

IMPRES™

Smart Energy Systems





Motorola's state-of-the-art IMPRES technology allows communication between the battery and the charger. The result – a radio system that's charged and ready to go whenever you need it.

Unique Battery Charging and Reconditioning Solution

Automated battery maintenance

Manual tracking and recording of battery use are a thing of the past. IMPRES uses a unique communications protocol to facilitate adaptive reconditioning – the charger evaluates the details of the battery's usage pattern to determine the optimal reconditioning interval. This automated process works to diminish memory effect and optimize the cycle life of the battery and maximize talk time.

Chargers that communicate

IMPRES multi-unit chargers are available with a two-line display module. Your customers have access to valuable information such as:

- Battery capacity (in mAh and percent of minimum rated capacity) and voltage while charging and at completion of charge
 - Time remaining to complete rapid charging (NiCd and NiMH only)
 - Current battery charge status
 - The battery's unique serial number, part number and chemistry
- Knowledge is power. Now you can make informed decisions on battery replacement and asset management.

Environmentally Friendly

IMPRES chargers have technology that avoids overcharging and our single-unit IMPRES chargers with external power supplies consume 40 percent less energy in standby mode than required by the U.S. Energy Independence and Security Act of 2007.

Long-term safe charging

IMPRES batteries may be left in IMPRES chargers for extended periods without heat damage due to the charger and will be monitored so that they are charged and ready to go whenever they are needed.

Support for mixed battery inventories

IMPRES chargers are compatible with non-IMPRES Motorola batteries, making the migration to all IMPRES much easier. However, automatic reconditioning and all other IMPRES features are realized only when using Motorola IMPRES batteries and chargers.

Extended warranty

When used exclusively with IMPRES chargers, IMPRES batteries carry extended capacity warranties that continue six months longer than Motorola Premium battery warranties.

Proven Tough

IMPRES batteries are subjected to the same rigorous testing and held to the same high standards as all Motorola Premium batteries. Actual results of Drop, Vibration and ESD (Electrostatic Discharge) tests prove that Motorola batteries outperform the competition.

Facts:

1. IMPRES products are smarter because they “talk” to each other

Motorola’s industry-exclusive IMPRES technology allows communication between the charger and the battery, which enables automated battery reconditioning, display of critical charging information and other key benefits. IMPRES batteries have a memory chip that stores all usage information, which can then be accessed and evaluated by any IMPRES charger. IMPRES chargers have built-in reconditioning capability that is automatically utilized any time an IMPRES battery requiring maintenance is inserted.

2. IMPRES chargers perform adaptive reconditioning

Before the availability of IMPRES chargers with automatic, adaptive reconditioning, battery maintenance technicians had to guess at the correct reconditioning intervals. Reconditioning too often wasted battery cycles; not reconditioning often enough resulted in diminished battery performance. IMPRES has changed all that. IMPRES chargers evaluate the actual usage pattern of every battery to establish the optimal reconditioning interval.

3. IMPRES offers long-term safe charging

Most conventional chargers transition to a maintenance charge mode at the completion of a charge cycle. Maintenance charge is constant power applied to a battery in an effort to keep it charged over time. This results in long-term heating that can damage a battery, resulting in lost capacity. IMPRES chargers automatically turn off at the end of a charge cycle yet continue to electronically monitor IMPRES batteries every 5 minutes to determine when more energy should be applied to the battery. This process assures that the battery maintains a very high state of charge without sustaining heat damage due to the charger.

4. Fully charged doesn’t mean full battery capacity

Most conventional chargers have an LED to indicate charge status. Red indicates charging and green indicates charge complete. But what does charge complete really mean? The charger is saying that it did the best it could given the condition of the battery and it is done. However, the resulting battery capacity could be far less than the original stated capacity for an old or defective battery, yet the user has no way of knowing that with only an LED indication. IMPRES chargers with displays provide the actual charge capacity of the battery, so you’ll know exactly how much usage you will get from each battery.

5. IMPRES charger LED indicators give additional information

IMPRES chargers have additional LED indication capability to supply you with even more information during a charge cycle. The alternating red/green LED indicates batteries have fallen below a certain capacity threshold (typically less than 60% of rated minimum capacity). An IMPRES battery exhibiting a red/green indication is not defective – it has simply reached a capacity level that may limit its usage.

Myth:

Competitive batteries are IMPRES compatible

Competitive battery manufacturers often claim to be “IMPRES compatible.” While it may be true that some competitive batteries can be charged in IMPRES chargers, there are still significant limitations and concerns. The communication between an IMPRES battery and IMPRES charger that enables automatic reconditioning, display of IMPRES data on display chargers and other IMPRES features is a Motorola exclusive technology and will only occur with the combination of IMPRES batteries and IMPRES chargers. Motorola does not test the charge compatibility or safety of competitive batteries in IMPRES chargers.



APX™ Quick Reference Guide

IMPRES Battery and Charger Guide by Radio Series

APX Batteries

Battery Part Number	Chemistry	Capacity†	Special Features
NNTN7037A	NiMH	2100mAh	Ruggedized
NNTN7573A	NiMH	2100mAh	Ruggedized PLUS
NNTN7036A	NiMH	2000mAh	Intrinsically safe*, Ruggedized
NNTN7035A	NiMH	2000mAh	Intrinsically safe*, Ruggedized PLUS
NNTN7038A	Li-ion	2900mAh	Ruggedized
NNTN7034A	Li-ion	4200mAh	Ruggedized
NNTN7033A	Li-ion	4100mAh	Intrinsically safe*, Ruggedized



The batteries listed above are designed for use with the following chargers:

NNTN7080A – IMPRES Single-Unit Charger

NNTN7586A – IMPRES Dual-Unit Charger

NNTN7593A – IMPRES Dual-Unit Charger with Display Modules

NNTN7065A – IMPRES Multi-Unit Charger

NNTN7073A – IMPRES Multi-Unit Charger with Display Modules

NNTN7624A – IMPRES Compatible Vehicular Charger

RLN5382A – Individual IMPRES Display Module for NNTN7065A

APX Inserts for XTS Chargers

These inserts allow APX batteries to be charged in the following chargers:

NNTN7687A – Insert for WPLN4111AR XTS Single-Unit Charger

NNTN7686A – Insert for WPLN4108BR/4130A XTS Multi-Unit Charger



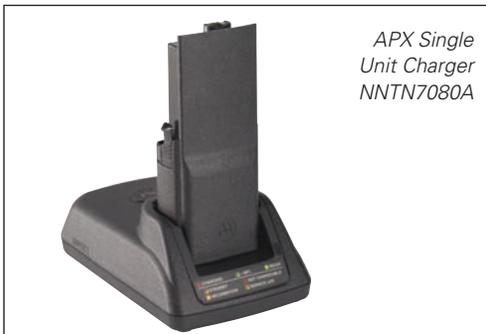
Next Generation IMPRES Dual-Unit Chargers

The new APX IMPRES Dual-Unit Chargers provide public safety personnel the convenience of a spare battery that is charged and ready to be used at all times. This dual pocket design allows simultaneous charging of primary and secondary batteries. This Next Generation IMPRES charger provides advanced features, including the ability to turn on/off reconditioning, reduced reconditioning time and improved energy efficiency.

IMPRES Compatible Vehicular Charger

The APX IMPRES compatible vehicular charger has full IMPRES charger to battery communication capability. This ensures continuity of IMPRES battery charge data logging in a vehicular environment, so the IMPRES battery will receive adaptive, automatic reconditioning and will qualify for the 6-month capacity warranty extension.

NOTE: The IMPRES compatible vehicular charger will not recondition IMPRES batteries while in a vehicle, but it will provide an indication when reconditioning is required in an IMPRES desktop charger.



Introducing Ruggedized PLUS Batteries

Motorola manufactures batteries that meet industry standards (IPx7) for submersibility. These batteries can be submerged in 1 meter of fresh water for 30 minutes, where the battery and water are at the same temperature. Batteries that meet this standard Motorola refers to as Ruggedized.

Motorola now makes batteries to an even more stringent military standard for customers who require a higher level of submersibility protection – MIL-STD-810E Method 512.3 Immersion. Batteries that meet this standard are referred to as Ruggedized PLUS and meet the incremental submersibility requirements below:

- Product is subjected to a temperature shock from -40°C to +85°C, six times.
- Product is dropped on all six surfaces from 4 feet onto concrete.
- Product is heated to 50°C and then submerged in 1 meter of fresh water at 23°C for 2 hours.

The 27°C temperature difference between the battery and the water effectively increases the submersion depth to approximately 2 meters.



† Indicates minimum rated battery capacity.

* When used with an FM approved intrinsically safe radio unit.

ASTRO® Quick Reference Guide

IMPRES Battery and Charger Guide by Radio Series

For ASTRO Digital XTS® 3000, XTS 3500 and XTS 5000

Battery Part Number	Chemistry	Capacity†	Special Features
HNN9031B	NiCd	1525mAh	
HNN9032B	NiCd	1525mAh	Intrinsically Safe*
NNTN4435B	NiMH	1800mAh	
NNTN4436B	NiMH	1700mAh	Intrinsically Safe*
NNTN4437B	NiMH	1700mAh	Intrinsically Safe*, Ruggedized PLUS
PMNN4093A	NiMH	3000mAh	
NTN9862C	Li-ion	2750mAh	
NNTN6034A	Li-ion	4150mAh	
NNTN7453A	Li-ion	3950mAh	Intrinsically Safe*, Ruggedized PLUS

For ASTRO Digital XTS 1500, XTS 2500, MT 1500 and PR1500

Battery Part Number	Chemistry	Capacity†	Special Features
NTN9858C	NiMH	2100mAh	
NTN9857C	NiMH	2000mAh	Intrinsically Safe*
NNTN6263A	NiMH	2000mAh	Intrinsically Safe*, Ruggedized
NNTN7554A	Li-ion	2050mAh	
NNTN7335A	Li-ion	2700mAh	Ruggedized

The batteries listed above are designed for use with the following chargers:

WPLN4111AR – IMPRES Single-Unit Charger

WPLN4108BR – IMPRES Multi-Unit Charger

WPLN4130A – IMPRES Multi-Unit Charger with Display Modules

WPLN4208B – IMPRES Compatible Vehicular Charger

RLN5382A – Individual IMPRES Display Module for WPLN4108BR (Software Version 1.3 or later)

IMPRES Compatible Vehicular Charger

The IMPRES compatible vehicular charger has full IMPRES charger to battery communication capability. This ensures continuity of IMPRES battery charge data logging in a vehicular environment, so the IMPRES battery will receive adaptive, automatic reconditioning and will qualify for the 6-month capacity warranty extension.

NOTE: The IMPRES compatible vehicular charger will not recondition IMPRES batteries while in a vehicle, but it will provide an indication when reconditioning is required in an IMPRES desktop charger.

For HT1000™, MT2000™, MTS2000™, JT1000™, MTX8000™ and MTX9000™

Battery Part Number	Chemistry	Capacity†	Special Features
HNN9028AR	NiCd	1500mAh	
HNN9029AR	NiCd	1500mAh	Intrinsically Safe*

For Saber and ASTRO Saber

Battery Part Number	Chemistry	Capacity†	Special Features
HNN9033B	NiCd	2000mAh	
HNN9034B	NiCd	2000mAh	Intrinsically Safe*

The batteries listed above are designed for use with the following chargers:

WPLN4111AR – IMPRES Single-Unit Charger

WPLN4108BR – IMPRES Multi-Unit Charger

WPLN4130A – IMPRES Multi-Unit Charger with Display Modules

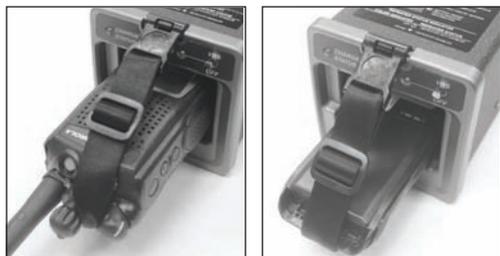
RLN5382A – Individual IMPRES Display Module for WPLN4108BR (Software Version 1.3 or later)



Display shows battery capacity, voltage, charge status and more in real time.

WPLN4130A – With Display Modules (shown)

WPLN4108BR – Without Display Modules



WPLN4208B – Charge the battery attached to the radio or alone.



WPLN4111AR

† Indicates minimum rated battery capacity.

* When used with an FM approved intrinsically safe radio unit.

MOTOTRBO™ and Professional Series Quick Reference Guide

IMPRES Battery and Charger Guide by Radio Series



WPLN4232A

For MOTOTRBO

Battery Part Number	Chemistry	Capacity†	Special Features
PMNN4066A	Li-ion	1500mAh	Ruggedized
PMNN4069A	Li-ion	1400mAh	Intrinsically Safe*, Ruggedized
PMNN4077A	Li-ion	2150mAh	Ruggedized

The batteries listed above are designed for use with the following chargers:

WPLN4232A – IMPRES Single-Unit Charger

WPLN4212A – IMPRES Multi-Unit Charger

WPLN4219A – IMPRES Multi-Unit Charger with Display Modules

NNTN7616A – *NEW* IMPRES Compatible Vehicular Charger

RLN5382A – Individual IMPRES Display Module for WPLN4212A

For HT750™, HT1250™, HT1250.LS™, HT1550.XLS™, MTX850™, MTX8250™, MTX8250.LS™, MTX950™, MTX9250™, PR860™

Battery Part Number	Chemistry	Capacity†	Special Features
HNN4001A	NiMH	1800mAh	
HNN4002A	NiMH	1690mAh	Intrinsically Safe*
HNN4003A	Li-ion	2000mAh	

The batteries listed above are designed for use with the following chargers:

WPLN4182A – IMPRES Single-Unit Charger

WPLN4187A – IMPRES Multi-Unit Charger

WPLN4192A – IMPRES Multi-Unit Charger with Display Modules

NNTN7618A – *NEW* IMPRES Compatible Vehicular Charger

RLN5382A – Individual IMPRES Display Module for WPLN4187A



NNTN7616A – Charge the battery attached to the radio or alone. IMPRES Compatible Vehicular Charger

NEWEST ADDITION! IMPRES Compatible Vehicular Charger

Now available for MOTOTRBO and Professional Series portables, this IMPRES compatible vehicular charger has full IMPRES charger to battery communication capability. This ensures continuity of IMPRES battery charge data logging in a vehicular environment, so the IMPRES battery will receive adaptive, automatic reconditioning and will qualify for the 6-month capacity warranty extension.

NOTE: The IMPRES compatible vehicular charger will not recondition IMPRES batteries while in a vehicle, but it will provide an indication when reconditioning is required in an IMPRES desktop charger.



Display shows battery capacity, voltage, charge status and more in real time.



WPLN4192A – With Display Modules
WPLN4187A – Without Display Modules (shown)



WPLN4182A

† Indicates minimum rated battery capacity.

* When used with an FM approved intrinsically safe radio unit.



**PC not included.*

IMPRES Battery Reader

The industry exclusive IMPRES Battery Reader provides IMPRES battery users the ability to access charging, reconditioning and key usage data that can affect overall battery performance. By keeping batteries in peak condition, talk time and cycle life are optimized, reducing battery replacement.

Utilize the benefits of Motorola's exclusive IMPRES technology by downloading key usage data from your IMPRES batteries.

Installs quickly and easily. Simply attach the Reader to a PC via the USB port. No additional power required.

Supports all IMPRES batteries.

Get clear and quick insight into the status of your IMPRES battery.

- Present, Initial and Rated capacity provides a quick view of the battery's ability to hold a charge
- Battery Manufacture Date and Date of First Use provides accurate insight into the age of the battery
- Total Charge Cycles gives insight into the battery's overall use
- Total Recondition Cycles gives an additional performance indication
- Total Estimated non-IMPRES Charge Cycles helps track warranty claims and provides additional insight into potential battery problems
- Recommendation box helps to quickly identify actions to optimize battery life
- Histograms help quickly identify the appropriate battery capacity to meet your needs
- Export the data easily to Excel® for archiving and easy future access

Battery Reader Standard Package (NNTN7392):

IMPRES Battery Reader

USB Cord

HT Professional Series Adapter Insert

MOTOTRBO Adapter Insert

APX Adapter Insert

System Software CD

SPECIFICATIONS

IMPRES Smart Energy Chargers

Single-Unit Chargers	APX	XTS	MOTOTRBO	Professional Series
Model Numbers:	NNTN7080A	WPLN4111AR	WPLN4232A	WPLN4182A
Dimensions: (H x W x D)	2.4 x 3.8 x 6.4"	3.23 x 3.82 x 7.88"	2.4 x 3.8 x 6.4"	2.2 x 3.8 x 5.8"
Input Voltage:	100-240 VAC 50-60 Hz	90-265 VAC 50-60 Hz	100-240 VAC 50-60Hz	100-132 VAC 50-60Hz
Charging Current: (maximum)	1.25 A	1.5 A	1.25 A	1.25 A
Warranty:	2 Years	2 Years	2 Years	2 Years
Operating Temperature:	41° to 104° F	41° to 104° F	41° to 104° F	41° to 104° F
Charging Method: All Chargers	CCDT / Negative Pulse (NiCd / NiMH) and CCCV (Li-ion)			

Dual-Unit Chargers	APX
Model Number:	NNTN7586A/7593A
Dimensions: (H x W x D)	8.2 x 5.6 x 2.5"
Input Voltage:	100-240 VAC, 47-63 Hz
Charging Current: (maximum)	1.5 A
Warranty:	2 Years / 1 Year
Operating Temperature:	41° to 104° F
Charging Method: All Chargers	CCDT / Negative Pulse (NiCd / NiMH) and CCCV (Li-ion)

Multi-Unit Chargers	APX	XTS	MOTOTRBO	Professional Series
Model Numbers:	NNTN7065A/7073A	WPLN4108BR/4130A	WPLN4212A/4219A	WPLN4187A/4192A
Dimensions: (H x W x D)	6 x 17.5 x 11.5"	6 x 17.5 x 11.5"	6 x 17.5 x 11.5"	6 x 17.5 x 11.5"
Input Voltage:	90-265 VAC 50-60 Hz	90-265 VAC 50-60 Hz	90-265 VAC 50-60 Hz	90-265 VAC 50-60 Hz
Charging Current: (maximum)	1.5 A	1.5 A	1.5 A	1.5 A
Warranty:	2 Years / 1 Year	2 Years / 1 Year	2 Years / 1 Year	2 Years / 1 Year
Operating Temperature:	41° to 104° F	41° to 104° F	41° to 104° F	41° to 104° F
Charging Method: All Chargers	CCDT / Negative Pulse (NiCd / NiMH) and CCCV (Li-ion)			

Vehicular Chargers	APX	XTS	MOTOTRBO	Professional Series
Model Number:	NNTN7624A	WPLN4208B	NNTN7616A	NNTN7618A
Dimensions: (H x W x D)	3.23 x 3.82 x 7.88"	3.23 x 3.82 x 7.88"	3.23 x 3.82 x 7.88"	3.23 x 3.82 x 7.88"
Input Voltage:	10.8-16.6 VDC	10.8-16.6 VDC	10.8-16.6 VDC	10.8-16.6 VDC
Charging Current: (maximum)	1.25 A	1.25 A	1.25 A	1.25 A
Warranty:	1 Year	1 Year	1 Year	1 Year
Operating Temperature:	5° to 122° F – Charge rate decreased at extreme temperatures.			
Charging Method: All Chargers	CCDT (NiCd / NiMH) and CCCV (Li-ion)			

IMPRES Battery Warranty

24 months against any defects in manufacturing or workmanship. Nickel-Cadmium batteries are warranted to maintain 80% rated capacity for 18 months. Nickel-Metal Hydride and Lithium-ion batteries are warranted to maintain 80% rated capacity (70% rated capacity for PMNN4093A) for 12 months. IMPRES batteries charged exclusively in IMPRES chargers carry an additional 6 months of capacity warranty.

