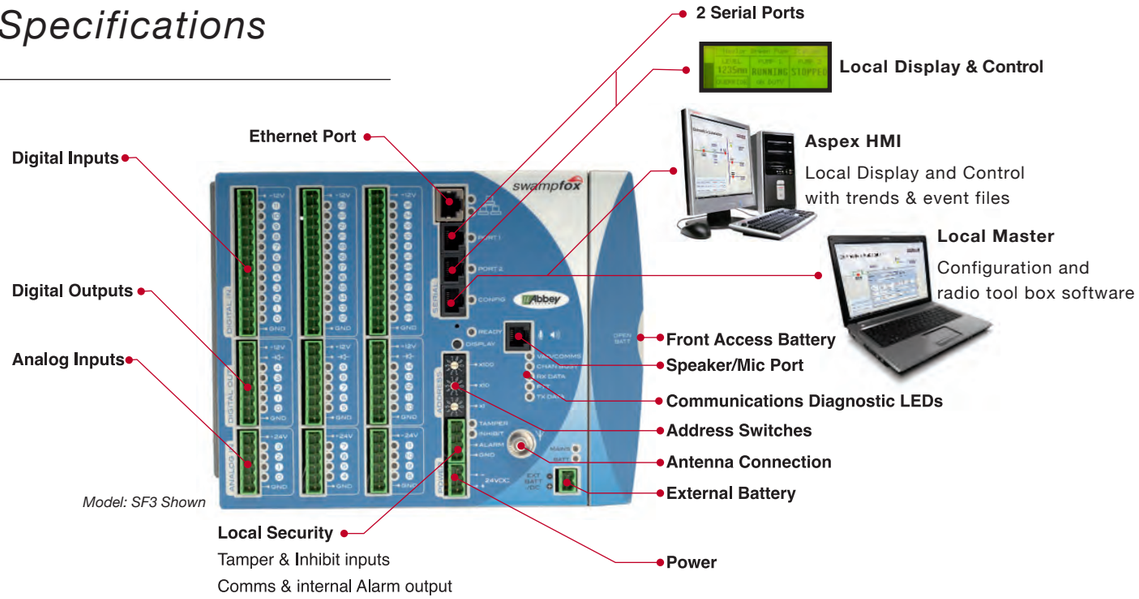
Specifications



Model: SF3 Shown

I/O Capacity							Inbuilt I/O	
	Digital in	Digital out	Analog in	Tamper in	Inhibit in	Alarm relay out	Status	Measurements
SF1	12	5	4	1	1	1	11	12
SF3	36	15	12	1	1	1	11	12

Specifications

Hardware

Processor
32 bit CPU
512K Flash, 512K battery backed RAM
Multiple 16 bit slave CPUs

Power
12V / 24VDC

Battery
NiMH 2.5 AHr *(~8-15 hrs duration)*

Environmental
Temp range -20 to +60 deg C
Humidity 5-95% non condensing
Shock 60G 15m/s 3 pulses/axis
EMI/EMC meets FCC requirements

Dimensions
SF1 H168mm, W175mm, D125mm
Weight 2kg

SF3 H168mm, W240mm, D125mm
Weight 2.8kg

Communications Options

Cellular
Enables cellular communication with the site

5 watt VHF radio
136-174MHz
CTCSS 12.5/25kHz
16 channel programmable adjustable power settings

4 watt UHF radio
400-470MHz, 450-530MHz
CTCSS 12.5/25kHz
16 channel programmable adjustable power settings

External radio interface
(for higher power radios)
Hi-Z unbalanced interface

Firmware Capability

Slave protocols
Modbus
Allen-Bradley DF-1
DNP3
HDLC

Master protocols
DNP3
Modbus
Allen-Bradley DF-1
Starflow
FloPro

Programming (incl)
MPL programming language for logic capability

Datalogging
25,000 time stamped events for later downloading & display

Options

Aspex HMI
Local display and control software

Local display
Local display via modbus LCD

Configuration software
Powerlink Local Master configuration software

Fibre optic interfaces
(powered from Swampfox)
RS-232 <> glass / plastic POF
RS-485 <> glass / plastic POF

Converters
(powered from Swampfox)
RS-232/RS-485 for multi-dropped serial devices

Analog Output module
4 x 0-20mA 12bit Analog outputs
Din mount external PCB

Specifications may be subject to change without notice

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swampfox™

A complete pump station and reservoir communications and control system in one box

- Communicate using cellular, internal, external or IP radio, or fibre optics
- Ethernet and serial interfaces
- Local display option
- Multiple communications protocols
- Configure over the comms network or onsite
- Inbuilt program logic & datalogging options
- RFI immunity with aluminium housing
- Battery; easy access & condition testing

INNOVATORS IN REMOTE CONTROL TECHNOLOGY

Hastings DC Avenue Road Sewer P/S

Typical Installations

Greater Wellington Regional Council – Bradey Reservoir inlet control valve enclosure

Powerco Gas – nationwide cellular pressure monitoring and Alarm System, typical enclosure

Hastings District Council – Otene Rd, valves and flumes RTU enclosure

Hastings District Council – Johnston Way stormwater RTU enclosure

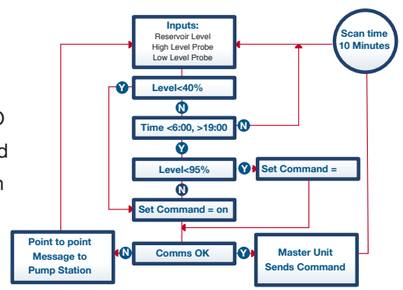
Swampfox Communications [RTU function]

Swampfox is designed for use in telemetry systems with multiple communications channels over a number of different media including VHF/ UHF radio, line, fibre optic, cellular and IP networks. Several features unique to telemetry are included; Remotely Initiate a Message [RIM] back to the Master when an input identified as an Alarm occurs. Send Commands only once, not on every scan. Message frame numbering means that should a Swampfox not receive the message addressed to it then it will be resent from the Master.

The ability to communicate with multiple serial devices e.g. VSDs, Meters, PLCs and Displays means I/O from these can be combined, reported back to the SCADA Master, or used in logic or datalogging tasks.

Swampfox Logic [PLC function]

Programming allows the Swampfox to fulfill the role of a PLC, managing pump stations, small treatment plants and reservoirs. It is an online, realtime language which is self-documenting and simple to use. IF tests, FOR conditions and DO commands form the basis of the language which runs in the Swampfox and at Abbey Systems SCADA Master stations. Logic allows Swampfox to activate backup programs should the RTU detect there is a communications failure. Programs can be written at the SCADA Master and downloaded over the communications channel.



Example of logic

Swampfox Datalogging [Timestamped data storage function]

Datalogging lets Swampfox store statuses and measurements in memory for later retreival. Datalogging can be triggered in multiple ways including; time, status change, system command or derived from a logic program e.g.

- store Turbidity, Chlorine, & Bore levels every minute for Drinking Water Standards reporting
- store Pump motor currents during the motor start
- store Rainfall only when it's raining
- store all changes when the cabinet door is open

The SCADA Master can later retrieve these automatically or manually, over the communications channel, or by using a laptop PC. They can be displayed in an Aspex trend, or exported in a CSV file or to an SQL database

As a Pump Station Controller these three functions of RTU, PLC and Datalogger are combined to provide users with useful functions e.g. the Swampfox can operate as a Pump Station Controller.

Pump Control

- start & stop pumps
- second pump start
- duty pump change
- change the start & stop levels
- manual or automatic operation

Alarms

- high level and overflow
- pump run-on, cavitation, over-current
- mains fail, batt low, time to overflow
- security

Site Performance monitoring

- inflow calculation (without using a flow meter)
- individual pump run hours, number of starts
- pumped volume
- battery state, holdup duration estimate
- RTU quiescent load
- temperature
- attendance record

Battery Condition monitoring

Smart battery management optimises the holdup time the Swampfox has in a Mains Fail situation and will report a failing battery before it occurs. Periodically the battery is removed from charge by the Swampfox; a load is applied and the measured battery voltage stored. This value is reported back to the SCADA Master along with several other values also recorded. Combined with the battery age and measured external series resistance [ESR] a holdup time estimate is determined and can be displayed on the SCADA HMI.

Battery Drawer with NiMH Battery

Software Tools

Local Master software tools allow the Swampfox I/O to be configured e.g. invert an input, set debounce time, latch or pulse an output, set the communications timings, also create and test local logic programs, and review I/O in connected serial equipment e.g. Meters, PLCs or Displays.

Radio Toolbox software allows users to change radio channels from the "CONFIG" port if replacing a Swampfox in the field.