



Marine

Energy Solutions

Batteries, Solar Equipment,
UPS Solutions, DC Solutions,
Controllers & Inverters

yhienergy.co.nz





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About YHI

YHI (New Zealand) Ltd is a leading distributor of batteries, solar and energy equipment. We strive to bring you the highest quality products from the best global brands

YHI (New Zealand) Ltd is a leading New Zealand energy products distribution company and offers a comprehensive range of Batteries, Solar Power and EVSE products, as well as offering Power Systems Solutions and Services.

Established in 1995, YHI (New Zealand) Ltd has grown to operate from eight locations throughout New Zealand and has 87 staff.

YHI (New Zealand) Ltd is a proud member of:



Sustainable Energy
Association New Zealand



DRIVE
ELECTRIC





Neuton Power provide an extensive range of high quality energy products, including marine, deep cycle and automotive batteries as well as PV modules and mounting components.



Founded in 1925 by George Godber and Carl Speer, Trojan Battery Company is the world's leading manufacturer of deep-cycle batteries. From deep-cycle flooded batteries to deep-cycle AGM and gel batteries, Trojan has shaped the world of deep-cycle battery technology with more than over 90 years of battery manufacturing experience.



Morningstar is a world-leading supplier of solar charge controllers & inverters, with over 4 million units installed in over 100 countries. Morningstar's products have been recognized in international solar markets as the most advanced and highest quality products available.



Trinasolar is a leading global manufacturer of next generation photovoltaic products. Trina is committed to building strategic, mutually beneficial collaborations with installers, developers, distributors and other partners as the backbone of shared success in driving smart energy together.



Eltek is part of the proud Norwegian maritime and offshore heritage and can look back on more than 40 years experience as a dedicated power specialist, developing modular, compact and reliable solutions for use in demanding environments.



Eaton is a brand dedicated to improving people's lives and the environment with power management technologies that are more reliable, efficient and safe.



C&D Technologies produces battery power solutions and services for the telecommunications, UPS and switchgear. C&D Technologies unique ability to offer complete systems that are designed and produced to high technical standards set it apart from other brands.



Vision sealed lead acid batteries have gained an enviable reputation for quality and reliability in both New Zealand and overseas markets. From Vision's smallest 6V1.2Ah battery which is used in security applications to the 12V150Ah battery used in UPS applications, you can rely on Vision to provide the battery you need.



YHI Part Code NPM22

NPM24

NPM24DC

NPM27

NPM27DC

NPM31

NPM31DC



Batteries For Starting & Deep Cycling

Neuton Power Marine Batteries are specifically designed to perform on the ocean, resistant to engine vibration, heat & wave force.

Manufactured to the highest standards to withstand the harsh environment of marine applications.

Terminal Key:



STARTING

PRODUCT CODE	CCA	20HRATE	LENGTH	WIDTH	HEIGHT	WEIGHT	TERMINAL KEY
M22	550	95	240mm	172mm	180mm	13.6kg	B
M24	750	75	258mm	172mm	200mm	18.4kg	B
M27	830	100	303mm	172mm	200mm	21.75kg	B
M31	950	105	330mm	172mm	217mm	25.65kg	B

DEEP CYCLE

PRODUCT CODE	CCA	20HRATE	LENGTH	WIDTH	HEIGHT	WEIGHT	TERMINAL KEY
M24DC	650	80	258mm	172mm	200mm	18.9kg	B
M27DC	700	90	303mm	172mm	200mm	21.45kg	B
M31DC	750	100	330mm	172mm	217mm	24.2kg	B



CHARGING METHOD

- Batteries should be recharged within 24hours after each period of use.
- Charging time by various charging rate can be determined by the the SOC (state of charge)

METHOD 1; CONSTANT VOLTAGE CHARGE (RECOMMENDED) METHOD

TYPE	VOLTAGE SETTING
Daily Cycle Service	14.4-14.8
Floating Service	13.2-13.7
Equalizing	15.5

- Unit Average at 77°F (25°C)
- Every 30 to 90 days, conduct the equalizing charge. Daily cycle service and deep discharging service need more frequent equalizing.

END OF CHARGE

- Current : below 1.0A during charge.
- Stabilized open circuit voltage : 12.75V or higher

HOURS OF USABLE POWER (H.U.P)

AMP. DRAW	5A	15A	25A
M24-700	16.0hrs	4.4hrs	2.5hrs
M27-750	17.8hrs	4.9hrs	2.7hrs
M31-800	20.0hrs	5.6hrs	3.1hrs

METHOD 2; CONSTANT CURRENT CHARGE

BATTERY	M24-700	M24-750	M31-800	
SOC	OCV	3.75A	4.5A	5.0A
100%	12.75V	-	-	-
75%	12.40V	6Hr	-	-
50%	12.20V	12Hr	-	-
25%	12.00V	18Hr	-	-
0%	11.90V	24Hr	-	-

END OF CHARGE

- Maximum voltage output across the battery terminals is maintained at constant level for 2 hours during the charge
- Stabilized open circuit voltage : 12.75V or higher



C&D Tubular GEL (OPzV) Series range of valve regulated lead acid stationary batteries combine the benefits of recombination technology (i.e. virtually no maintenance due to very low gas emissions) plus the advantages of conventional vented batteries with positive tubular plates (i.e. long life and excellent cycling capability).

FEATURES

- Design life: 15 Years
- Tubular Positive Plate - Special grid construction, pressure cast from antimony free alloy, with highly porous gauntlets that retain the active material.
- Pasted negative plate - service lives consistent with the positive plates
- Separators - extremely high porosity and low internal resistance
- Electrolyte - Gel Structure
- Containers and lids - Made of plastic (ABS) material.
- Cells are normally installed in an upright position on steel stands
- One way relief valve - opens at low pressure and is fitted with a flame arrestor device
- 2 year warranty on standby applications

OPzV TUBULAR GEL BATTERIES

PRODUCT CODE	VOLTAGE (V)	10H RATE CAPACITY (AH)	LENGTH (MM)	WIDTH (MM)	HEIGHT (MM)	WEIGHT (KG)	TERMINAL TYPE
CD2200TGEL	2	200	103	206	354	19.0	M10
CD2250TGEL	2	250	124	206	354	23.0	M10
CD2300TGEL	2	300	145	206	354	28.0	M10
CD2350TGEL	2	350	124	206	471	31.0	M10
CD2420TGEL	2	420	145	206	471	36.0	M10
CD2490TGEL	2	490	166	206	471	41.0	M10
CD2600TGEL	2	600	145	206	643	49.0	M10
CD2800TGEL	2	800	210	191	664	65.0	M10
CD21000TGEL	2	1000	210	233	646	80.0	M10
CD21200TGEL	2	1200	210	275	665	93.0	M10
CD21500TGEL	2	1500	210	275	796	115.0	M10
CD22000TGEL	2	2000	214	399	771	155.0	M10
CD22500TGEL	2	2500	214	487	769	200.0	M10
CD23000TGEL	2	3000	214	576	771	235.0	M10



FEATURES

- Enhanced power stability and reliability in cyclic applications
- Endurable power system with a longer service life
- Fast capacity recovery for next discharge cycle
- Minimised total ownership
- Long life-cycle service design
- Excellent Partial State of Charge (PSoC) and cyclic performance
- Leading charging acceptance
- Compliant to major global specifications
- Extreme temperature tolerance
- 3 year warranty

LEAD CARBON BATTERIES

PRODUCT CODE	VOLTAGE (V)	RATE 10H CAPACITY (AH)	LENGTH (MM)	WIDTH (MM)	HEIGHT (MM)	TOTAL HEIGHT (MM)	WEIGHT (KG)
SHC12150FT	12	150	559	126	285	285	50
SHC12200FT	12	172	559	126	328	328	60



FEATURES

- Stable quality & high reliability
- Higher power density
- Reliable construction
- Valve regulating
- Excellent recovery from deep discharge

Vision FM Series are designed for general-purpose applications, including UPS, Telecom, and electrical utilities.

With 10 year design life, the batteries comply to the most popular international standards, including IEC896-2, BS6290-4 and Eurobat Guide.

The battery container and cover are available both in V0 class flame retardant ABS or HBO ABS plastics.

With more than 20 years of production experience, the VISION FM Series of VRLA batteries are recognized as the most reliable and high quality batteries in the industry.

STARTING							
PRODUCT CODE	VOLTAGE	10H RATE CAPACITY (AH)	LENGTH	WIDTH (MM)	HEIGHT (MM)	TOTAL HEIGHT (MM)	WEIGHT (KG)
3FM180DX	6	180	306	168	220	225	28.60
3FM200DX	6	200	240	185	275	275	32.50
3FM225	6	225	320	176	225	247	30.5
6FM9Y	12	8.2	151	65	94	100	2.8
6FM33	12	33	195	130	155	168	10.2
6FM40	12	40	197	165	170	170	13.5
6FM55	12	55	229	138	208	220	19.0
6FM60	12	60	258	166	206	215	24.0
6FM65	12	65	350	167	179	179	23.4
6FM75	12	75	258	166	206	215	24.0
6FM80	12	80	350	167	179	179	24.0
6FM100	12	100	330	171	215	222	32.0
6FM120	12	120	410	176	227	227	38.0
6FM120SX	12	120	330	171	215	225	38.0
6FM150	12	150	485	172	240	240	55.5
6FM200	12	200	522	238	218	223	65.0
6FM230	12	230	520	269	203	208	72.6

YHI (NEW ZEALAND) LTD IS PROUD TO INTRODUCE:



Founded in 1925 by George Godber and Carl Speer, Trojan Battery Company is the world's leading manufacturer of deep-cycle batteries. From deep-cycle flooded batteries to deep-cycle AGM and gel batteries, Trojan has shaped the world of deep-cycle battery technology with over 90 years of battery manufacturing experience.



Terminal Key:



Terminal Configuration:



DEEP CYCLE AGM

Reliant AGM Batteries

PRODUCT CODE	VOLTAGE	20HRATE	LENGTH	WIDTH	WEIGHT	HEIGHT	TERMINAL TYPE	TERMINAL KEY
TRJ185-AGM	12	200	380mm	176mm	55kg	367mm	M8/DT/LT	A
TRJ305-AGM	6	310	296mm	176mm	43kg	358mm	M8/DT/LT	E
TRT105-AGM	6	217	262mm	179mm	31kg	273mm	M8/AP/LT	E



DEEP CYCLE AGM BATTERIES

PRODUCT CODE	VOLTAGE	20HRATE	LENGTH	WIDTH	WEIGHT	HEIGHT	TERMINAL TYPE	TERMINAL KEY
TR12-AGM	12	140	344mm	172mm	45kg	276mm	13	B
TR24-AGM	12	76	277mm	174mm	24kg	219mm	6	B
TR27-AGM	12	89	306mm	174mm	29kg	237mm	6	B
TRU1-AGM	12	34	195mm	130mm	11kg	160mm	15	B

SOLAR AGM BATTERIES

TRSAGM06220	6	220	262mm	179mm	31kg	273mm	M8/LT	E
TRSAGM06375	6	375	296mm	176mm	52kg	414mm	M8/LT	E

DEEP CYCLE FLOODED

6 Volt Batteries

TRJ305H-AC	6	360	296mm	176mm	45kg	366mm	6	E
TRJ305P-AC	6	330	296mm	176mm	44kg	366mm	6	E
TRL16G-AC	6	435	296mm	176mm	57kg	425mm	6	E
TRL16H-AC	6	435	296mm	176mm	57kg	425mm	6	E
TRL16P-AC	6	420	296mm	176mm	52kg	425mm	6	E
TRT-105	6	225	262mm	181mm	28kg	283mm	1, 2, 3, 4	E
TRT-105PLUS	6	225	262mm	181mm	28kg	281mm	1, 2, 3	E
TRT-125	6	240	262mm	181mm	30kg	283mm	1, 2, 3, 4	E
TRT-145	6	260	262mm	181mm	33kg	303mm	1, 2, 4	E

8 Volt Batteries

TRT-875	8	170	260mm	180mm	29kg	283mm	1,2	B
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12 Volt Batteries

TR27TMH	12	105	326mm	168mm	25kg	247mm	5, 7, 8, 9	B
TRJ185H-AC	12	225	380mm	176mm	56kg	373mm	6	A
TRJ185P-AC	12	205	380mm	176mm	52kg	373mm	6	A
TRT-1275	12	150	329mm	181mm	39kg	283mm	1,2	B

DEEP-CYCLE GEL

TRTE35-GEL	6	210	244mm	190mm	31kg	272mm	8	E
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SOLAR INDUSTRIAL LINE FLOODED

TRSIND06610	6	472	389mm	260mm	100kg	610mm	14	E
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MARINE/RV DEEP CYCLE FLOODED

TR SCS225	12	130	354mm	171mm	30kg	253mm	10	B
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TRILLIUM™

TROJAN INTELLIGENT LITHIUM

Designed and engineered in the USA, Trillium, Trojan's Intelligent Lithium battery, can be used in a variety of stationary and motive power applications. From its superior cell and battery design to its intelligent, built-in diagnostics, Trillium offers a range of advanced safety, environmental and electronic features not found in competitive products. With life expectancy well over 5,000 cycles, Trillium will deliver outstanding return on investment over time, plus the legendary quality Trojan Battery is known for.

WHY CHOOSE TRILLIUM LITHIUM?

Superior Cell Selection

Trillium features a Trojan-specific cell, which undergoes a 128-point quality control check and is 100 percent X-ray inspected to ensure the highest quality. It's cobalt-free and nickel-free, and it features the industry's safest chemistry.

Most importantly, Trillium features extraordinary life—greater than 5,000 cycles—and this power is packed into a battery footprint that's 20 percent smaller than competitive offerings.

Superior Battery Design

Trillium has automotive-grade components for durability, safety, and a current sensor, fuse, and temperature sensor. It's waterproof and dust proof, with an IP67 environmental rating—the highest in its class by far.

Trillium is designed to be a true replacement for deep-cycle lead-acid batteries and can be used with existing lead-acid chargers with AGM/GEL settings (I-E profile).

Superior Electronics

Trillium offers unique, advanced electronic features such as a visual SOC (state of charge) gauge on the top of the battery.* A microprocessor* ensures the battery is completely self-protected, and if a problem is detected, will turn itself off. When a problem goes away, it turns back on, automatically self-healing.

Integrated Controller Area Network (CAN)** communications share battery data—state of charge, state of health, and fault status—with other devices.

Trillium also has the built-in ability to track lifetime amp-hours throughput and historical fault data is stored.*

Superior Performance

Trillium gives you more runtime and a longer life than competitors' batteries in its class and delivers consistent power across the state of charge range. It can be charged in less than two hours. It features a simple system that is scalable up to 48 volt applications.

Superior Opportunity

Trillium is designed and engineered in the USA by Trojan, the world's leading supplier of deep-cycle batteries for nearly 100 years. You can be confident Trillium is the highest quality product on the market—backed by Trojan's extraordinary customer support.



YHI Part Code TR24-LI

TR27-LI

TRU1-LI



TR24-LI

VOLTAGE	20HRATE (AH)	LENGTH	WIDTH	HEIGHT	WEIGHT	TERMINAL TYPE
12.8V	92.5	259mm	168mm	216mm	12.3Kg	M8 Threaded Hole

TR27-LI

12.8V	111	307mm	168mm	221mm	13.6Kg	5/16" - 18 Stud and 1/4" - 20 Threaded Hole
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TRU1-LI

25.6V	25.5	198mm	132mm	173mm	5.3Kg	M6 Threaded Hole
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SPECIFICATIONS

	TR24-LI	TR27-LI	TRU1-LI
Continuous Discharge Current	250 Amps	300 Amps	50 Amps
Pulse Discharge Current @ 77°F (25°C)	350 Amps for 30 Seconds	400 Amps for 30 Seconds	70 Amps for 30 Seconds
Communication	CAN-Open	N/A	N/A
Reserve Capacity @ 25 Amps	220 Min	265 Min	60 Min
BMS Protections	Cell-Level Voltage, Temperature, Over Voltage, Under Voltage, Over-current	Cell-Level Voltage, Temperature, Over Voltage, Under Voltage, Over-current	Cell-Level Voltage, Temp, Current
BMS Functions	Cell Balancing, State of Charge	Cell Balancing, State of Charge	Cell Balancing
Safety Systems	Contactors, Fuse, BMS	Contactors, Fuse, BMS	BMS, MOSFETS
Series Connections	Up to 4S (51.2V)	Up to 4S (51.2V)	Up to 2S (51.2V)
Parallel Connections	Up to 20P	Up to 20P	Up to 20P
Discharge Voltage Cutoff	9.5V ± 5%	9.5V ± 5%	19V ± 5%
Charge Voltage Cutoff	15.2V ± 5% for 5 Seconds	15.2V ± 5% for 5 Seconds	30.4V ± 5% for 5 Seconds



YHI Part Code **TSM275PD05**

TSM310DD05A

Honey

60 Cell

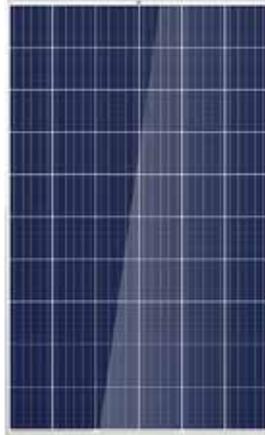
Polycrystalline Module

16.8%

Module Efficiency

0W ~ + 5W

Positive Power Tolerance



Honey^M plus⁺

60 Cell

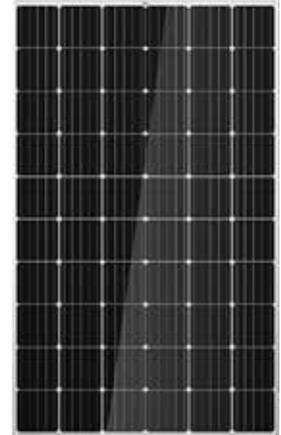
Monocrystalline Module

18.9%

Module Efficiency

0W ~ + 5W

Positive Power Tolerance



BENEFITS

- Extremely versatile
- Maximize limited space
- Highly reliable due to stringent quality control
- Certified to withstand the most challenging environmental conditions

BENEFITS

- Excellent low light performance
- Maximize limited space with top-end efficiency
- Highly reliable due to stringent quality control
- Certified to withstand the most challenging environmental conditions

The **Honey** series is perfect for small rooftop systems. Honey panels can generate high amounts of energy even when space is limited. Honey panels are a popular option for residential and commercial customers because of their reliability, pleasing aesthetics and compatibility with all major balance of system components and module electronics.

The Trina **Honey M Plus** packs even more power in a 60 cell module by using more efficient monocrystalline cells which have a darker, more uniform, aesthetically pleasing look. The Honey M Plus has the same great reliability as the Honey, and is compatible with all major balance of system components and most module-level power electronics.

ELECTRICAL DATA @STC

	TSM275PD05	TSM310DD05A
Peak Power Watts - Pmax (Wp)*	275	310
Power Tolerance	0W ~ + 5W	0W ~ + 5W
Module Efficiency	16.8%	18.9%
Maximum Power Current (A)	8.84A	9.37A
Maximum Power Voltage (V)	31.1V	33.2V
Short Circuit Current (A)	9.32A	9.94A
Open Circuit Voltage (V)	38.1V	40.2V
Cell Technology	Polycrystalline	Monocrystalline

MECHANICAL DATA

	TSM275PD05
Dimension of Solar Module	1650x992x35mm
Weight	18.6Kgs
	TSM310DD05A
Dimension of Solar Module	1650x992x35mm
Weight	18.6Kgs

STC: Irradiance 1000 W/m², Cell Temperature 25°C, Air Mass AM1.5
* Measuring tolerance: ±3%



YHI Part Code NPV15

NPV30

NPV55

NPV100

NPV160



BENEFITS

- Lightweight
- Transportable
- Ideal for compact spaces
- Engineered for RV & Marine applications

ELECTRICAL CHARACTERISTICS STC

	NPV15	NPV30	NPV55	NPV100	NPV160
Maximum Power at STC (Pmax)	15W	30W	55W	100W	160W
Maximum Power Voltage (Vmp)	18.0V	18.0V	18.2V	18.5V	18.4V
Maximum Power Current (Imp)	0.83A	1.67A	2.78A	5.56A	8.89A
Open-circuit Voltage (Voc)	21.8V	22.0V	22.2V	22.4V	22.6V
Short-circuit Current (Isc)	0.88A	1.75A	2.92A	5.85A	9.36A
Maximum system voltage	600V	600V	600V	600V	1000V
Power tolerance -1%~+3%	0 to +3%				
Nominal Operating cell temperature (NOCT) 45	45±2 °C	45±2°C	45±2°C	45±2°C	45±2°C

MECHANICAL DATA

	NPV15	NPV30	NPV55	NPV100	NPV160
Cell Type	Polycrystalline	Polycrystalline	Polycrystalline	Polycrystalline	Polycrystalline
No of Cells	36pcs	36pcs	36pcs	36pcs	36pcs
Dimensions (mm)	385 x 350 x 25mm	656 x 350 x 25mm	670 x 530 x 30mm	1020 x 670 x 35mm	1476 x 670 x 35mm
Weight (Kg)	1.8Kg	2.2Kg	4Kg	8Kg	12Kg



YHI Part Code NPV50WFLEX

NPV160WFLEX



BENEFITS

- Lightweight
- Transportable
- Ideal for mounting to irregular surfaces

Flexible solar panels are ideal for mounting to irregular surfaces such as an RV roof or boat. The lack of any large, rigid frame and extremely thin design allows easier transportation in a caravan or car. The solar cells are implanted in very distinctive and highly resilient polymers that offer greater durability. The flexible non-glass area of the solar panel is even tough enough to walk on.

SPECIFICATIONS:

- MC4 terminated cables (negative is plug, positive is socket)
- Maximum recommended bending degree: 20°

ELECTRICAL CHARACTERISTICS STC

	NPV50WFLEX	NPV160WFLEX
Max. Power	50 W	160 W
Maximum Power Current (IMP)	2.92A	8.38A
Maximum Power Voltage (VMP)	18.5V	19.1V
Short Circuit Current (Isc)	3.00A	8.88A
Open Circuit Voltage (Voc)	22.6V	23.0V

MECHANICAL DATA

	NPV50WFLEX	NPV160WFLEX
Dimension of Solar Module	660x600x3mm	1540x660x3mm
Weight	1.3Kgs	2.8Kgs

CELL

	NPV50WFLEX	NPV160WFLEX
Cell Technology	Monocrystalline	Monocrystalline
Number of cells per module	36pcs	36pcs
Cell type	Sunpower mono	Sunpower mono



YHI Part Code RVMOUNTKIT



DESCRIPTION

The Neuton Power Roof Mount Kit can be used with any sized aluminum framed solar panel to provide secure mounting to RVs, boats and many flat surface applications. The PV Mount Kit will support the solar panel at the optimum height above the surface to enable airflow from underneath, ensuring the solar panel functions as efficiently as possible.

NOTE: The mount kit can be installed without penetrating the mounting surface using the recommended sealant.

Material: ABS Plastic

7 piece kit:

4x Solar panel corner moulds

1x Solar cable junction box

2x Solar panel side mounts

APPLICATIONS

- RV
- Boat
- Caravan
- Enclosed trailer
- Other Mobile Applications



Technology

Eaton is experienced in delivering solutions for the most demanding applications. As an example, marine UPSs have special dependability requirements due to harsh environmental conditions and to the critical nature of the protected equipment. Eaton has supplied marine UPSs to hundreds of vessels over the years.

TECHNOLOGY

Eaton marine UPSs are designed to meet the most stringent industry standards. The double-conversion online topology (picture 1) with a static bypass switch is Eaton's choice for marine use. This protects against all types of power disturbances that may occur in the supplying network and is the only topology that meets the highest performance class, VFI-SS-111, requirements. All Eaton UPSs are tested and certified to meet appropriate safety and EMC standards.

Eaton UPSs are built into one cabinet that houses all the electronics: the rectifier, the inverter, the static bypass and the microprocessor control. This configuration allows the entire system to be controlled as one integral device. This leads to higher reliability than using separate power converters. It also saves plenty of valuable space.

Higher reliability

The most critical loads may require increased protection. Therefore all 3-phase systems can be connected to parallel redundant configuration (picture 2).

In such a system two or more UPSs are supplying and sharing the same load. Should a failure occur in any of the UPS units, the faulty unit is automatically disconnected from the load and the remaining unit or units continue to supply the load. This redundancy leads to extremely high system level reliability.

Communication options

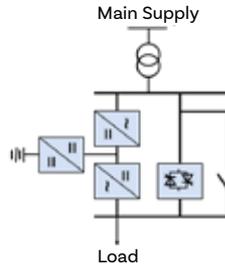
System performance monitoring is often crucial for continuous operation. Therefore a versatile combination of remote communication options via serial communication ports and potential free contacts are available.



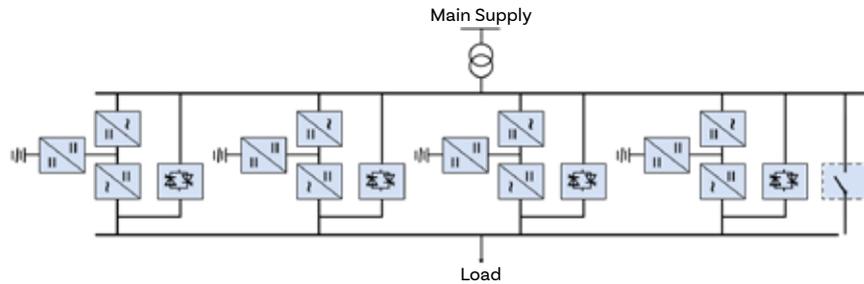
YHI Part Code **gPX1500IRTM**

gPX3000IRTM

gPXM3KI



Picture 1.
Double-conversion online UPS topology



Picture 2.
Parallel redundant UPS system

PRODUCTS

Small systems 0-3 kVA

DNV and ABS type approved on-line double conversion UPS with automatic bypass, tower or Rack/Tower versatile, multilingual LCD display, hot swappable batteries, power management software, USB and Serial port.

Mid range systems 8-160 kVA

DNV type approved up to 15kVA, double-conversion online technology with power ratings 8-10kVA, single-phase input and output, 8-30kVA, three-phase input and single-phase output and 8-160kVA three-phase input and output, small foot print, patented Hot Sync® parallel capability up to four redundant systems, ABM™ technology to extend battery service life, wide communication options.

Large systems 225-1100 kVA

Double-conversion online technology with power ratings 225-1100 kVA, three-phase input and output, small foot print, possible for inherent redundancy, patented Hot Sync parallel capability up to four redundant systems, ABM technology to extend battery service life, wide communication options.

Customised solutions

Beyond standard product offering it is possible to do project based modifications to meet environment requirements and customer needs. Whether these modifications are related to physical functional and appearance requirements or there is need for special regulation requirements Eaton can find the optimal solution.

APPLICATIONS

- Satellite communication
- Voyage Data Recorder
- Dynamic Positioning System
- Azipod control
- Internal cable TV
- Intercom, security camera systems
- Emergency Public Announcement
- Water-proof doors
- Power distribution, filtering
- Control/monitoring system
- Computer systems
- Cash registers (EPOS) at hotels, tax free and other shops, restaurants, casinos and other entertainment venues
- Emergency lighting
- Ship automation
- Navigation equipment
- Radio and telecom

Contact us for more information

YHI Part Code **MS-MW-4048-230**



FEATURES

- Modern, lightweight design; easier to install and maintain
- Eliminates cooling fans through superior thermal design, for long-term reliability and greater efficiency
- Built-in multi-function display
- Power Factor-corrected charger
- Flexible modes of operation: Off-Grid, UPS, and Solar Priority
- 5 year warranty

The **MultiWave™** inverter/charger establishes a new benchmark for battery-based inverters. Combining the surge and power capabilities of a low-frequency inverter with the agility and compactness of a high-frequency design, MultiWave is a radical all-new design built with advanced energy storage technologies in mind—one leapfrogging decades of incremental progress in power conversion. MultiWave’s innovative, software-driven digital architecture can deliver more power with less weight, achieve peak efficiency of 95% across a wide load range, and is fast enough for use in uninterrupted power supply (UPS) applications.

MultiWave’s unprecedented charging capabilities—up to 100 Amps*— are ideal for quickly and effectively charging advanced batteries including lithium types. With adjustable voltage and frequency settings, the new 4kW 230Vac Inverter/Charger is truly designed for the global marketplace. Flexible and easy to install, MultiWave features a high-resolution display for programming and data access. A built-in DIN-rail module mounting expansion system allows adding on generator control, system monitoring alert capabilities, battery management systems (BMS) and other future-ready features as they become available.

MULTIWAVE

	MW-4048-230
DC operating voltage range	36 - 64 Vdc
Minimum DC input voltage	12V
Peak efficiency	95%
Charging	4000W / 80A at 50VDC / 100A max output
AC input frequency range	42 - 68 Hz
AC output frequency (selectable)	50/60Hz
AC transfer time	<10ms
Standby consumption	6W
Zero-load consumption	16W
Max power continuous (+40°C)	4000W
Surge capacity (5 seconds)	8000W
Nominal AC output volts	230Vac
Temperature range	-40°C to +60°C
Total harmonic distortion (THD)	< 5%
Cooling method	Passive (fanless)
Communications Interfaces	RS-232, EIA-485, 4 x RJ45 for TCP/IP, Type-B USB
Unit dimensions	46.8 x 47.9 x 23.8cm
Unit weight	20.9kg

YHI Part Code MS-SI300



FEATURES

- Pure Sine Wave
- Handles up to 200% surge
- 55mA self consumption (standby mode)
- No internal cooling fan
- Adjustable and Programmable
- Toroidal transformer design
- Peak efficiency of 92%
- Extensive electronic protections with automatic recovery
- Protected against harsh tropical and marine environment

SureSine is a pure sine wave inverter delivering AC power in off-grid solar applications, including rural electrification, telecom, remote homes, RVs, caravans and boats. A cast, anodized aluminum enclosure with no internal cooling fan needed ensures long-term reliability in the harshest conditions.

Improved load operation – Pure sine wave provides quality AC equivalent to grid power. Toroidal transformer design generates good wave form throughout the range of input voltages. Handles 200% surge up to 600W.

High reliability – No internal cooling fan or other moving parts. Uses epoxy encapsulation, conformal coating, stainless steel hardware and an anodized aluminum enclosure to protect against harsh tropical and marine environments.

More power available – High efficiency and low self consumption maximizes power to the loads. Automatic stand-by reduces consumption during no load conditions.

SURESINE

SI-300-220V

Continuous Power Rating	300W @ 25°C
Peak Power Rating (10 minutes)	600W @ 25°C
DC Input System Voltage	10.0 - 15.5V
Waveform	Pure Sine Wave
AC Output Voltage (RMS)	220V +/- 10%
AC Output Frequency	50 Hz +/- 0.1%

OPTIONS

Remote Meter (RM-1)	YES
PC MeterBus Adapter (MSC)minutes)	YES
Relay Driver (RD-1)	YES
Waveform	YES
EIA-485 Adapter (RSC-1)*	YES
Ethernet Meterbus Converter (EMC-1)	YES

GENERAL INFORMATION

Ambient Operating Temperature	-40°C to + 45°C
Terminal	2.5 mm ² -35 mm ² 14 AWG-2 AWG
Product Weight	4.5 kg
Unit Shipping Weight	5.2 kg
Dimensions	21.3 x 15.2 x 10.5 cm
Warranty	2 years



*The EIA-485/RS-232 Adapter can be used in conjunction with the PC Meter-Bus Adapter to enable the SureSine to communicate over a 485 network. 200% surge up to 600W.



YHI Part Code **MS-TS-M-2-600V**



FEATURES

- Accommodates PV systems > 150 Voc with long wire runs from the array to the controller.
- Uses Morningstar’s patented 4-stage charging algorithm to optimize battery health.
- Features extensive system networking, monitoring and communications.
- Optimized for harsh environments and equipped with electronic protections.
- Enables battery back-up for grid-tied systems using more efficient DCcoupling

The **TriStar MPPT 600V** (TS-MPPT-600V) is a breakthrough in charge controller design. By accepting PV array input up to 600 Voc, it enables installers to design systems with longer, fewer strings, reducing cabling and hardware which make installation and wiring easier and faster.

Morningstar’s advanced digital engineering combined with superior thermal management make the TS-MPPT-600V with TrakStar technology the only charge controller in its class that doesn’t require a cooling fan or fans, making it both extremely

reliable and efficient (with 97.9% peak efficiency). Ideal for DC-coupled energy storage applications.

TRISTAR MPPT 600V

ALL VERSIONS

Maximum Battery Current	60A
Nominal Maximum Operating Power	3200Wp
Maximum Solar Open Circuit Voltage	600V
Battery Operating Voltage Range	16 - 72 Vdc
Nominal System Voltage	24, 36, 60 Vdc
Input Operating Voltage Range	Battery Voltage to 525V

GENERAL INFORMATION

Ambient Operating Temperature	-40 °C to +45 °C
Power terminals	2.5 mm ² -35 mm ² 14 AWG-2 AWG
Product Weight	8.98 kg
Unit Shipping Weight	9.9 kg
Dimensions	39.2 x 22.1 x 14.9 cm
Warranty	5 years

OPTIONS

Ground Fault Protection Device (GFPD-150V and GFPD-600V)	
MeterHub (HUB-1)	
TriStar Meter-2-600V (TS-M-2-600V)	
TriStar Remote Meter-2 (TS-RM-2) Range	
Ethernet MeterBus Converter (EMC-1)	
Remote Temperature Sensor (RTS)	

ALL VERSIONS

	YES
	INCLUDED



YHI Part Code MS-TSMPPT-30

MS-TSMPPT-45

MS-TSMPPT-60

MS-TSMPPT-60M



FEATURES

- Maximizes Energy Harvest
- Extremely High Reliability
- Very High Efficiency
- Extensive Networking and Communication Capabilities
- Metering and Data Logging
- Certified to IEC 62093

The industry-leading **TriStar MPPT** with TrakStar Technology is an advanced maximum power point tracking controller for larger off-grid photovoltaic (PV) energy systems up to 3kWp. An acclaimed design, TriStars have been proven in solar installations around the globe and remain the first choice for designers of mission-critical systems where failure is not an option.

TRISTAR MPPT

	TS MPPT-30	TS MPPT-45	TS MPPT-60	TS MPPT-60M
Maximum Battery Current	30A	45A	60A	60A
Nominal Solar Input				
12V Battery Bank	400Wp	600Wp	800Wp	800Wp
24V Battery Bank	800Wp	1200Wp	1600Wp	1600Wp
48V Battery Bank	1800Wp	2400Wp	3200Wp	3200Wp
Maximum Open Circuit Voltage	150V			
Nominal System Voltage	12, 24 or 48Vdc			

OPTIONS

	TS MPPT-30	TS MPPT-45	TS MPPT-60	TS MPPT-60M
TriStar Meter-2 (TS-M-2)	YES	YES	YES	PRE-INSTALLED
TriStar Remote Meter 2 (TS-RM-2)	YES	YES	YES	YES
MeterHub (HUB-1)	YES	YES	YES	YES
Ethernet Port	NO	NO	INCLUDED	INCLUDED
EIA-485 Adapter (RSC-1)w	YES	YES	INCLUDED	INCLUDED
Remote Temperature Sensor (RTS)	INCLUDED	INCLUDED	INCLUDED	INCLUDED
Ground Fault Protection Device (GFPD-150V and GFPD-600V)	YES	YES	YES	YES
Ethernet MeterBus Converter (EMC-1)	YES	YES	YES	YES

GENERAL INFORMATION

Ambient Operating Temperature	-40°C to +45°C
Terminals	35 mm ² / 2 AWG
Product Weight	
MS-TS-MPPT-30	3.6 kg
MS-TS-MPPT-45	3.6 kg
MS-TS-MPPT-60	4.1 kg
MS-TS-MPPT-60M	4.3 kg
Unit Shipping Weight	
MS-TS-MPPT-30	4.5 kg
MS-TS-MPPT-45	4.5 kg
MS-TS-MPPT-60	5.0 kg
MS-TS-MPPT-60M	5.2 kg
Dimensions	5 29.1 x 13.0 x 14.2 cm
Warranty	5 years



YHI Part Code MS-PSMPPT-25

MS-PSMPPT-25M

MS-PSMPPT-40

MS-PSMPPT-40M



FEATURES

- Maximizes energy harvest
- Custom programmable
- Advanced self-diagnostics
- Data logging
- Automatic Lighting Control
- Extensive electronic protections
- Fanless design

ProStar MPPT solar charge controller is an advanced maximum power point tracking (MPPT) battery charger for off-grid photovoltaic (PV) systems up to 1100 watts. All versions have TrakStar Technology and include load control. The ProStar design has been proven in over two decades of use in the world's most demanding installations—and ProStar today reflects

Morningstar's policy of continuous improvement through regular upgrades and enhancements. Because Morningstar's employee-owned culture never "rests on success," ProStar customers can own both a legend and the latest in a single product.

PROSTAR MPPT

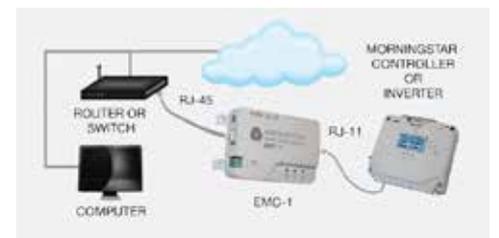
	PS-MPPT-25	PS-MPPT-25M	PS-MPPT-40	PS-MPPT-40M
Maximum Battery Current	30A	45A	60A	60A
Nominal Maximum Operating Power				
12 volt battery	350W @45C	350W @45C	550W @45C	550W @45C
24 volt battery	700W @60C	700W @60C	1100W @60C	1100W @60C
Maximum Open Circuit Voltage	120 Volts (without damage to unit)			
Nominal System Voltage	12V or 24V			

GENERAL INFORMATION

Ambient Operating Temperature	-40 °C to +45 °C
Terminals	16 mm ² / 2 AWG
Product Weight	1.4 kg
Unit Shipping Weight	1.9 kg
Dimensions	20 x 17 x 7 cm
Warranty	5 years

OPTIONS

	PS-MPPT-25	PS-MPPT-25M	PS-MPPT-40	PS-MPPT-40M
Digital Meter	NO	INCLUDED	NO	INCLUDED
Remote Meter (RM-1)	YES	YES	YES	YES
Remote Temperature Sensor (RTS)	YES	YES	YES	YES
MeterHub (HUB-1)	YES	YES	YES	YES
Wire Box (PS-MPPT-WB)	YES	YES	YES	YES
PC Meterbus Adapter (MSC)	YES	YES	YES	YES
USB MeterBus Adapter (UMC-1)	YES	YES	YES	YES
Relay Driver (RD-1)	YES	YES	YES	YES
Ethernet MeterBus Converter (EMC-1)	YES	YES	YES	YES





YHI Part Code MS-SSMPPT-15L



FEATURES

- Maximizes Energy Harvest
- Use of high voltage modules
- Converts 36V or 24V arrays
- Automatic Lighting Control
- Extensive electronic protections

SunSaver MPPT with TrakStar technology is the perfect charging solution for smaller off-grid solar systems up to 400Wp. An industrial-grade design proven in challenging applications and environments, SunSaver has been called the “single most successful charge controller in the solar industry.”

SUNSAVER MPPT™

SS-MPPT-15L

Maximum Battery Current	15A
Nominal Solar Input	
12V Battery Bank	200Wp
24V Battery Bank	400Wp
Maximum Open Circuit Voltage	75V
Nominal System Voltage	12/24 Vdc

GENERAL INFORMATION

Ambient Operating Temperature	-40 °C to +45 °C
Terminals	16 mm ² / 6 AWG
Product Weight	0.60 kg
Unit Shipping Weight	0.70 kg
Warranty	5 years

OPTIONS

SS-MPPT-15L

Remote Meter (RM-1)	YES
Remote Temperature Sensor (RTS)	YES
MeterHub (HUB-1)	YES
PC MeterBus Adapter (MSC)	YES
DIN Rail Clips (DIN-1)	YES
Remote Temperature Sensor (RTS)	YES
Ground Fault Protection Device (GFPD-150V and GFPD-600V)	YES
Ethernet MeterBus Converter (EMC-1)	YES



YHI Part Code MS-TSPWM-45

MS-TSPWM-60

MS-TSPWM-60M



FEATURES

- Built for reliability and performance
- More information with LED indicators.
- Communications capability
- Fully adjustable
- Extensive electronic protection
- Fanless design

Three-function PWM controller for larger systems, providing reliable PWM solar battery charging or load control or diversion regulation.

TRISTAR

	TS-45	TS-60	TS-60M
Rated Solar, Load or Diversion Current	45A	60A	60A
Nominal System Voltage	12,24 or 48Vdc		

OPTIONS

	TS-45	TS-60	TS-60M
TriStar Meter-2 (TS-M-2)	YES	YES	PRE-INSTALLED
TriStar Remote Meter-2 (TS-RM-2)	YES	YES	YES
MeterHub (HUB-1)	YES	YES	YES
EIA-485 Adapter (RSC-1)	YES	YES	YES
Remote Temperature Sensor (RTS)*	YES	YES	YES
Ground Fault Protection Device (GFPD- 150V and GFPD-600V)	YES	YES	YES

GENERAL INFORMATION

Ambient Operating Temperature	-40 °C to +45 °C
Terminals	35 mm ² / 2 AWG
Product Weight	
TS-45	1.6 kg
TS-60	1.6 kg
TS-60M	1.8 kg
Unit Shipping Weight	
TS-45	2.0 kg
TS-60	2.0 kg
TS-60M	2.2 kg
Dimensions	26.0 x 12.7 x 7.1 cm
Warranty	5 years



YHI Part Code MS-PSPWM-15

MS-PSPWM-15M

MS-PSPWM-30

MS-PSPWM-30M



FEATURES

- Longer battery life through 4-stage charging and temperature
- More information with three battery-level LED indicators.
- Extensive electronic protection against reverse polarity, reverse current at night, short circuits, overcurrent and excessive temperature
- Fanless design for long-term reliability.

Mid-range PWM solar charge controller for both professional and consumer applications, incorporating legendary ProStar design and performance.

PROSTAR™ CONTROLLER

	PS-15	PS-15M	PS-30	PS-30M
Rated Solar Current	15A	15A	30A	30A
Rated Load Current*	15A	15A	30A	30A
Nominal System Voltage	12/24 Vdc			

OPTIONS

	PS-15	PS-15M	PS-30	PS-30M
Digital Meter	NO	INCLUDED	NO	INCLUDED
Remote Meter (RM-1)	YES	YES	YES	YES
Ethernet MeterBus Converter (EMC-1)	YES	YES	YES	YES
Remote Temperature Sensor (RTS)	YES	YES	YES	YES
Ground Fault Protection Device (GFPD- 150V and GFPD-600V)	YES	YES	YES	YES

GENERAL INFORMATION

Ambient Operating Temperature	-40 °C to +60 °C
Terminals	16 mm ² / 6 AWG
Product Weight	
PS-15	0.3 kg
PS-15M	0.4 kg
PS-30	0.3 kg
PS-30M	0.4 kg
Unit Shipping Weight	
PS-15	0.6 kg
PS-15M	0.7 kg
PS-30	0.6 kg
PS-30M	0.7 kg
Dimensions	15.3 x 10.5 x 5.5 cm
Warranty	5 years



YHI Part Code MS-SSPWM12-6

MS-SSPWM12-6L

MS-SSPMW12-10

MS-SSPWM12-10L

MS-SSPWM24-10L

MS-SSPWM12-20L

MS-SSPWM24-20L

FEATURES

- Ideal for oil/gas applications.
- Longer battery life
- Tropicalization - hardened for field use with anodized aluminum enclosure, epoxy encapsulation, marine-rated terminals.
- Additional features
- L-versions include low-voltage load disconnect

The world's leading small solar controller for industrial and consumer markets. Proven in demanding locations, including mines and oilfields.

SUNSAVER™ CONTROLLER

	SS-6-12V	SS-6L-12V	SS-10-12V	SS-6-12V	SS-6L-12V	SS-10-12V	SS-10-24V
Rated Solar Current	6A	6A	10A	10A	10A	20A	20A
Rated Load Current	6A	6A	10A	6A	6A	20A	20A
Nominal System Voltage	12 Vdc			24 Vdc			12Vdc
Low Voltage Disconnect	NO	YES	NO	YES	YES	YES	YES

OPTIONS

DIN Rail Clips (DIN-1)	YES
Ground Fault Protection Device (GFPD-150V and GFPD-600V)	YES

GENERAL INFORMATION

Ambient Operating Temperature	-40 °C to +45 °C
Terminals	5 mm ² / 2 AWG
Product Weight	0.23 kg
Unit Shipping Weight	0.4 kg
Dimensions	15.2 x 5.5 x 3.4 cm
Warranty	5 years



YHI Part Code MS-SSDPWM12-25

MS-SSDPWM12-25RM



FEATURES

- Rugged design - epoxy encapsulation protects against dust and highhumidity.
- User adjustable - set parameters with on-board DIP switches or furthercustomize with a PC using Morningstar MSView software.
- Dual battery charging capability; house and vehicle for example.

A two-battery solar charge controller with optional remote meter, designed for RV/caravan and marine use.

SUNSAVER DUO™ CONTROLLER

	SSD-25	SSD-25RM
Rated Solar Current	25A	25A
Rated Load Current	NONE	NONE
Nominal System Voltage	12Vdc	12Vdc

GENERAL INFORMATION

Ambient Operating Temperature	-40 °C to +45 °C
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Terminals	16 mm ² / 6 AWG
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Product Weight	
SSD-25	0.26 kg
SSD-25RM	0.27 kg

Unit Shipping Weight	
SSD-25	0.6 kg
SSD-25RM	1.0 kg

Dimensions:	17.0 x 5.6 x 4.1 cm
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Warranty	5 years
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OPTIONS

	SSD-25	SSD-25RM
Remote Meter (RM-1)	YES	INCLUDED
Remote Temperature Sensor (RTS)	YES	YES
PC MeterBus Adapter (MSC)	YES	YES
DIN Rail Clips (DIN-1)	YES	YES
EIA-485 Adapter (RSC-1)*	YES	YES
Ground Fault Protection Device (GFPD-150V and GFPD-600V)	YES	YES
Ethernet MeterBus Converter (EMC-1)	YES	YES



*There is no load connection on the SunSaver Duo.

** The EIA-485 / RS-232 Adapter can be used in conjunction with the PCMeterBus Adapter to enable these devices to communicate over a 485 network.



YHI Part Code MS-SKPWM12-6

MS-SKPWM12-12



FEATURES

- High temperature rated – to 70° for operation in high temperatures at the solar module; no need to de-rate.
- Rugged design – approved for outdoor use without an additional enclosure.
- IP65 rated with UV-resistant case; epoxy encapsulated electronics and watertight connection to junction box.
- Ideal for oil/gas applications. Approved for use in hazardous locations:
- Class 1, Division 2, Groups A-D.

Compact “point of use” design mounts directly to the solar module junction box or module frame and eliminates the need for an additional controller housing.

SUNKEEPER™ CONTROLLER

	SK-6	SK-12
Rated Solar Current	6A	12A
Rated Load Current*	NONE	NONE
Nominal System Voltage	12Vdc	12Vdc

OPTIONS

	SK-6	SK-12
Remote Temperature Sensor (RTS)**	YES	YES

* There is no load connection on the SunKeeper.

** Installation of the RTS to the SunKeeper requires some soldering

GENERAL INFORMATION

Ambient Operating Temperature	-40 °C to +70 °C
Terminals	2.0mm ² / 14 AWG
Product Weight	0.11 kg
Unit Shipping Weight	0.2kg
Dimensions	9.9 x 5.1 x 1.3 cm
Warranty	5 years



YHI Part Code MS - SLPWM12-10L

MS-SLPWM12-20L

MS-SLPWM24-10L

MS-SLPWM24-20L



FEATURES

- Provides 10 lighting options with accurate on-board timer. User adjustable for 2 to 10 hours ON or for ON all night. Unique ON/OFF/ON settings conserve energy and turn lights on again for 1 or 2 hours before sunrise. Timer accuracy is within 2 seconds.
- Easy to set-up, with test-button feature and LED indicator. To confirm correct installation, test button turns light on during the day and LED indicates selected lighting option.
- Rugged design with anodized aluminum enclosure, epoxy encapsulation, corrosion-resistant terminals.

World's leading solar lighting controller for street and pathway lighting, parking areas, bus stations, signage, and much more.

SUNLIGHT™ CONTROLLER

	SL-10L-12	SL-10L-24	SL-20L-12	SL-20L-24
Rated Solar Current	10A	10A	20A	20A
Rated Load Current*	10A	10A	20A	20A
Nominal System Voltage	12Vdc	24Vdc	12Vdc	24Vdc
OPTIONS				
DIN Rail Clips (DIN-1)	YES	YES	YES	YES
Group Fault Protection Device (GFPD-150 and GFDP-600V)	YES	YES	YES	YES

* Low Voltage Disconnect is included in all SunLight Controllers.

GENERAL INFORMATION

Ambient Operating Temperature	-40 °C to +60 °C
Terminals	5.2mm ² / 10 AWG
Product Weight	0.27 kg
Unit Shipping Weight	0.3 kg
Dimensions	16.8 x 5.5 x 3.4 cm
Warranty	5 years



YHI Part Code MS-SGPWM12-4



FEATURES

- Rugged design - 100% solid state, epoxy encapsulated; rated for 25% overloads (no need to de-rate)
- Longer battery life - series design PWM charging (instead of shunt) with temperature compensation, low self-consumption.
- Easy to install - outdoor rated connecting wires make a waterproof connection to the solar module and battery.

Single module, compact solar charge controller for small systems, ideal for both professional and consumer use

SUNGUARD™ CONTROLLER

	SG-4
Rated Solar Current	4.5A
Rated Load Current*	None
Nominal System Voltage	12Vdc

GENERAL INFORMATION

Ambient Operating Temperature	-40 °C to +60 °C
Terminals	5.2mm ² / 10 AWG
Product Weight	0.1 kg
Unit Shipping Weight	0.1 kg
Dimensions	6.4 x 5.1 x 3.8 cm
Warranty	5 years



YHI Part Code **MS-EBMPPT-20**

MS-EBMPPT-20M

MS-EBMPPT-30

MS-EBMPPT-30M

MS-EBMPPT-40

MS-EBMPPT-40M



FEATURES

- Four stage battery charging
- Two USB ports for directly charging mobile phones and other consumer electronics devices
- Lighting and load control
- 30 days of data logging
- Rugged, weatherized design with electronic protections

An affordable Maximum Power Point Tracking (MPPT) solar charge controller for residential and other consumer applications. Metered and non-metered versions available at 20, 30, and 40-amp charge ratings for 12 and 24-volt battery systems.

ECOBOOST MPPT™ CONTROLLER

	EB-MPPT -20	EB-MPPT -20M	EB-MPPT -30	EB-MPPT -30M	EB-MPPT -40	EB-MPPT -40M
Normal Battery Voltage	12V or 24V Automatic Sensing and Setting					
Maximum PV Open Circuit Voltage	120V					
Load Current Rating	20A	20A	30A	30A	30A	30A

GENERAL INFORMATION

Ambient Operating Temperature	-40 °C to +65 °C
Terminals	2.5-16mm ² /14-6 AWG
Weight	1.4 kg
Dimensions	19.6 x 17.3 x 7.1cm
Warranty	2 years

OPTIONS

	EB-MPPT -20	EB-MPPT -20M	EB-MPPT -30	EB-MPPT -30M	EB-MPPT -40	EB-MPPT -40M
Digital Meter	NO	INCLUDED	NO	INCLUDED	NO	INCLUDED
Remote Temperature Sensor (RTS)	YES	YES	YES	YES	YES	YES
Mobile phone holder (one included)	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED	INCLUDED



YHI Part Code **MS-ECPWM-10**

MS-ECPWM-10M

MS-ECPWM-20

MS-ECPWM-20M

MS-ECPWM-30

MS-ECPWM-30M



FEATURES

- Four-stage battery charging
- Dusk-to-dawn lighting control
- Load control
- Rugged, weatherized design with electronic protections

A Pulse Width Modulation (PWM) solar charge controller delivering essential off-grid battery regulation functions in an easy-to use-package. Available in metered and non-metered versions.

ECOPULSE™ CONTROLLER

	EC-10	EC-10M	EC-20	EC-20M	EC-30	EC-30M
Normal Battery Voltage			12V or 24V auto-detect			
Maximum PV Open Circuit Voltage			10A, 20A or 30A			
Load Current Rating			10-35V			

GENERAL INFORMATION

Ambient Operating Temperature	-40 °C to +65 °C
Terminals	Power: 2.5-16mm ² /14-6 AWG Battery/Temp. Sense: 0.25-1.0mm ² /24-16 AWG
Weight	0.4 kg
Dimensions	15.3 x 10.5 x 5.5 cm
Warranty	2 years

OPTIONS	EC-10	EC-10M	EC-20	EC-20M	EC-30	EC-30M
Digital Meter	NO	INCLUDED	NO	INCLUDED	NO	INCLUDED
Remote Temperature Sensor (RTS)	YES	YES	YES	YES	YES	YES

YHI Part Code MS-SHS12-6

MS -SHS12-10

MS-SHS12-6-NL

MS-SHS12-10NL



FEATURES

- High reliability - built-in electronic fuse protection ensures wiring mistakes during installation will not damage the controller. Conformal coating for protection against harsh environments
- Lighting control built-in for dawn-to-dusk operation (Night Light version)
- Easy to set-up and use - control functions are automatic, requiring no user adjustments. LED indicators monitor battery and system status.

Low cost, affordable solar charge controllers featuring advanced electronic technology, for rural electrification solar home systems. Includes low-voltage disconnect for residential use.

SHS™ CONTROLLERS

	SHS-6	SHS-10
Rated Solar Current	6A	10A
Rated Load Current*	6A	10A
Nominal System Voltage	12Vdc	12Vdc

GENERAL INFORMATION

Ambient Operating Temperature	-25 °C to +50 °C-
Terminals	For wire sizes to 4mm ²
Weight	0.2 kg
Dimensions	15.1 x 6.6 x 3.6 cm
Warranty	2 years

SHS NIGHT LIGHT™ CONTROLLERS

	SHS-6-NL	SHS-10-NL
Rated Solar Current	6A	10A
Rated Load Current	6A	10A
Nominal System Voltage	12Vdc	12Vdc

* Low Voltage Disconnect included on all SHS controllers.



YHI Part Code **MS-TS-M-2-600V**



On-Board Advanced Digital Display for the TriStar MPPT 600V Controller. Displays extensive system and controller information, logged data, bar graph metering, as well as alarms and faults for easy troubleshooting.

FEATURES

- 2 x 16 character LCD display
- Mounts to the controller*
- Displays extensive system and controller information, logged data, bar graph metering as well as alarms and faults for easy troubleshooting
- Choice of 5 languages (English, French, German, Portuguese or Spanish)

* Replaces stock front faceplate

COMPATIBLE WITH:

- ProStar MPPT Controller
- SunSaver MPPT Controller
- SunSaver Duo Controller
- SureSine Inverter
- ProStar Controller



YHI Part Code **MS-TS-M-2**



On-Board Advanced Digital Display for the TriStar and TriStar MPPT Controllers. The meter will display a great deal of information about your TriStar controller and the operation of your system. In addition, the meter enables manual functions and controller diagnostics. These capabilities will increase your confidence that the system is working properly and will help you to improve reliability, battery life and system performance.

FEATURES

- 2 x 16 character LCD display
- Mounts to the controller*
- Displays extensive system and controller information, logged data, bargraph metering as well as alarms and faults for easy troubleshooting
- Choice of 5 languages (English, French, German, Portuguese or Spanish)

* Replaces stock front faceplate

COMPATIBLE WITH:

- TriStar MPPT Controller
- TriStar Controller
- MeterHub



YHI Part Code MS-TS-RM-2



FEATURES

- 2 x 16 character LCD display • Displays extensive system and controller information, logged data, bar graph metering, as well as alarms and faults for easy troubleshooting
- Choice of 5 languages (English, French, German, Portuguese or Spanish)

Remote Digital Display for the TriStar Family Controllers. The TS-RM-2 provides the same data display as the TS-M-2, except that it ships with 30 meters of cable and a flat faceplate. These features enable convenient mounting away from the controller.

COMPATIBLE WITH:

TriStar MPPT 600V Controller
TriStar MPPT Controller
TriStar Controller
MeterHub



YHI Part Code MS-RM-1



FEATURES

- Easy to install and use
- Low self-consumption
- 4 digit display with custom icons
- Displays systems information, logged data*, alarms and errors
- May be mounted in the wall or on the wall with included frame

Remote Digital Display for viewing a controller or inverter in a separate location. This meter provides comprehensive system information for easy monitoring including voltage, current and temperature.

COMPATIBLE WITH:

ProStar MPPT Controller
SunSaver MPPT Controller
SunSaver Duo Controller
SureSine Inverter
ProStar Controller



YHI Part Code MS-HUB-1



FEATURES

- Allows several Morningstar products to communicate over a MeterBus network (maximum 15 devices)
- In multi-controller systems the TS-M-2, TS-M-2-600V and TS-RM-2 are networkable using Morningstar's MeterHub to allow individual controller data and aggregate system data to be displayed together on a single meter.
- Enables multiple controllers to share a TriStar Meter or Relay Driver
- Provides electrical isolation

This product electrically isolates devices that supply power to the network, preventing damage to the network in the event of grounding problems.

COMPATIBLE WITH:

- | | |
|------------------------------|------------------------|
| TriStar MPPT 600V Controller | TriStar Controller |
| TriStar MPPT Controller | TriStar Meter 2 |
| ProStar MPPT Controller | TriStar Remote Meter 2 |
| SunSaver MPPT Controller | Relay Driver |



YHI Part Code MS-MSC



FEATURES

- Easy to install and use
- Low self-consumption
- 4 digit display with custom icons
- Displays systems information, logged data*, alarms and errors
- May be mounted in the wall or on the wall with included frame
- Includes 10 meters of cable

* Logged data only available for the SunSaver MPPT, ProStar MPPT and ProStar controllers

Converts RJ-11 MeterBus to RS-232 Connector

COMPATIBLE WITH:

- ProStar MPPT Controller
- SunSaver MPPT Controller
- SunSaver Duo Controller
- SureSine Inverter
- ProStar Controller



YHI Part Code **MS-RSC-1**



Converts RS-232 to EIA-485 Connector

COMPATIBLE WITH:

TriStar MPPT Controller
SunSaver MPPT Controller
TriStar Controller
SunSaver Duo Controller
SureSine Inverter
Relay Driver

FEATURES

- Allows up to 128 Morningstar products to communicate on the same communications bus and over much greater distances than with RS-232
- All data is transmitted via MODBUS™ protocol
- Removable four (4) position EIA-485 terminal
- 9-pin RS-232 connector (male)
- Status LED for monitoring and diagnostics
- Molded tabs for attachment to 35mm standard DIN rail
- RS-232 ribbon cable (not shown) with low-profile connectors
- Networking several TriStar and/or TriStar MPPT controllers
- Adding Morningstar PC Meterbus Adapters (MSC) for use with an RJ-11 port in multi-device networks
- Adding Morningstar's Relay Driver (RD-1) to a network
- Integrating any compatible Morningstar product into an existing EIA-485 network, such as those used by industrial control or SCADA systems



YHI Part Code **MS-UMC-1**



Converts RJ-11 MeterBus to RS-232 Connector

FEATURES

- Used to connect a Morningstar controller or inverter to a PC or other third party serial enabled device
- Communications link enables monitoring and logging of data as well as customizing of set points

COMPATIBLE WITH:

ProStar MPPT Controller
SunSaver MPPT Controller
SunSaver Duo Controller
SureSine Inverter



YHI Part Code **MS-EMC-1**



FEATURES

- Allows communication between a computer and compatible Morningstar products
- Can be used for:
Programming custom charging set-points
Logging live data
- Communication with third party hardware that supports MODBUS™ communication compatible

Converts the MeterBus RJ-11 to a standard USB 2.0 interface

COMPATIBLE WITH:

ProStar MPPT Controller
SunSaver MPPT Controller
SunSaver Duo Controller
SureSine Inverter
ProStar Controller



YHI Part Code **MS-RTS**



Allows data transfer to the internet

FEATURES

- Connects to any meterbus enabled controller to provide enhanced data and network features
- Adds IP based MODBUS connectivity for remote communication and control
- Live View displays system status and log data directly from the EMC in an easy to view webpage
- Adds SNMP and email notifications for system status changes
- Powered via meterbus port on controller, PoE or DC Input for 12,24 or 48V systems
- Gateway to EnVision™, a cloud-based site manager

COMPATIBLE WITH:

TriStar MPPT Controller	ProStar Controller
ProStar MPPT Controller	SunSaver Duo Controller
SunSaver MPPT Controller	SureSine Inverter
TriStar Controller	



YHI Part Code MS-DIN-1



FEATURES

- Rugged plastic clips match SunSaver and SunLight mounting holes
- Provides a simple way to install controllers to DIN rails
- Enables removal of controllers from DIN rails without removing the clips
- Polypropylene clips
- Fits all 35mm standard DIN rails
- Includes mounting screws

For installing controllers and accessories to DIN RailsCompatible

COMPATIBLE WITH:

SunSaver MPPT Controller
SunSaver Controller

SunSaver Duo Controller
SunLight Controller



YHI Part Code MS-GFPD-600V

MS-GFPD-150V



COMPATIBLE WITH:

TriStar MPPT-600V Controller
TriStar MPPT Controller

Morningstar's Ground Fault Protection Device (GFPD) prevents current from following any unintended paths during a ground fault.

Other ground fault detection/interruption products break the bond to the grounded conductor. When this occurs, not only is the earth bond compromised, but the battery and DC loads can also be left ungrounded and floating. For a negatively grounded system this means that the negative side of the battery and loads can float to negative Voc in relation to ground and the positive side can float to (negative Voc + Vbat). Morningstar's GFPD better isolates the array from the battery and loads, while maintaining the bond to ground.

FEATURES

- Disconnects both the positive and negative conductor and completely isolates PV source circuits
- Trips at 300mA compared to 1A for alternative solutions
- Provides design flexibility to accommodate large and small array configurations
- Uses high quality breaker solutions rather than fuses which are problematic to replace at remote sites• Works like a traditional AC GFI
- Maintains the integrity of earth bond for battery and loads
- Does not require an extra warning label at the battery per U.S. National Electric Code requirements
- Makes it easier to locate and troubleshoot ground faults
- Powered via the pv system's battery
- Equipped with both visual and audible alarms
- Built to support both single controller and multiple controller systems
- When the earth bond is not broken, Morningstar's GFPD will only shut off affected controllers
- All loads will continue to operate safely with the battery remaining bonded to ground
- Multiple controllers and GFPDs can be added on an as-needed basis

GROUND FAULT PROTECTION DEVICE

	GFPD-150V	GFPD-600V
Number of Poles	2	2
Maximum Solar Voltage	150V	600V
Maximum Solar Current	60A	50A
Trip Method	Relay	
Mounting	DIN-rail or Panel-Mount	
Input Voltage	8-72 Vdc	
Self- Voltage	<0.5W	
Ground Fault Threshold Current	300mA +/- 10%	
Output Trip Signal	12V	
Normal System Voltage	12,24,36 or 48Vdc	

GENERAL INFORMATION

Ambient Operating Temperature	-40 °C to +60 °C -40 °F to +140 °F
Terminals	25 mm ² / 4 AWG and 35 mm ² / 2 AWG
Weight	GFPD-150V 600V2.0 kg / 4.4 lbs GFPD-600V 4.4 kg / 8.9 lbs
Dimensions	GFPD-150V 26.9 x 12.8 x 11.2 cm 10.6 x 5.1 x 4.4 in GFPD-600V 35.7 x 22.1 x 10.6cm 14.1 x 8.7 x 4.2 in
Warranty	5 years



YHI Part Code **MS-RD-1**



FEATURES

- Cost-effective and Highly reliable
- Fully Programmable
- Advanced Generator Control
- Industrial Design
- LED Indicators
- 4 independent relay driver outputs (relays not included)
- Used for high/low voltage alarms, load control, and generator start
- Reads digital data inputs from 'compatible' controllers and inverters
- Reads battery voltage in systems with other controllers

Logic Module for system control functions. The Relay Driver provides high level system control functions such as high/low voltage alarms, load control and generator start.

COMPATIBLE WITH:

- | | |
|------------------------------|-------------------------|
| TriStar MPPT 600V Controller | TriStar Controller |
| TriStar MPPT Controller | ProStar Controller |
| ProStar MPPT Controller | SunSaver Duo Controller |
| SunSaver MPPT Controller | SureSine Inverter |
| | MeterHub |



YHI Part Code **MS-MPPTS-WB**



FEATURES

- Material: High strength polycarbonate Lexan
- Enclosure space: accommodates 35mm² wire
- Meets NEC standards for conduits and wire bending

An optional two-piece enclosure accessory for ProStar MPPT. Provides effective cover for wires and conduit leading to and from the ProStar MPPT controller. This Wire Box may be required or recommended by authorities having jurisdiction to reduce hazards associated with exposed wires, conduits and connections.

COMPATIBLE WITH:

- ProStar MPPT Controller



Powering Marine & Offshore Operations

Eltek products are used within marine, oil and gas and wind farms. They power supervision, automation, data transmission, switchgear control, safety, emergency systems, dynamic positioning and ballast water treatment.

WHY USE ELTEK?

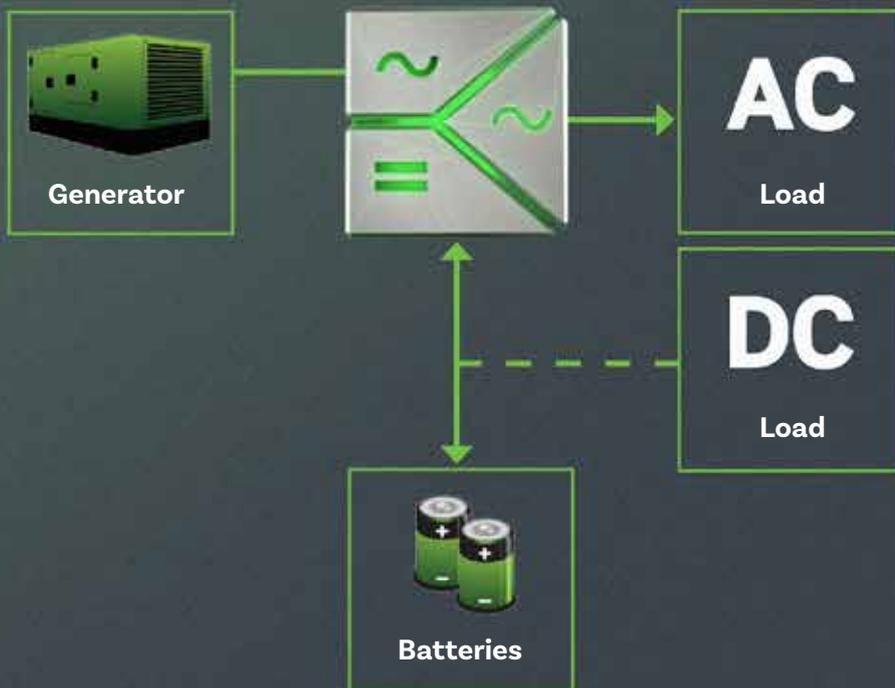
Eltek is part of the proud Norwegian maritime and offshore heritage and can look back on more than 40 years experience as a dedicated power specialist, developing modular, compact and reliable solutions for use in demanding environments.

Improve Efficiency

An Eltek Modular UPS, designed and certified for marine use, is the secure and safe way to improve the efficiency and flexibility of onboard power supplies. It will significantly reduce complexity, increase control and manageability, and provide the basis for a future-proof on board power infrastructure. The bottom line is a significant reduction in total cost of ownership.

APPLICATIONS

- Dynamic positioning
- Propulsion control
- Water tight doors
- Navigation
- Ship identification
- Data center
- Cranes
- Public address and alarm
- AC Substations



Contact us for more information



Trailer Wheel Options

Great looking wheel options to take your boat trailer to the next level



GALVANISED STEEL SILVER

13x5 | 14x6

Galvanised Steel

Fitted to:



ATLAS GLOSS BLACK FP

13x5

Alloy

Fitted to:





Advanti Racing meticulously crafts every wheel design with precision and forward styling. The Advanti Racing brand has been delivering drivers inspiring wheel designs for over 20 years. Our investment in technology and commitment to quality makes us one of the few manufacturers able to produce wheels for Formula One, this unique resume is what defines Advanti Racing



VULCAN
GLOSS BLACK FP

13x5 | 14x6

Alloy

Fitted to:



VULCAN
MATT BLACK

13x5 | 14x6

Alloy

Fitted to:





YHI

YHI NEW ZEALAND LTD





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