DEVIL XBT

Argos WildCat Interface

TURO TECHNOLOGY PTY LTD

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Revision History

Devil XBT Argos WildCat Interface

Date	Revision	Description
19 Feb 2008	5	
03 May 2007	4	Added setup, configuration and transmission information.
06 Oct 2005	3	1. Changed the response from “OK\r\n” to “Wildcat\r\n”. 2. Added Purpose section.
04 Oct 2005	2	Changed from using RTS line to using a PIC microprocessor to intercept GUID’s.
29 July 2005	1	Original document

CONTENTS

1 Background

The Argos transmitter used is the Seimac WildCat. The WildCat gets data from a host (through a serial connection) for transmission.

On initially powering up, the WildCat default operation is to transmit a 4 byte message (0x00, 0x01, 0x02, 0x03). Another default operation is that it will continue to repeatedly transmit the last received data from the host controller/computer until either new data is sent to the WildCat or a preconfigured timeout is reached, at which time will cease to transmit.

There are undesirable modes and consequences of this Wildcat default operations:

- if while under the control of the host, the power to the WildCat is accidentally turned off and then on again, it will transmit its default message unless the host sends new data,
- if while under the control of the host the power to the host is accidentally turned off, or even if the Devil program is closed, then the Wildcat will continue transmitting its last message (and not updating) unless the host restarts and sends new data,
- if the WildCat is turned on when the host is not operating, it will transmit its default message,
- the serial connection on the WildCat can utilise either hardware or software handshaking. With software handshaking, the preferred mode, the host can not readily identify the presence of the WildCat.

These undesirable modes and the ability to identify the presence of the WildCat are addressed by “Devil Seimac Wildcat Argos Transmitter Interface module”.

2 Hardware – Devil Seimac Wildcat Argos Transmitter Interface module

The Devil system uses the Devil Seimac Wildcat Argos Transmitter Interface module.

The WildCat has a serial TTL interface. This Interface module uses the following pins on the DB15 connection on the transmitter unit:

Pin 1 – Power In
Pin 2 – Ground
Pin 3 – Enable (TTL)
Pin 5 – Serial Data Out (TTL)
Pin 6 – Serial Data In (TTL)

A small circuit embedded in the back shell of the DB15 of the Interface module contains a microprocessor that intercepts special codes on the Data In line (coming from the host computer where the Devil software runs). The circuit is in documents 09615 and 09616. The host computer is connected to this back shell via an RS232 using only the tx, rx and ground lines.

The microprocessor circuit does two things:

- Enables and disables the Wildcat by controlling the Enable line (pin 3).
- Responds to the host by notifying it’s presence and that it is powered.

2.1 Functions

Under the following conditions the Wildcat is disabled:

- Initially on power up.
- No data has come from the host (on Data In) for the past 120 seconds.
- A Disable command has arriveed from the host (on Data In).

Under the following conditions the Wildcat is enabled:

- An Enable command has arrived from the host (on Data In). This is the only way that the Wildcat is enabled.

Under the following conditions the circuit responds:

- When the Hardware Query command arrives from the host (on Data In), the response (AND'd with Wildcat output line on Data Out) is "Wildcat\r\n".

2.2 Commands

The following details are for information only and are not required for setting up a Wildcat for operation with the Devil System. The underlying Devil software handles these commands.

To enable embedding of commands when there may also be binary traffic on the lines, the commands used are ascii strings of GUID:

Enable	"084C0A1B-F3F1-4417-98D6-C0ADE90B5301"
Disable	"1FA94506-87CD-4EBB-A5BA-E2EFA32A1005"
Hardware Query	"E9852122-B562-4E6C-988A-ABC83DB60C3D"

3 WildCat Configuration

The Wildcat needs an Argos ID to be programmed into it and it's configuration needs to be setup. To do this the Seimac PPTcom4 program, running on a pc, is used.

First, the computer needs to be connected to the Wildcat. Because the Wildcat accepts only serial TTL signals, an RS232 to TTL converter is required. The Wildcat uses a 15 pin D connector for both power and the serial signals. Seimac supply a suitable cable with connectors and an RS232 to TTL converter. Note that the Devil Seimac Wildcat Argos Transmitter Interface module can not be used for configuring the Wildcat.

Once connected the PTTcom4 program can be used. The following example shows the Wildcat set up for an ARGOS ID of B41C7 and a repetition rate of 46 seconds. Only one ID is used, this is important for the way the host Devil program communicates with the Wildcat.

Follow the instructions that come with this program and set up the Wildcat as shown in the following screenshot:

C:\Program Files\PTTComm 4\wildcat-v2_0a.cfg

Sensor name and number		Item name	Value
ARGOS transmitter	1	PTT ID number	b41c7 H
	1	PTT ID number	0 H
	1	PTT ID number	0 H
	1	PTT ID number	0 H
	1	Primary transmission rep rate (seconds)	46
	1	Secondary transmission rep rate (seconds)	86405
	1	Transmission on time (seconds)	86400
	1	Transmission off time (seconds)	1
	1	Number of additional ID's	0
	1	Enable 28-bit IDs (1=yes 0=no)	0
	1	Test TX (1=yes 0=no)	0
	1	Zero Pad (1=yes 0=no)	1
	1	Zero Fill	0
Serial communications	2	Baud rate	4800
	2	Serial data enabled yes=1 no=0	1
	2	Hardware handshaking yes=1 no=0	0
	2	User interface access interval (sec)	0
	2	Serial timeout (seconds)	15
	2	Serial debug messages (1=yes 0=no)	1
Digital Sensor Logic	3	Active digital inputs	f H
	3	Digital AND mask	0 H
	3	Digital OR mask	0 H
	3	Digital XOR mask	0 H
	3	Digital INVERT mask	0 H
	3	Digital COMBINE mask	0 H
	3	Transmit on logic TRUE (1=yes 0=no)	0
	3	Sensor History (1=enabled 0=disabled)	0
	3	Sensor Timestamp (1=enabled 0=disabled)	0
	3	Sensor Power (1=enabled 0=disabled)	1
	3	Sensor Delay (seconds)	2
Analog Sensor Logic	4	Active analog sensors	7 H
	4	Sensor 1 maximum	255
	4	Sensor 2 maximum	255
	4	Sensor 3 maximum	255
	4	Sensor 4 maximum	255
	4	Sensor 5 maximum	255
	4	Sensor 6 maximum	255
	4	Sensor 7 maximum	255
	4	Sensor 8 maximum	255
	4	Sensor 1 minimum	0
	4	Sensor 2 minimum	0
	4	Sensor 3 minimum	0
	4	Sensor 4 minimum	0
	4	Sensor 5 minimum	0
	4	Sensor 6 minimum	0
	4	Sensor 7 minimum	0
	4	Sensor 8 minimum	0
System Timers	5	Start up delay (seconds)	1
	5	Sensor sample period (seconds)	45
	5	Shut down timer (seconds; 0 for no shut down)	0
	5	Shutdown flag (reset to zero)	0 H
Misc	7	Calculate checksum	C828A00
	7	Verify	VVVVVV
	7	Enable Expansion Board	E003FDDE030

Typical important user parameters are PTT ID Number and Primary transmission rep rate. Note that the other transmission rep rates should be as shown and the Serial communications should also be as shown.

Note that this configuration sets the serial interface to the transmitter to use software handshaking as per the Seimac WildCat Users Manual UM-335-03-006 V2.0, section 6.1.1 Software Handshaking.

4 Devil Software Configuration

To use Argos satellite transmission the transmitter server first has to be configured. Go to Configuration->Servers... as follows:

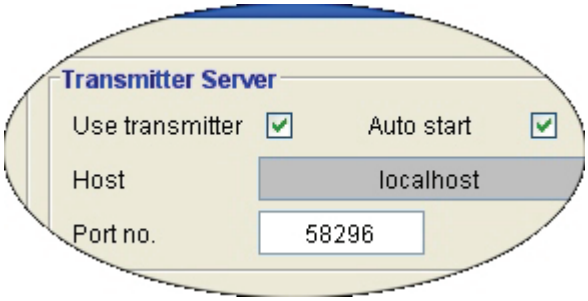
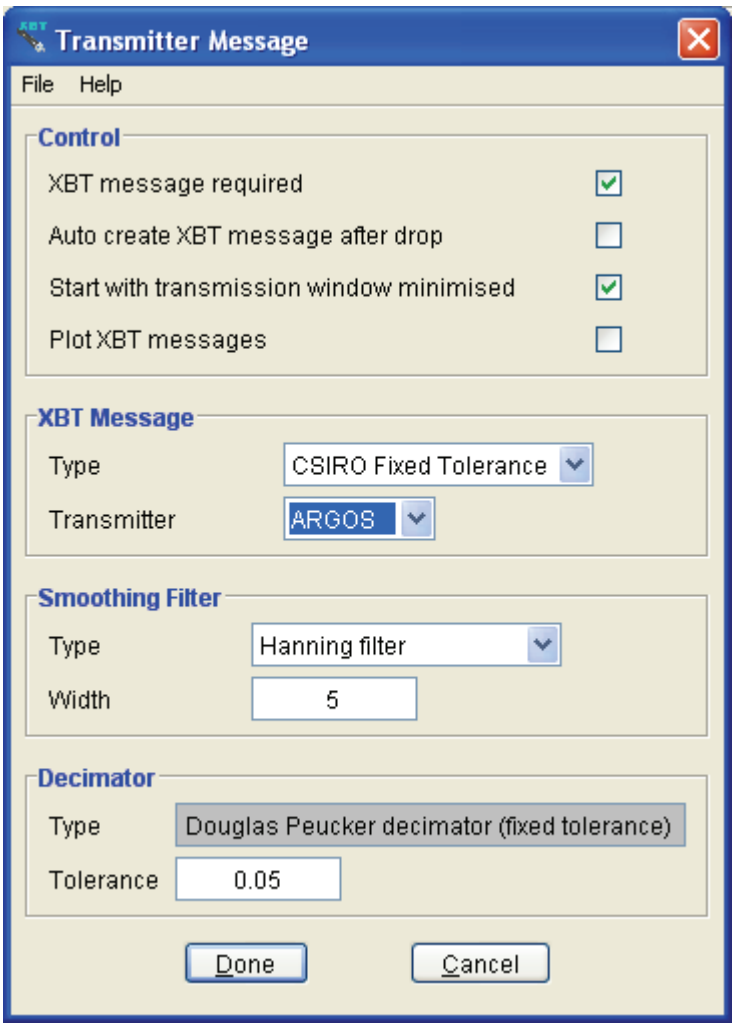


Fig 1 Transmitter Server Configuration

Ensure that the “Auto start” box is ticked and the Port no. is 58296. Then click on Done.

Then go to Configurations->Transmitter Message… and check the box XBT message required:



Select the required XBT Message:

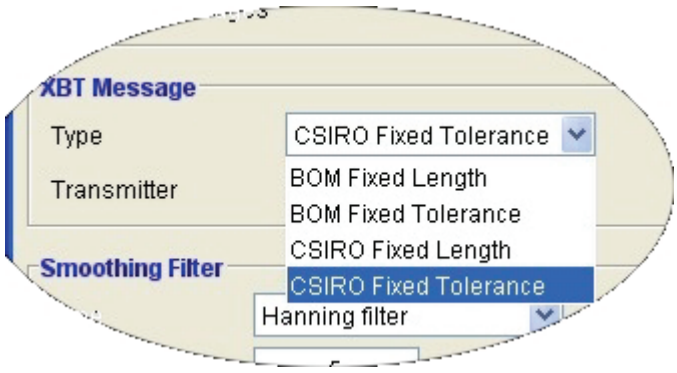


Fig 2 Message Format Selection

There are two formats of messages, BOM and CSIRO (see the document “Devil Data Formats” for a description of them).

The message is constructed from the profile to a reduced number of points. The number of points is either preset (Fixed Length) or a variable length depending on the preset accuracy (Fixed Tolerance). The length or tolerance is settable in the Decimator area of the window.

Note that for BOM Fixed Length, the length is not adjustable.

5 Transmitting

When the Wildcat has been configured and the Devil Software Configuration has been setup. The messages will be transmitted either automatically or when the “Transmit…” button is clicked.

Each XBT drop is transmitted as four Argos messages (repeatedly cycled through the messages) for a couple of hours before the next drop is transmitted.

To decode the Argos messages after they are received refer to document “Devil Data Formats”.