NEPTUNE SYSTEMS

Apex AquaController
Automatic Feeding System (AFS)

Setup Guide

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AUTOMATIC FEEDING SYSTEM – INTRODUCTION

Congratulations on your purchase of this Apex AquaController expansion accessory. The Automatic Feeding System is the first of its kind – a fully integrated feeding solution for your aquarium. You can incorporate any of the Apex program features into your feeding strategy – control your pumps and lights; vary feedings by time of day or day of week; suspend feedings if certain probe values are exceeded…there's no end to the control you get with the Apex AquaController and the Automatic Feeding System.

FEATURES

- Easily connects to ANY Apex via the AquaBus interface
- Compatible with all Apex Systems – Apex, Lite or Jr.
- Feeds pellet or flake food in varying amounts as often as you like
- 'Stay Dry' sealed food container keeps out moisture
- All Apex program functions are available giving you flexibility to feed when and how you want
- Mounts to the side of acrylic and glass tanks or sits on a flat surface
- Powered via the Aquabus – will work worldwide, 15' Aquabus cable included
- Multiple feeders can be connected to the Apex – stock with different dry foods

PHYSICAL INSTALLATION

The feeder can be mounted to the rim of your tank using the included mounting bracket or can sit on a flat surface. Four self-stick rubber feet are included that may be applied to the bottom of the feeder if you're not going to use the bracket. Pull the drum out of the housing and pop off the lid to fill with your preferred dry food then just push the drum back into the housing on the rotation shaft. Adjust the orange slider (- +) to control how much food is released on each drum rotation.

INITIAL CONNECTIONS

Before connecting your AFS to your system insure you are on a compatible firmware level. The AFS requires firmware of *at least* 4.30_BA13. You can determine the firmware version your controller is running by looking at the beginning of any XML report or by going to the Network Setup web page and looking at the bottom of the page. If your firmware is not at that level or greater, please download and apply the latest version from Neptune's support web page at www.neptunesystems.com/support/sw-updates/ where you'll find updates for both PC's and Mac's as well as complete instructions. Your controller will not recognize the AFS or create the appropriate outlet if you are not on a compatible level of firmware.

Plug one end of the included AquaBus cable into either of the AquaBus ports on the AFS and the other end into an available AquaBus port anywhere on your existing Apex system. It makes no difference which AquaBus port is used and you do not need to power down the system when connecting AquaBus accessories as the system is plug-and-play.

WARNING: NEVER plug standard USB devices into any AquaBus connector or AquaBus accessories into computer USB ports. Damage to the AquaBus accessory and/or USB device may result.

STARTUP

As soon as the AFS is connected to an active AquaBus, it will power up and begin to initialize. When first connected to an Apex Base Unit (through the AquaBus), the AFS will automatically be assigned an AquaBus address and be added to the Apex list of outlets. The LED Status indicator on the AFS will flash yellow while it is being initialized. This only takes a second or two. Once initialized, the LED Status indicator will be solid green.

VERIFY THE INSTALLATION

Verify the AFS was initialized and added to the Apex configuration:

Apex Display: Setup – Module Setup – Modify Name – from this screen, you can see all AquaBus modules installed on the system.

Web Interface: Configuration – Module Setup – Verify the AFS is listed in the Apex Module List and note the module number assigned to it.

An outlet will be automatically created called 'Feeder_X_1' where 'X' represents the module number assigned to the AFS. For example, if your feeder was assigned Aquabus address #4 the outlet would be named 'Feeder_4_1'. Like any other outlet, you can change this name if you wish.

CONFIGURING AND TESTING THE AFS

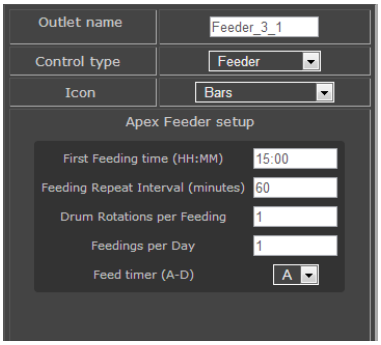
There is no configuration necessary with the AFS. Once the outlet is created you can begin programming it. To test the outlet to see if it's active, simply set the outlet to ON via the Dashboard, the Display or your smart phone app. The feeding drum should extend, rotate one time then retract back into the AFS. You can then turn the outlet to AUTO and begin programming.

PROGRAMMING EXAMPLES

The following examples will help you quickly program your system to use the AFS. Refer to the Apex Setup and Programming Guide or the Comprehensive Reference Manual for detailed instructions on how to configure and program outlets as well as a complete definition of all programming statements and syntax.

METHOD #1 - USING THE FEED WIZARD

To use the wizard, make sure 'Feeder' is selected for Control Type in the Outlet Configuration web page. The feed wizard will look like this:



First Feeding Time – The time each day of your first (or only) feeding.

Feeding Repeat Interval – If you are going to have multiple feedings, how far apart should they be? If you only intend a single feeding, you can ignore this and leave it at 60.

Drum Rotations per Feeding – How many drum rotations per feeding?

Feedings per Day – Used with Feeding Interval to space multiple feedings starting with Feeding Time

Feed Timer (A-D) – Used to select one of the built-in Feed timers as an override to your AFS feed program

Here's a chart to help you understand how to use the Feed Wizard to get the feed times you desire:

Scenario	Feeding Time	Feeding Interval	Drum Rotations	Feedings per Day
Feed one time at noon with a single drum rotation	12:00	Value ignored	1	1
Feed three times per day at 9am, Noon and 3pm; single drum rotation each time	9:00	180	1	3
Feed twice a day at 1pm and 5pm; 3 drum rotations each time	13:00	240	3	2

METHOD #2 - ADVANCED PROGRAMMING EXAMPLES

At any point you can switch programming modes and use the '*Advanced'* mode to enter your program yourself. Optionally, you can begin with the Wizard (see above), let the wizard create the program then switch modes to *Advanced* and modify the program the Wizard created for you.

Here's the program created by the Wizard in the first scenario: Single feeding at Noon, single rotation:

OSC 000:00/000:30/000:30 Then On
if Time 00:00 to 12:00 Then Off
if Time 12:02 to 00:00 Then Off
if FeedA 000 Then On

The key to programming the AFS is understanding that the feeder drum will rotate once every time power is applied. That's where the Oscillate statement comes in. It turns the outlet ON for 30 seconds then OFF. The 'If Time' statements keep the outlet OFF the rest of the time – in this example all day with the exception of 12:00:00 – 12:01:59. The Oscillate statement starts at 12:00 with 30 seconds OFF followed by 30 seconds ON (which causes the feed drum to extend, rotate and retract). This happens once and the outlet then goes OFF until the next day at noon.

Here's the code created by the Wizard for the last example: Feed twice a day at 1pm and 5pm, 3 drum rotations each time:

OSC 000:00/000:30/000:30 Then On
if Time 00:00 to 13:00 Then Off
if Time 13:04 to 17:00 Then Off
if Time 17:04 to 00:00 Then Off
if FeedA 000 Then On

Note that each 'If Time..' statement is longer – 4 minutes instead of 2 which gives you the 3 x 1 minute rotations plus a little time so the outlet doesn't turn OFF too early. If you wanted a different number of drum rotations at each feeding, simply adjust the times accordingly – 2 minutes for a single rotation, 3 minutes for 2 rotations, 4 minutes for 3 rotations, etc. This way you could have 2 rotations at the 1pm feeding but 4 rotations at the 5pm feeding.

One final note about the program the wizard creates. You'll note there's a 'If Feed…' statement automatically inserted at the end of the program. This gives you the ability to manually activate the feeder whenever you want and get a single feed rotation. Simply select that feed timer from the Display module, the Dashboard or your smart phone application and the AFS will be activated for a single drum rotation feed.

EXCEPTIONS YOU CAN INCORPORATE IN YOUR FEED STRATEGY

Since the AFS understands all the Apex commands, probes and switches, you can incorporate these into your feed program for the ultimate in control. For example, you can suspend feeding if your water quality is below a certain point by checking your ORP or pH levels:

OSC 000:00/000:30/000:30 Then On
if Time 00:00 to 13:00 Then Off
if Time 13:04 to 17:00 Then Off
if Time 17:04 to 00:00 Then Off
if FeedA 000 Then On
If ORP < 300 Then OFF ← Add this statement at the end of your program

You can also suspend feeding if any alarm conditions are TRUE simply by checking the condition of your email alarm outlet. For example, add the following at the end of your feed program:

If Outlet EmailAlm_I5 = ON Then OFF

Another possible exception, suppose you want to suspend feeding on a particular day each week. Again, with the Apex controller it's easy to do. Add the following code to the end of your feed program if you want to skip feedings on Saturdays (for more information on the Day of Week command, see the Comprehensive Reference Manual at Neptune's support web site):

If DOW ------S Then OFF

Suppose you make use of float switches as part of your aquarium control strategy – perhaps to tell you your sump is low or your skimmer waste reservoir is full. Maybe you use a toggle switch to indicate a maintenance period has begun. You can incorporate a switch condition in your feed program:

If Switch3 CLOSED Then OFF

If Switch3 indicated you were in a maintenance mode and perhaps your pumps and skimmer are turned off, this would tell the feeder to skip this feeding. As soon as you complete maintenance mode and Switch3 goes back to OPEN, when the next feeding time arrives, the feeder will operate normally.

One final example. Here we want a complete feeding workflow:

Initiate Feed cycle → turn off return and skimmer → wait 1 minute → feed → wait 10 min → turn on return → wait 5 min → turn on skimmer

Here's how you would accomplish that. First, you'll need a virtual outlet (for information on how to create virtual outlets, see the Comprehensive Reference Manual). We'll start with a simple one time a day, single rotation feeding but you can adapt for any number of feedings:

[v-feed]
Set OFF
If Time 12:00 To 12:01 Then ON

[skimmer]
Set ON
If Outlet v-feed = ON Then OFF
Defer 15:00 Then ON

[return]
Set ON
If Outlet v-feed = ON Then OFF
Defer 10:00 Then ON

[feeder_3_1]
Set OFF
If Outlet v-feed = ON Then ON
Defer 1:00 Then ON

As you can see, it's really up to your imagination on what you can do with a fully integrated Automatic Feeding System and an Apex AquaController. And if you ever get stuck on how to accomplish something, Neptune support and the Neptune Community Forums are ready and waiting to assist:

support@neptunesys.com
http://forum.neptunesystems.com

NEPTUNE SYSTEMS LIMITED WARRANTY

Neptune Systems warrants this product to be free from defects in material and workmanship for a period of 1 year from the date of purchase. Probes carry a 90-day warranty. If repair or adjustment is necessary and has not been the result of abuse, misuse, or accidental damage, within the 1-year period, please return the product with proof of purchase, and correction of the defect will be made without charge.

For your protection, items being returned must be carefully packed to prevent damage in shipment and insured against possible damage or loss. Neptune Systems will not be responsible for damage resulting from careless or insufficient packaging. Before returning please obtain a return authorization (RMA) number from Neptune Systems at (408) 578-3022. Returned merchandise will not be accepted without a RMA number.

Except for the warranty set forth above, Neptune Systems is not responsible for any damages including, but not limited to, consequential damage occurring out of or in connection with the delivery, use or performance of Neptune Systems' products. Buyer's remedies for breach of warranty shall be limited to repair, or replacement and full or partial adjustment to purchase price.

Information in this manual is subject to change without notice. Please see www.neptunesys.com for the latest product information and product updates.

105 Cochrane Circle, Suite L
Morgan Hill, CA 95037
http://www.neptunesys.com
support@neptunesys.com
Phone 408-779-4090 Fax 408-762-2042

AFS Manual

CE DECLARATION OF CONFORMITY

Manufacturer: Neptune Systems, LLC. 105 Cochrane Circle Suite L, Morgan Hill, CA 95037; 408-779-4090
Product: Automatic Feeding System

Model No. AFS

The undersigned hereby declares, on behalf of the Neptune Systems, LLC. of San Jose, California that the above-referenced product, to which this declaration relates, is in conformity with the provisions of:

- EN 60950-1+A1:2009
- EN 60335-1:2010

The Technical Construction File required by this Directive is maintained at the corporate headquarters of Neptune Systems, LLC, 105 Cochrane Circle Suite L, Morgan Hill, CA.

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Curt Pansegrau
President

The symbol to the right means that according to local laws and regulations your product should be disposed of separately from household waste. When this product reaches its end of life, take it to a collection point designated by local authorities. Some collection points accept products for free. The separate collection and recycling of your product at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.