
Instructions

Installation and Operation of the Prodigy Smart-Board™, KSBU-N

Scotsman's Advanced Feature Smart-Board is an optional add on electronic device that can be applied to most Prodigy models, either cuber or flaker. It can be used:

- With the standard controller
- With the standard controller and the SmartLock Out Control (KSL)
- With the standard controller and the Vari-Smart™ Ice Level Control (KVS)
- With the standard controller, and both the KSL and the KVS

Smart-Board abilities include:

- USB connection to Scotsman's Prodigy TechTool software
- Data Logging
- Data Display

Kit Contents (permanent mount)

- Smart-Board (AFB), mounting screws, overlay label, connecting cable

Installation:

1. Depress and hold the Off button until the machine shuts Off (Status light will go out).
2. Disconnect electrical power from the ice machine.
3. Remove front panel.
4. Locate blank lower part of overlay panel (label). Score perforation with knife, lift up bottom corner of label and peel the blank portion away from the control box cover up to the perforation. Flex several times and remove the label from the control box cover.
5. Attach supplied overlay to control box door in place of the one removed in step 4.
6. Remove screw holding control cover to control box, swing control & cover open.
7. Install AFB board to bottom of control box cover. Secure to cover with the supplied screws.
8. Connect supplied wire from SmartBoard **J1** to main controller **Accessory**.

Note: If the unit has a SmartLock installed too, connect the SmartLock cable to J3 (RLO) of the SmartBoard.



9. Close the control box cover.
10. Reconnect electrical power. Display will show time and date (US Central Time). See time set section for instructions on changing the time.

Configuration: Set Up

First time use: Follow the steps to reset the Smart-Board (push Enter).

1. Reconnect electrical power. Display will show time and date.
2. If this is the first time the Smart-Board has been used or connected to this unit, you might see a Machine Changed notice.
3. Machine Changed: Enter=RST, ESC=No. Push Enter

```
Date: 12-20-2008
Time: 03:33:10PM
```

```
Machine Changed
Enter=RST, ESC=No
```

After the Enter button has been pushed, you will first see the Resetting notice, then see the log files from the prior unit being erased. There are 19 log files.

```
Resetting
```

If you do not want it reset, push ESC.

```
Erasing Log 1
```

After the log files have been erased, the Smart-Board will restart.

The next screen will show time and date (US Central Time). See time set section for instructions on changing the time. First time users should go to the next page.

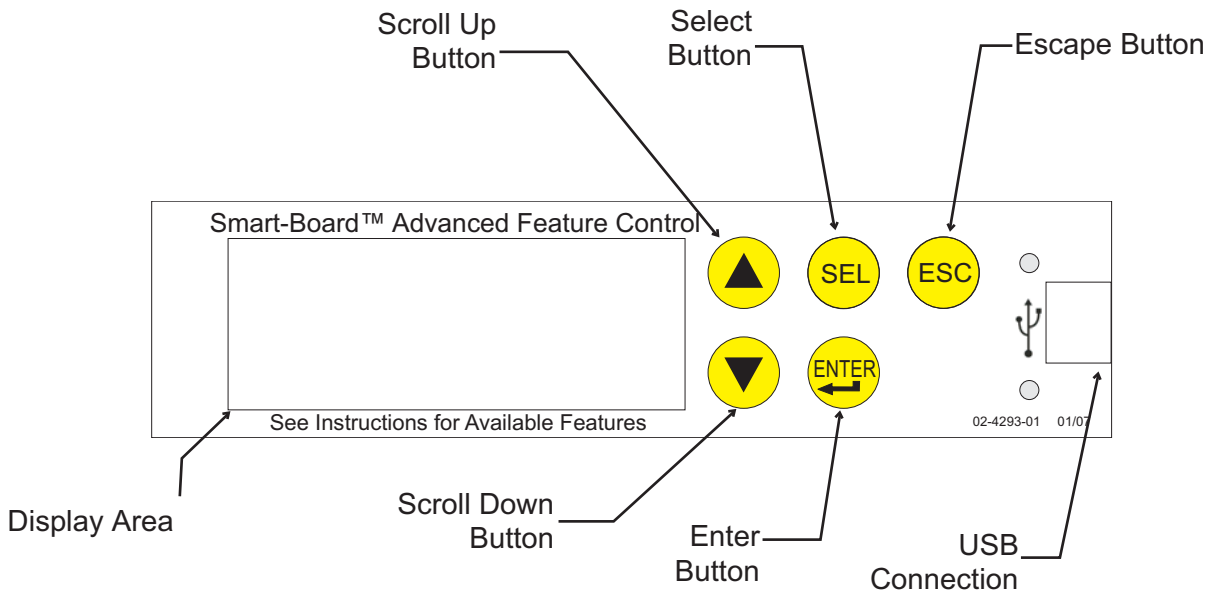
```
Reset successful
restarting
```

```
Date: 12-20-2008
Time: 03:33:10PM
```

Use of Smart-Board Buttons:

Scroll Up: Changes the display to a menu item higher on the menu list or goes up one number on a setting

Scroll Down: Changes the display to a menu item lower on the menu list or goes down one number on a setting



Select Button: Use to make changes to settings.

Enter Button: Changes display to a sub menu list.

Escape Button: Changes display to the main menu.

The Smart-Board can display Warnings and Data.

Data Available: Cubers - partial list, see page 6 for more under status, performance or cleaning.

- Time, Date
- Average freeze time
- Minimum freeze time
- Maximum freeze time
- Average harvest time
- Minimum harvest time
- Maximum harvest time
- Diagnostic code with timestamp
- Compressor run time
- Freeze cycles
- Flush level used
- Water quality
- Operational mode
- Water temperature
- Discharge temperature
- Voltage from the transformer
- Bin stat input status

Data Available: Flakers - partial list, see page 7 for more under status, performance or cleaning.

- Warning
- Power Interrupts
- Time to Clean
- Button Lock
- Time to Clean Interval
- Time Since Last Cleaning
- Compressor Runtime
- Pwr Up Time
- Bin Level
- Bin Level Setting
- Freeze Timer (in 00:00 format)
- Relay Voltage
- Board Voltage
- Auger Motor Current
- Falling Ice Count
- Bin Stat

Warnings - will appear in display after malfunction

For Cubers

- Self Test Fail
- Long Freeze Pend
- Long Freeze Err
- Long Harvest Err
- Check Water
- High Temp Error
- Sump Temp Sensor
- Disch Temp Sensor
- Min Freeze Pend
- Min Freeze Error
- Check Water Warn
- Long Freeze Warn
- Long Harv Warn
- High Temp Warn

For Flaked or Nugget Machines

- Self-Test Failure
- No Ice Pending
- No Ice Strikeout
- Auger High Load Pending
- Auger High Load Strikeout
- No Water
- Refrigeration Pressure Too High/Low
- No Ice Warning
- Auger Load Warning

Communication Features:

The Smart-Board can communicate information in two ways:

- Display: The two line display is controlled by the buttons on the front of the Smart-Board.
- USB: There is a USB connection on the front of the Smart-Board. It can be used by a laptop or other PC type computer to read, download or log data. Scotsman software is required.

Other Features:

7 Day Programmable Ice Level Control is available when the optional Vari-Smart adjustable ice level control is installed on the Prodigy controller. Instructions for programming are included in these instructions. **Some features are not available when installed on a cuber that has Rev 1 software.** Rev 2 use began approximately March 2007.

If a Smart-Board and a Vari-Smart are used with a Rev 1 software controller:

- Bin level control cannot be disabled by setting programmable value to 0. Setting to 0 uses the current switch setting, whatever it happens to be at.*
- Bin Full LED is not controlled by the Smart-Board, but by the disabled selector switch. This means it can be on or off with no correlation to actual level.
- In the Smart-Board menu, there's a value called Bin Level Setpoint, it'll show the disabled selector switch value instead of the programmable value.

Software Rev can be identified using the Smart-Board or there is a white sticker on the cuber controller, next to the Bin Stat connector. That sticker lists the software rev (as in S.W. Rev: 2).

*** Recommendation when using Rev 1: Set the Vari-Smart control knob to Full (arrows point at each other).**

If moved to another machine:

Clear the datalogger fault history, operational history and data logs so data from a prior unit is not used on another unit.

Fault History: Push the down arrow key to get to Setup, push Enter. Push the Down arrow key until Clear fault history shows, then push Sel once to select the Clear menu and again to clear the fault history.

Performance History: Push the down arrow key to get to Performance, push Enter. Push the Down arrow key to get to Clear History. Push Sel once to select the Clear History menu and again to clear it.

Log: Push the down arrow key to get to Setup, push Enter. Push the Down arrow key until Clear current log file shows, then push Sel once to select the Clear menu and again to clear the log.

Menu Tree - Cubers

Date - preset

Time - preset to Central Time

Warnings

No warnings

See prior page for warning list

Base Faults

Fault code 1:

Fault code 2:

Fault code 3:

Fault code 4 :

Fault code 5 :

Fault code 6 :

Fault code 7 :

Fault code 8 :

Fault code 9 :

Fault code 10 :

Adv (advanced) Faults, description of fault and time and date of occurrence

Self test failure

Long Freeze Pend

Long Freeze Strikeout

Long Harv Pend

Long Harvest Strikeout

Check Water

High Temp Error

Disch Temp Error

Sump Temp Sensor

Discharge Temp Sensor

Min Freeze Pend

Minimum Freeze Strikeout

Status

Discharge Temp

Sump Temp

Board Voltage

Bin Level

Bin Setpoint

Freeze Timer

Harvest Timer

Freeze Counter

Water Quality

Flush Used

Long Frz Strike

Long Hrv Strike

Min Frz Strike

Pwr Interrupts

Bin Stat

Disch Frz Set

Cleaning

Clean interval

Next Clean Due

Last Clean

Flush level

Set Flush Level

Performance

Percent run time:

Min Freeze Time

Max Freeze Time

Avg Freeze Time

Min Harvest Time

Max Harvest Time

Avg Harvest Time

Clear History

Test

Water Test

Water fill time

Esc to cancel test

Timers

Compressor run time

Comp resettable

Press enter to reset

Pwr up time

Pwr resettable

Press enter to reset

Revision

AFB SW Revision

Controller SW

US Bin Level SW

AFB Hardware Rev

Controller HW

Setup

Date

Set date

Time

Set time

Model Number

Set model number

Serial Number

Set serial number

Manufacturer

Equipment Name

Manufacture date

Set Manufacture Date

Install Date

Set Install Date

Contact Name

Set Contact Name

Contact Phone Number

Set contact phone

Audible alert

Set audible alert on / off

Clear current log file

Press Select to clear log

Clear fault history

Press Select to clear fault code

Logging rate

Set logging rate

Fill time warning xxx seconds

Set fill time warning

Freeze time warning xx minutes and seconds

Set freeze time warning

Harvest time warning minutes and seconds

Set harvest time warning

Discharge temp warning in degrees F

Set discharge temp warning

PGM Bin Level*

Bin Level Ctrl

Set Bin Level Ctrl On Off

Monday time 1

Monday level 1

Monday time 2

Monday level 2

Monday time 3

Monday level 3

Monday time 4

Monday level 4

Tuesday time 1

Tuesday level 1

Tuesday time 2

Tuesday level 2

Tuesday time 3

Tuesday level 3

Tuesday time 4

Tuesday level 4

Wednesday time 1

Wednesday level 1

Wednesday time 2

Wednesday level 2

Wednesday time 3

Wednesday level 3

Wednesday time 4

Wednesday level 4

Thursday time 1

Thursday level 1

Thursday time 2

Thursday level 2

Thursday time 3

Thursday level 3

Thursday time 4

Thursday level 4

Friday time 1

Friday level 1

Friday time 2

Friday level 2

Friday time 3

Friday level 3

Friday time 4

Friday level 4

Saturday time 1

Saturday level 1

Saturday time 2

Saturday level 2

Saturday time 3

Saturday level 3

Saturday time 4

Saturday level 4

Sunday time 1

Sunday level 1

Sunday time 2

Sunday level 2

Sunday time 3

Sunday level 3

Sunday time 4

Sunday level 4

Network Configuration***

IP Address

Subnet mask

Default gateway

DHCP Enable

Update IP Address**

Update Subnet mask**

Update default Gateway**

Update DNS**

Update DHCP**

Update network on next power cycle**

* all under PGM Bin Level also have a Set menu

** also have a Set menu

*** Does not apply to this version Smart-Board.

Menu Tree - Nugget or Flaker

Date and Time Preset

Warnings

- Self-Test Failure
- No Ice Pending
- No Ice Strikeout
- Auger High Load Pending
- Auger High Load Strikeout
- No Water
- Refrigeration Pressure Too High/Low
- No Ice Warning
- Auger Load Warning

Base Faults

- Fault code 1:
- Fault code 2:
- Fault code 3:
- Fault code 4 :
- Fault code 5 :
- Fault code 6 :
- Fault code 7 :
- Fault code 8 :
- Fault code 9 :
- Fault code 10 :

Adv Faults descriptions of faults with time and date of occurrence

- Self-Test Failure
- No Ice Pending
- No Ice Strikeout
- Auger High Load Pending
- Auger High Load Strikeout
- No Water
- Refrigeration Pressure Too High/Low

Status

- Relay Voltage
- Board Voltage
- Auger Motor Current
- Auger Motor Trip Current
- Auger Motor Strikes
- Ice Making Sensed
- Ice Making Strikes
- Freeze Timer
- Ultrasonic Bin Level
- Ultrasonic Bin Level Setpoint
- Power Interrupt Counter
- Bin Stat Input

Cleaning

- Cleaning Interval (hrs of power time)
- Next Cleaning Due
- Last Cleaning Performed

Performance

- % Runtime Calculation

Timers

- Compressor Run Time
- Compressor Run Time Resettable
- Power Up Time
- Power Up Time Resettable

Revision

- Smart Board SW
- Controller SW
- KVS SW
- Smart Board HW
- Controller HW
- Ethernet SW

Setup

- Current Date
- Current Time (12:00:00 am format)
- Machine Model Number
- Machine Serial Number
- Machine Manufacturer
- Equipment Name
- Date of Manufacture
- Install Date
- Contact Name
- Contact Phone Number
- Audible Alert
- Clear current log file
- Clear fault history
- Logging Rate
- Auger Current Warning Value
- Ice Detect Warning Value

PGM Bin Level*

- Bin Level Ctrl
- Set Bin Level Ctrl On Off
- Monday time 1
- Monday level 1
- Monday time 2
- Monday level 2
- Monday time 3
- Monday level 3
- Monday time 4
- Monday level 4
- Tuesday time 1
- Tuesday level 1
- Tuesday time 2
- Tuesday level 2
- Tuesday time 3
- Tuesday level 3
- Tuesday time 4
- Tuesday level 4
- Wednesday time 1
- Wednesday level 1
- Wednesday time 2
- Wednesday level 2
- Wednesday time 3
- Wednesday level 3
- Wednesday time 4
- Wednesday level 4
- Thursday time 1
- Thursday level 1
- Thursday time 2
- Thursday level 2
- Thursday time 3
- Thursday level 3
- Thursday time 4
- Thursday level 4
- Friday time 1
- Friday level 1
- Friday time 2
- Friday level 2

- Friday time 3
- Friday level 3
- Friday time 4
- Friday level 4
- Saturday time 1
- Saturday level 1
- Saturday time 2
- Saturday level 2
- Saturday time 3
- Saturday level 3
- Saturday time 4
- Saturday level 4
- Sunday time 1
- Sunday level 1
- Sunday time 2
- Sunday level 2
- Sunday time 3
- Sunday level 3
- Sunday time 4
- Sunday level 4

Network Configuration

- IP Address Read
- Subnet Mask Read
- Default Gateway
- DNSRead
- DHCP Enable
- Update IP Address
- Update Subnet Mask
- Update Default Gateway
- Update DNS
- Update DHCP
- Update Network On Next Power Cycle

Advanced Fault Definitions - Cubers

Self test failure

The controller checks for proper operation at power up. If the check shows a problem, this warning or fault will be displayed.

Long Freeze Pend

If the ice machine fails to make ice within the maximum time limit, the controller will note that and display this warning or fault while it is attempting another freeze cycle.

Long Freeze Strikeout

If the ice machine fails to make ice within the maximum time limit for a third consecutive time, this warning or fault will be displayed and the machine will be shut down.

Long Harv Pend

If the ice machine fails to release ice within the maximum time limit, the controller will note that and display this warning or fault while it is attempting another freeze cycle

Long Harvest Strikeout

If the ice machine fails to release ice within the maximum time limit for a third consecutive time, this warning or fault will be displayed and the machine will be shut down.

Check Water

If the water level sensor does not sense a full reservoir during the maximum time limit, this warning or fault will be displayed. The machine will automatically attempt to fill with water.

High Temp Error

If the discharge temperature exceeds 250 degrees at any time, the controller will shut the machine down and display this warning or fault.

Sump Temp Sensor

The water temperature sensor's resistance varies with the water temperature. If the resistance is beyond what the sensor's capability is, this warning or fault is displayed.

Discharge Temp Sensor

The discharge temperature sensor's resistance varies with the refrigerant temperature. If the resistance is beyond what the sensor's capability is, this warning or fault is displayed.

Min Freeze Pend

If the controller senses finished ice thickness before the minimum freeze time has elapsed, this warning or fault will be displayed.

Minimum Freeze Strikeout

If the controller senses finished ice thickness before the minimum freeze time has elapsed three cycles in a row, this warning or fault will be displayed if the machine and the machine will be shut down.

Advance Fault Definitions - Flaker or Nugget

Self-Test Failure

The controller checks for proper operation at power up. If the check shows a problem, this warning or fault will be displayed.

No Ice Pending

The controller monitors ice making using the photo eyes. If falling ice is not sensed by the photo-eyes, and if it is NOT the third consecutive time it has occurred, this warning or fault will be displayed.

No Ice Strikeout

If the controller fails to sense ice for a third consecutive time, this warning or fault will be displayed and the machine will be shut down.

Auger High Load Pending

The controller monitors the current used by the auger drive motor. If the current exceeds the limit, and if it is NOT the third consecutive time that it has, this warning or fault will be displayed.

Auger High Load Strikeout

If the auger motor draws too much current for a third consecutive time, this warning or fault will be displayed and the unit will be shut down.

No Water

If the water level sensor is dry or the water is too pure, this warning or fault will be displayed, and the unit will be shut off.

Refrigeration Pressure Too High/Low

There are two pressure switches on the machine, if either one opens due to an over or under pressure condition, the controller will display this fault or warning.

Smart-Board Button Use:

Menu Groups: Push and release the down arrow key to scroll down to the next group.

- Date - preset
- Time - preset to Central Time
- Warnings
- Base Faults
- Adv (advanced) Faults
- Status
- Cleaning
- Performance
- Test Cubers only
- Timers
- Revision
- Setup
- PGM Bin Level
- Network Configuration (N/A this version)

Within each group are several screens of information or settings, like times, that can be changed.

Date and Time Groups: No submenus are available.

Warnings: Press and release the Enter button to see information on current Warnings.

Press and release ESC to return to the prior menu.

Base Faults: Press and release the Down arrow to underline the B in Base Faults, then the Enter button to see in the display:

Most recent failure (labeled 0) and how long ago it occurred (in hours), then press and release the down arrow to see:

Second to most recent failure (labeled 1) and how long ago it occurred (in hours), then press and release the down arrow to see the third, fourth, fifth, and so on up to ninth where the list ends.

If there are no errors, the screen will display End of Errors.

Press and release the escape button to return to the main menu tree.

Date: 12-20-2006
Time: 03:33:10PM

▼
Warnings
Base Faults

▼
▼
Adv Faults
Status

▼
Cleaning
Performance

▼
▼
Test
Timers

▼
▼
Revision
Setup

▼
▼
Setup
PGM Bin Level

▼

ENTER
Warnings
Base Faults

ESC
No Warnings

▼
Warnings
Base Faults

ENTER
Warnings
Base Faults

End of Errors

ESC

Press and release the down arrow key to underline the A in Advanced Faults.



```
Base Faults
Adv Faults
```

Advanced Faults: Press and release the Enter button to see in the display:



```
Long Harv Pend
04-15-07:08:15AM
```

Most recent failure and the exact time it occurred. Pressing and releasing the down arrow cycles through the other failures back to the oldest.

Several examples are listed to the right.



```
No Ice Pend
08-01-08:07:11AM
```



At the end of the list the display will show directions to go back to the main menu.



```
UP arrow = back
esc = main menu
```

Press and release the escape button to return to the main menu tree.



Status List for Cubers

Press and release the down arrow to underline the S in Status.

Press and release the Enter button to see:

Discharge Temp in degrees F., Then press and release the Down arrow key to see:

Sump Temp in degrees F. Then press and release the Down arrow key to see:

Board Voltage - from the transformer. Then press and release the Down arrow key to see:

Bin Level number. Use with Vari-Smart control. Displays level currently sensed. Will display 255 when no Vari-Smart present. Then press and release the Down arrow key to see:

Bin set point: Used with Ultrasonic control. Then press and release the Down arrow key to see:

Freeze Timer: Freeze time. Then press and release the Down arrow key to see:

Harvest Timer:: Harvest time. Then press and release the Down arrow key to see:

Freeze Counter: Then press and release the Down arrow key to see:

Water Quality.: Measurement of the conductivity of the reservoir water. Typically between 20 and 60, lower numbers mean higher mineral content. Then press and release the Down arrow key to see:

Flush Used: The WaterSense system has selected this purge setting. Will read 255 if no water in sump. Then press and release the Down arrow key to see:

Long Freeze Strike: Long Freeze Strike number. Number of long freeze errors in memory. Then press and release the Down arrow key to see:

Long Harvest Strike: Long Harvest Strike number: Number of long harvest errors in memory. Then press and release the Down arrow key to see:

Min Frz Strike: Minimum freeze strike number Then press and release the Down arrow key to see:

Pwr Interrupts: Number and time of power interruptions. Then press and release the Down arrow key to see:

Bin Stat: Open or Closed. Open is normal when no bin thermostat is attached or there is no ice on a thermostat. Then press and release the Down arrow key to see:

Disch Frz Set: In degrees F. Shows the discharge temperature recorded as a set up number. The set up number is used for determining how long the fan is off at the end of the freeze cycle.

▼ Adv Faults
Status

ENTER

▼ Discharge Temp:
157

▼ Sump Temp:
38

▼ Board Voltage:
14

▼ Bin Level:
13

▼ Bin Setpoint:
9

▼ Freeze Timer:
00:00

▼ Harvest Timer:
00:00

▼ Freeze Counter:
0

▼ Water Quality:
0

▼ Flush Used:
0

▼ Long Frz Strike:
0

▼ Long Hrv Strike:
0

▼ Min Frz Strike:
0

▼ Pwr Interrupts:
0

▼ Bin Stat:
Open

▼ Disch Frz Set:
0

ESC

Status List for Flakers or Nugget:

Press and release the down arrow to underline the S in Status.

Status Press and release the Enter button to see:

Relay Voltage: Voltage supplied to the relays. Press and release the Down arrow key to see:

Board Voltage: Voltage supplied to operate the controller. Press and release the Down arrow key to see:

Auger Motor Current: Current draw of the auger drive motor. Press and release the Down arrow key to see:

Auger Motor Trip Current: Maximum allowed amp draw. Press and release the Down arrow key to see:

Auger Motor Strikes: Number of times auger motor has currently exceeded the amp draw setpoint. Press and release the Down arrow key to see:

Ice Making Sensed: Has the controller sensed ice making? Press and release the Down arrow key to see:

Ice Making Strikes: Number of times the controller has not sensed ice falling in the chute. Press and release the Down arrow key to see:

Freeze Timer: Current compressor on time in minutes. Press and release the Down arrow key to see:

KVS Level: Distance in inches the optional Vari-Smart system has measured from the sensor to the top of the ice. Press and release the Down arrow key to see:

KVS Level Setpoint: Distance in inches the optional Vari-Smart system will maintain as a maximum ice level. Press and release the Down arrow key to see:

Power Interrupt Counter: Number of times power has been interrupted to the machine. Press and release the Down arrow key to see:

Bin Stat Input: Shows Closed if no bin thermostat is attached or if one is attached and is closed. Shows open only if there is a bin thermostat attached and it is open, which stops ice making. When done with Status, press and release the ESC button.

▼
Adv Faults
Status

ENTER
▼

▼
Relay Voltage:
240 VAC

▼
Board Voltage:
14 VAC

▼
Auger Mot Current
1.8 Amps AC

▼
Aug Mot Trip Curr
3.0 Amps AC

▼
Auger Mot Strikes
0

▼
Ice Making Sensed
Yes

▼
Ice Making Strikes
0

▼
Freeze Timer:
00:00

▼
KVS Level
00:00

▼
KVS Level Setpoint
0

▼
Pwr Interrupts
0

▼
Bin Stat
Closed

ESC

Push and release the Down arrow to put the line under the C in Cleaning. Then push and release the Enter button to see.

Cleaning. Press and release the Enter button to see:

The Clean Interval. Then press and release the Down arrow to see:

The Next Clean Due in x HRS. Then press and release the Down arrow to see:

Last Clean: x HR Ago.

Then press and release the Down arrow to see:

Cubers Only

Flush Level: Set to Auto or 1, 2, 3, 4 or 5.

Push and release the SEL arrow key to enter flush level set mode.

Push and release the Up or Down arrow keys to change flush level.

Push and release the Enter key to set the new flush level.

Then press and release the ESC button.

Push and release the Down arrow to put the line under the P in Performance.

Then push and release the Enter button to see:

Performance

Percent run time. Then press and release the Down arrow to see:

Cubers Only:

Min Freeze Time. Then press and release the Down arrow to see:

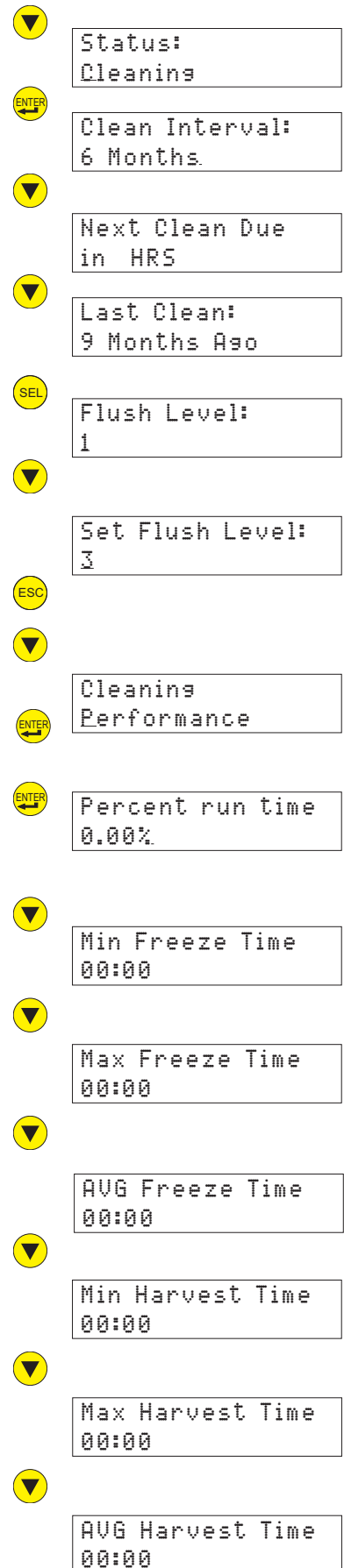
Max Freeze Time. Then press and release the Down arrow to see:

AVG Freeze Time. Then press and release the Down arrow to see:

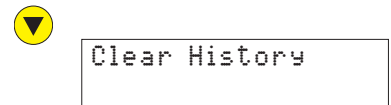
Min Harvest Time. Then press and release the Down arrow to see:

Max Harvest Time. Then press and release the Down arrow to see:

AVG Harvest Time. Press the Down arrow to see the next screen



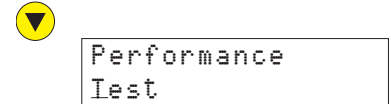
History screen. Press and release the SEL button to clear the performance history.



When done with Performance, press and release the ESC button.



Push and release the Down arrow to put the line under the T in Test. Then press and release the Enter button to see:



Test. Press and release the SEL button to begin a water test. The time to fill the reservoir will be displayed.



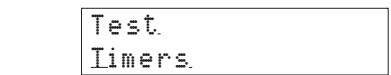
When done with Test, or to cancel it, press and release the ESC button.



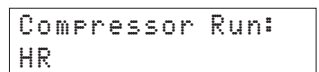
Push and release the Down arrow to put the line under the T in Timers. Then press and release the Enter button to see:



Timers. Push and release the Enter button to see



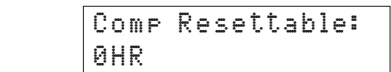
Compressor run time. Then press and release the Down arrow to see:



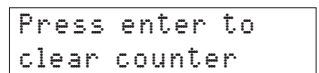
Compressor run resettable. Press the Down arrow to go to the next line or *Optional* Press SEL to enter reset mode.



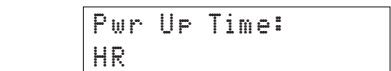
Press Enter to reset compressor run time to 0



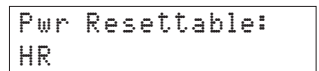
Press the Down arrow to go to Power up time. Then press and release the Down arrow to see:



Power on resettable. Press the Down arrow to go to the next line or *Optional* Press SEL to enter reset mode.



Press Enter to reset Power on time to 0



When done with Timers, press and release the ESC button.



Push and release the Down arrow to put the line under the R in Revision. Then push and release the Enter button to see:

▼
Timers
Revision

Revision. SW Rev number.

Then press and release the Down arrow to see:

Controller SW (software rev number) Then press and release the Down arrow to see:

ENTER
Smart-Board SW R

US Bin Level (Vari-Smart) software revision. Then press and release the Down arrow to see:

▼
Controller SW

Hardware Rev (Smart-Board revision)

▼
KUS SW
140

Then press and release the Down arrow to see:

Controller HW (hardware rev number).

▼
Smart-Board HW R
1

When done with Revisions, press and release the ESC button.

▼
Controller HW
1

Push and release the Down arrow to put the line under the S in Setup.

ESC

Then push and release the Enter button to see:

▼
Revision
Setup

Setup:

View the Date or change it.

To Set Day, Month and Year

Press SEL key to get to Setup screen

ENTER

Push and release the SEL key to move to another underlined number.

SEL
Date:
Select to change

Push and release the Up or Down arrow key to change the marked character.

SEL
Set Date:
Date: 12-21-2007

Push and release the Select key to move to the next character, repeat prior step to change the character.

SEL
▲

When done, push and release the Enter key.

▼
SEL

Then press and release the Down arrow to view the time or change it.:

ENTER

To Set Time

Press SEL key to get to Setup screen

▼
SEL
Time:
Select to change

Push and release the SEL key to move the underline to another number.

SEL

Push and release the Up or Down arrow key to change the marked character.

SEL
▲
Set Time:
Date: 02:07:51PM

Push and release the Select key to move to the next character, repeat prior step to change the character.

▼
SEL

When done, push and release the Enter key.

Then press and release the Down arrow to view the Model number.

Then press and release the Down arrow to view the Serial number

Then press and release the Down arrow to view the Manufacturer

Then press and release the Down arrow to view the Equipment Name

Then press and release the Down arrow to view the Manufacture date

Then press and release the Down arrow to view the Install date *Optional - change date*

Then press and release the Down arrow to view the Contact name *Optional - change contact*

Then press and release the Down arrow to view the Contact phone number. *Optional - change contact phone number*

Then press and release the Down arrow to view the Audible Alert.

Optional: Press SEL to switch the audible alert on or off.

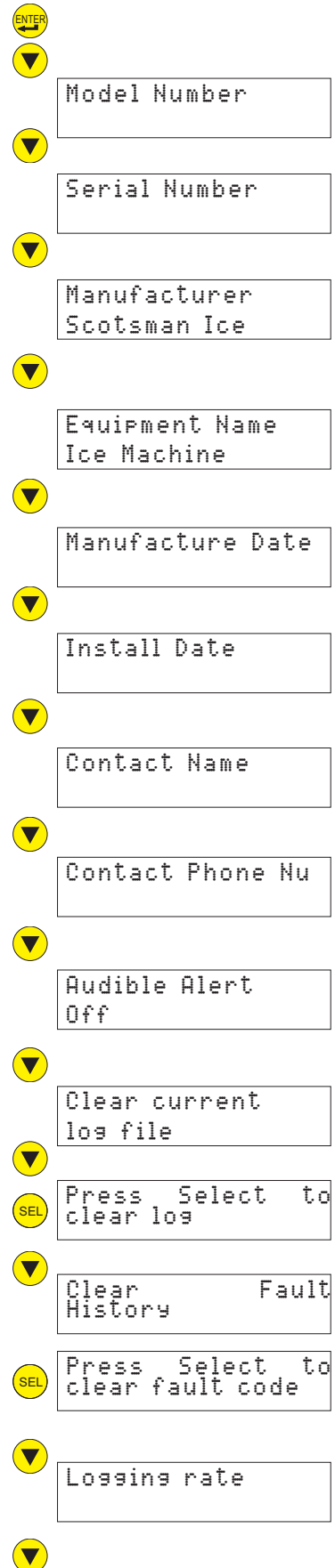
Then press and release the Down arrow to view the. Then press and release the Down arrow to view the screen to clear the current log file.

Optional: Press SEL to clear the log file.

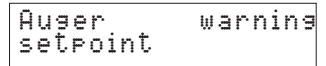
Then press and release the Down arrow to view the Clear Fault History file. Then press and release the Down arrow to view the

Optional: Press SEL to clear the fault history.

Logging rate. Then press and release the Down arrow to view the logging rate.

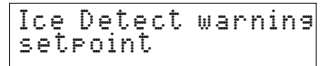


Auger Warning - Flake and Nugget only. Press and release the Down arrow to view the



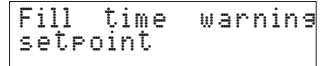
Auger warning
setpoint

Ice Detect Warning - Flake and Nugget only. Press and release the Down arrow to view the



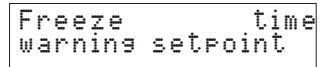
Ice Detect warning
setpoint

Fill time warning. Cuber only. Press and release the Down arrow to view the



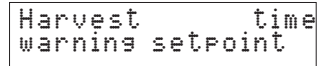
Fill time warning
setpoint

Freeze time warning. Cuber only. Press and release the Down arrow to view the



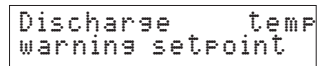
Freeze time
warning setpoint

Harvest time warning. Cuber only. Press and release the Down arrow to view the



Harvest time
warning setpoint

Discharge temp warning. Cuber only.



Discharge temp
warning setpoint

Any of the above can be modified by changing the settings as noted below. The warning set points can be adjusted to match local conditions, so that when they change the Smart-Board provides a notice of the change.

To Change Setup Settings:

From a specific Setup Menu Item, press SEL key to get to Setup screen. Push and release the SEL key to move the underline to another number.



Push and release the Up or Down arrow key to change the marked character.



Push and release the Select key to move to the next character, repeat prior step to change the character.

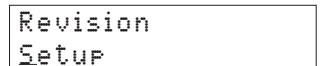


When done, push and release the Enter key.



Example 1: Set Install Date

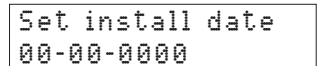
Push the Down arrow key until Setup is visible and the S is underlined. Press Enter.



Revision
Setup



Repeatedly push and release the Down key until the Install Date screen appears. Press SEL key to get to Setup screen



Set install date
00-00-0000



Push and release the SEL key to move the underline to another number. Push and release the Up or Down arrow key to change the marked character.



Push and release the Select key to move to the next character, repeat prior step to change the character.



When done, push and release the Enter key.



To Set the 7 Day Programmable Ice Level - only usable with Vari-Smart control. There are four times and levels available for each day of the week.

Use Up or Down Arrow keys to scroll to **PGM Bin Level** screen. When the P in PGM is underlined, press and release the Enter key.

Bin Level Ctrl is on the screen. If it reads Off, push and release the down arrow button to begin programming.

If Bin Level Ctrl is On, push and release the SEL button. From On, push the Down arrow key to turn Off. The control must be set to OFF to adjust bin level. Push Enter and Down to get to the first programming menu.

Monday Time 1 will show on the screen. Press and release the SEL key to begin setting Monday Time 1. **Set Monday Time** appears in the display.

Change Monday Time 1: 01:30AM might be displayed. To adjust, push the SEL button to position the underline mark under the character to be changed. Push and release the up or down arrow key to change the number or letter one time. Repeat pushing the SEL button to move the underline and repeat pressing the up and down arrow buttons to change the time.

Push Enter once to change the screen back to Monday Time 1. Push Down once to get to the level reading.

Change Monday Level 1: Monday Level 1 is in the display. Push SEL once to display Set Monday Level 1. Rotate the Vari-Smart knob one click at a time until the desired level appears. A delay is normal. Note: smaller numbers = higher ice level. Push Enter one time to set the level. "Off" means the switch is set for maximum ice level. **Off not available with SW Rev 1 controller.** Rev level on sticker on back of controller.

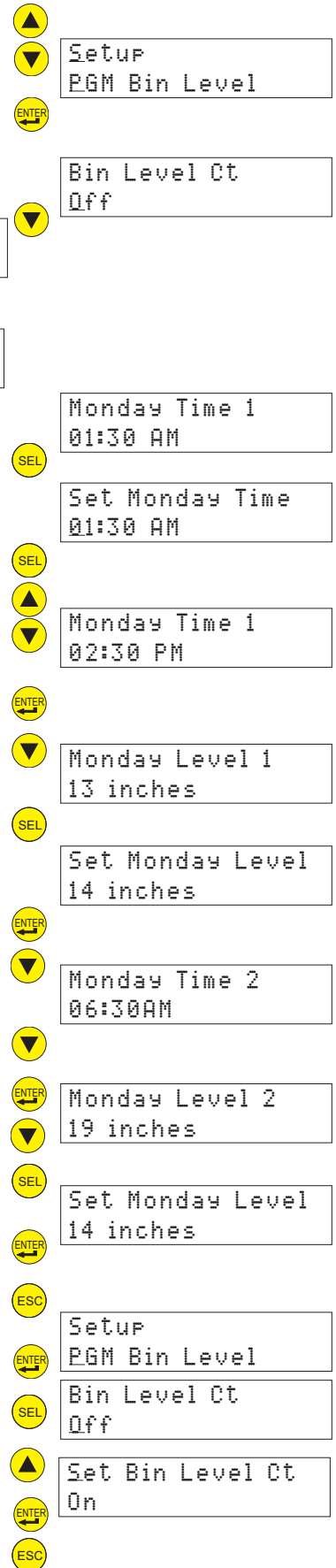
Push the Down arrow to go to **Monday Time 2**, and set that time using SEL and arrow buttons as in Change Monday Time 1 above. Push Enter once to set it and change back to Monday Time 2. Push the down arrow button to go to Monday Level 2 and change that level using the SEL button and the Vari-Smart knob as in Change Monday Level 1 above. Push Enter to set that level.

Repeat for all time and level settings.

When done, push ESC to return to the PGM Bin Level screen. When the P in PGM is underlined, press and release Enter.

Bin Level Ctrl will show on the screen. Push and release the SEL button. Push and release up arrow key to change the setting from Off to On.

Push and release Enter and ESC when done.



Note: Units on dispensers or short bins should not set their level other than 9 or Off - setting too low will result in no ice.

Example: Unit on a tall bin (44" or more). Low ice levels during the week, high ice levels during the weekend. Off = highest ice level.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Time 1	1:00 AM	1:00 AM	1:00 AM	1:00 AM	1:00 AM	1:00 AM	1:00 AM
Level 1	32	32	32	32	32	Off	Off
Time 2	11:00 AM	11:00 AM	11:00 AM	11:00 AM	11:00 AM	11:00 AM	11:00 AM
Level 2	32	32	32	32	32	Off	14
Time 3	3:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM	3:00 PM
Level 3	32	32	32	32	32	Off	32
Time 4	7:00 PM	7:00 PM	7:00 PM	7:00 PM	7:00 PM	7:00 PM	7:00 PM
Level 4	32	32	32	32	Off	Off	32

Record settings here for future reference:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Time 1							
Level 1							
Time 2							
Level 2							
Time 3							
Level 3							
Time 4							
Level 4							

Diagnostic Example: Look up Average Freeze Time:

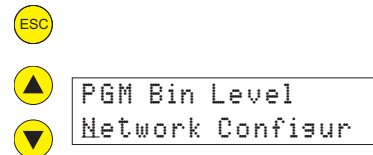
Use Up or Down arrow keys to scroll to Performance screen.

Push and release the Enter arrow.

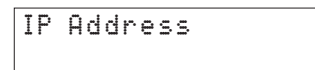
Push and release the Up arrow until the Average Freeze Time screen appears.

When done, push and release the ESC button until the Main screen appears.

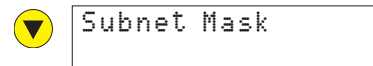
To view or change the Network Configuration, use the up and down arrow keys to display Network Configuration. When the N in Network is underlined, press and release the Enter key.



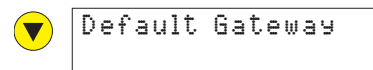
The IP address of the Smart-Board (if connected to a network) will be displayed.



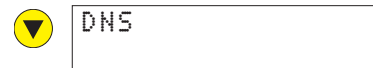
Press the down arrow key to see the Subnet Mask



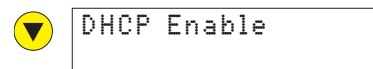
Press the down arrow key to see the Default Gateway



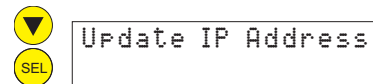
Press the down arrow key to see the DNS



Press the down arrow key to see DHCP Enable



Press the down arrow key to see the Update IP Address screen. Press the SEL key to access it.



Press the up or down arrow key to change the first (underlined) number. Press the SEL key to move the underline to the next number, then press the up or down key to change that number. Repeat as needed to change the numbers. When done, press the Enter key.



Repeat the same process to change the other network parameters, if needed.

Once desired network parameters have been manually configured, turn on "Update Network on Next Power Cycle". After the power to the machine has been cycled, the new parameters will take affect.

Supplied Software

Description:

Scotsman Prodigy Tech Tool 1.0 is a software program designed to access the Prodigy ice machine Smart-Board. It can read and display the data in the controller. The data is converted to chart form and can then be saved and / or printed. It is on the CD-ROM and must be installed onto the PC that will be used to connect through the USB port of the Smart-Board.

Installation and Use

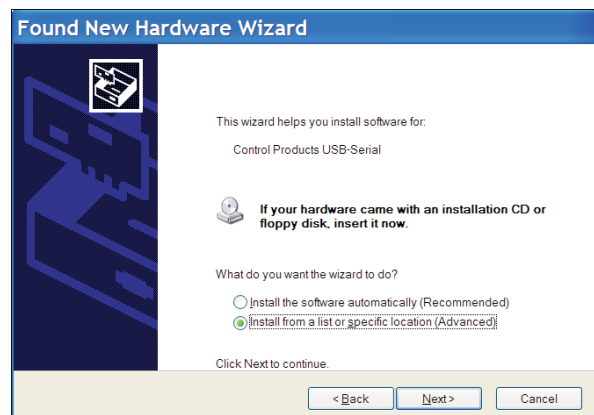
Requirements:

- Windows XP or Vista
- 40 MB disk space minimum. More will be needed if data logging is used.
- Desktop or Laptop PC with a USB port.
- Live ice machine with Smart-Board (to install USB driver)

Software Installation:

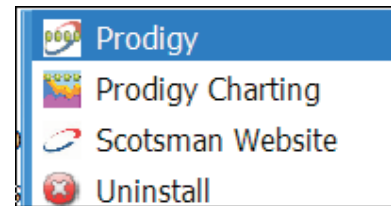
Pre-installation: The Smart-Board must be UNPLUGGED from the the PC.

1. Insert the CD into the computer's CD-ROM drive.
2. Follow the program installation instructions. At the finish, do NOT start the application.
 - The installation will place 2 icons on the desktop, Prodigy Charting and Scotsman Prodigy.
 - The installation will also set up a Scotsman Prodigy section under Programs (Start > All Programs > Scotsman Prodigy).
3. After the installation is complete, remove the CD-ROM from the drive.
4. Power up the Smart-Board and plug the USB connector into the PC and the Smart-Board.
5. The PC will automatically find the Smart-Board and begin the process to install the driver.
6. Select all default settings for installing the device driver.
7. Installation is now complete.



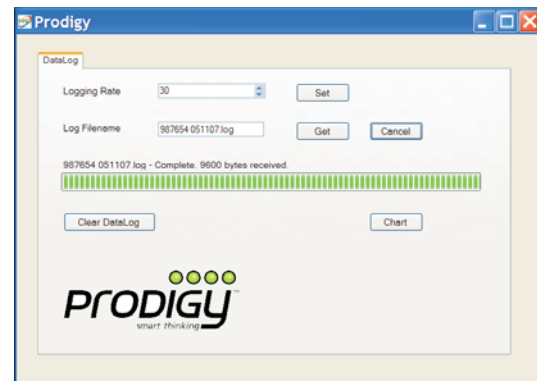
Use:

With the Smart-Board powered and connected to the computer's USB port, Open Scotsman Prodigy:



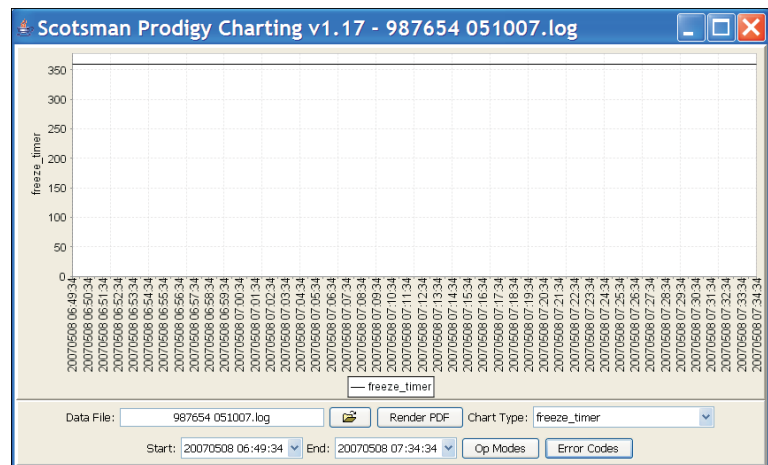
Start, All Programs, Scotsman Prodigy, Prodigy

Click on **Get**. The software will automatically begin to download the information from the Smart-Board. Once that is complete either click on **Chart** or select a new log file to review.



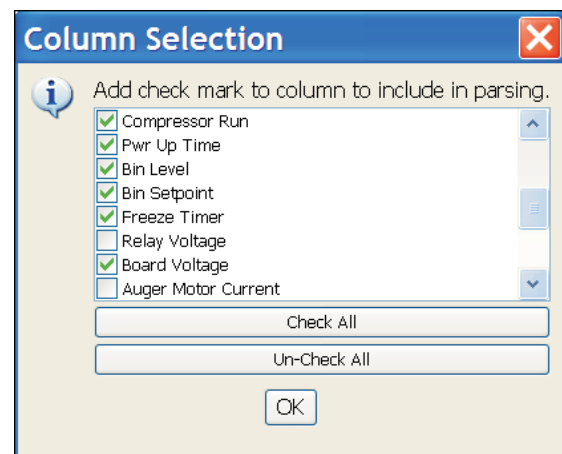
When you click on **Chart**, the Column Selection dialog box will appear. You can select any chart you want to review. The default is all of them. Click on **OK** to go to the next step.

The software will display the Charting information box. You may have to expand it to see the Chart Type selection area on the right.



Use the Chart Type box to display the list of available charts.

Which one of these to use depends upon what the machine situation is. For example, if the machine is down, displaying code 2, indicating a maximum length harvest cycle, it would be good to know the freeze cycle time before the long harvest cycle. If the freeze cycle time is long, it may be that no ice is being made, so none is available to open the curtain during harvest, causing a maximum harvest time code. Checking the Base Faults or Advanced Faults is another way to understand what occurred and when.



Another example is a complaint of low capacity. The chart on Power up time should show if the machine is on all the time. Then a look at the freeze timer chart will show how often it is cycling. The two will provide a good idea of the machine's ability to produce ice.

At any time clicking on the **Render PDF** button will generate all the charts in PDF format so they can be saved. Once saved they can be printed or emailed.

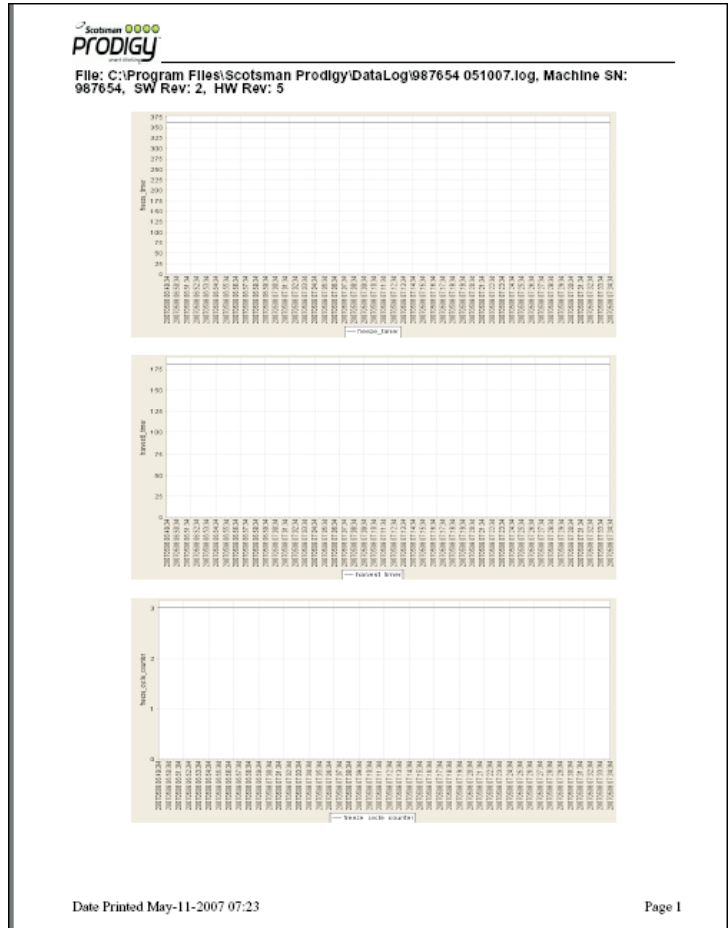
Chart Definitions - Cubers

- Freeze timer = Freeze time in seconds.
- Harvest timer = Harvest time in seconds.
- Freeze Counter = Continuous freeze cycles (starts over after bin full, power interruption, or ice melt state)
- Flush level set point = Flush level setting 0-5.
- Flush used = 1-5. Flush level used in autoflush (0) mode.
- Water quality = An indication of water quality where 0-24 Extremely Mineral Laden; 25-30 Somewhat Mineral Laden; 31-65 Normal; 66-120 Very Clean; >120 Extremely Clean
- Error code - Diagnostic Error Code. Codes listed in software and on next page.
- Op mode = the current mode of the controller. Modes listed in software and on next page.
- Sump temperature = Reservoir water temperature in degrees F
- Discharge temperature = Discharge temperature in degrees F
- Supply voltage = approximation of AC voltage to the control board from the transformer.
- Bin stat = Bin thermostat, when used. 0 open, 1 closed
- RLO = SmartLock option. 0 not locked, 1 locked
- Ready to Harvest = Ice thickness sensor. 0 no ice, 1 ice
- Sump Full = Water level sensor. 0 no water, 1 water
- Sump Empty = Water level sensor. 0 no water, 1 water
- Remote = 0 not remote, 1 remote
- Curtain SW1 = 0 closed, 1 open
- Curtain SW2 = 0 closed, 1 open
- Water Solenoid = 0 off, 1 on
- Water Pump = 0 off, 1 on
- Hot Gas = 0 off, 1 on
- Condenser Fan/Aux = 0 off, 1 on
- Compressor = 0 off, 1 on
- Purge Valve = 0 off, 1 on
- Power up time= Time power connected to machine.
- Compressor run = Time compressor has been operating
- Power interrupts = Number of electrical power interruptions to the machine
- Bin setpoint = Set point of the Vari-Smart control
- Bin level (inches) = Ice level measured by the Vari-Smart control
- HGV counter = Number of times the hot gas valve has cycled. Equals harvest cycles.
- Auto flush level min = minimum level flush can be set to when set to automatic

Chart Definitions - Flaked or Nugget Machine

- Op Mode = The mode the controller was in at the time shown
- Error Code = The codes, if any, of any diagnostic codes.
- Warning = The codes, if any, of any warnings. Same codes as diagnostic
- Pwr Interrupts = Number of electrical power interruptions to the machine
- Time to Clean = 0 = no, 1=yes
- Button Lock = 0 = no, 1 = yes
- Time to Clean Interval = Time set between Cleaning light activations, in hours.
- Compressor Run = Time compressor has been operating
- Pwr Up Time = Time power connected to machine.
- Bin Level = Ice level measured by the Vari-Smart control
- Bin Setpoint = Set point of the Vari-Smart control
- Freeze Timer = time in seconds that the compressor operated before bin full
- Board Voltage = approximation of AC voltage to the control board from the transformer
- Relay Voltage = AC load voltage determined by controller. 115 or 230.
- Auger Motor Current = amp draw of the auger motor x10
- Ice Making Sensed = 0 = not sensed, 1 = sensed
- Bin Stat = Bin thermostat, when used. 0 open, 1 closed.
- RLO = SmartLock option. 0 not locked, 1 locked
- Ice Dispensed - not used
- Water Dispensed - not used
- Compressor = 0 off, 1 on
- Auger = auger motor. 0 off, 1 on
- Bin Eyes Blocked = 0=no, 1=yes

Reference



Example of generated PDF file

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

Error Code Display

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

Op Mode Display

Smart-Board Access through Ethernet

1. After installation, connection, and power up, scroll down to locate IP Address.
2. Enter that IP address into an internet browser like Internet Explorer or Firefox.
3. A Prodigy logo screen will appear. After a few seconds it will update and show a screen similar to the one here. Login as an observer or administrator using the password.

4. As an Observer, several actions are available at this screen:

- Controller Snapshot
- AFB Config File
- Key Pad Lock Status
- Time To Clean Setting
- Flush Level Setting
- Bin Level Scheduling
- Change Password

Controller Snapshot lists the current status of many aspects of the controller.

AFB Configuration File lists the current status of many aspects of the Smart-Board and the controller.

Key Pad Lock Status lists if the key pad of the controller is locked or not.

Time to clean setting. Lists the number of months of power up time the unit must accumulate before the De-Scale / Sanitize light is switched on.

Flush Level Setting lists the Purge level the controller is set to use.

Bin Level Scheduling. Only applies to units that have the Vari-Smart ice level control installed. Lists the times and levels that have been set.

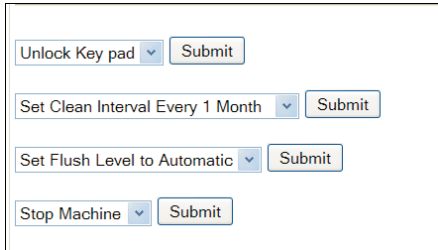

Logging in as an Administrator allows additional actions:

Key Pad Lock or Unlock. Lists if the controller is locked or not and can be changed by selection and submitting.

Adjust the Clean Notice. Lists the number of months of power up time the unit must accumulate before the De-Scale / Sanitize light is switched on. Selecting a different interval and submitting will change that number.

Adjust the Purge or Flush level. Lists and allows change of the amount of water purged per cycle.

Start or stop the machine. Allows the machine to be started or stopped remotely.



Appendix

NAFEM Protocol. See the NAFEM website, www.nafem.org, for more information.

NAFEM CERTIFICATE OF COMPLIANCE

MANDATORY REQUIREMENTS			
Company Name	Scotsman Ice Systems		
Product Category	Ice Machine	Model Number	12-2945
<input checked="" type="checkbox"/>	IEEE 802.3 Section 14 – 10 BASE T	<input checked="" type="checkbox"/>	Asset Management Enterprise: Identification
<input checked="" type="checkbox"/>	IEEE 802.3 Ethernet or IEEE 802.11b	<input checked="" type="checkbox"/>	RFC 1157 [SNMPv1] <i>Agent</i>
<input checked="" type="checkbox"/>	RFC 826 [ARP]	<input checked="" type="checkbox"/>	RFC 1156 [SMI]
<input checked="" type="checkbox"/>	RFC 791 Internet Protocol version 4.0 [IPv4]	<input checked="" type="checkbox"/>	RFC 1213 [MIB-II]
<input checked="" type="checkbox"/>	RFC 792 [ICMP]	<input checked="" type="checkbox"/>	NAFEM Units of Measure*1
<input checked="" type="checkbox"/>	RFC 768 User Datagram Protocol [UDP]	<input checked="" type="checkbox"/>	NAFEM Textual Convention *1
<input checked="" type="checkbox"/>	RFC 951 BOOTP or DHCP <i>Client</i>	<input checked="" type="checkbox"/>	NAFEM Traps *2
<input checked="" type="checkbox"/>	RFC 1350 Trivial File Transfer Protocol [TFTP] <i>Client</i>	<input checked="" type="checkbox"/>	CODES AND MESSAGES*2
		<input checked="" type="checkbox"/>	Clock/Calendar Enterprise: Time
*1 Only required if Optional NAFEM enterprise groups selected require these items		*2 Only required if Traps are used for notification	

OTHER REQUIREMENTS:	
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Administration Enterprise Group <input checked="" type="checkbox"/> Identification <input checked="" type="checkbox"/> Network <input checked="" type="checkbox"/> Community Table [Instance(s) 5] <input type="checkbox"/> Notify Messages <input type="checkbox"/> Notify Message Acknowledgement </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Bulk Transfer Enterprise Group <input type="checkbox"/> Storage Media Types Table [Instance(s)] <input checked="" type="checkbox"/> File Items Table [Instance(s) 30] <input checked="" type="checkbox"/> File Transfer <input type="checkbox"/> Notify Messages <input type="checkbox"/> Notify Message Acknowledgement </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Clock/Calendar Enterprise Group <input checked="" type="checkbox"/> Time <input type="checkbox"/> Daylight <input type="checkbox"/> Scheduler </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Inventory Management Enterprise Group <input type="checkbox"/> Configuration Table <input type="checkbox"/> Data Table [Instance(s)] <input type="checkbox"/> Storage Table <input type="checkbox"/> Log Configuration Table <input type="checkbox"/> Log History Table [Instance(s)] <input type="checkbox"/> Notify Messages <input type="checkbox"/> Notify Message Acknowledgement </div> <div style="border: 1px solid black; padding: 5px;"> Utility Management Enterprise Group <input type="checkbox"/> Configuration Table <input type="checkbox"/> Data Table [Instance(s)] <input type="checkbox"/> Alarm Table <input type="checkbox"/> Log Configuration Table [Instance(s)] <input type="checkbox"/> Log History Table <input type="checkbox"/> Notify Messages <input type="checkbox"/> Notify Message Acknowledgement </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Maintenance Enterprise Group <input type="checkbox"/> Process Item Configuration Table <input type="checkbox"/> Process Data Table Instance(s)] <input type="checkbox"/> Process Item Alarm Table <input type="checkbox"/> Scheduled Item Configuration Instance(s)] <input type="checkbox"/> Scheduled Item Data Table <input type="checkbox"/> Unscheduled Item Instance(s)] Configuration <input type="checkbox"/> Unscheduled Data Table <input type="checkbox"/> Log Configuration Table Instance(s)] <input type="checkbox"/> Log History Table <input type="checkbox"/> Notify Messages <input type="checkbox"/> Notify Message Acknowledgement </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Notification Enterprise Group <input type="checkbox"/> Hosts Table Instance(s)] <input type="checkbox"/> Event Log </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Asset Management Enterprise Group <input checked="" type="checkbox"/> Identification <input checked="" type="checkbox"/> Component Instance(s) 20] Identification Table </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Monitor Enterprise Group <input checked="" type="checkbox"/> Configuration Table <input checked="" type="checkbox"/> Data Table Instance(s) 16] <input type="checkbox"/> Alarm Table <input type="checkbox"/> Log Configuration Table <input type="checkbox"/> Log History Table Instance(s)] <input type="checkbox"/> Notify Messages <input type="checkbox"/> Notify Message Acknowledgement </div> <div style="border: 1px solid black; padding: 5px;"> Security Enterprise Group <input type="checkbox"/> System <input type="checkbox"/> User Table Instance(s)] <input type="checkbox"/> Access Table Instance(s)] <input type="checkbox"/> Logging Parameters Table Instance(s)] <input type="checkbox"/> Protection Parameters Table Instance(s)] <input type="checkbox"/> Event Log </div>