



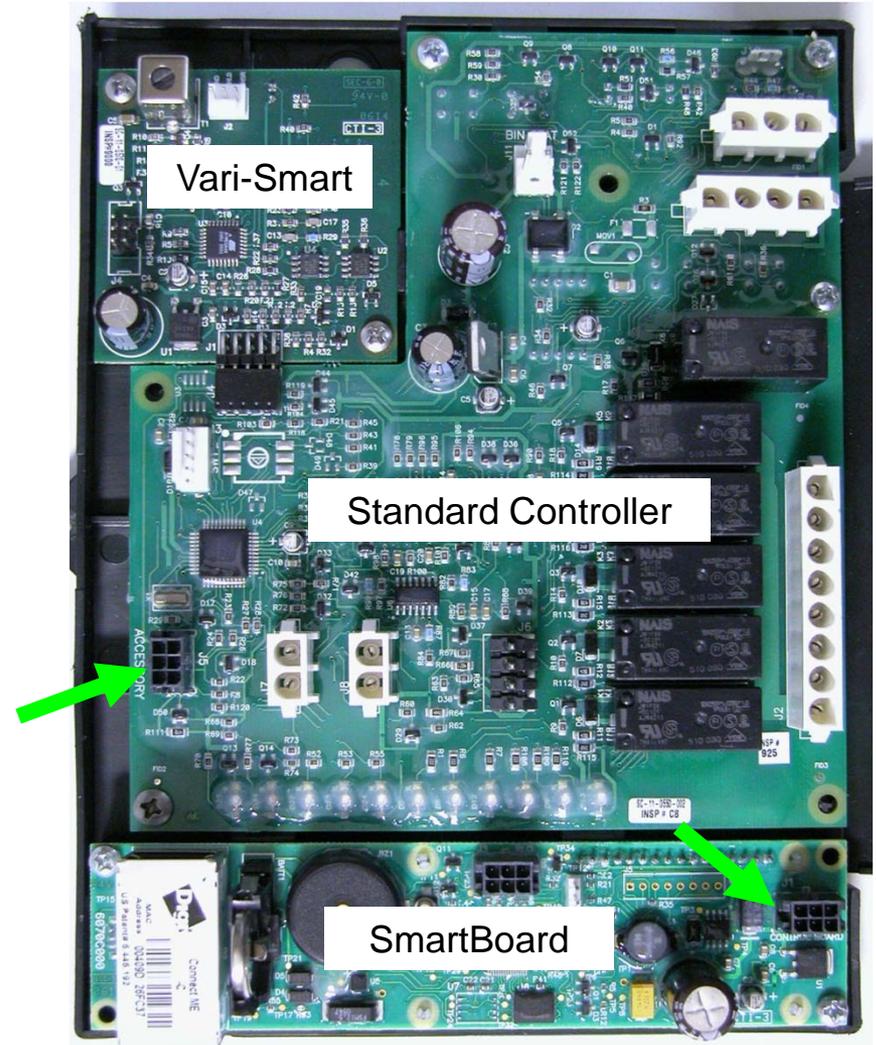
Prodigy Options

Option List

- Smart-Boards
 - Kit number **KSBU** – **not for networks**
 - Kit number **TPDL2**, a **portable** datalogger
 - Kit number **KSBU-N** – Smart-Board with Ethernet connector
- Vari-Smart – Kit number **KVS**
- SmartLock – Kit number **KSL**

Option Information

- One or all can be on a unit
 - Green arrows show Smart-Board cable connections



What do they do?

- **Smart-Board**

- Logs data

- Diagnostic code times – know when the problem occurred
 - Cycle times – know how the machine is performing

- Communicates

- Network model: Ethernet connection – can be used to monitor operation per the NAFEM protocol – use third party software
 - Two line display provides added information
 - USB connection – need PC & Scotsman software

- Calculates cycle information

- Average freeze or harvest times
 - Percent run time

What do they do?

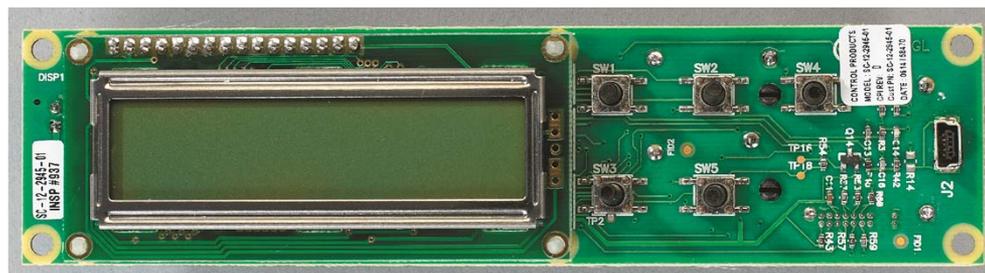
- Smart-Board - continued

- Displays status

- Freeze cycle time
 - Harvest cycle time
 - Purge value selected
 - Water and discharge temperatures
 - Voltage to the controller
 - Run times

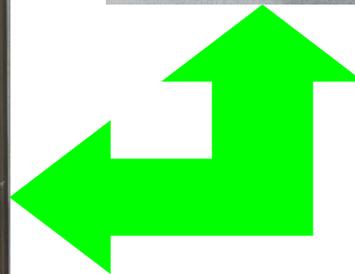
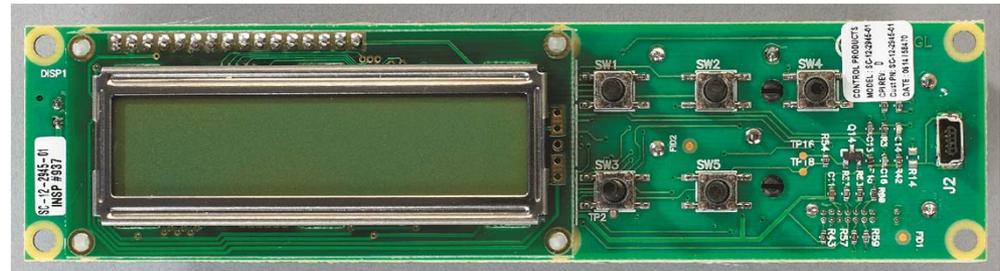
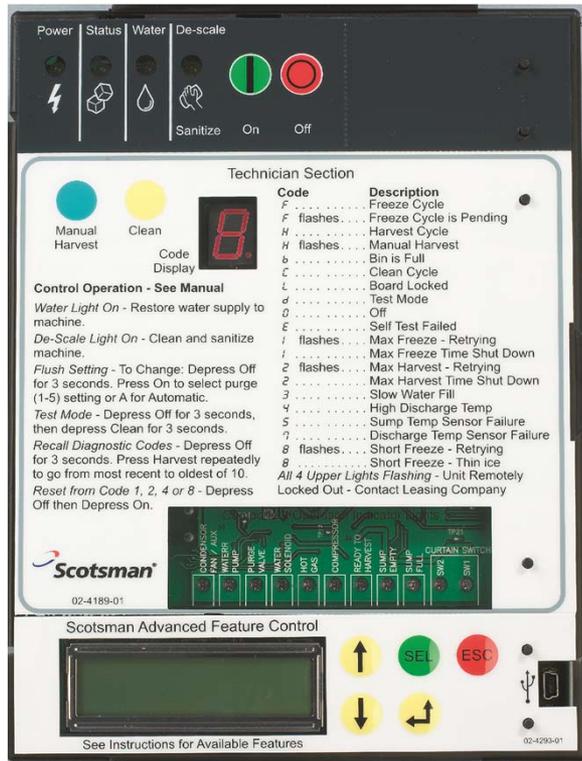
- Does NOT

- Email alerts, codes or anything
 - List a diagnosis – some thought will be required



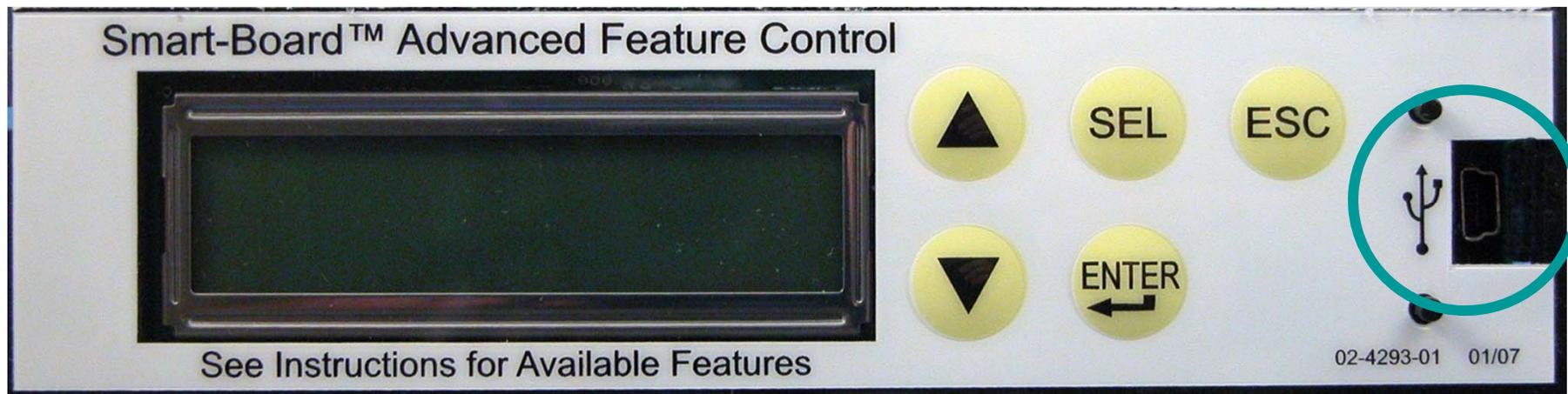
Smart-Board

- Add-on to machine
 - Located below the standard controller



Smart-Board

- USB connection for PC to use with supplied Scotsman software



Smart-Board & TPD L2

- Display Menu:
 - Date and Time
 - Warnings – alerts without shut down – blinking green status light notifies user
 - Trigger points are adjustable
 - Base Faults – those logged in controller
 - Advanced faults – those logged in Smart-Board - lists time and date of fault
 - Status
 - Temperatures, bin level (when Vari-Smart is used)
 - Freeze time, harvest time, cycle count, flush used, strike counter, power interrupts

Smart-Board & TPD2

- Display Menu:
 - Cleaning
 - Clean interval
 - Next clean due
 - Performance
 - Percent run time, min, max and average times
 - Test
 - Tests water fill rate
 - Timers
 - Compressor run, machine power on

Smart-Board & TPDL2

- Display Menu
 - Revision
 - Hardware and software info
 - Setup
 - Time, date, contact info
 - Program bin level
 - Use with Vari-Smart
 - Not used with TPDL2
 - Network configuration
 - Not used with KSBU and TPDL2

Smart-Board Example: Status

- Depress the down arrow to change what is displayed.
- When the S of Status is underlined, depress the Enter key.
 - The ice machine's discharge temperature will be displayed.
 - Press the down arrow again, and the sump temperature will be displayed.
 - Another down arrow push brings up the calculated voltage to the controller

```
Adv Faults  
Status
```

```
Discharge Temp:  
157
```

```
Sump Temp:  
38
```

```
Board Voltage:  
14.03 VAC
```

Smart-Board Example: Status

- When connected to a Vari-Smart, the Smart-Board can display the measured bin level in inches from the base.
- Push the down arrow to see the level the system is set for
- Freeze and Harvest Times are the next Status items on the menu



Bin Level:
10



Bin Setpoint:
9



Freeze Timer:
00:00



Harvest Timer:
00:00

Smart-Board Example: Performance

- Press the ESC key to return to the main menu.
- Press the down arrow key until the P in Performance is underlined.

Then press Enter.

- The run time percentage will be displayed
- More down arrow presses shows average Freeze time.
 - Harvest time also available
- Stored cycle time data can be cleared by selecting Clear History

Adv Faults
Status

Cleaning
Performance

Percent. Run Time:
45.34 %

Ave Freeze Time:
10:15

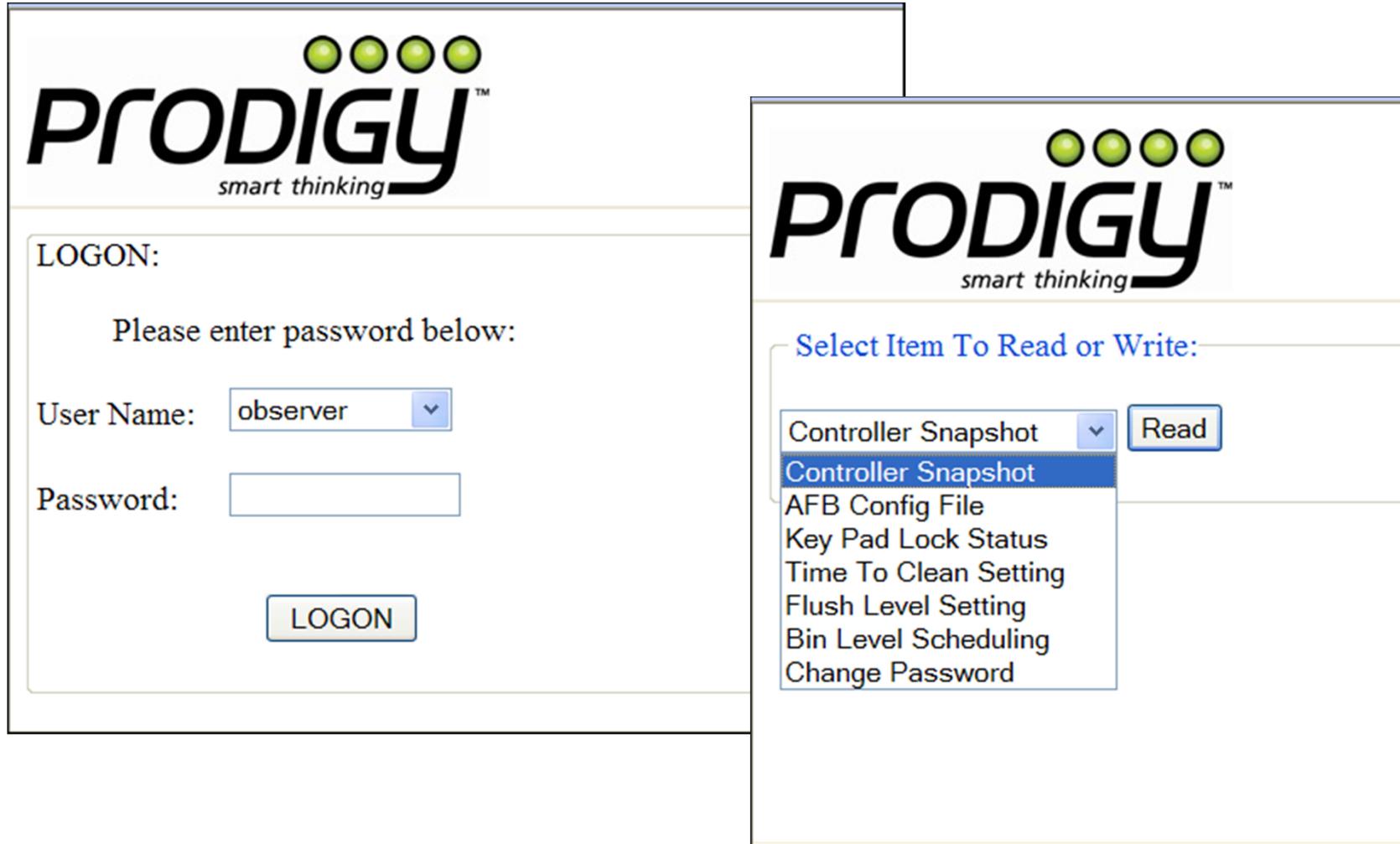
Clear History

Smart-Board KSBU-N

- Same as Smart-Board but has an Ethernet connector
 - For applications where network connection or NAFEM protocol is needed
 - Query the controller when connected to a network using an Internet Browser (Explorer, Firefox)
 - Need network address – it's displayed when Smart-Board is connected to a network
 - Enter it (the IP address) into the Address Bar and tap Enter



KSBU-N Standard Network Access



The image shows two overlapping screenshots of the Prodigy web interface. The left screenshot displays the login page, and the right screenshot shows the configuration menu.

Left Screenshot (Login Page):

- Logo: **PRODIGY**™ smart thinking (with four green circles above the text)
- Section: **LOGON:**
- Text: Please enter password below:
- User Name: (dropdown menu)
- Password:
- Button: **LOGON**

Right Screenshot (Configuration Menu):

- Logo: **PRODIGY**™ smart thinking (with four green circles above the text)
- Section: **Select Item To Read or Write:**
- Dropdown menu: **Controller Snapshot** (selected)
- Button: **Read**
- Menu items:
 - Controller Snapshot
 - AFB Config File
 - Key Pad Lock Status
 - Time To Clean Setting
 - Flush Level Setting
 - Bin Level Scheduling
 - Change Password

KSBU-N Network Controller Snapshot



Select Item To Read or Write:

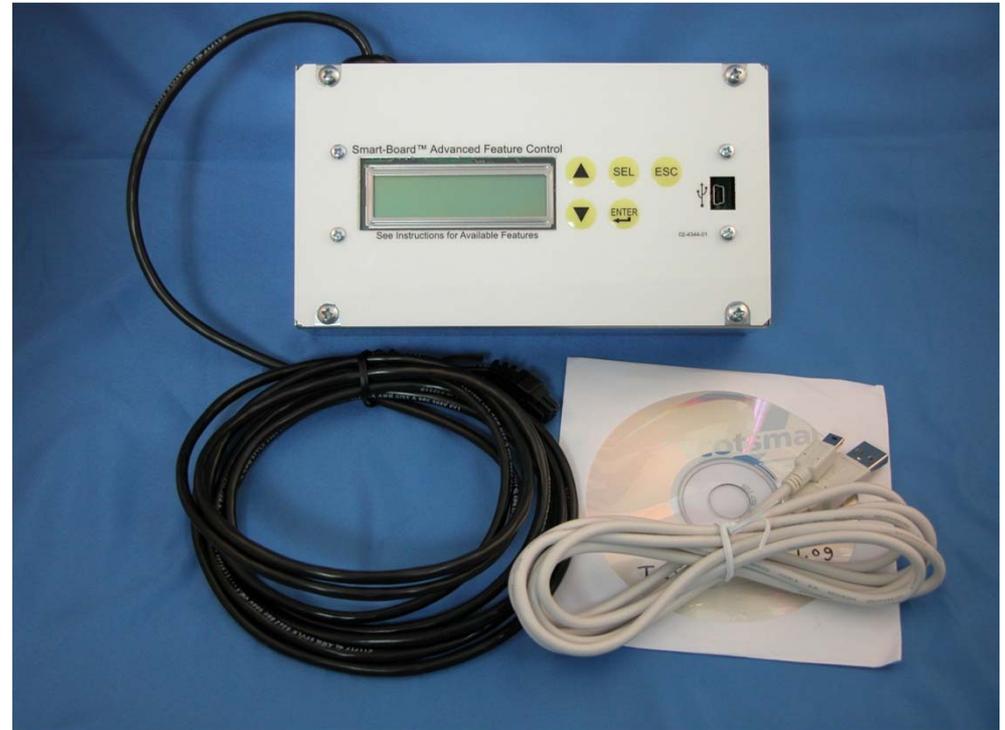
Controller Snapshot

Controller Response

Name	Value	Description
Serial Number	987654	Machine Serial Number. Lists the last 6 numbers
Software Rev	2	Controller Software Revision
Hardware Rev	0	Controller Hardware Revision
Op Mode	3	"Mode of operation. Modes are: 1 = Flush Level Adjust State, 2 = Immediate Off, 3 = Off, 4 = Freeze, 5 = Harvest, 6 = Restart Refrigeration, 7 = Bin Full, 8 = Clean, 9 = Error Shut Down, 10 = Error Restart, 11 = Scotsman Test, 12 = Fault Code View, 13 = Ice Meltdown, 15 = Water Fill Test, 17 = Time to Clean Adjust"
Error Code	0	"Current error code, 0 = No error, 1 = Max Fill Time, 2 = Max Freeze Pending, 3 = Max Freeze, 4 = Max Harvest, 5 = Max Harvest Pending, 10 = High Discharge Temperature, 11 = Discharge Temperature Sensor, 12 = Sump Temperature"
Warning	0	"AFB Warning, 0 = No warning"
Hot Gas Valve Counter	7010	Number of times hot gas valve has cycled = number of batches the machine has made
Pwr Interrupts	132	Number of times power has been interrupted

TPDL2

- Tool, Prodigy Data Logger 2
 - Smart-Board in a box (with a long cable)
 - Includes Software
 - Includes USB cable
 - Compatible with cubers and flakers
 - Software and USB cable only needed if using PC to review data



TPDL2

- Use of TPDL2
 - Can be attached to an ice machine and left with it inside the cabinet to gather data
 - 1. Connect to controller – but not when unit is making ice! Controller will reset if connected live.
 - 2. Clear Current Log File
 - Setup, Down arrow to Clear Current Log file, Select button twice to clear it
 - 3. Clear History
 - Performance, Down arrow to Clear History, Select button twice to clear it
 - 4. Be sure Program Bin Level is set to OFF
 - PGM Bin Level, Enter to view Bin Level Ctrl, Off or On. Select and arrow buttons to change it.

Smart-Board Software

- Scotsman Prodigy and Prodigy Charting
 - Supplied with each Smart-Board
 - Install on Windows XP, Vista or Windows 7 computer
 - Prodigy downloads data from Smart-Board
 - Charting analyzes the data
 - 37 different operational facts available, a few are:
 - Freeze time
 - Harvest time
 - Sump temp
 - Discharge temp

Smart-Board Software

- Data downloads to c:\scotsman prodigy\datalog
 - File is named with serial number and date of download
 - Example: 987654 072307.log
 - Full file is about 2.5 MB and takes about 20 minutes to download
 - Data log in Smart-Board can be cleared by Prodigy software
 - Data file can be imported into Excel

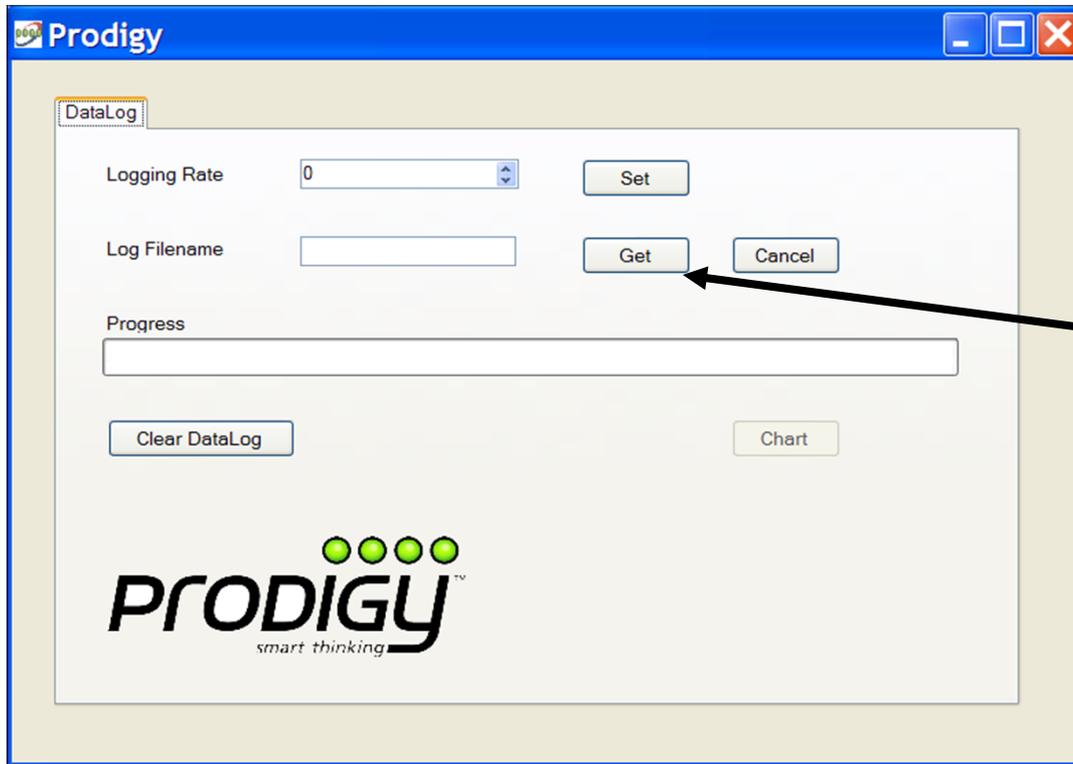
Data File and Excel

- From within Excel:
 - File Open, select the data log file
 - In the dialog box “files of type” area select “all files”
 - Delimited should be the default, if not check it
 - Tab should be the default delimiter, if not check it
 - File will open in Excel and can be saved as a separate Excel file if desired.

Use of Data Log

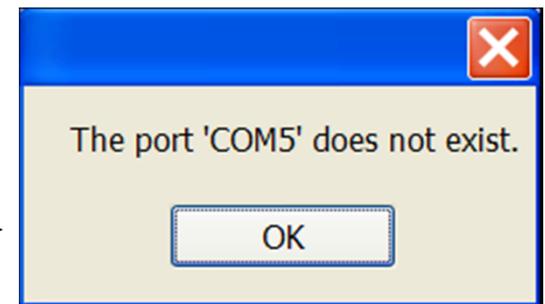
- Must understand how an ice machine works
 - Look for causes of failure modes
 - Example - Low capacity complaint
 - Machine suspected of shutting off when bin is not full (false bin full)
 - Op mode in log can show if bin full signal was present or unit shut off due to long freeze or harvest
 - Freeze cycle times can show long cycles
 - Discharge temperature can show when unit was off – perhaps due to high pressure cut out

Use of Software - Prodigy



Select Get to download data

This alert shows when the Smart-Board is not connected to the PC



Use of Software - Charting

Column Selection [X]

i Add check mark to column to include in parsing.

- Op Mode
- Error Code
- Warning
- Hot Gas Valve Counter
- Pwr Interrupts
- Time To Clean
- Button Lock
- Time to Clean Interval

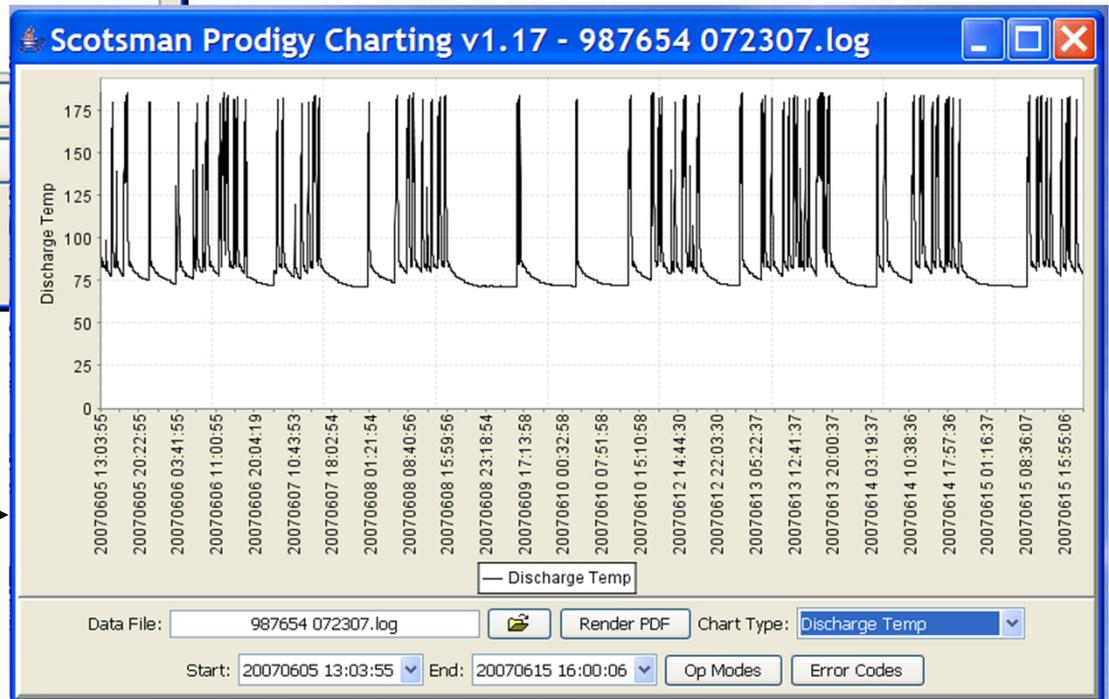
Check All

Un-Check All

OK

← Select what to chart
Check All works best

View the Chart →



Charting Code Information

Op Modes

- 0 = Power restart stat
- 1 = Flush level adjustment state
- 2 = Immediate off state
- 3 = Off state
- 4 = Freeze state
- 5 = Harvest State
- 6 = Restart refrigeration state
- 7 = Bin full state
- 8 = Clean state
- 9 = Error shutdown state
- 10 = Error restart state
- 11 = Scotsman test state
- 12 = fault code view state
- 13 = Ice melt down state
- 14 = Remote lock out state
- 15 = Water fill test state
- 16 = Voltage shutdown state
- 17 = Time to clean adjustment state
- 26 = EEPROM check sum error state

OK

Error Codes

- 1 = Sump water max fill time error
- 2 = Max freeze time pending error
- 3 = Max freeze time error
- 4 = Max harvest time error
- 5 = Max harvest time pending error
- 6 = Min freeze time pending error
- 7 = Min freeze time error
- 10 = High discharge temperature error
- 11 = Discharge temperature sensor error
- 12 = Sump temperature sensor error

OK

What do they do?

- **Vari-Smart**

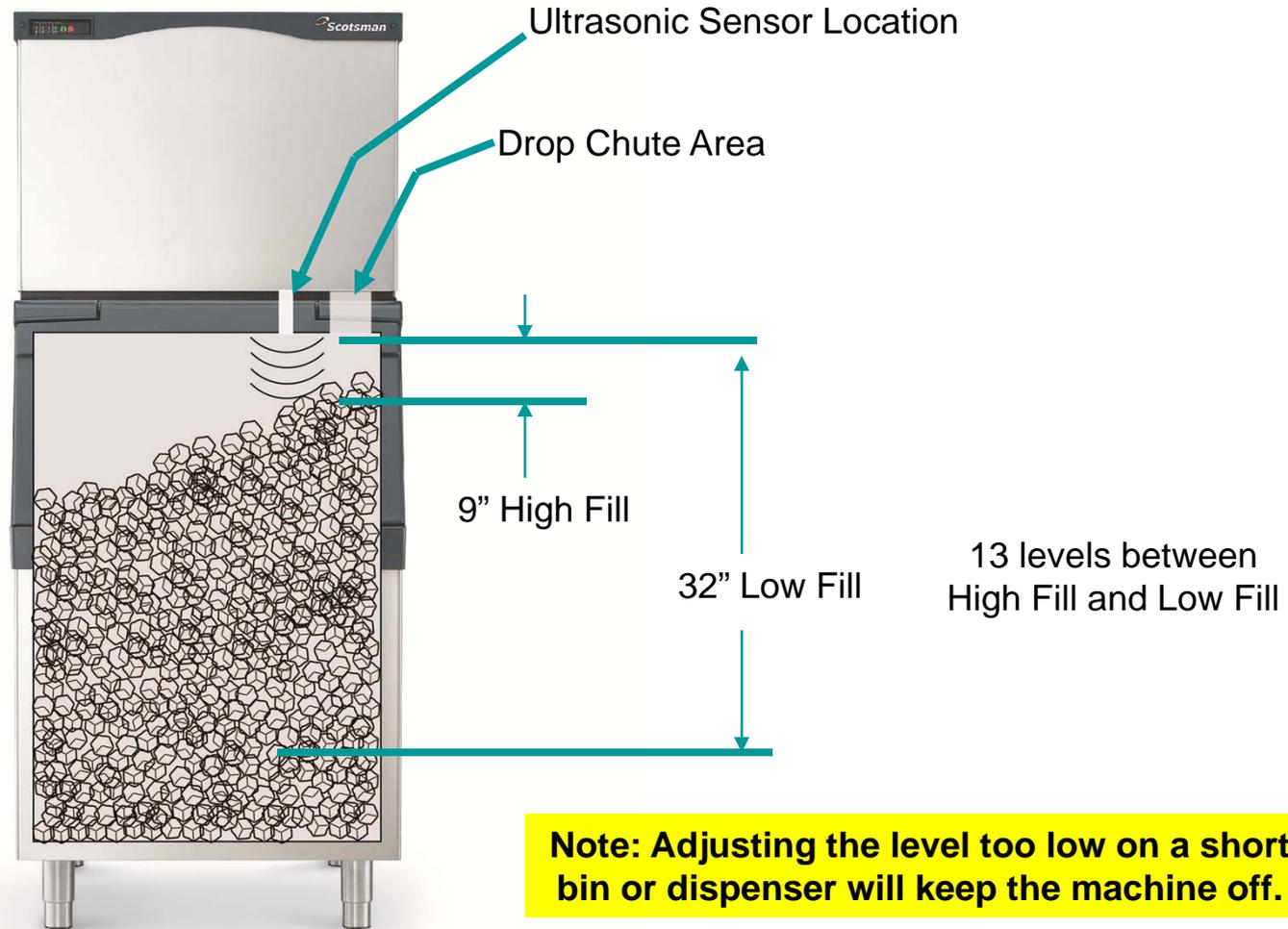
- Maintains a lower ice level in the bin or dispenser than the standard curtain switch
- Ice level is adjustable
 - Closest lowered level is 9 inches from the sensor
 - Furthest is 32 inches from the sensor
 - Prodigy bases have molded sensor locations
- Can be used with the Smart-Board for 7 day programmable ice level setting

Field Installed Options

- Vari-Smart – Adjustable ice level control
 - Connects to existing controller
 - Adjustable to maintain a lower level of ice in bin or dispenser



Vari-Smart – How does it work?



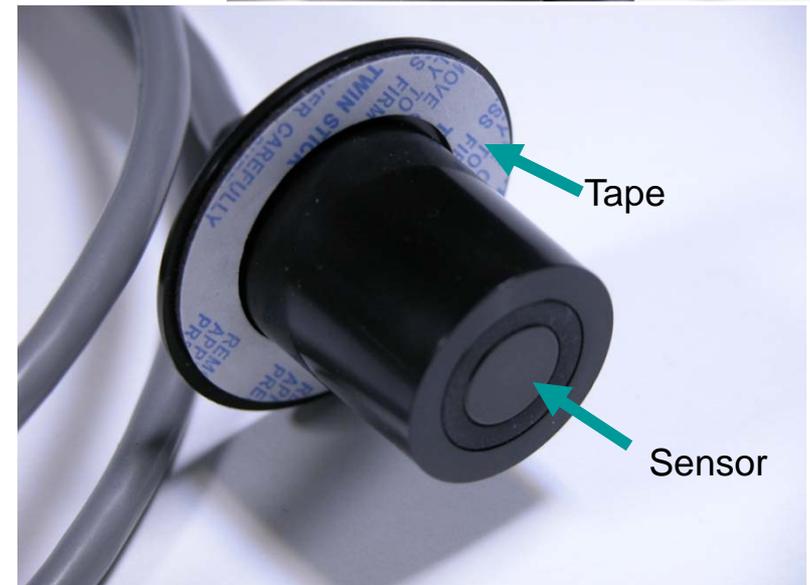
Bin Full

- The Bin Full light is On when the Vari-Smart senses an ice height greater than it is set for.
- The control will shut the machine off at the end of the cycle after bin full is sensed.



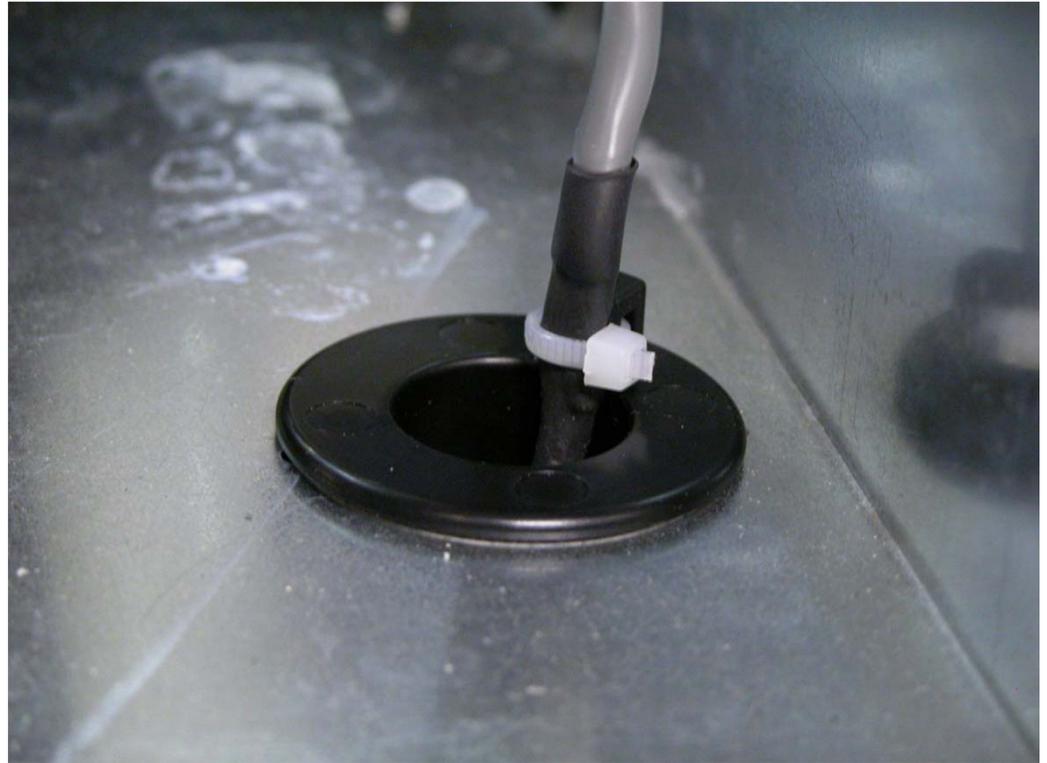
Vari-Smart

- Sensor installs in base of machine.
 - Molded hole in base
 - Sensor mount
 - Internal rubber grommet for sensor
 - Mount must be secured to the sheet metal base
 - Double sided tape



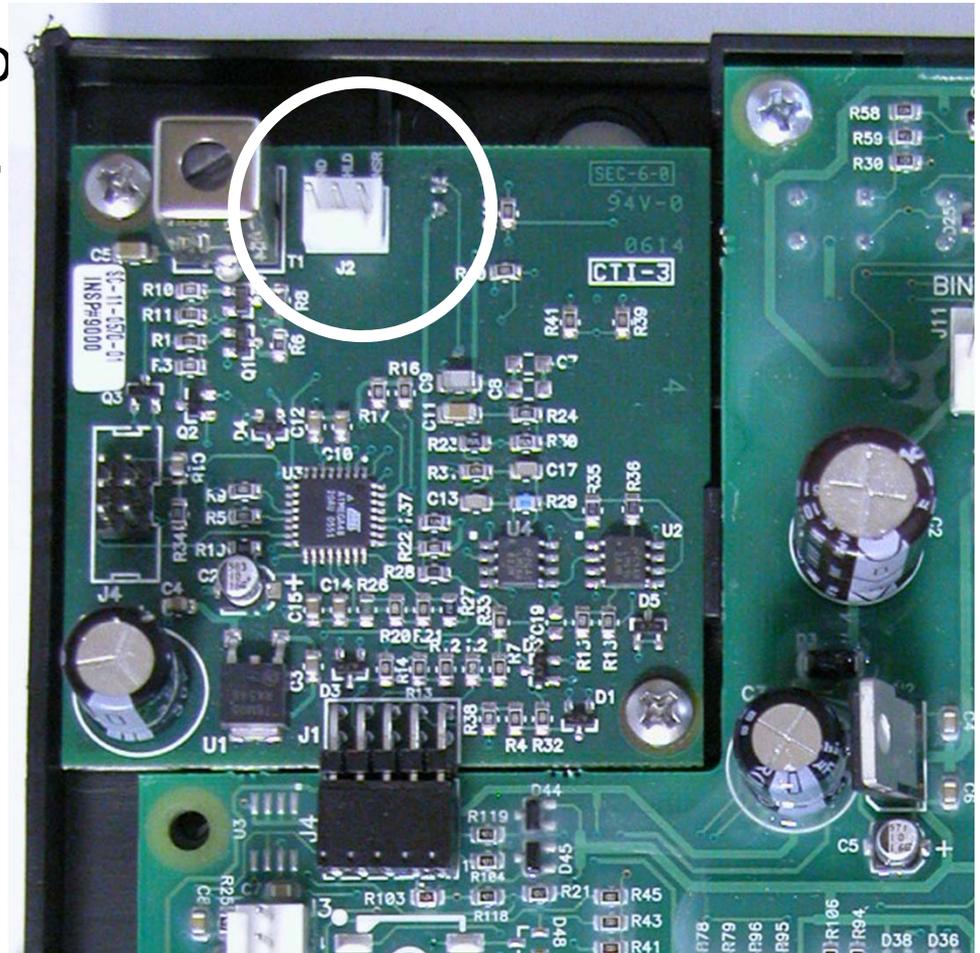
Vari-Smart

- Sensor shown in the installed position
- Wire routes to the Vari-Smart control board, which attaches to the main Prodigy controller.



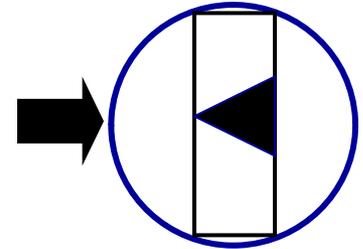
Vari-Smart

- Sensor cable connects to Vari-Smart control at top.
- Vari-Smart control board plugs into main Prodigy controller.



Vari-Smart

- When the adjustment knob and decal arrows point to each other the unit shuts off on the curtain switch
 - Next setting CW is 9" from sensor to top of ice
 - Typical ice slope results in ice closer at the drop zone
- Adjustable lower
- 1" ice level differential between off and on



Vari-Smart

- Recommended settings
 - Dispensers
 - 9 – 11 inches
 - Bins
 - Tall bins – any
 - Short bins – no lower than 16"
 - Do not set too low when on a dispenser or short bin
 - If too low, Vari-Smart will sense dispenser liner and keep ice machine off



Vari-Smart

- What to expect
 - Vari-Smart maintains an ice level
 - Level maintained will be approximately what is selected
 - Occasionally shuts off on curtain switch
 - Occasionally higher under drop zone after recent harvest and at first fill
 - Use / dispenser agitation levels out the ice
 - Two units on same bin use individual Vari-Smarts and will maintain separate levels

7 Day Programmable Ice Level

- Vari-Smart and Smart-Board together can provide automatically adjusted bin ice levels
 - 7 days of independent settings
 - 4 times per day
 - From Off (cycles on curtain switch)
 - To 32
 - The Smart-Board includes a clock and has a 10 year battery.

Smart-Board 7 Day Programmable Ice Level

- Default Settings

- Bin Level Control set to OFF in Smart-Board

- Vari-Smart dial setting controls ice level
- When set to ON, the Smart-Board is in control and the Vari-Smart dial has no affect

- Preset ice levels – same for each day

- 12 am = 9"
- 5 am = 9"
- 12 pm = 9"
- 5 pm = 12"

Programming Ice Level - Example

- Push the down arrow of the Smart-Board until the screen shows PGM Bin Level and the P is underlined. Push the Enter and then SEL keys.
- Push the Up arrow key to change On to Off. Push the Enter key.

```
Setup  
PGM Bin Level
```

```
Set Bin Level Ct  
On
```

```
Set Bin Level Ct  
Off
```

Set Bin Level Ct must be OFF to program the Smart-Board for ice level control.

Programming Ice Level - Example

- Push the down arrow key.
- Underlined numbers can be adjusted with arrow keys. SEL moves underline to the next number.
- Push Enter to confirm the time.
- Push down arrow key.
- Rotate Vari-Smart adjustment knob to dial in setting. A slight delay in response is normal.
- Push Enter to confirm the level.
- Repeat for all settings.

Monday Time 1
01:00 AM

Monday Level 1
Selector Switch

Monday Level 1
9

or

Monday Level 1
10

or

Monday Level 1
32

Programming Ice Level - Example

- Push the down arrow of the Smart-Board until the screen shows PGM Bin Level and the P is underlined. Push the Enter and then SEL keys.
- Push the Up arrow key to change Off to On. Push the Enter key.

```
Setup  
PGM Bin Level
```

```
Set Bin Level Ct  
Off
```

```
Set Bin Level Ct  
On
```

Set Bin Level Ct must be ON to allow the Smart-Board to operate the ice level control.

KSBU-N Standard Network Access

- With a network connection
 - Set time and level the Vari-Smart will maintain

Ultrasonic Bin Level Scheduling:

Ultrasonic Bin Level Scheduling Enabled ▾

Mon Time 1: 12 :00 AM ▾ 9 Inches ▾ Time 2: 05 :00 AM ▾
9 Inches ▾ Time 3: 12 :00 PM ▾ 9 Inches ▾ Time 4: 05 :00
PM ▾ 12 Inches ▾

What do they do?

- **SmartLock**

- Allows the machine to be shut down or restarted remotely, via page.
 - When shut down or locked, machine will not operate.
 - Requires unlock command to restart.
 - Used in conjunction with a Skytel account.
- Limited coverage – see coverage map at Skytel website

SmartLock

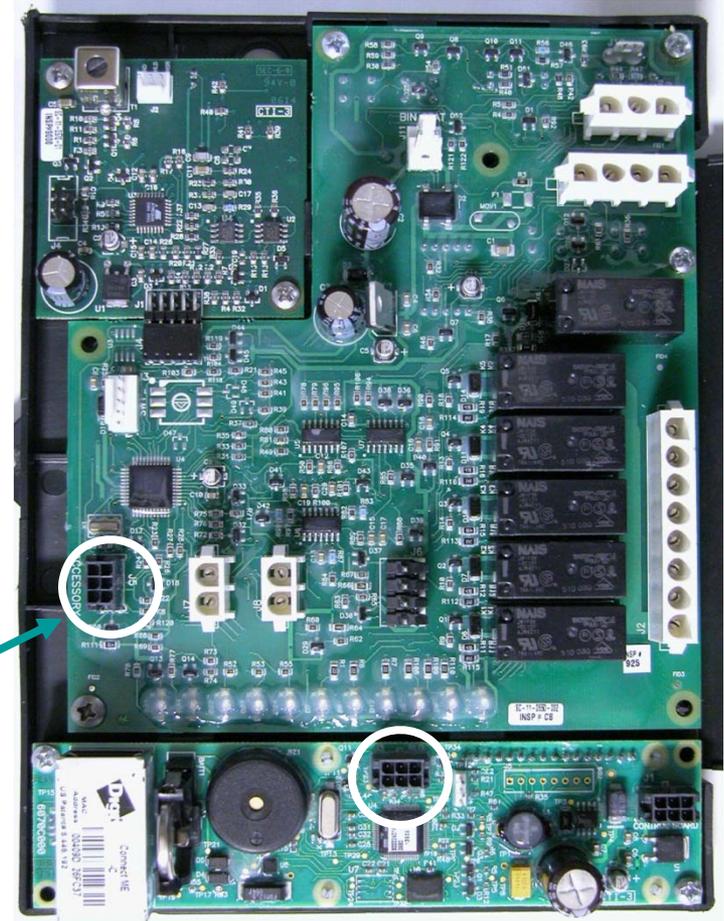
- Cable from controller to external antenna mounted to back of ice machine cabinet



SmartLock

- If not using the Smart-Board, connect to the Accessory terminal of the Controller.
- If using the Smart-Board, connect to the RLO (J3) terminal of the Smart-Board.

Accessory



SmartLock

- Must be activated at SkyTel site to engage SmartLock protection
 - Need account, unit serial number and SmartLock number to activate

The screenshot shows the SkyTel website interface for sending a message. The page has a blue header with the SkyTel logo and navigation links: Products & Services, Customer Service, Coverage, Partnerships, About SkyTel, and a search box. Below the header is an orange navigation bar with links for Send Messages, Personal Messaging, Shop, and Contact Us. The main content area is titled 'Send A Message:' and includes the instruction 'Send a message to any SkyTel U.S. alphanumeric customer.' The form fields are: Recipient's SkyTel PIN (with a 'save PIN(s) [?]' link), Response Address (with a 'save address [?]' link), and a large text area for the Message. Below the message field is a 'Count Characters' button and a note '(Includes response address)'. The 'Delivery Time' section has a radio button for 'Now' and a date/time selector set to 8:16 AM Central Time. There is also a 'Show Custom Response Field' button. At the bottom of the form are 'Send Message' and 'Clear Fields' buttons. On the right side, there is a 'More Info' section with links for Send a Message, Check Status of Message, Personal Messaging, Need Help?, and FAQ. The footer contains links for Site Map, Privacy Policy, Terms & Conditions, Verizon Business, and Contact Us, along with the copyright notice '© 2006 SkyTel Corp. All Rights Reserved'.

SmartLock

- Once activated, internet lock command or removal of cable locks out controller – stops ice making
- When controller is locked out, machine cannot be restarted unless unlock signal is sent
 - Activation, lock and unlock are all through internet service

SmartLock

- Controller replacement on unit with SmartLock
 - Must enter unit serial number into replacement controller
 - Use TPD1 to enter the serial number
 - Setup
 - Serial number – Select to change
 - Only enter last 6 numbers
 - Re-activate to obtain SmartLock protection

Summary

- Standard Prodigy performs very adequately without the options
- Options are for **specific purposes**
 - Smart-Board for monitoring machine operation
 - Vari-Smart for adjustable ice level
 - SmartLock for remote on-off control
 - TPDL2 for service use