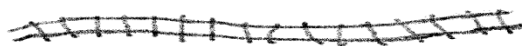


april systems design ltd



www.aprilsystems.co.uk
+44 (0) 115 9693202

Trap monitor – Operation Instructions

V1.2 5/11/2012

Low power text message system for traps monitoring use

Inputs

- The system has as standard a single trap activated sensor input this can be a magnetic switch or mechanical sensor.
 - The cable to the sensor is monitored - disconnecting the case connector or breaking this wire will trigger the tamper message. If left open the cable tamper system will not retransmit.
 - The unit is fitted with a selectable tilt sensor if the trap is moved over 45 degrees from being level
-
- To save power the system monitors the sensor only every few seconds.
 - Once detected the system gains communication with the mobile phone network – the duration of this will vary and can be from 10 seconds to 1 minute. A text message is then sent to one or more phone numbers.
 - When the trap is re-opened no transmission is initiated
 - If enabled on the system - When the trap is still closed, two hours after the first text message a repeat of the text message is sent, this is repeated every four hours until the trap is opened.

The sensor inputs can be tested for operation, in a test mode – see “test sensor” section below

Power

The unit is powered from a solar panel that charges a battery. When not activated the unit is consuming a very low power, around 0.00005 Amps. This is easily supplied by the solar panel in even very low light levels.

With a fully charged battery and no activations the system will run for over a year without any solar input. Activation uses about 0.3% of a full battery.

With less than 3 activations per day battery levels can be maintained in even low light levels. The battery voltage is sent on the text message to allow the user to monitor its level.

- If the system detects a low battery when transmitting then 'low battery' is included in the message.
- The system includes a shunt regulator to stop the over charge of the battery in very sunny conditions
- An external solar panel can be attached if the unit is to be used in a dark position

Modem / SIM Card

The unit can be fitted with any standard contract or pay-as-you-go SIM card. Typical pay-as-you-go costs are 4p to 12p per text, some networks are cheaper if the number texted is on the same network.

The top-up card supplied with the unit has the units phone number on and can be used at most shops or can be used on-line to top-up the account.

Each activation of the unit will read the current credit level and display it on the next text generated.

Note: Phone accounts are classed as dormant if no activity is undertaken within 3 months. It is recommended that the system is triggered as a test of the battery level and communication every month.

Text phone numbers

The unit can be programmed with the phone numbers it will send to by texting the unit with a password when it is set to programming mode – see “programming numbers” section below.

- Up to 3 Phone numbers can be programmed into the unit called A B or C.
- It is simple to select between the programmed numbers
- Each phone number texted incurs a text message charge.
- The unit name can be added to the message, also easily changed to suit.

Typical message:	What this means
Far marshfield box	users name for the unit
Unit-activated (new)	action (new or still activated)
Batt=6.2V	battery voltage
Credit=12.32	airtime credit £ before this message
Mode=Once	text message once or repeat if still
Sig=04/3	signal strength
(A)+447973625245	text phone number A = used
B+447973625245	text phone number B = not used
C+447973625245	text phone number C = not used
SerNoA0040/V1.0	unit serial number and type

Unit water resistance

The enclosure and connectors of the unit are IP65 this should resist rain and a short immersion; do not leave in an immersed position or in standing water. Do not drill hole or screw through the unit's case to mount

Signal strength

Do not position the unit inside or near any solid metal structures as this will reduce the signal strength and possibly lead to a loss of communication

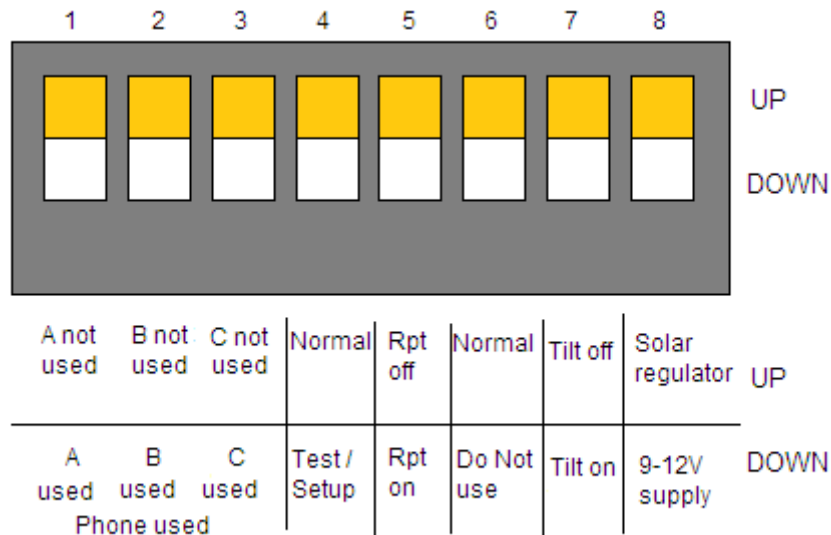
Unit Storage

Disconnect the trap sensor connector, leave in a lit position indoor or outdoor

Unit Settings

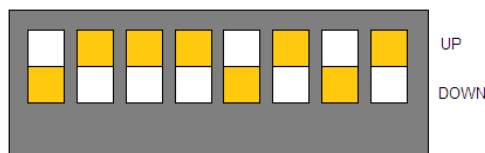
To set the text phone number or to test the sensor action, then the switch settings need to be used

- Open the lid of the box
- Orientate with the switches facing you like a piano



- If the change is a selection of the A B or C number that is already programmed into the unit then then the switch 1 2 or 3 can be altered and the lid replaced
- If the change is an alteration of the repeat, solar regulator or tilt again the selection can be made and the lid replaced.
- If programming new number into positions A B or C then see " programming numbers" below
- If testing sensor actions see "Sensor testing" below

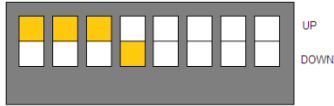
Typical setting: Contact phone number A, repeat message, tilt on, solar powered



Programming numbers and names

If a new number is required to be programmed then:

- Open the lid of the box
- Orientate with the switches facing you like a piano
- Select the program mode switches 1-3 up and switch 4 down.



- Trigger the unit into activation by disconnecting the cable and reconnecting it
- Wait 5 – 20 seconds for the indicator to flash quickly
- Text the unit with the code and position

Send the text with no spaces , capitals or small letters are treated the same

Use international prefix with the number ie "+44" for UK and drop the first "0"

Codea	loads the number used to send the text, into position A	
Codeb	loads the number used to send the text, into position B	
Codec	loads the number used to send the text, into position C	
Codea+44797123456	loads the number in the text into position A	
Codeb+44797123456	loads the number in the text into position B	
Codec+44797123456	loads the number in the text into position C	
Codentext	loads the text charaters into the name of the unit	
Codeztext	loads the text charaters into the credit check call ie	codez*#1345#

- Wait for the indicator to flash quickly again
- Select the switch 4 up and the text numbers to be used A, B or C on 1 2 or 3
- Indicator should stop flashing and go out.
- Close the lid
- Test unit operation

Note: different airtime providers use different credit check calls – the unit will be programmed with the credit call that matches the SIM provided – see office for more information

Sensor Testing

The sensors can be tested to check operation without the activation of the unit. This may be useful for sensor alignment or testing

- Open the lid of the box
- Orientate with the switches facing you like a piano
- Select the test mode switches 1-3 as indicated below and switch 4 down.
- Trigger the unit into activation by disconnecting the cable and reconnecting it
- Indicator will light depending on sensor input
- When complete return switches to operation mode positions
- Close the lid
- Test unit operation

[test F] Switches 1-4 down

Test trap sensor , if indicator lit = trap closed = activated



[test E] Switch 1 up and 2-4 down

Test box tamper, if indicator lit = box open



[test D] Switch 1 down, 2 up and 3-4 down, 7 down

Test tilt, switch 7 = tilt on must be down, if indicator lit = tilt activated



[test C] Switch 1-2 up, 3-4 down

Cable tamper, if indicator lit = cable disconnected



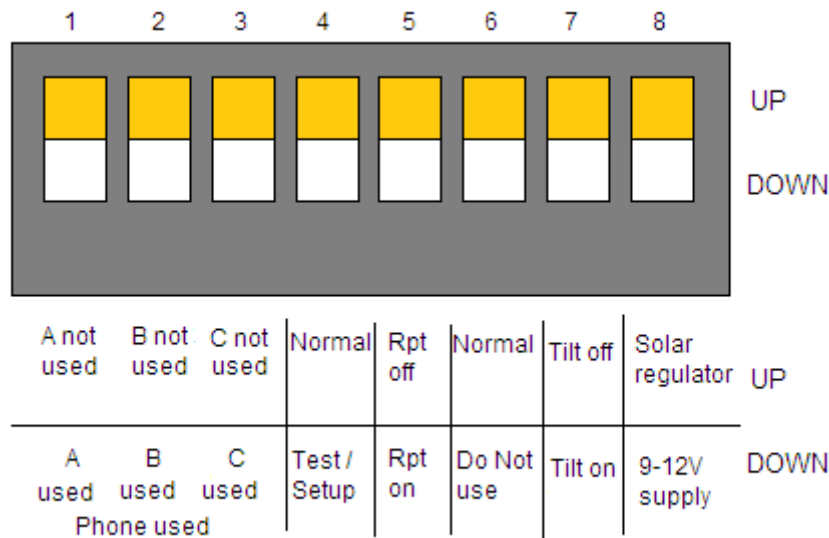
[test B] Switch 1-2 down 3 up – not used

[test A] factory reset phone numbers – DO NOT USE

[test 9] factory test mode – DO NOT USE

[test 8] see “program numbers and names”

Switch detail



1,2,3 Phone numbers

If switch 1,2 and 3 are up = off then the unit will transmit the text to the base station phone.

If A is down then the message is sent to phone number A.

If B and/or C are down = then the message is also sent to these numbers .

4 test mode / program unit mode

With switch 4 down - trigger the unit it will not transmit a message but enters the setup / test mode . See later for test modes

5 Repeat message

If the trap is not reset and the switch is down then the trap activated message is sent again , the message is tagged with (rpt)

- First repeat 2 hours after the first
- Subsequent repeats every 4 hours

6 Not used – must be in up position

7 Tilt on

If the switch is down then the tilt sensor is powered and enabled. The tilt sensor detects the unit being over 30 degrees from flat for longer than 1 second

8 Solar regulator

If the switch is up then the solar shunt regulator is activated this stops the battery being overcharged if under solar power, if the switch is down then a separate supply is being used and the 6V battery should not be connected.

Quick reference

1	2	3	4	5	6	7	8	
								UP
								DOWN

A not used	B not used	C not used	Normal	Rpt off	Normal	Tilt off	Solar regulator	UP
A used	B used	C used	Test/Setup	Rpt on	Do Not use	Tilt on	9-12V supply	DOWN
Phone used								

Programming 1.Set switch 2.trigger unit 3.Wait for fast flash 4.text unit



Codea
Codeb
Codec
Codea+44797123456
Codeb+44797123456
Codec+44797123456
Codename

Test trap sensor 1.Set switch 2.trigger unit 3. if indicator lit = trap closed



Quick reference

1	2	3	4	5	6	7	8	
								UP
								DOWN

A not used	B not used	C not used	Normal	Rpt off	Normal	Tilt off	Solar regulator	UP
A used	B used	C used	Test/Setup	Rpt on	Do Not use	Tilt on	9-12V supply	DOWN
Phone used								

Programming 1.Set switch 2.trigger unit 3.Wait for fast flash 4.text unit



Codea
Codeb
Codec
Codea+44797123456
Codeb+44797123456
Codec+44797123456
Codename

Test trap sensor 1.Set switch 2.trigger unit 3. if indicator lit = trap closed

