Charging the WORLD'S COMMUNICATIONS




ACT

Advanced Charger Technology, Inc.

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Company Background

Advanced Charger Technology (ACT) was founded in 1996. We are a leading manufacture (OEM) of battery battery charging and maintenance solutions. From our fully integrated, state-of-the-art US-based manufacturing facility, our privately-held company prides itself on being a leader in battery charger technology. ACT's exclusive iCHARGE™ series of battery chargers, conditioners, and analyzers was developed to meet the demanding and diverse needs of the two-way radio industry and other applications where superior battery charging performance was, and still is required.

The unique need and sensitivity for reliability in public safety means ACT chargers are core equipment in police, fire, EMS, military and private security operations around the world. As we continue to grow, the demand for our technology has spread into other market applications.

Our patented iCHARGE™ line of products has been offering innovative solutions to battery charging requirements for over fifteen years. Using real-time feedback to monitor the state of the battery throughout the charging process, our technology constantly employs varying positive and negative charges which respond to the needs of the individual battery to maximize the efficiency of each charge. The iCHARGE™ micro controller determines the condition of the battery and responds with an individualized charging algorithm to each battery throughout the charging cycle.

After more than 3 years of development, our Next Generation line of iCHARGE™ products continue to demonstrate our commitment to providing cutting edge technology to battery charging and maintenance, while leveraging ACT's history of expertise in the industry. We have developed this new line of chargers to meet the respective needs of our diverse users around the world. Our technology features superior analyzing accuracy and simultaneous reconditioning/charging of Ni-Cd,NiMH,Li-Ion as well as Li-Poly battery chemistries and is intrinsically safe (IS) compatible.

Summary Benefits

of ACT Next Generation iCHARGE

- **Chargers designed to meet specific and varied user requirements allow the end user to determine which features best meet his/her needs.**
- **Tri-chemistry compatible to handle the entire fleet of batteries in use.**
- **Battery conditioning at every charge event to ensure maximum battery life possible.**
- **Field interchangeable adapters provide ongoing, cost-effective versatility for changes to batteries.**
- **User-friendly designs allow for simple operation.**

Common Battery Issues

Many common factors affect virtually all batteries, and surprisingly – many of them are related to how they were charged. The quality that went into the battery manufacturing, the energy drain requirements on a given battery, the environment in which the battery is consistently used, the charge method, the method to end the charge, etc.

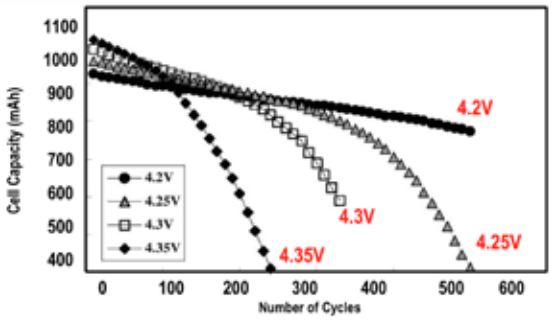
Some typical examples of common user complaints include -

"My batteries aren't lasting as long as they used to."

ACT's technology relies on a series of dynamic positive and negative pulses to condition the battery as it charges. In Ni-Cd and Ni-MH battery chemistries, this process prevents memory buildup or lost battery capacity. In Lithium-based battery chemistries these pulses allow for the battery to equalize to a charge-receptive state.

More importantly, ACT technology terminates at 100% capacity without over-charging. This is especially critical in Lithium-based battery chemistries where even a slight over-charge condition will permanently and irreparable damage the battery cell walls, thereby reducing the battery's capacity. ACT technology utilizes a complex charging algorithm to ensure termination of charge at full capacity.

The following graph illustrates the effect on battery service life from excessive charging



- Over Charge Shortens battery cycle life
- The Higher the voltage, the higher the initial capacity

"Factors that affect cycle-life and possible degradation mechanisms of a Li-Ion cell based on LiCoO2", Journal of Power Sources 111 (2002) 130-136

Texas Instruments

"I have to have a charger for every different battery I use"

By design, ACT's charging codes are resident on each adapter – which allows for multiple battery chemistries and designs to be charged on our multibay chargers. This reduces the sheer number of chargers an organization has to have to service its batteries.

"My radio dies after I send a single transmission, but my battery was charged last night."

The energy demand of any battery is highest when it is in transmit state. Many common OEM chargers will terminate charge at 80-90% full capacity. These chargers will then enter a low-current trickle mode to complete the charging process. Yet the indicators on the charge show a ready state at this low trickle charge mode. This effectively means the battery may or may not be fully charged, under-charged or even over-charged. ACT technology terminates at 100% available charging capacity, and does so in a manner that is tailored to each battery.

iGAUGE

Product Number: iGAUGE

An intelligent capacity display unit that fits underneath existing adapter plates and delivers precise digital reading (mAh) on your battery's capacity. Also features deep conditioning via three complete discharge/recharge cycles that virtually eliminate all memory effects in NiCd and NiMH batteries and simultaneously restores lost battery capacity. Shows battery capacities in Lithium-based battery chemistries.

Features:

- Digital display on battery capacity.
- Easy installation.
- User-friendly interface.
- Works on all battery chemistries.

ACT Twelve Bay Charger

Product Number: z612

The iCHARGE z612 contains 12 complete charging stations that operate independently. One to twelve batteries can be simultaneously charged. The unit works for common radio batteries used on many Tetra platforms. Various batteries from Motorola®, Nextel®, Sepura®, Nokia®, and even Blackberry® devices can be supported.

Features:

- Fastest Most Reliable Charge to keep batteries in operation, longer.
- Dynamic charging ensures maximum charge without risks of damaging over-charge.
- User interchangeable adapters
- Precise Termination allows for batteries to be safely left on the charger for extended periods of time.

Single Bay Conditioning Charger

Available in a desktop or in-vehicle design, the ACT® iCHARGE™ single bay conditioning chargers offer robust trichemistry conditioning charging. Both models also accommodate intrinsically safe (IS) battery designs. Each unit offers unique features for virtually any charging requirement.

Drop-In option for Motorola® IMPRES™

ACT i20 Desktop Charger

Product Number: i20

Features:

- Dynamic Pulse Charging Technology for superior charging.
- Compatible with ACT iGAUGE battery analyzer.
- Drop-In option with Motorola® IMPRES™.
- Reconditioning feature to recover lost capacity (NiMH and NICD).
- Field interchangeable adapters for multiple radio battery types.

ACT i25 In-Vehicle Charger

Product Number: i25 01 (Hardwired)
i25 02 (Cig. Adapter)

Features:

- Dynamic Pulse Charging Technology for superior charging.
- 8"x4.5"x2" footprint for versatile placement.
- Comes with adjustable mounting bracket for easy installation.
- Portable power for quick, reliable charging in the field.
- Field interchangeable adapters for multiple radio battery types.

i80 Six-Bay with three iGAUGES installed

i80 Six-Bay with six iGAUGES installed

i80 Six-Bay Conditioning/Charger

Product Number: i80

The ACT® iCHARGE™ i80 Six-bay is a tri-chemistry conditioning charger designed for everyday use with most major OEM portable radio batteries, including Motorola® Impres™. It will charge up to six batteries of any battery chemistry type simultaneously; both intrinsically safe (IS) and non-intrinsically safe batteries (Non-IS.) The i80 six-bay conditioning charger also offers drop-in capability for Impres™ batteries alone or while attached to the radio using a specially designed adaptor cup. The i80 provides drop-in rapid charging for non-Impres™ batteries as well.

Simple LED indicators depict charge status of each battery. When the battery reaches full charge, the LED indicator turns green and charging is finished. Unlike other battery chargers on the market, the ACT® i80 Six-Bay offers complete termination at charge to avoid potential battery damage via over-charge while at the same time ensuring users of a completely charged battery.

Since the software codes for ACT®'s dynamic pulse conditioning charging are located on the adapters, a simple in-field change in adapters allows for cost effective upgrades in the event of a change in radios or battery chemistries.

With the addition of the ACT® iGAUGE, the i80 Six-Bay Conditioning Charger becomes a battery analyzer that provides a digital display on battery capacities. Additionally, for NICD or NIMH, the IGUAGE enables the i80 Six-Bay Conditioning Charger to recover lost battery capacities via its RE-ACTIVATE feature.

The ACT® iCHARGE™ i80 Six-Bay provides a battery conditioning charge during every charge event to enhance battery life in all battery chemistries.

Features:

- Tri-chemistry charging for multiple radio battery chemistries
- Six independent, field-interchangeable adapters
- Compatible with the ACT® iGAUGE Analyzer
- Drop-In capability for Impres™ radio batteries, as well as non-Impres™ batteries
- Dynamic pulse charging technology tailored to each battery
- User-friendly design and operation

i85 Six-Bay Maintainor

Product Number: i85

The ACT® iCHARGE™ i85 Maintainor is the ideal solution for day-to-day charging and conditioning of your two-way radio batteries as well as for long-term and emergency battery storage. Batteries left on the unit for extended periods are individually discharged and recharged, every 14 days to ensure peak condition for when they are needed.

Designed for use with most major OEM portable radio batteries, including Motorola® Impres™, the ACT® iCHARGE™ i85 Maintainor is a six bay, tri-chemistry conditioning charger with maintenance mode and bi-weekly discharge/charge cycle to keep batteries at peak condition. It is compatible with both intrinsically safe (IS) and non-intrinsically safe (Non-IS) batteries and offers drop-in capability for Motorola® Impres™ batteries alone or while attached to the radio, using a specially designed adaptor cup. The i85 offers drop-in rapid charging for non-Impres™ batteries as well.

Features:

- Tri-chemistry charging for multiple radio battery chemistries
- Drop-in capability for Impres™ radio batteries, as well as non-Impres™
- Battery cycling mode eliminates self-discharge
- Compatible with both IS (Intrinsically safe) and non-IS
- Simultaneous charging of multiple battery designs and chemistries
- Conditions and charges in a single process to enhance battery life
- Batteries can be left on charger for extended periods of time
- Can be upgraded for iGAUGE use

i87 Six-Bay Reconditioner

Product Number: i87

The ACT® iCHARGE™ i87 Six-Bay Reconditioner is designed for two-way radio users with a large number of batteries exhibiting reduced capacity from incorrect or improper charging methods or “memory” effect. With the push of a button, the battery can be recycled and thereby reconditioned to eliminate the “memory” effect and restore the lost capacity.

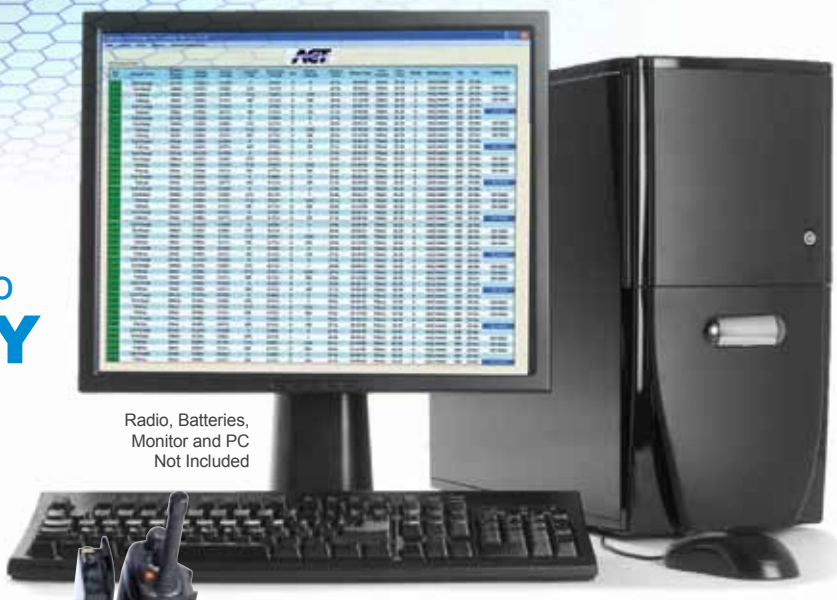
The iCHARGE™ i87 will charge and recondition up to six batteries simultaneously. It is compatible with Ni-Cd, Ni-MH, Li-Ion and Li-Poly batteries, both intrinsically safe (IS) and non-intrinsically safe (Non-IS) and offers drop-in capability for Motorola® Impres™ batteries (with and without the radio attached).

It is designed for daily use and to withstand harsh, rugged environments. It offers the following features with the corresponding benefits:

Features:

- Up to 6 independent reconditioning cycles at the push of a button.
- Multi chemistry battery charging and reconditioning
- Six independent interchangeable adapters to offer cost effective upgrades
- Drop-In capability for Motorola® Impres™ radios/batteries

Expandable Up To 20 MULTI-BAY UNITS



Radio, Batteries, Monitor and PC Not Included

i90 (six-bay)

i92 (twelve-bay)

ACT i90 & i92 Battery Analyzing System

Product Number: **i90 (six-bay)**
i92 (twelve-bay)

The ACT® iCHARGE™ Battery Analyzing Systems (BAS) are the perfect solution for taking control of the conditioning, testing and analyzing of your batteries. Designed for use with a PC or Laptop, these units include software which provides real-time battery conditioning, and battery capacity analysis with visibility of the battery voltage, stage of charging process, and phase time per charge cycle. The analysis results are stored and retained to provide historical comparative data.

The BAS units can be expanded by "daisy-linking" together with other BAS units and run off the same PC or laptop to monitor and analyze up to 120 (i90) or up to 240 (i92) batteries simultaneously and can be remotely monitored. Expanded units can be run off 1 PC and no additional software licenses are required. And the i90 BAS can be linked together with the i92 BAS to accommodate an even greater range of battery types for addressing the entire needs of many departmental operations.

The ACT® iCHARGE™ i90 BAS is designed for two-way Ni-Cd, NiMH, Li-Ion and/or Li-Poly chemistry radio batteries. The ACT® iCHARGE™ i92 BAS is designed for Lithium Ion and/or Lithium Polymer batteries for TETRA, BlackBerry®, smaller portable two-way radio and cell phones. Both units are compatible with bar code scanning technology.

Features:

- Real-time battery monitoring and analysis.
- Remote monitoring from different locations.
- Expandable up to 20 six bay units
- Switches to Maintenance Mode once battery is fully charged.
- Batteries can be safely left on the unit for extended periods of time.
- All positions operate independently.
- Field Interchangeable adapters.
- Drop-In capability for Motorola® Impres™ batteries (i90 BAS only)
- Simple installation and operation
- Does not require a dedicated PC station.

i1006 (six-bay)

i1012 (twelve-bay)

ACT iCASE Charger

Product Number: **i1006 (six-bay)**
i1006 (twelve-bay)

The ACT® iCHARGE™ iCASE Charger is an essential component for any Emergency Preparedness Program and other remote deployment applications. The iCASE Charger is supplied in a rugged, protective case made of lightweight HPX® Resin with double layered soft grip handles and double pad lockable clasps. It is designed to withstand extreme temperatures and harsh environments. The portable design offer versatile application, is MilSpec approved and is waterproof, dustproof, and crushproof. Powered by 12-24 VDC connection, the ACT iCASE charger is a perfect solution to your in-field battery charging requirements.

The six-bay configuration (model i1006) is designed for use with most major OEM portable radio batteries, including Motorola® Impres™, the ACT iCASE Charger is a six-bay, tri-chemistry conditioning charger. It will charge up to six batteries of any battery chemistry type simultaneously; both intrinsically safe (IS) and non-intrinsically safe (Non-IS.) The unit also offers drop-in capability for Impres™ batteries alone or while attached to the radio via a specially designed adapter cup. The ACT iCASE Charger also provides rapid drop-in charging for non-Impres™ batteries as well.

The twelve-bay configuration (model i1012) is designed for use with most major TETRA portable radio batteries and many cell phone batteries. The ACT iCASE Charger will charge up to twelve, lithium-based batteries simultaneously and independently of one another.

Features:

- Tri-Chemistry charging for multiple radio battery types.
- Robust Housing to withstand extreme field environments
- Field interchangeable adapters
- Dynamic Electrochemical Waveform (DEW™) technology
- User-friendly design and operation
- Can be connected to suitable Solar Power Panel

Specifications:

- **Power:** 12-24 VDC Voltage
- **Wt:** 20 lbs
- **Physical Dimensions:**
  24” x 19.5” x 9”
  Optional 110-220 V power supply available

Choosing the Right ACT Multi-Bay Charger

	i20	i25	i80	i85	i87	i90	i92	z612	i1006	i1012
Ni-CD compatible	✓	✓	✓	✓	✓	✓			✓	
Ni-MH compatible	✓	✓	✓	✓	✓	✓			✓	
Li-Ion compatible	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Li-Poly compatible	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Designed for six batteries per unit			✓	✓	✓	✓			✓	
Designed for twelve batteries per unit							✓	✓		✓
IS/FM compatible	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Drop-In Option for Motorola® IMPRES™ (battery on radio)	✓		✓	✓	✓	✓			✓	
Drop-In IMPRES™ battery alone	✓		✓	✓	✓	✓			✓	
Reconditioning button	✓				✓					
Pre-Programmed Cyclical Maintenance				✓						
iGAUGE Compatible	✓		✓	*		N/A	N/A		✓	
Typical TETRA cell phones / radios							✓	✓		✓
Portable Design		✓							✓	✓
Complete Two Radio Battery Analysis						✓				
Complete Cellular Battery Analysis							✓			

** Engineering Upgrade Available*

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Made in USA

The next iCHARGE GENERATION Adapter List

ACT Part #	Fits Radio Models	ACT Charger Model
AEG		
IAEG10B NN	Teleport	i20, i25, i80, i85, i87, i90
IAEG11B NN	Teleport V11/N	i20, i25, i80, i85, i87, i90
IAEG12B NN	TP VII Kit	i20, i25, i80, i85, i87, i90
Bendix King		
IBEK10B NN	EPH/LPA/LPH/LPX	i20, i25, i80, i85, i87, i90
Bosch		
IBOS10B NN	Bosch	i20, i25, i80, i85, i87, i90
ICOM		
ICOM10B LIN	F3/4 & F3S/4S	i20, i25, i80, i85, i87, i90
ICOM10B NN	F3/4 & F3S/4S	i20, i25, i80, i85, i87, i90
ICOM11B LIN	F21, F22, F30, F40, F31, F41, F3GT, F4GT	i20, i25, i80, i85, i87, i90
ICOM11B NN	F21, F22, F30,F40, F31, F41, F3GT, F4GT	i20, i25, i80, i85, i87, i90
ICOM13B LIN	F14, F15, F24, F25, F34, F44	i20, i25, i80, i85, i87, i90
ICOM13B NN	F14, F15, F24, F25, F34, F44	i20, i25, i80, i85, i87, i90
ICOM14B LIN	F50/F60	i20, i25, i80, i85, i87, i90
iCOM14B NN	F50/F60	i20, i25, i80, i85, i87, i90
Harris		
IGER10B NN	MPA, MPD, MTL, PLS	i20, i25, i80, i85, i87, i90
IGER12B NN	MRK	i20, i25, i80, i85, i87, i90
IGER14-1B NN	LPE / KPC	i20, i25
IGER14B NN	LPE / KPC	i80, i85, i87, i90
IGER15B LIN	Jaguar, 5100P / 7100P	i20, i25, i80, i85, i87, i90
IGER15B NN	Jaguar, 5100P / 7100P	i20, i25, i80, i85, i87, i90
IGER16B NN	300P	i20, i25, i80, i85, i87, i90
iGER19B LIN	P5400	i20, i25, i80, i85, i87, i90
IGER19B NN	P5400	i20, i25, i80, i85, i87, i90
IDEN		
IIDE10B LIN	IDEN i360	i20, i25, i80, i85, i87, i90
Kenwood		
IKEN10B NN	TK250, TK278, TK350, TK 353, TK430	i20, i25, i80, i85, i87, i90
IKEN11B LIN	TK260, TK270, TK290, TK360, TK378, TK380	i20, i25, i80, i85, i87, i90
IKEN11B NN	TK260, TK270, TK290, TK360, TK378, TK380	i20, i25, i80, i85, i87, i90
IKEN12B LIN	TK2140, 2170, 3140, 3160	i20, i25, i80, i85, i87, i90
IKEN12B NN	TK2140, 2170, 3140, 3160	i20, i25, i80, i85, i87, i90
IKEN13B NN	TK349	i20, i25, i80, i85, i87, i90
IKEN15B LIN	TK2180, TK 3180, TK5210	i20, i25, i80, i85, i87, i90
IKEN15B NN	TK2180, TK 3180, TK5210	i20, i25, i80, i85, i87, i90
IKEN16B LIN	TK 2200/3200	i20, i25, i80, i85, i87, i90
IKEN16B NN	TK 2200/3200	i20, i25, i80, i85, i87, i90
iKEN17B LIN	NX200/300/TK5220/5320	i20, i25, i80, i85, i87, i90
iKEN17B NN	NX200/300/TK5220/5320	i20, i25, i80, i85, i87, i90
Maxon		
IMAX10B NN	SP130 / 140 / 150 / SL55	i20, i25, i80, i85, i87, i90
Motorola		
IMOT10B NN	HT1000, MT2000, MTS2000	i20, i25, i80, i85, i87, i90
IMOT11B NN	HT600, 800, MTX 800-900, MT1000, P200-210	i20, i25, i80, i85, i87, i90
IMOT12B NN	GP300, GTX, LTS2000, P110	i20, i25, i80, i85, i87, i90
IMOT13B NN	GP350	i20, i25, i80, i85, i87, i90
IMOT14B NN	Saber	i20, i25, i80, i85, i87, i90

ACT Part #	Fits Radio Models	ACT Charger Model
Motorola (continued)		
IMOT16B NN	P1225	i20, i25, i80, i85, i87, i90
IMOT17B LIN	XTS3000, XTS5000, EF5100	i20, i25, i80, i85, i87, i90
IMOT17B NN	XTS3000, XTS5000, EF5100	i20, i25, i80, i85, i87, i90
IMOT18B LIN	HT750, HT1250, HT1550	i20, i25, i80, i85, i87, i90
IMOT18B NN	HT750, HT1250, HT1550	i20, i25, i80, i85, i87, i90
IMOT20B NN	SP50	i20, i25, i80, i85, i87, i90
IMOT22B LIN	CT250, XTS1500, XTS1500, XTS2500, MT1500, GP340	i20, i25, i80, i85, i87, i90
IMOT22B NN	CT250, XTS1500, XTS1500, XTS2500, MT1500, GP340	i20, i25, i80, i85, i87, i90
IMOT25B LIN	EX500, GP388	i20, i25, i80, i85, i87, i90
iMOT25B NN	EX500, GP388	i20, i25, i80, i85, i87, i90
IMOT26B LIN	CP150, CP200, PR400	i20, i25, i80, i85, i87, i90
IMOT26B NN	CP150, CP200, PR400	i20, i25, i80, i85, i87, i90
IMOT30B NN	GP900	i20, i25, i80, i85, i87, i90
IMOT32B LIN	XTS2500	i20, i25, i80, i85, i87, i90
IMOT32B NN	XTS2500	i20, i25, i80, i85, i87, i90
iMOT-33B LIN	iMPRES	i20, i25, i80, i85, i87, i90
iMOT-33B NN	iMPRES	i20, i25, i80, i85, i87, i90
IMOT34B LIN	Mototrbo XPR	i20, i25, i80, i85, i87, i90
IMOT34B NN	Mototrbo XPR	i20, i25, i80, i85, i87, i90
iMOT35B IMP	APX 7000	i20, i25, i80, i85, i87, i90
iMOT35B LIN	APX 7000	i20, i25, i80, i85, i87, i90
IMOT35B NN	APX 7000	i20, i25, i80, i85, i87, i90
Niros		
INIR10B LIN	P500	i20, i25, i80, i85, i87, i90
INIR10B NN	P500	i20, i25, i80, i85, i87, i90
OTE		
IOTE10B NN	OTE Puma	i20, i25, i80, i85, i87, i90
Sepura		
ISEP10B NN	SRP1000	i20, i25, i80, i85, i87, i90
ISEP20B LIN	SRP2000	i20, i25, i80, i85, i87, i90
Simoco		
ISIM15B NN	PRP-73/74	i20, i25, i80, i85, i87, i90
ISIM20B NN	480 T, SRP8000, SRP9000	i20, i25, i80, i85, i87, i90
Tait		
ITAI10B LIN	Orca	i20, i25, i80, i85, i87, i90
ITAI10B NN	Orca	i20, i25, i80, i85, i87, i90
ITAI11B LIN	TP9100, TP9135, TP9140, TP9155, TP9160	i20, i25, i80, i85, i87, i90
ITAI11B NN	TP9100, TP9135, TP9140, TP9155, TP9160	i20, i25, i80, i85, i87, i90
ITAI12B LIN	TP8000 Series	i20, i25, i80, i85, i87, i90
ITAI12B NN	TP8000 Series	i20, i25, i80, i85, i87, i90
Vertex		
IVER10B NN	VX500/510/520	i20, i25, i80, i85, i87, i90
IVER11B LIN	VX110/120/127/130/150/160/170/1180/210/410/420/800	i20, i25, i80, i85, i87, i90
IVER11B NN	VX110/120/127/130/150/160/170/1180/210/410/420/800	i20, i25, i80, i85, i87, i90
Nextel		
z6012 PL	Nextel MTH800	i612, i92
Motorola -Tetra		
z6013 PL	MTP 850	i612, i92
z6015 PL	BK10, BK60, BK71	i612, i92
Blackberry		
Z6017 PL	Blackberry 12 bay plate	i612, i92

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