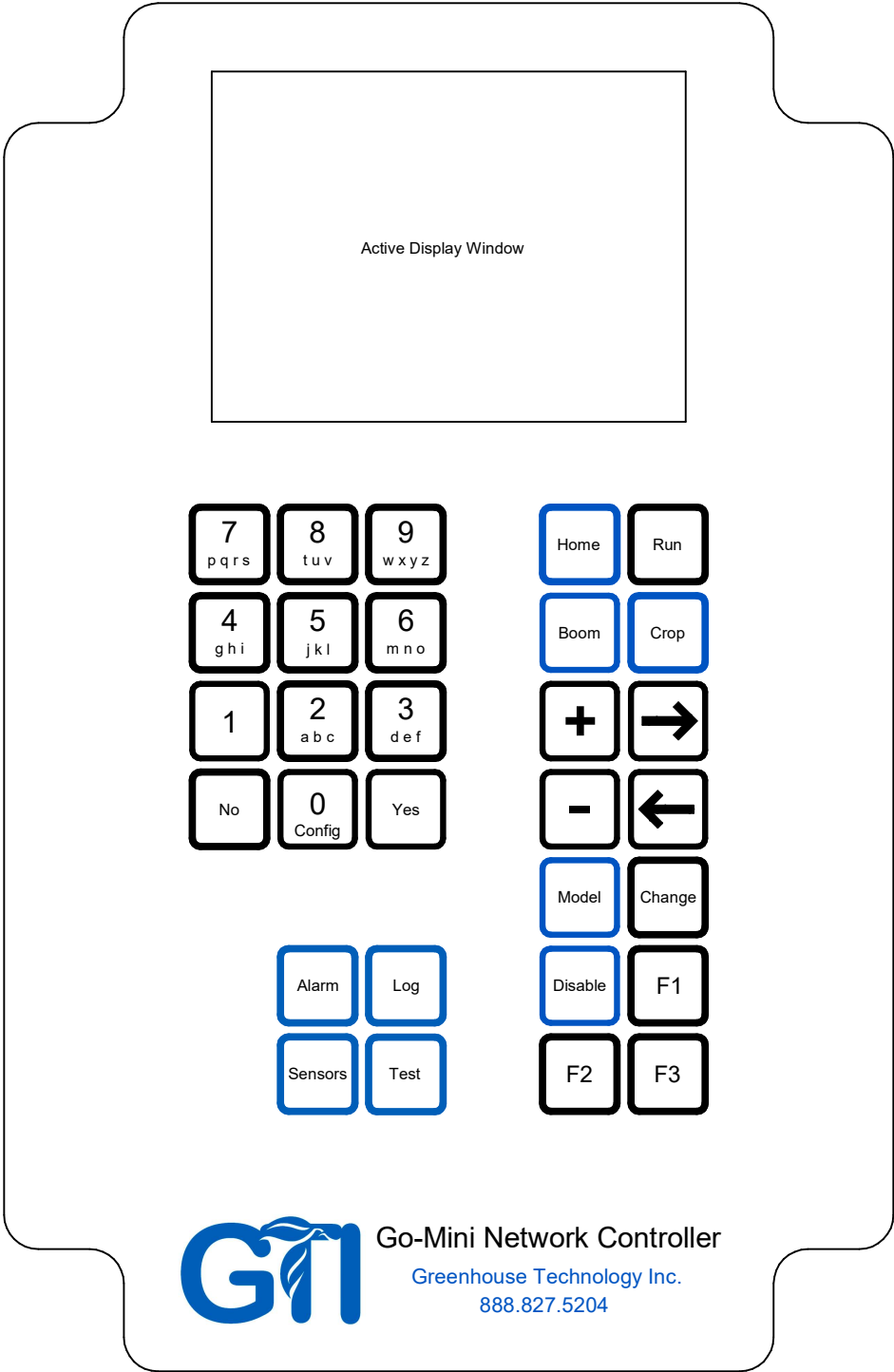


# Go-Mini User Manual

## Table of Contents

1.	Config.....	4
2.	Water.....	14
3.	Create Model.....	26
4.	Edit Model.....	30
5.	Create Disable.....	32
6.	Edit Disable.....	35
7.	Sensors.....	38
8.	Logs.....	39
9.	Alarms.....	41



# Scenario

Joe has (4) booms that he wants to run using VPD. He purchased a GTI Mini-GO-1 and has physically installed it, but hasn't configured anything software-wise.

## 1. Joe Configures his Network

First, Joe Sets the time and date. Starting at the Home Screen:

```
Status      Wed      10:41

Sensors
AT LT RH

Booms
B1E B2C B3C B4E
```

he presses


```
0
Config
```

```
Config
1 Clock
2 Network Units
3 Sensors
4 Utilities
5 About
```

then

```
1
```

```
Clock
05:37 (24hr)
10/20/17 (MM/DD/YY)
```

Joe presses  to open the screen up for changes

Clock  
05:37 (24hr)  
10/20/17 (MM/DD/YY)


Clock  
10:40 (24hr)  
10/20/17 (MM/DD/YY)

Clock  
10:40 (24hr)  
11/18/17 (MM/DD/YY)



Clock  
10:40 (24hr)  
11/18/17 (MM/DD/YY)

He presses  to go back to the config menu:

Now it's time to set up the network units:

```
Config
1 Clock
2 Network Units
3 Sensors
4 Utilities
5 About
```

2  
abc

```
Network Units
1 Boom 1
2 Boom 2
3 Boom 3
4 Boom 4
```

1

```
Network Unit 1
Name:      Boom 1
Address:   002
Type:      Boom
Status:    Inactive
< >
```

A couple of things to change here - the name of the unit needs to be more memorable, And the boom needs to be activated.

Change

```
Network Unit 1
Name:      Boom 1
Address:   002
Type:      Boom
Status:    Inactive
```

Change

```
Name
Boom 01

(up to 12 characters)
```

He presses



Name
<u>4</u> oom 01
(up to 12 characters)

then



Name
<u>B</u> oom 01
(up to 12 characters)

then



again

Name
<u>H</u> oom 01
(up to 12 characters)

and



to move to the next space

Name
<u>H</u> oom 1
(up to 12 characters)

He fills out the rest of the name, moving the cursor with the arrow keys and cycling to the desired letter using multiple key presses on number keys. The finished Result is a new boom name:

Name
<u>H</u> ouse3south
(up to 12 characters)

He presses



to save the new name

Name  
House3south  
  
(up to 12 characters)



Network Unit 1  
Name: **House3south**  
Address: **002**  
Type: **Boom**  
Status: **Inactive**



Network Unit 1  
Name: **House3south**  
Address: **002**  
Type: **Boom**  
Status: **Inactive**



Network Unit 1  
Name: **House3south**  
Address: **002**  
Type: **Boom**  
Status: **Inactive**

When a field is a binary choice, like this one, Joe presses



to toggle between the options

```
Network Unit 1
Name:   House3south
Address: 002
Type:   Boom
Status: Active
```

The screen looks good. Joe presses



to save it.

```
Network Unit 1
Name:   House3south
Address: 002
Type:   Boom
Status: Active
<                                     >
```

Joe presses



to add another Network Unit

```
Network Unit 2
Name:   Unit 02
Address: 003
Type:   Boom
Status: Inactive
```

renames and activates it,

```
Network Unit 2
Name:   House3north
Address: 003
Type:   Boom
Status: Active
```



And saves it



```

Network Unit 2
Name:      House3north
Address:   003
Type:      Boom
Status:    Active
  
```

Joe adds and saves the remaining two booms:

```

Network Unit 3
Name:      House2south
Address:   004
Type:      Boom
Status:    Active
  
```

```

Network Unit 4
Name:      House2north
Address:   005
Type:      Boom
Status:    Active
  
```

He presses



to see how the network menu looks now.

```

Network Units
1 House3south
2 House3north
3 House2south
4 House2north
+
  
```

Looks great!



```

Config
1 Clock
2 Network Units
3 Sensors
4 Utilities
5 About
  
```

## Time to Configure Sensors:

```

Config
1 Clock
2 Network Units
3 Sensors
4 Utilities
5 About

```

3  
def

```

Sensors
1 AT
2 LT
3 RH

```

1

```

AT Sensor
Unit:      Fahrenheit
Type:      Temp GTI
Calibrate: + 00
Status:    Inactive

```

Joe notices that it only needs to be active. He presses

Change → → Change

```

AT Sensor
Unit:      Fahrenheit
Type:      Temp GTI
Calibrate: + 00
Status:    Active

```

Yes

```

AT Sensor
Unit:      Fahrenheit
Type:      Temp GTI
Calibrate: + 00
Status:    Active

```

Joe presses

No

Note: 'Unit' field values are: {Fahrenheit, Celsius}

Note: 'Type' field values are: {Temp GTI, RH GTI}.

```
Sensors
1 AT
2 LT
3 RH
```

Joe wants to program the RH sensor. He presses



```
RH Sensor
Type:      RH GTI
Calibrate: + 00
Status:    Inactive
```

then

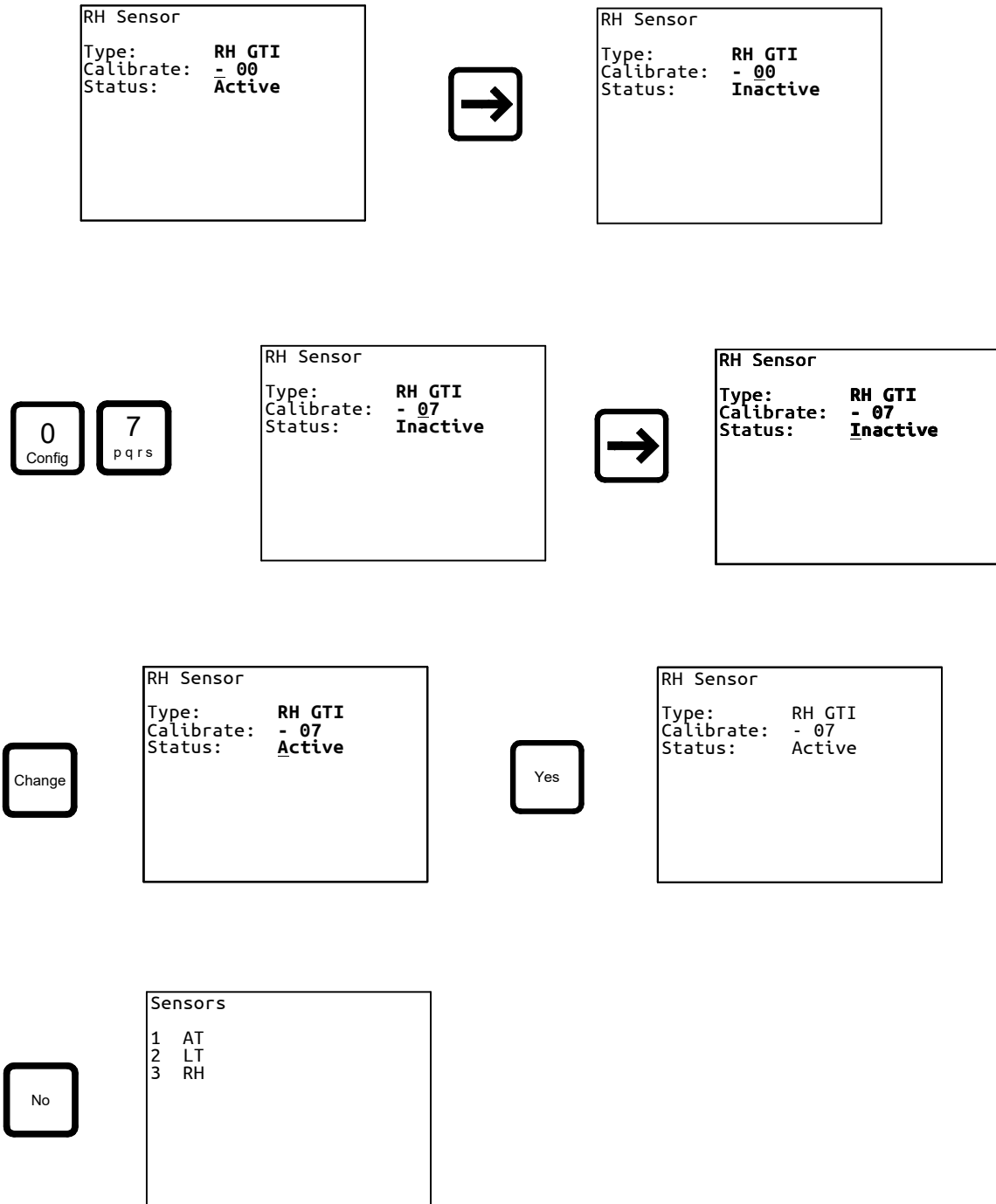


```
RH Sensor
Type:      RH GTI
Calibrate: + 00
Status:    Active
```



```
RH Sensor
Type:      RH GTI
Calibrate: + 00
Status:    Active
```



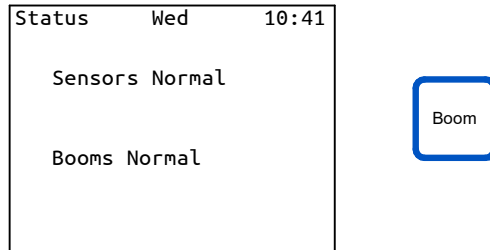


For right now the Sensor type is hard-coded, as there is only one type of sensor that works with the GoMini.

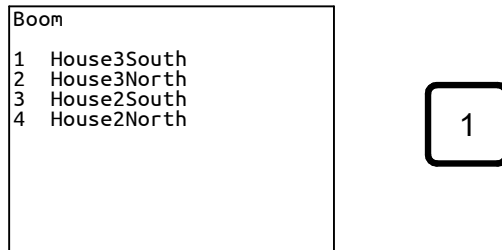
## 2. Joe Waters His Plants

### Scenario A: Manual

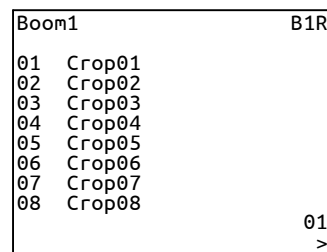
Joe wants Boom 1 to water crop 1 right now.  
Starting from the Home Screen:



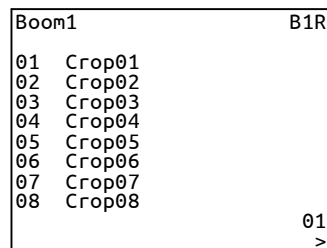
And picks Boom 1 from the list of booms:



to see the Boom Screen / Crop Menu



Then picks a crop



```

Crop Status      10:42
B1 House3South   B1R
C01 Poïnse-10-15

manual

< >

```

He presses

Run

A confirmation screen appears:

```

B1 House3South
C01 Crop01

Run?

Yes / No

```

Joe presses

Yes

```

Crop Status      10:42
B1 House3South   B1R
C01 Poïnsett-10-15

manual

< >

```

Boom is idle

Crop is pending

Within a few seconds, the screen should read:

```

Crop Status      10:42
B1 House3South   B1R
C01 Poïnsettia-10-15

manual

< >

```

Boom is running Crop 01

Crop is running

If Boom 1 had an error status E (indicates boom error) or alarm status A (indicates communication alarm), or is busy running crops ahead of this one in the queue (crop being currently run to be indicated by a 2-digit number status, i.e. "02" for "I'm busy running crop 02", then you might reasonably expect the crop 01 status to remain P indefinitely / for a while. But in this case the boom was idle, so it hopped to.

## Note:

Boom Status Values: {A = alarm - boom is in comm alarm  
E = error - boom has an error (e.g. no motion error)  
R = boom is in remote, ready to go  
B = a command has been sent to the boom ("busy")}

## Scenario B: Timed

```
Crop Status      10:42
B1 House3South   B1R
C01 Poirse-10-15

manual

< >
```

He presses



To open the screen for changes :

```
Crop Status      10:42
B1 House3South   B1R
C01 Crop01

manual
```

For this parameter, there are 4 values: {manual, timed, target, model}

Joe presses



once to cycle to "timed".

```
Crop Status      10:42
B1 House3South   B1R
C01 Crop01

timed
00:00
```

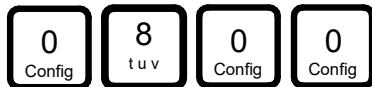
A field appears for time.

Joe presses



to move the cursor to the time field

and



to set the value to 08:00

```
Crop Status      10:42
B1 House3South   B1R
C01 Crop01

timed
08:00
```

(time is in 24hr format)



He presses



to save.

```
Crop Status      10:42
B1 House3South   B1R
C01 Poirse-10-15

  timed
  08:00

<                >
```

Boom 1 is now scheduled to water Crop 01 every day at 8am.

## Scenario C: VPD (No model)

```
Crop Status      10:42
B1 House3South  B1R
C01 Poïnse-10-15

  manual

<                >
```

He presses



To open the screen for changes :

```
Crop Status      10:42
B1 House3South  B1R
C01 Crop01

  manual
```

Again, for this parameter, there are 4 values: {manual, timed, target, model}

Joe presses



twice to cycle to "target".

```
Crop Status      10:42
B1 House3South  B1R
C01 Crop01

  Idle
  target
  00000 / 01000 vpd
```

A number and an editable field appear. The number (00000) is the presently accumulated VPD, defaulted to 00000. The field is the VPD target, defaulted to 01000.

Joe presses



to move the cursor to the vpd target field

and enters



as his VPD target.

```

Crop Status      10:42
B1 House3South  B1R
C01 Crop01

Idle
target
00000 / 00385 vpd

```

Then he presses



to save:

```

Crop Status      10:42
B1 House3South  B1R
C01 Crop01

target
00000 / 00385 vpd
< >

```

Boom 1 is now scheduled to water Crop 01 every time the accumulated VPD hits 00385

Joe's done!

*If, however, He would like to run the crop once to get it started:*

```

Crop Status      10:42
B1 House3South  B1R
C01 Crop01

target
00000 / 00385 vpd
< >

```

He presses



```

B1 House3South
C01 Crop01

Reset AVPD & Run?

Yes / No

```

then



```

Crop Status      10:42
B1 House3South  B1B
C01 Crop01

target
00001 / 00385
< >

```

Boom is busy

**Note: The "Busy" indicator is a momentary indicator that indicates that the message has been sent, and doesn't mean that the boom is confirming receipt.**

## Scenario D: VPD (with model)

```
Crop Status      10:42
B1 House3South   B1R
C01 Poïnse-10-15

  manual

<                >
```

He presses

Change

To open the screen for changes :

```
Crop Status      10:42
B1 House3South   B1R
C01 Crop01

  manual
```

Again, for this parameter, there are 4 values: {manual, timed, target, model}

Joe presses

Change

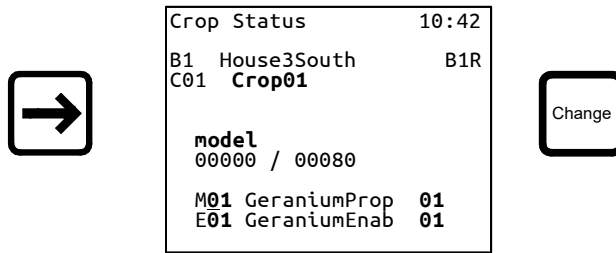
three times to cycle to "model".

```
Crop Status      10:42
B1 House3South   B1R
C01 Crop01

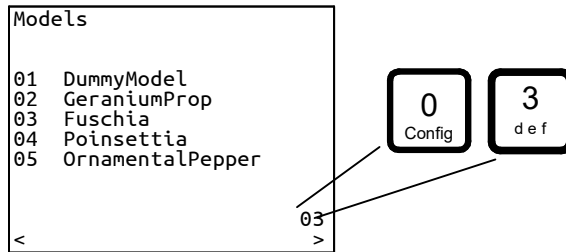
  model
  00000 / 00080

M01 GeraniumProp 01
D01 GeraniumEnab 01
```

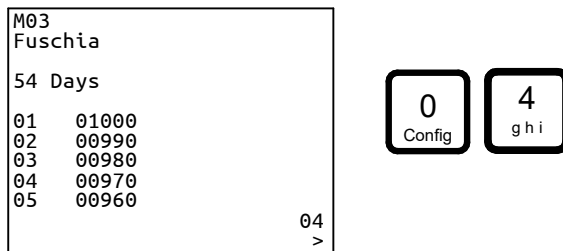
When Joe switches to "model", the screen immediately selects Model, 01 Day 01 and Disable 01, Day 01 by default, displays the Model and Disable names, then populates the vpd target with the target from the model. If you select a different model and different day, it should populate the target correspondingly. To change the model, Joe presses



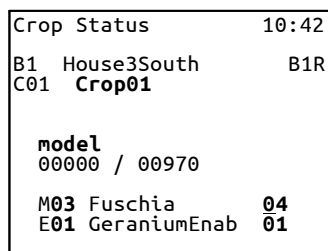
Again, for this parameter, there are 4 values: {manual, timed, target, model}



Immediately the days screen for the model appears. The Go-Mini is "assuming" that if you had to pick a model, you probably have to pick a day.



Immediately when Joe picks the last digit of the model day number, The Crop Status screen appears, with the cursor on the model day (in case Joe needs a re-do) and the model is changed to the one he picked.




*Note - If Joe entered the wrong day number, he can press [Change] on the day number field to open up the assigned model and pick a new day.*

Picking a disable model works exactly the same way.

```
Crop Status      10:42
B1 House3South   B1R
C01 Crop01

model
00000 / 00970


M03 Fuschia      04
E01 GeraniumEnab 01
```



```
Crop Status      10:42
B1 House3South   B1R
C01 Crop01

model
00000 / 00970




M03 Fuschia      04
E01 GeraniumEnab 01
```



```
Enables



01 GeraniumEnab
02 TuberBegonia
03 FuschiaEnab
04 PoinsettiaEn
05 OrnaPepperEn

                                03
<                                >
```

And picks the day:

```
E01
FuschiaEnable    Off x8.25
51 Days
01  20:00 - 05:00
02  19:55 - 05:05
03  19:50 - 05:10
04  19:45 - 05:15
05  19:40 - 05:20
                                01
>
```





Surveys the results, and saves the screen.

```
Crop Status      10:42
B1 House3South   B1R
C01 Crop01

model
00000 / 00970

M03 Fuschia      04
E03 FuschiaEnab 02
```



```
Crop Status      10:42
B1 House3South   B1R
C01 Crop01

model
00000 / 00970

M03 Fuschia      04
D03 FuschiaEnab 01
```

*Note - If Joe doesn't want to see the Models / Enables / Days, he can just type digits instead:*

```
Crop Status      10:42
B1 House3South   B1R
C01 Crop01

model
00000 / 00080

M01 GeraniumProp 01
D01 GeraniumEnab 01
```



```
Crop Status      10:42
B1 House3South   B1R
C01 Crop01

model
00000 / 00970

M03 Fuschia      04
E01 GeraniumEnab 01
```



```
Crop Status      10:42
B1 House3South   B1R
C01 Crop01

model
00000 / 00970

M03 Fuschia      04
E03 FuschiaEnab 02
```



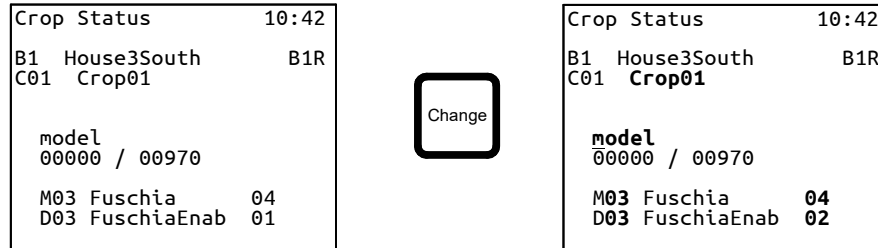
```
Crop Status      10:42
B1 House3South   B1R
C01 Crop01

model
00000 / 00970

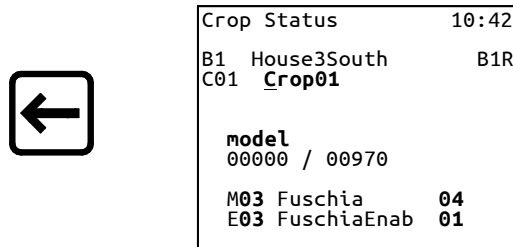
M03 Fuschia      04
D03 FuschiaEnab 01
```

*Joe can use any combination of pressing the "Change" key, and typing digits, etc., to fill out this screen.*

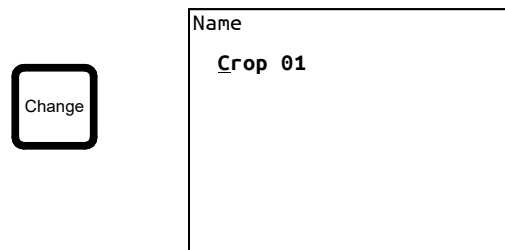
Joe has decided that he wants to name Boom 1's Crop 01 something more memorable. He goes back to the Crop Status Screen for this crop:



The cursor doesn't start on the crop name, even though it's at the top of the screen. The cursor starts on the water type, "model", because the crop name isn't something you should frequently change.



He presses the left arrow to move the cursor to the crop name, then presses



The naming process looks exactly as it does in config - arrow keys move the cursor, and pressing a number key repeatedly cycles through the number and letters on the key. Pressing the Zero Key twice makes a space.



After a few key presses, he has created the crop's new name.

```
Name
  Fuschia-11-26
```

He presses



to save it

```
Crop Status      10:42
B1 House3South   B1R
C01 Fuschia-11-26

  model
00000 / 00970

M03 Fuschia      04
E03 FuschiaEnab 01
```

and

again

to save his changes to the boom status screen.

```
Crop Status      10:42
B1 House3South   B1R
C01 Fuschia-11-26

  model
00000 / 00970

M03 Fuschia      04
D03 FuschiaEnab 01
```



```
Boom1 Crop
01 Fuschia-11-26
02 Crop02
03 Crop03
04 Crop04
05 Crop05
06 Crop06
07 Crop07
08 Crop08
>
```

The change is also visible in Boom 1's Crop list.

### 3. Joe Creates a Model

We start by time-travelling to a time before Joe created his first Model, when the only Model in the Go-Mini was the Dummy Model (The Model01 factory installed on the Go-Mini).

The Go-Mini is displaying its Status Screen

```
Status      Wed      10:41

Sensors Normal

Booms Normal
```

Joe presses  to see the Model list:

```
Models

01  DummyModel
+

< >
```

Then  to create a brand new model

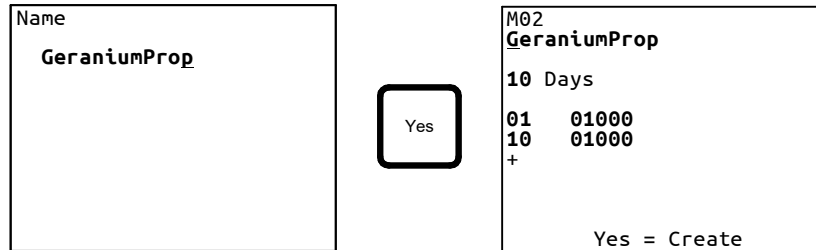
```
M02
ModelName
10 Days
01  01000
10  01000
+

Yes = Create
```

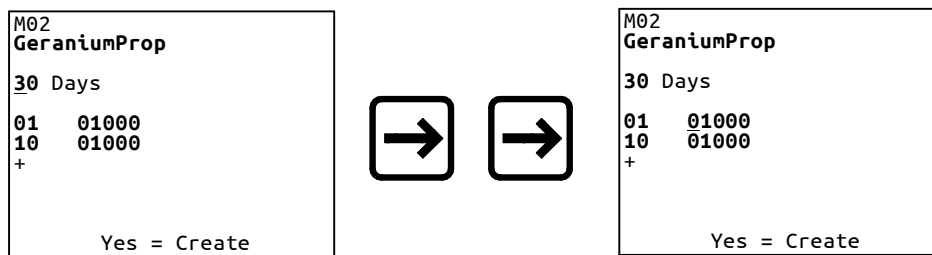
 to change the name

```
Name
  ModelName
```

He uses the number and arrow keys to rename the Model, and confirms the name:

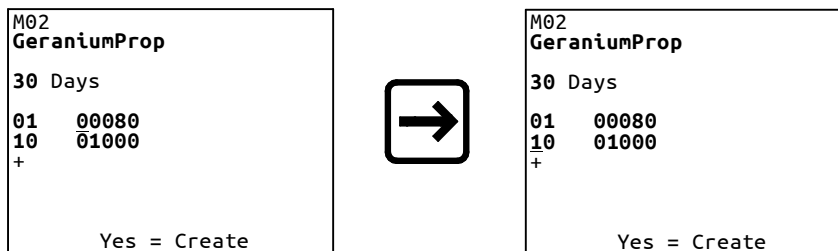


then he moves the cursor to the number of days and changes it to 30, then moves to the data points



The Model is drawn using a 'connect the dots' strategy, with targets changing linearly between each of the data points.

Joe enters his first data point: an 80 vpd target on Day 01.



Now his second data point, a 920 vpd target on Day 22

abc abc

M02  
GeraniumProp

30 Days

01	00080
22	01000
+	

Yes = Create

Config Config wxyz abc Config

M02  
GeraniumProp

30 Days

01	00080
22	00920
+	

Yes = Create

Joe specifically wants 3 data points - he wants a curve whose targets increase more slowly near the end of the model. He presses

M02  
ModelName

30 Days

01	00080
22	00920
23	01000
+	

Yes = Create

to add another data point

He fills it out - 01000 VPD on day 30

M02  
ModelName

30 Days

01	00080
22	00920
30	01000
+	

Yes = Create

and presses  to create the model

Immediately the first page of the "Days" screen of Model 2 appears

```

M02
GeraniumProp
30 Days
01  00080
02  00120
03  00160
04  00200
05  00240

```

Joe pages through the rest of Crop Model 02's Day screens using the arrow keys:

```

M02
GeraniumProp
30 Days
06  00280
07  00320
08  00360
09  00400
10  00440

```

```

M02
GeraniumProp
30 Days
11  00480
12  00520
13  00560
14  00600
15  00640

```

```

M02
GeraniumProp
30 Days
16  00680
17  00720
18  00760
19  00800
20  00840

```

```

M02
GeraniumProp
30 Days
21  00880
22  00920
23  00930
24  00940
25  00950

```

```

M02
GeraniumProp
30 Days
26  00960
27  00970
28  00980
29  00990
30  01000

```

## 4. Joe Edits a Model

Joe's not quite satisfied with his GeraniumProp model yet. He wants to edit a couple of the vpd targets. He wants to change the first day's target, and add 2 more days.

From the first page of the Model's Day screen (where he left off),

```
M02
GeraniumProp
30 Days
01 00080
02 00120
03 00160
04 00200
05 00240
```

Joe presses



```
M02
GeraniumProp
30 Days
01 00080
02 00120
03 00160
04 00200
05 00240
```

He wants to change the first vpd target to 100, so he presses



```
M02
GeraniumProp
30 Days
01 00100
02 00120
03 00160
04 00200
05 00240
```

And to change the number of days, he presses:



```
M02
GeraniumProp
30 Days
01 00100
02 00120
03 00160
04 00200
05 00240
```



```
M02
GeraniumProp
32 Days
01 00100
02 00120
03 00160
04 00200
05 00240
```

Yes

```

M02
GeraniumProp
32 Days
01  00100
02  00120
03  00160
04  00200
05  00240
        
```

Joe presses 3 1 (or, alternately, → x6 for the scenic route)

```

M02
GeraniumProp
32 Days
31  01000
32  01000
        
```

Change

```

M02
GeraniumProp
32 Days
31  01000
32  01000
        
```

When Joe added the two days, the Mini-Go populated them with data from the model's last day (then day 30). This is why the target is 01000 for these days. Joe wants to change this.

0  
Config

1

0  
Config

5  
j k l

0  
Config

```

M02
GeraniumProp
32 Days
31  01050
32  01000
        
```

→

```

M02
GeraniumProp
32 Days
31  01050
32  01000
        
```

0  
Config

1

1

0  
Config

0  
Config

```

M02
GeraniumProp
32 Days
31  01050
32  01100
        
```

Yes

```

M02
GeraniumProp
32 Days
31  01050
32  01100
        
```

## 5. Joe Creates an Enable

Just after creating his first Model, Joe decides to create an "Enable". The process is very similar. From the home screen:

```
Enable
01 Enable01
< >
```



```
E02
EnableName      Off x5.00
10 Days
01 20:00 - 08:00
10 20:00 - 08:00
+
<
```



```
Name
EnableName
```

He fills out a new name:

```
Name
GeraniumEnab
```

And presses



to return to the enable screen

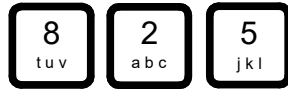
```
E02
GeraniumEnab   Off x8.25
10 Days
01 20:00 - 05:00
10 20:00 - 05:00
>
```



He presses



to move the cursor to the multiplier, and



```

E02
GeraniumEnab      Off x8.25
10 Days
01  20:00 - 05:00
10  20:00 - 05:00
+
  
```

to change the off multiplier to 8.25. The off multiplier is applied to the VPD target during off hours. This means that if the target was 100 vpd, during the enable, the target is 825 vpd. If he wants it disabled entirely during off hours, he sets the multiplier to 0.00.



```

E02
GeraniumEnab      Off x8.25
30 Days
01  20:00 - 05:00
10  20:00 - 05:00
+
<
  
```

to set the length of the Enable to 30 days. Next, he sets the data points, using the arrow to move between fields (each time field is a 4-digit field - hours and minutes are not separate)

```

E02
GeraniumEnab      Off x8.25
30 Days
01  18:58 - 06:04
30  18:00 - 08:00
+
<
  
```

There are only 2 points, so resulting the daily start times should vary linearly between the two starts, and the daily end times should vary linearly between the two ends. That's exactly what they look like:

Here's the finished Enable.

```
E02
GeraniumEnab      Off x8.25
30 Days
01  18:58 - 06:04
02  18:56 - 06:08
03  18:54 - 06:12
04  18:52 - 06:16
05  18:50 - 06:20
>
```

```
E02
GeraniumEnab      Off x8.25
30 Days
06  18:48 - 06:24
07  18:46 - 06:28
08  18:44 - 06:32
09  18:42 - 06:36
10  18:40 - 06:40
< >
```

```
E02
GeraniumEnab      Off x8.25
30 Days
11  18:38 - 07:44
12  18:36 - 06:48
13  18:34 - 06:52
14  18:32 - 06:56
15  18:30 - 07:00
< >
```

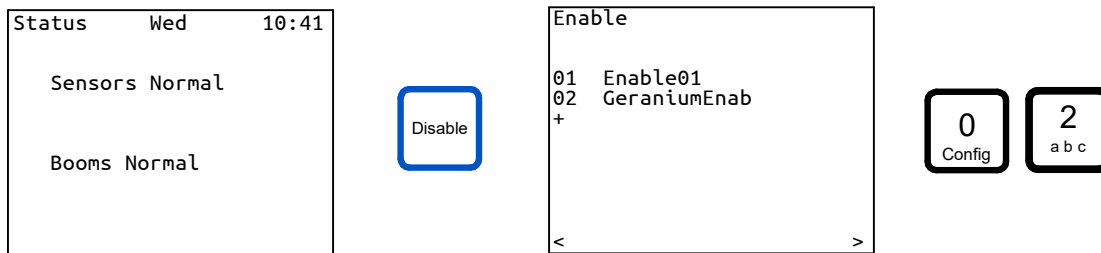
```
E02
GeraniumEnab      Off x8.25
30 Days
16  18:28 - 07:04
17  18:26 - 07:08
18  18:24 - 07:12
19  18:22 - 07:16
20  18:20 - 07:20
< >
```

```
E02
GeraniumEnab      Off x8.25
30 Days
21  18:18 - 07:24
22  18:16 - 07:28
23  18:14 - 07:32
24  18:12 - 07:36
25  18:00 - 07:40
< >
```

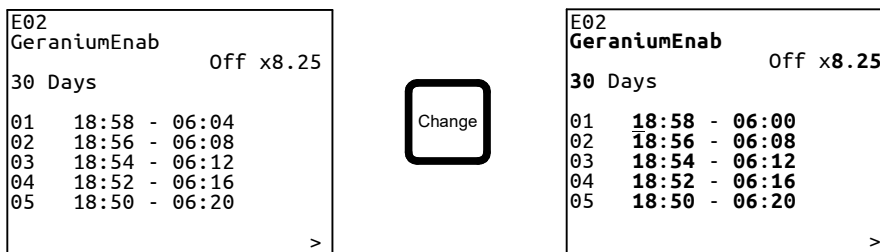
```
E02
GeraniumEnab      Off x8.25
30 Days
26  18:08 - 07:40
27  18:06 - 07:44
28  18:04 - 07:52
29  18:02 - 07:56
30  18:00 - 08:00
< >
```

## 6. Joe Edits an Enable

Joe wants to edit some start and end times in the enable that he just created. Starting at the Home screen:

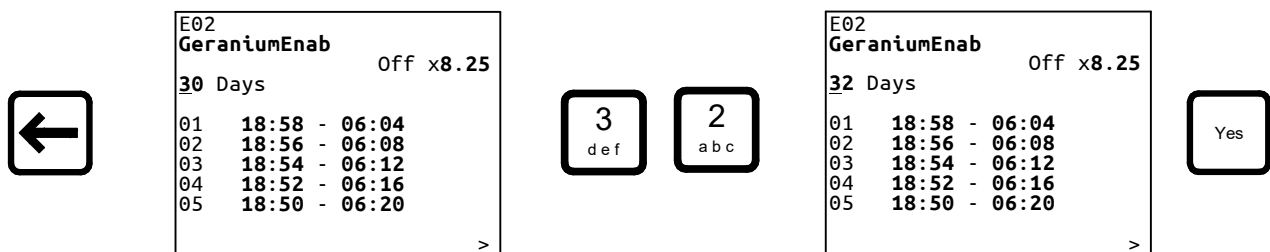


This is the enable screen.



Note that the cursor starts on the first day's start time. That's because the day values are something that Joe might want to tweak more than the number of days or multiplier, which might be more stable.

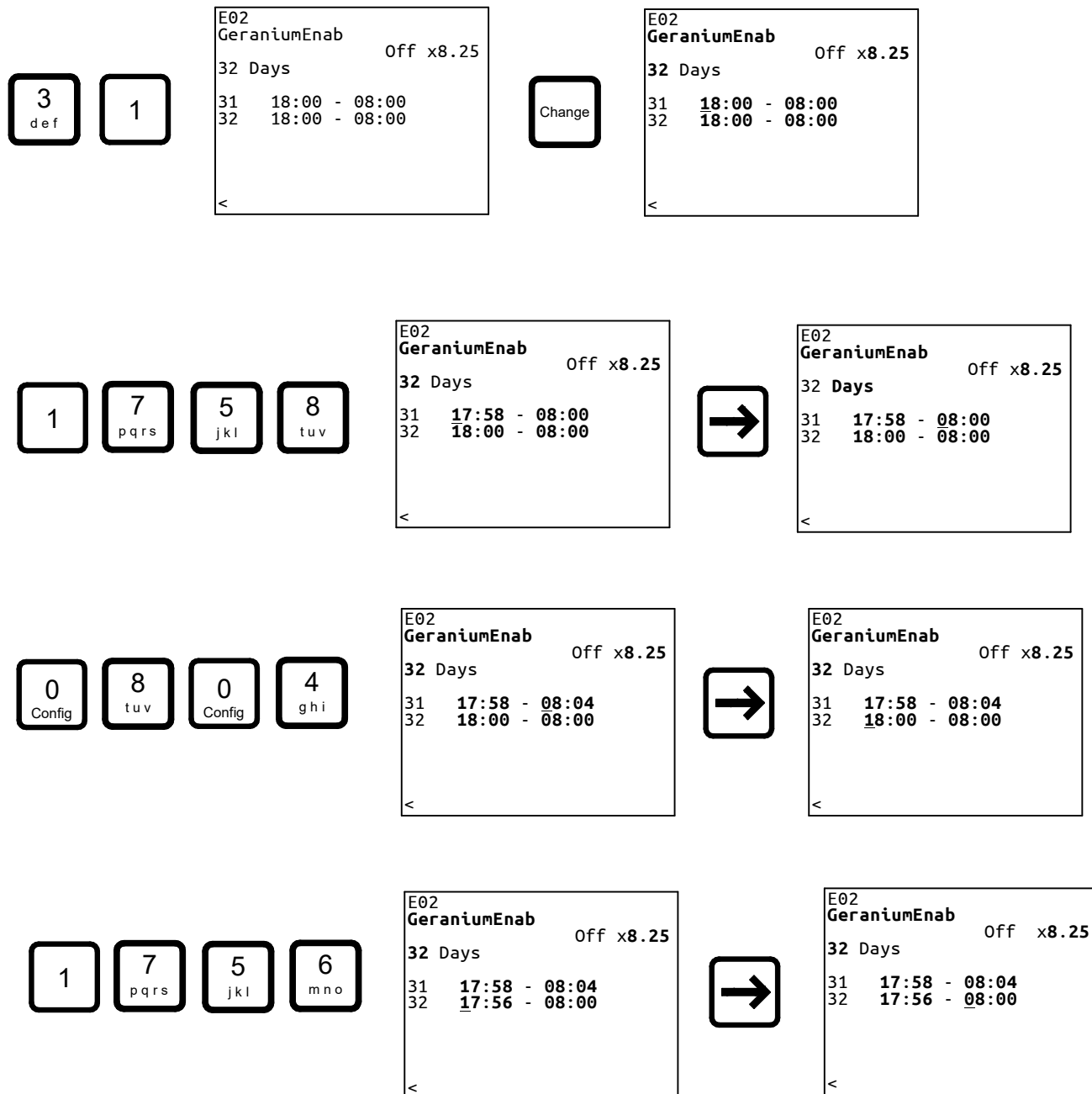
Joe wants to change the Enable's length to 32 days, though:



He wants to tweak Day 31 and 32's values,

The additional 2 days were automatically populated with Day 30's data, as that was previously the last day. Joe wants to go ahead and tweak it:

While you're in view mode on this screen, pressing the day number (2 digits) brings you to the page where that day is shown. So in this case:



0 Config 8 tuv 0 Config 8 tuv

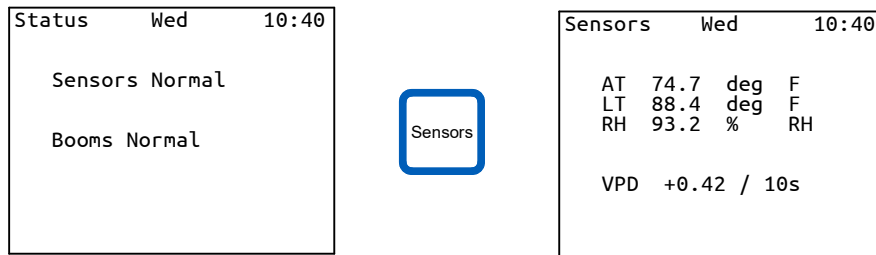
```
E02
GeraniumEnab      Off x8.25
32 Days
31 17:58 - 08:04
32 17:56 - 08:08
<
```

Yes

```
E02
GeraniumEnab      Off x8.25
32 Days
31 17:58 - 08:04
32 17:56 - 08:08
<
```

## 7. Sensors

Occasionally Joe might want to check his sensors to see their values. Starting at the Home Screen:



This is just a view screen to show Joe his sensor values.

*Note: If Joe had selected 'Celsius' for his temperature units, the screen should look like this:*

Sensors				Wed	10:40
AT	23.7	deg	C		
LT	31.5	deg	C		
RH	93.2	%	RH		
VPD +0.42 / 10s					

# 8. Logs / Alarms

## A: Network Logs

Occasionally Joe might want to check his logs to see what his booms have been doing. Starting at the Home Screen:

```
Status      Wed      10:40

Sensors Normal

Booms Normal
```

Alarm or Log

```
Network Log

01 B2 C04 Wed 10:40 e
02 B1 C08 Wed 10:38 c
03 B3 C01 Wed 10:37 c
04 B1 C15 Wed 10:29 c
05 B3 C11 Tue 17:28 c

>
```



```
Network Log

06 B1 C08 Wed 10:18 c
07 B4 C01 Wed 10:10 c
08 B1 C15 Wed 10:02 e
09 B4 C07 Wed 10:00 i
10 B3 C01 Wed 10:00 c

< >
```

(up to 99 entries)

0 Config 7 p q r s

(pick one)

```
Network Log 07

Boom 4, Crop 01

Started 10:03
Completed 10:10

< >
```

This network log list is the master log. It's a queue with 99 events, and includes Logs and Alarms.

## B: Log Status Indicators

right column:

c = complete

i = incomplete (ongoing)

e = error



# 10. Test

The Home screen doesn't give all of the info that Joe might want to see about his network and the GoMini controller. To see detailed info,

Joe presses



```
GOMINI QUICK TEST
Board Temp: 76.4F
Air ADC:    1023 -107.8F
Leaf ADC:   1023 -107.8F
Humidity ADC:0000 0.0
Time: 14:02:00 05/28/19
Key: 00
Booms: B1C B2R B3C B4
       76 99 32 99
```

There are several pieces of information here, mostly for diagnostic purposes:

- |                              |  |
|------------------------------|--|
| 1. Board Temperature Sensor: | Temperature (degF):  |
| 2. Air Temperature Sensor:   | Increments out of 1024, Temperature (degF)                 |
| 3. Leaf Temperature Sensor:  | Increments out of 1024, Temperature (degF)                 |
| 4. Humidity Sensor:          | Increments out of 1024, Relative Humidity (%)              |
| 5. Clock:                    | HH:MM:SS (24hr Format), MM/DD/YY (Date)                    |
| 6. Key:                      | Unique 2-digit number for each key                         |
| 7. Booms:                    | Boom Status for each boom,<br>%Comm Success for each boom, |