

Lithium-Ion battery



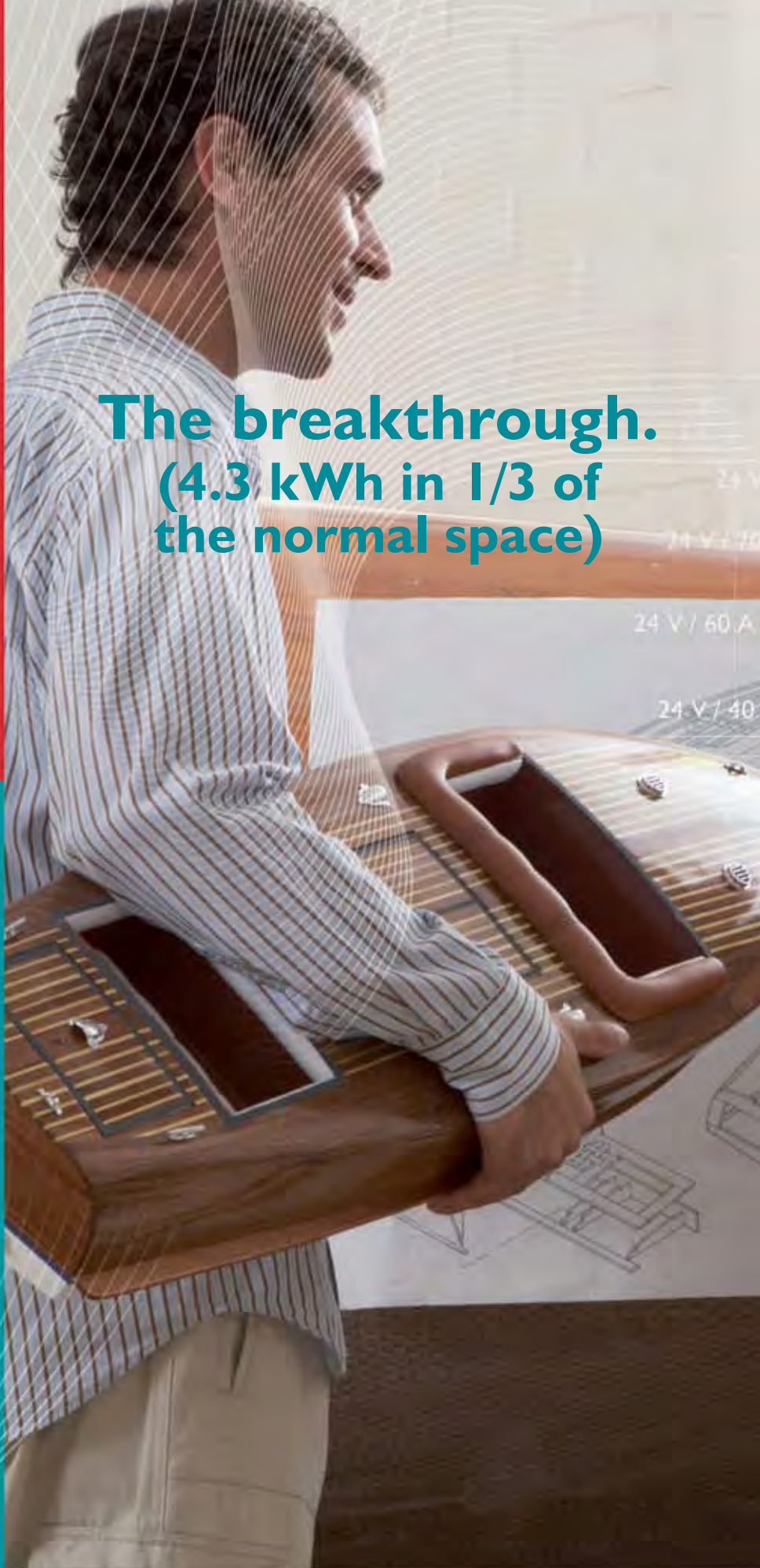
Weight and space savings
of up to 70%

The ideal replacement for
lead-acid batteries

Extreme high power
density

Three times the lifespan
MasterBus compatible

The breakthrough.
(4.3 kWh in 1/3 of
the normal space)



 **MASTERVOLT**

THE POWER TO BE INDEPENDENT



The
breakthrough

Lithium-Ion battery

MLI 24/I60 – 4.3 kWh

Mastervolt gives you the Power to be Independent. As the leading manufacturer of comprehensive, integrated power supply systems, innovation is inherent to everything we do. And it is within this tradition that Mastervolt introduces our new high-capacity Lithium-Ion battery, the first solution of its kind in the world.

Background

The standard lead-acid battery has barely changed since it was designed in 1859. Although new variants such as AGM and gel batteries have been developed, improvements in terms of power density, lifespan, size and weight have found their boundaries. This is why the technical experts at Mastervolt felt the time was ripe for change.

Lithium-Ion technology

Used primarily in smaller devices such as mobile phones and laptops, Lithium-Ion batteries are appreciated for their limited size and weight, low rate of self-discharge and lack of 'memory effect'. We asked ourselves whether this technology could be put to more robust use? How about on a large, seagoing yacht, an advanced sailboat or a van with sensitive equipment onboard?

After some extensive R&D, the answer was a resounding yes. Mastervolt has now developed the first-ever high-capacity Lithium-Ion battery which can easily and safely be deployed in such demanding environments. This advance is sure to revolutionise the way yacht owners, yards and contractors see things in terms of batteries.

More efficient and effective

Two elements determine the useful power that a battery can deliver: The charge/discharge efficiency and the extent of the authorised depth of discharge (DOD), a factor that can dramatically lower the lifespan of a battery. The Mastervolt Lithium-Ion battery is up to 15% more efficient than a traditional lead-acid battery, allowing:

- shorter charge times;
- shorter running hours when charged by generator;
- more power from a battery of the same dimensions:
 - a lead-acid battery, for instance, has a recommended DOD of 50%; this means that you can only use up to 200 Ah from a 400 Ah battery;
 - a Lithium-Ion battery with a DOD of 80% means that those same 400 Ah provide some 320 Ah instead – almost 60% more!

Complete safety

The Lithium-Ion battery is equipped with a Battery Management System, including Bidirectional Active Cell Balancing. This allows:

- optimal safety without any restrictions during charging and discharging;
- full voltage, current and temperature control;
- the battery to produce more power;
- longer lifespan.



MasterBus compatible

For the best possible performance, the Mastervolt Lithium-Ion battery is equipped with MasterBus communication. To charge the MLI 24/160 you have to use a MasterBus enabled battery charger. Besides a quick and safe charge process this gives more advantages:

- a more efficient charging process enables around 5% more capacity;
- consumption and available capacity are perfectly attuned to each other;
- MasterBus system integration gives you a good overview at any time of how much your battery is charged.

Higher speed thanks to lower weight

When speed and sailing performance matter, a Lithium-Ion battery - weighing 70% less than a comparable lead-acid battery - has major benefits. A fast yacht with an average 800 Ah set onboard, for example, will shed 600 kg and enjoy a considerable performance gain.



Easy installation

A Lithium-Ion battery is smaller than an equivalent lead-acid battery. In fact, the MLI 24/160 replaces two separate 12 V lead-acid batteries, making the footprint 70% smaller. This means it requires less space, can be placed almost anywhere, and is easier and faster to install.

Discharging and the memory effect

The Lithium-Ion battery is not affected by the so-called memory effect, which means it can be used for any applications throughout its lifespan. Large or small discharges, cyclical and non-cyclical use are never a problem.

Versatility

Its high capacity makes Lithium-Ion technology exceptionally suited to vessels and vehicles with electric and hybrid propulsion. The MLI 24/160 can be connected in parallel unlimited and up to 250 V DC in series without restrictions.

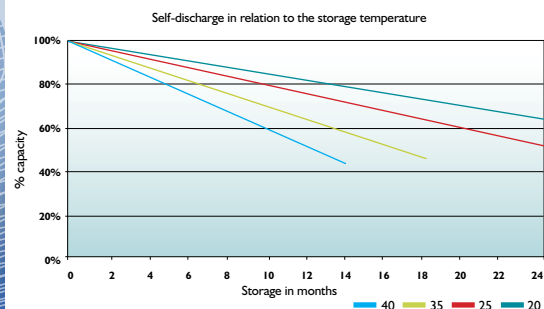


Attractive and functional

The elegant design in Mastervolt's characteristic colours is fitted with two handy integrated handles. The battery poles are easily accessible as well as fully protected, meaning no additional shields or covers are necessary. The handles include a number of recesses for a correct and convenient installation of the cables.



Technical matters

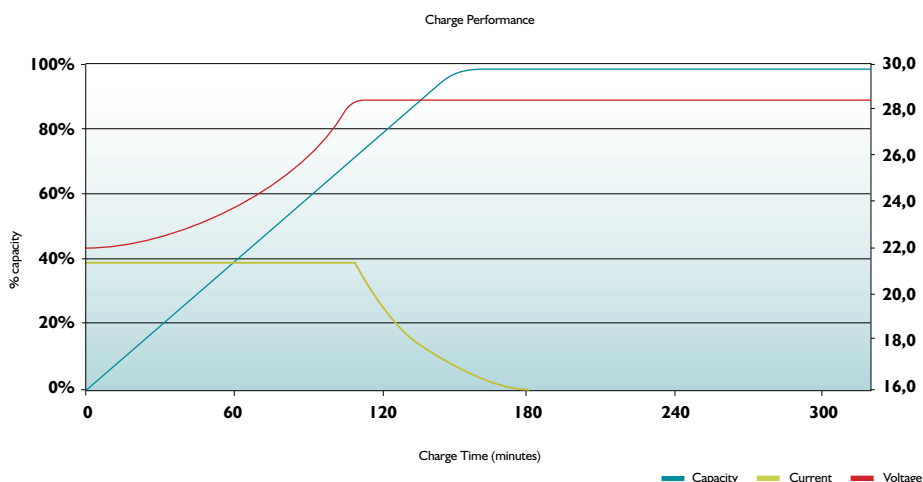
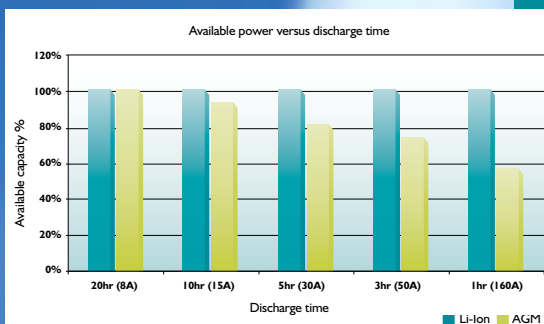
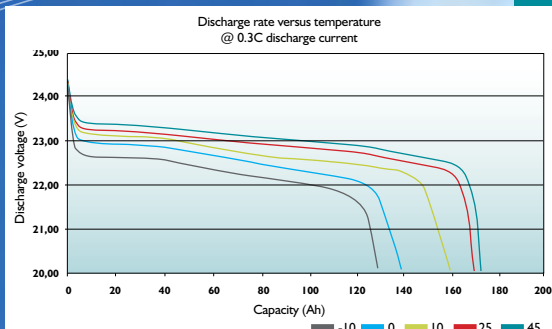


Isn't Lithium-Ion technology expensive?

Your investment is certainly higher than with traditional batteries, and a Mastervolt Lithium-Ion battery does cost more than gel or AGM batteries. However, the benefits you receive can outweigh the extra costs. You can work with a lower battery capacity, Lithium-Ion technology ensures up to triple the lifespan of lead-acid batteries and your power efficiency is many times higher. Then there is the substantial added value of lower weight, smaller volume, less frequent replacement and an amazingly simple installation. This is an investment that pays!

Appropriate for all applications

Another huge advantage of the Mastervolt Lithium-Ion battery is the amount of power available for diverse, intensive and long-lasting discharging, while that of a lead-acid battery drops quite abruptly (see graph). The discharge curve of Mastervolt's Lithium-Ion battery remains constant virtually all the time. This makes Mastervolt's Lithium-Ion battery perfectly suited to any possible application.



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Lithium-Ion batteries **remarkable** advantages

Weight and space reduction

- ultra-light; 70% less weight;
- ultra-small; smaller volume and footprint;
- 360° installation angle; can be placed in any position.

Installation

- ideal replacement for lead-acid batteries;
- fully MasterBus compatible;
- completely isolated battery poles;
- unlimited parallel wiring;
- series connectable.

Safety and environmental concerns

- comes with Mastervolt Battery Management System for optimal safety and yield;
- maintenance-free;
- no gas formation.

Lifespan

- very long lifespan (≤ 2000 charge cycles);
- no memory effect;
- 90 to 94% charge efficiency (compared to 70 to 83% for lead-acid batteries).

Use

- shorter charging times;
- can be used as a starter or service battery thanks to very high peak capacity (10xC);
- no capacity loss with fast discharging; equal Ah capacity at C1, C3 and up to C20;
- the high allowed DOD gives more and lasting current.

Safety

- Mastervolt is the only manufacturer in the world that produces, sells and services a Lithium-Ion battery and an active Battery Management System as well as a battery charger.

More information?

Contact your nearest Mastervolt representative or visit
www.mastervolt.com



Technical specifications



MLI 24/160

Article no.	66020160
Nominal voltage	26.5 V
Nominal capacity (C20)	160 Ah
Nominal power	4.3 kWh
Weight	± 48 kg / 106 lbs, 90 W/kg, 100 W/L
Parallel configuration	yes, unlimited
Series configuration	yes up to 250 V DC, contact Mastervolt for higher voltages

CHARGE/DISCHARGE PARAMETERS

Charge voltage – cut off at 0.015C	28.5 V
Discharge cut off voltage	22 V
Recommended charge/discharge current 0.3C	50 A
Max. charge/discharge current 1C	160 A

RATED CAPACITY @ 25 °C

20 hr discharge	160 Ah
10 hr discharge	160 Ah
5 hr discharge	160 Ah
3 hr discharge	160 Ah
1 hr discharge	160 Ah

COLD CRANKING AMPS

Pulse current (10 sec)	< 1600 A
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CYCLE LIFE

@ 80% DOD	< 2000
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GENERAL

Technology	lithium iron phosphate
Number of cells	8
Max. installation angle	360°
Terminal type	M8
Operating temperature*	-20 to 60 °C / -4 to 140 °F
Nominal operating temperature	25 °C
Storage temperature	-20 to 75 °C / -4 to 167 °F
Self discharge	< 3% / month @ 20 °C
Guarantee	2 years

DIMENSIONS

Length	623 mm ± 2 mm / 24.5 inch ± 0.1 inch
Width	199 mm ± 2 mm / 7.8 inch ± 0.1 inch
Height incl. terminals	345 mm ± 2 mm / 13.6 inch ± 0.1 inch

* temperatures above 25 °C can have effect on life time and cycle life

Subject to alterations. For our complete range
please visit www.mastervolt.com



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