

# PART 7: SWITCH BOXES

Providing Koi keepers with a safe and convenient way of controlling their pond's electrical components, switch boxes are valuable pieces of kit, particularly given their latest technological capabilities. **Keith Holmes** guides us through their installation...



Keith Holmes

Keith manages Koi Water Barn, and has been with the company for over 14 years. He's had in excess of 100 articles published worldwide, and co-authored four books, including Interpet's *Koi Health*.



## WHY DO I NEED A SWITCH BOX?

Having a pond should provide you with hours of enjoyment if it's installed and maintained correctly. However, an aspect which merits care and attention is the use of electricity in a wet environment.

Water and electricity obviously don't mix, but this doesn't mean that you can't have a safe pond setup.

Switch boxes keep the wiring from all of your pond's electrical components in one place in a weather-proof housing.

They also reduce the number of plug sockets which need to be installed close to the pond, and provide a tidy, easily accessible cable system.

## HOW DO I GO ABOUT CHOOSING ONE?

First of all, you need to make sure that the box offers a suitable level of protection against water and the elements. A ratings system is used to show the degree to which a product is protected



against moisture. This is referred to as the Ingress Protection (IP) rating. Ratings read 'IP', followed by two numbers. The first indicates the level of protection offered against solids, and the second the protection against liquids. If either of the numbers is represented with an 'X', this means that the item hasn't been tested.

Make sure that you know the power rating of each device on your pond. As a general rule, most switch boxes run off a single 13 amp plug. If it were loaded with more than that, the fuse in the plug would blow. You should also check if the power rating refers to each switch or the entire box.

## HAVE SWITCH BOXES IMPROVED OVER THE YEARS?

Yes, some of the latest models feature remote control operation, enabling you to switch the devices on and off using a simple handheld device.

They also feature digital screens, which helpfully display the exact consumption of the equipment being used.

## SHOPPING FOR SWITCH BOXES

Here are the most widely available switch boxes on the market, which vary in price, according to their equipment capacity and technical features...

### Traditional switch boxes

These units are available in 2,3,4,5 and 6 way variants with LED lights.

The 6 way model offers the advantage of not only having a mains indicator light, which is common to all

boxes in this range,

but also indicator

lights on

each

switch

to

show

their

status.

All of the

units have an



IP56 rating, and a maximum loading of 13 amps.

They're easy to install, and have fully labelled terminals and easy to fit waterproof gaskets, which create seals around the cable entries.

**Price:** From £24.95 for the 2 way, to £49.95+ for the 6 way.

### Evolution Aqua Matsuko switch boxes

Evolution Aqua have teamed up with Matsuko to develop a range of high performance weatherproof switch boxes, which manage all electrical needs in a pond environment. The boxes allow up to five devices, including pumps, filters, skimmers, fountains and lights, to be controlled by a single unit. There are three types available – the 5 way offers up to five lines of power at up to 1,500W per line; the programmable SwitchMaster 5 way is suitable for five lines of power,

each delivering 1,500W; and the programmable SwitchMaster Pro 5 way with PumpGuard ensures that if a pump is connected to the box, its performance and parameters will be monitored to prevent damage. The latter model will also detect the power consumption of every device connected.

**Price:** £59.95 for the 5 way, £99.95 for the programmable 5 way, and £149.95 for the programmable 5 way plus PumpGuard.



### Oase InScenio FM-Master 3

This waterproof system has been developed for controlling fountains, lighting and pond technology effects at the touch of a button. It turns power circuits on and off, controls lights and regulates the filter capacity via remote control. It can be installed easily, the remote control has a range of 80m, and it comes with a two year guarantee.

**Price:** £179.95.



### Blagdon Powersafe electrical switch boxes

Designed for safe pondside electrical connections, these weatherproof boxes come in four different sizes. Each unit has a unique power on and power standby indicator, clear power application identification labels for each switch, a large housing with simple to remove circuit board for easier wiring, is simple to install, and comes with wall or post mounting brackets and fittings.

The 3 way and 5 way boxes are also available with handsets for remote operation.

**Price:** from £30 for the 2 way, up to £65 for the 5 way.





## INSTALLATION PROCESS

**Time taken:** Approximately an hour, depending on the number of switches being wired.  
**Level of difficulty:** Easy. **Number of people required:** One.

### Preparation

First of all, find a suitable location to place the box. In most cases, when you wire the unit, you'll also need to wire in the mains feed, which should be plugged into a three-pin plug socket. It doesn't matter too much if the unit is going to be located some distance away from the socket as a longer length of cable can often be used, but be

sure to check the instructions first. The next step is to attach the box to the wall using the fittings supplied, or by drilling four holes through the back of the unit and fixing it with screws and wall plugs. You'll also need to run the cables from the devices that you're going to connect to the box and strip the wires.

### TOOLS CHECKLIST

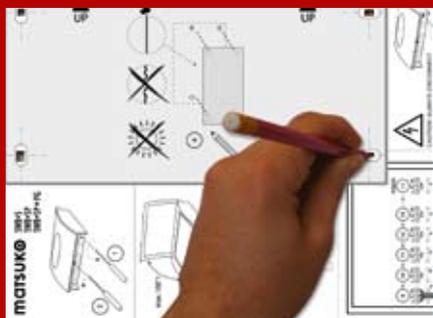
- Spirit level
- Tape measure
- Screwdriver
- Wire/cable strippers
- Screws/wall plugs
- Drill



### Step-by-step guide

Here's an Evolution Aqua Matsuko SwitchMaster Pro being fitted with three pond devices. Before attempting installation, download the manual at: [evolutionaqua.com](http://evolutionaqua.com); consult an electrician, if necessary; and make sure that the main power supply to the box is switched off before any work is carried out.

**1** Ensure that the switch box will be placed on a flat surface. You can fix it to a wall, providing that the brickwork isn't too rough. Use the template provided to mark out the location of the four screw holes on the wall.



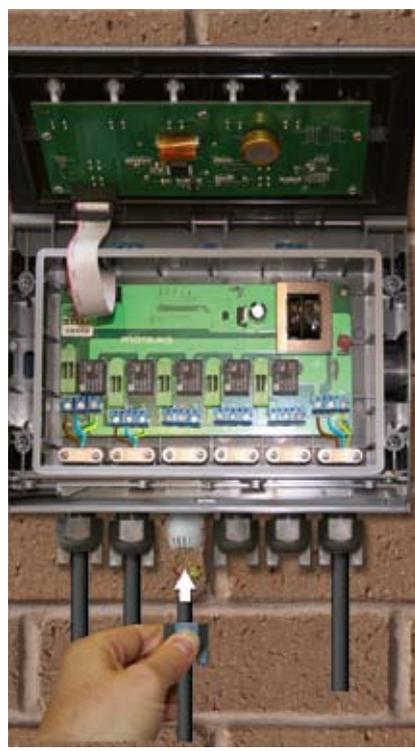
**2** Using a drill, affix rawl plugs, and use four screws to attach it to the wall. Make sure that the box is level, and the lid can be opened and closed easily.



**3** To connect the power cable, you'll need 13mm diameter armoured cable, connected to a mains power supply. Thread the power cable with exposed ends through the grey connector and into the switch box. Unscrew the necessary cable, pin and connector clamps to allow you to wire in the earth, live and neutral connections.



**4** Wire in every device you need to connect up, as instructed by the installation manual.



**5** Once every device has been installed, close the lid and secure it by screwing back in the small locking screw.



**6** Turn the switch box on at the mains. Once activated, the power light will illuminate and the screen will display a welcome message, followed by the main menu screen.



**7** On the SwitchMaster Pro model, every device can be programmed to turn on and off at set times at your convenience (see page 64).

On the 5 Way device, you can manually activate each power line by simply pressing the corresponding button.



### FINISH THE JOB

If you don't have one of the latest switch boxes with screens, which can be programmed to display the connected devices, write or print off some stickers to place underneath each switch to indicate which component it controls.

## SETTING UP A PROGRAMMABLE SWITCH BOX

Before you start using your switch box, you'll need to programme in the names of your pond devices, and set up their 'on' and 'off' times.

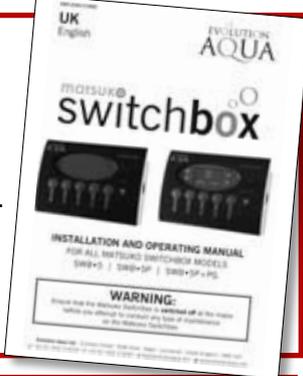
This step-by-step demonstration shows how to programme the SwitchMaster Pro model from Evolution Aqua's Matusko switch box range.

Up to five pond devices can be entered into the unit. After starting up the power supply, there will be a short delay while the system starts up.

Once the screen has displayed, press the square Menu button to bring up the programming options. To return to the main menu at any point, press the Menu button.

### Step-by-step guide

**1** Before programming the Evolution Aqua Matusko switch box, read the installation manual carefully.



**2** Take time to familiarise yourself with the layout of the display screen. The five lines display the preset names of the devices which you need to programme in on each line. If the device is switched on, you'll see a tick. 'OFF' means that the device has been turned off.



**3** ENTERING THE DATE AND TIME  
The screen also displays the date and time, which can be easily set up by going to the 'date and time' menu. Use the up and down arrows to change the figures, and save them by pressing enter.



### 4 PUMPGUARD™ FEATURE

When a pump is connected to the first line, the SwitchMaster Pro model will monitor its performance to prevent it from burning out. To activate a new pump or delete an old pump's data, go to the PumpGuard menu screen and select the relevant option. Once a pump has been activated, the system will run through the setup procedure.



### 6 PROGRAMMING A DEVICE

Every connected device can be programmed to turn on and off at your convenience. First of all, using the up, down and enter buttons, give each piece of equipment a preset name.



### 7 PROGRAMMING A DEVICE

You can now enter an 'on' and 'off' time for each device.



### 5 POWER CONSUMPTION MONITOR

The SwitchMaster Pro features a power consumption monitor. The screen below displays the power consumption, measured in watts, of the pump connected to Line 1 (L1). It also shows the total consumption of every device which is switched on (L1-5).



Display shows power consumption of line 1 (pump only)

Display shows total power consumption of all active lines

### DOS AND DON'TS

#### DO

- ✓ Purchase a switch box with more switches than you require. The chances are that you'll need more in the future.
- ✓ Consult a fully qualified electrician if you're unsure about anything.
- ✓ Think carefully about the box's location, and position it for easy access. If it has a red LED mains indicator, place the unit where it's clearly visible.

#### DON'T

- ✗ Overload the switches. Always stick to the maximum current rating shown.
- ✗ Overload the box. If the switch box is fed from a plug with a 13 amp fuse, the unit can take a maximum of 13 amps, not 13 amps on each switch.
- ✗ Get overly confident with the wiring. Always seek help, if necessary. When it comes to electricals, it's just not worth the risk of going it alone.