



# Pro-Star® AVW400 3G Installation and Operation Manual



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AVW400HM00.4

## AVW400 Installation and Operation Manual Revision History

Revision	Date	Description of Changes
AVW400HM00.1	4/15/11	First Draft Issued for internal review.
AVW400HM00.2	5/3/11	Preliminary Release for ETL. Added "Product Safety:UL & CSA" specs and warranty requirements in Chapter 1. Correct the cellular antenna mounting hole size and revise the RIR description in Chapter 2. Revised some initialization steps and add Electrical Service Requirements in Chapter 3. Added warranty warning, corrected pressure sensor installation, and replaced 2 pictures in Chapter 4. Added template in Chapter 6.
AVW400HM00.3	5/11/11	Change pictures. Correct Typos. Add SIM installation in Chapter 3.
AVW400HM3G.4	10/22/14	Updated GSM 'S' status indicator to reflect 3G operation (pg.10).

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# Chapter 1 - Introduction

Protel is proud to introduce the Pro-Star® AVW400 integrated controller timer and activity monitor for Air, Vacuum and Water machines. The Pro-Star® AVW400 offers the features of the AVW200 but also includes a built-in GSM cellular data modem. The AVW400 product effectively combines the functionality of two timer controlled 110v AC relay switches with the convenience of remote management including programming and status monitoring. The efficiencies gained through remote management of AVW machines result in decreased overhead cost and increased profits. Alarm conditions and coin box information is collected and communicated from the Pro-Star® AVW400 hardware to the IVS™ for AVW Management Software, which can be accessed via the Internet. This innovative system allows for establishing or modifying the timer on duration and vend price remotely, offering added convenience and peace of mind. Featuring a rugged, compact design the Pro-Star® AVW400 is built to provide years of reliable service. Clearly labeled connections and intuitive progress indicators make it easy to install and maintain.

The Pro-Star® AVW400 connects directly to installed coin acceptors and AVW machine motors to provide coin detection and motor on/off control. It then routes connected AC power to the appropriate motor when the programmed base rate is deposited. In addition to turning on the AVW machine, the Pro-Star® AVW400 also monitors and records coin deposits and timer duration. Optional devices provide for the additional monitoring and reporting of air pressure and coin box collections. Following a daily schedule, the Pro-Star® AVW400 uploads its collected data wirelessly using the built-in GSM cellular interface, to the Internet-based IVS for AVW management software. Through a secure subscription service, the IVS for AVW software generates valuable management reports including coin accounting and timer activity as well as equipment status reports such as power failure, low pressure, and stuck timers. Incorporating the Pro-Star® AVW400 into your AVW business brings a new level of management convenience and features that are designed to help optimize operational efficiencies.

## **Standard Features:**

### **Dual Timer Operation –**

One or two motors can be controlled and monitored

### **Built-in GSM Modem –**

Wireless communication of data to Protel servers

### **Cash Box Accounting –**

Reports cash box amounts including “box full”

### **Monitor Battery Backup –**

Capable of reporting power outages real time

### **Service Mode Event Recording –**

Service mode allows for non-intrusive diagnostics

### **Intuitive Status Indicators –**

Provides a visual interpretation of AVW400 status

## **Optional Accessories:**

### **Coin Collection Switch –**

Track exactly when the coin box is emptied

### **Air Pressure Sensor –**

Detect low or no air pressure conditions

### **FreeBee Free Vend Remote –**

Activate vend cycle from up to 150 feet away

### **Credit Card Reader –**

Alternate payment for service in addition to normal coin payment.

## **Safety**

The following general safety precautions must be observed during all phases of operation and service of this instrument. Failure to comply with these precautions or with specific warnings elsewhere violates safety standards of design, manufacture, and intended use of the instrument. Protel Inc.® assumes no responsibility for the customer's failure to comply with these requirements.

## **IMPORTANT**

This instrument is an electrical apparatus and is specifically designed for use or operation only by trained personnel. Only qualified personnel may carry out maintenance.

## **GROUND THE INSTRUMENT**

To minimize shock hazard, the instrument must be connected to an electrical ground. The instrument is equipped with a three-conductor ac power input connector to facilitate a connection to earth ground.

## **DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE**

Do not operate the instrument in the direct presence of flammable gases or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

## **KEEP AWAY FROM LIVE CIRCUITS**

Operating personnel must not remove instrument covers. Qualified maintenance personnel must make component replacement and internal adjustments. Do not replace components with power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed.

## **DO NOT SUBSTITUTE PARTS OR MODIFY INSTRUMENT**

Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification to the instrument. Return the instrument to Protel Inc.® for service and repair to ensure that safety features are maintained.

## **PRODUCT SAFETY: UL & CSA (PENDING)**

The AVW400 is in compliance with the requirements of UL 60950-1  
Issue:2007/03/27 Ed:2 UL Standard for Safety Information Technology Equipment -  
Safety - Part 1: General Requirements

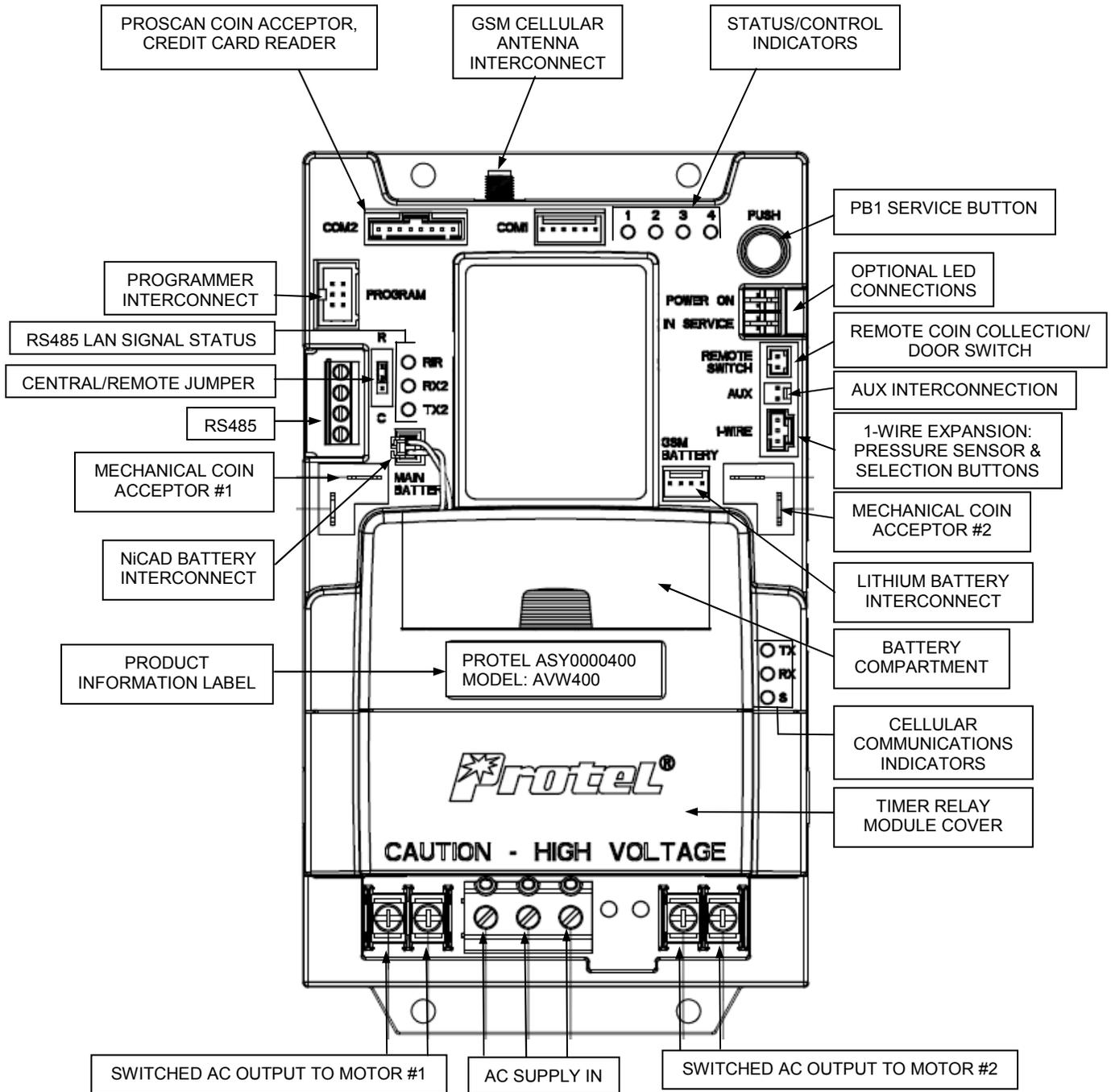
The AVW400 is certified to Canadian CSA C22.2#60950-1  
Issued:2007/03/01 Ed:2 Information Technology Equipment Safety Part 1: General

## **Warranty Requirements**

The AVW400 is a completely self-contained controller & monitor, and this simplifies troubleshooting. The enclosure for the AVW400 is sealed at the Protel factory with a warranty seal on one of the enclosure screws, and the product warranty is void if this seal is removed. If an AVW400 requires service or repair, it must be returned to the Protel factory.

# Chapter 2 - Connections and Functionality

Before installing the Pro-Star® AVW400 you should become familiar with the location of its components, connectors and indicators.



## ProStar® AVW400 Controller / Monitor

### Connection Descriptions

<b>L N</b> ⊕	Line (Hot), Neutral, and Ground Input
<b>L1</b>	Controller #1 Switched AC Line Output
<b>N1</b>	Controller #1 AC Neutral Output
<b>L2</b>	Controller #2 Switched AC Line Output
<b>N2</b>	Controller #2 AC Neutral Output
<b>C1</b>	Controller #1 Mechanical Coin Acceptor Input
<b>C2</b>	Controller #2 Mechanical Coin Acceptor Input
<b>RS 485</b>	RS485 Wired LAN Interconnect
<b>MAIN BATTERY</b>	NiCad Battery Connector
<b>GSM BATTERY</b>	Lithium Battery Connector
<b>R / C</b>	Remote / Central Jumper
<b>PROGRAM</b>	FP-20 Flash Programmer Connector
<b>COM 2</b>	Electronic Coin Validator / Credit Card Reader Connector
<b>COM 1</b>	Future Expansion
<b>PUSH (PB1)</b>	Service Push Button
<b>REMOTE SWITCH</b>	Remote Coin Collection or Door Open Switch Connector
<b>AUX</b>	Auxiliary Connector
<b>1-WIRE</b>	1-Wire Connector
<b>POWER ON</b>	Power On LED Connector
<b>IN SERVICE</b>	In Service LED Connector
<b>RS485 LAN Signal LED's</b>	Indicates RS485 Signal Transmission
<b>Status and Control LED's</b>	Indicates Operational Status and Control Feedback
<b>Cellular LED's</b>	Indicates Status and Communication for GSM Cellular Modem.

### R/C JUMPER Setting

Position "C"	Position "R"
Central Monitor (Normal)	Remote Monitor

**Note:** A POR (Power On Reset) must be initiated after changing the jumper position.

## Cellular Communications Indicators

TX	Indicates data is being transmitted to the internal GSM cellular modem.
RX	Indicates data is being received from the internal GSM cellular modem.
S	GSM Cellular Modem Status Indicator.

**TX** – TX is abbreviated for transmit. This LED will illuminate when the Pro-Star® AVW400 is sending data to the internal GSM cellular modem.

**RX** – RX is abbreviated for receive. This LED will illuminate when the Pro-Star® AVW400 is receiving data from the internal GSM modem.

**S** – GSM Cellular Modem Status Indicator. The Status LED is the key indicator for the current status of the cellular modem. When a modem is first connected, the modem goes through several states that are indicated by the Status LED.

**State1:** LED Off

Cellular modem is shutdown. The Pro-Star® AVW400 needs to trigger the unit to "wake up" before communication can begin.

**State2:** LED Steady On/Off Flash (50% duty cycle)

Cellular modem is active but not attached to GSM network.

**State3:** Long Pause With 1 Quick Flash

Cellular modem is active and attached to the GSM network. The cellular modem must be in this state before communications can occur.

## RS485 Signal Status Indicators

RX2	Indicates receive data is detected on the RS485 bus.
TX2	Indicates transmitting data on the RS485 bus.
RIR	Radio-in-Range Indicator for optional 900MHz LAN radio.

**TX2** – TX is abbreviated for transmit. This LED will illuminate when that particular monitor is sending data on the RS485 bus.

**RX2** – RX is abbreviated for receive. This LED will illuminate when data is detected on the RS485 bus from another device such as a credit card reader or a FreeBee remote.

**RIR** – Radio In Range Status Indicator. This LED provides a visual indication of the 900 MHz LAN radio and is used for diagnostic purposes.

*Central Monitor* – The Protel HDM0142100 radio is used on Central monitors, and it is programmed for central operation. The RIR LED turns on when the radio is powered up, and it does not indicate “in range”. The central radio in a central monitor is used to communicate with remote radios in remote monitors or the remote radio in a FreeBee free vend remote.

*Remote Monitor* – The Protel HDM0142200 radio is used on Remote monitors, and it is programmed for remote operation. For a radio in remote mode, the RIR LED does not turn on until the remote radio detects signal from a central radio indicating it is “in range” of the Central. A Remote monitor communicating over a 900 MHz LAN radio will not work until it is “in range” of the Central monitor.

## **Operational Status / Control Indicators**

### **LED 1 – Configuration File Status**

<b>LED Status</b>	<b>Description</b>
OFF (Normal)	Monitor has a Configuration File and is in a normal operating state.
ON	Monitor does not have a Configuration File.
FLASHING	Monitor failed to download Configuration File and is operating under a default Configuration File.

### **LED 2 – Address Assignment on Communications Bus (Remote only)**

<b>LED Status</b>	<b>Description</b>
OFF (Normal)	Address assigned by Central Controller / Monitor.
ON	Address not assigned by Central Controller / Monitor.

### **LED 3 – Communication Status**

<b>LED Status</b>	<b>Description</b>
OFF (Normal)	No communication activity.
ON w/ PB1	When PB1 is pressed, lights to indicate that the monitor is establishing connection with Host Computer or Central Monitor.
FLASHING	Transferring data to Host Computer.

#### **LED 4 – Coin Box Emptied / Coin Counter Reset**

<b>LED Status</b>	<b>Description</b>
OFF (Normal)	No activity.
ON w/ PB1	When PB1 is pressed, lights to indicate coin box collection
ONE FLASH	Monitor is capturing the coin box switch status.
FOUR FLASHES	Coin Collection Completed

#### **LED 2, 3 & 4 – Service / Test Mode**

<b>LED Status</b>	<b>Description</b>
OFF (Normal)	Controller is operating in the normal mode.
ON w/PB1	Enter Service Mode
FLASHING	Controller is operating in the Service Mode.

#### **LED 1, 2, 3 & 4 – Soft Reset (Retains data)**

<b>LED Status</b>	<b>Description</b>
OFF (Normal)	Controller is operating in the normal mode.
ON w/PB1	Initiates Soft Reset
TWO FLASHES (All LED's)	A Power On Reset (POR) has been successfully performed.

#### **Hard Reset (Data will be lost)**

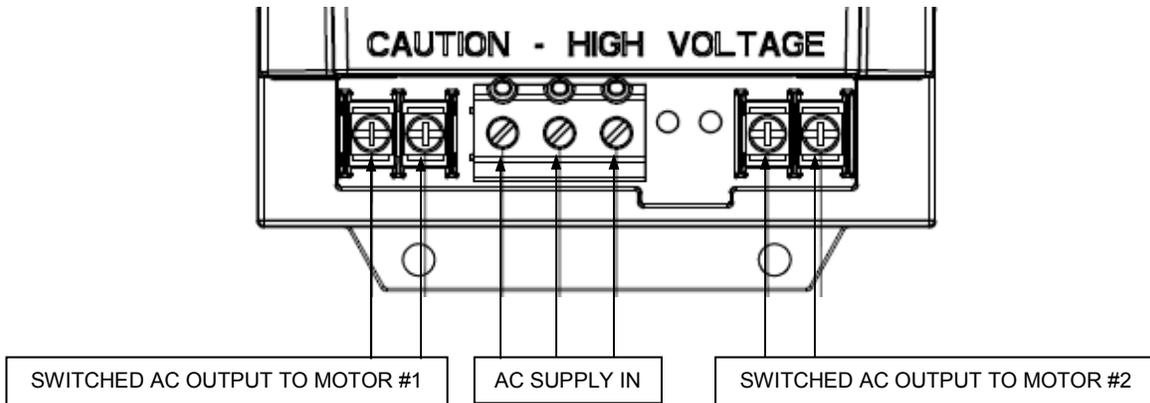
Remove Power – Disconnect the back up Main Battery, wait 3 minutes. Plug backup battery in. All 4 LEDS will flash 2 times. Restore power.

## Chapter 3 - Installation

**WARNING:**

To avoid electrical shock, verify that AC power has been disconnected to the AVW machine before initiating the installation process or when performing maintenance on the Pro-Star® AVW400 or inside the AVW machine.

The Pro-Star® AVW400 is designed for installation inside the AVW machine's controller compartment. Because the space provided for controller mounting varies from one machine manufacturer to another, it may be necessary to identify a suitable location for your specific machine. A template is provided in this manual to assist in establishing the appropriate measurements for mounting the Pro-Star® AVW400. Devices inside of the AVW machine including motors, coin mechanisms and optional sensors or switches as well as external AC power are connected directly to the Pro-Star® AVW400. See the Interconnect Diagram in Chapter 4.



## Pro-Star® AVW400 Installation

### Tools needed:

Screwdriver  
Drill

### Equipment not supplied:

4ea. – #10 screws  
Tie wraps

### Electrical Service Requirements:

- Air Only, Vac Only, or Air/Water Machines - The AC power source should be protected by at least a 15 amp circuit breaker, and the minimum service wire size is 12 AWG for up to 60 feet.
- Air/Vac Machines – The AC power source should be protected by at least a 20 amp circuit breaker, and the minimum service wire size is 10 AWG for up to 70 feet. This will accommodate a 5A compressor and two 7A vacuum motors. It is not recommended to use a high current (greater than 5A) compressor in an air/vac machine with the Pro-Star® AVW400, because that would require a 30A circuit breaker and 8 AWG service wire.

### Note:

The Pro-Star® AVW400 installation and operation manual does not cover pre-installation set-up of the AVW for IVS management system. Before the Pro-Star® AVW400 can be fully activated it must first be set up in the IVS for AVW management system. This would include site and telephone number assignment, and typically includes setting up base rates, timer durations, event configuration parameters, reporting and/or polling parameters, and notification preferences.

- 1) **Important:** Turn **OFF** the machine's power.
- 2) Take a few minutes to familiarize yourself with the system wiring. Use tie wraps to assist in organizing any wires that may hinder the installation process.
- 3) Install the cellular antenna (see installation instructions below).
- 4) If optional devices are being used, such as the remote collection switch, the air pressure sensor, or the RS485 LAN radio antenna, it is recommended that these devices are installed before installing the Pro-Star® AVW400. Refer to installation instructions specific to these devices.
- 5) Being careful to avoid damaging wires or the AVW machine integrity, drill the mounting holes.
- 6) Ensure a SIM is installed in the SIM tray (see instructions below).
- 7) Install the Pro-Star® AVW400 controller timer and monitor securely in place.
- 8) Attach external AC power to the appropriate Load (L), Neutral (N), and Ground (⊕) terminals. See Electrical Service Requirements above.
- 9) Install the Motor #1 wires to the Switched Motor Drive #1 Load (L1) and Neutral (N1) terminals.

- 10) Install the Motor #2 wires to the Switched Motor Drive #2 Load (L2) and Neutral (N2) terminals. (Dual motor applications only)
- 11) Install the Mechanical Coin Mechanism #1 wires to connector C1. These connections are not polarity sensitive.
- 12) Install the Coin Mechanical Mechanism #2 wires to connector C2. These connections are not polarity sensitive.

**CAUTION:**  
 Risk of explosion exists if battery is replaced by an incorrect type.  
 For disposal of used batteries, call 1-800-822-8837

13) Attach installed optional devices to their appropriate connectors on the Pro-Star® AVW400.

14) The Pro-Star® AVW400 is shipped with its NiCad and lithium batteries unplugged. Plug-in the NiCad and lithium batteries at this time.

15) **Important: Re-check all wiring, make sure none of the wiring will cause mechanical interference, and ensure that all modules are securely fastened.**

16) Proceed to the Initialization section of this manual to configure the Pro-Star® AVW400 Controller / Monitor and establish communications with the IVS for AVW Management Software.

## Cellular Modem Antenna Installation



The Pro-Star® AVW400 Controller / Monitor has a built-in cellular modem, and it provides wireless communications between the Pro-Star® AVW400 Controller / Monitor and the IVS for AVW management system.

**NOTE:** For non-Protel machines, a 5/8" hole must be drilled in the top of the cabinet to allow installation of the antenna. Protel machines have an antenna mounting hole.

- 1) Identify a suitable location for mounting the Cellular antenna on top of the AVW machine. When considering the mounting location, keep in mind that a channel for routing the Cellular Antenna cable to the Pro-Star® AVW400 must be available.

- 2) Mount the antenna through the hole drilled in the top of the cabinet, and secure the antenna base with locking nut.
- 3) Connect the antenna cable (large, silver colored end) to the base of the antenna. Route the Cellular Antenna cable to the Pro-Star® AVW400, and attach the SMA cable connector to the threaded, gold colored, SMA connector at the top end of the AVW400. For applications where a longer antenna cable is required, use a WICA000273-72, six foot, extension cable.
- 4) Restore AC power to the AVW machine and proceed to the Initialization section of this manual to configure the Pro-Star® AVW400 Controller / Monitor and establish communications with the IVS for AVW Management Software.

## SIM Installation



- 1) The SIM tray is located on the right side of the Pro-Star® AVW400 monitor near the three LEDs labeled TX, RX, and S. Using a pen or other pointed object, depress the actuator to the right of the SIM tray to open the tray. The tray will pop out about 1/8 inch when the actuator is depressed.



- 2) Pull the tray out of the Pro-Star® AVW400 monitor.
- 3) Install the SIM in the tray with the gold contacts facing up out of the tray. Note the location for the notch on one corner of the SIM.
- 4) With the SIM installed in the tray, carefully slide the tray all the way back into the slot on the right side of

the Pro-Star® AVW400 monitor. The tray should be flush with the side of the monitor when correctly installed.

**CAUTION: DO NOT FORCE THE SIM TRAY. IT SHOULD SLIDE IN SMOOTHLY.**

## Initialization

- 1) Upon installation, with the NiCad and lithium batteries plugged in and ac power turned **ON**, LED1 will be illuminated indicating that the Pro-Star® AVW400 monitor is on, but not configured. To configure the monitor, it must communicate with the IVS for AVW Management System.
- 2) To initiate a call to the host management system, press and hold the gray PB1 pushbutton depressed until LED3 illuminates. When LED 3 lights, release the gray pushbutton.

**Note:** Upon pressing the gray pushbutton, LED4 will briefly illuminate first, then LED4 will turn off and LED3 will turn on. Release the gray pushbutton when LED3 turns on. LED3 will light steady while the Pro-Star® AVW400 attempts to establish a connection with the IVS system. When a connection is established, LED3 will begin to flash during modem communication with the host management system. After successfully communicating with IVS and receiving a system configuration, all LED's will be OFF. The Pro-Star® AVW400 is now ready for normal use.

- 3) Place the monitor in Service Mode (see page 23). Perform a test vend. Trip a coin mechanism (or deposit coins) to make the machine turn ON. Exit the Service Mode by momentarily pressing the gray PB1 pushbutton. Then press the gray pushbutton again until LED4 illuminates, and release the pushbutton. This will reset the Coin Box amount to zero, and the Coin Box should be collected at this time. A modem communication will occur to report the collection: LED3 will flash when modem communication with the host has been established, and will turn OFF upon completion. Verify that all LED's are OFF. The test vend event will be displayed on the IVS event screen. This, of course, requires access to the management system.

## **Communicating with the IVS for AVW Management System**

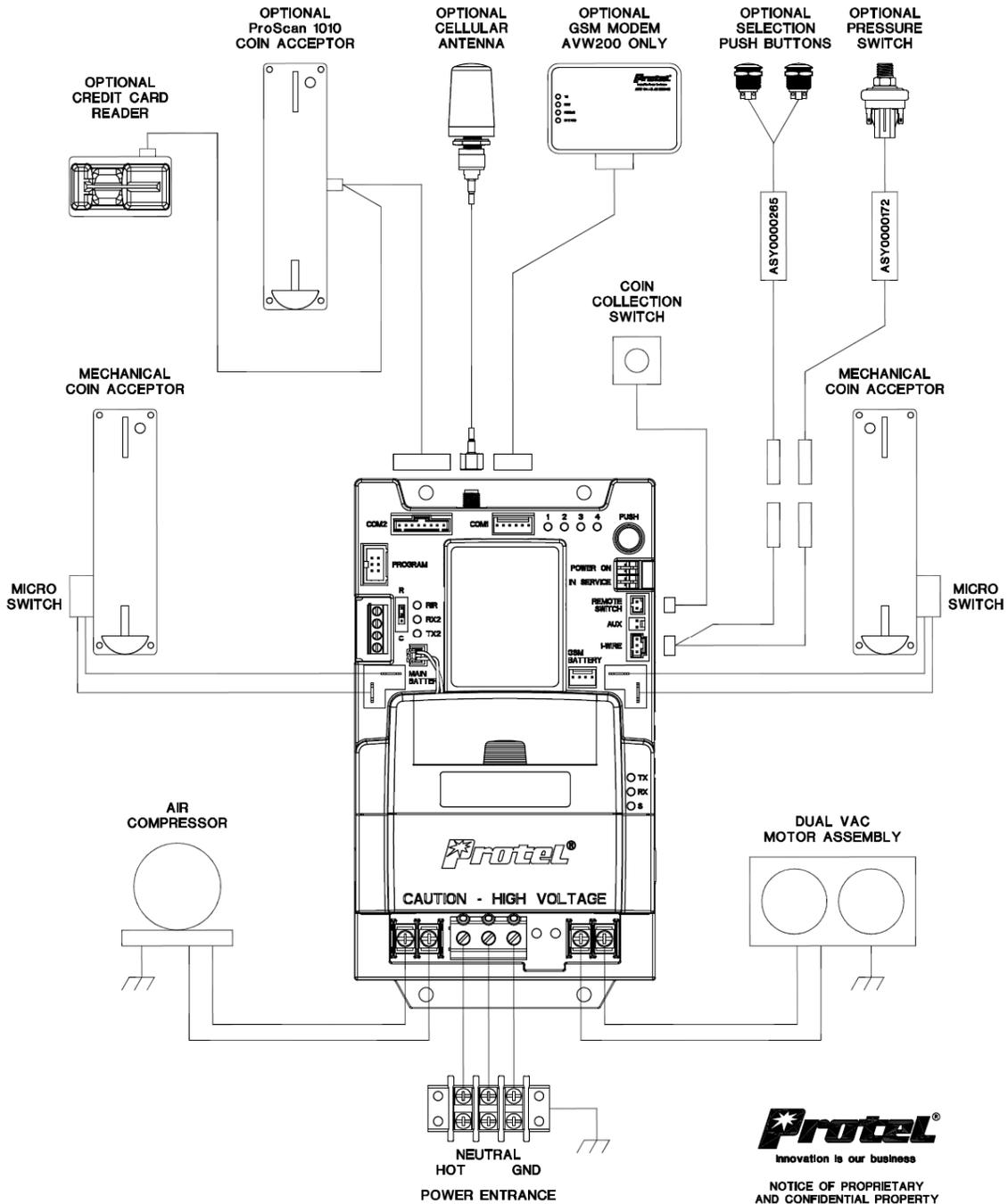
In the event of a communication failure, the Pro-Star® AVW400 Controller Timer & Monitor will initiate a retry protocol until a successful communication session occurs. A failed communication session can occur because:

- The cellular modem in the Pro-Star® AVW400 was not in State 4 (see description of Cellular Communications Indicators in Chapter 2). This can be due to a problem with the SIM or a problem with connecting to the cellular network.
- Network congestion or problems prevented the host computer from receiving the communication.
- The host computer did not answer the incoming communication.
- The host computer answered the incoming communication, but communication dropped before the session was completed.

All of the events above result in a failed communication session. The Monitor will attempt to establish a new communication session using the following retry protocol:

- The monitor will attempt to call again after 2 minutes. This cycle will be attempted 3 times if needed.
- The monitor will then wait 15 minutes and try again. This cycle will occur 3 times if needed.
- The monitor will wait 2 hours and try again. This cycle will occur 3 times if needed.
- The monitor will try again at the next scheduled reporting time. This will repeat indefinitely until a successful communication occurs.

# Chapter 4 – Optional Equipment



AVW400\_LAYOUT.DWG

## AVW200 AND AVW400 INTERCONNECT DIAGRAM



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## Timer Relay Module

The Pro-Star® AVW400 features a modular Timer Relay assembly. This eliminates the need to replace the entire controller / monitor assembly should a timer relay fail.

**WARNING: Use the Timer Relay Module cover to access the fuse and the Timer Relay Module. Do not open the entire AVW400 enclosure because that will void the product warranty. One of the enclosure screws is covered with a warranty seal.**

### Fuse Replacement

If the monitor appears to be non operational (no power, no LED's) check Fuse (F1) under the Timer Relay Module cover. The correct fuse type is 1.5 amps, 250 Volts, 2AG fast acting.

#### 1. Before proceeding any further, disable AC power to the AVW machine.

**WARNING:**

To avoid electrical shock, verify that the AC supply power to the AVW machine has been disconnected at the source before servicing the Pro-Star® AVW400.

2. Remove the external AC power from the Load (L), Neutral (N), and Ground (⊕) terminals.
3. Remove the Motor #1 and Motor #2 wires from the L1, N1, L2 and N2 terminals.
4. Remove the Coin Mechanism #1 and Coin Mechanism #2 wires from connectors C1 and C2 respectively.
5. Remove the Pro-Star® AVW400 from the AVW machine.
6. Gently pull out on the Timer Relay Cover tabs located on each side of the cover and lift to remove the Timer Relay cover.
7. Using a screwdriver, carefully begin to pry up the Timer Relay Module, shifting from side to side until it is raised high enough to gain a grip on both sides with your fingers. Then, lift the Timer Relay Module using a rocking motion until it is free from the Pro-Star® AVW400 unit.
8. Check fuse F1. If the fuse is blown, replace with a 1.5 amp, 250 Volt, 2AG, fast acting fuse.
9. Install the Timer Relay Module by aligning it in place on the Pro-Star® AVW400 unit and then firmly pressing it down until it is securely seated.
10. Re-install the Timer Relay Cover.

11. Reference the Installation and Initialization sections of this manual to re-install the Pro-Star® AVW400.

### Timer Relay Module Replacement

1. It is recommended that a service call be initiated to the IVS for AVW Management System before performing any maintenance on the Pro-Star® AVW400. To accomplish this, press and hold the gray pushbutton depressed until LED3 illuminates. When LED 3 lights, release the gray pushbutton.

**Note:** Upon pressing the pushbutton, LED4 will briefly illuminate first, then LED4 will turn off and LED3 will turn on. Release the pushbutton when LED3 turns on. LED3 will light steady while the Pro-Star® AVW400 attempts to establish a connection with the IVS system. When a connection is established, LED3 will begin to flash. After successfully communicating with IVS all LED's will be OFF.

#### 2. Before proceeding any further, disable AC power to the AVW machine.

**WARNING:**

To avoid electrical shock, verify that the AC supply power to the AVW machine has been disconnected at the source before servicing the Pro-Star® AVW400.

3. Remove the external AC power from the Load (L), Neutral (N), and Ground (⊕) terminals.
4. Remove the Motor #1 and Motor #2 wires from the L1, N1, L2 and N2 terminals.
5. Remove the Coin Mechanism #1 and Coin Mechanism #2 wires from connectors C1 and C2 respectively.
6. Remove the Pro-Star® AVW400 from the AVW machine.
7. Gently pull out on the Timer Relay Cover tabs located on each side of the cover and lift to remove the Timer Relay cover.
8. Using a screwdriver, carefully begin to pry up the Timer Relay Module, shifting from side to side until it is raised high enough to gain a grip on both sides with your fingers. Then, lift the Timer Relay Module using a rocking motion until it is free from the Pro-Star® AVW400 unit.
9. Install the replacement Timer Relay Module by aligning it in place on the Pro-Star® AVW400 unit and then firmly pressing it down until it is securely seated.
10. Re-install the Timer Relay Cover.

11. Reference the Installation and Initialization sections of this manual to re-install the Pro-Star® AVW400.

## Remote Coin Box Collection Switch



The PB1 service button on the Pro-Star® AVW400 can be used to report a Coin Collection event to the IVS for AVW system. For added convenience, a Remote Coin Box Collection Switch can be installed within the coin box compartment or in an alternate machine location. This will provide collection personnel access to the switch without the need to open the controller compartment. To accomplish this, an open path for routing the switch wiring to the Pro-Star® AVW400 controller / monitor must be available.

### Remote Coin Box Collection Switch Installation

1. Identify a convenient location for the remote coin box collection switch that does not physically or electrically interfere with the AVW machine or its components.
2. Clean the established mounting location for the switch with rubbing alcohol to remove any dirt or grime.
3. Attach the switch in place using the supplied Dual Lock fastener.
4. Route the switch wires to the Pro-Star® AVW400 and attach them to the connector labeled Remote Switch.

## Credit Card Reader

See separate “Pro-Star® AVW200 Card Reader Option Installation and Operation Manual” for information on the Protel credit card reader.

## Air Pressure Sensor



When equipped with the optional Air Pressure Sensor, the Pro-Star® AVW400 can monitor and report air pressure status. During an air vend, the air pressure in the hose will fluctuate as the user depresses and releases the air nozzle. The Air Pressure Sensor feeds the status of the air pressure to the Pro-Star® AVW400 throughout the entire vend cycle. The Pro-Star® AVW400 analyzes the fluctuations in airflow to determine whether a normal pressure, low pressure, or no pressure condition exists. A low or no pressure condition will result in a corresponding alarm to the IVS for AVW management system. A low pressure condition may indicate a defective regulator, weak compressor, or an air leak, and a no pressure alarm is likely the result of a cut hose or defective compressor.

### Air Pressure Sensor Installation

1. Disconnect the air hose from the pressure regulator (if installed) or compressor output.
2. Connect the T fitting to the pressure output on the compressor.
3. Connect the Pressure Sensor and the air hose to the T fitting.

When installing the Air Pressure Sensor it is recommended that Teflon Tape be used on all air fittings.

4. Route the Pressure Sensor wire to the Pro-Star® AVW400 and secure it to the connector labeled 1-WIRE. If the pressure sensor is located far from the Pro-Star® AVW400, use a WICA000315-72 extension cable between the pressure sensor and the ASY0000172 cable. If selection pushbuttons are installed, use a WICA000195 “Y” splitter cable to connect the pressure sensor and the selection pushbuttons to the 1-WIRE connector on the Pro-Star® AVW400.
5. Use tie wraps to neatly secure the Pressure Sensor wire in place so that it will not interfere with the operation of the AVW machine or become damaged.

## FreeBee Remote Kit with External Antenna



### Freebee installation

**NOTE:** For non-Protel machines, a 7/16” hole must be drilled in the top of the cabinet to allow installation of the ANT0000046 antenna. Protel machines have an antenna hole.

1. Remove the cover marked LED Status Control by pressing in the sides and gently lift near the top center of the cover. This allows access to the radio.
2. Install the brass colored end of the WICA000272-15 cable to the radio module by holding the radio board vertically, and carefully press down on the miniature connector until you feel a click. Mount the radio to the AVW400, and place the cover

back on. Notice the guide holes for the antenna cable when replacing the cover. The cable can exit on the right or the left side under the cover.

3. Mount the antenna through the hole drilled in the top of the cabinet, and secure the antenna base with the locking nut.
4. Mount the monitor and connect the two cables together. For applications where a longer antenna cable is required, use a WICA000273-72, six foot, extension cable.

In the Routes/Sites/Machine Information menu, select Integrated Monitor and input the serial number of the Freebee. The serial number is located on the back of the Freebee.

In the Event Configuration menu for the Routes/Sites/Machine, you will set the Cost and Duration for both vends.

## Chapter 5 – Operational Features

### Service Mode

A Service Mode allows for performing test vends without affecting coin collection totals. To enter the Service Mode, press and hold the gray service button on the Pro-Star monitor until LED's 2, 3, & 4 are lit, and then release the button. It takes approximately 3 seconds for each state change for the LED's. The monitor will remain in the Service Mode for a period of fifteen (15) minutes, and LED's 2, 3, and 4 will blink continuously while the monitor is in the Service Mode. Test coin drops and timer events are reported to the IVS management software as Test Coin Drop, Test Vend (Timer #1 OFF), and Test Vend (Timer #2 OFF). Additionally, the monitor will report the date and time that the service mode was accessed.

To exit the Service Mode manually, simply press the gray service button. In the normal operation mode, all LED's are off.

**Note:** Service Mode events can be set up to be emailed or text-messaged via the Notification section in the IVS for AVW management system. This allows field service personnel to verify operation when servicing a machine without requiring someone to be at the host computer to provide feedback.

## Coin Collections

Coin collections can be recorded by the Pro-Star® AVW400 Controller /Monitor and reported to the IVS for AVW management software. When a coin collection is initiated, the amount in the coin box is re-set to \$0.00. A coin collection can be initiated using either the PB1 pushbutton or the optional remote coin box collection switch.

**Note:** It is necessary to program the remote switch to work as a coin collection switch rather than a door open switch. This is accomplished through the IVS for AVW management software Event Configuration.

To initiate a coin box collection, simply press and release PB1 or the optional coin box switch.

## Hard Reset

Should the Pro-Star® AVW400 Controller / Monitor ever get into an unknown state, it may be necessary to perform a Hard Reset. When a Hard Reset is performed, all existing information and programming in the Pro-Star® AVW400 Controller /Monitor will be lost. Therefore, a Hard Reset is recommended as a “last resort” after all other attempts to return the unit to its normal operating state have failed. To initiate a Hard Reset, disconnect back up batteries and remove power. Wait 10 seconds and restore power first and then reconnect batteries.

# Chapter 6 – AVW400 Mounting Template

Below is an outline drawing of the AVW400 that identifies the four screw holes used to mount the AVW400 in a machine.

