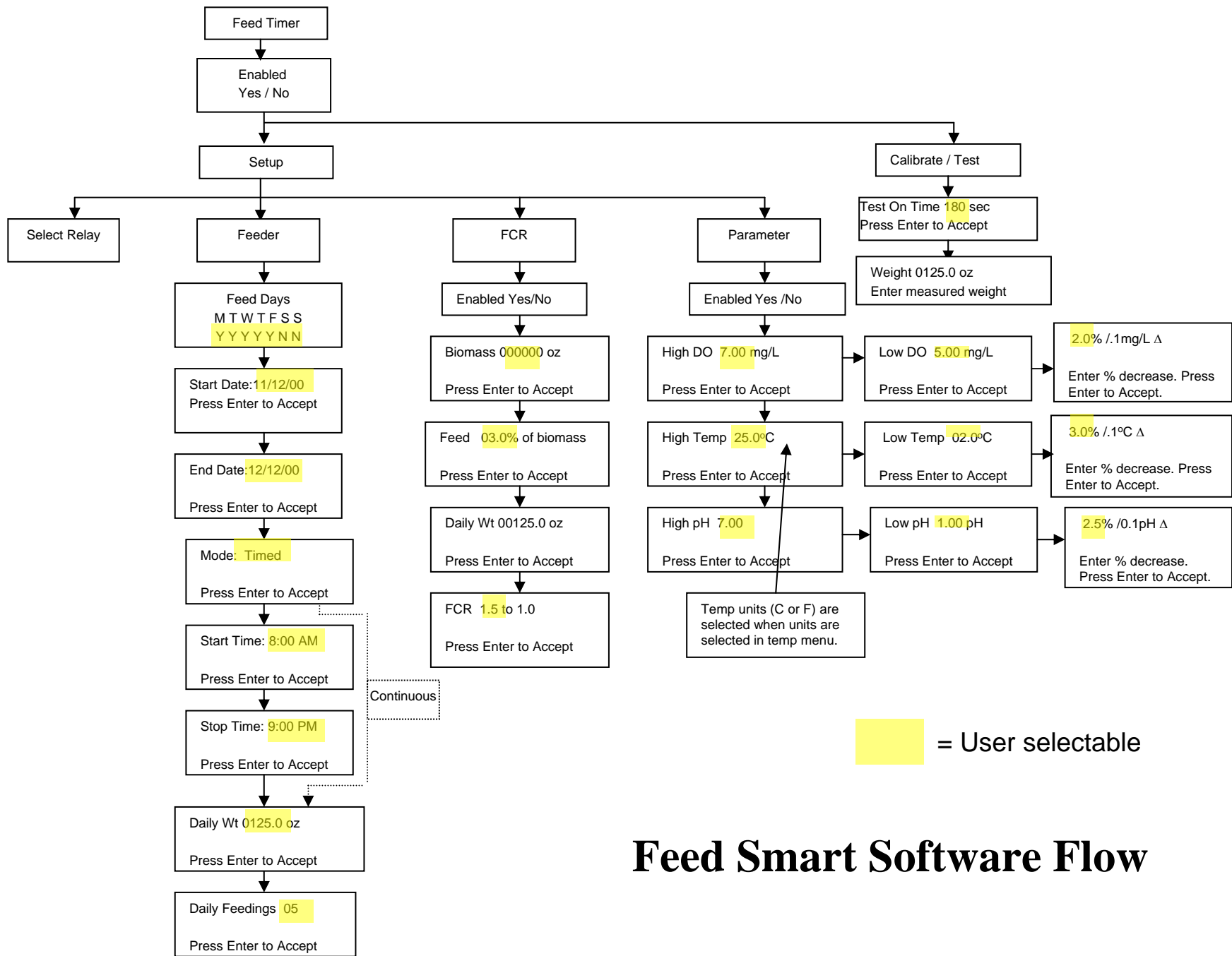# Feed Smart™ Feed Timer
for Aquaculture Monitors
Models 5200A and 5400

Manages Feed Delivery

- Standard in YSI 5200A and 5400 continuous monitors
- Setup from monitor menu or from AquaManager™ desktop software
- Can be used with most powered feeders
- Up to 100 feedings per day
- Can decrease feed amounts by user defined % based on DO, Temperature and pH values
- Increases feed amount on a daily basis using the user defined FCR (Feed Conversion Ratio)
- Feed amounts are determined by "rate based" calculations and a simple one-step calibration process
- Multiple modes of operation for versatility; Continuous or Timed Mode and can be used with or without FCR and Parameter Control functions
- Units of measure; ounce (oz), pound (lbs), kilogram (kg), gram (g)

Feed Smart Software Flow

Feed Timer Setup

AquaManager Setup Screen (AquaManager is not required)

Continuous Mode

- Select what days you would like to feed, i.e. Monday, Tuesday, Thursday

- Select a start and end date

- Enter a daily feed amount

- Enter the number of feedings/day

Timed Mode

- Select what days you would like to feed, i.e. Monday, Tuesday, Thursday

- Select a start and end date

- Select the time you would like to feed, i.e. Start 8:00AM and End 6:00PM

- Enter a daily feed amount

- Enter the number of feedings/day

Timed Mode Feeding

Example of calculations:

Timed Mode		
Test Time - Calibration	60	Seconds
Feed Weight Per Test	10	Pounds
Rate (calculated)	0.166666667	lbs/sec
Start Time	8:00	AM
Stop Time	6:00	PM
Total Available Time	600	Min/day
Daily Weight	100	lbs
Daily Feedings	50	
Weight per Feeding	2	lbs
On time per feeding	12	sec
Time between feedings	12	min

- Can be used in either Continuous or Timed Modes

- Select what days you would like to feed, i.e. Monday, Tuesday, Thursday

- Select a Start and End date

- Select the time you would like to feed, i.e. Start 8:00AM and End 6:00PM (Timed Mode)

- Enter the number of feedings per day

- Enter starting biomass – will be recalculated daily and can be adjusted as needed, based on FCR

- Enter % of biomass to be feed – used to calculate daily feed amount

- Enter anticipated FCR – used to calculate biomass

FCR and Biomass Calculation

Example of calculations:

Step 1	Day1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Feed % Biomass	9.90%	9.90%	9.90%	9.90%	9.90%	9.90%	9.90%
Biomass	2000	2132	2272.712	2422.711	2582.61	2753.062	2934.764
Daily Feed Amount	198	211.068	224.9985	239.8484	255.6784	272.5532	290.5417
Cumulative Feed Amount	198	409.068	634.0665	873.9149	1129.593	1402.146	1692.688
Step 2							
FCR Factor to 1.0	1.5						
FCR made into a decimal	0.666667						
Increase in Biomass	132	140.712	149.999	159.8989	170.4523	181.7021	193.6944
Cumulative Biomass Increase	132	272.712	422.711	582.6099	753.0622	934.7643	1128.459
Calculated New Biomass	2132	2272.712	2422.711	2582.61	2753.062	2934.764	3128.459

FCR and Biomass Calculation

Example of calculations:

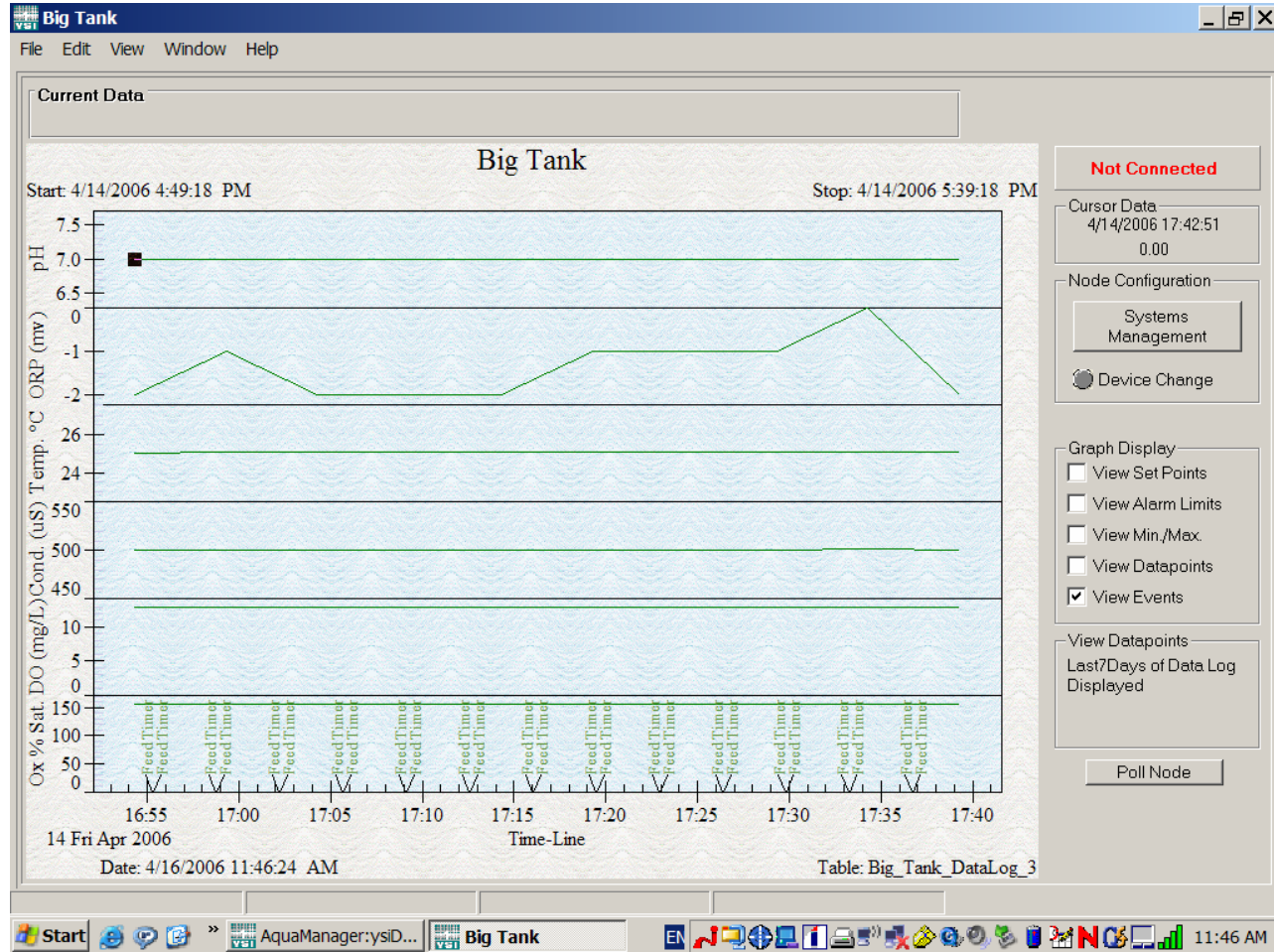| Step 1	Day1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Feed % Biomass	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Biomass	2000	2050	2101.25	2153.781	2207.626	2262.816	2319.387
Daily Feed Amount	100	102.5	105.0625	107.6891	110.3813	113.1408	115.9693
Cumulative Feed Amount	100	202.5	307.5625	415.2516	525.6329	638.7737	754.743
Step 2							
FCR Factor to 1.0	2.0						
FCR made into a decimal	0.5						
Increase in Biomass	50	51.25	52.53125	53.84453	55.19064	56.57041	57.98467
Cumulative Biomass Increase	50	101.25	153.7813	207.6258	262.8164	319.3868	377.3715
Calculated New Biomass	2050	2101.25	2153.781	2207.626	2262.816	2319.387	2377.372

Parameter Control

- Can be used in any feeding mode

- Reduces the amount of feed based on user defined criteria

  - ➢ Define High and Low values – between these values feeding is 100%

  - ➢ Enter % decrease in feed weight based on change in parameter condition, i.e. 2.0% / .1mg/L △

  - ➢ Can be set to turn off feeding if conditions warrant

- Controls can be set for dissolved oxygen, temperature and pH and values are additive

- All values are user selectable

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Event Logging

- Event logging can record every time the feeder turns on and off

- Data is also in tabular form

Advantages

- Low start up capital cost – included with 5200A and 5400 monitors

- Very flexible, easy to setup and use

- Saves money on labor vs other feeding methods

- Increases yields and reduces feed waste

- Parameter control protects livestock if water quality deteriorates