



DSI BATTERIES



DELTA SMART LITHIUM BATTERIES FOR MILITARY EQUIPMENT



DSL BATTERIES

DELTA SMART LITHIUM BATTERIES FOR MILITARY EQUIPMENT



General

·Most military are carrying out modernization program that give soldiers the latest technology, consolidate energy requirements and lighten their load, it's a continuing process. New technologies bring more power needs, which leads to more trade-offs with regards to how much a soldier can carry. Human factor is what drives our research and development process when developing military batteries

·In modern days, Militaries Command Control Communication and Information Sys (C41) plays a major role in combat and peace time operation and thus all deployment are required with multitude of high tech equipment. Batteries provide the power that needs to run these equipments essentially.

·"BATTERIES FUNCTION SIMILAR TO SOUL IN A HUMAN BODY"

·It cannot be stressed enough that a battery is what makes difference between an unsuccessful or successful operation.

·Presently, batteries used in these equipment mostly use in Ni-Cd Battery cells which were invented way back in 1949. Due to number of inherent limitations and short-comings of Ni-Cd and development of much better and reliable batteries Like Li-Ion, Ni-Cd technology has gone Ni-Cd tec one obsolete and is being replaced by Li-Ion technology the world over. A number of Ni-Cd battery manufacturers have already stopped further production of these batteries and other are in process of doing so.

·Li-Ion Batteries were first invented in 1990 and competed nose to nose with Ni-Cd and Ni-MH Batteries to gain customer acceptance. Since 1990, lot of technological developments has taken place to improve the reliability and performance of Li-Ion Batteries. Today, Li-Ion Batteries are the fastest growing and most promising technology. All advanced armies are switching over to this technology due to a number of very important advantages over Ni-Cd.

Advantages of Li-Ion Batteries

Li-Ion Batteries have following advantages Over Ni-Cd Batteries:-

40% lighter than Ni-Cd Batteries thus ensuring lesser operator fatigue

Much more reliable than Ni-Cd Batteries

High capacity ensuring increased run time

Very negligible self-discharge rate

Minimum maintenance

No Memory effect

Does not require periodical deep discharge

Waste material is environmentally safe

Better life cycle

High performance in cold weather

Greater specific energy

Higher Energy Density

Rapid charge time

Easily chargeable from normal Battery Charges

Design and Development of DSL Military Batteries

In order to ensure that user has access to the latest, state-of-the art, mil spec compliance and cost effective Li-Ion smart batteries, our highly experienced team of Engineers, with utmost dedication has designed and development. Each DSL Battery is equipped with our exclusive and patent SMART circuit technology based on Microprocessor Control PCB

which ensures to enhance the Battery life and prevent its damage / explosion. Functions of smart control PCB.

- Intelligent high efficiency charge management. Recommended charging / discharging and techniques are automatically adopted during charging/discharging of DSL Battery.

- Prevents over-charging and over-discharging. Provides charge and discharge over-temperature protection.

- Prevents deep discharge of any cell during use of storage. Battery Protection Circuit Module (PCM) is incorporated.

- State-of-Charge (SOC) Display gives real time capacity of the DSL Battery which is displayed on an LCD most of the DSL Batteries.

Smart Lithium Ion Battery DSL-77/M (7.5 AH)

Replacement of Ni-Cd 13.2V, 4Ah of Radio set AN/9RC-77

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
- Over Charging and Over Discharging Protection Circuit
- Charge and Discharge Over Temperature Protection
- Battery Protection Circuit Module (PCM) incorporated
- State of Charge (SOC) Display
- Rugged Military Casing
- Smart Circuit Technology®
- High Energy Density

Typical Applications

- Military Communication Devices
- Radio Set AN/PRC-77

Charging System

a. The battery has an in-built Charge Management System which allows direct charging from 80~100 Watt DC Charger Adaptor of 18-24 VDC. Charging time will be 4-5 hrs

b. The in-built Charge Management System also allows direct charging of battery from 24 Volt Vehicle Battery or any 24V DC Source. The charging time remains to be 4~5 hrs

c. The Battery can be made to be optionally charged using the existing Ni-Cd Charger. However the charging time in this case will be 30~32 hrs because of low output current (400 mA) of existence charger

Design and Development of DSL Military Batteries

In order to ensure that user has access to the latest, state-of-the art, mil spec compliance and cost effective Li-Ion smart batteries, our highly experienced team of Engineers, with utmost dedication has designed and development-



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S #	Battery	Model	Ampere	Voltage	S #	Battery	Model	Ampere	Voltage
01	DSL	77/H	9.5 Ah	14.4 V	13	DSL	92 M	7.5 Ah	10.8 V
02	DSL	77/M	7.5 Ah	14.4 V	14	DSL	92 H	9.5 Ah	10.8 V
03	DSL	46/H	9.5 Ah	14.4 V	15	DSL	90/M	7.5 Ah	28 V mode
04	DSL	46/M	7.5 Ah	14.4 V	16	DSL	90/H	9.7 Ah	28 V mode
05	DSL	86/M	7.5 Ah	14.4 V	17	DSL	10M	10.4 Ah	10.8 V
06	DSL	86/H	9.5 Ah	14.4 V	18	DSL	10H	13.0 Ah	10.8 V
07	DSL	87M	5.2,2.2 Ah	24V +_50 V	19	DSL	535	3.5 Ah	7.4 V
08	DSL	58/S	5.6 Ah	10.8 V	20	DSL	4023	2.0 Ah & 2.5 Ah	7.4V
09	DSL	58/S2	6.8 Ah	10.8 V	21	DSL	17	2Ah	7.4 V
10	DSL	9888	2.2 Ah & 3.4 Ah	7.4 V	22	EV	24-100F	110 Ah	24V
11	DSL	4411	2.9 Ah & 3.3Ah	7.4 V	23	AGM/GEL LED ACID Batteries for UPS/ Energy Solar System (ESS)			
12	DSL	148	7Ah	10.8 V					

Each DSL Battery is equipped with our exclusive and patent SMART circuit technology based on Microprocessor Control PCB which ensures to enhance the Battery life and prevent its damage / explosion. Functions of smart control PCB:-

- Intelligent high efficiency charge management. Recommended charging / discharging and techniques are automatically adopted during charging/discharging of DSL Battery.
- Prevents over-charging and over-discharging. Provides charge and discharge over-temperature protection.
- Prevents deep discharge of any cell during use of storage. Battery Protection ircuit Module(PCM) is incorporated.
- State-of-Charge (SOC) Display gives real time capacity of the DSL Battery which is displayed on an LCD most of the DSL Batteries.

Smart Lithium Ion Battery DSL-77/M (7.5 AH) Replacement of Ni-Cd 13.2V, 4Ah of Radio set AN/9RC-77

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
- Over Charging and Over Discharging Protection Circuit
- Charge and Discharge Over Temperature Protection
- Battery Protection Circuit Module (PCM) incorporated
- State of Charge (SOC) Display
- Rugged Military Casing
- Smart Circuit Technology®
- High Energy Density

Typical Applications

- Military Communication Devices
- Radio Set AN/PRC-77

Charging System

- The battery has an in-built Charge Management System which allows direct charging from 80~100 Watt DC Charger Adaptor of 18-24 VDC. Charging time will be 4-5 hrs
- The in-built Charge Management System also allows direct charging of battery from 24 Volt Vehicle Battery or any 24V DC Source. The charging time remains to be 4~5 hrs
- The Battery can be made to be optionally charged using the existing Ni-Cd Charger. However the charging time in this case will be 30~32 hrs because of low output current (400 mA) of existence charger



Technical Specifications	
Part Number	16-77-001-1
DPP Part Number	DSL-77/H
Weight	1.4 Kg(Max)
Nominal Voltage	14.4VDC
Capacity	9.5 AH
Max Pulse Discharge	11 Amp 1.0 Sec
Energy	136Wh
Life Cycle	Min 350 Cycles (No memory effect as in Ni-Cd)
Operating Temperature	-20°C to +55°C
Storage Temperature	0°C to +35°C
Self-Discharge	Negligible
Exterior/Housing	As per Military Standard
Terminals/Connectors	Customized Connectors
State of Charge Indicator	5-Segment LCD Display
Qualification	Designed to meet Military Standards
Protection	End of Discharge Protection Over Discharge Current Protection Over Charge Current Protection Over Charging Protection



DSL BATTERIES

DELTA SMART LITHIUM BATTERIES FOR MILITARY EQUIPMENT



Replacement of Ni-Cd 13.2V of Radio set AN/9RC-77

Smart Lithium Ion Battery DSL-77/H (9.5 AH)

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
- Over Charging and Over Discharging Protection Circuit
- Charge and Discharge Over Temperature Protection
- Battery Protection Circuit Module (PCM) incorporated
- State of Charge (SOC) Display
- Rugged Military Casing
- Smart Circuit Technology®
- High Energy Density

Typical Applications

- Military Communication Devices
- Radio Set AN/PRC-77



Charging System

- The battery has an in-built Charge Management System which allows direct charging from 80~100 Watt DC Charger Adaptor of 18-24 VDC. Charging time will be 4-5 hrs
- The in-built Charge Management System also allows direct charging of battery from 24 Volt Vehicle Battery or any 24V DC Source. The charging time remains to be 4-5 hrs
- The Battery can be made to be optionally charged using the existing Ni-Cd Charger. However the charging time in this case will be 30-32 hrs because of low output current (400 mA) of existence charger

Technical Specifications	
Part Number	16-77-001-1
DPP Part Number	DSL-77/H
Weight	1.4 Kg(Max)
Nominal Voltage	14.4VDC
Capacity	9.5 AH
Max Pulse Discharge	11 Amp 1.0 Sec
Energy	136Wh
Life Cycle	Min 350 Cycles (No memory effect as in Ni-Cd)
Operating Temperature	-20°C to +55°C
Storage Temperature	0°C to +35°C
Self-Discharge	Negligible
Exterior/Housing	As per Military Standard
Terminals/Connectors	Customized Connectors
State of Charge Indicator	5-Segment LCD Display
Qualification	Designed to meet Military Standards
Protection	End of Discharge Protection Over Discharge Current Protection Over Charge Current Protection Over Charging Protection

Smart Lithium Ion Battery DSL-58/S

Replacement of BT-70785

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
- Over Charging and Over Discharging Protection Circuit
- Battery Protection Circuit Module (PCM) incorporated
- Rugged Military Casing
- Smart Circuit Technology®



- High Energy Density

Typical Applications

- Harris Hand Held 5800 Radio Set
- Charging System

- Compatible to all OEM Designated Charging System

Part Number	16-58-000-4
DPP Part Number	DSL-58/S
Weight	
Nominal Voltage	10.8 V
Capacity	5.6 AH
Max. Discharge	6.0 A
Max. Pulse Discharge	11.0A<1 s
Energy	80 Wh
Life Cycle	Min 350 Cycles
Operating Temperature	-20°C to +55°C
Storage Temperature	0°C to +35°C
Self-Discharge	Negligible
Exterior/Housing	Durable High Impact Plastic Housing
Terminals/Connectors	Twist Lock Contact
Qualification	Designed to Military Standard
Protection	Over Voltage Protection Under Voltage Protection Over Discharge Current Protection Over Charge Current Protection

Replacement of BT-70785 Smart Lithium Ion Battery

DSL-58/S2

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
 - Over Charging and Over-Discharging Protection Circuit
 - Battery Protection Circuit Module (PCM) incorporated
 - Rugged Military Casing
 - Smart Circuit Technology®
 - High Energy Density
- Typical Applications
- Harris Hand Held 5800 Radio Set



Charging System

- Compatible to all OEM Designated Charging system
- Compatible to all existence Harris Hand Held Battery Charger
- RF-5853 series or RF 5853-CH101

Technical Specifications	
Part Number	16-58-001-4
DPP Part Number	DSL-58/S2
Weight	< 500 grms
Dimension	LxWxH (70x40x85)mm
Color	Olive Drab (OD)
Surface Finish	Non-Reflective
Nominal Voltage	10.8V
Out Put Voltage	12~12.6 VDC (Fully Charged)
Capacity	9 VDC ± 0.5 VDC
BMS Cut off Voltage	7.0 AH (At cut off 9 Volt 5 AH)
Max. Discharge	6.0A
Max. Pulse Discharge	11.0A 1s
Energy	70 Wh



DSL BATTERIES

DELTA SMART LITHIUM BATTERIES FOR MILITARY EQUIPMENT



Life Cycle	Min 350 cycles
Memory	No Memory Effect
Operating Temperature	-20°C to +55°C
Storage Temperature	0°C to +35°C
Self-Discharge	Negligible
Exterior/Housing	Durable High Impact Plastic Housing
Terminals/Connector	Twist Lock Contact
Qualification	Designed to Military Standard
Protection	Over Charging Protection End of Discharge Protection Over Discharge Current Protection Over Charge Current Protection Ingress protection: IP 68

Lithium Ion Rechargeable Battery DSL-148

TECHNICAL DATASHEET

Features

- Communicates using a single wire Interface
- High Power, allows 8A discharge

Typical Applications

- AN/PRC-148
- TRC-9110

Charging System

All OEM Charger Compatible



Technical Specifications	
Part Number	20-148.001
Model No	DSL-148
Dimension	Length: 2.8 in (71 mm) Width: 1.8 in (41 mm) Height: 3.4 in (88 mm)
Weight	0.83 lbs (0.38 kg)
Nominal Voltage	10.8V
Maximum Voltage	12.0V
Energy	74 Wh
Capacity	7.0Ah (nominal)
Discharge Max	8A
Pulse Discharge	40A for 1m/s
Operating Temperature	-30°C to +60°C
Recommended Storage Temperature	-20°C to +40°
Connector	Flat Contacts (Bottom), 1/4- Turn (Top)
State of Charge Indicator	No
Disposable	Check local regulations (Contains 0% mercury or Cadmium)
Protection	Over Charging Protection End of Discharge Protection Over Discharge Current Protection Over Charge Current Protection

Smart Lithium Ion Rechargeable Battery DSL-78

Li-Ion Rechargeable 3.7V, 10.2 AH

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
- Over-charging and Over-Discharging Protection Circuit
- Battery Protection Circuit Module (PCM) Incorporated
- Rugged Military Casing
- Smart Circuit Technology®

Typical Applications

- Harris Hand Held 7800 Radio Set SPR

Charging System

- Compatible to all OEM Designated Charging System



Technical Specifications	
Part Number	16-58-000-5
DPP Part Number	DSL-78
Weight	200 g
Nominal Voltage	3.7 V
Capacity	6.8 AH
Max. Discharge	2A
Max. Pulse Discharge	4A<1 s
Energy	28 Wh
Life Cycle	Min 350 Cycles
Memory	No Memory Effect
Operating Temperature	-20°C to +55°C
Storage Temperature	0°C to +35°C
Fuel Gauge Display	LED Display
Self Discharge	Negligible
Exterior/Housing	Durable High Impact Plastic Housing
Terminals/Connector	Fisher Connectors Special
Qualification	Designed to Military Standard
Protection	Over Voltage Protection Under Voltage Protection Over Discharge Current Protection Over Charge Current Protection

Smart Lithium Ion Battery DSL-92

(Replacement BT-70492/BK)

TECHNICAL DATASHEET

Features

- Rating 81 Wh
- Absolute state of charger indicator

Typical Applications

- Thermal imager (Sphie and Mirabel)

Charging System

Compatible to all OEM Designated Charging System (BTC-70801, BTC-7084, BTC-70663, BTC-70000)



Technical Specifications	
Part Number	16-92-002-5 (6140-14-547-1723)
DPP Part Number	DSL-92
Dimensions	Length: 5.75 in (146.0 mm) Width: 2.50 in (63.6 mm) Height: 2.05 in (52.0 mm)
Weight	1.12 Lbs (0.5 Kg)
Nominal Voltage	10.8 V
Maximum Voltage	12.6 V





DSL BATTERIES

DELTA SMART LITHIUM BATTERIES FOR MILITARY EQUIPMENT

Energy	81 Wh
Life Cycle	Min 300 Cycle
Capacity	7.5 Ah
Discharge rate	4.5A Continuous
Operating Temperature	-24°C to +55°C
Recommended Storage Temperature	+0°C to +35°C (+32°F to +95°F)
Exterior/Housing	Durable High Impact Plastic Housing
Connector	Custom flat contacts on bottom (discharge)
State of Charge Indicator	5 Segment LCD with Constant Display
Qualification	Design to military Standard
Protection	Over Charging Protection Under Discharge Protection Over Discharge Current Protection Over Charge Current Protection

(Replacement BT-70492/BK) Smart Lithium Ion Battery DSL-92H

TECHNICAL DATASHEET

Features

- Rating 100 Wh
- Absolute state of charger indicator

Typical Applications

- Thermal imager (Sphie and Mirabel)

Charging System

Compatible to all OEM Designated Charging System

Additional Charging System (Optional)

The Battery has an Inbuilt charging capability with a direct 12.6V DC, 100W Charger provide with each battery



Technical Specifications	
Part Number	16-92-002-5
DPP Part Number	DSL-92H
Dimensions	Length: 5.75 in (146.0 mm) Width: 2.50 in (63.6 mm) Height: 2.05 in (52.0 mm)
Weight	1.12 Lbs (0.5 Kg)
Nominal Voltage	10.8 V
Maximum Voltage	12.6 V
Life Cycle	Min 350 Cycle
Energy	100 Wh
Capacity	10 Ah
Discharge	Pulse Discharge
Operating Temperature	-20°C to +55°C
Recommended Storage Temperature	+0°C to +35°C (+32°F to +95°F)
Exterior/Housing	Durable High Impact Plastic Housing
Connector	Custom fiat contacts on bottom (discharge)
State of Charge Indicator	Design to military Standard
Protection	Over Charging Protection Under Discharge Protection Over Discharge Current Protection Over Charge Current Protection

Smart Lithium Ion Battery DSL-90/M (BB-2590)

Replacement of BB-2590/U

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
- Compliance with SMBus data communication
- Over-charging and Over-discharging Protection Circuit
- Charge and Discharge Over-temperature Protection
- Battery Protection Circuit Module (PCM) Incorporated
- State-of- Charge (SOC) Display
- Rugged Military Casing
- Smart Circuit Technology®



·High Energy Density

Typical Applications

SINGGARS & ATCS (AN/PRC-104, 119, 117) FALCON (AN/PRC-138, 117, KY-57MXF430 (V), AN/PSC-5, M22, ROBOTS and UAV

Charging System

Compatible to all OEM Designated Charging System

Technical Specifications	
Part Number	16-90-000-7
DPP Part Number	DSL-90/H
Weight	3 Lbs
Color	Tan/Black
Chemistry	Li-ion
Nominal Voltage	28.8 V (2 x 14.4 Volt)
Capacity	7.5 Ah/28.8 V Mode, 15 Ah/14.4 Volt Mode
Max Discharge	36.0 A
Max Pulse Discharge	11.0A<1 S
Energy	216 Wh in 28 V Mode
Life Cycle	Min 350 Cycles
Memory	No Memory Effect
Operating Temperature	-20°C to +55°C
Storage Temperature	0°C to +35°C
Self-Discharge	Negligible
Exterior/Housing	Floating Type per US Army Dwg-SC-C179495
Qualification	Designed to Military Standard MIL-PRF-32383
Protection	Over Charging Protection End of Discharge Protection Over Discharge Current Protection Over Charge Current Protection

Replacement of BB-2590/U

Smart Lithium Ion Battery DSL-90/H

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
- Compliance with SMBus data communication
- Over-charging and Over-discharging Protection Circuit
- Charge and Discharge Over-temperature Protection
- Battery Protection Circuit Module (PCM) Incorporated
- State-of- Charge (SOC) Display
- Rugged Military Casing
- Smart Circuit Technology®
- High Energy Density

Typical Applications

SINGGARS & ATCS (AN/PRC-104, 119, 117) FALCON (AN/PRC-138, 117, KY-57MXF430 (V), AN/PSC-5, M22, ROBOTS and UAV

Charging System

Compatible to all OEM Designated Charging System



Technical Specifications	
Part Number	16-90-000-7
DPP Part Number	DSL-90/H
Weight	3 Lbs
Color	Tan/Black
Chemistry	Li-ion
Nominal Voltage	28.8 V (2 x 14.4 Volt)
Capacity	9.9 Ah/28.8 V Mode, 19.8 Ah/14.4 Volt Mode
Max Discharge	36.0 A
Max Pulse Discharge	11.0A<1 S
Energy	273 Wh in 28 V Mode
Life Cycle	Min 350 Cycles
Memory	No Memory Effect
Operating Temperature	-20°C to +55°C
Storage Temperature	0°C to +35°C





DSL BATTERIES

DELTA SMART LITHIUM BATTERIES FOR MILITARY EQUIPMENT

Smart Lithium Ion Battery DSL-86/M

Replacement of Ni-Cd 13.2V, 7Ah of Radio set PK/PRC-786

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
- Over, Charging/Discharging, Over Current Protection
- Charge and Discharge Over Temperature Protection
- Battery Protection Circuit Module (PCM) incorporated
- Rugged Military Casing
- State of Charge (SOC) Display
- Smart Circuit Technology®
- High Energy Density

Typical Applications

- Military Communication Devices
- AN/PRC-786 Radio Set



Charging System

- The battery has an in-built Charge Management System which allows direct charging from 80~100 Watt DC Charger Adaptor of 18-24 VDC. Charging time will be 4-5 hrs
- The in-built Charge Management System also allows direct charging of battery from 24 Volt Vehicle Battery or any 24V DC Source. The charging time remains to be 4-5 hrs
- The Battery can be made to be optionally charged using the existing Ni-Cd Charger. However the charging time in this case will be 30-32 hrs because of low output current (400 mA) of existence charger

Technical Specifications	
Part Number	16-786-000-1
DPP Part Number	DSL-86M
Weight	
Nominal Voltage	14.4 V
Capacity	7.5 AH
Max. Discharge	6.0 A
Max. Pulse Discharge	11.0A1 s
Energy	108 Wh
Life Cycle	Min 350 Cycles
Memory	No Memory Effect
Operating Temperature	-20°C to +55°C
Storage Temperature	0°C to +35°C
Self-Discharge	Negligible
Exterior/Housing	Metal Box
Terminals/Connector	Customized Connector
State-of-Charge Indicator	5-Segment LCD Display
Qualification	Designed to meet Military Standards
Protection	Over Charging Protection End of Discharge Protection Over Discharge Current Protection Over Charge Current Protection

Replacement of Ni-Cd 13.2V, 7Ah of Radio set PK/PRC-786

Smart Lithium Ion Battery DSL-86/H (BB-2590)

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
 - Over, Charging/Discharging, Over Current Protection
 - Charge and Discharge Over Temperature Protection
 - Battery Protection Circuit Module (PCM) incorporated
 - Rugged Military Casing
 - Smart Circuit Technology®
 - State of Charge (SOC) Display
 - High Energy Density
- Typical Applications
- Military Communication Devices
 - AN/PRC-786 Radio Set



Charging System

- The battery has an in-built Charge Management System which allows direct charging from 80~100 Watt DC Charger Adaptor of 18-24 VDC. Charging time will be 4-5 hrs
- The in-built Charge Management System also allows direct charging of battery from 24 Volt Vehicle Battery or any 24V DC Source. The charging time remains to be 4-5 hrs
- The Battery can be made to be optionally charged using the existing Ni-Cd Charger. However, the charging time in this case will be 30~32 hrs because of low output current (400 mA) of existence charger

Technical Specifications	
Part Number	16-786-001-3
DPP Part Number	DSL-86H
Nominal Voltage	14.4 V
Capacity	13 AH
Max. Discharge	6.0 A
Max. Pulse Discharge	11.0A <1 s
Energy	180 Wh
Life Cycle	Min 350 cycles
Memory	No Memory Effect
Operating Temperature	-20°C to +55°C
Storage Temperature	0°C to +35°C
Self-Discharge	Negligible
Exterior/Housing	Metal Box
Terminals/Connector	Customized Connector
State-of-Charge Indicator	5 Segment LCD Display
Qualification	Designed to meet Military Standards
Protection	Over Voltage Protection Under Voltage Protection Over Discharge Current Protection Over Charge Current Protection

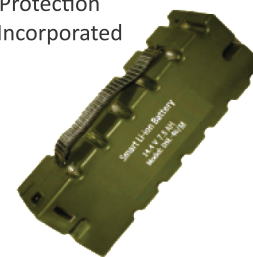
Smart Lithium Ion Battery DSL-46/M

Replacement of Ni-Cd 14.4V, 4Ah 88-4600

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
 - Over-charging and Over-discharging Protection Circuit
 - Charge and Discharge Over-temperature Protection
 - Battery Protection Circuit Module (PCM) Incorporated
 - Rugged Military Casing
 - Smart Circuit Technology®
 - State-of-Charge Display
 - High Energy Density
- Typical Applications
- Military communication devices
 - AN/PRC Radio Sat 4820



Charging System

- The battery has an in-built Charge Management System which allows direct charging from 80-100 Watt DC Charger Adaptor of 18-24 VDC. Charging time will be 4-5 hrs
- The in-built Charge Management System also allows direct charging of battery from 24 Volt Vehicle Battery or any 24V DC Source. The charging time remains to be 4-5 hrs
- The Battery can be made to be optionally charged using the existing Ni-Cd Charger. However, the charging time in this case will be 30-32 hrs because of low output current (400 mA) of existence charger



DSL BATTERIES

DELTA SMART LITHIUM BATTERIES FOR MILITARY EQUIPMENT



Technical Specifications	
Part Number	15-46-000-2
DPP Part Number	DBL-46M
Nominal Voltage	14.4 V
Capacity Max. Discharge	7.5 AH 6.0 A
Mex. Pulse Discharge	11.0ATs
Energy	108 VWh
Life Cycle	Min 350 Cycles
Operating Temperature	-20°C to 55°C
Memory	No Memory Effect
Storage Temperature	0°C to 35°C
Self-Discharge	Negligible
Exterior/Housing	Durable High Impact Plastic Housing
Terminals/Connector	Customized Connector
State-of-Charge Indicator	5-Segment LCD Display
Qualification	Designed in Military Standard
Protection	Over Voltage Protection Under Voltage Protection Over Discharge Current Protection Over Charge Current Protection

Replacement of Ni-Cd 14.4V, 4Ah BB-4600

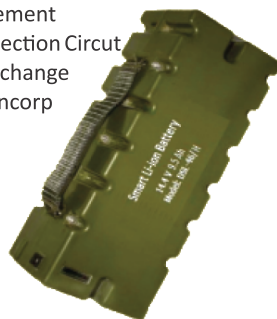
Smart Lithium Ion Battery

DSL-46/H, 9.5Ah

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
 - Over-charging and Over-Discharging Protection Circuit
 - Change and Dictio Over Change and Dechange
 - Battery Protection Corail Module (PCM) Incorp
 - Rugged Military Casing
 - Smart Circuit Technology®
 - State-of-Charge Display
 - High Energy Density
- Typical Applications
- Military communication devices
 - AN/PRC Radio Sat 4020



Charging System

- The battery has an in-built Charge Management System which 18-24 VDC time will be 4-5 allows direct charging from 80~100 Watt DC Charger Adaptor of
- The in-built Charge Management System also allows direct charging of battery from 24 from Volt Battery or any 24V DC Source. charging time remains to be 4~5 hrs
- The Battery can be made to be optionally charged using the existing Ni-Cd Charger. However the charging time in this case will be 30-32 hrs because of low output current (400 mA) of existence charger

Technical Datasheet	
Part Number	16-46-000-2
DPP Part Number	DSL-46H
Nominal Voltage	14.4 V
Capacity	9.5 AH
Max. Discharge	6.0 A
Max. Pulse Discharge	11.0A 1 s
Energy	136 Wh
Life Cycle	Min 350 Cycles
Memory	No Memory Effect
Operating Temperature	-20°C to 55°C
Storage Temperature	0°C to 35°C
Self-Discharge	Negligible

Exterior/Housing	Plastic
Terminals/Connector	Customized Connector
State-of-Charge Indicator	5-Segment LCD Display
Qualification	Designed to Military Standard
Protection	Over Voltage Protection End of Discharge Protection Over Discharge Current Protection Over Charge Current Protection
Under Temperature Current Protection	Zero and below temperature of the battery, BMS will stop the continuous charging and start pulses charging till battery pack 5°C Temperature to avoid the damaging of cell pack Protection

Smart Lithium Ion Battery DSL-10M

Replacement of Ni-Cd Peg belt IC2

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
 - Over-charging and Over-discharging Protection Circuit
 - Battery Protection Circuit Module (PCM) Incorporated
 - Smart Circuit Technology®
 - State-of-Charge Display
 - High Energy Density
- Typical Applications
- Thermal Imager Sophie (Belt) Auxiliary Source



Charging System

- Recommended charging Rate is 5 A to Max Voltage 12.6 V in a temp range 5°C to 45°C
- Can use any commercially available charger having output of 18-24VDC, 100W

Technical Specifications	
Part Number	16-AXS-000-5
DPP Part Number	DSL-10M
Nominal Voltage	10.8V
Capacity	10.4 AH
Max. Discharge	8.0 A
Max Pulse Discharge	11.0A <1 S
Energy	108 Wh
Life Cycle	Min 350 cycles
Memory	No Memory Effect
Operating Temperature	-20°C to +55°C
Storage Temperature	0°C to +35°C
Self-Discharge	Negligible
Exterior/Housing	Plastic
Terminals/Connector	Customized 2 pin plug
State-of-Charge Indicator	5-segment LCD Display
Qualification	Designed to military Standard
Protection	Over Charging Protection End of Discharge Protection Over Discharge Current Protection Over Charge Current Protection





DSL BATTERIES

DELTA SMART LITHIUM BATTERIES FOR MILITARY EQUIPMENT

Smart Lithium Ion Battery

Replacement of Ni-Cd Peg belt IC2

DSL-10/H

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
- Over-charging and Over-discharging Protection Circuit
- Battery Protection Circuit Module (PCM) Incorporated
- Smart Circuit Technology®
- State-of- Charge Display
- High Energy Density

Typical Applications

- Thermal Imager Sophie (Belt) Auxiliary Source

Charging System

a. The battery Module has an in-built Charge Management System which allows direct charging from 80-100 Watt DC Charger Adaptor of 18-24 VDC. Charging time will be 4~5 hrs

b. The in-built Charge Management System also allows direct charging of battery from 24 Volt Vehicle Battery or any 24V DC Source. The charging time remains to be 4~5 hrs



Technical Specifications	
Part Number	21-4411-00001
Model No	DSL-4411
Dimension	L:30 x W: 29.5 x H: 15 (mm)
Nominal Voltage	7.4V
Maximum Voltage	8.4V
Energy	14 Wh
Capacity	1900 mAh (nominal)
Discharge	Pulse Discharge
Operating Temperature	-10°C to +55°C
Recommended Storage Temperature	-20°C to +60°C
Disposable	Check local regulations (Contains 0% mercury or Gadmiun)
Protection	Over Charging Protection End of Discharge Protection Over Discharge Current Protection

Batteries for Hand Held Radio Motorola & Kenwood

Hand Held Motorola Radio Set Battery



Hand Held Motorola Radio Set Battery



Hand Held Kenwood Radio Set Battery



Technical Specifications	
Part Number	16-AXS-001-5
DPP Part Number	DPP-10/H
Nominal Voltage	10.8V
Capacity	13.0 AH
Max. Discharge	8.0 A
Max.. Pulse Discharge	11.0A1 S
Energy	140 Wh
Life Cycle	Min 350 Cycles
Memory	No Memory Effect
Operating Temperature	-20°C to +55°C
Storage Temperature	0°C to +35°C
Self-Discharge	Negligible
Exterior/Hosing	Plastic
Terminals/Connector	Customized 2 pin plug
State-of-charge indicator	5-segment LCD Display
Qualification	Designed to Military Standard
Protection	Over Charging Protection End of Discharge Protection Over Discharge Current Protection Over Charge Current Protection
Under Temperature Current Protection	Zero and below temperature of the battery, BMS will stop the pack 5°C Temperature to avoid the damaging of cell pack Protection continuous charging and start pulses charging till battery

Lithium Ion Rechargeable Battery DSL-4411 (BB-030)

TECHNICAL DATASHEET

Features

- Communicates using a single wire interface

Typical Applications

- Radio Set LMR ASELAN

Charging System

All OEM Charger Compatible

a. The battery Module has an in-built Charge Management System which allows direct charging from 80-100 Watt DC Charger Adaptor of 18-24 VDC. Charging time will be 4~5 hrs

b. The in-built Charge Management System also allows direct charging of battery from 24 Volt Vehicle Battery or any 24V DC Source. The charging time remains to be 4~5 hrs



DSL BATTERIES

DELTA SMART LITHIUM BATTERIES FOR MILITARY EQUIPMENT



Lithium Iron Phosphate Rechargeable

12.8Volt, 8Ah Model: DSL-7

Replacement of 12V, 7Ah SLA Battery

TECHNICAL DATASHEET

Features

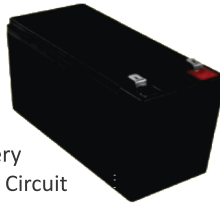
- 5 times long life as compare to LEAD Acid Battery
- Over-charging and Over-discharging Protection Circuit
- Battery Protection Circuit Module (PCM) Incorporated
- Smart Circuit Technology®

Typical Applications

- OAS Equipment (UPS)

Charging System

- Compatible to Existence Charging System



Technical Specifications	
Part Number	23-7-000-1
DPP Part Number	DSL-7
Dimension	151 x 64 x 94 ±2mm
Nominal Voltage	12.8V
Capacity	8Ah
Max. Discharge	10 Amp
Max. Pulse Discharge	12. Amp <1 s
Energy	100 Wh
Life Cycle	Min Cycles 2000 80% DOD
Memory	No Memory Effect
Operating Temperature	-20°C to +55°C
Storage Temperature	0°C to +35°C
Exterior/Housing	Durable High Impact Plastic Housing
Terminals/Connector	Flat Thimble
Protection	Over Voltage Protection Under Voltage Protection Over Discharge Protection Over Charge Protection

Replacement of Ni-Cd Peg belt IC2

Lithium Ferris Phosphate Rechargeable

12.8Volt, 9Ah Model: DSL-9

TECHNICAL DATASHEET

Features

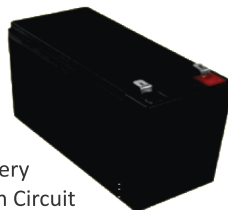
- 5 times long life as compare to LEAD Acid Battery
- Over-charging and Over-discharging Protection Circuit
- Battery Protection Circuit Module (PCM) Incorporated
- Smart Circuit Technology®

Typical Applications

- OAS Equipment (UPS)

Charging System

- Compatible to Existence Charging System



Technical Specifications	
Part Number	23-7-000-1
DPP Part Number	DSL-9
Dimension	151 x 64 x 94 ±2mm
Nominal Voltage	12.8V
Capacity	9Ah
Max. Discharge	10 Amp
Max. Pulse Discharge	12. Amp <1 s
Energy	110 Wh

Life Cycle	Min Cycles 2000 80% DOD
Memory	No Memory Effect
Operating Temperature	-20°C to +55°C
Storage Temperature	0°C to +35°C
Exterior/Housing	Durable High Impact Plastic Housing
Terminals/Connector	Flat Thimble
Protection	Over Voltage Protection Under Voltage Protection Over Discharge Protection Over Charge Protection

Rechargeable Smart Lithium Ion Battery DSL-87M

(Replacement BB-287) DSL-87M

TECHNICAL DATASHEET

Features

- Intelligent High Efficiency Charge Management
- Over Charging and Over Discharging Protection Circuit
- Charge and Discharge Over Temperature Protection
- Battery Protection Circuit Module (PCM) incorporated
- Rugged Military Casing
- Smart Circuit Technology®

Typical Applications

- Tow Weapon System

Charging System

- In built charging system & need 220V ± 5% AC Volt Input



Technical Specifications	
Part Number	20-87-001-1
DPP Part Number	DSL-87M
Dimensions	Length: 15.5 in (394 mm) Width: 4.8 in (122mm) Height: 8.5 in (216 mm)
Weight	23.0 Lbs (10.4 Kg)
Nominal Voltage	Section 1 (25.2 V), Section 2 & 3 (50.4 V) each
Cut off Voltage	Section 1 (17.5±1V), Section 2 & 3 (35 ± 2 V) each
Energy	Section 1 (131 Wh), Section 2 & 3 (110 Wh) each
Capacity	Section 1 (5.2Ah), Section 2 & 3 (2.2 Ah) each
Life Cycle	Min 350 Cycle
Discharge	2.6 25.2 Volt, 1.1A ± 50 Volts
Pulse Discharge	Not Applicable
Operating Temperature	-24°C to +55°C
Storage Temperature	-30°C to +60°C
Exterior/Housing	Durable High Impact metal case
Connector	8 Pin round connector
Qualification	Design to military Standard
Protection	Over Charging Protection Under Discharge Protection Over Discharge Current Protection Over Charge Current Protection





DSL BATTERIES

DELTA SMART LITHIUM BATTERIES FOR MILITARY EQUIPMENT

Lithium Polymer Battery DSL-535/CP

TECHNICAL DATASHEET

Features

- High Charge Density
- Light Weight
- Rugged Military Casing
- Cell charge balance
- DSL535-Battery NOTE

Typical Applications

- Designed for Military use
- Thermal Imager IR-535

Charging System

a.Dedicated charger TI IR 535



Technical Specifications	
Part Number	16-535-000-1
DPP Part Number	DPP-535
Nominal Voltage	7.4V
Nominal Capacity	3500 mAh
Max Capacity	3600 mAh
Discharge Current	2 Amp
Peak Discharge Current	2.5 Amp
Energy	25 Wh
Life Cycle	Min 350 Cycles (No Memory Effect as Ni-Cd)
Operating Temperature	-20°C to +55°C
Storage Temperature	0°C to +35°C
Self Discharge	Negligible
Exterior/Housing	Plastic Casing
Terminals / Connector	Customized Connector
Protection	Over Charging Protection End of Discharge Protection Over Discharge Current Protection Over Charge Current Protection

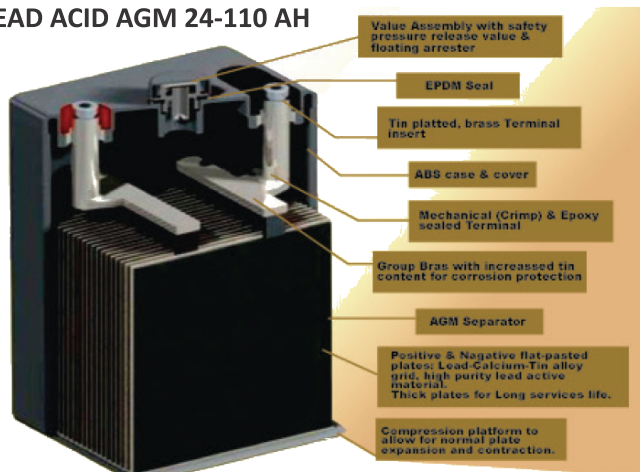
MAX UNION

SEALED LEAD ACID (AGM) BATTERY

MODEL: EV 24-100F



MAINTENANCE FREE SEALED LEAD ACID AGM 24-110 AH



MODEL: EV 24-100F

TECHNICAL DATA SHEET

Table

MAX UNION

SEALED LEAD ACID (AGM) BATTERY

MODEL: EV 24-100F

Haze Battery Co

Terminals: -

·Our standard terminal for all batteries is the "insert" Style constructed from tin plates brass for excellent mechanical, and corrosion resistance properties.

·Insert design allow for excellent adhesion and mechanical strength between the insert and the lead terminal stem.

·Terminal threads are M8 size, terminal diameter is 14mm

Innovation Features: -

·Completely maintenance free, sealed construction eliminates the need for watering.

·Increased durability and deep cycle ability for heavy load applications.

·Full Tank formed plates.

·Analytical Grade Electrolyte.

·Spill Proof/Lead Proof.

·Valve Regulated - Max Internal Pressure 4 Psi.

·Low Self discharge

·ABS (pc) case and cover

·Multi-position usage.

·FAA and IATA approved as non-hazardous.

·Long design life - up to 5 years

Specification:

Normal Voltage	24 Volts
Grid alloy	Calcium/Tin lead alloy
Plates	Flat pasted
Separator	Absorbent Glass Mat (AGM)
Active Material	Very high purity Lead
Charge Voltage	Flat 2.25-2.30 VPC @ 20°C
Electrolyte	Sulphuric acid-Analytical grade purity
Venting Valve	EPDM Rubber - 1.5 to 4 psi release pressure
Frame Arrester	Built-in flame arrester in valve assembly
Terminal	Insert type - Epoxy sealed by extended mechanical paths M8 Thread





TECHNICAL DATA SHEET Capacity 110 AH at 20 hrs Discharge Rate

Discharge Capacity in Ah

Temperature in 20-25o C

End of discharge voltage per cell	16	20	25	30	36	40	46	1hr	90	2hr	3hr	4hr	5hr	6hr	7hr	8hr	10hr	12hr	20hr	24hr
1.80 V	40.6	48.3	48.8	62.4	64.3	68.0	67.6	61.6	68.2	72.8	80.2	86.0	90.8	84.4	86.8	97.7	101	104	110	112
1.76 V	43.4	48.7	61.8	68.2	68.1	64.8	68.3	63.4	74.6	74.6	81.8	87.4	92.3	88.0	88.8	101	103	106	112	114
1.70 V	46.1	49.9	62.9	66.4	67.2	68.7	60.1	64.3	76.2	76.2	82.6	88.2	93.1	88.8	100	102	104	108	113	116
1.86 V	46.3	60.8	63.6	68.2	67.9	69.6	60.8	64.9	76.8	76.8	83.2	88.9	93.8	87.8	100	102	106	107	114	118
1.80 V	47.4	61.8	64.3	68.8	68.4	60.0	61.3	66.6	78.6	78.6	83.7	88.4	-	-	-	-	-	-	0	-

Discharge Capacity in A

Temperature in 20-25 oC

End of discharge voltage per cell	16	20	26	30	36	40	46	1hr	90	2hr	3hr	4hr	5hr	6hr	7hr	8hr	10hr	12hr	20hr	24hr
1.80 V	162	139	119	105	92.7	84.0	76.7	61.6	46.4	36.4	28.7	21.6	18.2	16.7	13.8	10.1	10.1	8.63	110	112
1.76 V	173	146	124	108	86.7	88.7	79.0	63.4	46.7	37.3	27.2	21.8	18.6	18.0	14.1	10.3	10.3	8.78	112	114
1.70 V	180	160	127	111	87.6	88.1	80.1	64.3	47.1	37.8	27.6	22.1	18.8	18.2	14.3	10.4	10.4	8.87	113	116
1.86 V	186	163	129	112	88.9	88.2	81.1	64.9	47.8	38.0	27.7	22.2	18.8	18.3	14.3	10.6	10.6	8.94	114	118

Battery Dimension & Weight

Dimension (mm & approx. weight kg)			Terminal Layout
Length	Width	Height	
630mm	240mm	236mm	M8

Capacity Temperature Correction Factor To be applied to date at 25Oc

Discharge time	-30oC	-20oC	-10oC	0oC	6oC	10oC	16oC	20-26oC	30oC	36oC	40oC	50oC
6 min to 69 mins	24%	36%	46%	68%	77%	83%	82%	100%	106%	107%	108%	110%
1 hr to 100 hrs	28%	41%	68%	73%	79%	88%	84%	100%	104%	106%	107%	108%





MAX UNION SEALED LEAD ACID (AGM) BATTERY MODEL: EV 24-100F

Terminals:

Our standard terminal for all batteries is the "insert" Style constructed from tin plated brass for excellent mechanical, and corrosion resistance properties.

Insert design allow for excellent adhesion and mechanical strength between the insert and the lead terminal stem.

Terminal threads are M8 size, terminal diameter is 14mm

Innovation Features:

Completely maintenance free, sealed construction eliminates the need for watering.

Increased durability and deep cycle ability for heavy load applications.

Full Tank formed plates.

Analytical Grade Electrolyte.

Spill Proof / Lead Proof.

Valve Regulated - Max Internal Pressure 4 Psi.

Low Self discharge

ABS (pc) case and cover

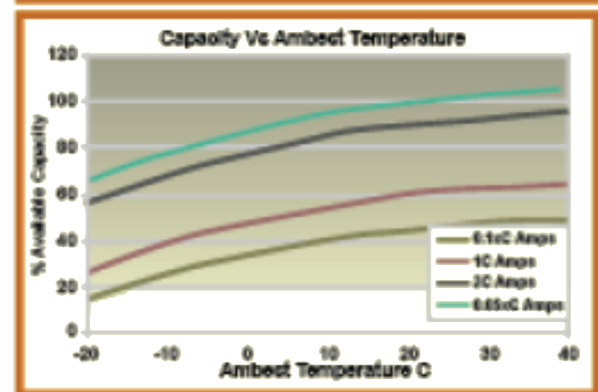
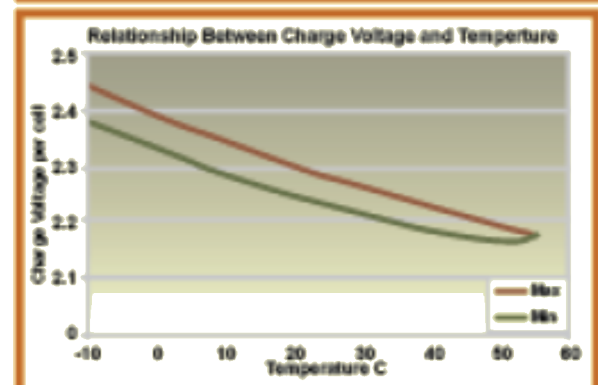
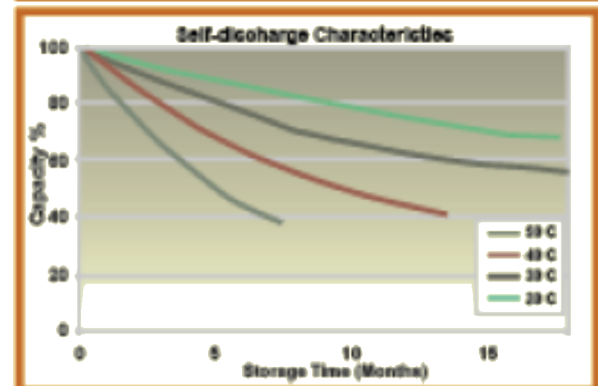
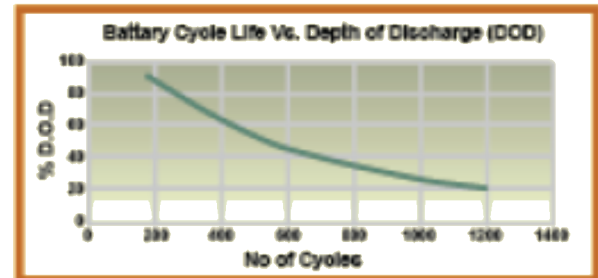
Multi-position usage.

FAA and IATA approved as non-hazardous.

Long design life - up to 5 years

Specifications:

Normal Voltage	24 Volts
Grid alloy	Calcium / Tin lead alloy
Plates	Flat pasted
Separator	Absorbent Glass Mat (AGM)
Active Material	Very high purity Lead
Charge Voltage	Flat 2.25-2.30 VPC @ 20°C
Electrolyte	Sulphuric acid-Analytical grade purity
Venting Valve	EPDM Rubber - 1.5 to 4 psi release pressure
Frame Arreste	Built-in flame arrester in valve assembly
Terminal	Insert type - Epoxy sealed by extended mechanical paths M8 Thread



DSL BATTERIES

DELTA SMART LITHIUM BATTERIES FOR MILITARY EQUIPMENT



AGM / GEL LEAD ACID Batteries for UPS / Energy Solar and Military Communications Devices / System



Battery Model	Volt	Capacity / C20 Hrs	Dimension & Weight				Terminal
			Length	Width	Height	Weight in kg	
DJ6-7	6	7	151	34	94	1.12	T1/T2
DJ12 -5	12	5	90	70	101	1.5	T1/T2
DJ12-6	12	6	90	70	101	1.75	T1/T2
DJ12 -7	12	7	151	65	94	1.9	T1/T2
DJ12-7.2	12	7.2	151	65	94	2.6	T1/T2
DJ12 -7.5	12	7.5	151	65	94	2.3	T1/T2
DJ12-8	12	8	151	65	94	2.35	T1/T2/T5
DJ12 -9	12	9	151	65	94	2.4	T1/T2
DJ12-12	12	12	151	98	95	3.5	T1/T2
DJ12 -17	12	17	181	77	167	5.1	T3/T8
DJ12-18	12	18	181	77	167	5.3	T3/T8
DJ12 -26	12	26	165	176	127	7.9	T3/T8
DJ12-40	12	40	197	165	170	12.5	T4/T9
DJ12 -70	12	70	260	168	211	21.5	T5/T9
DJ12-100	12	100	330	171	214	27.5	T5/T9/T11
DJ12 -100	12	100	330	171	214	30	T5/T9/T11
DJ12-100FT	12	100	506	110	224	30	T9
DJ12-150FTG	12	150	551	110	287	43.0	T12
DJ12-200	12	200	560	126	280	57	F11

