# P 🔺 R 🔺 D O X

# 4 to 32-Zone Expandable Security Systems





# Description

Spectra SP control panels (SP4000, SP5500, SP6000, SP65, and SP7000) offer a combination of innovative features and an advanced communication bus for a uniquely expandable security system. Through its communication bus, all Spectra SP panels can be expanded via wireless and hardwired expansion modules and a variety of accessory modules. With their in-field firmware upgrade capability, the Spectra SP series allows installers to upgrade their system without hassle – quickly, easily, and on-site. To further facilitate installation, every Spectra SP panel can be configured using easy-to-follow, menu-driven programming.

Spectra SP also features multipath communication; this enables your system to communicate through multiple channels, including telephony with its built-in landline dialer, IP with the IP150 Internet Module, IP/GPRS/GSM with the PCS series module, and voice with the VDMP3 Plug-In Voice Module.

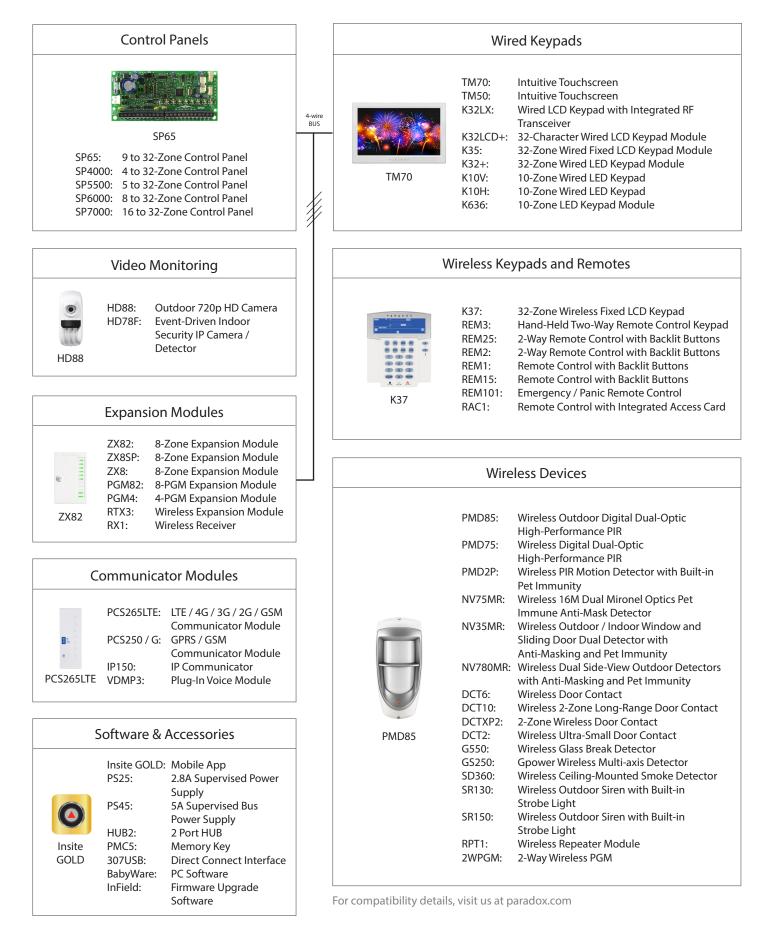
With its reliable communication technology, flexible expansion and user-friendly keypads, Spectra SP is the complete residential or commercial security solution.

# Features

- Supports StayD mode
- 4-wire expansion bus
- Wireless expansion (via RTX3 / RX1)
- Expandable to 32 zones
- Expandable to 16 PGMs
- 2 partitions
- 32 user codes
- Supports PCS series modules
- Supports IP150 Internet Module
- Supports VDMP3 Plug-in Voice Module
- Supports REM3 Hand-held Remote Keypad
- Supports SR150 Wireless Siren
- Landline dialer (except SP65)
- In-field firmware upgradable



# System Overview



# Feature Details



# Internet Communication (IP150)

The IP150 Internet Module allows you to control and monitor your security system remotely through any web browser. It allows for email notifications of important system events such as alarms, arm/disarm events, and troubles. For example, receive an email at work when your kids get back from school. Also, view the live status of your system and arm/disarm it. For instance, you have just left your office for the weekend but are unsure whether you armed the system. Simply check the status of your system from a laptop and arm it.



# Wireless Communication (PCS Series)

The PCS series modules provide the Spectra SP control panels with wireless communication capabilities to report system events via IP, GPRS, and/or GSM. Whether it be uploading/ downloading via IP or GPRS, receiving system status and events by voice or text message, or reporting to the monitoring station via IP, GPRS, or GSM, the PCS series enhances the communication capabilities of any Spectra SP installation.



# Voice Communication (VDMP3)

The VDMP3 is a plug-in, voice-assisted module that can be programmed to call up to five telephone numbers in the event of an alarm. For example, when an alarm occurs at your store during off-hours, every employee can receive notification via telephone. You can also call the VDMP3 from an outside line, enabling you to arm or disarm the system as well as activate PGMs. The VDMP3 essentially turns any outside telephone into a keypad. The VDMP3 is easy to install; plug it in directly onto the panel, set the phone numbers, and select the activation event.



# StayD

StayD resolves all issues with common security systems and represents the only solution for secure living. The revolutionary StayD feature represents a completely reversed philosophy compared to all other security systems made today. Traditional systems share the same principle - in order to provide security, users must remember to arm the system; otherwise the system is disarmed and does not provide security. A StayD system is always armed, and needs only to be partly disarmed when an entry or exit is needed. With StayD, you can truly have peace of mind knowing, that you are always protected.



# In-field Upgradable

Spectra SP is not only easy to install, but is also fully in-field upgradable, allowing for simple on-site updates. The process is effortless; connect the PC to the panel and you are a few clicks away from performing a complete system upgrade within minutes. No need to change panels or hardware; all the updates are performed using Paradox's InField Firmware Upgrade Software.



# App-based System Control

The Insite GOLD app enables you to remotely access your Paradox security system and view your system cameras. Insite GOLD provides lots of functionality and information at one's fingertip. It has an intuitive user-interface which enables you to easily connect to your security system and edit settings. Now you can control your Paradox security system from any Android / iOS smartphone.

# TM70 Overview



TM70: Intuitive Touchscreen

# SpotOn Locator™

Upload photos, images, or schematics to eliminate the need for deciphering LED zone lights. These images display any door, window, or motion detector that are active. Since the images are uploaded by the user, they are truly customized, and can be unique to each installation. SpotOn Locator<sup>™</sup> is integrated in the original firmware, and when purchased, is unlocked with an authorization code.

# ■ OneScreen Monitoring<sup>™</sup>

Provides a real-time visual display of the system's status on one screen. It allows the user to choose which partitions will be displayed showing arming level, alarm, ready, and troubles. It also displays zone statuses; open, close, bypass, alarm, and tamper. OneScreen Monitoring<sup>™</sup> also features Solo Test<sup>™</sup> mode, which allows installers and users to easily test all system zone's via the TM70 Touch's screen. OneScreen Monitoring<sup>™</sup> is integrated in the original firmware, and when purchased, is unlocked with an authorization code.

| Display               | 16-bit, color LCD; 8.6 x 15.4 cm (3.1 x 5.9 in.), 800 x 480 pixels |
|-----------------------|--|
| Input Voltage         | 9 to 15 Vdc  |
| Current Consumption   | 250 mA at max brightness + 80 mA sounder                           |
| Keypad Zone Input     | 1 for a detector or external temperature sensor                    |
| Tamper                | Built-in, cover and wall   |
| Humidity              | 5 to 90%   |
| Operating Temperature | -10 to 55 °C (14 to 131 °F)  |
| Compatibility         | Swan, EVO, Spectra, Magellan                                       |

# Specifications

Note: All control panel outputs are rated to operate between 11.4 Vdc and 12.5 Vdc.

TSP-G2K rev.15 - Printed in Canada 04/2019

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# Specifications PRX2780000033-P2C

The PRX2780000033-P2C is a metal box enclosure for provision multiple module and panel mounting.

Features:

- Many punch-out holes for simple wiring
- Easy door removal
- Sizes: 28cm X 28cm X 7.6cm (11" x11" x 3")





# **Specifications PRXK-TK278**

The PRXK-TK278 is a BOM Kit for 1x tamper switch PRX2502302000-P2C and 1x tamper bracket PRX2781030000-P2C to suit with Paradox Metal Box Enclosure PRX2780000033-P2C; to protects against tampering (opening door or removal from wall).



# SP5500+ / SP6000+ / SP7000+ User Guide

4 to 32-Zone Expandable Security Systems





# NV5 High-Performance Digital Infrared Motion Detector

### Description

The NV5 is the entry-level motion detector from Paradox's ENVY line of next generation motion detection. Featuring advanced processing technology, optical technology, and easy installation, the NV5 represents state of the art technology with the most advanced and innovative digital infrared detector of its class.

The NV5 features Paradox's developed optics - a Hybrid Cylindrical / Spherical combination 1.0 inch lens with 3<sup>rd</sup> generation 3D Lodiff<sup>®</sup> Fresnel segments- the first and most advanced lens in the detection industry. This combination offers the best detection possible for passive infrared energy reception optimized for far beams (cylindrical) and medium/ close beams (spherical). This lens also features Paradox's "Equalized" detection pattern, ensuring equal sensitivity throughout the protected area. Furthermore, the NV5 offers Small Pet Resistance or, alternatively, a Super Creep Zone Mirror add-on optics, which provides superior detection directly below the detector (see Beam Pattern).

The NV5 offers Auto Pulse Signal Processing with two levels of RF rejection, dual or single edge processing, and LED feedback for each setting. With precision and equalized detection, superior detector stability, total area coverage, and complete false alarm protection, the NV5 is the most advanced and innovative digital infrared detector in its class.

ENVY DE





### Features

- Infrared motion detector managed by Full Authority Digital Electronics Control (FADEC)
- Paradox's Hybrid Cylindrical-Spherical 1.0 inch lens with 3<sup>rd</sup> generation 3D Lodiff<sup>®</sup> Fresnel segments- 10 x 10 m (32.8 x 32.8 ft), 90° viewing angle, and 0.5 m (1.6 ft) to max range (no dead zone beam pattern)
- Paradox's equalized detection pattern ensures equal sensitivity throughout the protected area
- Paradox Super Creep down-looking beam optic option for straight down detection
- Pet Resistance up to 16 kg (35 lb)
- Dual/Single Edge Processing selection the only one in its class
- Paradox patented Auto Pulse Signal Processing (APSP) with settings for normal or high interference environments
- Digitally equalized temperature compensation; unit performance specifically tailored to obtain same catch capability at all specified operating temperatures
- Digital Sensitivity trimmer adjustment with five range levels and LED feedback, allows for perfect unit adjustment for all room sizes
- Optional wall/ceiling mount bracket
- Miniature yet easy to install with no PCB removal or adjustment
- CE and EN50131 Grade 2 approved (see PARADOX.com for latest approval updates)
- Interchangeable lenses; 90° standard lens

# Advanced Digital Technology (FADEC)

The NV5's digital analysis and algorithms ensure precise and accurate detection performance, managed by Full Authority Digital Electronics Control (FADEC). Depending on the environment application, the NV5 can be easily configured with its unique pre-programmed profile settings (Normal, Moderate, Pet Resistant, and Harsh).

- High-resolution and full-dynamic range digital signal conversion
- High-speed, advanced algorithm, digital signal processing
- Digital EMI / RFI interference rejection
- Five choices of digital range levels (via trimpot)

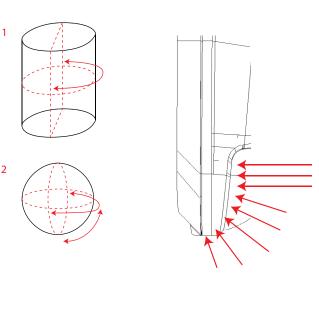
# Advanced Optical Technology

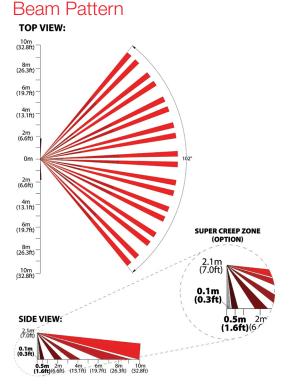
Paradox's Hybrid Cylindrical-Spherical combination offers the best detection possible for passive infrared energy reception for far beams (1. Cylindrical) and medium/close beams (2. Spherical). This lens design allows for ultimate perpendicular beam collection. Superior and uniform energy collection translates to a better image quality of the target which provides unmatched detection accuracy and stability.

- 3rd generation 3D LoDiff® Fresnel segments
- Optically and digitally equalized beam pattern (all beams optimized for generating equal signal level at any distance or angle)
- Optional Super Creep Zone or Pet Resistance up to 16 kg (35 lb)

# **Technical Specifications**

| Installation height                                      | 2.1 m – 3.1 m (7.0 ft – 10.2 ft) For 10 m and above range, unit must be installed at 2.1 m (7.0 ft) height and above               |  |
|--|--|--|
| Sensor   | Dual rectangular element, low noise, high sensitivity,<br>EMI immunity   |  |
| Lens   | Hybrid Cylindrical Spherical 3 <sup>rd</sup> gen. Fresnel Lens, equal beam sensitivity (patent pending)                            |  |
| Processing   | High resolution digital signal processing. Four profiles (Normal, Medium, Pet Res., Harsh), true digital temperature compensation. |  |
| Super Creep Zone   | Add on mirror option for enhanced creep zone at 0.1 m from the wall (no Pet Resistence)  |  |
| Range adjustment 5 level range adjustments (50% to 150%) |  |  |
| Startup time   | 10 seconds   |  |
| Detection speed  | 0.2 m/s to 3 m/s (0.6 ft/s to 9.8 ft/s)  |  |
| Power input  | 10 Vdc to 15 Vdc   |  |
| Current consumption                                      | 10.5 mA @ Standby / 11.3 mA @ Alarm  |  |
| Coverage   | 10 m (32.8 ft) x 90°   |  |
| Coverage   | 0.5 m (1.6 ft) down looking with optional creep zone   |  |
| PET Resistance   | Up to 16 kg (35 lb)  |  |
| Alarm indicator  | Red LED for 3 seconds  |  |
| Alarm output   | Solid State, N.C. 150 mA   |  |
| Anti-tamper switch                                       | N.C. 28 Vdc, 0.15 A  |  |
| Operating temperature                                    | -10°C to 50°C (14°F to 122 °F)   |  |
| Humidity   | 95% max.   |  |
| Dimensions   | 9.1 x 5.5 x 4 cm (3.5 x 2.2 x 1.6 in.)   |  |
| RFI Immunity   | 10 V/m 80 MHz to 2 GHz   |  |
| Environmental<br>standards                               | Complies with EN 50131 Security Grade 2 / Environmental<br>Class I   |  |





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# Wall/Ceilling Bracket

Wall Mount Bracket





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# Specifications PRXK32LCD+-N3Q

The PRXK32LCD+-N3Q is a 32-Character Hardwired LCD Keypad Module.

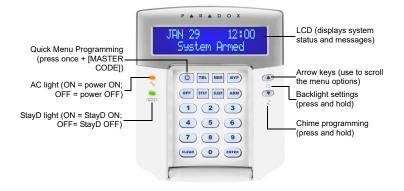
Features:

- Beautiful new design
- 32-character blue LCD with programmable labels
- Real-time zone alarm display (until disarmed)
- In-field firmware upgrade via 307USB
- StayD status LED
- Menu-driven programming for easy system setup (installer and end user)
- 1 keypad zone input
- Independently set chime zones
- 8 one-touch action buttons
- 3 keypad-activated panic alarms
- Adjustable backlight, contrast and scroll speed
- Connects to 4-wire expansion bus
- Compatible with MG5000, MG5050, MG5075, and Spectra SP series V2.31 and up
- Compatible with SP4000, SP65 V4.90 and up



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# Quick Start K32LCD+ Keypad



### How To Arm

### Arming When Exiting (Regular Arm)

To arm your system when exiting:

| Step | Description                               |
|------|---|
|      | Close all zones in the desired partition. |
| 2.   | Press [ARM] and enter your [ACCESS CODE]. |

Note: To arm with StayD enabled, refer to the StayD user manual, available at paradox.com. To learn more about StayD, contact your installer.

### Arming When Staying (Stay / Sleep Arm)

To arm your system when staying:

| Step | Description   |
|------|---|
| 1.   | Press [STAY] for stay arming or<br>[SLEEP] for sleep arming and then<br>enter your [ACCESS CODE]. |
| 2.   | Select the desired partition (1 or 2). For both, press one, then the other after the beep.        |



### How to Disarm

To disarm your system when entering:

| Step | Description  |
|------|--|
| 1.   | Press [OFF] and enter your [ACCESS CODE].  |
| 2.   | Select the desired partition (1 or 2). For both, press one, then the other after the beep. |

### Panic Keys

To send a silent or audible alarm to your security company, press and hold one of the key combinations listed below, for two seconds.

| Panic Alarm | Key Combinations |  |  |
|-------------|------------------|--|--|
| Police      | Keys [1] & [3]   |  |  |
| Medical     | Keys [4] & [6]   |  |  |
| Fire        | Keys [7] & [9]   |  |  |

### Alarm Memory Display

To view the alarms that occurred during the last armed period:

| Step | Description  |
|------|--|
| 1.   | Disarm the system.   |
| 2.   | Press [MEM]. All zones that were<br>breached during the last armed period<br>will be displayed. Use the arrow keys to<br>view the zones. |
| 3.   | Press [ENTER] to save and exit.  |

### **Trouble Display**

The LCD screen will display all troubles when they occur. To view and clear troubles:

| Step | Description  |
|------|--|
| 1.   | Press [TBL].   |
| 2.   | Scroll through the list of troubles using<br>the arrow keys. Refer to the MGSP<br>User Guide for trouble descriptions and<br>instructions. |
| 3.   | Perform the recommended repair<br>instructions to clear the trouble. If no<br>instructions are given, contact your<br>security company.    |
| 4.   | Press [CLEAR] to exit.   |

### How to Bypass Zones

When a zone is bypassed, it remains unarmed when the corresponding area is armed. To bypass zones:

| Step | Description  |
|------|--|
| 1.   | Press [BYP].   |
| 2.   | Enter your [ACCESS CODE].  |
| 3.   | Select the zone you want to bypass by entering the zone number, e.g., zone 3=03. |
| 4.   | Press [Enter].   |

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### **Specifications DFMWP16**

The DFMWP16 is combo siren and strobe (slim design).

- New design
- Siren tone selectable for different applications
- Sound volume adjustable: low dB for testing and high dB for normal operation
- Bright: new LED strobe design
- Independent siren and strobe operation
- High quality UV treated case
- Weatherproof
- Front and back tampers
- EOLRs built in, suitable for most major alarm panels

Operating voltage: 9-15VDC

SPL @ 1meter: 110dB

Siren current draw: 150mA

Strobe current draw: 50mA

Siren tone selectable: Tone 1: warble; Tone 2: Hi/Lo

Dimension: 200 x 110 x 40mm



| SECOR   |                                    | ١                 | /olume High       | J1                   |
|---|------------------------------------|-------------------|-------------------|----------------------|
| WP16 Combo Sirer                              | /Strobe                            | :                 | Siren Tone 1      | J2 Tone 2            |
| Voltage: 9-15VDC                              |                                    |                   | Та                | 6.8K                 |
| Current: Max 150mA @<br>High Volume: 110±3 dl |                                    |                   | mper o            | 5.6K                 |
| Low Volume: 95±3 dB                           | @ 1meter                           |                   | Tamper output EOL | ■ ■ 3.3K<br>■ ■ 2.2K |
| Tone 1: Warble<br>Tone 2: Hi/Lo               |                                    |                   | P                 | J3 0                 |
| 000   | 000                                | $\oslash \oslash$ | $\oslash$         | $\bigotimes$         |
|   | obe – + LED –<br>put Night Comfort | Tamper<br>Output  | Spare             |                      |





# **Specifications DFMWP08**

The DFMWP08 is indoor top hat piezo.

Input voltage: 12VDC

SPL @ 1meter: 105dB

Current draw: 90mA



# VRLA 12V7AH

# SA12V7

### **Specifications**

| Nominal Voltage              | 12 V   |
|------------------------------|--|
| Nominal Capacity 20HR        | 7.0 AH   |
| Dimensions                   | Length<br>Width<br>Container Height<br>Total Height (with terminal)                              |
| Approx Weight                | Approx 2.10 kg (4.63 lbs)  |
| Terminal                     | F1   |
| Container Material           | ABS Plastic  |
| Lead Material                | Purity Lead 99.995%  |
| Sulfurid Acid                | Distilled Sulfurid Acid (Zero met  |
| Separator                    | AGM  |
| Rated Capacity               | 7.00 AH/0.350A<br>6.53 AH/0.653A<br>6.00 AH/1.20A<br>5.37 AH/1.79A<br>4.55 AH/4.55A              |
| Max. Discharge Current       | 105A (5s)  |
| Internal Resistance          | Approx 23mΩ  |
| Operating Temp.Range         | Discharge : -15 - 50°C (5 - 12)<br>Charge : 0 - 40°C (32 - 104)<br>Storage : -15 - 40°C (5 - 10) |
| Nominal Operating Temp.Range | 25±3°C (77±5°F]  |
| Cycle Use                    | Initial Charging Current less tha<br>14.4V - 14.7V at 25°C (77°F) T                              |
|                              |  |

0°C

(32°F)

Standby Use

Capacity affected by Temperature

Self Discharge

# Width $65\pm 1 mm$ [2.56 inches] Container Height 95±1mm [3.74 inches] Total Height (with terminal) 100±1mm [3.94 inches] Approx 2.10 kg (4.63 lbs) F1 ABS Plastic Purity Lead 99.995% Distilled Sulfurid Acid [Zero metal content] AGM 7.00 AH/0.350A [20hr, 1.80V/cell, 25°C/77°F] 6.53 AH/0.653A (10hr, 1.80V/cell, 25°C/77°F] 6.00 AH/1.20A [5hr, 1.75V/cell, 25°C/77°F] 5.37 AH/1.79A (3hr, 1.75V/cell, 25°C/77°F] 5.35 AH/4.55A (1hr, 1.60V/cell, 25°C/77°F] 105A [5s] Approx 23mΩ Discharge : -15 - 50°C [5 - 122°F] Charge : 0 - 40°C [32 - 104°F] Storage : -15 - 40°C [5 - 104°F] Storage : -15 - 40°C [5 - 104°F]

Z

151±1mm (5.94 inches)

 25±3°C
 (77±5°F)

 Initial Charging Current less than 2.1A. Voltage

 14.4V - 14.7V at 25°C
 (77°F) Temp.Coefficient -30mV/°C

 No limit on Initial Charging Current Voltage

 13.5V - 13.8V at 25°C
 (77°F) Temp.Coefficient -20 mV/°C

 40°C
 (104°F)
 103%

 25°C
 (77°F)
 100%

86%

Sentry AGM series batteries may be stored for up to 6 months at 25°C (77°F) and then a freshening charge is required. For higher temperatures the time interval will be shorter.



### Applications

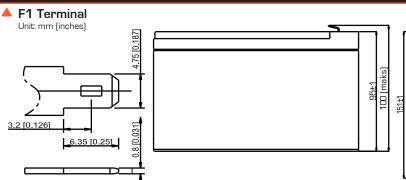
- All purpose
- Standby Applications
- Recreation Vehicles
- Uninterruptible Power Supply (UPS)
- Electric Power System (EPS)
- Fire & Security
- Generators

65±1 45±1

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• Medical Equipment

### Dimensions

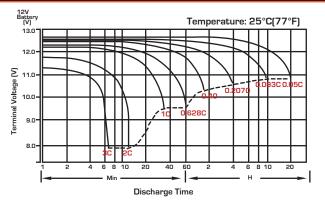


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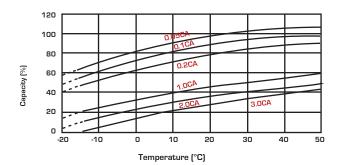
|            | Constant Current Discharge (Amperes) at 25°C (77°F) |       |       |       |       |       |      |      |      |      |      |      |       |       |       |
|------------|---|-------|-------|-------|-------|-------|------|------|------|------|------|------|-------|-------|-------|
| F.V/Time   | 5min  | 10min | 15min | 20min | 30min | 45min | 1h   | 2h   | Зh   | 4h   | 5h   | 6h   | 8h    | 10h   | 20h   |
| 1.85V/cell | 18.0  | 12.8  | 10.48 | 8.79  | 6.53  | 4.79  | 3.86 | 2.29 | 1.69 | 1.36 | 1.14 | 0.98 | 0.774 | 0.640 | 0.345 |
| 1.80V/cell | 21.4  | 14.3  | 11.4  | 9.44  | 6.94  | 5.05  | 4.03 | 2.38 | 1.74 | 1.40 | 1.17 | 1.01 | 0.791 | 0.653 | 0.350 |
| 1.75V/cell | 24.2  | 15.6  | 12.2  | 10.0  | 7.29  | 5.27  | 4.18 | 2.45 | 1.79 | 1.43 | 1.20 | 1.03 | 0.805 | 0.663 | 0.357 |
| 1.70V/cell | 26.7  | 16.7  | 12.9  | 10.5  | 7.59  | 5.46  | 4.32 | 2.51 | 1.83 | 1.46 | 1.22 | 1.05 | 0.817 | 0.672 | 0.361 |
| 1.65V/cell | 28.8  | 17.7  | 13.5  | 10.9  | 7.86  | 5.62  | 4.46 | 2.57 | 1.86 | 1.48 | 1.23 | 1.06 | 0.826 | 0.680 | 0.365 |
| 1.60V/cell | 30.6  | 18.6  | 14.1  | 11.3  | 8.09  | 5.76  | 4.55 | 2.61 | 1.89 | 1.50 | 1.25 | 1.07 | 0.834 | 0.685 | 0.367 |

| Constant Power Discharge (Watts/Cell) at 25°C (77°F) |      |       |       |       |       |       |      |      |      |      |      |      |       |       |       |
|--|------|-------|-------|-------|-------|-------|------|------|------|------|------|------|-------|-------|-------|
| F.V/Time   | 5min | 10min | 15min | 20min | 30min | 45min | 1h   | 2h   | Зh   | 4h   | 5h   | 6h   | 8h    | 10h   | 20h   |
| 1.85V,⁄cell  | 34.2 | 24.5  | 20.2  | 17.1  | 12.8  | 9.44  | 7.64 | 4.56 | 3.37 | 2.72 | 2.29 | 1.99 | 1.565 | 1.296 | 0.701 |
| 1.80V/cell   | 40.2 | 27.2  | 21.9  | 18.3  | 13.5  | 9.91  | 7.96 | 4.72 | 3.47 | 2.79 | 2.34 | 2.03 | 1.593 | 1.318 | 0.708 |
| 1.75V/cell   | 45.1 | 29.5  | 23.3  | 19.3  | 14.2  | 10.3  | 8.23 | 4.85 | 3.55 | 2.85 | 2.39 | 2.06 | 1.616 | 1.344 | 0.719 |
| 1.70V/cell   | 49.2 | 31.3  | 24.5  | 20.1  | 14.7  | 10.6  | 8.48 | 4.96 | 3.62 | 2.89 | 2.42 | 2.09 | 1.633 | 1.347 | 0.725 |
| 1.65V/cell   | 52.6 | 32.9  | 25.5  | 20.8  | 15.2  | 10.9  | 8.73 | 5.05 | 3.68 | 2.93 | 2.45 | 2.11 | 1.649 | 1.359 | 0.731 |
| 1.60V/cell   | 55.5 | 34.3  | 26.3  | 21.5  | 15.5  | 11.2  | 8.88 | 5.12 | 3.72 | 2.96 | 2.47 | 2.13 | 1.660 | 1.367 | 0.734 |

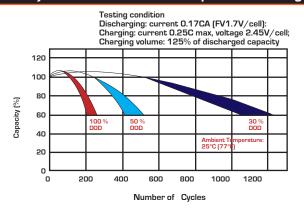
### **Discharge Characteristics**



### Temperature Effects in Relation to Battery Capacity



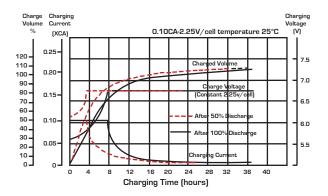
### Cycle Life in Relation to Depth of Discharge



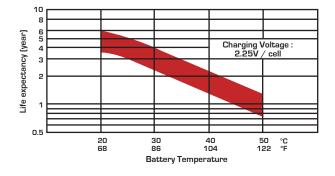
### Charging System

| DOD | Currency Limit (A) | Constant Voltage (V) | Fully Charged<br>Time (h) |  |  |
|-----|--------------------|----------------------|---------------------------|--|--|
|     | 0.15C10            | 13.5-13.8 vpc (12V)  | 10                        |  |  |
| 20  | 0.20C10            | 6.75-6.9 vpc (6V)    | 8                         |  |  |
| 50  | 0.15C10            | 13.5-13.8 vpc (12V)  | 15                        |  |  |
|     | 0.20C10            | 6.75-6.9 vpc (6V)    | 12                        |  |  |
|     | 0.15C10            | 13.5-13.8 vpc (12V)  | 16                        |  |  |
| 80  | 0.20C10            | 6.75-6.9 vpc (6V)    | 14                        |  |  |
| 100 | 0.15C10            | 13.5-13.8 vpc (12V)  | 20                        |  |  |
|     | 0.20C10            | 6.75-6.9 vpc (6V)    | 18                        |  |  |

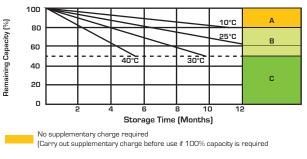
### **Float Charging Characteristics**



### Effect of Temperature on Long Term Float Life



### Self Discharge Characteristics



Supplementary charge required before use. Optional charging way as follows the table charging system.

Supplementary charge may often fail to recover the capacity. The battery should never be left standing still this is reached.

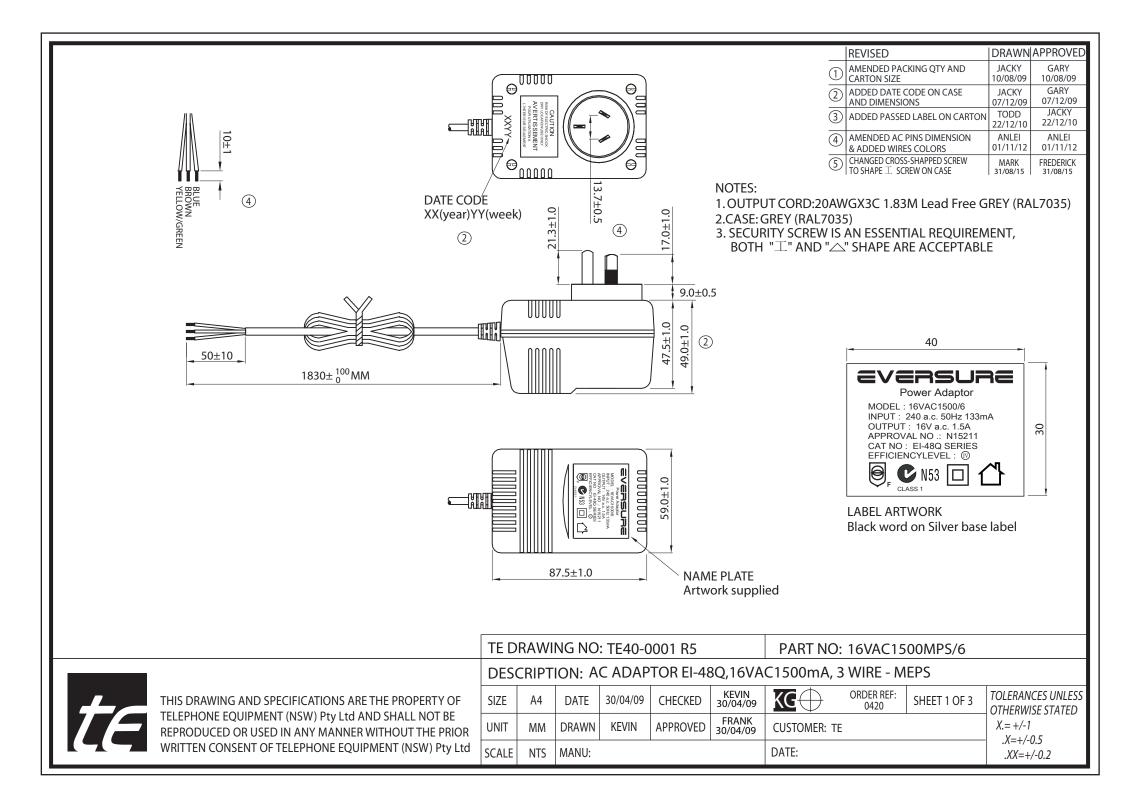
### State of Charge (SOC)

| Open Circuit<br>Voltage<br>(V/cell) | Open Circuit<br>Voltage<br>(12V/cell) | Open Circuit<br>Voltage<br>(6V/cell) | State of Charge<br>(% of full<br>charge capacity) |
|-------------------------------------|---------------------------------------|--------------------------------------|---|
| 2.14-2.15                           | 12.84-12.90                           | 6.42-6.46                            | 100   |
| 2.12-2.13                           | 12.72-12.78                           | 6.36-6.39                            | 90  |
| 2.11                                | 12.66                                 | 6.33                                 | 80  |
| 2.09                                | 12.54                                 | 6.27                                 | 70  |
| 2.07                                | 12.42                                 | 6.21                                 | 60  |
| 2.05                                | 12.30                                 | 6.15                                 | 50  |



Sealed Performance Batteries

Domestic Sales | Ph: +61 (0)7 3386 1102 | Fax: +61 (0)7 3102 9913 sales@spb.net.au | **www.sealedperformance.com.au** National Warehouse | 1 Ant Road | Yatala, Brisbane QLD 4207 Melbourne Office | 2/9 Compark Circuit | Mulgrave, Melburne VIC 3170



|                          |            |  |        |                                 |                                |                   |                       |                   |                | REVISED                 |              | DRAWN             | APPROVED                  |
|--------------------------|------------|--|--------|---------------------------------|--------------------------------|-------------------|-----------------------|-------------------|----------------|-------------------------|--------------|-------------------|---------------------------|
| ITEM                     |            |  | SPECI  | FICAT                           | ION                            |                   |                       |                   |                | AMENDED PAC             | KING QTY AND | JACKY<br>10/08/09 | GARY<br>10/08/09          |
| 1. Primary rated input   | ut voltage | AC240V 50Hz 133mA  |        |                                 |                                |                   |                       |                   | $ \frac{1}{2}$ | ADDED DATE C            | CODE ON CASE | JACKY             | GARY                      |
| 2. Secondary rated of    | output     | Unloaded voltage: AC 18  |        |                                 | ONS<br>D LABEL ON CARTON       | 07/12/09<br>TODD  | 07/12/09<br>JACKY     |                   |                |                         |              |                   |                           |
| voltage and curre        | nt         | Loaded Voltage : AC 16   | V ±    | 5%                              | Α                              | T 15              | 00 mA                 |                   |                |                         |              | 22/12/10          | 22/12/10                  |
| 3. Ripple voltage        |            | *** mV (RMS) MAX. AT Rate  | (4)    | & ADDED WIRE                    | PINS DIMENSION                 | ANLEI<br>01/11/12 | ANLEI<br>01/11/12     |                   |                |                         |              |                   |                           |
| 4. Insulation resistance |            | Primary - secondary: DC 500  | 5      | CHANGED CROSS<br>TO SHAPE I SCR | S-SHAPPED SCREW<br>REW ON CASE | MARK<br>31/08/15  | FREDERICK<br>31/08/15 |                   |                |                         |              |                   |                           |
| 5. Dielectric withsta    | nd test    | Primary - secondary: AC  |        |                                 |                                |                   |                       |                   |                |                         |              |                   |                           |
| 6. Temperature rise      |            | At rated loading 90℃ max. For  | input  | coil (B                         | y resis                        | tance m           | ethod)                |                   |                |                         |              |                   |                           |
|                          |            | and 55°C max. on case surface  | (By us | se of t                         | hermor                         | neter)            |                       |                   |                |                         |              |                   |                           |
| 7. EFFICIENCY            |            | ≥ 79%  |        |                                 |                                |                   |                       |                   |                |                         |              |                   |                           |
|                          | Primary    | SAA PLUG IN TYPE   |        |                                 |                                |                   |                       |                   |                |                         |              |                   |                           |
| 8. Leadout               |            |  |        |                                 |                                |                   |                       |                   |                |                         |              |                   |                           |
|                          | Secondary  | PVC cable length: 1.8 M  | eter   |                                 |                                |                   |                       |                   |                |                         |              |                   |                           |
|                          |            | Colour GREY (RAL7035)  |        |                                 |                                |                   |                       |                   |                |                         |              |                   |                           |
|                          |            | Wire size: AWG#20/3C   |        |                                 |                                |                   |                       |                   |                |                         |              |                   |                           |
|                          |            | Plug : STRIPPED AND TINK   | NED    |                                 |                                |                   |                       |                   |                |                         |              |                   |                           |
|                          | -          | PRIMARY SEC  | COND   | ARY                             |                                |                   | _                     |                   |                |                         |              |                   |                           |
| 9. Test circuit          |            | THERMAL<br>FUSE  |        |                                 | -o                             |                   |                       | <b>*</b>          |                |                         |              |                   |                           |
|                          |            |  |        |                                 |                                |                   | .OADING               |                   |                |                         |              |                   |                           |
| 10. Case                 |            | SAA48 colour = GREY (RAL7035)  |        |                                 |                                |                   |                       |                   |                |                         |              |                   |                           |
|                          |            |  |        |                                 |                                |                   |                       |                   | 0.000          |                         |              |                   |                           |
|                          |            |  |        |                                 |                                | : TE40-0          |                       |                   |                | PART NO: 16VAC1500MPS/6 |              |                   |                           |
|                          |            |  |        |                                 | ON: A                          | C ADAP            | TOR EI-48             | 3Q,16VA           | C1500mA, 3     | B WIRE - M              | EPS          |                   |                           |
| THIS                     |            | ECIFICATIONS ARE THE PROPERTY OF<br>T (NSW) Pty Ltd AND SHALL NOT BE | SIZE   | A4                              | DATE                           | 30/04/09          | CHECKED               | KEVIN<br>30/04/09 | KG             | ORDER REF:<br>0420      | SHEET 2 OF 3 |                   | ICES UNLESS<br>ISE STATED |
|                          |            | IN ANY MANNER WITHOUT THE PRIOR                                      | UNIT   | MM                              | DRAWN                          | KEVIN             | APPROVED              | FRANK<br>30/04/09 | CUSTOMER: TE   | CUSTOMER: TE            |              |                   |                           |
| WRIT                     |            | FELEPHONE EQUIPMENT (NSW) Pty Ltd                                    | SCALE  | NTS                             | MANU:                          |                   | I                     |                   | DATE:          |                         |              | -/+=X.<br>XX=+    |                           |

