



Industrial battery range

VRLA, Li-ion, NiCd, NiMH & accessories range overview



The world's leading battery manufacturer



BATTERY
YUASA
TRADE MARK



YUASA
BATTERY



100 YEARS OF QUALITY, RELIABILITY & PERFORMANCE

- Over 100-year pedigree, founded in 1918
- UK market leader for vehicle & industrial batteries
- Engineered for long life & maximum power
- The largest vehicle coverage from one brand

Join the millions of people who enjoy the long service life, high performance and exceptional reliability provided by Yuasa, the world's leading battery manufacturer.





GS Yuasa Battery Europe

For over 30 years, GS Yuasa Battery Europe Ltd have been Europe's leading battery supplier.

From sales and distribution centres in UK, Italy, Spain, France and Germany, GS Yuasa supply European markets with an extensive range of high-quality energy storage and network stabilisation solutions.

Our award-winning products, service and supply lead the industry and continue to set new standards of customer care, quality, choice and year-round availability.

A GS Yuasa company

GS Yuasa are the world's leading battery manufacturer and global leader for quality and innovation.

The GS Yuasa Group consists of 65 subsidiaries and 33 affiliates in countries throughout the world.

For over 100 years GS Yuasa has continually created advanced stored energy solutions under the philosophy of "innovation and growth", and established itself as the number one choice for vehicle and industrial batteries.

GS Yuasa batteries are used in a wide range of applications from the Shinkai deep sea submarine, to the Boeing 787 Dreamliner aircraft and International Space Station... and everything in between.

A UK manufacturer

Production began at GS Yuasa's manufacturing plant in Ebbw Vale, UK in 1981.

Manufacturing Yuasa NPL, EN, ENL and SWL battery ranges, well over 85 million batteries have been produced since the factory opened.





Common applications

Uninterruptible power supply (UPS)

Ranging in size from desk top units to large plant room installations, UPS's are a no-break backup power supply for essential equipment. Yuasa batteries can be sized to give the autonomy and load required for any project.

Batteries typically used:

NP	NPW	SW	ENL	SLR
NPL	RE	SWL	ENL FT	
NPH	REW	EN	Lithium	



Telecoms

Broadband, landline and mobile providers have equipment that needs battery backup power in the event of a mains failure. Whether in central systems or remote cabinets, Yuasa batteries are trusted by providers worldwide.

Batteries typically used:

NP	REW	EN	FXH
NPL	SW	ENL	SLR
RE	SWL	ENL FT	



Renewable energy

Solar, wind and wave energy is not always produced at times of maximum requirement. Yuasa batteries allow energy to be stored at times of low demand and then released into the grid when demand is high.

Batteries typically used:

NP	REC	ENL FT	SLE	Lithium
NPC	ENL	FXH	SLR	

Fire & security

Even the most advanced security systems are only as good as the backup batteries supporting them. When an emergency arises, Yuasa standby batteries can protect homes and businesses against crime and fire.

Batteries typically used:

NP	NPL	RE
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Golf & mobility



Golf and mobility equipment requires batteries to be charged and then used to power the equipment. Yuasa produce specialised cyclic battery types to give maximum performance for hundreds of charge/discharge cycles.

Batteries typically used:

NPC REC



Emergency lighting



Emergency lighting is required in commercial buildings. In the event of a mains failure, standby batteries provide light for safe evacuation. Yuasa NiCd, NiMH and VRLA batteries exceed common 3 hour run-time requirements.

Batteries typically used:

NiMH NPL REC
NiCd NPC ENL
NP RE ENL FT



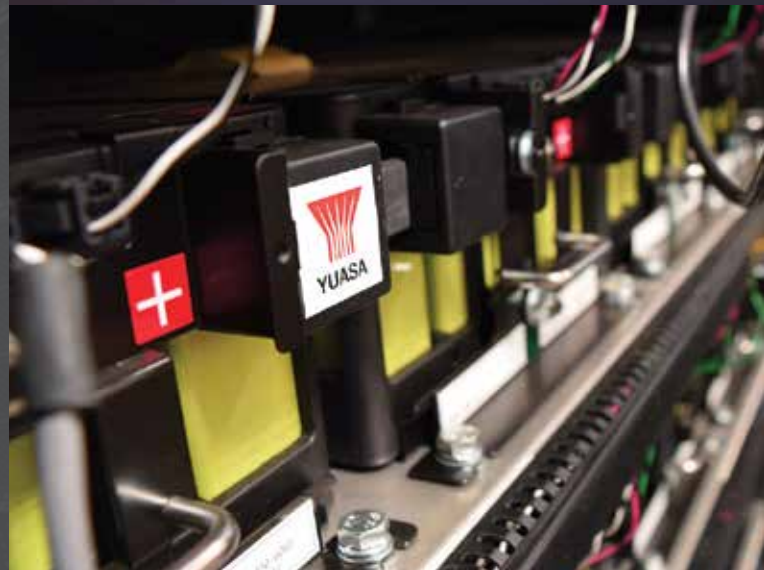
Energy storage



Businesses are usually charged on peak power demand. Load-shedding allows large cost savings by charging batteries during low demand and injecting this stored energy back into business load at times of high demand.

Batteries typically used:

NPL REC ENL FT SLE Lithium
NPC ENL FXH SLR



Floor cleaning & aerial access



A specialist battery solution is needed for applications where deep discharges and harsh operating conditions are common. The Yuasa Pro-Spec range have excellent resilience against plate corrosion and deep discharge.

Batteries typically used:

Pro-Spec



Yuasa industrial batteries

To help with battery selection, and due to different application and operational requirements, every Yuasa industrial battery has been designated with a Eurobat classification or Yuasa cyclic life tag.

Eurobat is a European organisation that has produced a guide to VRLA batteries. Within this guide there are 4 design life categories. Yuasa has used the test methods as set out in an official standard, BS EN60896-21/21 to designate each battery range into one of the categories.

3 to
5 year
EUROBAT
classification
Standard Commercial

6 to
9 year
EUROBAT
classification
General Purpose



NP series page 8

- Guaranteed capacity
- Yuasa quality assurance
- VDS approved
- 6 & 12 Volt types
- 0.8Ah to 65Ah
- Standby & light cyclic use

RE series page 9

- Guaranteed capacity
- Yuasa quality assurance
- VDS approved
- 12 Volt
- 5Ah to 12Ah
- Standby & light cyclic use



NPL series page 10

- 6 & 12 Volt types
- 24Ah to 200Ah
- Standby use

10 to
12 year
EUROBAT
classification
Long Life



SWL series page 11

- 6 & 12 Volt types
- 24Ah to 180Ah
- Standby use



10 to
12 year
EUROBAT
classification
Long Life



EN series page 12

- 2, 4 & 6 Volt types
- 80Ah to 540Ah
- Standby use



Over
12 year
EUROBAT
classification
Very Long Life



ENL series page 13

- 2, 4 & 6 Volt types
- 80Ah to 540Ah
- Standby use



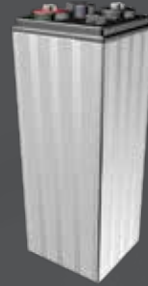
Over
12 year
EUROBAT
classification
Very Long Life



FXH series

page 14

- 12 Volt
- 45Ah to 200Ah
- Standby use



SLR series

page 15

- 2 Volt
- 500Ah & 1000Ah
- Heavy duty cyclic use



REC series

page 16

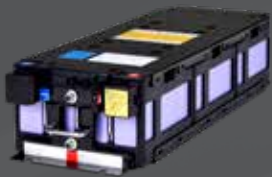
- 12 Volt
- 10Ah to 80Ah
- Cyclic use



NPC series

page 17

- 12 Volt
- 24Ah to 100Ah
- Cyclic use



Lithium series

page 19

- 3.7 to 50.4 Volt
- 5Ah to 47.5Ah
- Standby & cyclic use



NiCd & NiMH

page 20

- 1.2 Volt
- 50mAh to 13Ah
- General use



Pro-Spec

page 21

- 6, 8 & 12 Volt types
- 150Ah to 260Ah
- Deep cyclic use



Accessories

page

- Racking & site services 22
- Yu-Power chargers 23
- Hioki BT3554 tester 23
- Temperature monitoring 24

Eurobat classification or Yuasa cyclic design life assumes that the battery is operated in normal conditions at 20°C and in accordance with Yuasa recommended operating guidelines.

Yuasa cyclic design life assuming 50% depth of discharge.



www.yuasa.com

Yuasa's innovative website is mobile-ready and features the entire Yuasa range including specifications, part numbers and photographs. It also includes a range of downloadable brochures, resources, data sheets and guides and allows users to easily:

- Find the right battery and compare products
- Search for local distributors
- Access detailed technical information and guides
- Download dynamic technical data sheets
- Calculate UPS system size requirements
- Keep up to date with the latest from Yuasa

Features every Yuasa industrial, automotive and motorcycle product with full specifications and pictures.



NP series

Valve regulated lead acid batteries



Features

- Lead calcium grids for extended life
- Superb recovery from deep discharge
- Low discharge rate for long shelf life
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency
- Multipurpose: Float or light cyclic use
- Can be used in any orientation excluding continuous inverted use
- Application specific designs

Applications

Ideal for standby & light cyclic applications including:

- Fire & security systems
- Emergency lighting
- Solar and wind
- UPS
- Toys



Model name	Nominal Voltage (Volts)	Capacity			Dimensions (mm)			Weight - typical (kg)	Impedance at 1kHz mOhms	1 Second rate (Amps)	Terminal type	Layout (see page 18)
		20-hr rate to 10.5V at 20°C (Ah)	10-hr rate to 10.8V at 20°C (Ah)	Watts per cell 10 min to 1.6VPC at 20°C (watts)	Length (±1)	Width (±1)	Overall height (±2)					
NP1-6	6	1.0	0.93	-	51.0	42.5	54.5	0.25	75.0	30.0	A	5
NP1.2-6	6	1.2	1.1	-	97.0	25.0	54.5	0.31	60.0	36.0	A	1
NP2.8-6	6	2.8	2.5	-	134	34.0	64.0	0.57	30.0	84.0	A	1
NP4-6	6	4.0	3.7	-	70.0	47.0	105.5	0.87	20.0	120	A	5
NP7-6	6	7.0	6.5	-	151	34.0	97.5	1.32	12.0	210	A	1
NP10-6	6	10.0	9.2	-	151	50.0	97.5	1.93	8.0	300	A	1
NP12-6	6	12.0	11.1	-	151	50.0	97.5	2.05	7.0	360	C	1
NP0.8-12	12	0.8	0.74	-	96.0	25.0	61.5	0.35	180	24.0	H	6
NP1.2-12	12	1.2	1.1	-	97.0	48.0	54.5	0.58	110	36.0	A	3
NP2-12	12	2.0	1.86	-	150	20.0	89.0	0.7	68.0	60.0	B	7
NP2.1-12	12	2.1	1.9	-	178	34.0	64.0	0.82	65.0	63.0	A	1
NP2.3-12	12	2.3	2.1	-	178	34.0	64.0	0.95	65.0	69.0	A	1
NP2.8-12	12	2.8	2.5	-	134	67.0	64.0	1.12	60.0	84.0	A	3
NP3.2-12	12	3.2	2.9	-	134	67.0	64.0	1.2	50.0	96.0	A	3
NP4-12	12	4.0	3.7	-	90.0	70.0	106	1.75	40.0	120	A	1
NP7-12(L)	12	7.0	6.4	-	151	65.0	97.5	2.2	23.0	210	A/C	4
NP12-12	12	12.0	11.1	-	151	98.0	97.5	4.05	16.0	360	C	4
NP17-12I	12	17.0	15.7	-	181	76.0	167	6.1	15.0	510	D	2
NP18-12B	12	17.2	16.0	-	180	76.0	167	6.2	15.0	540	G	2
NP24-12I	12	24.0	22.3	-	166	175	125	9	11.0	500	D	2
NP38-12I	12	38.0	35.3	-	197	165	170	14.2	9.0	500	D	2
NP65-12I	12	65.0	60.5	-	350	166	174	23.0	7.0	800	E	2



NPH & NPW Series High Rate NP Batteries

NPH2-12FR	12	2.1	2.0	-	68.0	51.0	88.0	0.84	66.0	60.0	A	2
NPH3.2-12	12	3.3	3.0	-	134	67.0	64.0	1.4	35.0	96.0	A	3
NPH5-12(FR)	12	5.0	4.8	34.0	90.0	70.0	106	1.85	25.0	150	C	1
NPH12-12	12	12.0	11.1	70.0	151	98.0	97.5	4.1	16.0	360	C	4
NPH18-12B	12	20.0	18.7	115.2	181	76.0	167	6.3	7.9	540	G	2
NPW45-12	12	7.5	6.6	40.0	151	65.0	97.5	2.7	24.0	105	C	4



yuasa.co.uk/NP
For more information
and technical data

RE series

Valve regulated lead acid batteries




Features

- Lead calcium grids for extended life
- Superb recovery from deep discharge
- Low discharge rate for long shelf life
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency
- Multipurpose: Float or light cyclic use
- Can be used in any orientation excluding continuous inverted use
- Application specific designs

Applications

- Ideal for standby & light cyclic applications including:
- Fire & security systems
 - Emergency lighting
 - Solar and wind
 - UPS
 - Toys



Model name	Nominal Voltage (Volts)	Capacity		Dimensions (mm)			Weight - typical (kg)	Impedance at 1kHz mOhms	1 Second rate (Amps)	Terminal type	Layout (see page 18)
		20-hr rate to 10.5V at 20°C (Ah)	10-hr rate to 10.8V at 20°C (Ah)	Length (±3)	Width (±3)	Overall height (±3)					
RE5-12	12	5.0	4.6	90.0	70.0	106	1.96	42.0	120	A	1
RE7-12L(FR)	12	7.0	6.2	151	65.0	97.5	2.75	35.0	105	C	4
RE12-12	12	12.0	10.56	151	98.0	97.5	4.15	15.0	180	C	4
 REW45-12	12	8.0	6.96	151	64.0	97.5	2.7	24.0	105	C	4



Yuasa NP series

Europe's leading standby batteries



- ✓ European market leader for over 30 years
- ✓ Proven track record of long-life performance
- ✓ The original and most reliable NP VRLA battery
- ✓ Dependable standby & light cyclic power
- ✓ Yuasa quality, reliability & performance

NPL series

Valve regulated lead acid batteries



Features

- Low discharge rate for long shelf life
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency
- Maintenance free
- Flame retardant to (UL94) HBØ
- FR option flame retardant to UL94:VØ (oxygen index 30)
- Manufactured in factories that comply with ISO 9001

- Complies with BS EN60896-21+22

Applications

- Security & Fire
- Emergency Lighting
- Telecoms
- UPS



Model name	Nominal Voltage (Volts)	Capacity			Dimensions (mm)			Weight - typical (kg)	Impedance at 1kHz mOhms	1 Second rate (Amps)	Terminal type	Layout (see page 18)	Torque (Nm)
		20-hr rate to 10.5V at 20°C (Ah)	10-hr rate to 10.8V at 20°C (Ah)	Watts per cell 10 min to 1.6VPC at 20°C (watts)	Length (±1)	Width (±1)	Overall height (±2)						
NPL24-12I	12	24.0	21.1	93.2	166	175	125	9.0	9.5	500	D	2	2.5
NPL38-12I	12	38.0	33.4	147.5	197	165	170	14.0	7.5	500	D	2	2.5
NPL65-12I	12	65.0	57.2	252.4	350	166	174	23.0	5.0	800	E	2	4.8
NPL78-12IFR	12	78.0	68.6	302.9	380	166	174	27.5	4.5	800	F	2	6.0
NPL100-12	12	100	88.0	388.4	407	172	240	39.0	4.0	1000	I	1	16.5
NPL130-6IFR	6	130	114.4	504.9	350	166	174	23.0	2.5	500	E	5	4.8
NPL200-6	6	200	176	776.8	398	176	250	39.0	1.3	1500	I	5	16.5



yuasa.co.uk/NPL
For more information and technical data



SWL series

Valve regulated lead acid batteries



Features

- Excellent high rate discharge efficiency, typically 40% higher than equivalent standard product
- Low discharge rate for long shelf life
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency
- Maintenance free
- Standard case material is flame retardant to (UL94) HBØ

- FR option flame retardant to UL94:VØ (oxygen index 30)
- Manufactured in factories that comply with ISO9001
- Complies with BS EN60896-21+22

Applications

- UPS
- All other high rate discharge applications



Model name	Nominal Voltage (Volts)	Capacity			Dimensions (mm)			Weight - typical (kg)	Impedance at 1kHz mOhms	1 Second rate (Amps)	Terminal type	Layout (see page 18)	Torque (Nm)
		20-hr rate to 10.5V at 20°C (Ah)	10-hr rate to 10.8V at 20°C (Ah)	Watts per cell 10 min to 1.6VPC at 20°C (watts)	Length (±2)	Width (±2)	Overall height (±2)						
SW200	12	6.2	5.8	33.0	151	51.0	97.5	2.5	18.0	100	A+C	4	-
SW280	12	7.8	7.0	47.0	151	65.0	97.5	2.6	14.0	150	C	4	-
SWL750(FR)	12	25.0	22.9	128	166	175	125	9.8	8.5	500	D	2	2.5
SWL780V(FR)	12	28.8	27.1	130	166	125	175	10.1	8.5	500	D	2	2.5
SWL1100(FR)	12	40.6	39.6	200	197	165	170	14.5	7.5	500	D	2	2.5
SWL1800(FR)	12	57.6	55.0	329	216	168	223	23.0	6.0	800	E	1	4.8
SWL1850(FR)	12	74.0	66.0	319	350	166	174	23.8	4.4	800	E	2	4.8
SWL1850-6(FR)	6	148	132	-	350	166	174	23.8	1.8	500	E	5	4.8
SWL2250(FR)	12	86.0	76.0	375	380	166	174	28.0	3.6	800	F	2	6.0
SWL2300E(FR)	12	80.0	78.0	400	261	168	225	28.0	5.0	800	E	1	4.8
SWL2500E(FR)	12	93.6	90.0	490	305	168	225	32.0	4.0	1000	E	1	4.8
SWL2500TFR	12	93.6	90.0	490	305	173	223	32.0	4.0	1000	E	1	4.8
SWL2500-6(FR)	6	184	180	922	297	168	231.5	32.5	1.7	1500	F	5	6.0
SWL3300(FR)	12	110.2	105	550	350	168	225	37.5	3.5	1100	F	1	6.0
SWL3800(FR)	12	135	124	701	350	173	272	48.0	3.0	1200	F	1	6.0
SWL4250FR	12	150	140	411	341	173	281	49.0	2.7	1200	F	1	6.0

 yuasa.co.uk/SWL
For more information and technical data



EN series

Valve regulated lead acid batteries



Features

- Unique mix and match parallel assembly allows extensive variations to network capacity
- Low discharge rate for long shelf life
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency

- Maintenance free
- Fully compliant with BS EN60896-21+22
- Case material ABS flame retardant UL94:V0

Applications

- UPS
- Telecoms
- Emergency lighting



Model name	Nominal Voltage (Volts)	Capacity			Dimensions (mm)			Weight - typical (kg)	Impedance at 1kHz mOhms	1 Second rate (Amps)	Terminal type	Layout (see page 18)	Torque (Nm)
		20-hr rate to 10.5V at 20°C (Ah)	10-hr rate to 10.8V at 20°C (Ah)	Watts per cell 10 min to 1.6VPC at 20°C (watts)	Length (±2)	Width (±2)	Overall height (±2)						
EN80-6	6	86.4	81.6	336.1	200	208	238	23.0	2.0	1000	F	8	6.0
EN100-4	4	108	102	420.1	200	208	238	17.5	1.5	1000	F	8	6.0
EN100-6	6	108	102	420.1	200	208	238	23.0	2.0	1000	F	8	6.0
EN160-4	4	172.8	163.2	672.2	206	210	240	24.0	1.0	1500	F	10	6.0
EN160-6	6	172.8	163.2	672.2	305	210	240	35.0	1.5	1500	F	9	6.0
EN180-6	6	193	181.4	767.7	305	210	240	38.0	0.5 (single cell)	1500	F	9	6.0
EN320-2	2	345.6	326.4	1344.4	206	210	240	24.0	0.5 (single cell)	3000	F	10	6.0
EN480-2	2	518.4	489.6	2016.7	305	210	240	35.0	0.5 (single cell)	4500	F	11	6.0
EN540-2	2	579	544.2	2303.1	305	210	240	38.0	0.5 (single cell)	4500	F	11	6.0



ENL series

Valve regulated lead acid batteries



Features

- 15 year design life version of the EN series
- Unique mix and match parallel assembly allows extensive variations to network capacity
- Low discharge rate for long shelf life
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency

- Maintenance free
- Fully compliant with BS EN60896-21+22
- Case material ABS flame retardant UL94:V0

Applications

- UPS
- Telecoms
- Emergency lighting
- Renewable Energy



Model name	Nominal Voltage (Volts)	Capacity			Dimensions (mm)			Weight - typical (kg)	Impedance at 1kHz mOhms	1 Second rate (Amps)	Terminal type	Layout (see page 18)	Torque (Nm)
		20-hr rate to 10.5V at 20°C (Ah)	10-hr rate to 10.8V at 20°C (Ah)	Watts per cell 10 min to 1.6VPC at 20°C (watts)	Length (±1)	Width (±1)	Overall height (±2)						
ENL100-6	6	108	102	399.1	200	208	238	23.0	2.0	1000	F	8	6.0
ENL160-6	6	172.8	163.2	638.6	305	210	240	35.0	1.5	1500	F	9	6.0
ENL320-2	2	345.6	326.4	1277.2	206	210	240	24.0	0.5 (single cell)	3000	F	10	6.0
ENL480-2	2	518.4	489.6	1915.8	305	210	240	35.0	0.5 (single cell)	4500	F	11	6.0
ENL100-12FT	12	108	102	N/A	558	125	235	41.0	7.5	500	F	3	6.0


yuasa.co.uk/ENL
 For more information and technical data



FXH series

Valve regulated lead acid batteries



Features

- Front terminal connection for ease of installation & maintenance
- Low discharge rate for long shelf life
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency
- Maintenance free

- Case material ABS flame retardant UL94:V0
- BS EN60896-2 compliant

Applications

- UPS
- Telecoms
- Emergency lighting



Model name	Nominal Voltage (Volts)	Capacity			Dimensions (mm)			Weight - typical (kg)	Impedance at 1kHz mOhms	1 Second rate (Amps)	Terminal type	Layout (see page 18)	Torque (Nm) terminal / adaptor
		20-hr rate to 10.5V at 20°C (Ah)	10-hr rate to 10.8V at 20°C (Ah)	Watts per cell 15 min to 1.6VPC at 20°C (watts)	Length (±3)	Width (±3)	Overall Height (±3)						
FXH45-12IFR	12	46.4	44.6	180.8	278	103	197	15.0	4.7	400	E/D	3	5.4/3
FXH90-12IFR	12	96.8	89.8	441	395	105	255	30.0	3.4	540	F/E	3	11.9/5.4
FXH100-12IFR	12	101.2	98.4	404	508	106	236	34.9	3.5	540	E/E	3	5.4/5.4
FXH100S-12IFR	12	110.4	100	396	395	106	290	34.0	3.5	600	F/E	3	11.9/5.4
FXH140-12IFR	12	164.6	154	606	556	123	295	51.0	2.7	540	F/E	3	11.9/5.4
FXH155-12IFR	12	165.6	155	498.7	415	174	258	50.5	2.8	930	E	3	5.4/N/A
FXH165-12IFR	12	197	177	604	556	125	317	56.0	2.8	990	F/E	3	11.9/5.4
FXH185-12IFR	12	196	187	647.3	556	125	317	60.7	2.5	1000	F/E	3	11.9/5.4
FXH190-12IFR	12	210	200	766.4	604	123	320	67.0	2.5	1000	F/E	3	11.9/5.4
FXH200-12IFR	12	234.8	229	846	520	243	203	70.6	2.1	1000	F	3	11.9/N/A

90° FXH terminal adaptors

for telecoms use

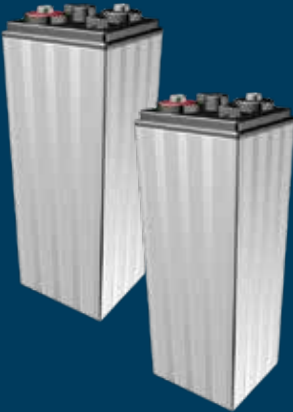
	Battery terminal	90° adaptor
FXH45-12IFR	M6	M5
FXH90-12IFR	M8	M6
FXH100-12IFR	M6	M6
FXH100S-12IFR	M8	M6
FXH140-12IFR	M8	M6
FXH155-12IFR	M6	N/A
FXH165-12IFR	M8	M6
FXH185-12IFR	M8	M6
FXH190-12IFR	M8	M6
FXH200-12IFR	M8	N/A

yuasa.co.uk/FXH
For more information and technical data



SLR series

Larger cyclic batteries





Features
 Easy installation and smaller footprint due to modular unit design

- Horizontal orientation
- Higher gas recombination facility due to silica gel/AGM construction
- Nano-Carbon negative plate for more efficient charging & less sulphation risk
- Higher capacity retention throughout service life

Applications

- Large scale utility & commercial
- Renewable energy storage
- Load shedding
- Off grid
- UPS
- Telecoms
- Emergency lighting

Model Name	Nominal Capacity 10-hr rate (Ah)	Nominal Voltage (Volts)	Cycle Life at Depth of Discharge (DoD)	
			50%	70%
SLR500	500	2	5500	5000
SLR1000	1000	2	5500	5000

Model Name	Length (mm)	Width (mm)	Total Height (mm)	Weight (kg)
SLR500	156	171	492	34.0
SLR1000	287	165	493	67.0

 yuasa.co.uk/SLR
 For more information and technical data



REC series

Premium VRLA cyclic batteries



Features

- Double cycle life when compared to standard VRLA
- Durability for deep discharge
- Modern construction to considerably prolong service life
- Low discharge rate for long shelf life
- Maintenance free
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency

Applications

- Golf & Mobility
- Solar & wind
- Renewable energy
- Professional tools
- Automatic guided vehicles
- Emergency lighting
- Measuring instruments



Model name	Nominal Voltage (Volts)	Capacity			Dimensions (mm)			Weight - typical (kg)	Impedance at 1kHz mOhms	1 Second rate (Amps)	Terminal type	Layout (see page 18)	Torque (Nm)
		20-hr rate to 10.5V at 20°C (Ah)	10-hr rate to 10.8V at 20°C (Ah)	Watts per cell 10 min to 1.6VPC at 20°C (watts)	Length (±3)	Width (±3)	Overall height (±3)						
REC10-12	12	10.0	9.3	51.8	151	65.0	115.5	3.2	17.6	150	C	4	N/A
REC12-12	12	12.0	11.2	68.0	151	98.0	97.5	4.2	11.8	180	C	4	N/A
REC14-12	12	13.0	11.9	78.3	151	98.0	97.5	4.2	10.1	195	C	4	N/A
REC22-12B / I	12	22.0	19.7	120.8	181	76.2	167	6.2	8.2	330	G / D	2	2.0-3.0
REC26-12I	12	26.0	23.5	145	166	175	125	9.0	8.8	330	D	2	2.0-3.0
REC36-12I	12	36.0	32.0	166.7	196	130	169	11.2	8.7	360	D	1	2.0-3.0
REC50-12I	12	50.0	40.0	233	197	165	175	15.3	5.7	400	D	2	2.0-3.0
REC80-12I	12	80.0	74.0	404	259	168	212.5	27.0	4.7	480	E	1	3.9-5.4

REC & NPC Carrying Cases

Model	Description
GB 12210	Carrying case for REC22-12B / I
GB 12260	Carrying case for REC26-12 & NPC24-12I
GB 12360	Carrying case for REC36



 yuasa.co.uk/REC
For more information and technical data



NPC series

VRLA cyclic batteries



Features

- Double cycle life when compared to standard VRLA
- Durability for deep discharge
- Modern construction to considerably prolong service life
- Low discharge rate for long shelf life
- Maintenance free
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency

Applications

- Golf & Mobility
- Solar & wind
- Renewable energy
- Professional tools
- Automatic guided vehicles
- Emergency lighting
- Measuring instruments



Model name	Nominal Voltage (Volts)	Capacity		Dimensions (mm)			Weight - typical (kg)	Impedance at 1kHz mOhms	1 Second rate (Amps)	Terminal type	Layout (see page 18)
		20-hr rate to 10.5V at 20°C (Ah)	10-hr rate to 10.8V at 20°C (Ah)	Length (±3)	Width (±3)	Overall height (±3)					
NPC24-12I	12	24.0	21.1	166	175	125	9.0	9.5	500	D	2
NPC38-12I	12	38.0	33.4	197	165	170	14.2	7.5	500	D	2
NPC65-12I	12	65.0	57.2	350	166	174	23.0	5.0	800	E	2
NPC100-12	12	100	92.3	350	168	225	38.8	4.0	1100	F	1

REC & NPC Powakaddy Adaptors

Model	Description
PK22	For REC22-12B
PK22I	For REC22-12I
PK26	For REC26-12 & NPC24-12I
PK36	For REC36

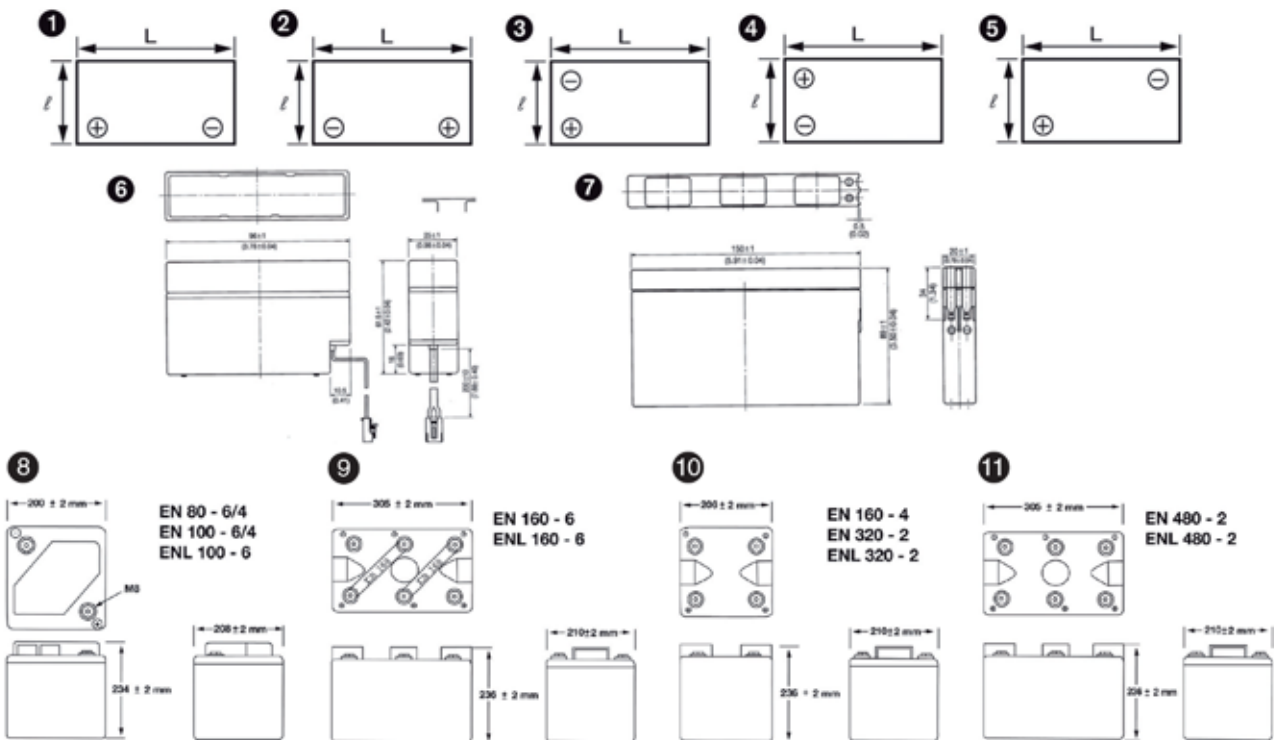


 yuasa.co.uk/NPC
For more information and technical data

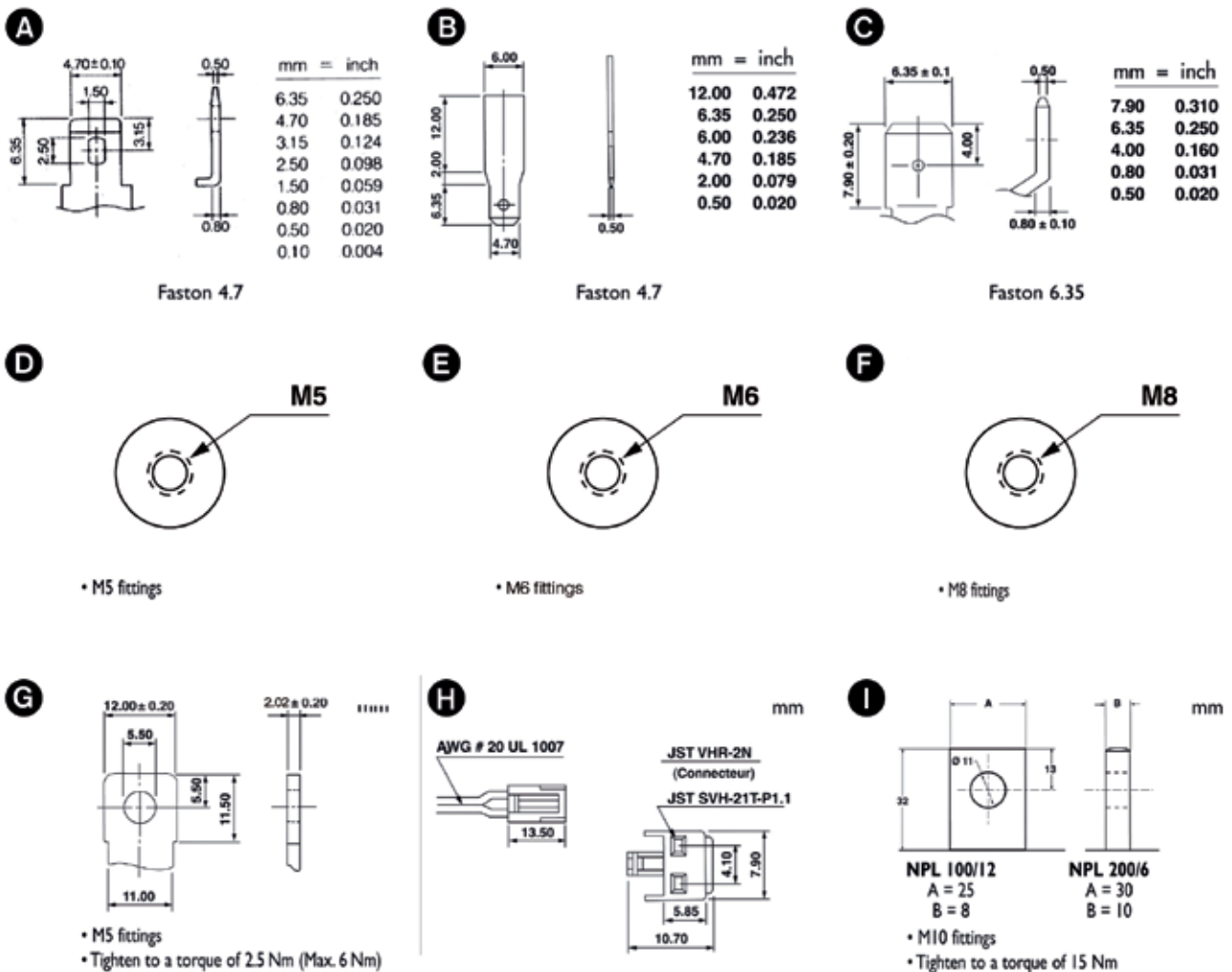


Layout & terminal diagrams

Layout



Terminals



Lithium series

GS Yuasa LIM Li-ion batteries



Features

- Advanced maximum reliability system design
- Built in battery monitoring unit (ACS) constantly monitors the condition of each cell
- Outstanding cycle life of up to 3,000 cycles at 100% discharge
- High Charge-Discharge density capable of currents up to 600A
- Maintenance free
- Safe materials used in design & production

Applications

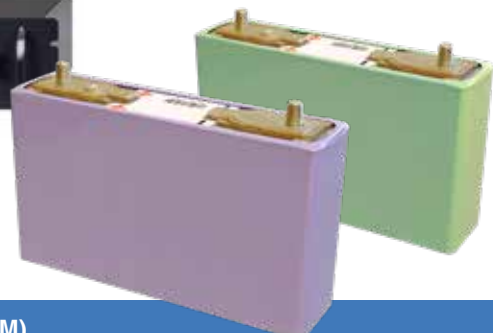
- High energy industrial systems
- UPS
- Energy storage
- Smart Grid
- AGV traction power



Model name	Nominal Voltage (Volts)	Operating Voltage range (Volts)	Capacity 1-hr rate to 22.0V @ 25° C (Ah)	Charge current continuous (Amps)	Maximum current continuous (Amps)	Discharge current continuous (Amps)	Maximum discharge current (Amps)	Dimensions (mm)			Weight (kg)	Cycles
								Length (±3)	Width (±3)	Height (±3)		
LIM25H-8S1-F1	28.8	22.0 - 33.6	25.0	100	600 (14s)	100	600 (14s)	440	219	128	17.5	20000
LIM25H-8S2-F2	28.8	22.0 - 33.6	25.0	100	600 (14s)	100	600 (14s)	440	219	128	17.5	20000
LIM25H-12S1-F1	43.2	33.0 - 50.4	25.0	100	600 (14s)	100	600 (14s)	620	219	128	28.0	20000
LIM25H-12S1-F2	43.2	33.0 - 50.4	25.0	100	600 (14s)	100	600 (14s)	617	219	128	27.5	20000
LIM40E-13T1	48.8	35.8 - 53.3	38.0	40.0	100 (60s)	40	600 (60s)	385	450	130	28.0	11000
LIM50EN-8S2-F2	29.6	22.0 - 32.8	47.5	50.0	125 (60s)	200	300 (60s)	440	219	128	17.0	11000
LIM50EN-12S2-F2	44.4	33.0 - 49.2	47.5	50.0	125 (60s)	200	300 (60s)	617	219	128	27.0	11000
LIM50E-7G-C1	25.9	19.3 - 28.7	47.5	50.0	125 (60s)	200	300 (60s)	412	180	135	15.0	7500



For more information and technical data



Li-ion battery control modules (LiBM)

- Monitors & controls the operation of up to 26 lithium ion modules
- Multiple LiBMs can be networked for larger system integration
- Provides full access to all cell data via RS485 and CANbus 2.0b ports
- 16 cell & monitoring system functions are checked continuously
- Status thresholds are configurable for all monitored parameters
- Warning & alarm outputs configurable via relay and opto-isolated NO and NC contacts
- State of Charge measured by voltage & current analysis
- On-board data logging capability
- Low power consumption at 24Vdc

NiCd & NiMH

Battery packs



Features

- Excellent cyclic performance
- Multiple pack configurations available for all cell types
- High temperature versions tested to ICEL 1010
- Three dimensional mesh structure
- Foamed Nickel technology allows higher capacity in smaller can sizes
- Maintenance free

Applications

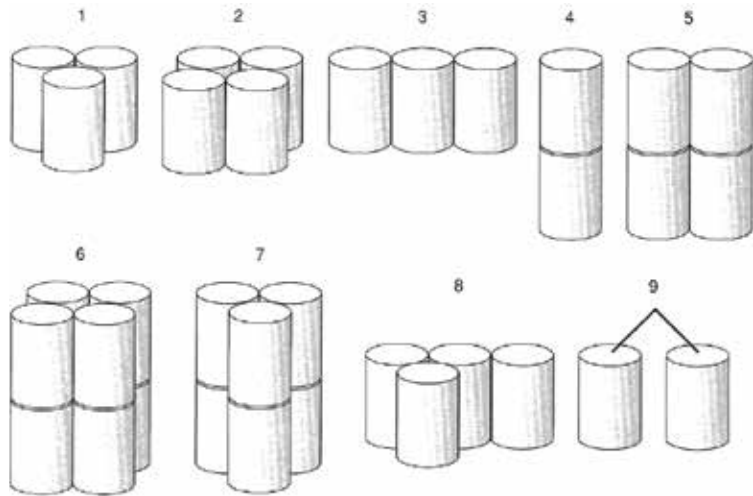
- Packs can be tailored to a wide range of smaller power applications, including:
- Emergency lighting
 - Electronic equipment
 - Testing equipment



Available Can Sizes

Can size	Fraction code	Diameter (mm)	Height (mm)
AA		14.1	48.0
7/5AA	R	14.1	64.4
4/5AA	S	14.1	42.6
2/3AA	X	14.1	28.0
1/2AA	Z	14.1	24.0
2/5AA	T	14.1	21.0
1/3AA	Y	14.1	16.5
AAA		10.1	43.6
7/5AAA	R	10.1	66.5
5/4AAA	V	10.1	49.5
5/6AAA		10.1	41.6
2/3AAA	X	10.1	27.8
1/2AAA	Z	10.1	25.0
1/3AAA	Y	10.1	15.0
1/4AAA	W	10.1	12.0
AAAA		7.9	41.5
F		32.2	89.0
18650		18.0	65.0
18670		18.0	67.0
A		16.8	49.0
7/5A	R	16.8	65.9
4/5 A	S	16.8	42.1
1/2A	Z	16.8	28.0
2/5A	T	16.8	21.5
1/3A	Y	16.5	16.5
AF		16.8	49.0
7/5AF	R	16.8	65.9
C		25.3	49.0
2/3C	X	25.3	30.0
1/3C	Y	25.3	19.1
D		32.2	59.0
2/3D	X	32.2	43.0
1/2D	Z	32.2	35.0
1/3D	Y	32.2	29.5
SC		22.1	42.0
5/4SC	V	22.1	49.0

Configuration options



All Yuasa cylindrical cells can be connected together to form higher voltage/capacity packs. Dependent upon quantities required, almost any configuration can be achieved. Pack details are available on request.

Part numbers for packs incorporate all the information required to identify manufacturing details.

For example, **3AAZ400LM3** translates as **3** x 'AA 1/2 size(Z)' cells **400mAh** with **Leads** and **Molex** plug and configured using style **3**.



CR123A & CR2 Non-rechargeable Lithium batteries

Model name	Nominal Voltage (Volts)	Capacity (mAh)	Diameter (mm)	Height (mm)
CR2 - 1000	3	1000	15.6	27.0
CR123A - 1700	3	1700	17.0	34.5

Pro-Spec

Multiple purpose deep cycle batteries



Features

- Deep cycle performance
- Resistant to vibration
- Low maintenance with easy access vent caps for topping up
- Glass Mat/porous rubber separator construction to resist corrosion & reduce electrical resistance
- Special case & lid designed to prevent short circuit
- Two terminal types available

Applications

- Electric vehicles including:
 - Golf carts
 - Mobility vehicles
 - Warehouse equipment
 - Fork lifts
 - Access platforms
 - Floor cleaners



Type	Model name	Capacity				Dimensions (mm)				Weight (kg)
		@25A (Mins)	@75A (Mins)	5HR (Ah)	20HR (Ah)	Length	Width	Height	Terminal height	
Deep Cycle 6V	DCB605-6(DT)*	383	105	175	210	259	179	245	273	27.0
	DCB105-6(DT)*	447	115	185	225	259	179	245	273	28.6
	DCB125-6(DT)*	488	132	195	240	259	179	245	273	30.7
	DCB145-6(DT)*	530	145	215	260	259	179	264	292	33.0
Deep Cycle 8V	DCB875-8(DT)*	295	75	145	170	262	181	245	273	29.0
	DCB890-8(DT)*	340	90	155	190	262	181	245	273	31.6
	DCB8125-8(DT)*	425	110	190	240	262	181	283	311	37.6
Deep Cycle	DCB1275-12(ET)	290	70	125	150	329	181	245	276	37.5

*ET available on request

DT - Dual Terminal

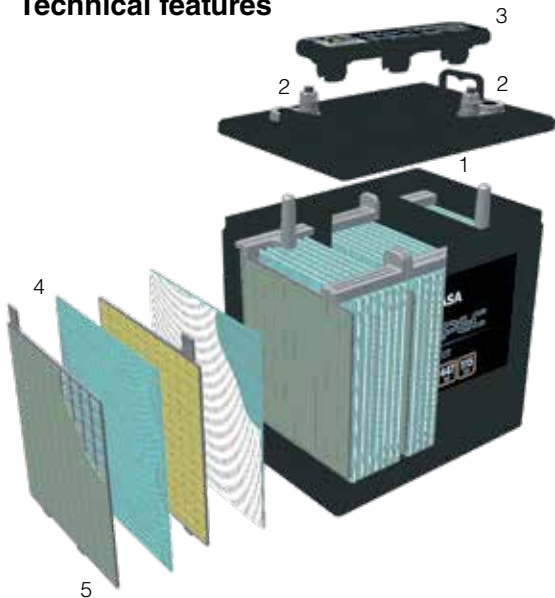


ET - Embedded Terminal



yuasa.co.uk/prospec
For more information and technical data

Technical features



- Case/Lid:
 - Less weight, shock resistant & acid resistant thanks to PP Resin construction
 - Specially designed structure to prevent short circuit from active material shedding in the bottom
- Terminal:
 - Cast with special lead alloy
 - Special plating to minimize heat generation electric resistance
 - Designed to be vibration resistance
 - Easily detachable with standard & bolt/nut structure
- Cap:
 - Designed & engineered to allow gas venting
 - Easy to refill & maintain
- Separator:
 - Porous rubber material protects against acid corrosion
 - Excellent physical characteristics & lower electric resistance
 - Uses micro-fibre glass mat to minimise active material shedding
- Plates:
 - Negative – 99.9% pure lead with hard paste feature, specific additives for excellent deep cycle ability
 - Positive - corrosion resistant grid with hard paste feature, specific additives for deep cycle purpose



* Suggested cyclic life based on 0.25C₃ 3 hour discharge - 0.18C₃ hour charge

Racking & site services

Yuasa technical department



The GS Yuasa Battery Sales UK Ltd Technical Department provides a full battery design and quotation service, including:

- **Battery sizing**
- **Open style or clad racks, cubical design & supply**
- **Gas & heat calculations**
- **AutoCAD drawings**
- **Battery system testing**

To discuss your project or requirements please contact us on **01793 833555** or **info@gs-yuasa.uk**



Battery sizing

Utilising Yuasa's range of VRLA batteries, the latest design software and extensive technical expertise, our engineers will find the best battery solution tailored to your requirements.

Battery containment

GS Yuasa have a full complement of battery racking solutions available. Our popular open or clad steel flat pack racking can be built to specification. Options include colour, tier heights, leg extensions, seismic strengthening and many more.

Gas & heat

We can provide full calculations relating to heat output and hydrogen gas emissions of any Yuasa battery system.

Drawings

Using AutoCAD software, our engineers can provide detailed rack and battery layout drawings for your project.

Install

GS Yuasa can quote for and arrange battery installation and commissioning. Our trained engineers and over 30 years of industrial battery experience will ensure your project goes smoothly.

System testing

We offer a full battery testing service for battery installations of all sizes. Measuring every battery for impedance and voltage, a detailed report with findings and recommendations will be issued once completed.

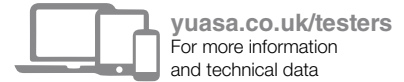


Hioki BT3554

Impedance tester

The Hioki BT3554 impedance tester provides complete diagnosis of VRLA batteries with a single device.

- 2, 4, 6 & 12 volts (nominal) batteries
- Up to 60 volt test range
- Designed for UPS, central lighting systems & other large backup battery installations
- Transfer saved data to tablet or PC via USB or Bluetooth*
- Auto-hold & Auto-data storage functions
- Integral storage for up to 4800 sets of data
- Full range of accessories & spares (available separately)
- Supporting software included
- 10°C to 60°C measurement range
- Supplied with heavy-duty carry case
- Suitable for testing the full range of Yuasa industrial VRLA products



*BT3554-01 model

Yu-Power®

Intelligent chargers

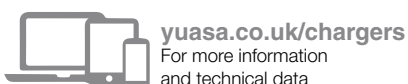


Yu-Power® intelligent chargers utilise multi-stage proportional timing technology to ensure safe and efficient lead acid battery charging.

Proportional timing during the bulk charging mode ensures the best balance of maximum state of charge, without damaging the battery before switching to the float charging mode.

Once in float charge mode the charger will charge the battery and maintain it at 100% state of charge, whilst using an ECO mode to save power.

YPC09A12MC	Yu-Power 900ma 12V Motorcycle Charger - UK Plug c/w YPCCLIPMC
YPC2A6	Yu-Power 2A 6V Charger - UK/Euro Plug c/w YPCCLIPMC
YPC2A12	Yu-Power 2A 12V Charger - UK/Euro Plug c/w YPCCLIPMC
YPC4A12	Yu-Power 4A 12V Charger - UK/Euro Plug c/w YPCCLIP
YPC4A24	Yu-Power 4A 24V Charger - UK/Euro plug c/w YPCCLIP
YPC8A12	Yu-Power 8A 12V charger - UK/Euro Plug c/w YPCCLIP
YPCCLIP	Yu-Power 24" Cordset (Torberry to clips)
YPCCLIPMC	Yu-Power 24" Cordset (std trailer to clips)
YPCMOB	Yu-Power 6" Cordset (male mobility plug to Torberry)
YPCPK	Yu-Power 24" Cordset (Powakaddy to Torberry)
YPCRINGMC	Yu-Power 24" Fused Ring Cordset (std trailer to rings)
YPCTESTMC	Yu-Power LED Battery Tester (trailer plug c/w YPCRINGMC)



The complete solution for uninterruptible power supply (UPS) battery data monitoring

A monitoring strategy is essential to ensure that a UPS system will always fulfil its role. Long service life and reliable performance can be achieved by continually monitoring key parameters.

Yuasa's easy-to-use battery monitoring solution consists of the Yu-Power YPCBM2 Battery Temperature Logger and the Yu-Power YPCBL2 Battery Temperature Logger USB Wireless Receiver. When used together these products monitor temperature and voltage, communicate wirelessly and determine if the system is operating within the recommended guidelines.



Yu-Power® YPCBM2 wireless battery temperature logger

The YPCBM2 Battery Temperature Logger requires a 12 Volt DC power supply and can be connected to individual batteries within a rack or across a string of up to 120 Volts. By installing more loggers, greater local temperature and voltage monitoring capability can be achieved. For example, with a logger installed on every battery within a system, each one's individual status can be monitored.



- Simply connect the logger to continually monitor local temperature & voltage
- Onboard memory automatically stores readings at a ten minute resolution for the entire life of the battery system
- Ultra-low power consumption <math><10\mu\text{A}</math> which is less than the battery's self-discharge rate
- Has a discoverable unique serial number embedded, allowing for detection of each individual logger
- Can be given a personalised device name within the Yu-Power analytical software for easy identification of each data logger
- Long wires with bare lead ends to allow easy fitment with any connector type

Yu-Power®

YPCBL2 battery temperature logger USB wireless receiver

The Yu-Power YPCBL2 Battery Temperature Logger USB Wireless Receiver can be used on any compatible device with a USB port.

It wirelessly receives and downloads data in real-time from up to 1000 Yu-Power YPCBM2 Wireless Battery Temperature Loggers.

- USB connection
- Allows for one user per receiver
- Unique activation code to securely pair device



Yu-Power analytical software

Software is supplied with the Yu-Power YPCBL2 USB Wireless Receiver and this powerful analytical software allows for the download and extraction of all recorded data for reporting.

It is designed by Yuasa engineers to accurately display key data from each registered battery temperature logger and provides full visibility of system performance status.



Full wireless remote monitoring also available.

- Real-time accurate voltage & temperature data logging
- Customisable & easy-to-use data downloads
- No additional software required to program the data loggers
- Easy detection, set up & personalisation of up to 1000 data loggers
- Allows export of data to Excel, CSV & text files for full end user analytic capability
- Configurable logging time frequencies
- Produces temperature & voltage alerts & exportable graphs with pre-defined performance limits
- Future proofed web based application

Standby & cyclic definitions

Standby

A float STANDBY application is one where a battery is maintained, using a float charge voltage, in a 100% state of charge ready to support an attached load immediately should the mains supply fail. The float charge voltage ensures the correct current flow to compensate for any self-discharge characteristic¹. A typical application for an industrial battery system would be an Uninterruptable Power Supply (UPS).

Yuasa consider a float standby application to be where a battery:

- Has no more discharges than is indicated in the table below

DOD²	Allowable Discharges per Year (average)
0.1 – 10%	16-18
or	
11- 30%	10-12
or	
31- 100%	2-3

- Is expected to have prolonged periods of float charge, > 3 months, between discharges on average and at least 72 hours recharge between planned consecutive discharges (unless the battery you are using has repeat duty sizing for reduced charging times)
- Is expected to spend >99.9% of its life on float charge
- Is never left in partially discharged condition

Yuasa VRLA standby battery types: NP, NPL, SWL and EN

Cyclic

A cyclic application is one where a battery is discharged and charged on a regular and/or planned basis. A typical application for a cyclic industrial battery system would be an electrical power load shedding system. Yuasa consider a cyclic application to be where a battery:

- Is regularly³ subjected to charge times of <72 hours between discharges
- Is regularly³ discharged to any depth of discharge
- Following first use is subjected to periods longer than 1 month without charge in any 6 month period.
- Following first use is left in a partial state of discharge for >1 week

Yuasa VRLA cyclic battery types: **NPC, REC, ENL, SLE**

Notes

1. Float charge can include intermittent charging patterns, having periods when fully charged batteries stand at open circuit. However, to ensure battery strings are correctly equalised for state of charge and charge acceptance characteristics, continuous float charge conditions should be applied for at least 6 months after commissioning or alterations to battery configuration.
2. Depth of Discharge (DOD). In regards to this document, 100% discharge is considered to be the end of the calculated autonomy period at any given load. A 10% discharge would be a discharge time of 10% of the calculated autonomy at a given load.
3. 'Regularly' could be considered as more than twice per month on average.

Golf, mobility & other cyclic use

Do:

- Follow the battery fitting instructions supplied by your equipment supplier.
- Charge your new battery for 12 hours before use. A battery can require up to 6 cycles of charge/discharge before it reaches its optimum performance. Always re-charge for a minimum of 12 hours after use.
- Ensure that your charger switches from bulk (usually indicated by a red or blue LED) to float charge (usually indicated by a Green LED) within 12 hours on charge. If this does not occur within 12 hours, then disconnect the battery from charge, use and then recharge.
- Store your battery in a fully charged state.
- Charge your battery as and when possible, regardless of state of charge.
- Maintain your equipment, follow lubrication advice and have your device regularly checked for correct running.
- Ensure that all running gear is free of grass, mud and other debris. Any extra resistance will exert extra load on the battery and will reduce run time.

Do not:

- Fully or partially discharge the battery and leave in a discharged state. This will cause internal damage to the battery and result in reduced life.
- Exceed the operational loading weight set by the product manufacture.
- Store the battery for long periods above an ambient temperature of 20 degrees centigrade.
- Drop or bump the battery – you will damage it.

Useful information:

- A battery is deemed to have reached end of life when it reaches 60% of original capacity.
- The life of the battery will depend on the depth of discharge and number of cycles performed.
- 1 cycle = 1 x discharge + 1 x charge.

Factors which can also affect life and run time are:

- Weight of the load carried.
- Number of times used per week (number of cycles).
- Length of time used per occasion (depth of discharge).
- Charging regime.
- Age and condition of your equipment - wheel bearing wear and motor condition can put extra load on the battery and reduce any autonomy time. New batteries fitted to new equipment will last longer than new batteries fitted to older equipment.
- Ambient temperature over 20°C.

Note: Yuasa REC and NPC batteries used in golf caddy applications are not designed to support a specific number of holes played during a round of golf. The guarantee of the product is solely based on the product premature failing due to a manufacturing or materials defect only. Yuasa do not manufacture an 18, 24, or 36 hole golf battery.

Cat. No. LIT038 08/19

E. & O. E.



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