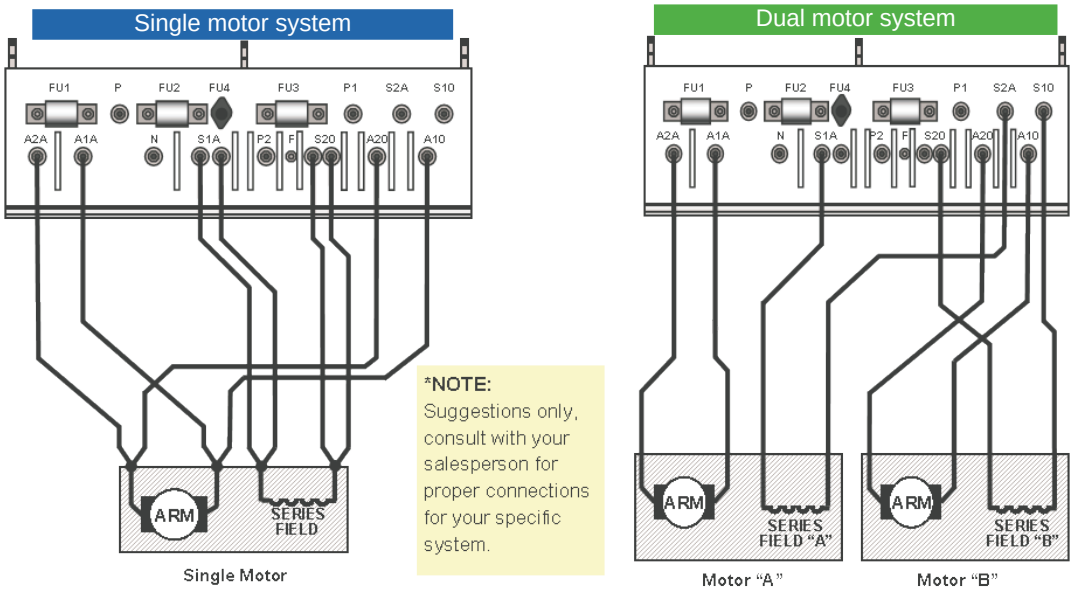
Description	Specifications
Ambient Operating Temperature	-10°C (no frost) to +50°C (14°F to 122°F)
Storage Temperature	-40°C to +60°C (-40°F to 140°F)
Relative Humidity	<90% no condensation
Altitude	3300 Feet (1000 meters) - de-rate above 3000 meters.

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)

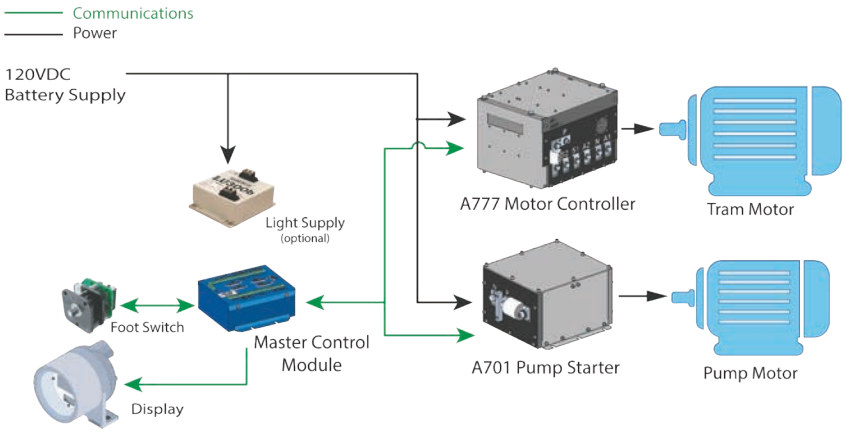
Applications:
- Scoops

Description

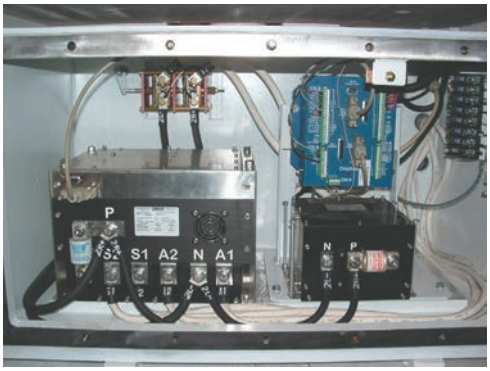
The A777 is a compact, self-contained unit that includes a cap bank, pre-charge circuit and DC-rated input contactor.

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		
Specifications	Input (DC)	Output (DC)
Rated Power @ Rated Volts	42kVA @ 120V	41kW @ 120V
Frequency Range	DC	DC
Voltage Range	80V - 160V	0 - 98% of V in
Amps @ Rated Power	350A @ 42kW	340A @ 41kW

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 (3300ft) de-rate above 3000 meters

Options for the A777 System		
Part Name	Description	Part Number
Motor Controller	A777 Traction Drive 1000A / 120V DC	A800215
Pump Starter	A701 Pump Starter - Gen II	A800216
Master Control	Master Control Module - Gen II	A800227
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**

Dimensions (IP00)	
Height	241mm (9.5”)
Width	353mm (13.9”)
Depth	312mm (12.3”)
Weight	29 kg (65 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

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.

Water Cooled Motors

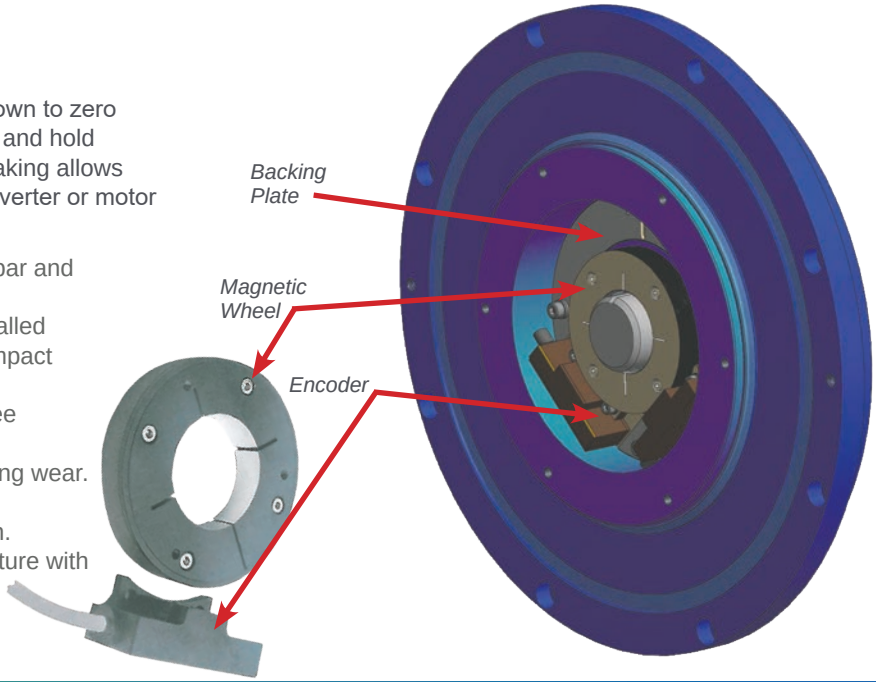
Water cooled motors by Saminco have two water connections (inlet and outlet) to a fully integrated wraparound water jacket design.
- 100% water cooled coverage over active core material.
- Inner jacket can last 10+ years.
- Optimized thermal circuit design with minimum thermal path length to cooling 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 tramming 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 savng 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.



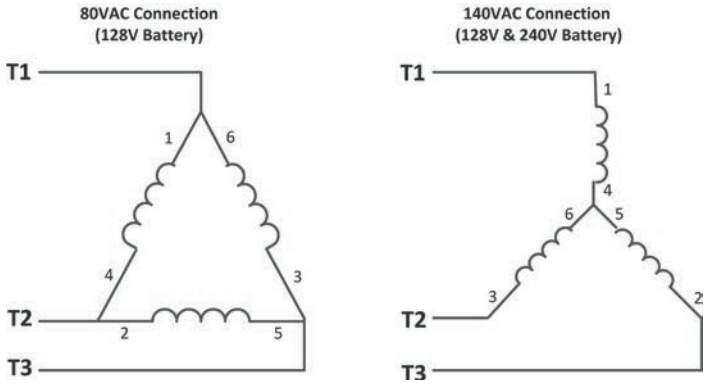
Mining Traction Motors

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

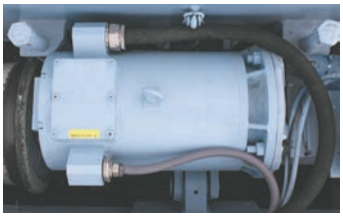
Applications:

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

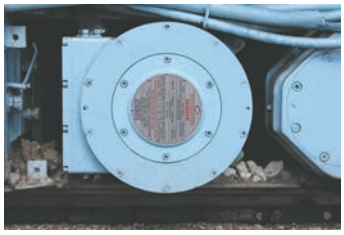
Dual Voltage Traction Motors for Battery Vehicles



TM1500



Mining locomotive motor installed



TM1200 continuous miner tram motor installed

TM1200 continuous miner tram motor

Motor Specifications - AC Traction

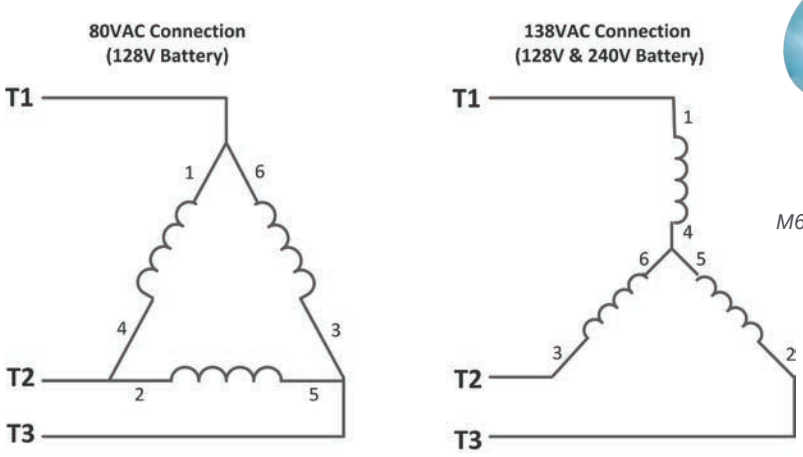
Motor Part Number	M6005-010-1	M6005-016-2	M6005-021	M6005-034	M6005-036	M6005-037	M6005-066
Model Number	XV55			TM1000	TM1500	TM1200	non-XP
Peak Torque	1000Nm	1000Nm	500Nm	1000Nm	1500Nm	1200Nm	1500Nm
Power Rating	55kW/ 75HP	55kW	15kW/ 20HP	55kW	80kW/ 108HP	40kW	80kW
Voltage	440V AC	80V / 140V AC	80V/ 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

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

Applications:
- Scoops
- Shuttle Cars
- Shield Haulers
- Continuous Miners

Dual Voltage Pump Motors for Battery Vehicles



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

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

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

Cable Part Number	Connects to	Description	Length	Quantity Needed
W6004-281	MCM to tram drive	Controls right or left tram motor	91cm (36”)	2
W6004-184	MCM to tram drive	Optional extended cable to tram drives	183cm (72”)	2
W6004-181	MCM to diagnostic display	Sends information to/from Diagnostic Display	91cm (36”)	1

Dimensions (IP00)	
Height	208mm (8.2”)
Width	208mm (8.2”)
Depth	89mm (3.5”)
Weight	2.73kg (6lbs)

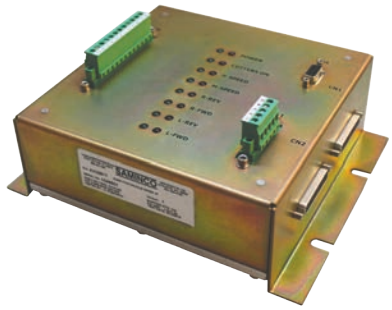
Digital Master Control Modules

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



MCM for JD400 Part # A800817

Master Control Module Specifications

MCM Part Number	A800817
System used with	JD400
Application	Continuous Miner
Input Supply	120V AC

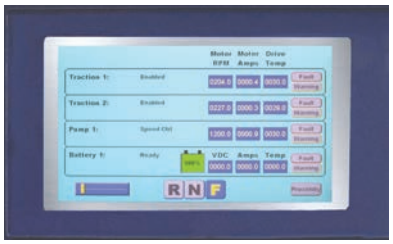
Dimensions (IP00)	
Height	208mm (8.2”)
Width	203mm (8”)
Depth	107mm (4.2”)
Weight	1.8kg (4lbs)

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

Saminco 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:

LHDs

Shuttle Car

Scoop

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

Saminco 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’)

Handheld Programmer

Saminco Part # *A800220-1*

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

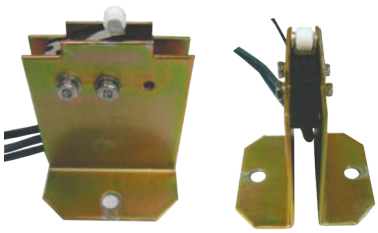
Electrical Specifications	
Input	24V DC via digital display

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

Saminco Part # *A800190*



PS300 Panic Switch (IP000)

Description

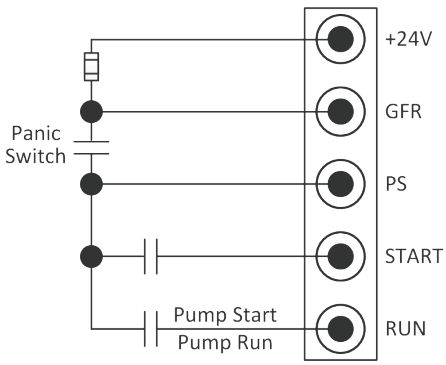
Panic switch for mining traction systems.

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 a 10µ/ 5V DC up to 100mA/ 250V AC.



Suggested wiring for the panic switch

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”)

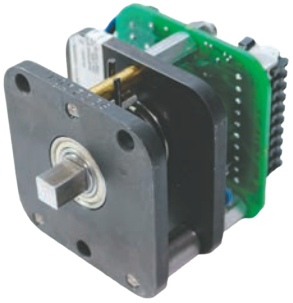
Foot Switches

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.

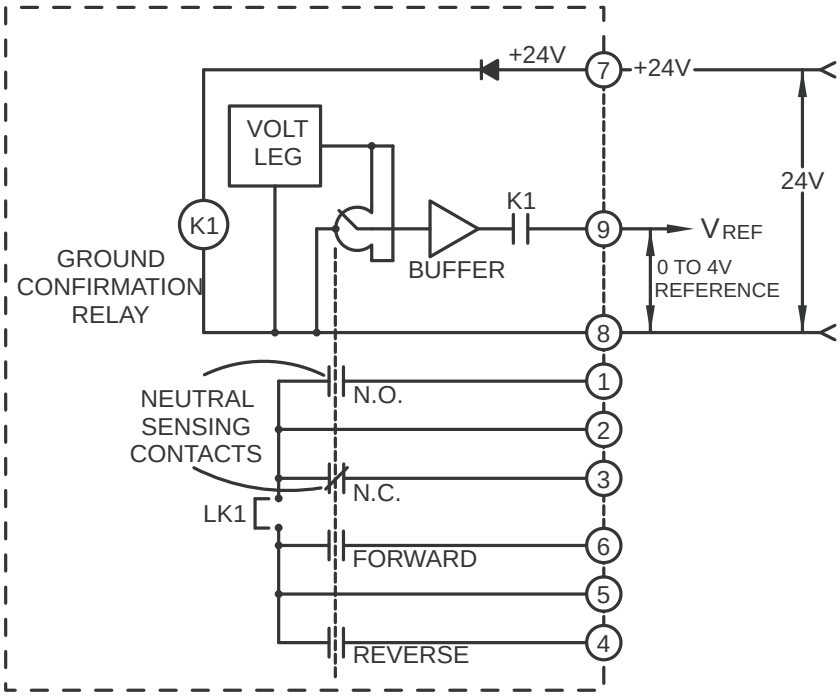
Features
- Rugged foot-switch assembly for off-road electric vehicles
- Configured for symmetrical forward/ reverse operation
- Mounts inside commonly available, explosion-proof housings
- Safety features: neutral sensing contact and missing ground/ common wire protection
- Gear-less construction allows 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



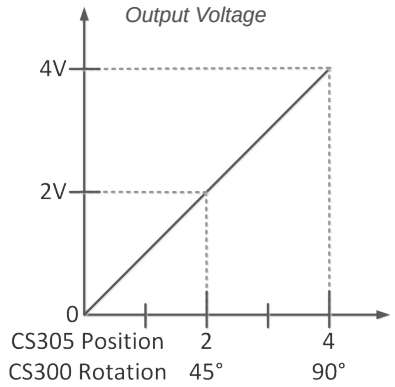
Specifications		
Part Number	A800498	A800281
Model Number	FS400	SR300
Input Supply	20V to 26V DC @ 20mA	20V DC to 30V DC @ 20mA
Output Voltage	0V to 4V DC = 0 - 100% Reference	0V to 4V DC for 0 - 90° rotation
Output Current	Up to 10mA	Up to 10mA
Height	86mm (3.4”)	60mm (2.4“)
Width	73mm (2.9”)	95mm (3.8 “)
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)

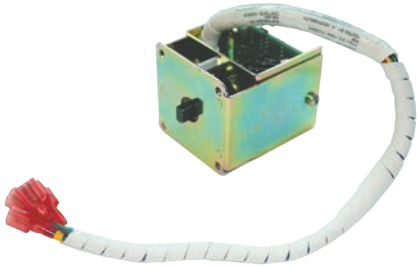
Description
Conveyor speed control switch assembly for shuttle cars.

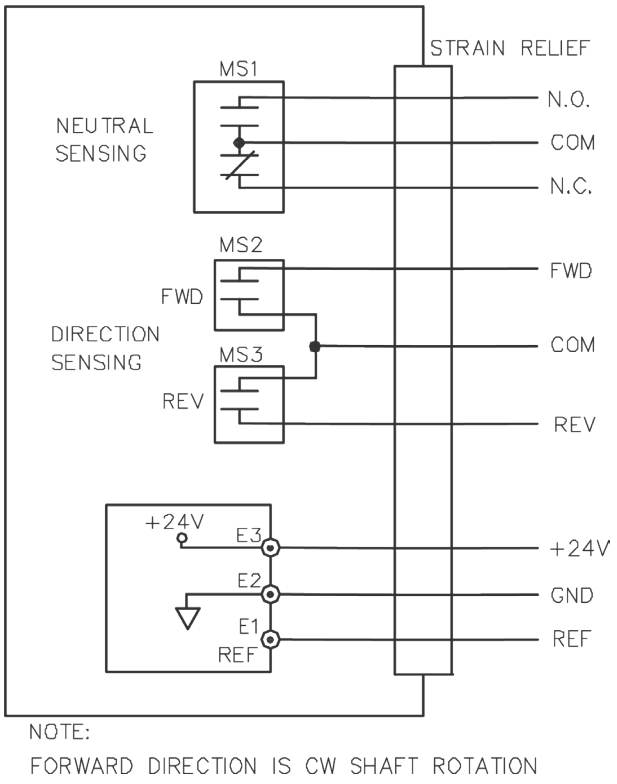
Features
- Ruggedly built to last.
- Configured for symmetrical forward/ reverse operation
  - CS300 with spring return to 0 (off)
  - CS305 with 6 step retained position in both directions
- Mounts inside commonly available explosion-proof housings used for shuttle cars
- Safety features: neutral sensing 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





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)	

LU300b Light Supply

Saminco Part # *A800966*

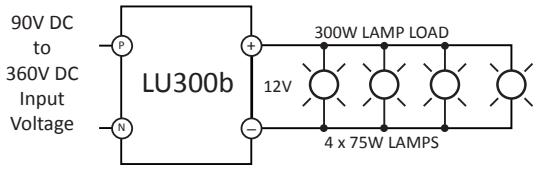
Description
The LU300b is a compact, 12V, 300W light supply for use in battery or trolley-operated vehicles such as scoops, shuttle cars, battery/ shield haulers and LHDs.

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)

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

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

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*

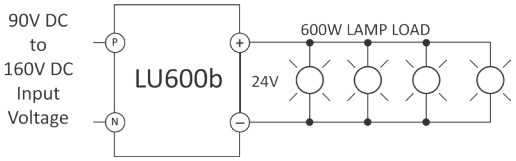
Description
The LU600b is a compact 24V DC, 600W DC, 75A isolated power supply for auxiliary equipment.

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.

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

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

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)

Pump Starter - A702 (10 - 50HP)

Saminco Part # *A800126*
(See your Sales Rep for specific ordering information)

Description
The A702 pump starter is an intrinsically safe soft starter for pump motors using 128V DC input from a battery.

Features
- The 24V control circuit is galvanically isolated from the DC input. Internal control circuit is also isolated from power circuit by means of DC current transformer.
- Provides continuous motor voltage and current sensing.
- Provides real time readings of input voltage, output current, shunt current and operational status via digital diagnostics display. Contact your Saminco rep for more details on this option.
- OFF position starting. The Saminco Pump Starter cannot operate unless all controls are in off position
- Built-in motor thermal overload circuit with inverse time characteristic.
- Soft start timer: Soft start of the pump motor is limited to 3 seconds by built-in start timer. Should the pump motor fail to accelerate up to full speed under 600A current limit, then the controller will be shut off.
- Over-current protection:
    - 350A fast acting fuse in the input of the motor controller.
    - Electronic over-current detects circuit trips input contactor M if motor current exceeds 750A.
    - Built-in motor thermal overload circuit with inverse time characteristic.
    - Built-in start up timers that limit pump motor start time to 3 seconds.
    - Overload protection adjustable up to 50HP, factory default is 10HP.

Electrical Specifications		
Specifications	Input	Output
Rated Power @ Rated Volts	41kW @ 120V	41kW @ 120V
Frequency Range	DC	DC - Soft Start
Voltage Range	70 - 200V	0 - 100% of V in
Amps @ Rated Power	341A @ 41kW	600A MAX (10 - 50HP)

Dimensions (IP00)	
Height	187mm (7.4”)
Width	276mm (10.9”)
Depth	254mm (10”)
Weight	9.5kg (21 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

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

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

Inductors

Saminco Part # *A801015*

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 40.

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

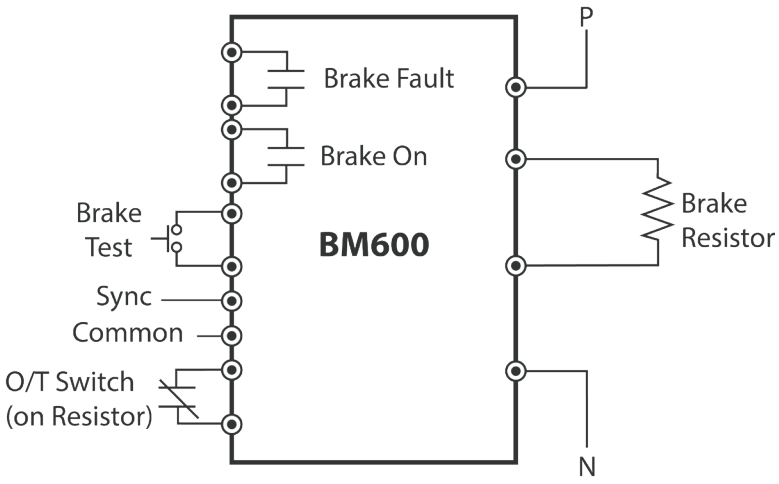
Saminco Part # *A800990 (155V Threshold)*
A800991 (317V Threshold)
A800992 (360V Threshold)

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°)
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

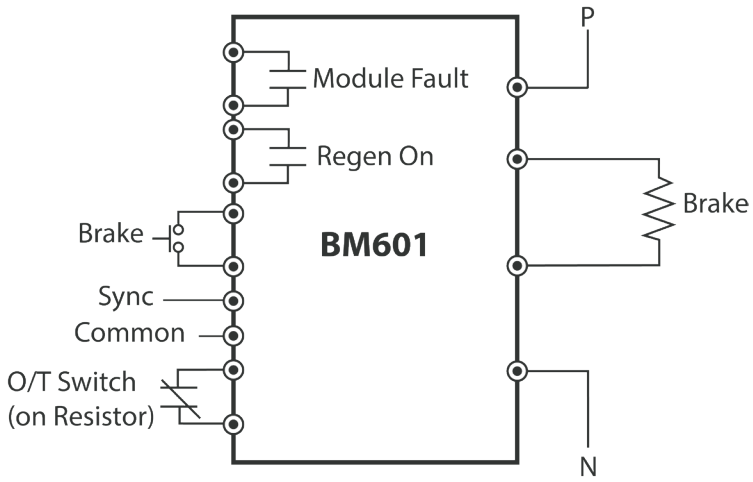
Saminco Part # *A800993*

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)

Saminco Part # A800994

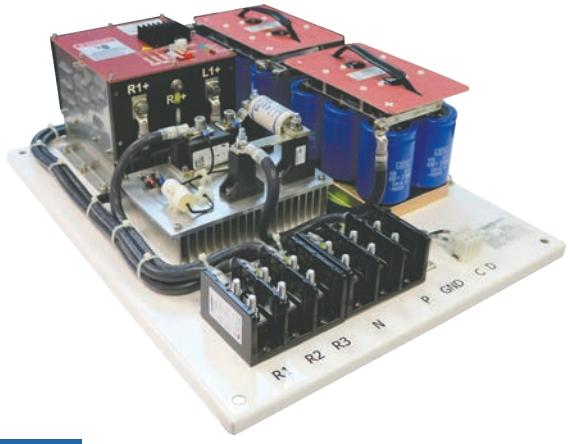
BM601 Brake Module Panel Assembly

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



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	-

Dimensions (IP00)	
Height	220mm (8.7”)
Width	686mm (27”)
Depth	233mm (21”)

Rectifier Brake Module (440V or 550V AC)

Saminco 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

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

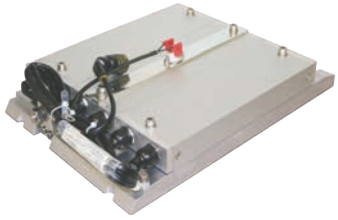
Description

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)



VFD Dynamic Brake Resistor

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

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”)

*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)

Saminco 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 ± 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

Saminco 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

Dimensions (IP00)	
Height	351mm (13.8”)
Width	196mm (7.7”)
Depth	790mm (31.1”)

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

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

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.

Exhaust side view

Fan side view

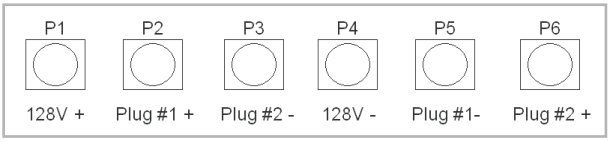
Features

- 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.

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

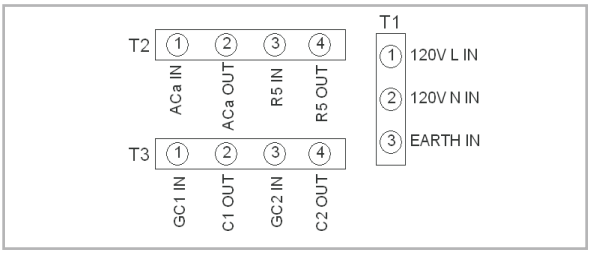
Customer Connections

Front Connectors



- P1 and P4 - 128V DC charger input
- P2 and P5 - Battery Plug #1 connection
- P3 and P6 - Battery Plug #2 connection

Side Connectors



- T1(1,2,3) – 120V AC supply input
- T2(1,2) – Aca (charger outputting acknowledgment) signal
- T2(3,4) – Charger run signal (tells charger it is okay to output 128V DC)
- T3(1,2) – Ground detection connections with Battery Plug #1
- T3(3,4) – Ground detection connections with Battery Plug #2

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

Dimensions (IP00)	
Height	216mm (8.5”)
Width	442mm (17.4”)
Depth	305mm (12”)
Weight	13kg (29 lbs)

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)

BC151 Series Battery Charger

Saminco Part # *A800636 / A800639*
(See your Sales Rep for specific ordering information)

Description

DC/DC battery charger with 150A output will fully charge an 800A battery in less than 6 hours. Available for 120V and 240V batteries.

Features

- Constant current / constant voltage charging pattern provides automatic output voltage limiting at end of charge.
- Silent charging is inaudible with 15k Hz carrier frequency.
- EMI filters for noise reduction.
- Fully protected against both input and battery reverse polarity.
- Available for negative as well as positive ground units.

Electrical Specifications				
Part #	A800636		A800639	
Model #	BC151/240N		BC151/120N	
Specifications	**Input**	**Output**	**Input**	**Output**
Rated Power @ Rated Volts	23.5kW @ 320V	23.4kW @ 290V	23.5kW @ 320V	22kW @ 145V
Frequency Range	DC	DC	DC	DC
Voltage Range	200 - 360V	150 - 290V	200 - 360V	80 - 145V
Amps @ Rated Power	74A DC	150A DC	74A DC	150A DC

Dimensions	(IP00)
Height	356mm (14")
Width	330mm (13")
Depth	603mm (23.75")
Weight	43kg (95 lbs)

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

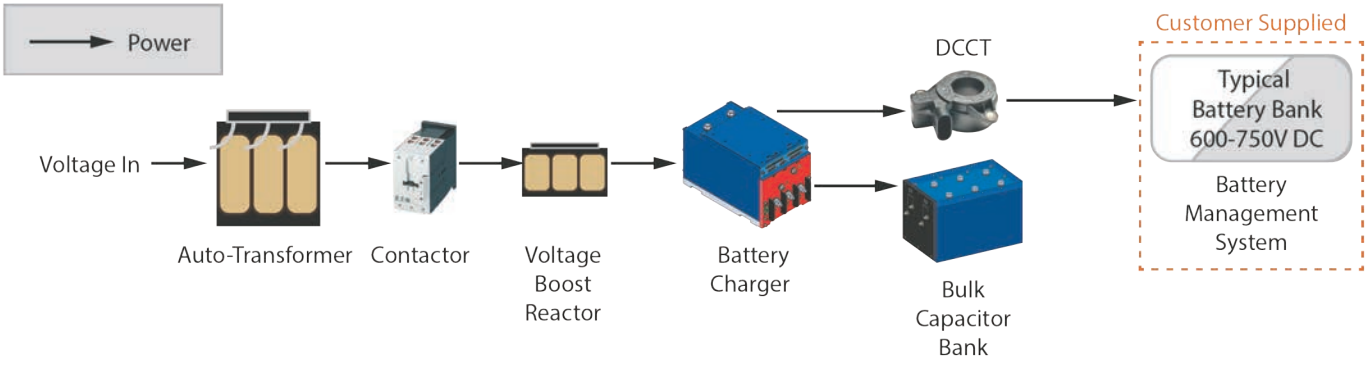
Hardware Description

- 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.			

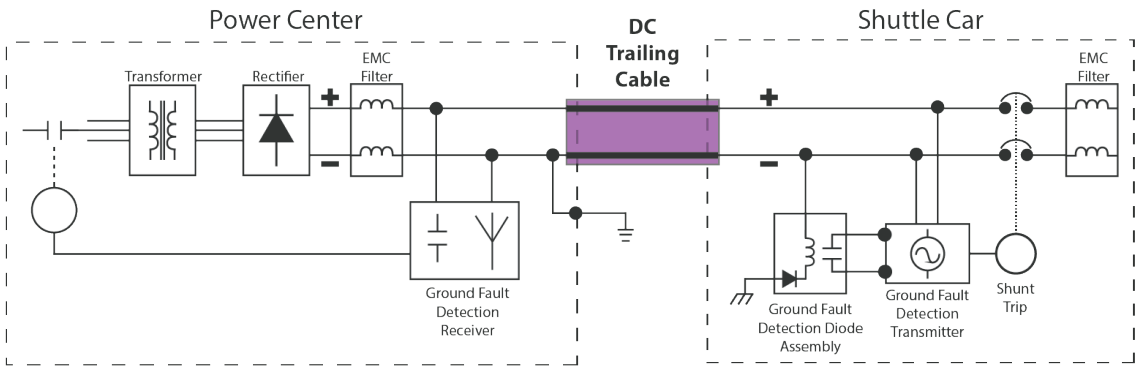
Dimensions		
Part Numbers	A801114 (USABC 110)	A801116 (USABC 75)
Height	249mm (9.8")	210mm (8.3")
Width	330mm (13")	203mm (8")
Depth	378mm (14.9")	356mm (14")
Weight	21kg (46 lbs)	14.5kg (31 lbs)

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.

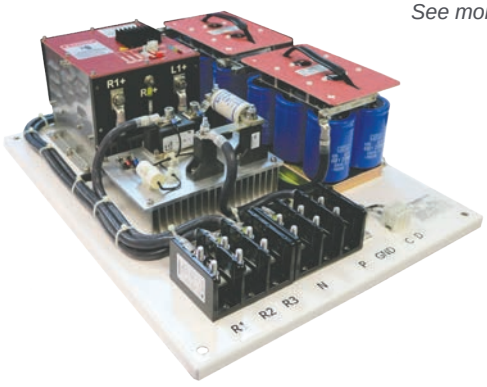



Ground Fault Detector (A800390)


Ground Fault Receiver (A800392)

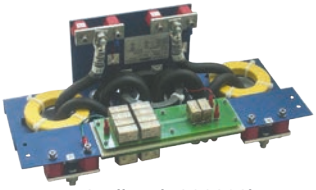

DC Choke (I9001-050)

See more on page 39.


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

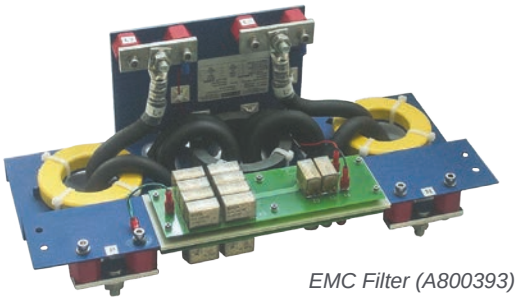
****Partial list shown. Please see your salesperson for all available options and configurations**

EMC Filters

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

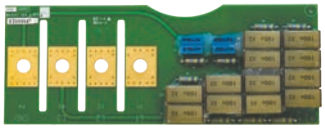
Description

Reduces electromagnetic noise between the main power supply and the Saminco drive.



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		
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**

Radio Control Systems

Applications:
- Continuous Miners
- LHD

TC3 Radio Control System

MSHA APPROVED
 # 18-A160002-0

Description

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

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

Applications:
- 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

	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

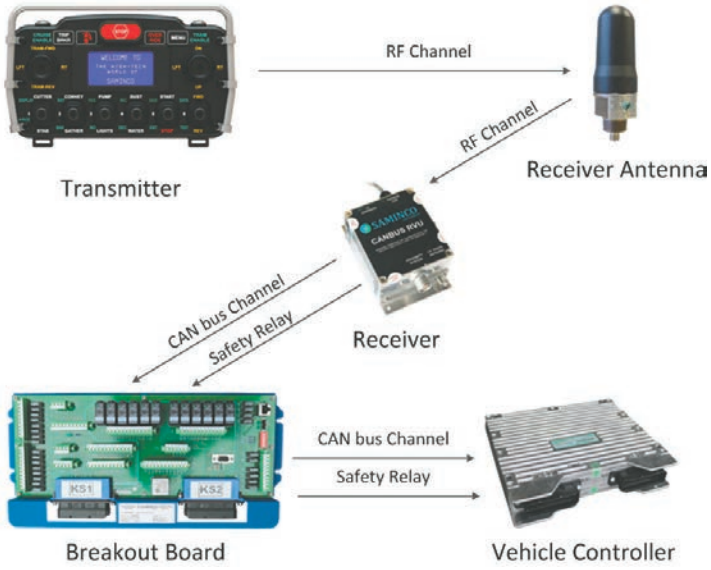
Applications:
- Continuous Miners

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.

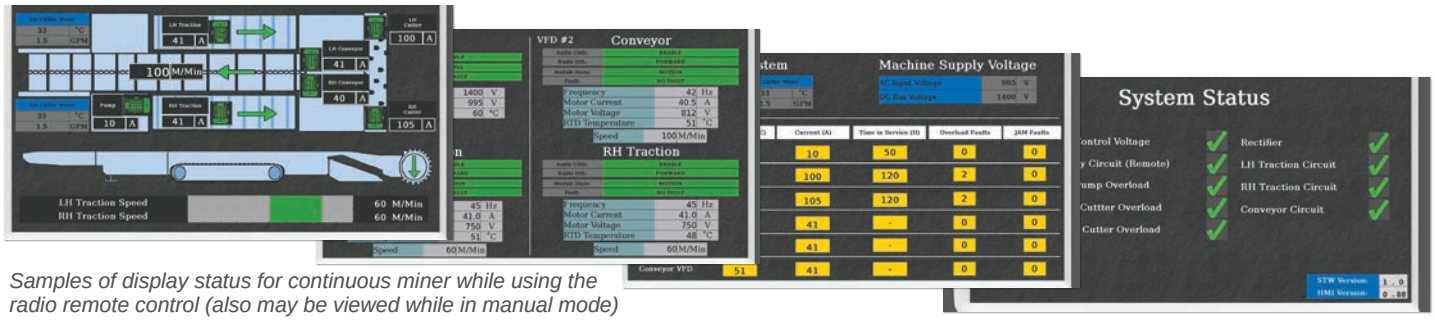
Features

- 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)

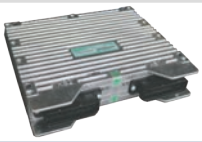
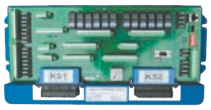


Sample diagram of vehicle control system and radio remote control system integration

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
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**

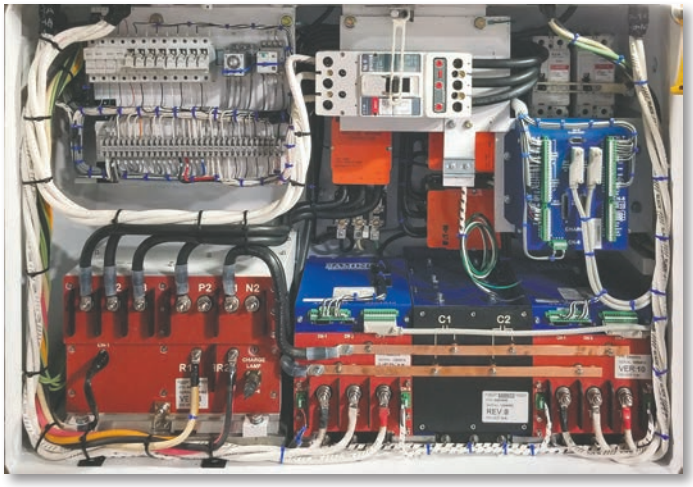
ELITE Services

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:

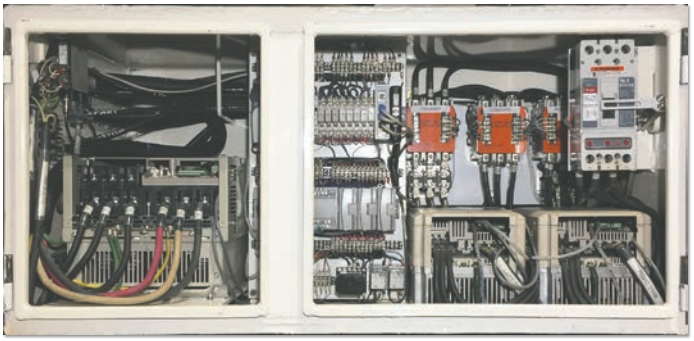


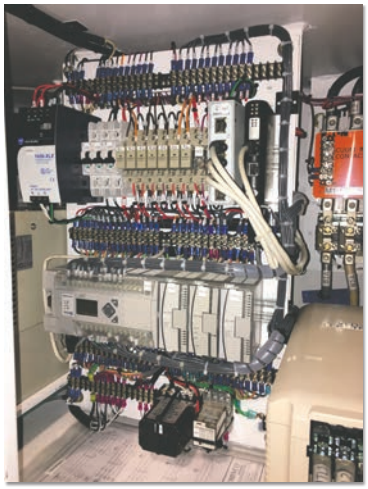
We are a 508A Industrial Control Panel Fabricator

We are a UL 508A Listed Industrial Control Panel Shop. Our Huntington, WV facility is designed and staffed to competently manage your electrical control panel requirements down to the most exacting quality standards.

Once completed, we throughly test each panel to confirm that all aspects are performing as intended.

- Installations
- Certified Repairs
- Panel wiring
- Enclosures





System Integrator for FZSoNick SA Switzerland

Saminco 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.

FZSoNick

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

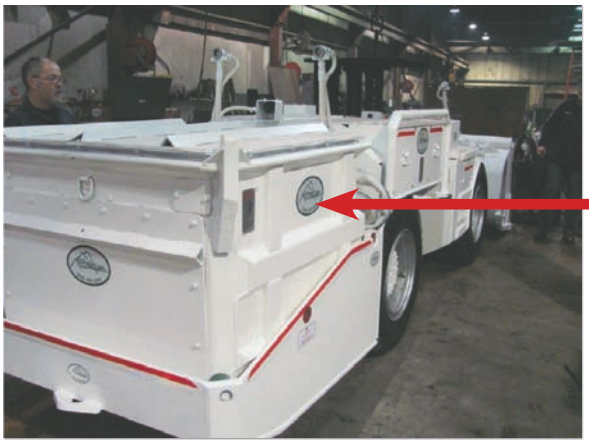
Sodium Nickel Technology

- 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



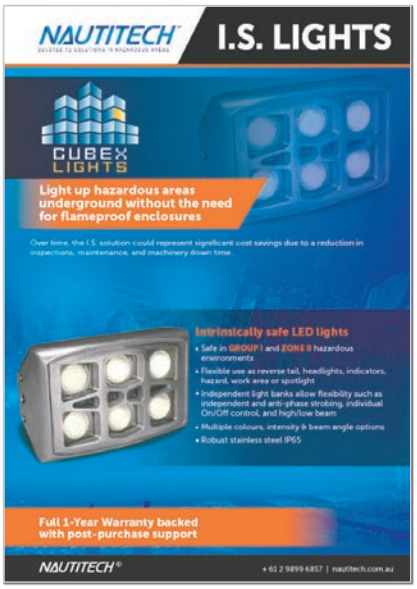
- 141 kWh battery
- Weight: 1200kg (2,640 lbs)
- 6 x 620V / 38Ah

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/



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

Typical Applications
Centrifugal pumps
Submersible pumps
Vertical turbine pumps
Pump systems starting from limited power sources like generators:
- Irrigation
- Booster pumps
- Lift stations
- Tank fill
- Water treatment

Special Functions
Remotely monitor your system from any location at any time.
Operation Status
Alarm notification
Data logging with export function

Material Handling

Typical Applications
Conveyors
Slope belts
Food and beverage packaging
Process, container and overhead cranes

Special Functions
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

Fan & Ventilation

Typical Applications
Mineshaft ventilation
Tunneling ventilation
HV AC systems
Smoke ventilation
Fire control ventilation

Special Functions
Reduced inrush currents and mechanical shock
Compatible with all building automation systems:
- 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

Crushing

Typical Applications
Aggregates
Quarry
Coal mining
Asphalt and concrete recycling

Special Functions
Reduced inrush currents and mechanical shock
Allows generator or soft line supplies
Load sensing to reduce shear pin

Industrial Motors

We offer industrial motors with TEFC, TEAA, TEAO, ODP, WPI or WPII, IEC, NEMA, Class F or H. Voltages range from 240V - 13.8kV, through 25,000 HP.

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.

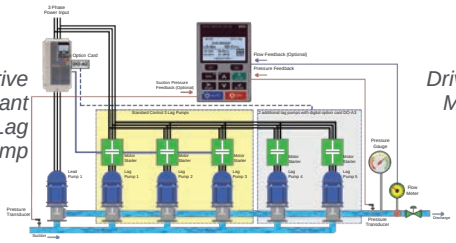
Remote SCADA Systems for Industrial Controls

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:

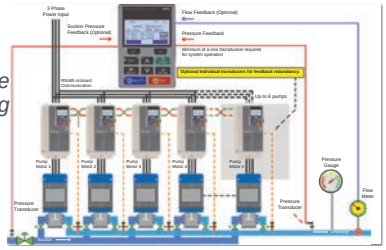
- VFDs
- Soft Starts
- Motor Protection Devices
- Measurement Devices
- ANY device with a Modbus RTU or Modbus TCP port
- ANY device with discrete I/O canalog or digital outputs

Virtual SCADA for Lift Stations

Single Drive Constant Speed Lag Pump



Drive to Drive Multiplexing



VFD and Soft Starter Controls Provided by:

YASKAWA

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

Danfoss Drives **DrivePro®** Service Partner

Authorized Medium Voltage Partner

We are an Authorized Service Provider for repairs and replacements.

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

SOLCON™ SOLUTIONS

We are a Preferred Partner and System Integrator for Solcon.

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

VX2 System

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

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.

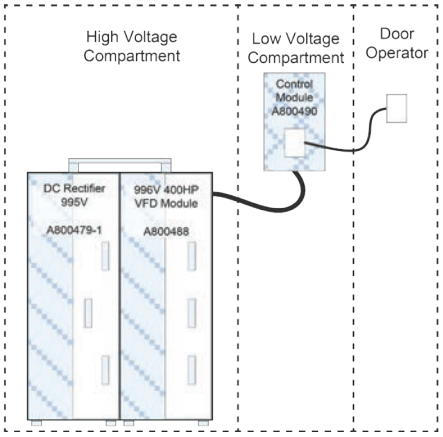
Features
- Speed can be controlled manually, remotely or automatically using internal or external controls.
- Rate of acceleration and deceleration is controlled allowing a perfect soft start or soft stop.
- Controlled soft starts reduce the mechanical stress on the motor shaft and load.
- Reduced starting 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

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 international

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.

We are now an ISO 9001:2015 Certified Company.

A DRIVING FORCE IN POWER

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