Log4OM 2
Amateur Radio Software

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User Guide

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Welcome to Log4OM V2

This latest version of Log4OM, Log4OM V2, is refined to include extra facilities requested by Log4OM V1 users, OM and YL's alike, and to streamlining the user interface.

Log4OM V2 is free software developed by Daniele Pistollato IW3HMH for the complete management of the station log. The application is developed in C # and is compiled for any Windows operating system Windows 7 and above.

The software will only run on Linux machines using the “Wine” Windows emulator or Mac OS X machines using “Parallels” emulation software or using “Boot Camp” The Log4OM V2 team do not provide support for the program when its being run on Linux or Mac machines.

Log4OM V2 is designed to be easy to understand, while being easy to adapt to the requirements of the individual. QSO's are personal and so no constraints have been made to prevent the user from accessing QSO data (Including by direct access to whatever database source is used).

Each set, list or database of the program is stored in text files, JSON or XML.

This approach allows the user to modify the list of awards, contests, operating modes, bands, band plans, views of the QSO and all other available parameters and information. This information is freely accessible and usable by other programs, and can be updated independently by the user if required. The database used for storing the QSO's is SQLite, which is open Source and free tools are available to read and write data in the database from the Internet.

More advanced users may wish to use the MySQL support included in the program, which makes a networked logbook for multiple stations possible for contests and DXPeditions.

The software is freely downloadable at https://www.log4om.com and its use is free of charge and available for any purpose.

Log4OM V2 is constantly evolving and new versions with new features are released regularly. The author endeavours to maintain compatibility with previous versions of the database. However, before performing any update, it is important to make a backup copy of the data because the publisher takes no responsibility for lost data.

While the author attempts to avoid problems and errors it is imperative (valid for any program) that the user makes regular backups of data either manually or with the special functions provided in the program. Log4OM by default create an ADIF backup on each program shutdown, keeping history of last backups and monthly saves.

Program features

- Accurate call sign lookup data
- Award tracking and display fully configurable by the user
- Band mapping of cluster spots with multiple band viewers individually filtered by mode and band by the user
- Call lookup by multiple external sources QRZ, HamQTH, QRZCQ, HamCall and internal Clublog aggregated with automatic fallback to secondary source if primary contains no data
- Call sign online QSL graphics and large scale, scrollable location map displays
- Dynamic UDP inbound / outbound support over multiple ports and services
- Ease of use via mouse or keyboard
- Enhanced standalone contest support with integral CAT display.
- Expanded Winkeyer support with integral CAT display.
- Full management of confirmations of the QSO data is available with different methods of delivery of the most appropriate confirmation type, including merging of QSO confirmation data.
- Full SOTA & IOTA support
- Improved QSO search engine with support for complex queries without SQL knowledge requirements (AND, OR, nested conditions)
- Integrated for on line logbooks with LOTW, eQSL, QRZ.com, HamCall, Clublog, HamQTH, HRDlog.net etc.
- Integration with N1MM, PSTRotator, QARTest, WSJT-X, FLDigi
- Intelligent cluster aggregates the information from multiple cluster servers and HRDLog Super cluster with spot quality display.
- Intelligent cluster filtering provides automatic collection of award references.
- Multiple Cluster viewer band maps by band and mode
- Propagation analysis using VOACAP linked to call sign lookup and cluster which predicts probability of a connection (Contact)
- Radio CAT control via either Omnirig or Hamlib
- Real time grey line presentation with long and short path tracks and headings.
- Search and filtering of data is the most advanced of any logging software.
- Security of user information and data with multiple backup options and locations.
- UDP Inbound, Outbound and Proxy facilities
- User configured layouts for cluster and logbook grids
- Voice Keyer

Support for Log4OM V2 is supplied free from the author at

https://www.Log4OM.com

Getting Started

Conventions used

Indicates an INFORMATION you should not miss
Indicates something you MUST read
Indicates something you can read to get more in depth with Log4Om logics

It is essential for the correct operation of the software that the 'Initial start-up' section of the Program Configuration is completed.

Log4OM version 1 and version 2 can both be run at the same time because they use different installation paths and it is NOT necessary to uninstall version 1 before installing version 2

Installation

- Download the software from http://www.log4om.com
- Unzip (Unpack) the compressed download file to a convenient location
- Run the installer exe file

It is not necessary to run Version 2 as an administrator unless Omnirig or other associated programs (e.g. WSJT, JTALERT) are elevated for multithreading in which case Omnirig and all programs working with it should also be elevated (Run as an administrator).

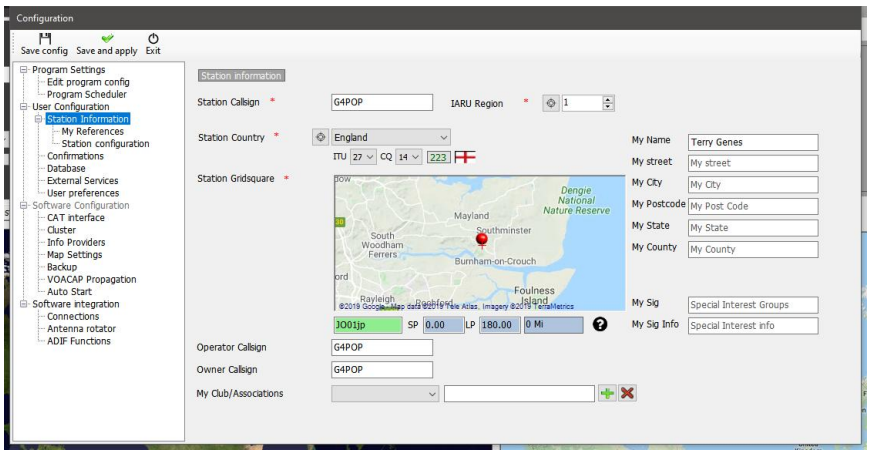
Initial set-up

Once the program is installed double click on the desk top shortcut. On initial start-up the user is presented with the window below, all information on the left hand side **MUST** be completed to enable Log4OM V2 to select the correct band-plans, maps, modes etc.

Minimum information:

- Station Call - This is the current call sign being used e.g. G4POP, G4POP/P or GW4POP/M
- Station country - The country where the Station call is located (In the examples above either England or Wales.) The ITU & CQ zones are automatically set upon entering the country but in the case of very large continents like Australia or the USA which cover many different zones please check that the selected zone is correct.
- Grid Locator - The 6 digit Maidenhead locator applicable to the current 'Station Call'
- Operator call - This may not be the station call perhaps because the station call is a special event or club call with many different operators using the equipment.
- Owners call - The person who owns the station

The personal information on the right hand side of the screen is used when operating with Winkeyer or other facilities which employ macros containing the users information.


Configuration
Save config
Save and apply
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Program Settings
Edit program config
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User Configuration
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Station configuration
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JO01jp
SP 0.00 LP 180.00 0 Mi
Operator Callsign
G4POP
Owner Callsign
G4POP
My Club/Associations
My Name
Terry Genes
My street
My street
My City
My City
My Postcode
My Post Code
My State
My State
My County
My County
My Sig
Special Interest Groups
My Sig Info
Special Interest info
Dengie National Nature Reserve
Mayland
Southminster
South Woodham Ferrers
Burnham-on-Crouch
Foulness Island
Rayleigh
Rochford

Creating a Logbook Database

It is NOT be possible to save or import QSO's unless the user first creates a database for the information to be saved to.

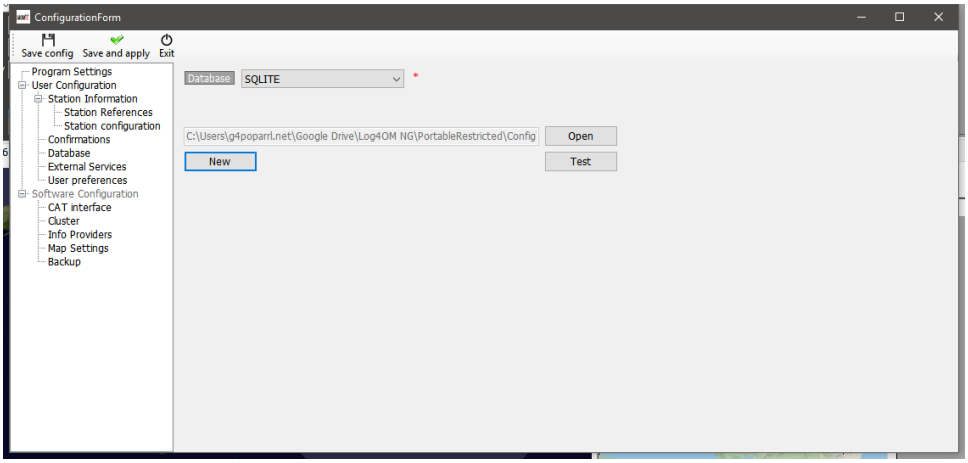
The user may have as many databases (Logbooks) as required e.g. Main call sign, Contest call sign or Special Event call sign etc.

However due to the powerful search and filtering tools in Log4OM V2, a single logbook may be used providing the QSO's have the correct Station and operator calls recorded. It is then possible to identify all QSO's using specific user call signs (Station or operator calls) and analyse the results for that set of QSO's. **The statistics are calculated on the whole database and not by station/call sign.**

The standard database is SQLIte but a MySQL database may be used for multi station contest operation of in the case of gigantic databases.

How to create a SQLite database.

- Go to 'Settings/Program configuration/Database'
- Select the type of database (SQLite is best for normal users)
- Click the 'New' button
- Select a location to save the database (A cloud storage is a good choice)
- Give the database a meaningful file name
- Click 'Save' in the file explorer window.
- Click 'Save & exit in the 'Program Configuration' window



Migrating from Log4OM Version 1

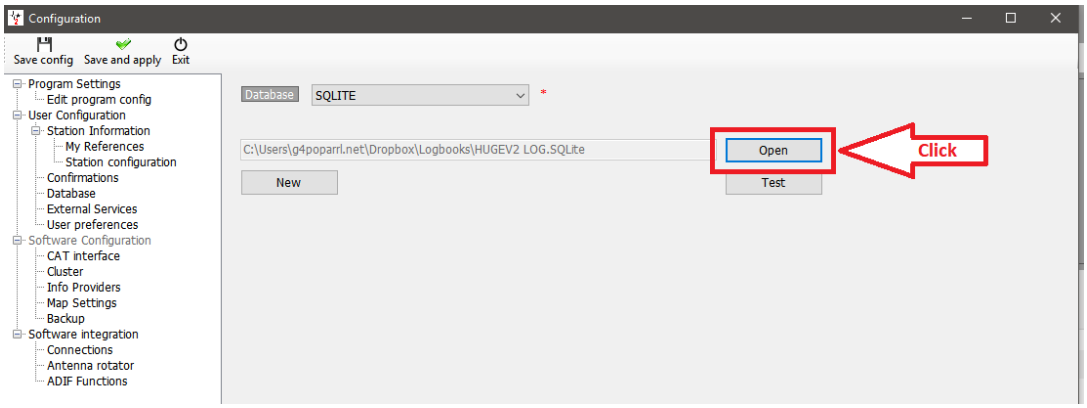
Log4OM version 2 cannot use an SQLITE database created/used by Log4OM version 1, it has an entirely different structure.

Users of Log4OM Version 1 should export an ADIF file in ADIF 3 format and then import it into the new version 2 of Log4OM once a database has been created or use Log4OM v.1 automatic backup as source

Changing Database

Log4OM allows an unlimited number of databases to be created, changing between databases does not require a program restart.

- File/Open New database
- Click on 'Open' in the 'Database' tab

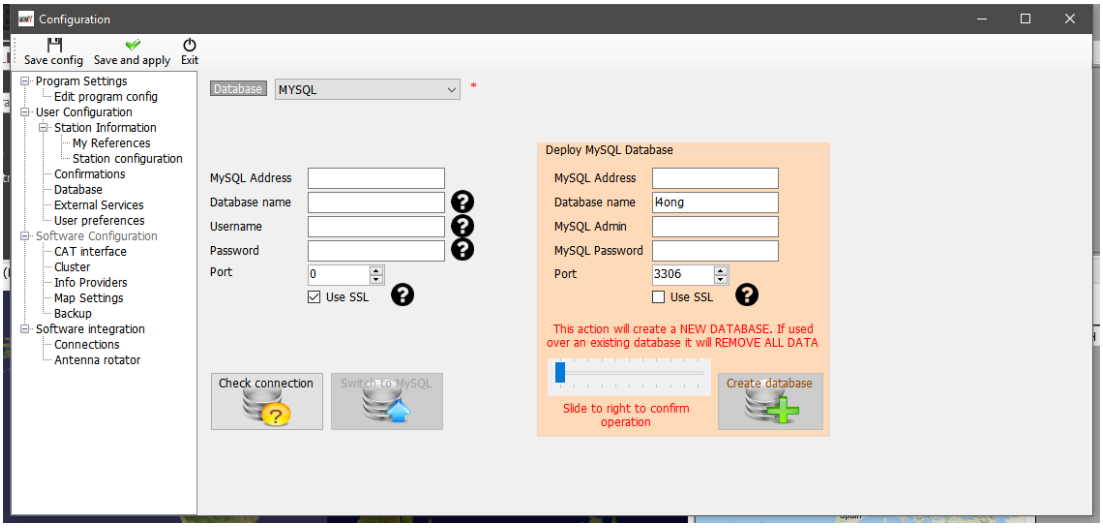


- Select the required database and click on 'Open'
- Click 'OK' in the connection test pop up window
- Click 'Save and apply'

Using MySQL Databases

MySQL databases are only required for contest or field day operations where multiple stations/operators are saving QSO's to a central database simultaneously or for gigantic databases over 150,000 QSO's

- Create a MySQL database using the MySQL tools provided by the MySQL database software
- Connect to it by going to the log4OM Settings/Program Configuration/Database tab and selecting MySQL from the 'Database' drop down menu at the top.



- Complete the fields on the left with the information from the MySQL database created earlier.
- Check the connection using the lower left button
- Complete the security fields to the right
- Click Create database.

Cloud storage of databases

Locating the database in one of the many "Cloud" storage providers is a very safe way of protecting the database because it can always be recovered either directly from the cloud or from any computer connected to that cloud storage facility.

It also makes it possible for the use of multiple logging sites e.g. Home on a local PC, Portable with a tablet or even a Windows phone. (Very useful for SOTA and WWFF operators.)

Unexpected results & possible data loss will be experienced if the log is updated simultaneously from more than one of the computers – Only use one instance of LOG4OM V2 at any time when working with a shared cloud hosted (google drive, dropbox, ...) database file (SQLite).

Typical situation:

A user has the following setup:

1. A main computer in the shack.
2. A laptop in the house used to update QSL sent and received status.
3. A Notebook computer used when operating portable or at an alternative location.

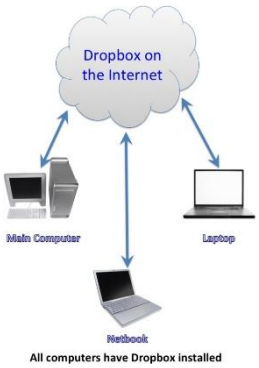
All computers must have LOG4OM V2 and cloud storage like Dropbox installed and use the same file located in a Dropbox folder, e.g. C:\.....\Dropbox\Log4OM Logs\Mylog.sqlite

In use:

- The user operates from his shack and the Dropbox log is updated and gets synchronized to the other two computers as QSO's are added.
- Later the user operates from another QTH or portable using a Notebook computer and the Dropbox log is updated and gets synchronized to the other two computers as QSO's are added.
- The following day using the laptop the user updates the Log4OM status for 100 QSL cards that came from the bureau and also 24 cards that were sent out - Dropbox synchronizes to the other two computers.

Result:

- All computers have the latest QSO's and also the latest QSL status.
- If the automatic backup facility included in Log4OM V2 is used to backup to Dropbox also the user then enjoys full security by having a copy of his log and a backup on all computers that he has connected to Dropbox.

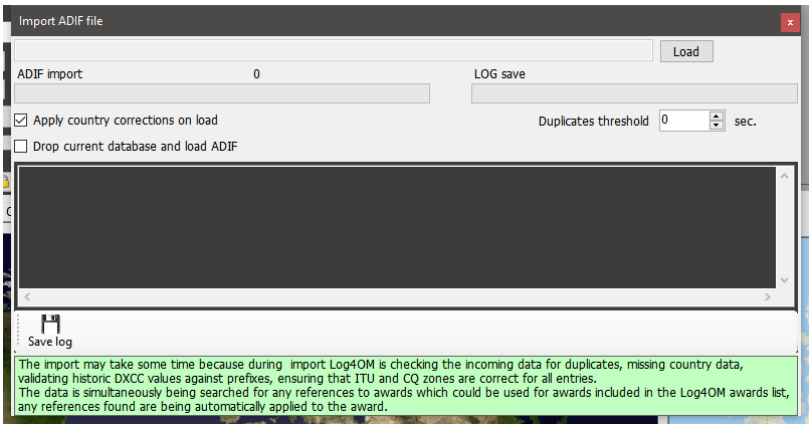


If the user needs to use all three computers simultaneously, as in a contest situation with three different stations logging to a central logbook, then it is necessary to use a MySql database or a LOCAL SQlite file not accessed through cloud storage (local network shared)

ADIF Import

Once a database has been created an ADIF file exported from any other logging program can be imported to Log4OM V2.

- Click menu 'File/Import ADIF'
- Click on the 'Load' button



- Navigate to the location of the ADIF file to be imported
- Select the ADIF file and click 'Open'
- Check the box 'Apply country corrections on load' to correct any DXCC errors in the file.
- Checking the box 'Drop current database on load ADIF' if is required to replace the existing QSO's
- Click 'Import' and wait to be notified that the import is complete.

Note all data will be lost and replaced by the incoming ADIF file!
leaving this box unchecked will merge the imported data with the existing data.

Any changes made to the incoming data will be listed and a copy of the log file containing details of any changes can be saved for future reference by clicking the **'Save log'** button at the bottom of the import window.

The 'Duplicates threshold' allows the user to set a margin for matching the QSO time +/- nn seconds up to 60 seconds to avoid causing duplicates due to time errors. This function is used when importing QSO from other sources that do not have a time resolution to seconds (e.g. QRZ.COM exports) and it is required to merge the QRZ log with the Log4OM logbook.

Illegal suffixes

Strange suffixes may cause some errors during import and cause an incorrect DXCC number and country name to be applied.

Examples:

- A station incorrectly using /LH as a suffix intending to signify a 'Light House' will be interpreted as a Norwegian station and recorded as such!
- A station incorrectly using /PM as a suffix intending to signify 'Pedestrian Mobile' will be interpreted as an Indonesian station and recorded as such!

/MM (Maritime Mobile) and /AM (Aeronautical Mobile) will be saved without a country name or DXCC due to the locations being outside any entity.

/P (Portable), /A (Alternative location in some countries), /QRP, /QRPP and /M (Mobile) will have no impact on the import and the country will be identified by the normal call sign prefix.

Call checking also includes checking the valid dates of special calls and DXPeditions to ensure further accuracy.

Multiple Configurations (Identities)

There may be occasions where more than on configuration (ID/Set up) is required, if for example if the user needs to run a club station and his/her home station or where there is more than one operator in a home and they each need separate setups for their respective call signs, logbooks, confirmations etc on a single PC

Log4OM provides a facility for an unlimited number of separate configurations may be used on a single PC

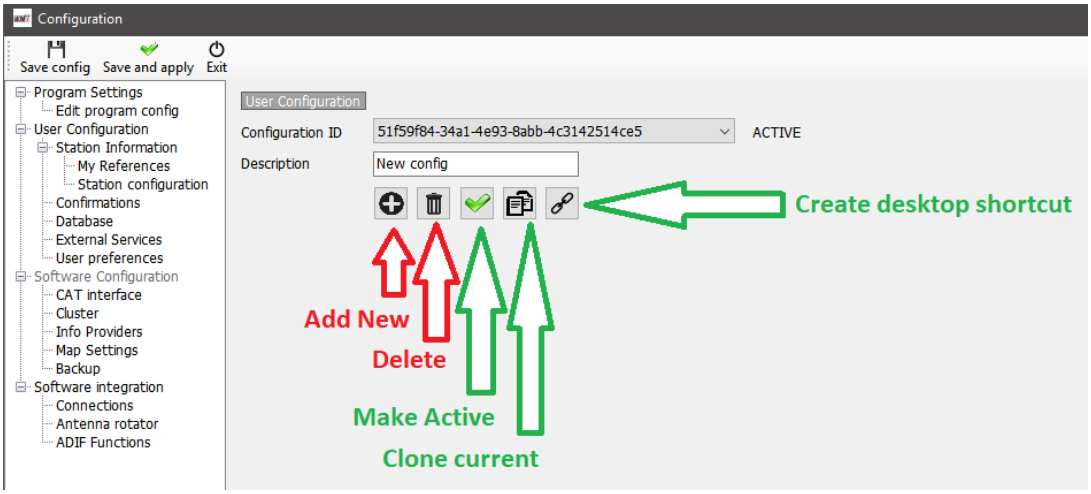
In the settings/Program configuration/User configurations tab these separate identities (Configurations) can be created, either by:

1. Creating a completely new identity by clicking on the + 'Add new config' button.
2. By cloning an existing configuration by clicking the 'Folders' icon 'Clone current config' button, this saves time if the new configuration is similar to the original, perhaps just a /P call with different Location.

Creating a desktop shortcut for a new ID

A desktop shortcut can also be created for each current config by clicking the 'Chain' icon 'Create link on desktop'

Configs are deleted by first selecting the config to be deleted from the drop down list followed by clicking on the 'Trash can' Icon

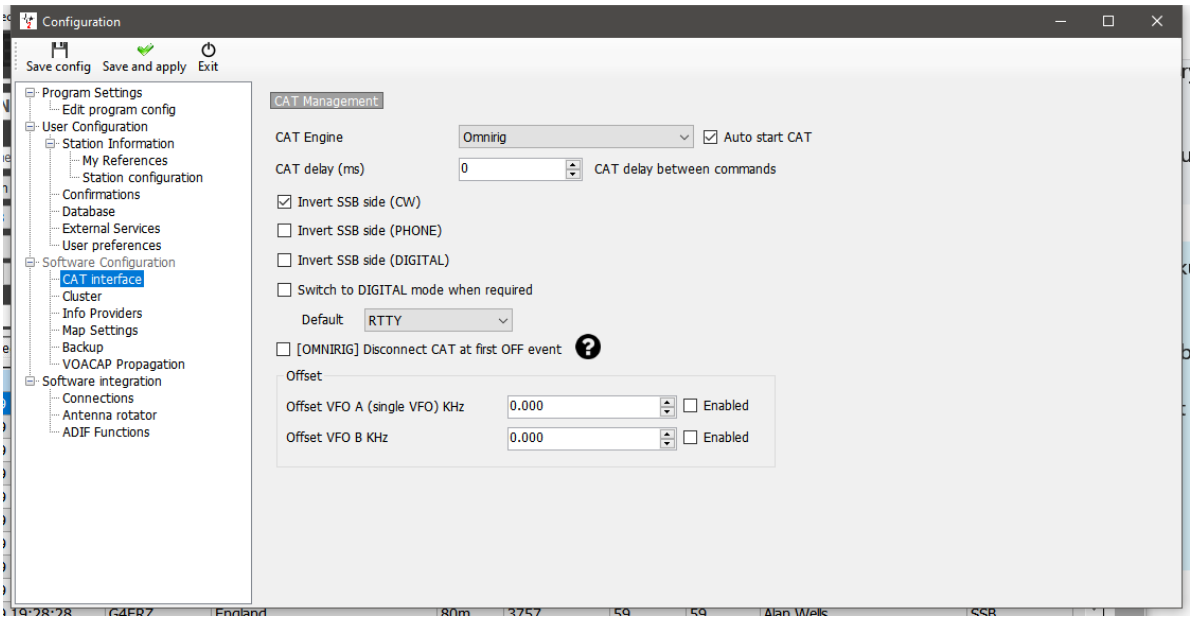


Creating a new Identity (Config)

- Open the settings/Program configuration/User configurations tab
- Either click the New or clone icon as identified above
- Add a name for the ID in the Description field
- If a new ID is being created complete the various information for a new configuration or if 'cloning' an existing config make whatever changes are required for the new configuration.
- Click the 'Chain' desktop shortcut icon to create a new desktop shortcut
- Click the green check mark to make the configuration active
- Click 'Save and Apply'

Radio CAT Control

To select the CAT Interface click on 'Settings/Program configuration then select 'CAT Interface'



- Select the required interface (Omnirig or Hamlib)
- Check the 'Auto start CAT' box
- Click on 'Save and apply'

Various other options are provided for the idiosyncrasies of various radios

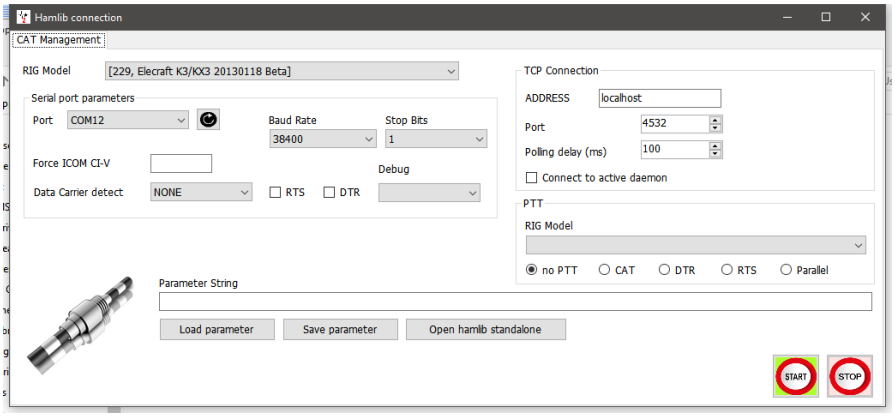
If Omnirig was not installed during the Log4OM install sequence and Omnirig is selected the user must download and install Omnirig from http://dxatlas.com/OmniRig/ - Then re-start Log4OM V2.

Connecting CAT

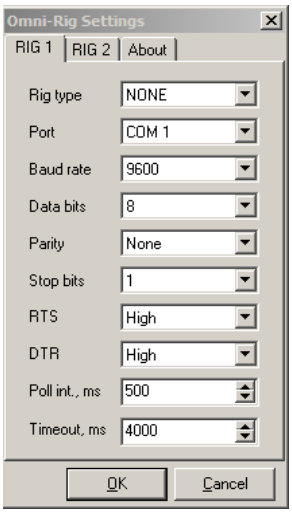
Click on 'Connect/CAT/Show CAT interface'

Depending on the selection made in the Program configuration either the Hamlib or the Omnirig interface window will appear as below

Hamlib interface

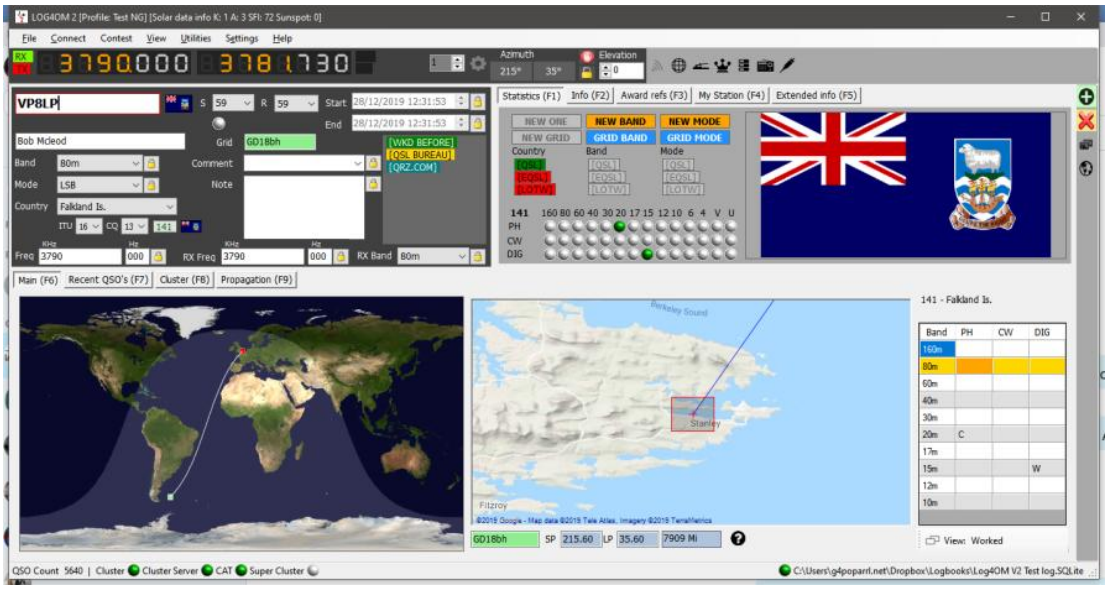


OmniRig Interface



Select the appropriate radio and set the com port and baud rate to match that of the radio and any other parameters for the equipment to be used and then click Open/OK.

Once connected the green CAT LED at the bottom of the Log4OM V2 window should light and the frequency will be displayed at the top.



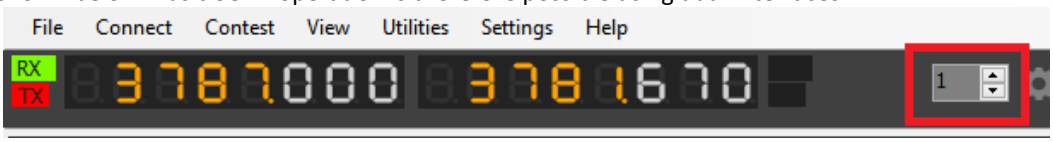
CAT Screen

Selecting CAT screen from the 'Connect/CAT' menu provides a large floating CAT control window which provides the following features.

- Change frequency by scrolling the digital display numerals with the mouse scroll wheel or by clicking the left mouse button to increase the frequency or right clicking to decrease.
- Change bands and modes by using the buttons
- Change between rig 1 and 2 if using Omnirig by selection at the top right.
- Set VFO offsets by clicking the settings cog icon at the top right of the window

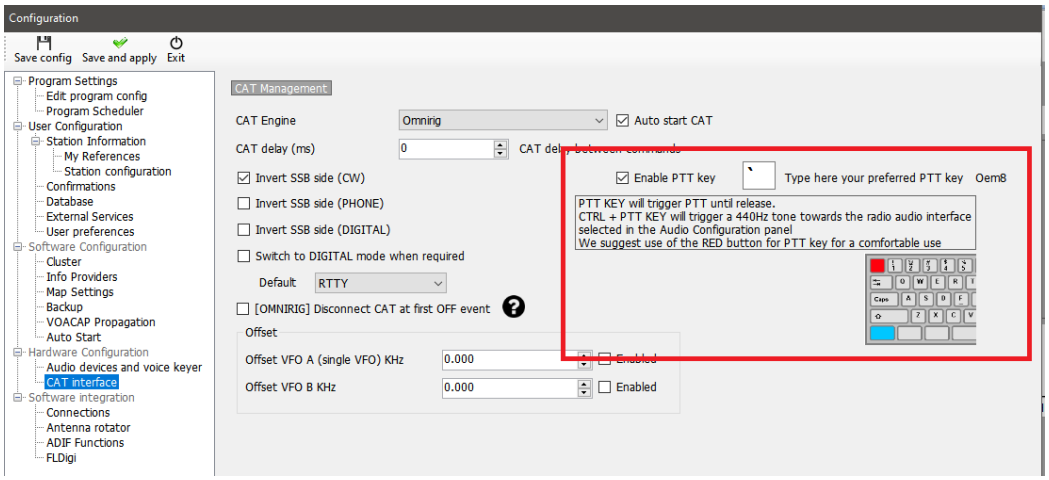
SO2R and dual radios

When using Omnirig it is possible to switch between two different radios using the Rig 1 & Rig 2 selection on the toolbar as shown below. Basic SO2R operation is therefore possible using dual interfaces.



PTT and Tune

In the Settings/Program Configuration/CAT Interface tab it is possible to select which keyboard keys trigger PTT and Tune.

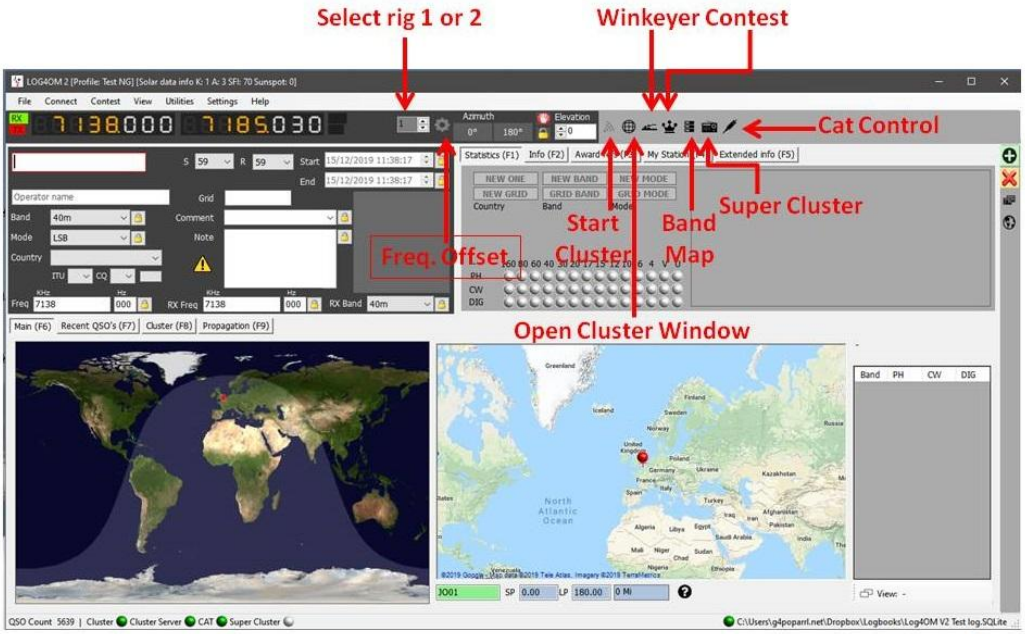


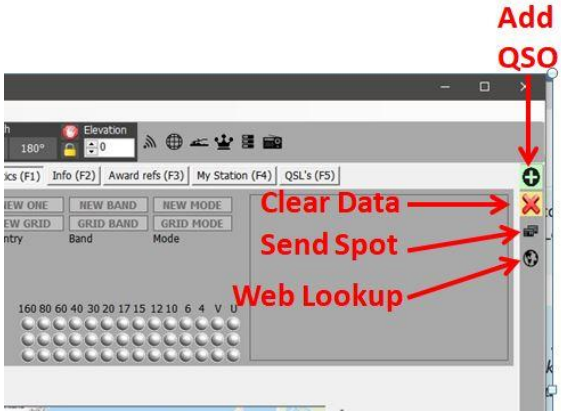
- Check the 'Enable PTT Key' check box
- Select the required keyboard key
- Click the 'Save and Apply' icon

The action is a press and hold not a toggle on/off action - PTT or tune will cease when the keyboard button is released.

Icons & Symbols

A different range of icons and symbols is used to that previously employed in version 1, here is an explanation of their uses.



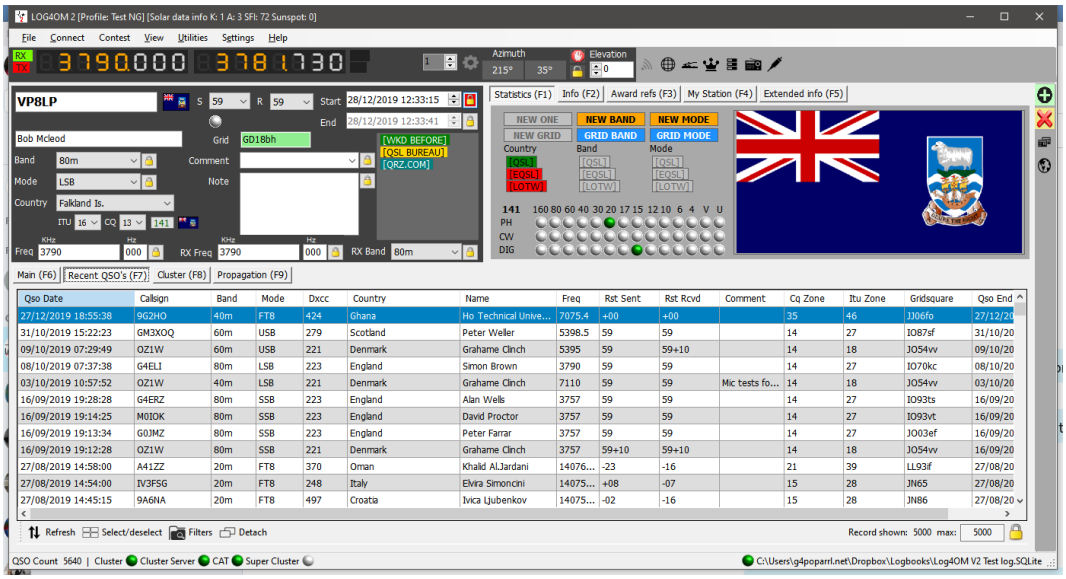


ADD QSO can also be achieved with keyboard RETURN key during QSO data entry.

	Cancel/clear		OK		Add/save
	Close		Background colour		Foreground (Font) colour
	Connected		Upload		Download
	Upload data		Delete data		Add data
	Download data		Delete		Primary choice / Contest mode
	Save		Settings		Winkeyer
	Open Cluster		Start Cluster		Refresh
	Select/deselect		Filters		Band Maps
	Super Cluster		Start		Stop Rotator
	Park Antenna or Lock a field		Send spot		Web Lookup
	Detach		Delete		Clone

Managing Layouts

The layout, titles and column order of most grids can be tailored to the users requirements.

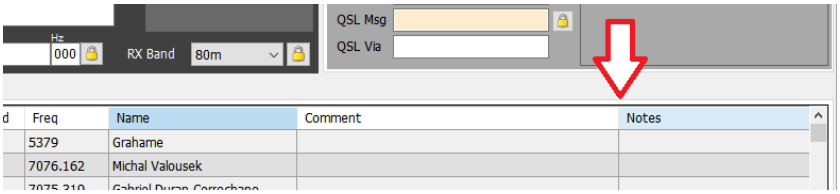


Column Layout and Title Editing

The row order, width, title names and included data can be edited in Log4OM V2 by the user in all tables e.g. cluster, recent QSO's etc.

Adjusting column widths

Select the vertical divider between column title headers and drag to widen or narrow column widths.

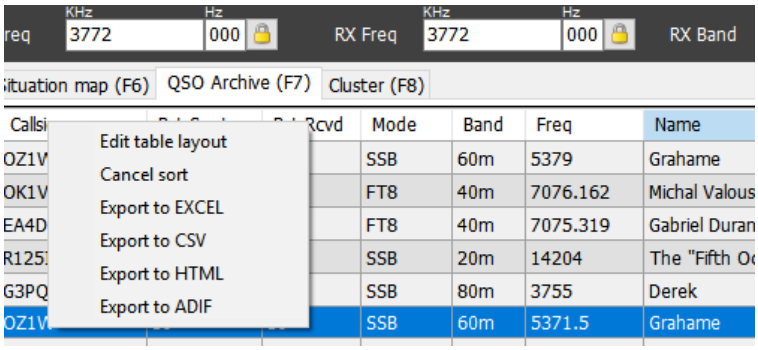


Changing column order

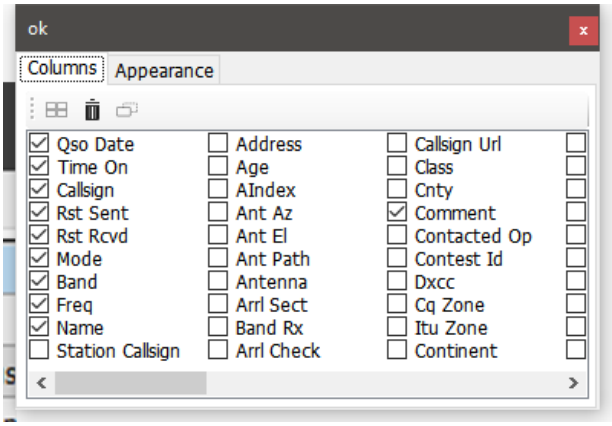
To change the position/order of the columns left click and hold in the middle of a column title then drag left or right as required to re-position.

Adding and removing columns

Right click in a title field and select 'Edit table layout'

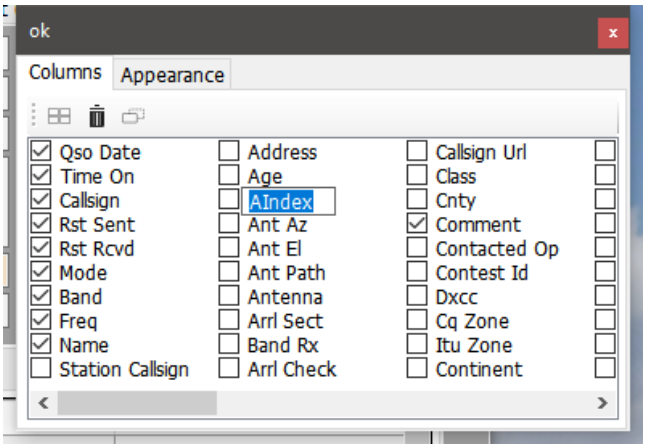


Check or uncheck the boxes to select the desired columns



Changing column titles

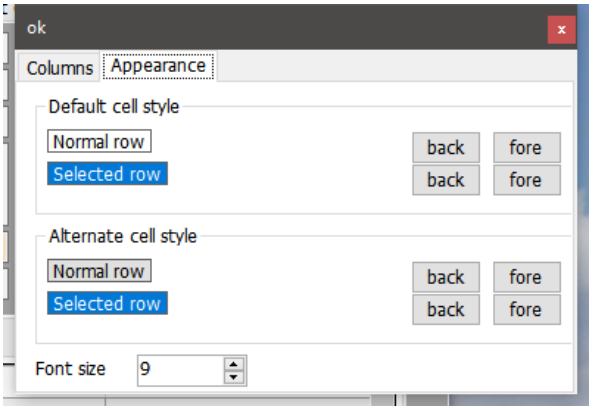
By slowly left clicking twice or by pressing the F2 key on the keyboard on any title in the 'Edit Table Layout' window enables the column name/title to be edited or reset to default layout.



Clear column name to reset to it's default value

Colour and sizes of text

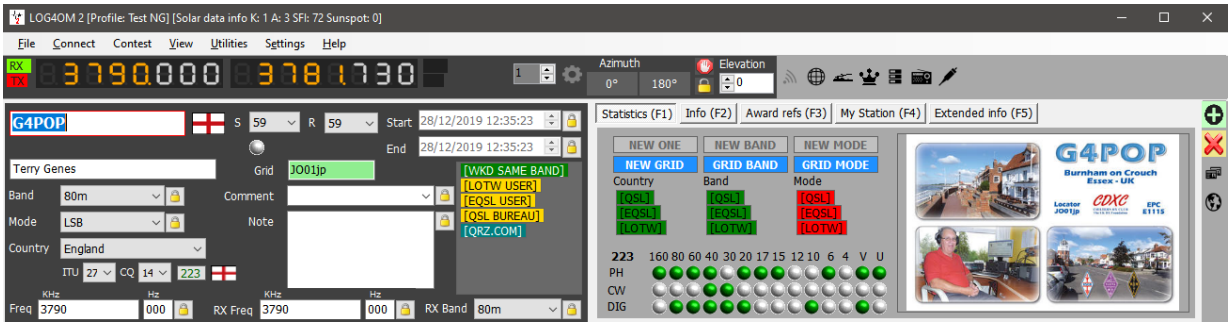
Selecting the 'Appearance' tab in the 'Edit Table Layout' menu allows font size selection and cell/text colour changes.



It is not possible to change column widths, titles etc in the awards grids

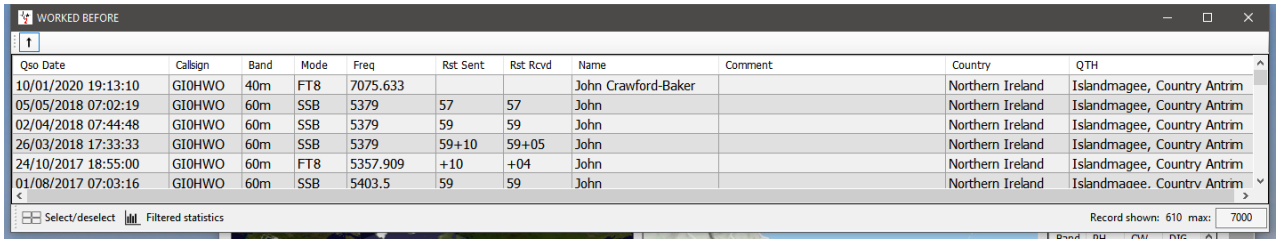
QSO Input

Log4OM automatically looks up a call sign added to the QSO input area using the on-line services selected, The Clublog Exception database, QSL Manager database, LOTW database and the users logbook to check if the station has been worked before and displays the results of the lookups together with a list of the data sources found for the call.



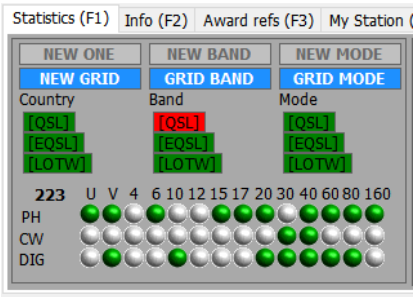
Some of the data sources in the list are hyperlinks which can be clicked on to open either a worked before window or browser displaying the details of the call sign.

Here is an example of clicking on the WORKED BEFORE Hyperlink. (The Worked Before window can also be opened from the 'View' menu)

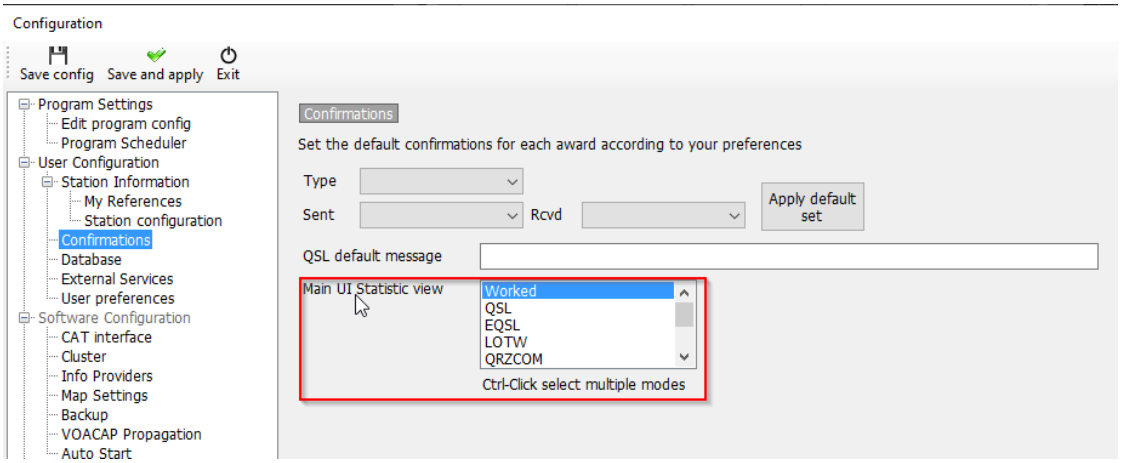


Clicking the arrow icon at the top left corner of the worked before window once will set 'Stay on top of other windows' clicking the arrow icon twice will revert to normal and the Worked before window will behave as normal.

The right hand side of the input panel displays the bands/modes the country has been worked on and the confirmation status for that country/Band/Made plus the grid reference status.



Statistics shown here are derived by the program settings through the CONFIRMATION menu:



The extreme right side of the input area displays the image, if any, available from the lookup site.

Frequency, band and mode data entry

If a radio is connected via CAT control the frequency, band and mode data is entered automatically, without a radio connected this data can be entered manually.

For manual entry of QSO's the frequency, band and mode can be locked by pressing the 'Padlock' icon to the right of each field.

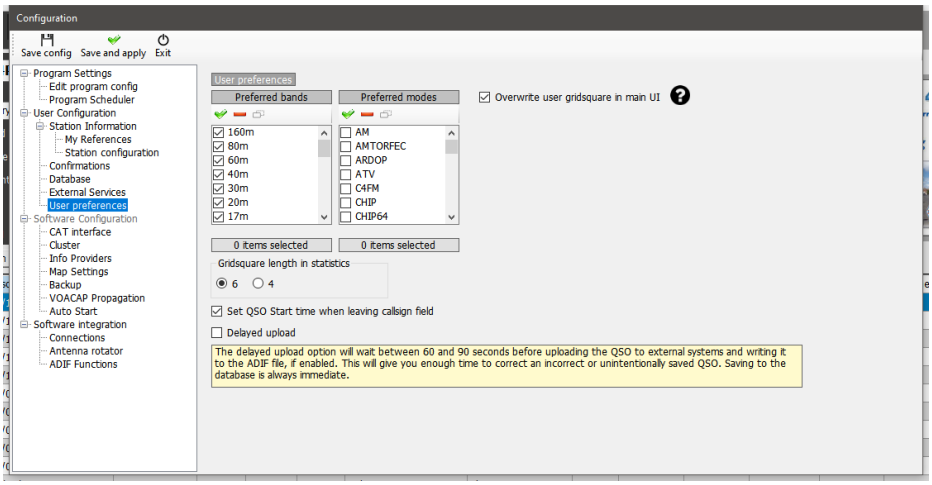
Date and time entry

The date and time is derived from the computers clock and is automatically adjusted to GMT/UTC/Zulu time.

The date and time can be set manually, as when entering historic QSO's and can be locked using the 'Padlock' icons to the right of the fields.

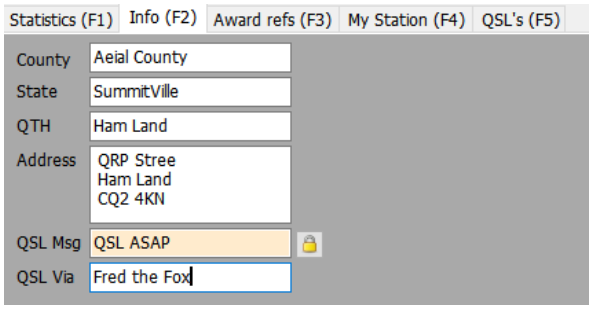
QSO Start date and time

The date and start time can either be the date and time the QSO is saved or if the 'Set QSO start time when leaving the call sign field' box is checked in the Settings/Program configuration/user preferences tab, the time will be set as the cursor leaves the call sign field.



Information (Info F2)

This tab in the QSO input area displays additional information about the station being worked/looked up

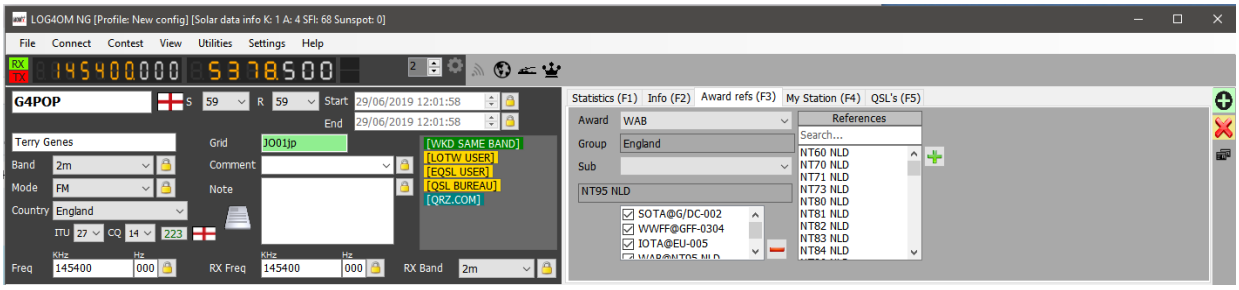


Adding special award references

If it is necessary to add an award reference like IOTA, SOTA, WWFF etc then the Award Refs. (F2) tab should be opened, the award selected and the reference added to the list box.

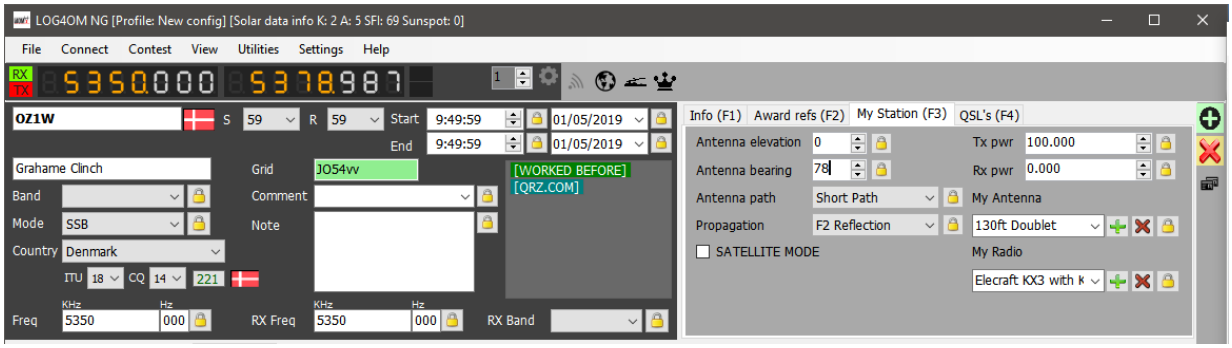
Standard awards like DXCC, WPX, WAC, WAS, Marathon etc are calculated from the standard fields already present so no user intervention is required for those awards.

If an award reference is recognised from the cluster comments field it will be automatically added to the reference list.



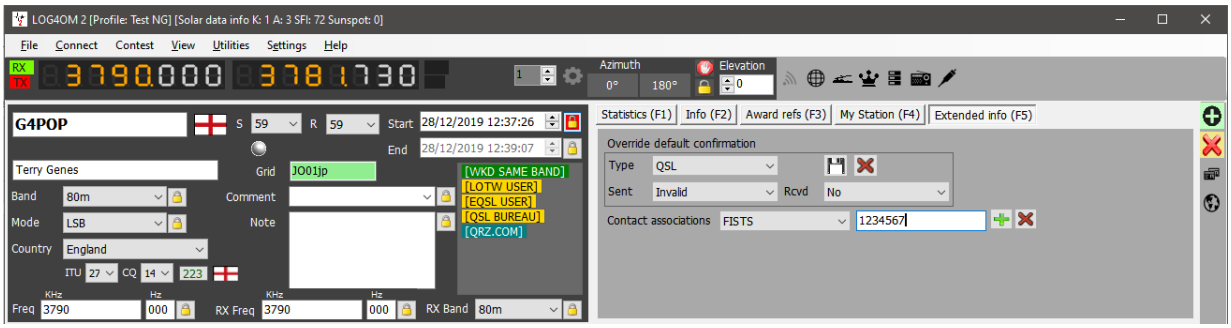
Changing your station information

It is also possible to change the information with regard to the users station like antenna, radio used, power levels in the My Station (F3) tab, before saving the QSO.



Overriding the default QSO Confirmation method

By selecting the QSL's (F5) tab it is possible to override the default QSL confirmation settings selected in the 'Program Configuration/Confirmations' menu.



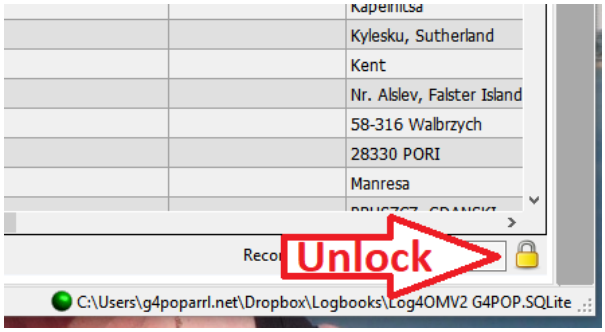
Saving the QSO

When all information is complete the QSO can be saved by clicking on the Green + (ADD) button or using the keyboard key 'Enter'

Delete a QSO(s)

QSO's can be deleted from the recent QSO (F7) window by the following actions

1. Click the 'Unlock' padlock icon at the bottom right hand corner of the window (Icon will go red when unlocked)



2. Select the QSO's to be deleted by using the Windows shift/click or Ctrl/click method

3. Press the keyboard 'Del' button

4. Click the padlock icon again to re-lock to avoid accidental deletion (Icon will revert to yellow when locked)

Clearing the data

If the QSO is not to be saved then clicking the X (CLEAR) button or pressing the keyboard key 'ESC'

Keyboard shortcuts.

The keyboard can be used as follows for speedy QSO entry

TAB key - Moves cursor through the main QSO input fields.

Esc Key - Clear data entered in the QSO input fields

Enter Key - To add a QSO

Back slash (\) Key - Press and hold for PTT (PTT KEY is user selectable in Configuration CAT menu)

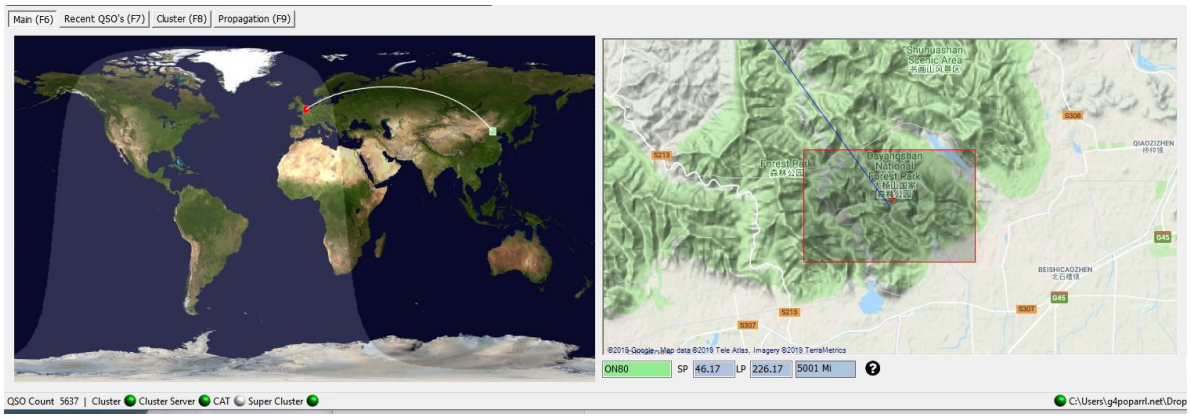
CTRL + PTT KEY – Send a 440Hz tune audio to the default transmit audio card

Main UI Maps

There are two maps in the main user interface:

That on the left is a real time grey line map that also plots the Short and long path Azimuth lines, the map style can be changed in the Settings/Program configuration/Map menu.

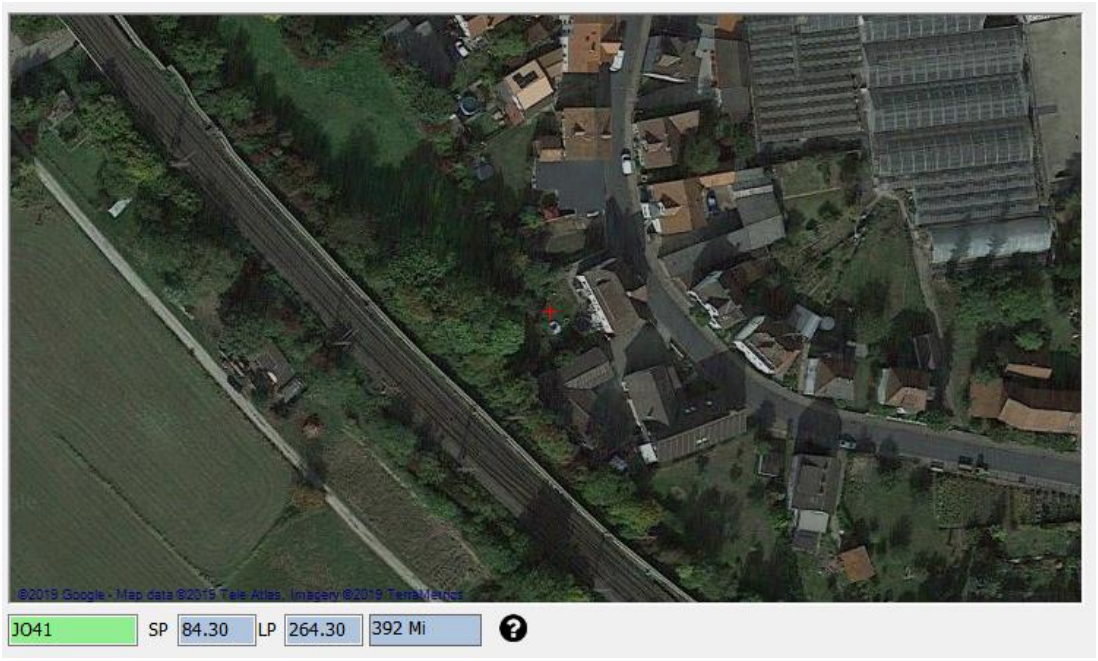
On the right is a Google map display of the location of the other station entered in the call sign input field and is based on the locator found in the call sign lookup or if no locator is found the approximate centre of the country.



The lower edge of the large scale Google map displays the Locator, Short and long paths and distance.

The right hand map can be zoomed using the mouse scroll wheel and by holding the right mouse button pressed the map can be repositioned/dragged.

The Google map on the right can be zoomed into street level view.



Call sign Look up processes

When a call sign is entered in the Call sign input filed of Log4OM information is simultaneously collated from many different sources to provide the most accurate information currently available . e.g. On-line call lookup services like QRZ, HamQTH, HamCall, QRZCQ, Clublog, Log4OM databases, QSL manager lists, LOTW user lists and CTY data for zone information.

The lookup is handled differently for QSO's that are being imported via an ADIF file 'Historic data' to that of a Call sign being entered during the process of making a contact (New QSO) which is considered to be 'Real time' data.

'Historic data' from imported QSO's may often be an entirely different set of information to the same call sign currently in use, there are many reasons for this as in the examples below:

- Call sign holder moved QTH
- Call sign was re-issued to a new licensee
- The IARU changed the zoning of the country/QTH
- The call is no longer in use
- The DXCC country prefix was changed

Information Providers.

In the quest for accuracy of data when recording and updating QSO's Log4OM Version 2 collates information from both external information providers and information maintained by the Log4OM team.

External sources

- Solar data from NOAA and VOACAP (Alex VE3NEA)
- CTY Data from Jim Reisert AD1C
- Clublog data from Clublog.org
- Call sign exceptions from Clublog.org
- HRDLog online
- LOTW Users from ARRL/LOTW
- IOTA data from RSGB/IOTA
- SOTA Summit information from SOTA
- Online call lookups from QRZ, HamQTH, QRZCQ & HamCall

Data maintained by the Log4OM Team

- Awards definitions
- Country file
- SOTA Associations list
- Band/Mode files
- All files released through application releases

Updating data resources

The lookup process accuracy relies on the data that is used being current and Log4OM V2 ensures that the reference resources are updated automatically at regular intervals.

The following files are automatically downloaded at scheduled intervals.

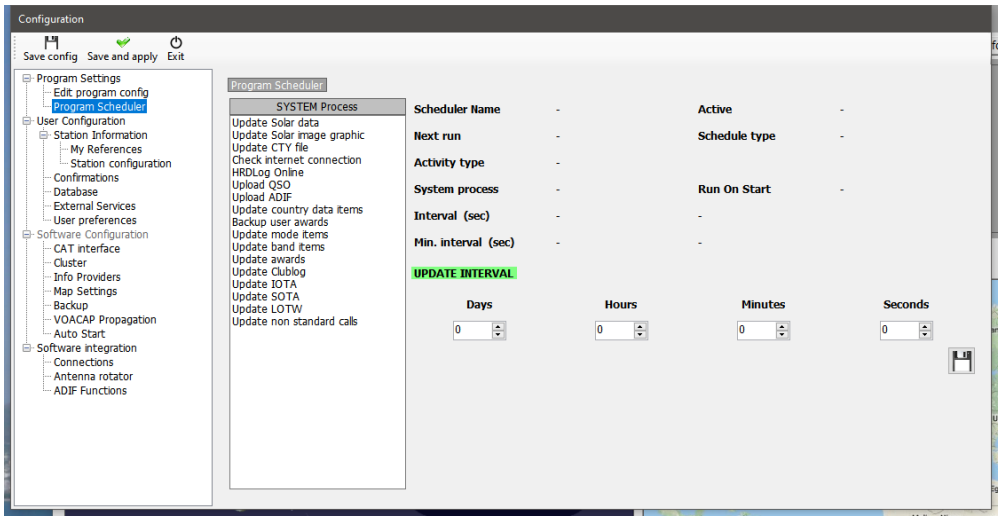
- Solar data
- CTY Data
- Clublog data
- LOTW users data
- Country Data

- Mode and band data
- Awards definitions
- IOTA Database
- SOTA Summit lists & SOTA Associations table

Manual update of those database resources is also available from the settings menu (Settings/Update resources)

Scheduling Data Updates

In the Settings/ Program Configuration/Program Scheduler it is possible to control how often these data sources are updated by selecting the data source from the list and changing the update frequency by days, minutes, hours and seconds, followed by clicking the save icon then Save and apply. We recommend to keep the default values, as they're calculated to have the best efficiency without overloading external data providers. SPOT updates are always available to manage exceptional situations.

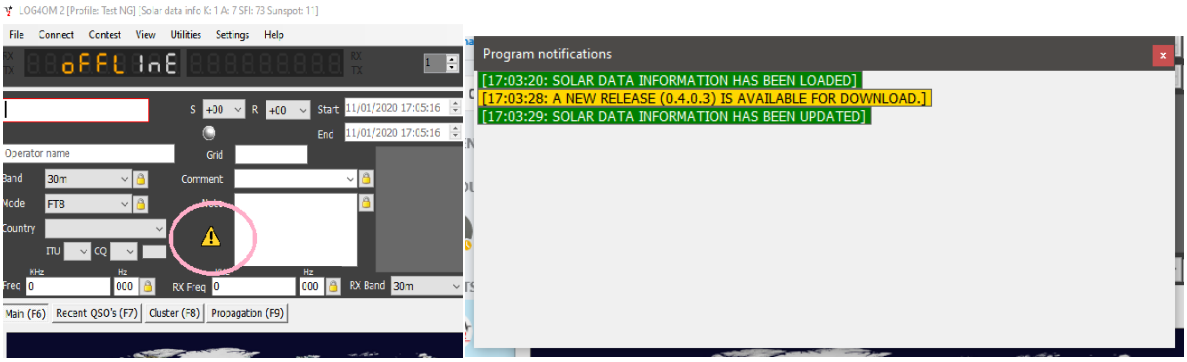


Selecting sources & lookup priority

In the Settings/Program Configuration/Info Providers view there are two tabs:

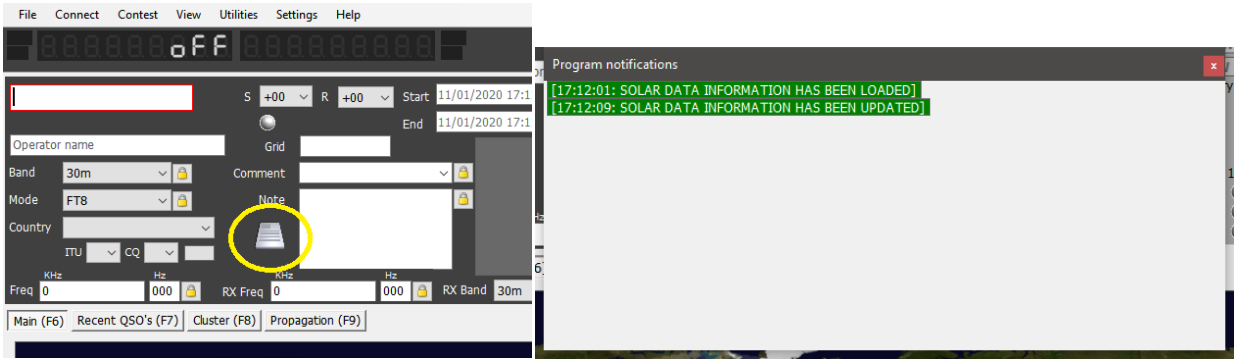
Update Notifications

When Log4OM initially starts it updates data the files as mentioned earlier and notifies the user of such updates with an icon in the main UI, the icon also informs of any program updates



Left clicking on the icon will display the message window listing the updated files and also availability of a program update as above, right clicking the icon will clear it.

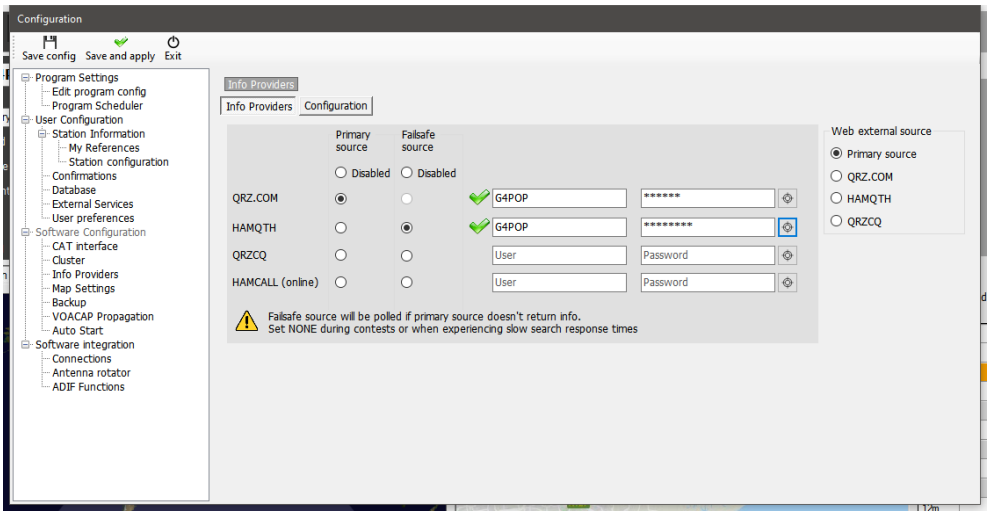
If no program updates are available then the icon shown below indicates that only data updates were found.



Service Providers

The user can select the online call lookup service to be the primary source and a choice of a failsafe or backup lookup service in the event of the primary source not being available or not providing information about the call sign being looked up.

The user must first add the user name and password for each source. Clicking the button directly to the right of each password field tests the lookup service is being correctly accessed, if it is working correctly a green check mark appears to the left of the user name field.

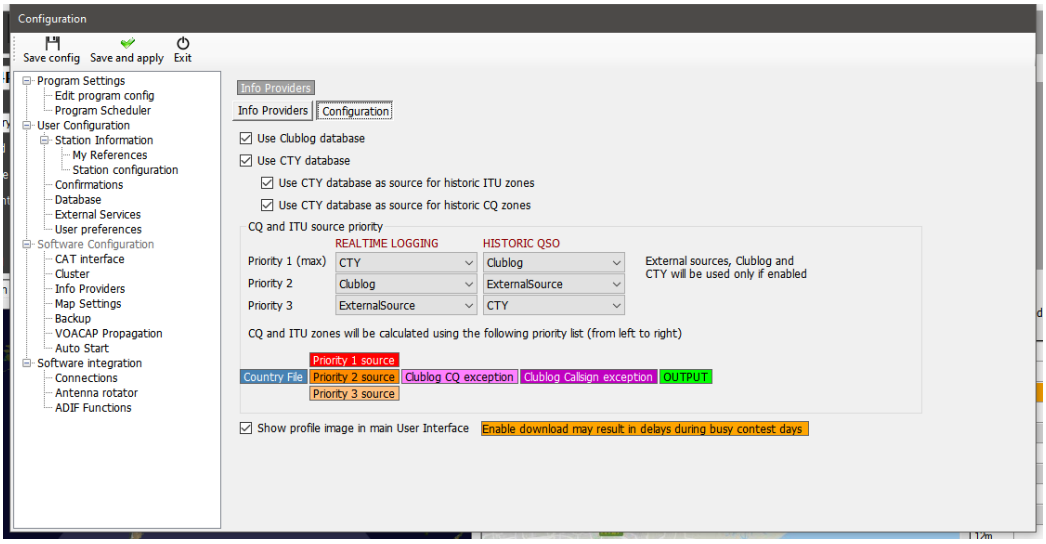


The user can also select which source is used when the external browser is opened by using the menu choices to the right.

Source priorities.

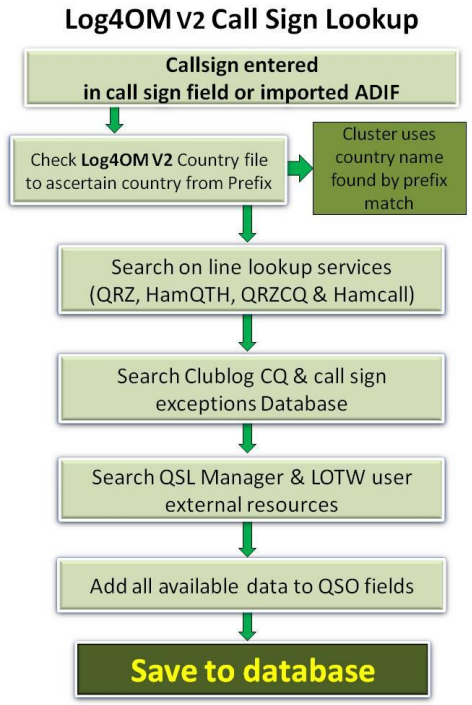
The 'Configuration' tab in the 'Info Providers' menu provides an opportunity to select the sources and how they should be prioritised.

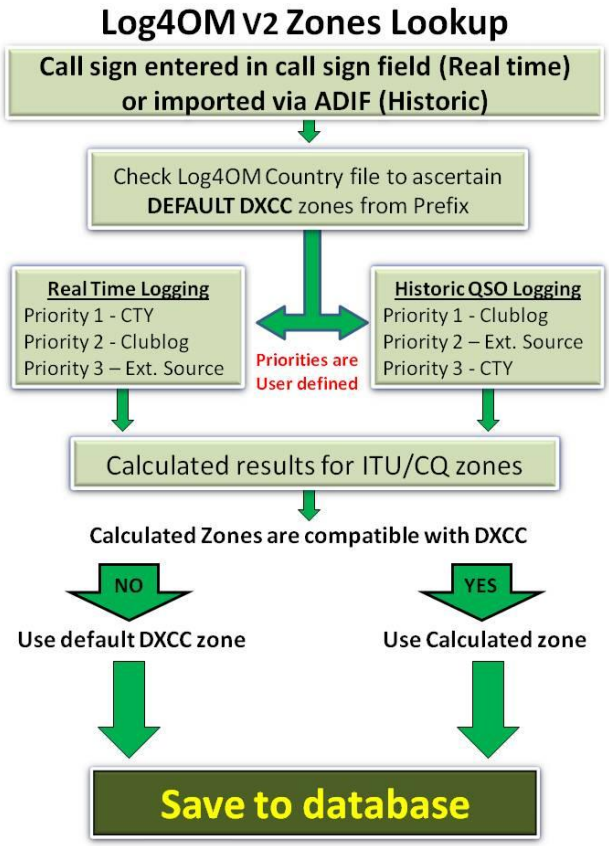
CQ and ITU zones present a difficult situation because due to either a station changing QTH or changes being made in zoning over the years the zones applicable to a call sign or country may alter according to when the QSO was made. Therefore historic QSO's which already exist in the logbook or that are being imported from another program have to be prioritised differently to a new (Real time) QSO being added. The Real time and Historic menu columns provide the user with a range of priorities for these selections.



Call lookup flow charts

The first flow chart shows the lookup procedure for general call sign information, the second chart depicts the method of determining the correct ITU and CQ zones related to a call sign

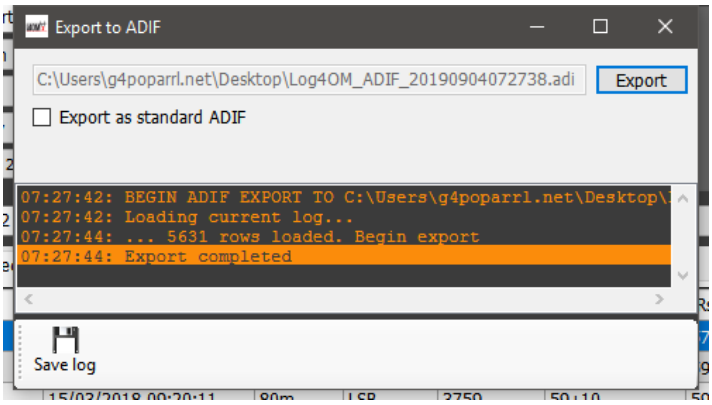




QSO Export

Bulk exporting

- To export the complete logbook go to the 'File' menu and select 'Export ADIF'
- If only standard ADIF fields are to be exported, not the complete data including Log4OM dedicated fields, check the box 'Export as standard ADIF'
- Add a name and location by clicking the 'Export' button

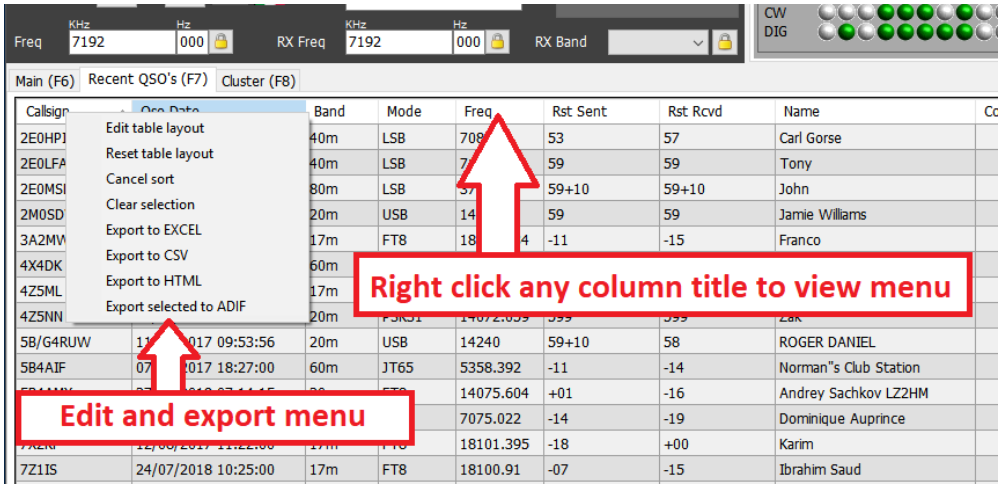


The main window will display the exports progress and any anomalies and this information may be saved to a text file by clicking the floppy disk 'Save' button.

Export selected QSO's

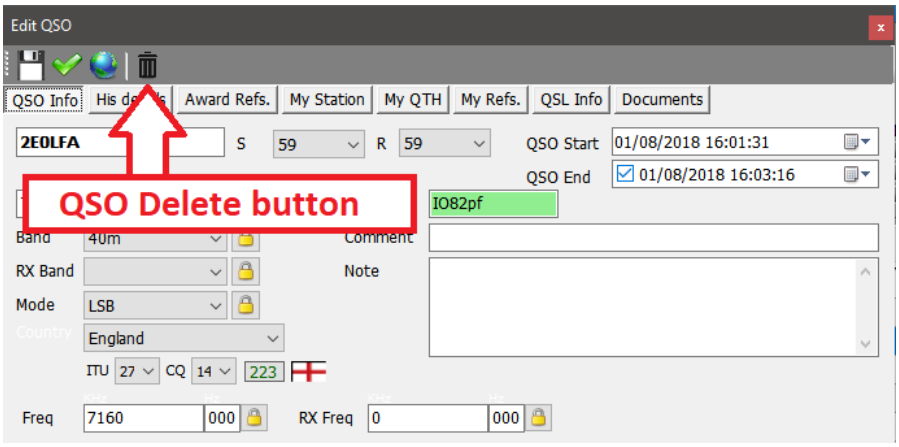
Log4OM Version 2 provides export of QSO's in ADIF, CSV, HTML and Excel formats in the grid views e.g. Awards, Recent QSO's, QSO Manager etc

- First select the QSO's to be exported by either the Windows method of left click, shift click or ctrl click, alternatively use the powerful search 'Filters' and the 'Select all' buttons at the bottom of the grids.
- To access the export action click the 'Export to ADIF' button at the top of the window if in the QSO Manager, in other grid views right click the title heading of a grid or right click on the selected QSO(s) and select the export required from the menu



QSO Deletion

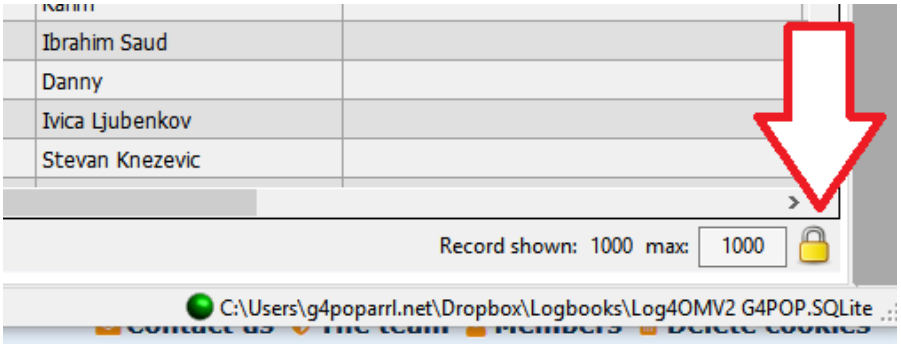
QSO's may be deleted individually from the QSO edit window by selecting the 'Trash bin' delete button on the top tool bar.



To open the edit window double left click on a QSO or select 'Edit QSO' from the right click menu.

Bulk deletion of QSO's

QSO's can be deleted selectively on by bulk by clicking the 'Unlock Delete' button at the bottom right corner of the grid. (When unlocked the padlock Icon turns red)

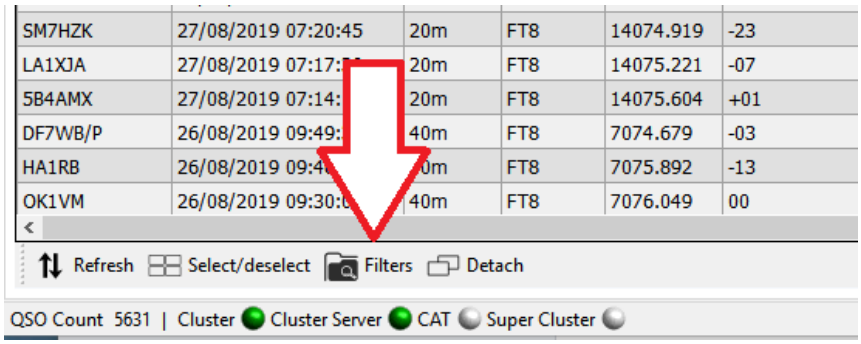


When the 'Unlock Delete' button is unlocked select the QSO's for deletion either by mouse click or filtering and then press the 'Del' button on the computer keyboard.

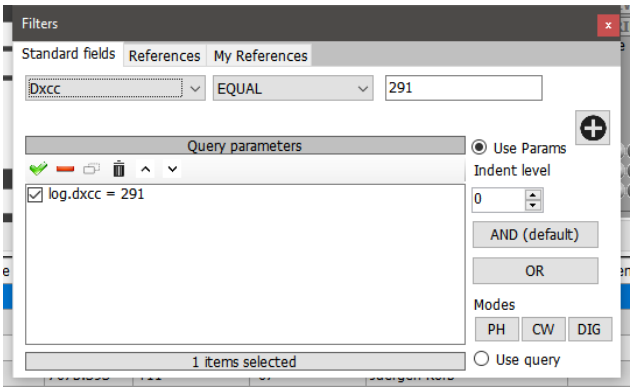
Filtering (Searching) QSO's

Log4OM version 2 provides even more powerful filtering possibilities without the need for in depth knowledge of regular expressions etc

The 'Filters' function is placed at the bottom of most grid windows as shown below.



Clicking the 'Filters' button opens the following window which contains three tabs. Standard fields, References and My references.



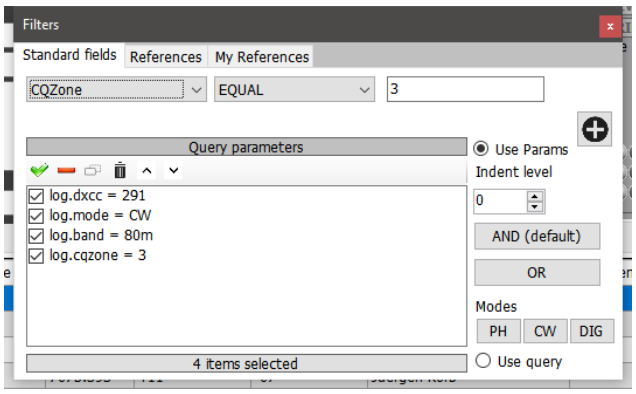
Standard fields

This is the simplest form of filtering whereby a standard field can be selected and a value for that field to be searched for which is either 'Equal to', 'Not equal to' or one of the other standard choices in the drop down menu.

Once the field, condition and value have been selected clicking the plus (+) button will add that filter tom the list.

In the example above the filter is set to find all DXCC entities which are 'Equal to' DXCC 291 (USA) the result will be that only contacts with the USA will now be displayed.

The filters can be cascaded to drill down to very fine detail, the example below depicts filters cascaded to select only those QSO's that were with stations in the USA using CW on 80 meters that were in CQ Zone 3 (West Coast)



Additional choices can be made by using the 'AND' plus the 'OR' selections to the selection could be changed to CW AND FT8 to display QSO's with stations in the USA on both modes CW and FT8 on 80m in CQ zone 3, alternatively using the OR connector the result would display stations worked on EITHER mode.

Using Indents.

The indent functions allow users to create blocks of query parameters.

As an example:
log.dxcc = 291 AND log.mode = CW AND log.band = 80m AND log.cqzone = 3

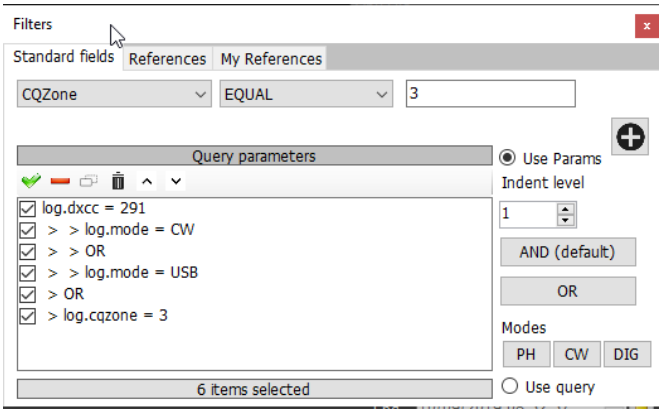
Which with the indent, will become

log.dxcc = 291 AND ((log.mode = CW OR log.mode = USB) OR log.cqzone = 3)

Which translates to:

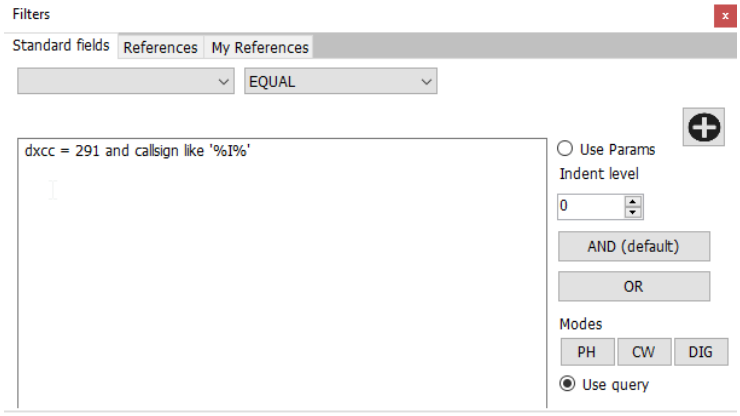
If dxcc = 291 and mode is CW or USB. If mode is not CW or USB, show data if CQZone is 3

The indent level is fundamental to use the engine correctly.



Use Query

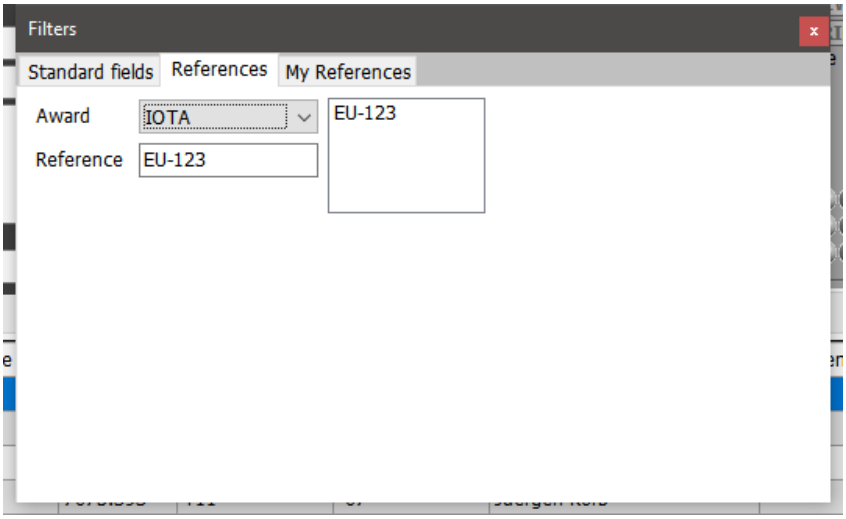
If the 'Use query' button at the lower right is clicked it enables the use of complex SQL queries.



Query automatically contains “SELECT * FROM LOG WHERE” so users must only add their own where conditions

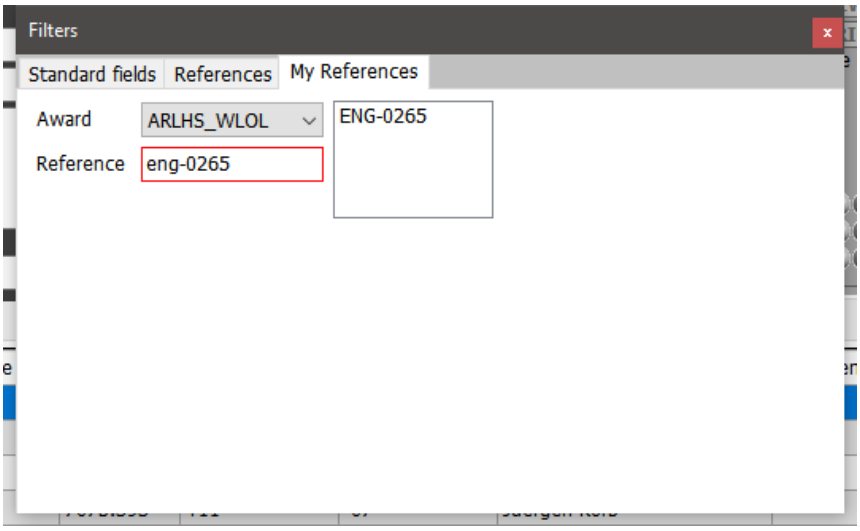
References

The references tab provides searching QSO's for stations worked activating specific awards references e.g. IOTA, SOTA, WAIL etc etc



My References

Provides searching using the users own reference e.g. when the user was portable on an IOTA Island, Lighthouse, summit etc



Telnet Cluster

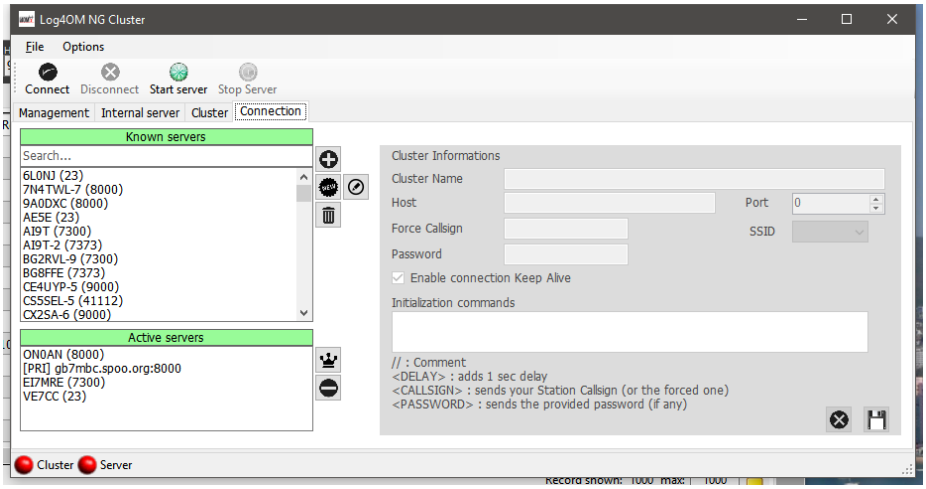
The Telnet cluster in Log4OM V2 can connect to many different cluster and skimmer servers simultaneously and will aggregated the results to provide a high quality list of DX spots without unnecessary duplicates.

Log4OM V2 also provides a cluster server to enable these aggregated results to be sent to other client software.

Setting up the Telnet cluster

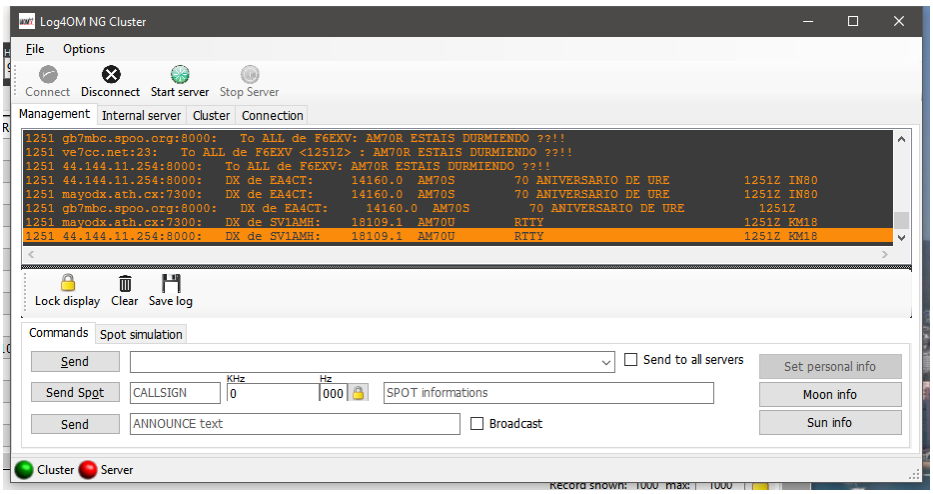
Access to the Telnet server is by the Connect/Telnet cluster menu

Servers may be selected from the 'known Server' list and added to the 'Active server' list and the user can add a new cluster server to the list by completing the cluster information form followed by clicking the save icon.



When all the desired cluster servers have been selected clicking the 'Connect' icon on the tool bar will open the 'Management' tab and display the connections being made and the incoming spots.

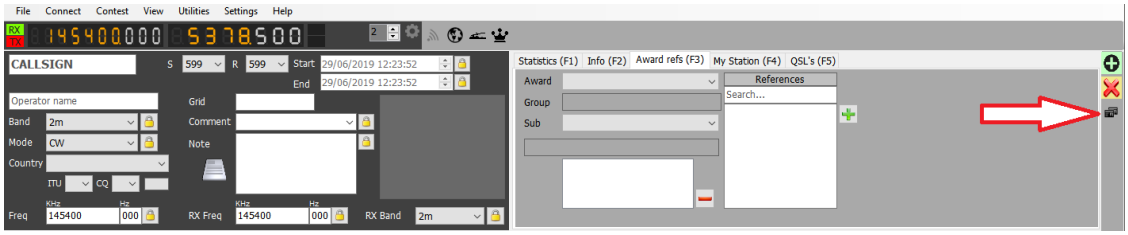
The Primary cluster is indicated with [PRI] in the Active servers list will receive user commands like spots and other messages, and will be also the standard destination for incoming commands through internal cluster server. The Primary cluster can be selected with the “crown icon”.



Cluster commands, filters, announcements and spots may also be sent from the commands tab in the 'Management' tab.

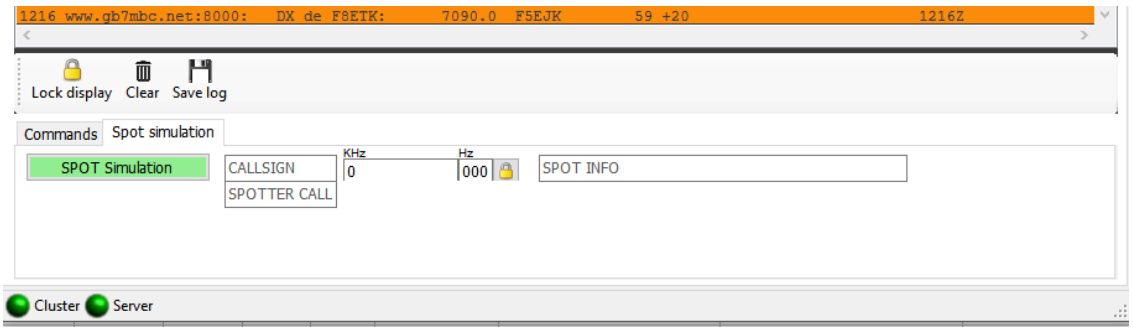
The 'Commands' tab enables the user to send commands like Show/DX or set special cluster server filters, for details of cluster commands see the documentation for the chosen cluster servers, DX Spider, CC User etc) Spots can also be sent from this window providing the user is registered with the chosen cluster servers.

Spots can also be sent directly from the QSO input screen by clicking on the send spot icon indicated in the graphic below.



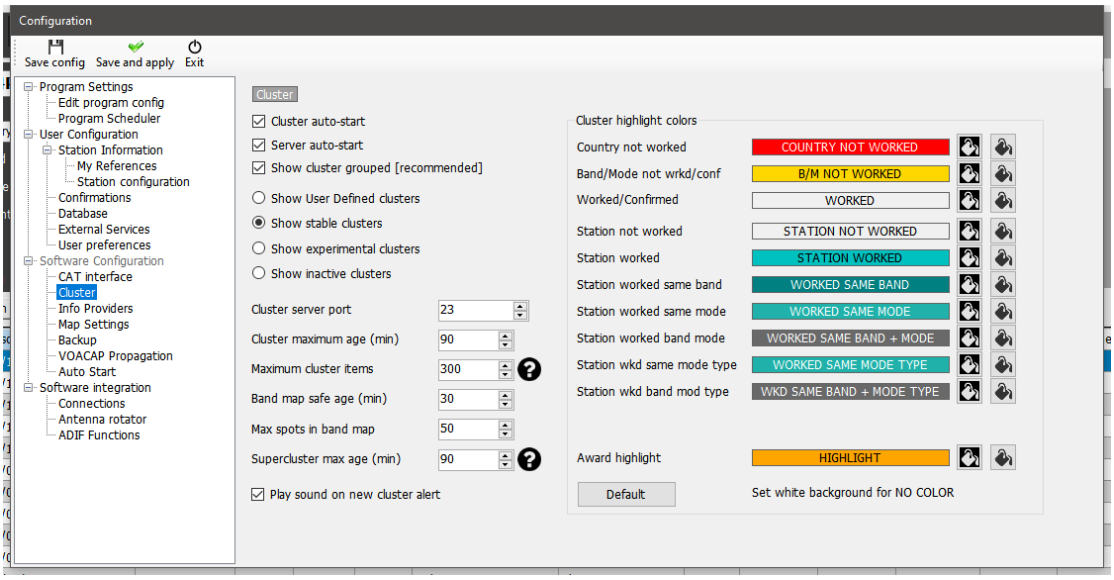
Spot Simulation

The 'Spot simulation' tab in the Connect/Telnet Cluster/Cluster Management screen allows the user to simulate sending a spot for test purposes without that spot being sent to the on-line cluster servers the spot is only displayed on the local computers cluster window.



Cluster configuration

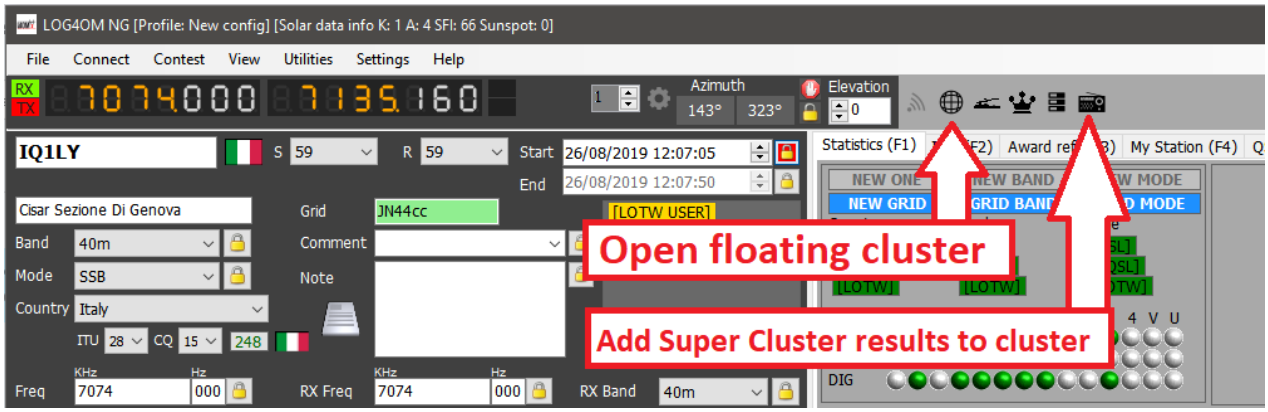
In the Settings/program configuration menu there are various options for the Telnet cluster e.g. Auto start of cluster and server and cluster highlighting selection.



The cluster can be started directly from main USER INTERFACE. Cluster disconnection is possible only through cluster management screen

Cluster displays

The main cluster is included in the main user interface, however a floating cluster screen can be deployed by clicking the cluster icon on the top tool bar.

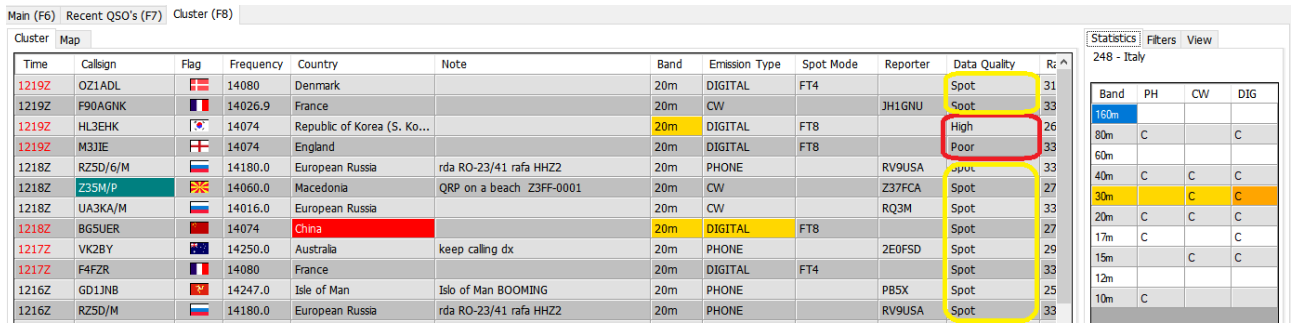


Both cluster displays provide displays of country worked/confirmed status and choices of band, mode and display views as below.

Super Cluster

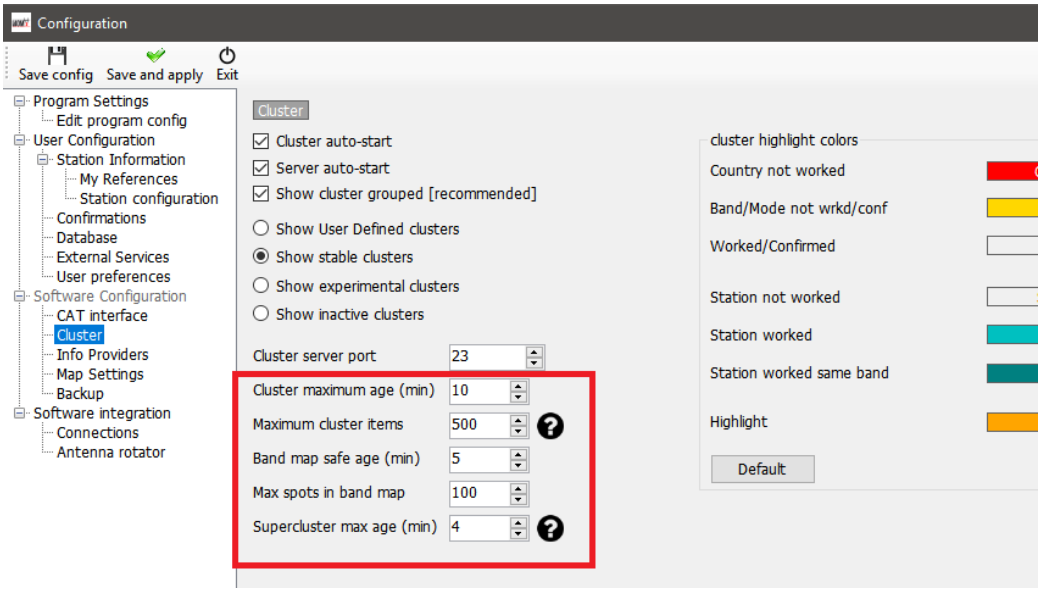
The Super Cluster gathers data from HRDLog of QSO's recently logged by HRDLog users and amalgamates that information with the main cluster results providing an extremely accurate indication of spot quality.

Example:
If G4POP logs a QSO with VK7AMA in the last few minutes and spots are also received from the telnet clusters for the same band and mode then there is a high probability that VK7 is workable from the UK.

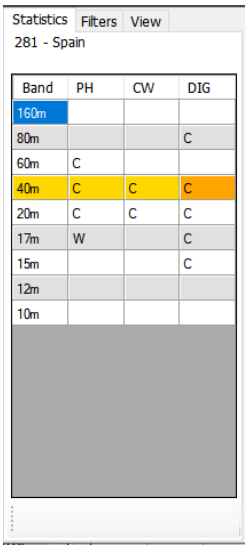


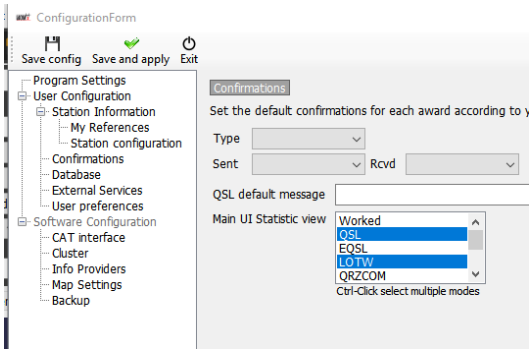
In the image above the 'Data quality' column displays spots of HIGH quality which have been received by Telnet and from the HRDLog data, whereas POOR quality indicates the data was only received via HRDLog and SPOT are spots received only via Telnet.

The age and maximum number of spots displayed in the Cluster, Band maps and from HRDLog for the Super Cluster display can be selected by the user in the settings/program configuration/cluster tab as shown below.

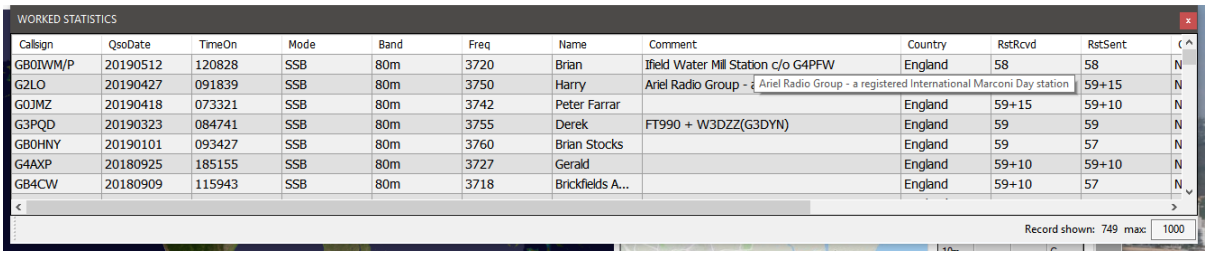


The 'Statistics' pane displays the worked/confirmed status and by what method of confirmation, of the country depending on that selected in the Program configuration/Confirmations menu shown on the right below.





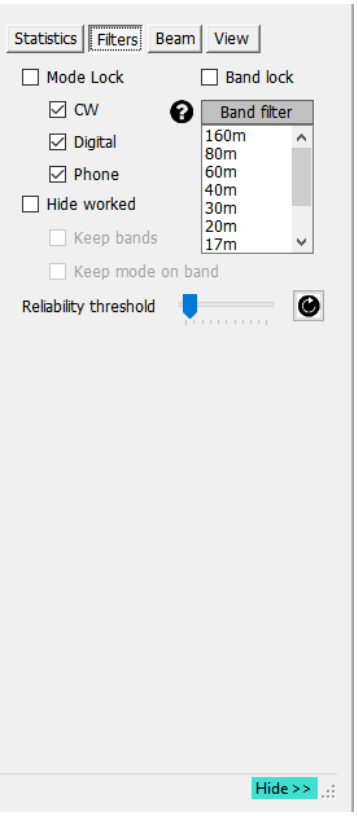
Double clicking a cell in the statistics pane marked with a W or C will open a worked before list of all of the contacts with that country on the band/mode of the cell selected.

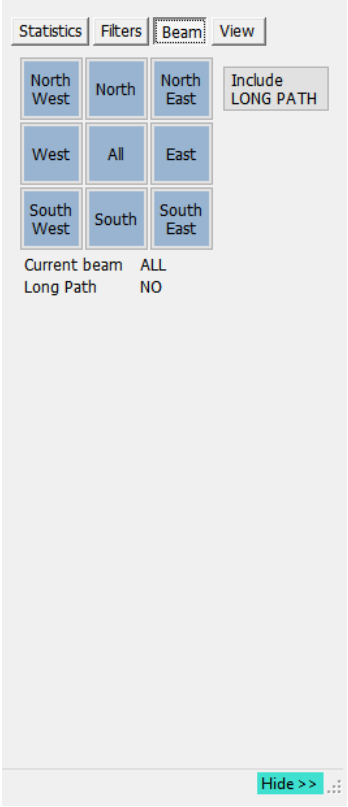


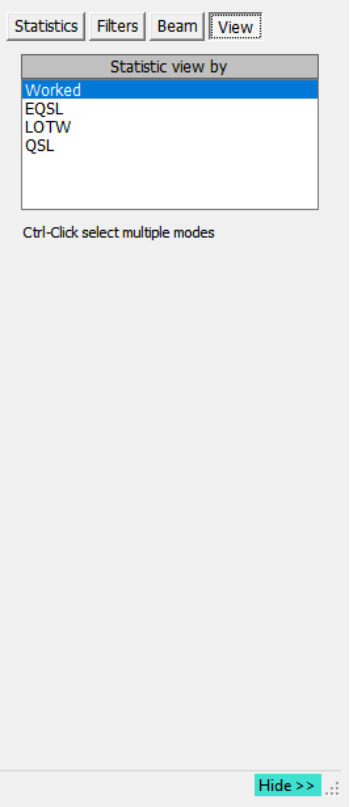
Cluster filters

The cluster filters provide a method of tailoring the spots to be displayed by band, mode, worked and QSL confirmation status - Use Ctrl/Click to select or deselect bands or statistics confirmation types.

The Beam filters enable selection of spots from a specific compass direction via short path or short and long path. This will enable filtering based on current beam direction in order to optimize efficiency.

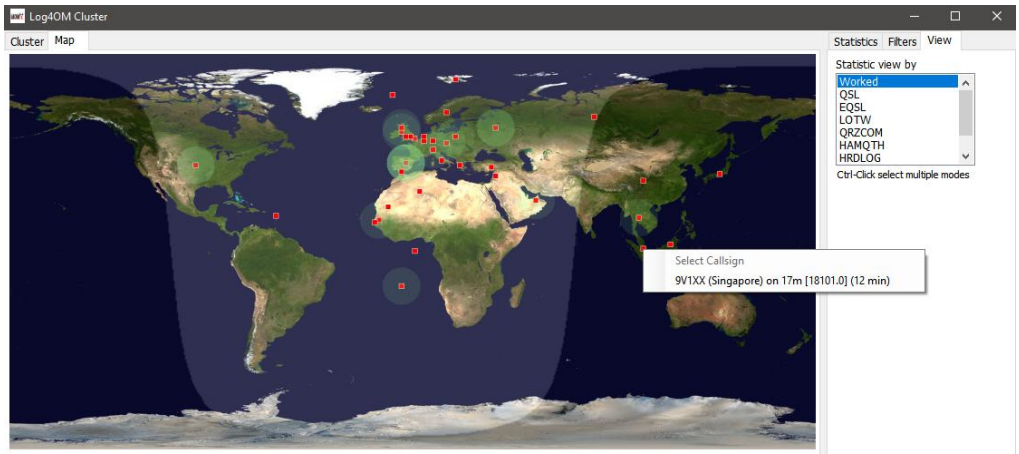






Cluster spots map

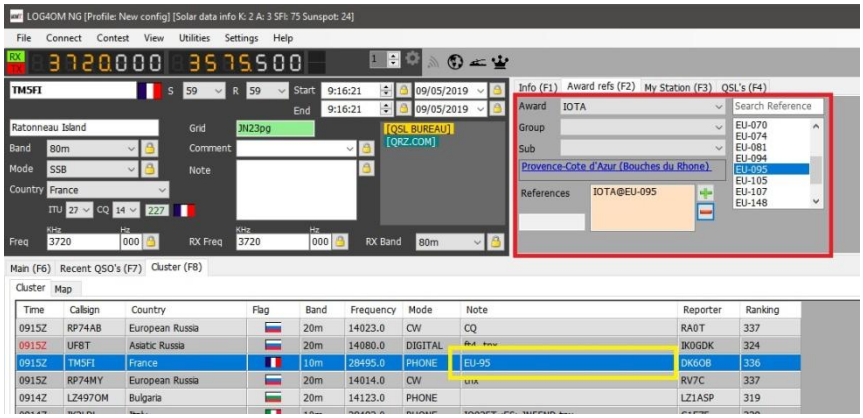
Clicking the 'Map' tab in either cluster will display a map of the current cluster spots, clicking a spot reveals the details of the spot a further click on the revealed call sign will perform the same actions as detailed in the 'cluster actions' section.



Intelligent cluster

When a spot is clicked on in the cluster if there is an award reference e.g. IOTA, SOTA or Log4OM V2 designer awards the text in the cluster comments/notes field is parsed, matched and added to the awards panel.

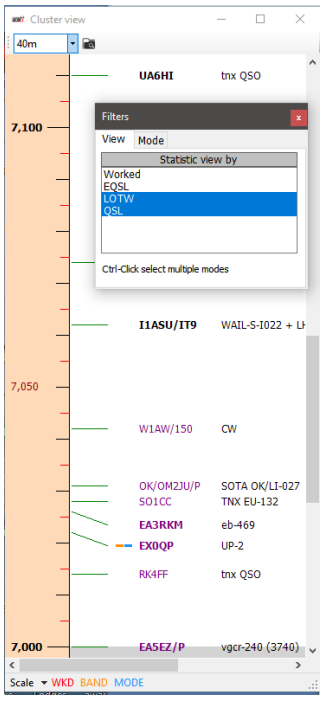
Below is an example of an IOTA reference being 'Read' from the notes field automatically.



Cluster Band maps

Cluster band maps can be accessed by the Connect/Cluster Band View menu and multiple Band maps can be opened for individual bands.

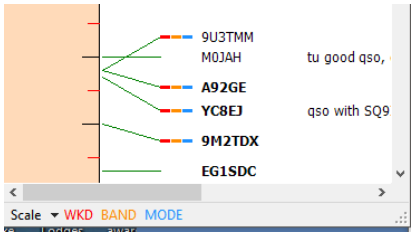
The band maps are automatically reopened when restarting Log4OM V2 in the same size and position as last opened.



Band map filters

Clicking the small folder icon at the top of the band map provides options to change the statistics view from 'Worked' to confirmation types (EQSL< LOTW or QSL) and multiple confirmation types can be selected by holding the Ctrl key depressed and left clicking the menu selections.

The confirmation status for the selected filter(s) is indicated by the small coloured bars to the left of the call signs



WKD = Worked (Red)
BAND = Band (Orange)
MODE + Mode (Blue)

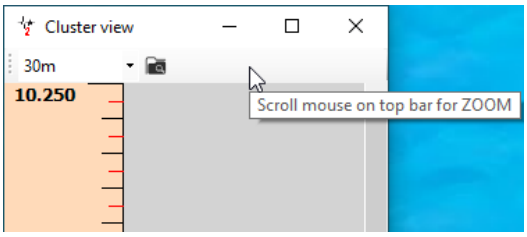
The 'Mode' tab in this window provides a choice of Phone, Digital or CW spots to be displayed.

Band map Bands

The drop down menu at the top left provides choice of bands to be displayed

Band Map Scale menu

The zoom level or scale of the band maps can be changed using the 'Scale' drop down menu at the lower left of the Band Map from 0.5x to 15.0x or scrolling mouse over the top bar:

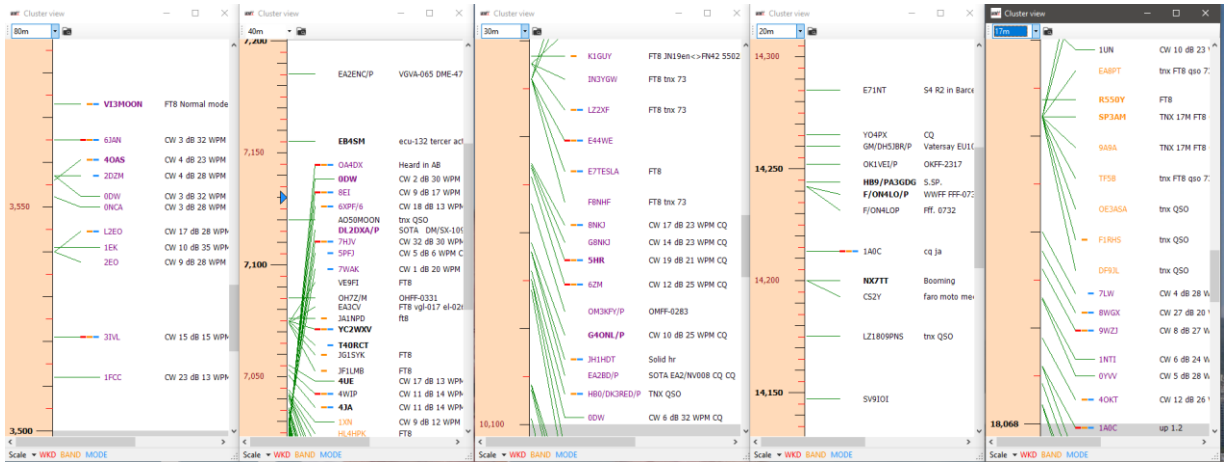


Band Map Mouse Actions

Identical to Cluster actions below with the addition of the ability to 'SCROLL' the band up and down with the mouse scroll wheel.

Band Maps multiple displays

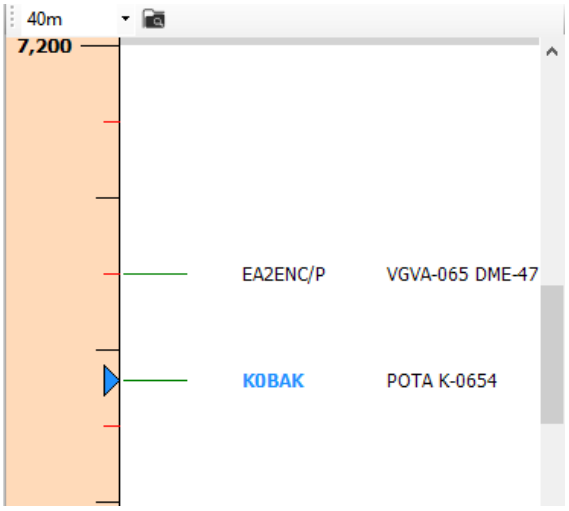
Any number of band maps can be displayed for different bands and modes at varying zoom levels

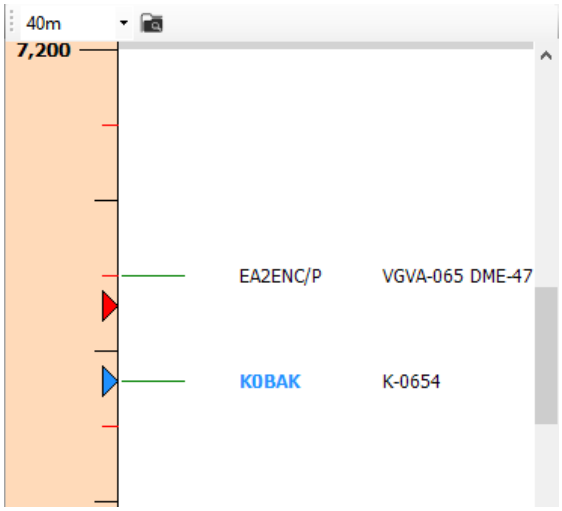


Band maps CAT frequency display

The current radio RX/TX frequency is displayed on the band map frequency scale by a blue arrow head marker, as the image on the left below.

When in split mode (assuming the radio is supported by Omnirig) the blue arrow head marker indicates the RX frequency and the red arrow head marker the TX frequency, as shown in the image on the right below.





Please note that clicking on a spot in the band map will activate a lookup in the main UI F6 view including country worked statistics, it will not activate the country statistics in the main cluster because the main cluster is able to function independently.

Cluster actions

Single click on cluster spot

1. Adds call to call sign input field
2. Looks call sign up in Clublog, QRZ, Recent calls and completed data fields
3. Checks for SOTA or IOTA or other award reference in comments and notes fields and completes the appropriate awards program fields.
4. Fills country worked by mode and band graph
5. Draws great circle path on world map
6. Opens the large scale station location map and biography photo if available from lookup site
7. Fills SP/LP headings, antenna elevation and distances in the Contact(F3) tab
8. Adds data to the Info (F1) tab for the station
9. Displays 'Worked' banner in the lookup data box - If 'Worked before' is clicked the worked before window opens displaying all previous contacts with that station.
10. If a call sign is found for call during lookup, clicking the lookup providers name (QRZ, HamQTH) opens the web browser at the page of the call sign
11. Fills mode, frequency and band in the input window if CAT is enabled.

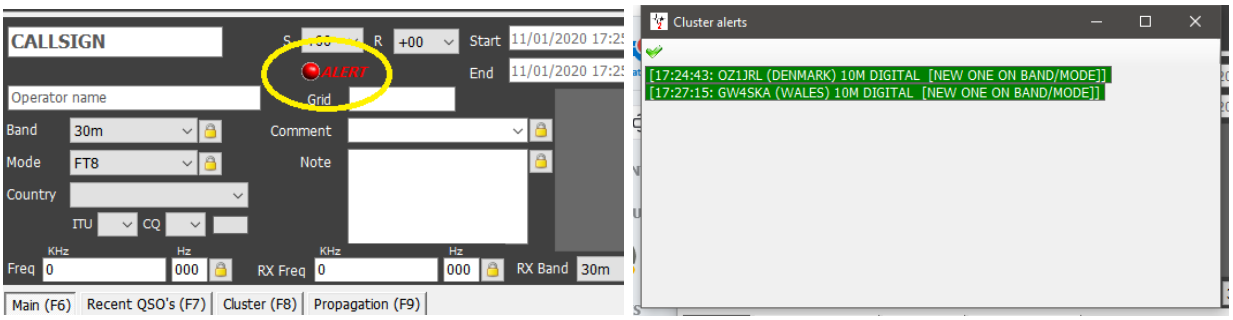
Double click on cluster spot

All as 1 above plus changes radio mode and frequency on the radio.

Cluster Alerts

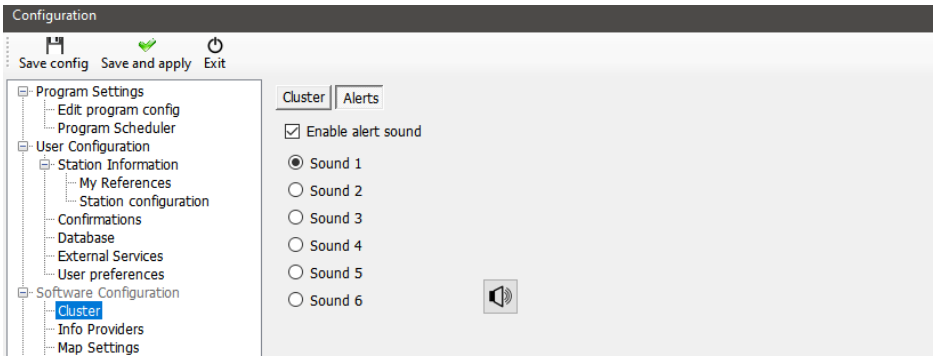
When a desired spot is received by the cluster an audio alert can be activated by checking the 'Play sound on new cluster alert' check box in the options/Cluster/Alerts tab.

The audio alert will sound and an alert message will appear in the main UI as below



Left clicking the alert icon will open the list of alerts as shown on the right above, right clicking on the alert icon will clear it.

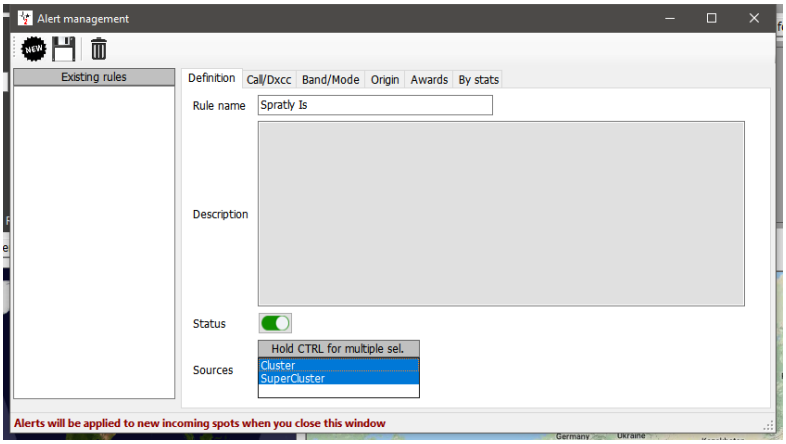
The required alert sound can be selected from the six choices and each one can be tested by clicking on the speaker icon.



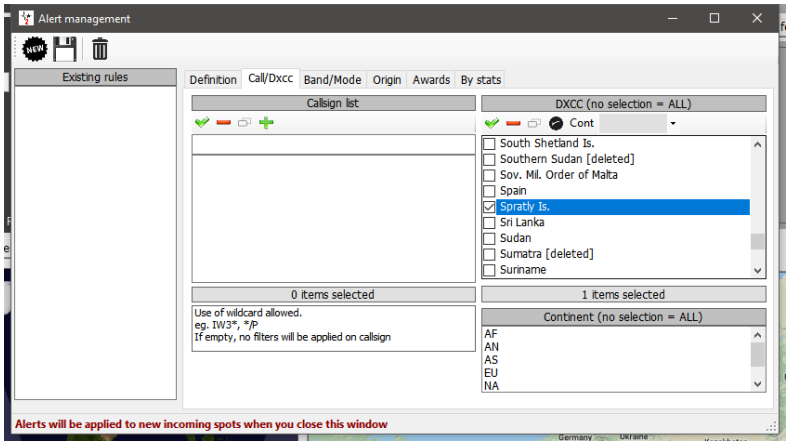
Filtering alerts

Defining the rules that will trigger the alert is done in the 'Alert management' window (Settings/Alert configuration)

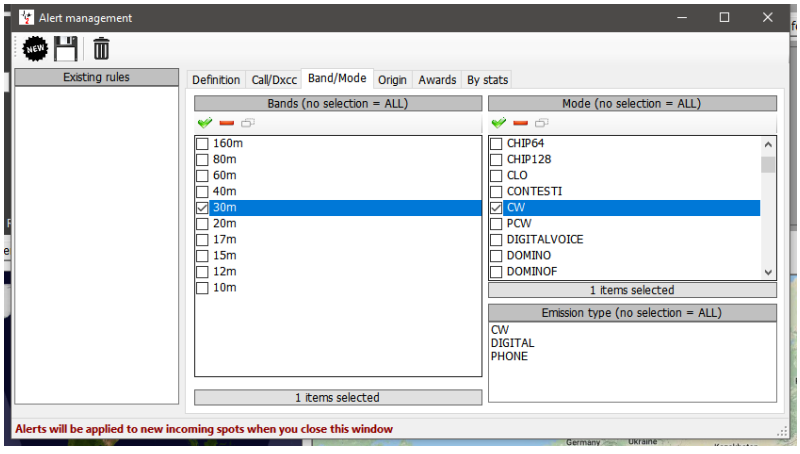
- Provide a filter rule name and description in the definition tab and select the cluster or clusters to watch, turn the status switch on to make the filter active.



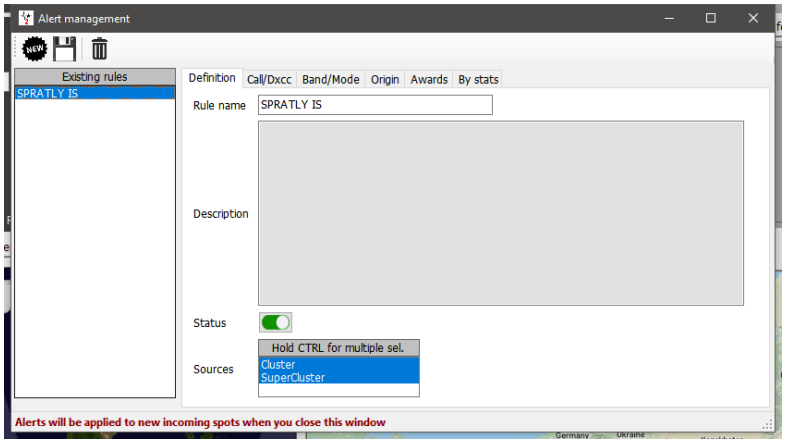
- In the Call/DXCC tab check the name of the DXCC country to be alerted for



- If the DXCC entity is required on specific bands or modes select the band/mode in the Band/mode tab. This example will alert for every occasion a spot for Spratly



- When all selections have been chosen click the floppy disk save icon and the alert filter will appear in the left side panel.

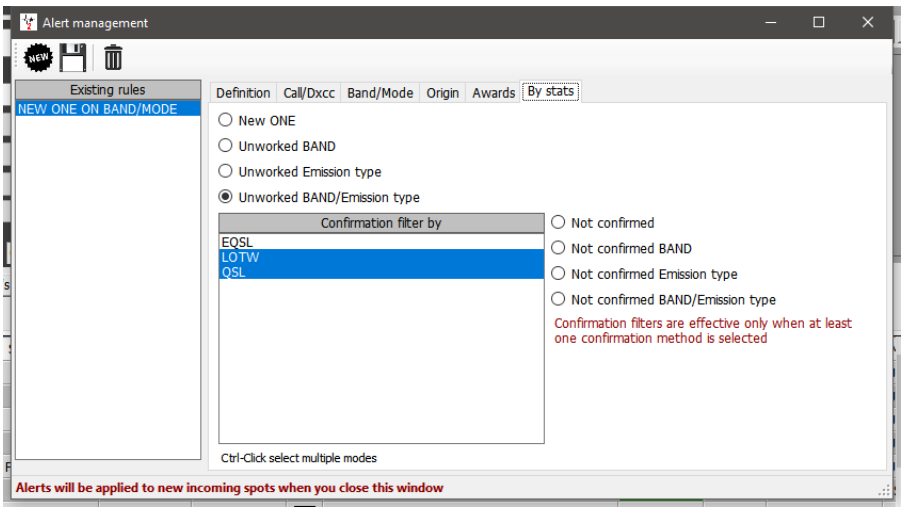


Alerts can be created by Call sign, prefix or suffix, DXCC, Continent, Band, Mode, Emission type, Spotter call sign, spotter continent, spotter country or for specific awards identified in the Notes field.

These criteria can be combined to finely filter the required alert. As an example sound alert when.....
..... G4POP is /P on 60m CW and is spotted by OZ1W

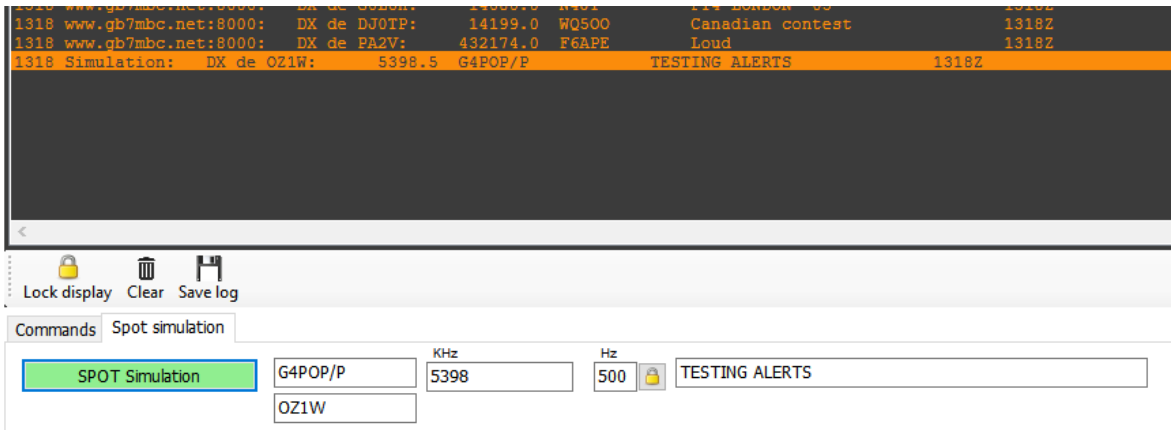
ALERT RULES are made with AND logic. All rules set must be matched (when multiple choices are available, like modes, bands, dxcc, at least one of them should be matched).

When using filters based on station statistics, for example a new country at least one of the fields must match



Testing alerts

To test an alert use the 'Spot simulation' facility in the 'Cluster management' window - Spot simulations are not broadcast to the on air Telnet clusters, they are only displayed on the local PC



Cluster support for Winkeyer

If the Winkeyer interface is open then the actions for single and double click will send call sign, lookup data, band and mode data directly to the Winkeyer fields

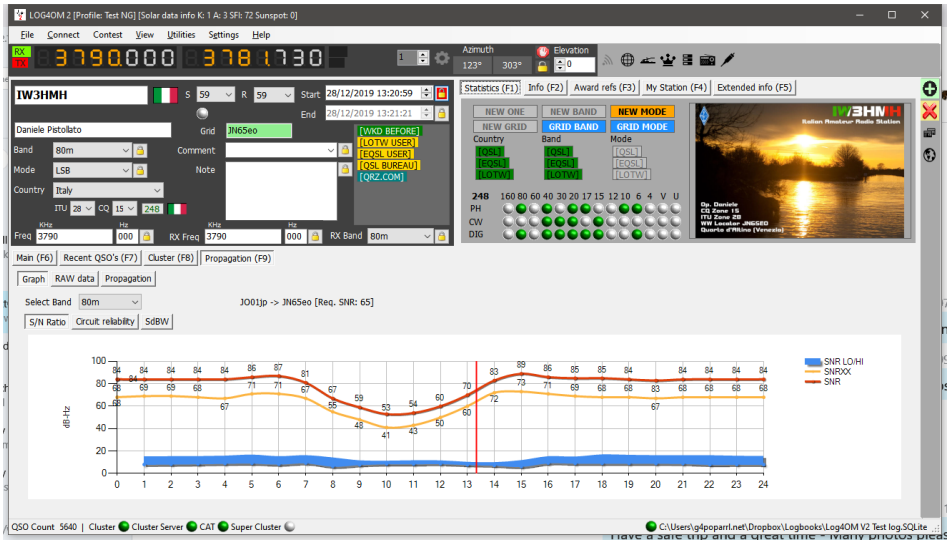
Propagation predictions

Log4OM version 2 includes a powerful propagation prediction tool based on VOACAP to calculate the best band/path between the users station and the station to be contacted (Call sign must be entered in call sign field)

The tool is accessible either through the Propagation tab in the main UI or from the drop down menus at the top of the main UI. To obtain a prediction is it necessary to enter the other stations call sign and band.

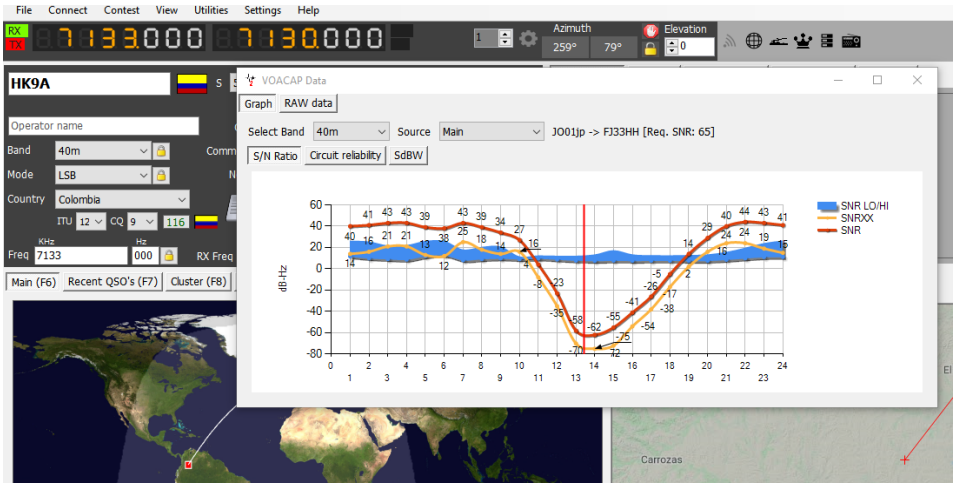
The predictions are calculated using the TX power level set in the Log4OM Settings/Program configuration/station configuration/TX Power field or as modified in the 'My Station (F4)' tab of the QSO input panel of the main UI. Antenna is not selectable and it's the standard dipole.

Three views are available which display either S/N ratio, Circuit Reliability or SdBW, explanations of these displays can be found in the excellent document by *Jari Perkiömäki OH6BG* which is reproduced below.

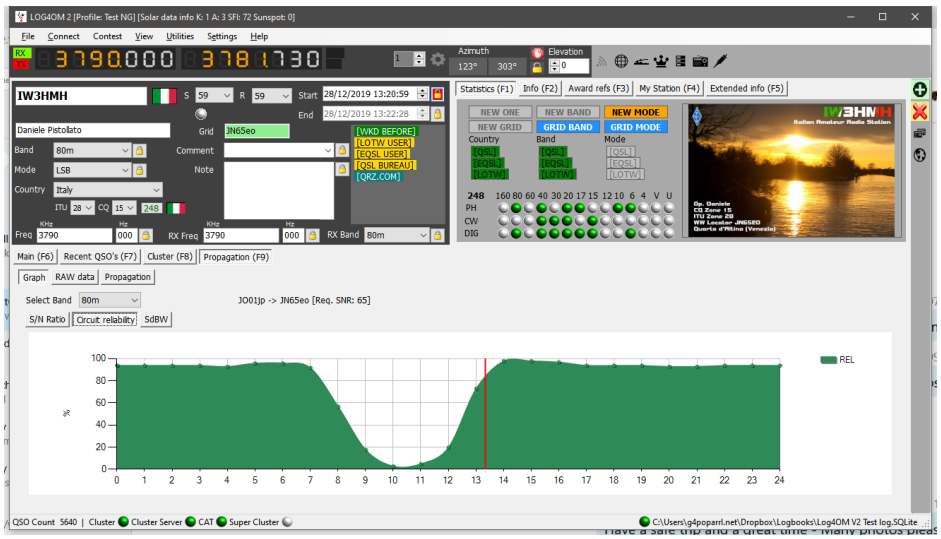


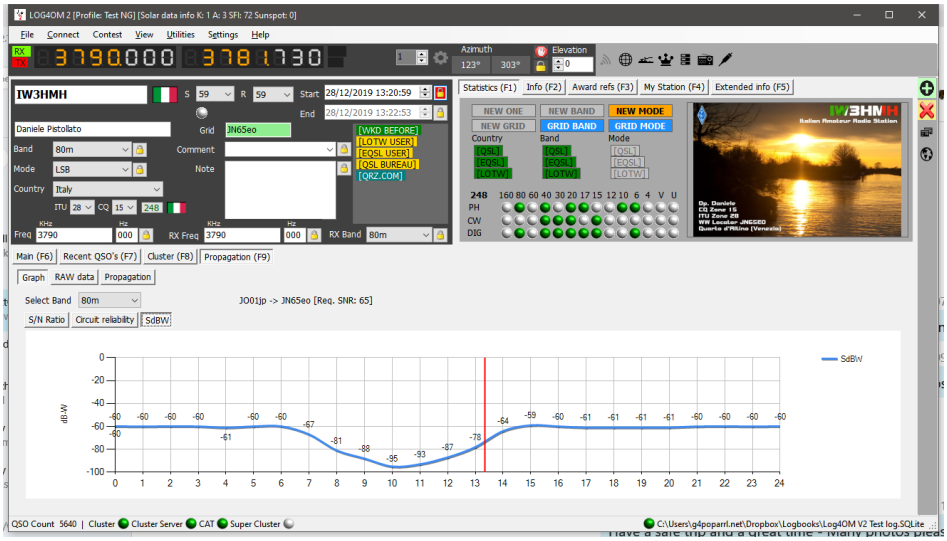
A separate window for propagation display is available from the view menu.

If the window is opened after the call is entered the calculations have already been done as a result the window will be empty. The window needs to be opened first so that when the call is entered it receives the results of the calculation.

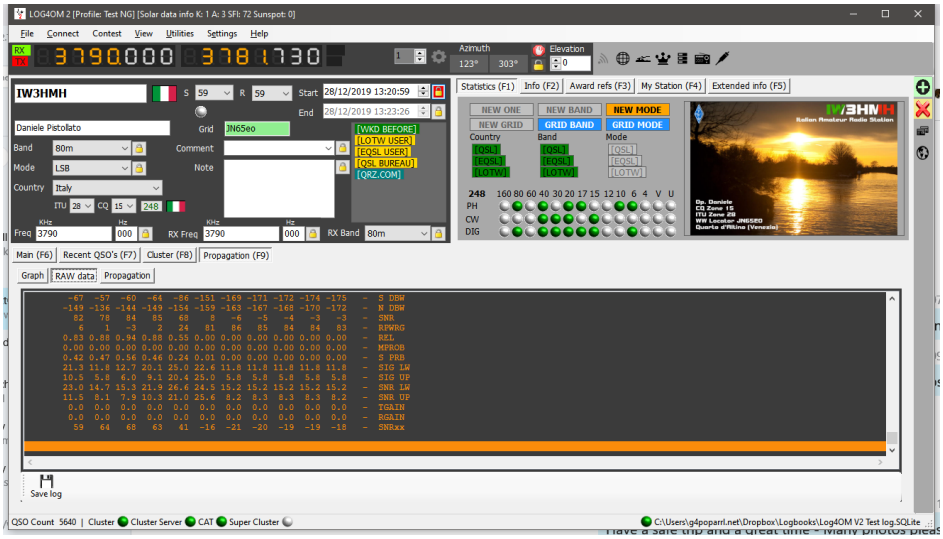


The 'Source' menu in the floating Propagation window allows the display to also be derived from the call entered in the contest or Winkeyer windows.





The raw data is also available in the tab 'Raw Data'

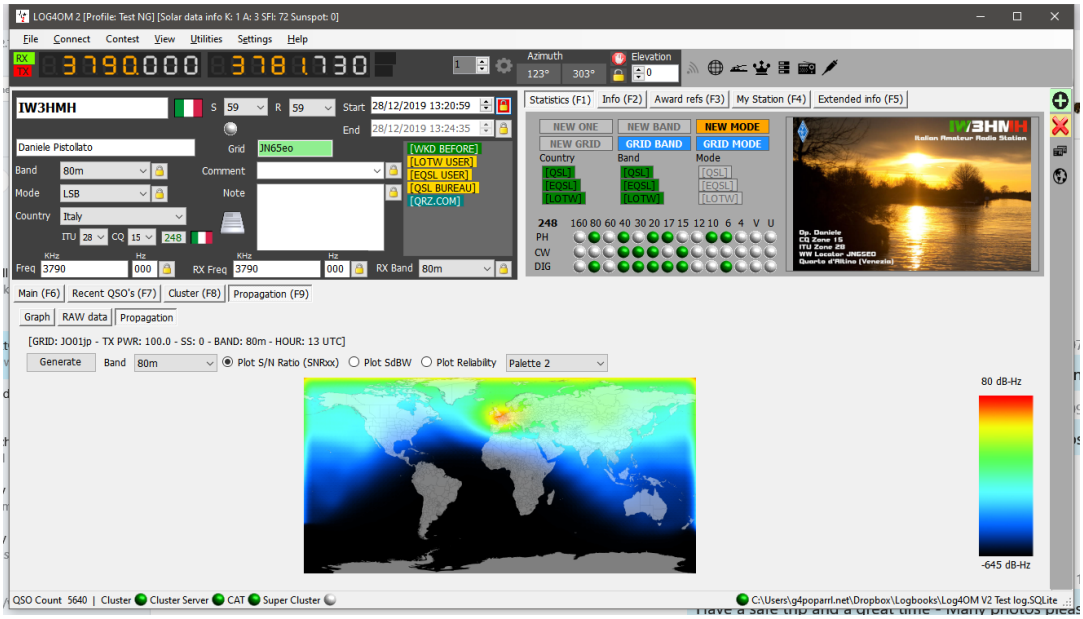


Propagation map

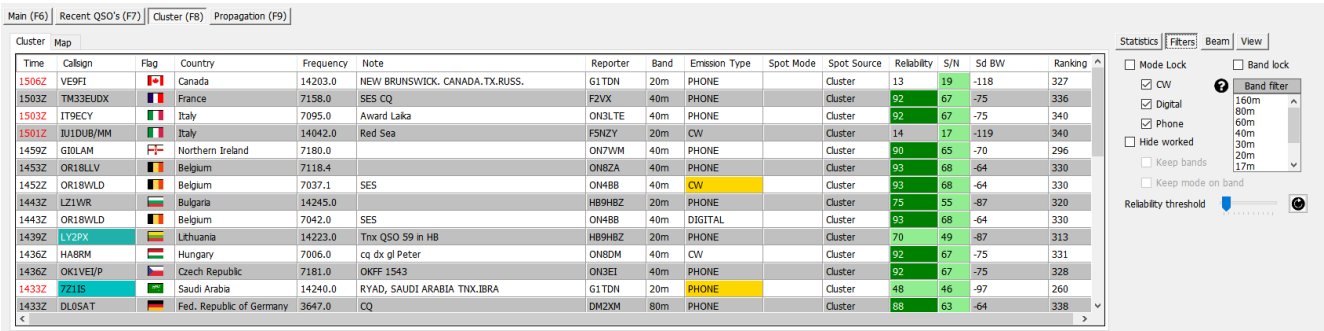
The propagation map that is also available from the 'View' menu or Propagation tab (F9) is not self generating from the call sign input because it takes time to calculate every grid square to be able to draw the map.

To activate

1. Select the band of interest
2. Select the data display type S/N Ratio, SdBW or Plot reliability
3. Choose the Map colour Palette
4. Click the 'Generate' button - As stated drawing the propagation map takes time so please wait!



The reliability factor is also displayed in a column of the cluster with the higher percentage of probability being progressively highlighted in a darker green, the Signal to noise ration and SdBW are also displayed.



Time	Callsign	Flag	Country	Frequency	Note	Reporter	Band	Emission Type	Spot Mode	Spot Source	Reliability	S/N	Sd BW	Ranking
1506Z	VE9FI		Canada	14203.0	NEW BRUNSWICK. CANADA.TX.RUSS.	G1TDN	20m	PHONE		Cluster	13	19	-118	327
1503Z	TM33EUDX		France	7158.0	SES CQ	F2VX	40m	PHONE		Cluster	92	67	-75	336
1503Z	IT9ECY		Italy	7095.0	Award Laika	ON3LTE	40m	PHONE		Cluster	92	67	-75	340
1501Z	IU1DUB/MM		Italy	14042.0	Red Sea	F5NZY	20m	CW		Cluster	14	17	-119	340
1459Z	GI0LAM		Northern Ireland	7180.0		ON7WM	40m	PHONE		Cluster	90	65	-70	296
1453Z	OR18LLV		Belgium	7118.4		ON8ZA	40m	PHONE		Cluster	93	68	-64	330
1452Z	OR18WLD		Belgium	7037.1	SES	ON4BB	40m	CW		Cluster	93	68	-64	330
1443Z	LZ1WR		Bulgaria	14245.0		HB9HBZ	20m	PHONE		Cluster	75	55	-87	320
1443Z	OR18WLD		Belgium	7042.0	SES	ON4BB	40m	DIGITAL		Cluster	93	68	-64	330
1439Z	LY2PX		Lithuania	14223.0	Tnx QSO 59 in HB	HB9HBZ	20m	PHONE		Cluster	70	49	-87	313
1436Z	HA8RM		Hungary	7006.0	cq dx gl Peter	ON8DM	40m	CW		Cluster	92	67	-75	331
1436Z	OK1VEI/P		Czech Republic	7181.0	OKFF 1543	ON3EI	40m	PHONE		Cluster	92	67	-75	328
1433Z	7Z1IS		Saudi Arabia	14240.0	RYAD, SAUDI ARABIA TNX.IBRA	G1TDN	20m	PHONE		Cluster	48	46	-97	260
1433Z	DL0SAT		Fed. Republic of Germany	3647.0	CQ	DM2XM	80m	PHONE		Cluster	88	63	-64	338

Adjusting the 'Reliability threshold' slider in the 'Filters' menu will change the threshold at which the reliability levels will be displayed.

The MUF and SNR Distribution

Choosing the Best Frequency

You have now run the prediction and are anxious to operate between the chosen locations on the frequencies you entered. There are two things to discuss in our analysis:

- What is the best of our frequencies?
- What is the predicted SNR (Signal-to-Noise) distribution on that frequency?

The Meaning of MUF

In VOACAP, the MUF (maximum usable frequency) is a statistical concept. The MUF is defined here as the median maximum usable frequency for a given ionospheric path, month, SSN and hour. On each day of the month at this hour, there is a maximum observed frequency (MOF) for a mode. The median of this distribution is called the MUF. Therefore, it is not the maximum usable frequency in terms of communications.
In other words, the MUF is the frequency for which ionospheric support is predicted on 50% of the days of the month, ie. 15 days out of 30 days. So on a given day communications may or may not succeed on the frequency marked as the MUF.
To ensure a good communication link between two locations, the operating frequency is typically chosen below the predicted MUF. It is often claimed that the optimal operating frequency lies somewhere between 80-90% of the MUF (e.g. if the MUF is 10 MHz, the optimal frequency would be around 8-9 MHz). However, in VOACAP it is the predicted SNR distribution using Complete System Performance methods (e.g. Methods 20, 21, 22 or 30) that determines which frequencies provide an acceptable grade of service

The MUFday

The MUF is also related to another parameter, MUFday. The value of the MUFday is the fraction of the days in a month at that hour that the operating frequency is below the MUF for the most reliable mode (that is, the mode with the highest reliability of meeting the required SNR). The mode and the associated data shown below the user-specified frequencies are always the most reliable mode. For a more detailed discussion, see Calculating MUFdays.

SNR, SNR10 and SNR90: The Predicted SNR Distribution

The SNR distribution tells us what grade of service is to be expected over the days in the month on a given frequency at a given hour. A statistical method is used to determine the grade of service over 27 days (SNR90), 15 days (SNR) and 3 days (SNR10) out of 30 days. However, it does not tell you which days are good or which days are bad.
Below are the four SNR output parameters needed for analysis:

```
1.0 13.1  6.1  7.2  9.7 11.9 13.7 15.4 17.7 21.6 25.9  0.0  0.0 FREQ
    F2F2 F2F2 F2F2 F2F2 F2F2 F2F2 F2F2 F2F2 F2F2 F2F2   -    -  MODE
      80   63   69   78   83   78   68   28  -39  -58   -    -  SNR
    26.7 12.4 13.8 21.2 26.7 26.8 26.8 26.8 26.8 13.3   -    -  SNR LW
    18.5  7.6  7.1  7.8 12.7 22.2 25.7 25.7 25.7  7.6   -    -  SNR UP
      54   51   55   57   56   51   41    1  -66  -71   -    -  SNRxx
```

The SNR indicates the dB-Hz value that can be maintained on 50% of the days (ie. on 15 days) in the month. In our example above on 11.9 MHz, the SNR value is 83 (dB-Hz).
The SNRxx (ie. SNR90, provided the REQ.REL. is 90%) indicates the dB-Hz value that can be maintained on 90% of the days (ie. on 27 days) in the month. In our example above on 11.9 MHz, the SNRxx value is 56 (dB-Hz). This can be calculated as SNR - SNR LW (or 83 - 27 = 56 in our example).
And finally, **the SNR10** (calculated as SNR + SNR UP) is the dB-Hz value that can be maintained on 10% of the days (ie. on 3 days) in the month. In our example above on 11.9 MHz, the SNR10 value is appr. 96 (dB-Hz).
The two most prominent parameters to consider in search of the best frequency are the SNR and SNR90 values. **As a rule of thumb, look for the highest SNR value and the highest SNR90 value**. Let us assume that the required SNR we wish to maintain in our circuit is 67 (not a good but still a reasonable listening quality in international broadcasting). We will see that the SNRxx is below 67 at all our frequencies which means none of them cannot maintain that grade of service on 27 days out of 30 days. Then we will need to look for the highest SNR. Of our frequencies, the best would be 11.9 MHz with the SNR value of 83.

Conclusion

In conclusion, 11.9 MHz is the best candidate for the operating frequency at 01 UTC during that month. 11.9 MHz is also below the predicted MUF of 13.1 MHz for that mode.

The RPWRG and the REL

Let us expand our example above by adding two other output parameters (RPWRG and REL) as follows:

```
  1.0 13.1  6.1  7.2  9.7 11.9 13.7 15.4 17.7 21.6 25.9  0.0  0.0 FREQ
      F2F2 F2F2 F2F2 F2F2 F2F2 F2F2 F2F2 F2F2 F2F2 F2F2   -    -  MODE
        80   63   69   78   83   78   68   28  -39  -58   -    -  SNR
        13   16   12   10   11   16   26   66  133  138   -    -  RPWRG
      0.74 0.24 0.57 0.74 0.78 0.70 0.51 0.03 0.00 0.00   -    -  REL
      26.7 12.4 13.8 21.2 26.7 26.8 26.8 26.8 26.8 13.3   -    -  SNR LW
      18.5  7.6  7.1  7.8 12.7 22.2 25.7 25.7 25.7  7.6   -    -  SNR UP
        54   51   55   57   56   51   41    1  -66  -71   -    -  SNRxx
```

The RPWRG is related to the SNR90 and REQ.SNR. In our example above, the REQ.SNR was set to 67 **(program config - user preferences)**.

The RPWRG (the required power gain) parameter tells us **how many decibels are needed in the communication system to achieve the SNR90 value of 67**. It is calculated as REQ.SNR - SNRxx (or 67 - 56 = 11 on 11.9 MHz). As the value of the RPWRG is positive in our example, it means that many decibels are needed for our system; if the value had been negative, that many decibels would have been in excess (ie. unnecessary) to achieve the required SNR for 27 days out of 30 days.

This parameter relates to the (communication) system design. In our example on 11.9 MHz, we should consider what measures we could take to add the necessary 11 desibels to the system: doubling the transmitting power would give us 3 desibels, using a more powerful transmitter antenna could give us a few desibels more, and at the receiving end we could choose, say, a 3-element Yagi instead of the whip antenna which would still contribute some more desibels.

The REL is related to the SNR and REQ.SNR, and is defined as a circuit reliability factor. It tells us the percentage of days in the month when the SNR value will equal to or exceed the REQ.SNR. The SNRxx tells us which SNR value can be achieved on 90% of the days (27 days) in the month. If the SNRxx would have been 67, then the value of REL had been 0.90 (or 90%, which is the REQ.REL. we have specified) and the RPWRG would have been zero (0).

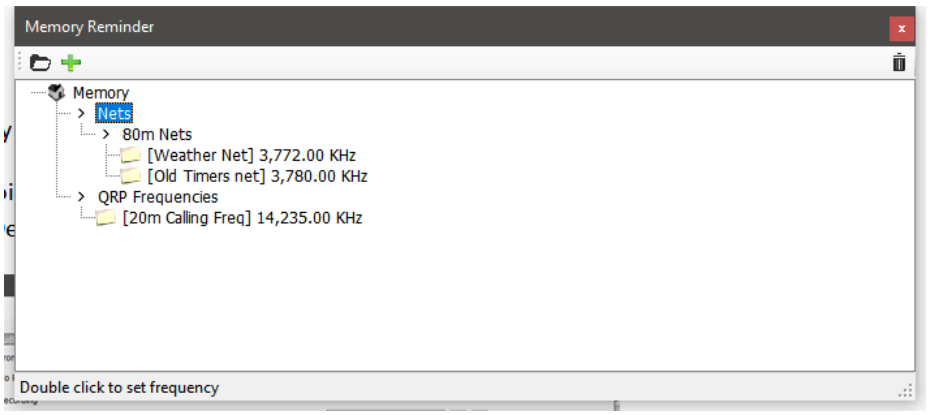
Conclusion

The REL value of 0.78 on 11.9 MHz suggests that the required SNR of 67 can be achieved on 78% of days in the month. To translate the percentage value to the number of days, take a look at the Z Tables. We will see that 78% equals to 23 days.

Originally written and copyrighted by Jari Perkiömäki OH6BG, https://www.voacap.com/muf.html

Memory reminder (Favourites)

In the view/Memory reminder window it is possible to save a list of often used frequencies (Favourites)



- Click the folder icon to add a folder, enter a folder name and click the enter/return key on the keyboard.
- Select the folder created and click the Green + button to add a frequency name and frequency, click the check mark icon to save the entry.

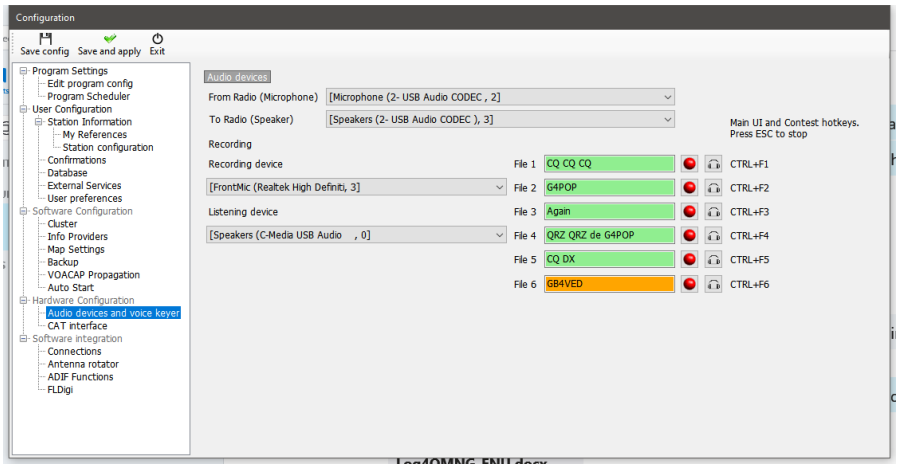
The mode is automatically selected according to the mode recorded for that frequency in the band plan file

Voice Keyer

Log4OM2 provides a voice keyer facility with six recordable memories.

Voice Keyer setup

To set up the voice keyer and record voice keyer messages open the Log4OM Program Configuration window from the 'Settings' menu and select the ‘Audio Devices’ tab.



1. Select the devices to be used for the transmission of the keyer messages in the ‘From/To Radio’ drop down menu’s
2. Choose the recording and playback devices in the ‘Recording’ panel
3. Provide a ‘File name’ for each memory.
   Note: Until a recording is completed the file name box will be highlighted Red.
4. Hold down the red button to the right of a memory name and record a message using a microphone connected to the computer – At the end of the recording release the red record button.
   Note: The file name box will change to green to indicate that it contains a message.
5. Click on the headphone symbol to the right of the recording button to playback the recording for that memory.

Voice Keyer in use

- The voice keyer messages are triggered by Ctrl + Function keys 1 to 6
- When a message is being sent there is a visual indication at the bottom of the main UI

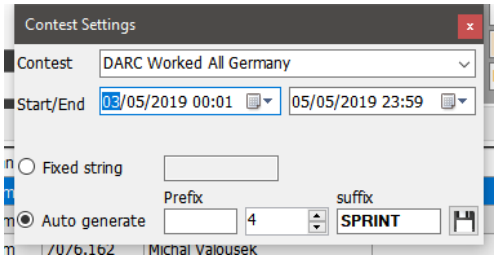
- Messages can be aborted during sending by pressing the keyboard key 'Esc'
- Messages can be sent either when the main UI is active or the contest window is open

Contest mode

Although not a fully featured contest logger Log4OM V2 provides a very useful interface for the casual contester. The dedicated contester should use the Log4OM V2 integration with N1MM for best efficiency.

Contest setup

- Select 'Contest/contest settings'

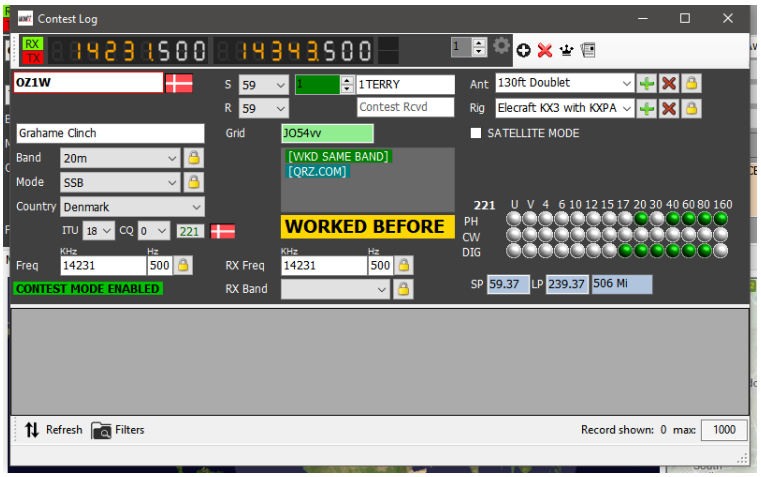


- Select the appropriate contest
- Adjust the start and end dates and times
- Add any fixed string, Prefix or suffix for the contest
- Set the serial number to the required start number.
- Click on the save icon at lower right (Floppy disk)
- Close the Contest settings window

Contest operating

If the dates set in the 'Contest settings' menu are not current then contest mode cannot be enabled!

- Open the contest window by selecting 'Contest/contest' from the menu bar or by clicking on the Contest icon (Crown) in the main toolbar.
- Click the 'Contest mode' button on the top tool bar (Looks like a crown) to enable contest mode.

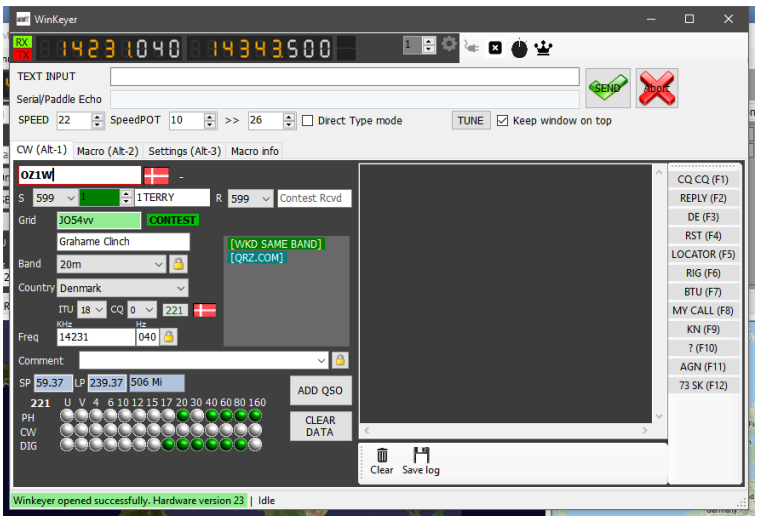


- The list of stations worked during the contest period is shown at the bottom of the window.
- If any station has been worked before [WKD SAME BAND] appears in the information window.
- The serial number is incremented automatically and is displayed together with any prefix or suffix at the top of the window.
- The users aerial and radio specifications can be changed by selecting from the drop down lists.

- The radio in current use can be changed by the rig selection list beside the frequency display for SO2R operation.
- Contest settings can also be accessed by clicking the tool bar icon (Icon is a rectangular data page)

Contesting with Winkeyer

When in contest mode Winkeyer is also in contest mode and provides the same contest sent and received fields as in the main contest window.



Select a set of contest macros from the 'Macro (Alt 2) tab and start Winkeyer as described in the Winkeyer section of this user guide. Keyboard operation for maximum QSO speed s also supported in contest mode.

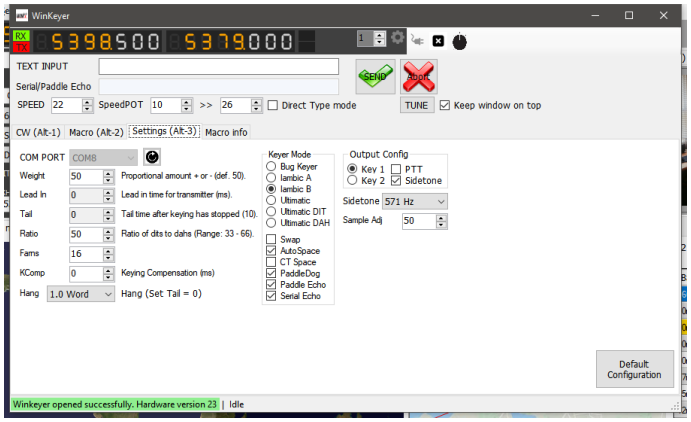
Winkeyer

The Winkeyer interface can be opened either by selecting Winkeyer from the 'View' menu or by clicking the Morse key icon in the top toolbar.

The Winkeyer interface is not compatible with old versions of Winkeyer only the USB versions will integrate.

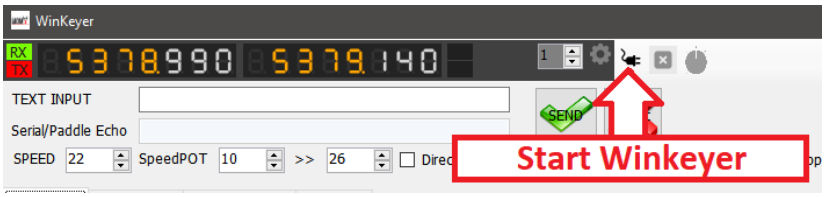
Winkeyer Settings (Alt-3)

All Winkeyer settings can be changed in the Settings (Alt 3) tab and this is where the Winkeyer USB port should be selected.



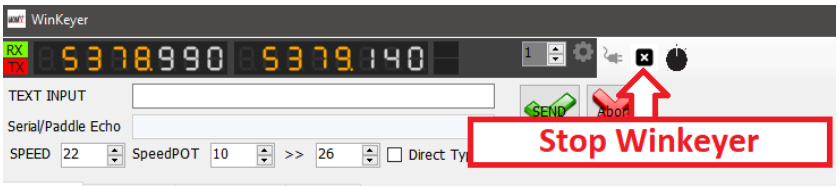
Starting & Stopping Winkeyer

Once the com port has been selected the Winkeyer can be started by clicking the connect icon next to the frequency display (Looks like a mains lead)

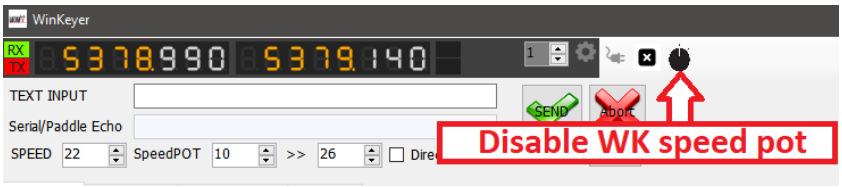


The connection details will be highlighted green at the bottom left corner of the Winkeyer window as shown above.

After use the Winkeyer must be disconnected by clicking the x next to the connect icon before the Winkeyer window is closed.



The physical speed pot on the Winkeyer hardware can be disabled by clicking the speed pot icon as below.

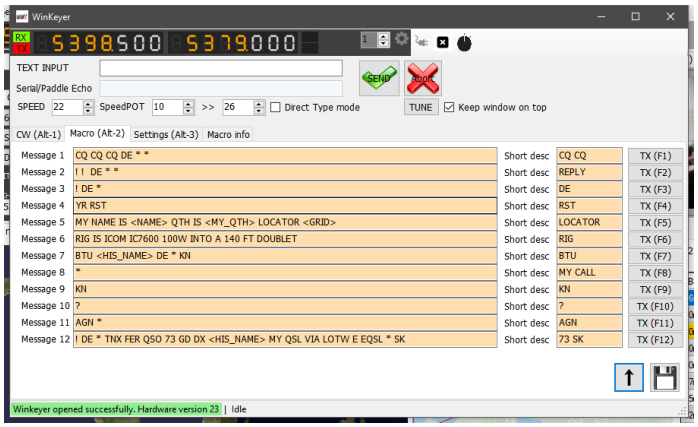


In use

Log4OM V2 Winkeyer support is designed for keyboard operation to enable high speed operation in contest or DX Expedition conditions, the mouse can also be used but this will be slower and more cumbersome.

Function Keys F1 - F12 - Activate user macros as constructed or edited in the Macros (Alt 2) tab.

An unlimited number of macro sets (Each set contains 12 macros) can be saved by using the floppy disk icon at the lower right of the Macro (Alt 2) tab and recalled by clicking the arrow at the lower right of the Macro (Alt 2) tab.



Call and QSO data entry

The cursor defaults to the Call sign field, when a call sign is entered a lookup is done as described elsewhere, the WB4 status is shown in the data lookup pane at the bottom of the WK window.

Tabbing out of the call sign field automatically records the QSO start time. The user can now tab through all of the other entry fields and enter or edit the data as required.

Alt-Enter - Saves the QSO to the logbook and records the end time of the QSO and clears the entered date and positions the cursor back into the call sign field ready for the next QSO.

Alt-W - Clears the data entered

Keyboard sending

In addition to the macros it is possible to send CW messages by typing into the 'Text input' filed at the top of the WK window, checking the 'Direct type mode' box will cause the text will be sent as its entered.

Alternatively with the 'Direct type mode' box unchecked text will not be sent until the 'SEND' button is pressed or the keyboard shortcut **Alt-S** is pressed

Alt-A - Clears the text in the input field

Cluster support for Winkeyer

When the Winkeyer interface is open then the actions for single and double click on a cluster spot will send the spotted call sign, band and mode data directly to the Winkeyer fields.

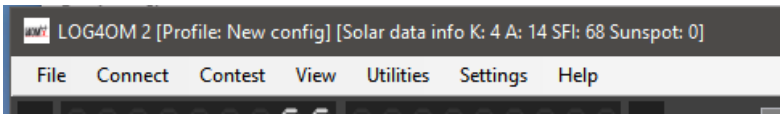
Double click on last message resends that message

Winkeyer Hotkey list

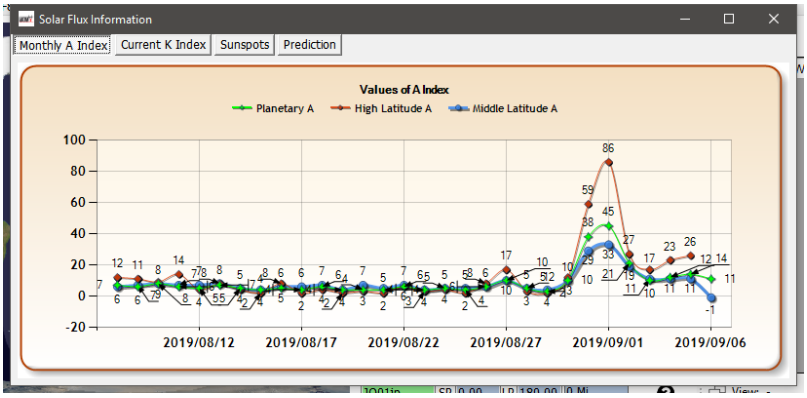
Function Keys F1 - F12 - Activates user macros
Alt-A - Clears the text in the Text input field
Alt-Enter - Saves the QSO to the logbook
Alt-W - Clears all data entered
Alt-S - Sends text in direct type Text input field
Esc - Clears text input field and aborts send
Tab - Advances the cursor to the next field
Double mouse click - Double clicking on the last message sent, Re-sends message

Solar Data

The solar Geomagnetic data information is regularly updated from NOAA and basic information is displayed on the top frame of Log4OM, displaying K & A index values, the current SFI and number of sunspots

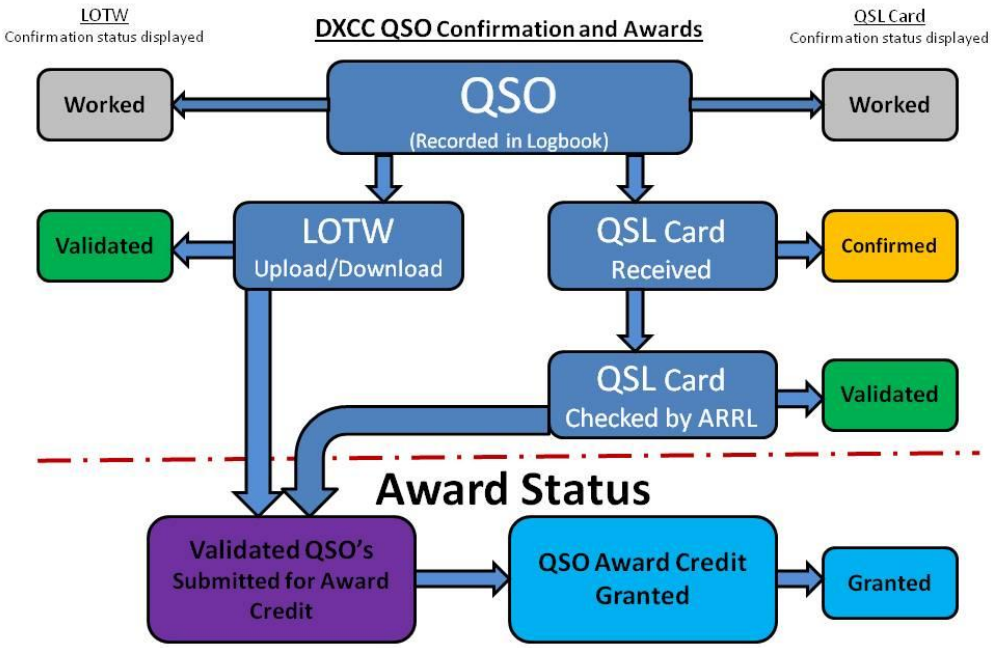


More detailed solar data including historic information is available in the View/Solar data dialog which displays the Monthly A Index, Current K index, Sunspots and a sunspot Prediction graph.



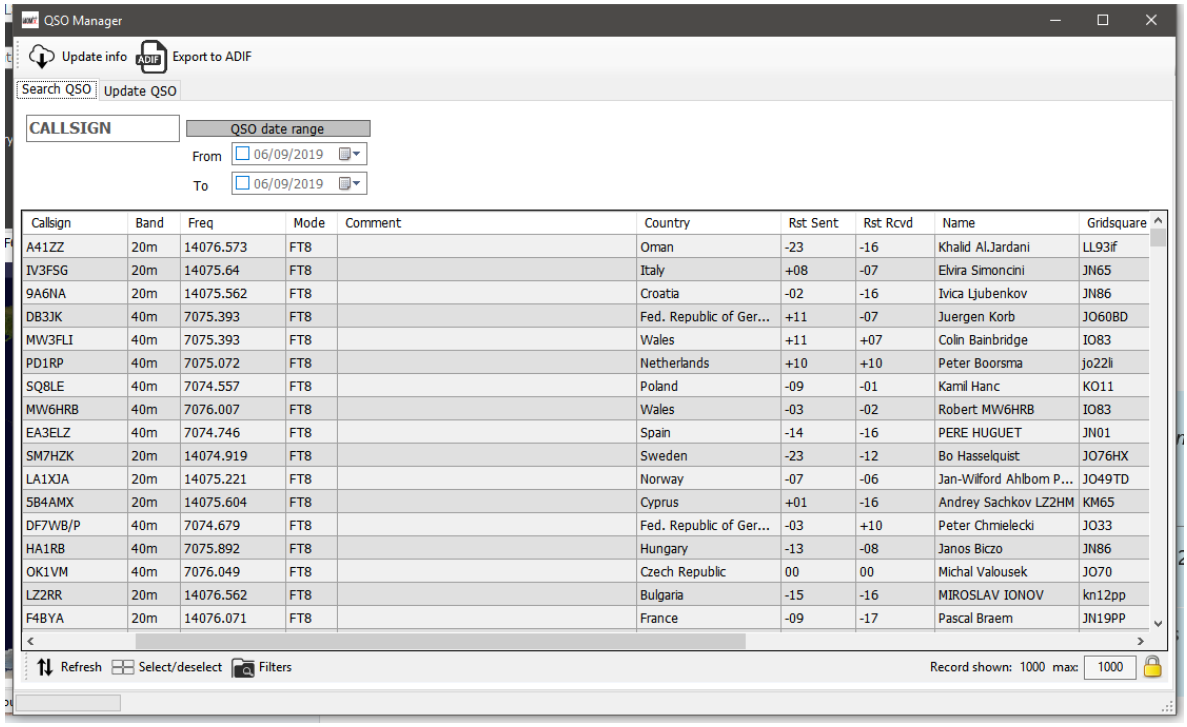
QSL Management for DXCC awards

To better understand the way QSO confirmations are used in DXCC awards this flow chart takes the QSO from initiation to award claim and credit.



QSO Management

Complete management of QSO data is achieved in the QSO Manager (Utilities/QSO Manager) which can be searched by call sign and date range using the quick search dialogs at the top of the window.



Callsign	Band	Freq	Mode	Comment	Country	Rst Sent	Rst Rcvd	Name	Gridsquare
A41ZZ	20m	14076.573	FT8		Oman	-23	-16	Khalid Al.Jardani	LL93if
IV3FSG	20m	14075.64	FT8		Italy	+08	-07	Elvira Simoncini	JN65
9A6NA	20m	14075.562	FT8		Croatia	-02	-16	Ivica Ljubenkov	JN86
DB3JK	40m	7075.393	FT8		Fed. Republic of Ger...	+11	-07	Juergen Korb	JO60BD
MW3FLI	40m	7075.393	FT8		Wales	+11	+07	Colin Bainbridge	IO83
PD1RP	40m	7075.072	FT8		Netherlands	+10	+10	Peter Boorsma	jo22li
SQ8LE	40m	7074.557	FT8		Poland	-09	-01	Kamil Hanc	KO11
MW6HRB	40m	7076.007	FT8		Wales	-03	-02	Robert MW6HRB	IO83
EA3ELZ	40m	7074.746	FT8		Spain	-14	-16	PERE HUGUET	JN01
SM7HZK	20m	14074.919	FT8		Sweden	-23	-12	Bo Hasselquist	JO76HX
LA1XJA	20m	14075.221	FT8		Norway	-07	-06	Jan-Wilford Ahlbom P...	JO49TD
5B4AMX	20m	14075.604	FT8		Cyprus	+01	-16	Andrey Sachkov LZ2HM	KM65
DF7WB/P	40m	7074.679	FT8		Fed. Republic of Ger...	-03	+10	Peter Chmielecki	JO33
HA1RB	40m	7075.892	FT8		Hungary	-13	-08	Janos Biczo	JN86
OK1VM	40m	7076.049	FT8		Czech Republic	00	00	Michal Valousek	JO70
LZ2RR	20m	14076.562	FT8		Bulgaria	-15	-16	MIROSLAV IONOV	kn12pp
F4BYA	20m	14076.071	FT8		France	-09	-17	Pascal Braem	JN19PP

THE USER IS ADVISED TO BACKUP LOGBOOK DATA BEFORE EDITING

Update Info

This button at the top left side of screen, updates the selected QSO(s) using the on-line search facilities selected by the user in the program configuration and also the Clublog Historic data file, Log4OM country and special call lists.

Export to ADIF

This button at the top of the screen, exports the selected QSO(s) to an ADIF file using the latest version of the ADIF format available.

Refresh button

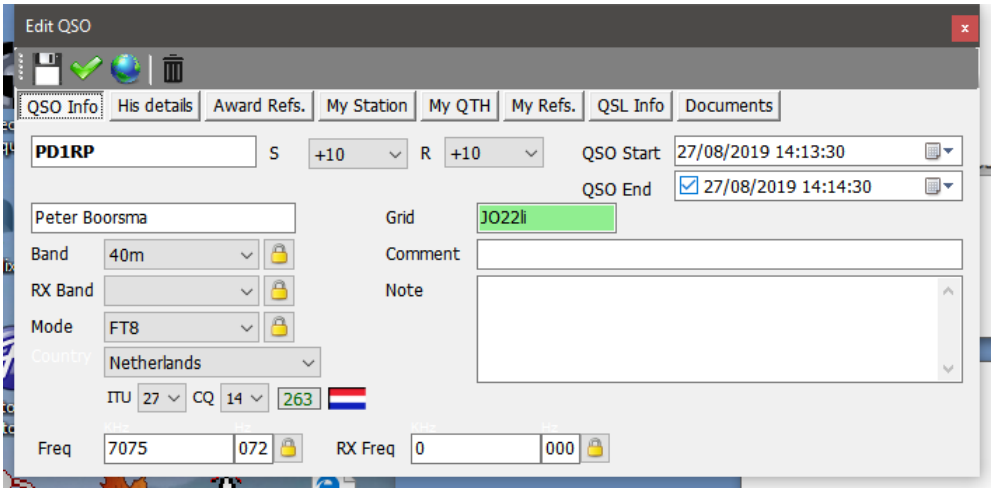
The 'Refresh' button at the bottom left side of screen, updates/refreshes the items displayed in the grid.

Select/Deselect

Located at the bottom of the screen this button either selects all of the entries displayed or deselects the entries displayed/selected by alternate clicks.

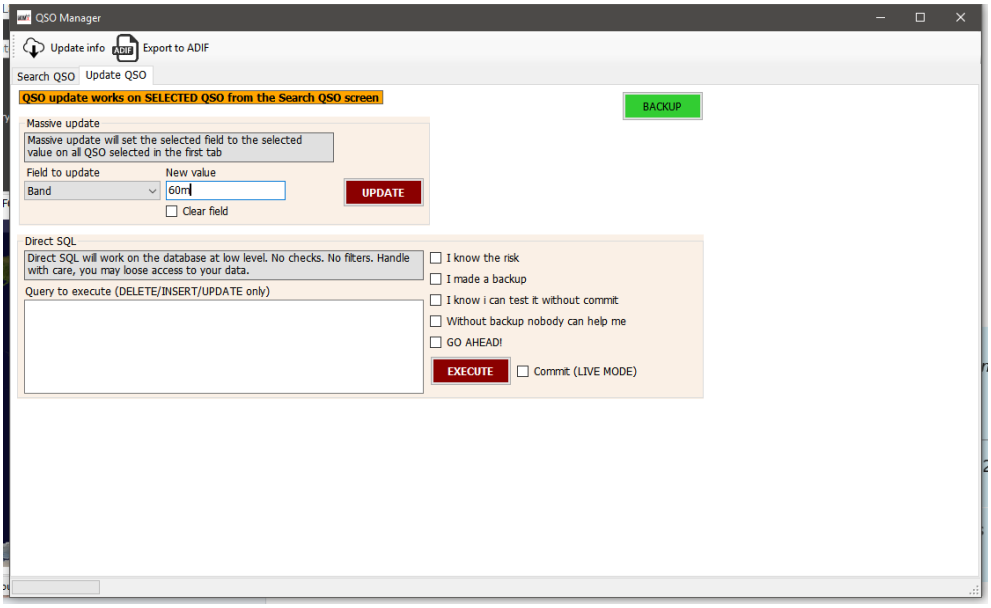
Editing a QSO

Double clicking or right clicking a QSO and selecting 'Edit' will open the editing window for the QSO



Bulk Editing

First filter and select the QSO(s) to be bulk edited then click the 'Update QSO' tab at the top of the main pane.



Select the field to be edited and enter a new value for the field - Click 'Update'

Direct SQL Updates

Alternatively the advanced user can use the Direct SQL method of updating but this should be used with caution and a BACKUP is essential before updating.

To prevent accidental updates the series of check boxes on the right must all be checked, the 'Execute' can then be clicked to do the SQL updates

QSO Confirmations

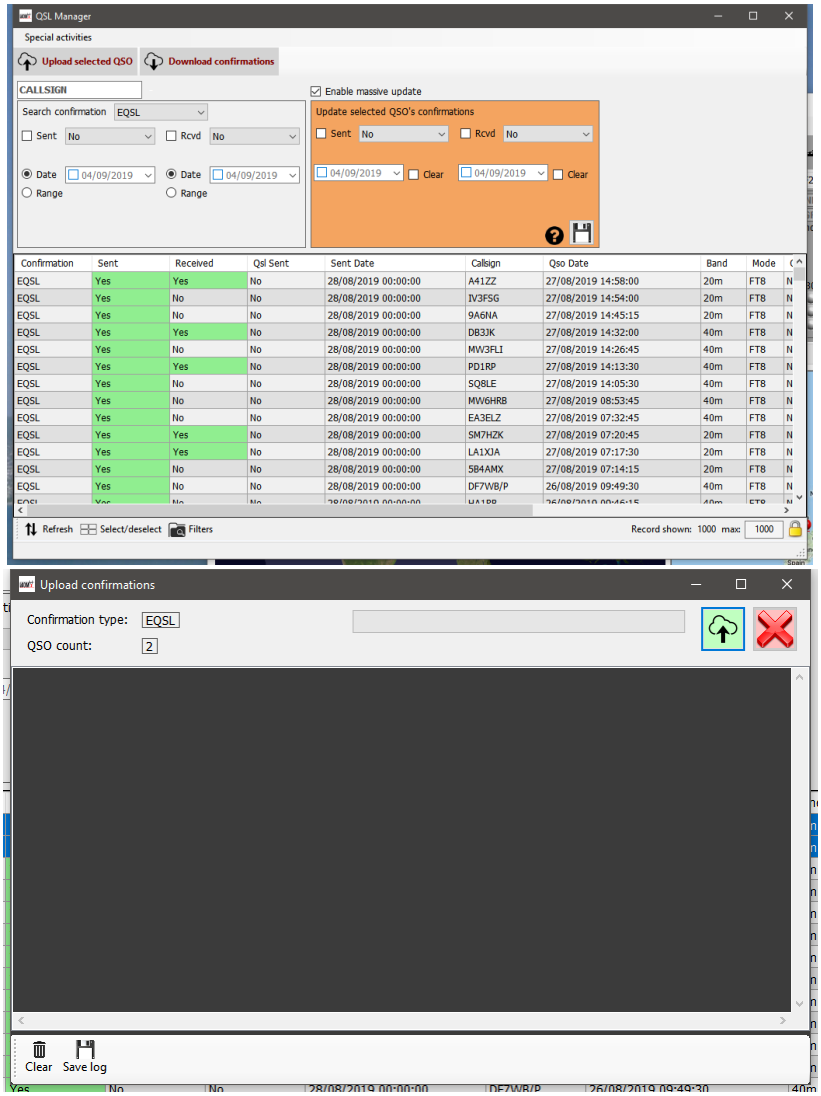
QSO confirmations are all managed by the 'QSL Manager' located in the 'utilities' menu.

Outbound and inbound QSO confirmations by QSL Card, eQSL, LOTW and outbound only to QRZ.com, HamQTH, HRDLog, Clublog because those online logs do not provide a method of automatically retrieving data, it can only be done by a manual download and import of ADIF files

Automatic upload of confirmations in real time as the QSO is entered is achieved as detailed in the section 'QSO automatic upload to online logs'

Upload to online logs from the QSL Manager

- Select the type of confirmation in the 'Search confirmation' menu
- Select the QSO's to be uploaded
- Click the 'Upload selected QSO's' button at the top of the QSL manager window
- Click the green 'Upload' button in the resulting upload screen

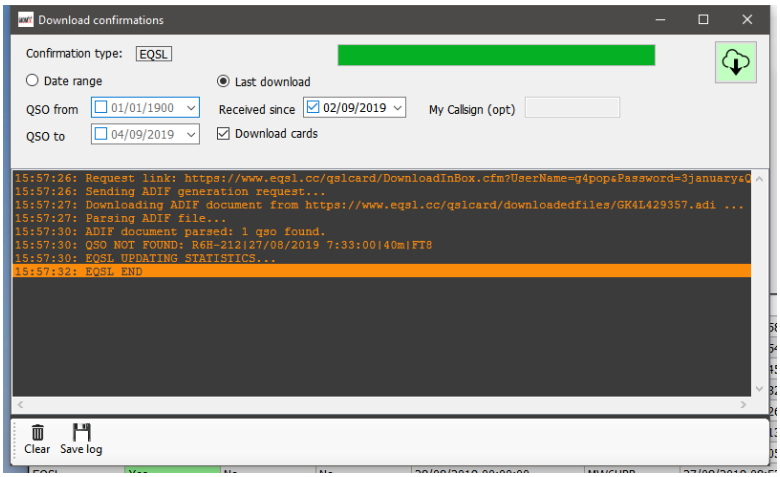


An upload of the complete logbook to Clublog is possible by selecting **'Special activities'** at the top of the QSL Manager screen which will purge all existing records held for the user at Clublog and replace them with the uploaded records - **Use with caution!**

Download QSO confirmations

To download confirmations from eQSL or LOTW

- Select either eQSL or LOTW from the 'Search Confirmation' menu
- Click the 'Download confirmations' button at the top of the window
- Select either a date range or Last download received date
- In the case of eQSL check the box 'Download cards' if records of the eQSL cards are required
- Click the green 'Download' arrow at the top right corner of the window

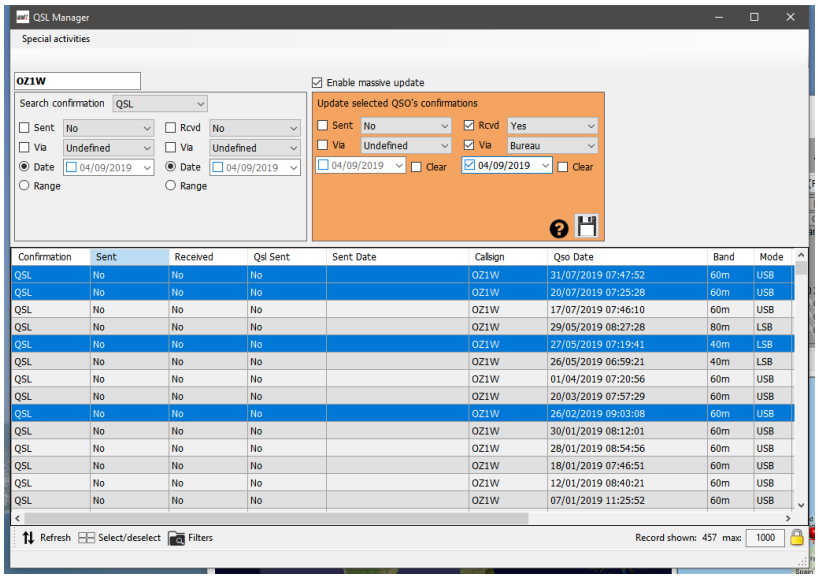


A progress and results report is displayed in the main section of the download screen and can be saved by clicking on the floppy disk 'Save' icon at the bottom left corner.

Recording QSL cards

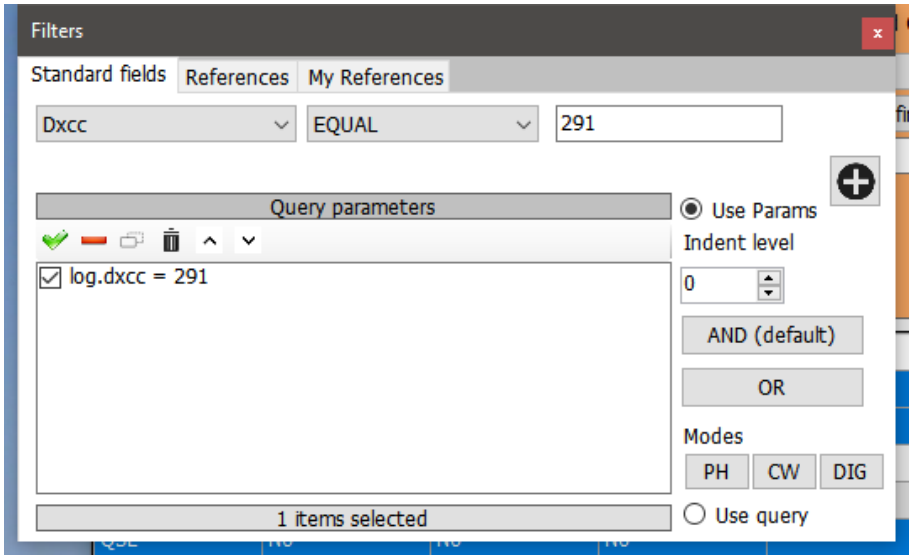
To manually enter QSL cards received by post or from the bureau

- Select 'QSL' in the 'Select confirmation' field
- Enter the call of the card received in the 'Call sign' field at the top of the window
- Check the box 'Enable massive update'
- Select the QSO's that are confirmed by the card
- Complete the fields on the right of the cream update pane
- Click the floppy disk 'Save' icon



Updating SENT cards can be achieved in a similar manner by completing the left hand side of the Cream coloured pane marked 'Sent'

Search for QSO's by date, date range, sent and received status is done in the search pane on the left, more complicated searches are achieved by using the 'Filter' facility at the bottom of the window.



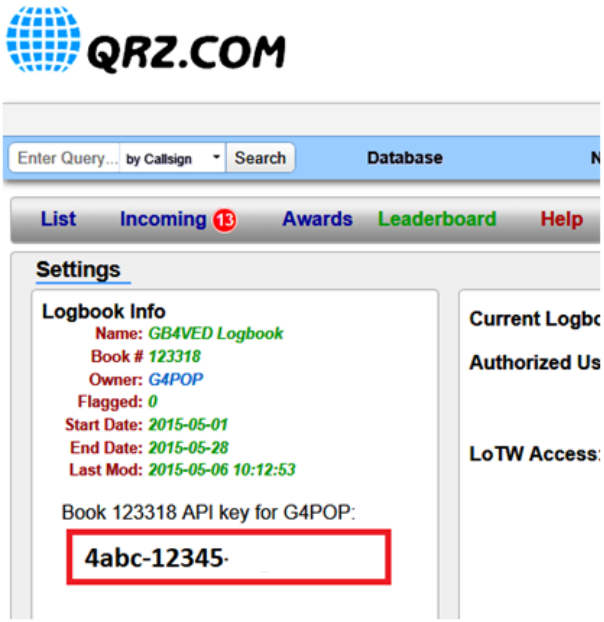
QSO automatic upload to online logs

In the Settings/Program configuration/external services tab select the on-line logs that are required to automatically upload. (QRZ, Clublog, HRDLog, EQSL, HamQTH and LOTW)

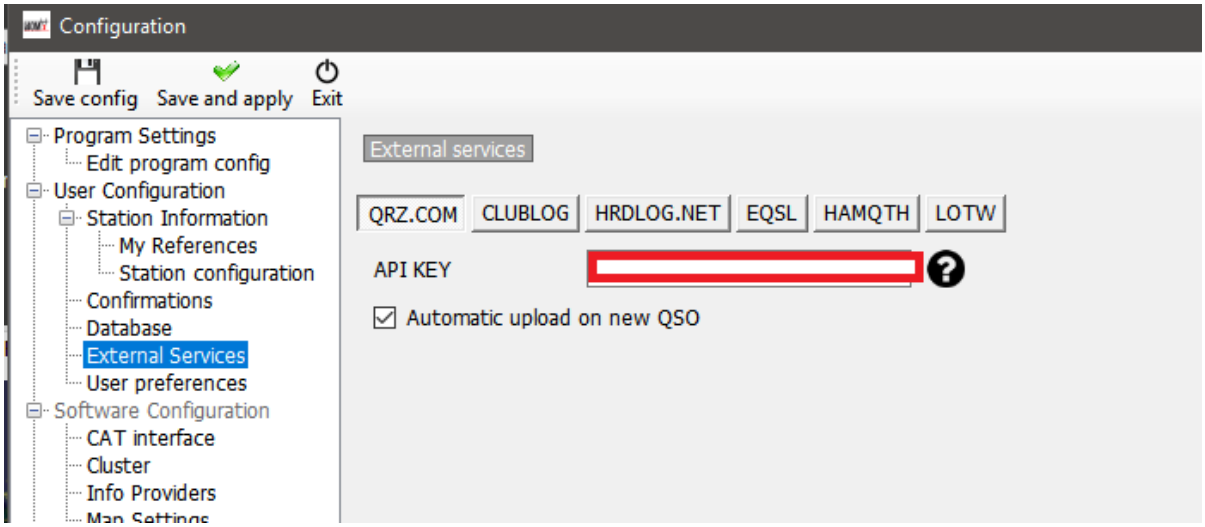
QRZ.com

The user MUST be a subscribing XML member of QRZ to use the auto upload API provided by QRZ.

The QRZ API Key can be found by logging into the QRZ users web page and selecting My Logbook/settings, the API key is shown on the left hand side in the Logbook Info pane.

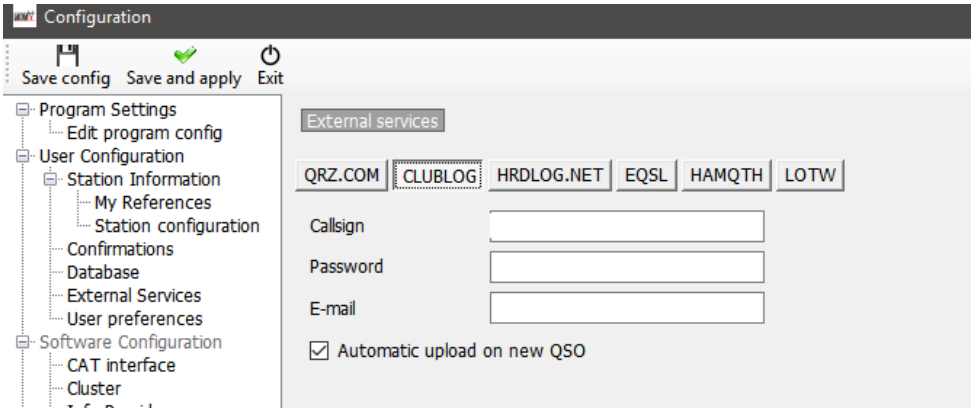


Copy and paste the API Key into the 'API Key' field as shown below and check the box 'Automatic upload on new QSO.



Clublog

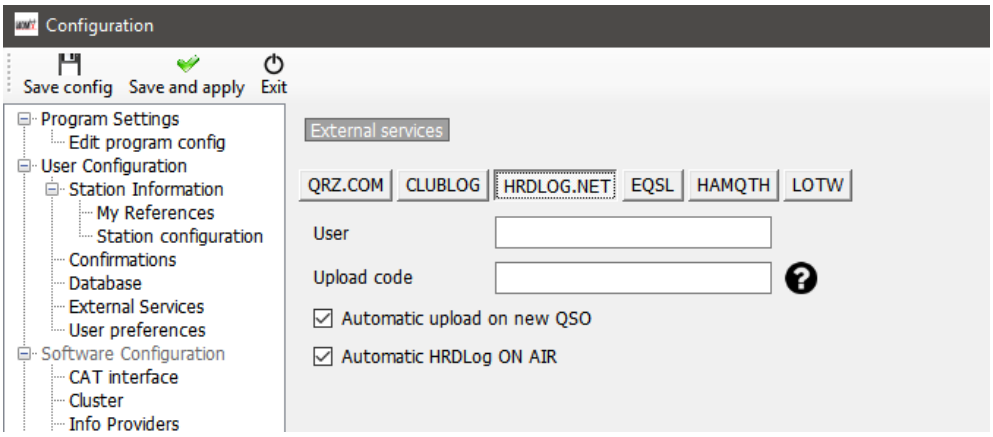
Complete the required fields and check the box 'Automatic upload on new QSO.



HRDLog

Obtain the upload code from the HRDLog web site and enter it with the call sign and check the box 'Automatic upload on new QSO'

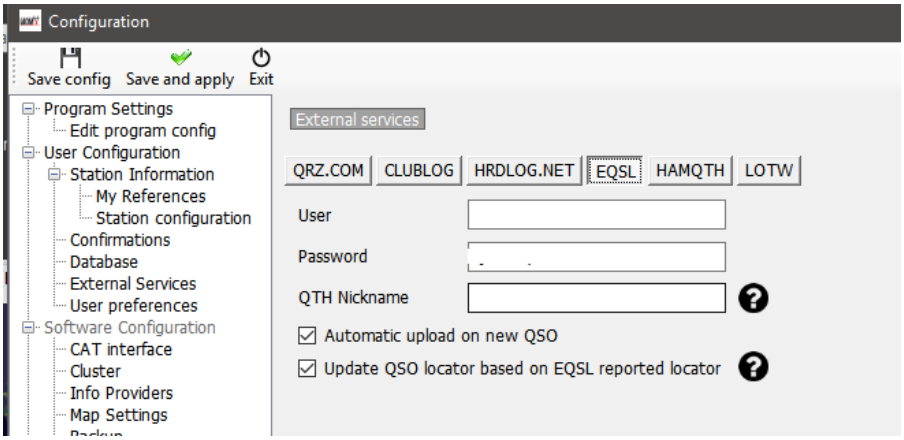
If it is required to be visible to friends when on air in the HRDLog web page also select the 'Automatic HRDLog on air' box.



HRDLOG Upload code is NOT your HRDLog password. You can find your upload code on your HRDLog user settings page.

EQSL

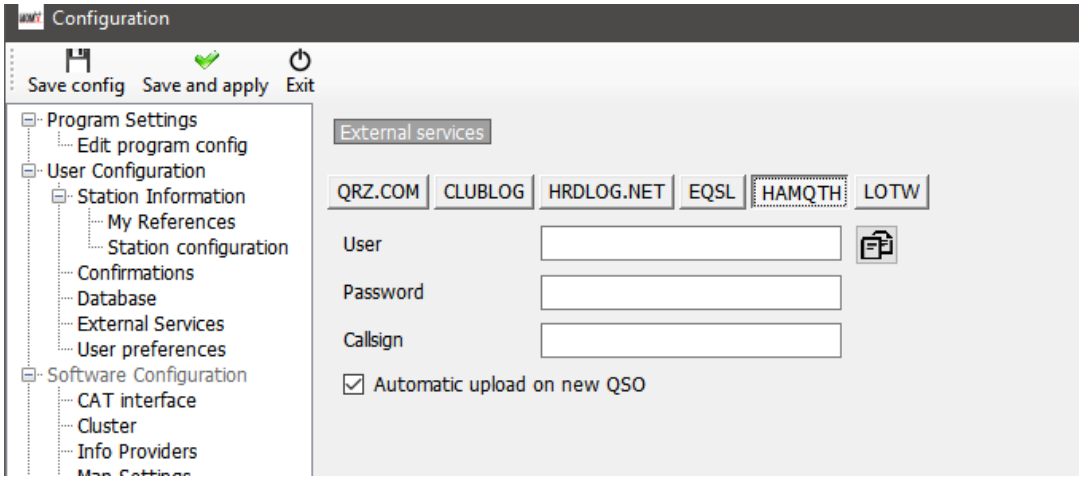
Complete the required fields and check the box 'Automatic upload on new QSO.



Also check the 'Update QSO Locator based on EQSL' to use the locator from EQSL

HamQTH

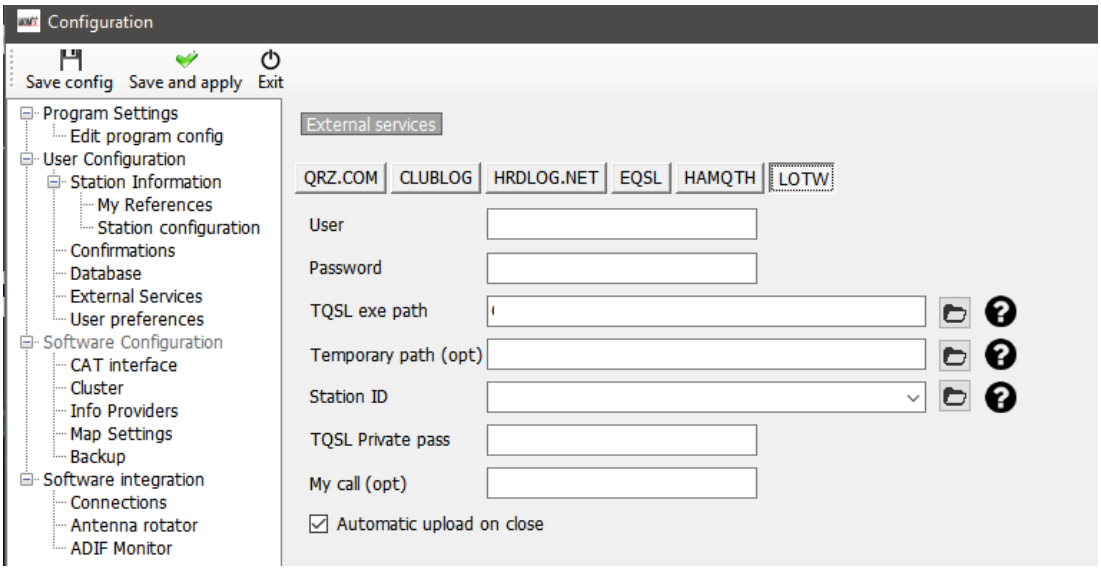
Complete the required fields and check the box 'Automatic upload on new QSO.



LOTW

Complete the required fields and check the box 'Automatic upload on new QSO'.

- The TQSL program must be installed and a valid certificate recorded
- The 'Temporary path' MUST be completed
- The 'Station ID' MUST match that for the certificate being used by TQSL



When all on line log details are completed click the 'SAVE and APPLY' button

Automatic upload to external sources will happen in a range of 0 to 30 seconds after saving by background process.

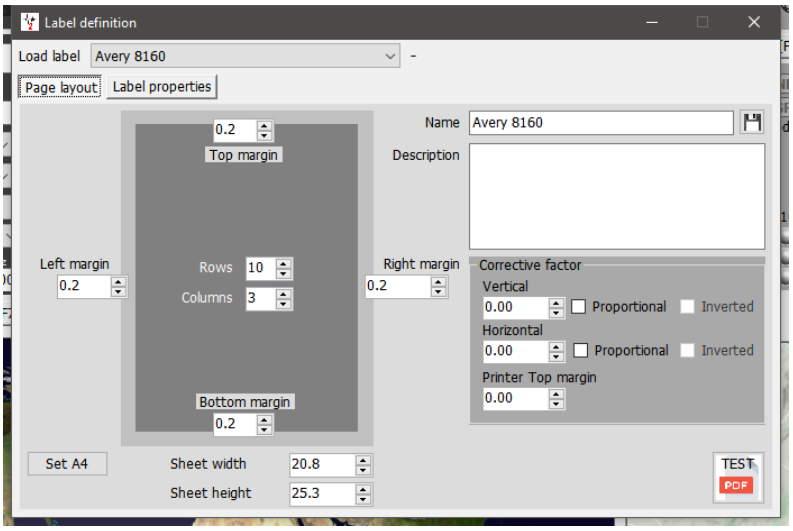
Log4OM will provide an option to add 1 minute minimum delay after the QSO is saved, to allow users to delete erroneous QSO saved

Labels

Log4OM provides a label print and design feature for QSL card and address labels.

Label design

Label design is available in the 'Utilities' menu, some standard label templates are provided but new templates are easily designed using the Utilities/Label Definition menu.



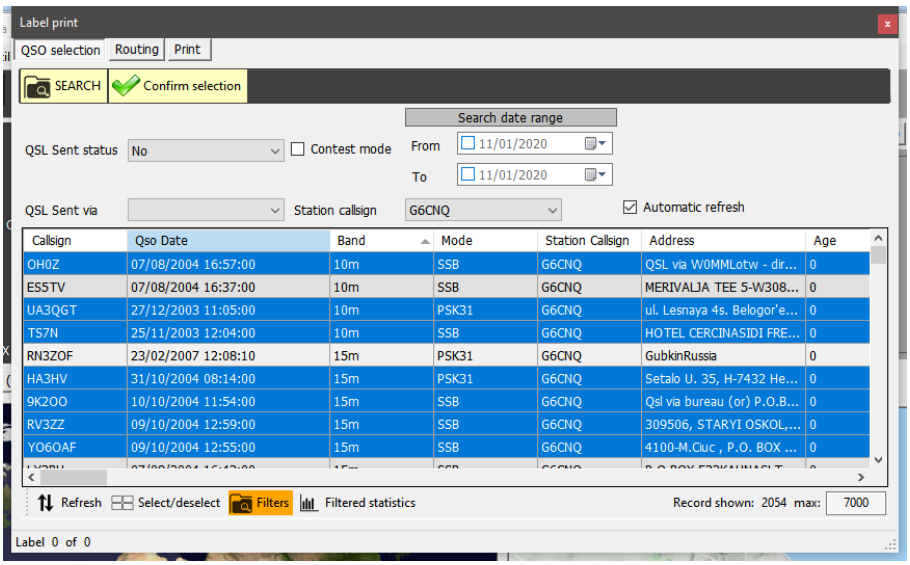
Once a template has been designed a test print facility is provided to check the design fits the label stationary by clicking the 'Test PDF' button.

It is suggested that a test print to normal copy paper is made and that then be placed over the label stationary and held up to a light source to check for layout correctness instead of printing tests directly to expensive label stationary.

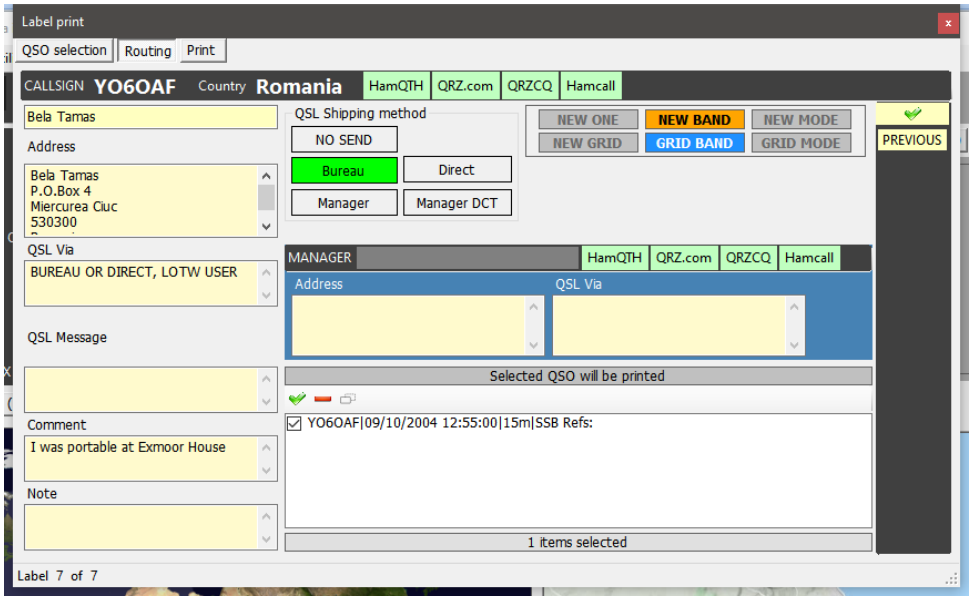
QSL Label Printing

The Label print menu can be selected from the utilities menu.

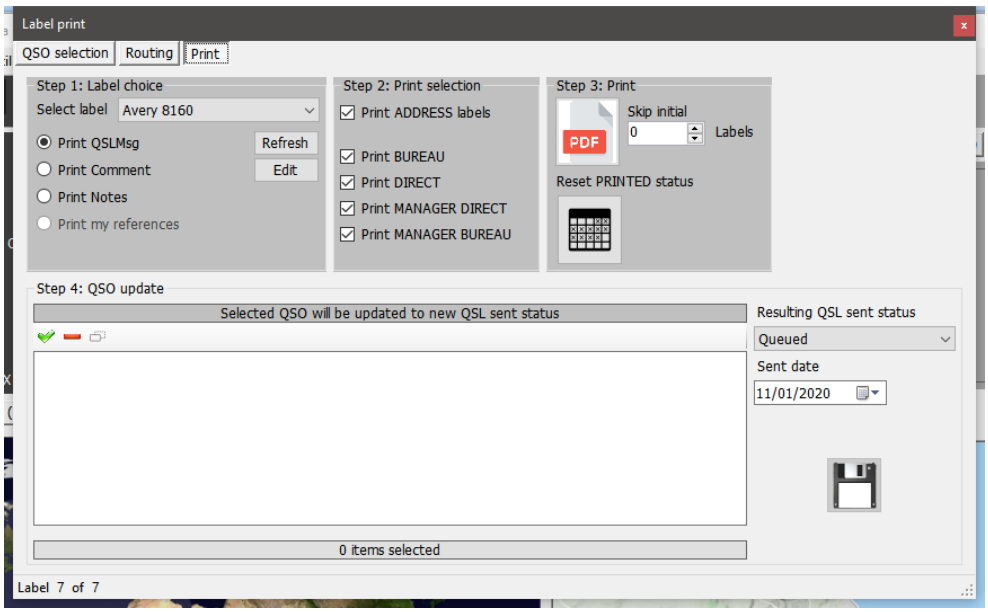
- Select the QSO's for which labels are required by using the various filtering options in the QSO selection tab i.e. Sent status, date range, QSL method or Station call sign or on any other field by using the filters. (Selection by station call sign is particularly useful when operating special event call signs or contest calls.)
- Once the QSO's are selected highlight them for printing



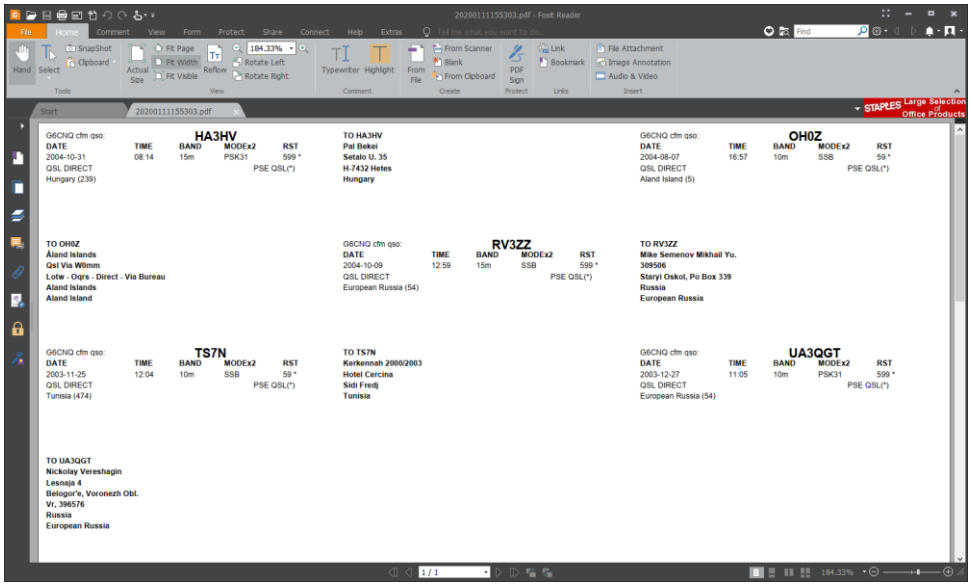
- Click 'Confirm selection'
- Ensure the information is correct for each QSO by using the on line lookup choices at the top of the window
- Select the desired QSL method (No send, Bureau, Direct, Manager or Manager DCT)
- Click the Green check mark at the top right of the window to confirm the selection and details



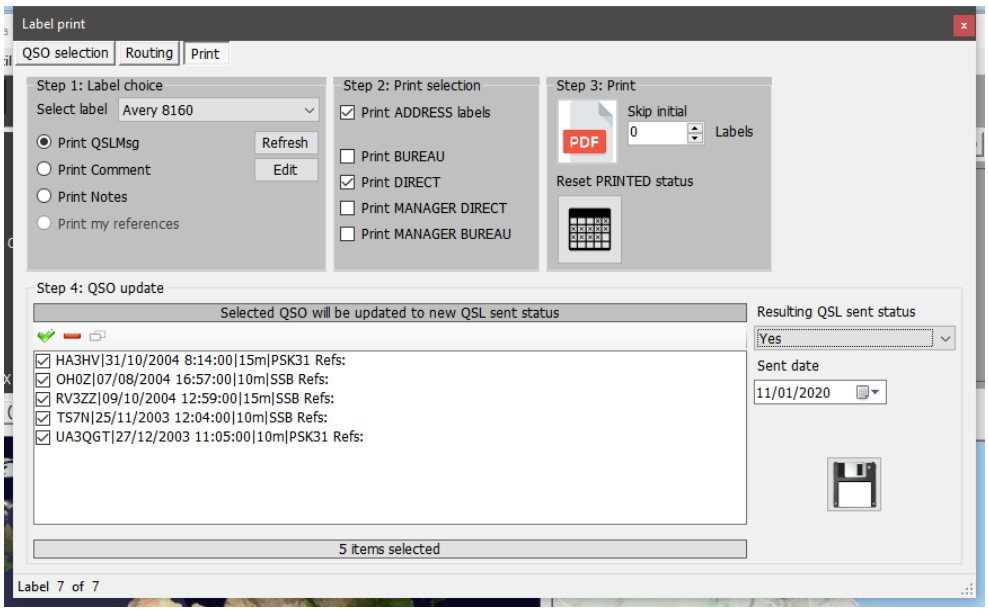
- When all have been marked as selected click the 'Print' tab
- Select the required label stationary and additional print details (Print QSL Msg, Comment, Notes etc)
- Check the required print selections (Direct, Print address labels etc.)
- Select the position of the first label to be printed
- Click the PDF button



- The PDF viewer will open and display the labels to be printed as below



- Assuming the results are acceptable print the labels.
- Select the QSO sent status to be marked for each of the QSO's listed
- Select the date for the QSO's to be marked as QSL sent date
- Click the 'Floppy disk' save icon and each QSO will have its QSL sent status and sent date updated and saved.



The operation can be aborted by clicking on the 'Reset PRINTED status' button

Statistics analysis

Log4OM V2 provides detailed statistical analysis of the database in a variety of ways

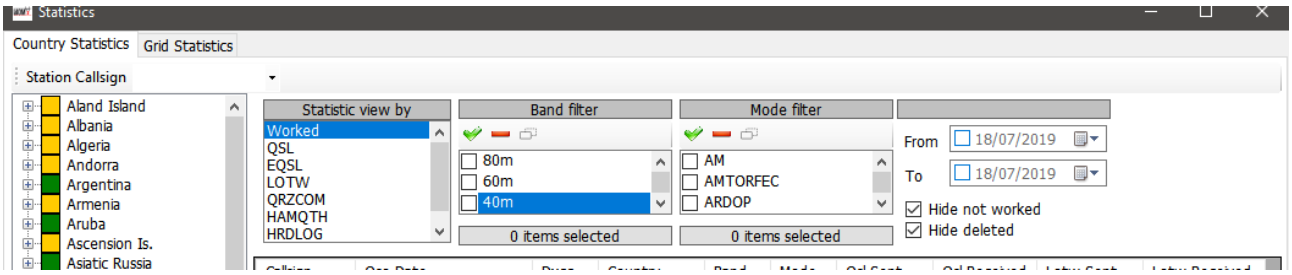
Statistics for Counties worked and confirmed

The status of a confirmation for a county (DXCC Entity) is displayed in the statistics form (View/Statistics)

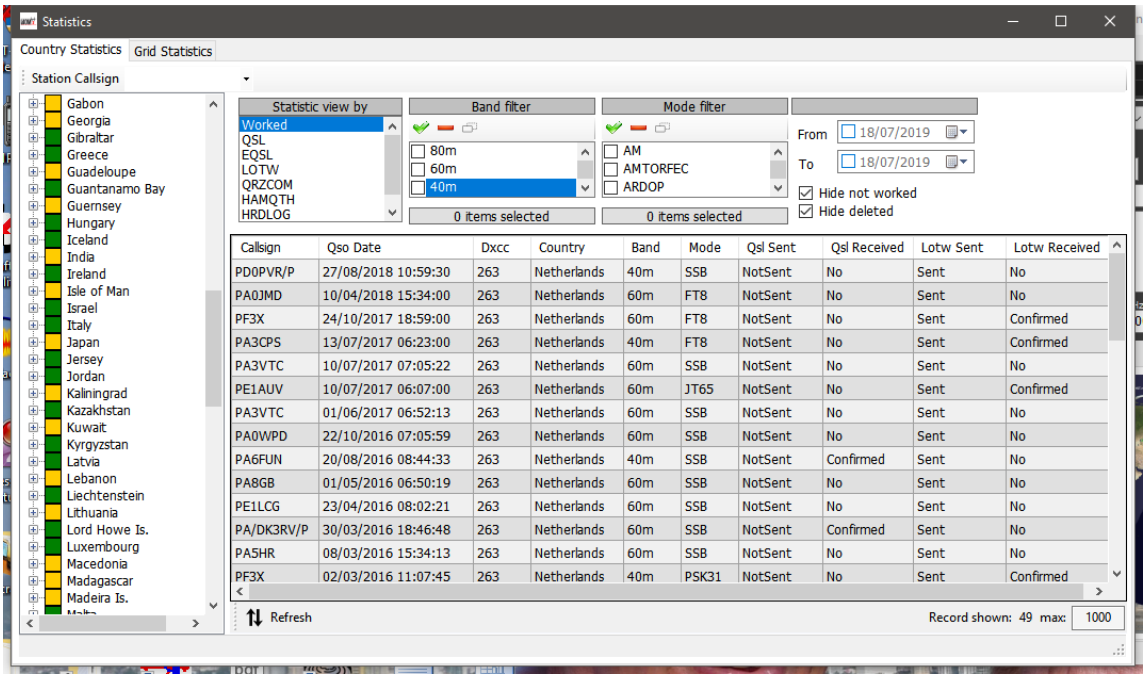
These statistics can be filtered by the following methods:

- Confirmation type - QSL, EQSL, LOTW etc
- Band or multiple bands
- Mode or multiple modes
- Date range
- Include or display deleted entries and un-worked countries

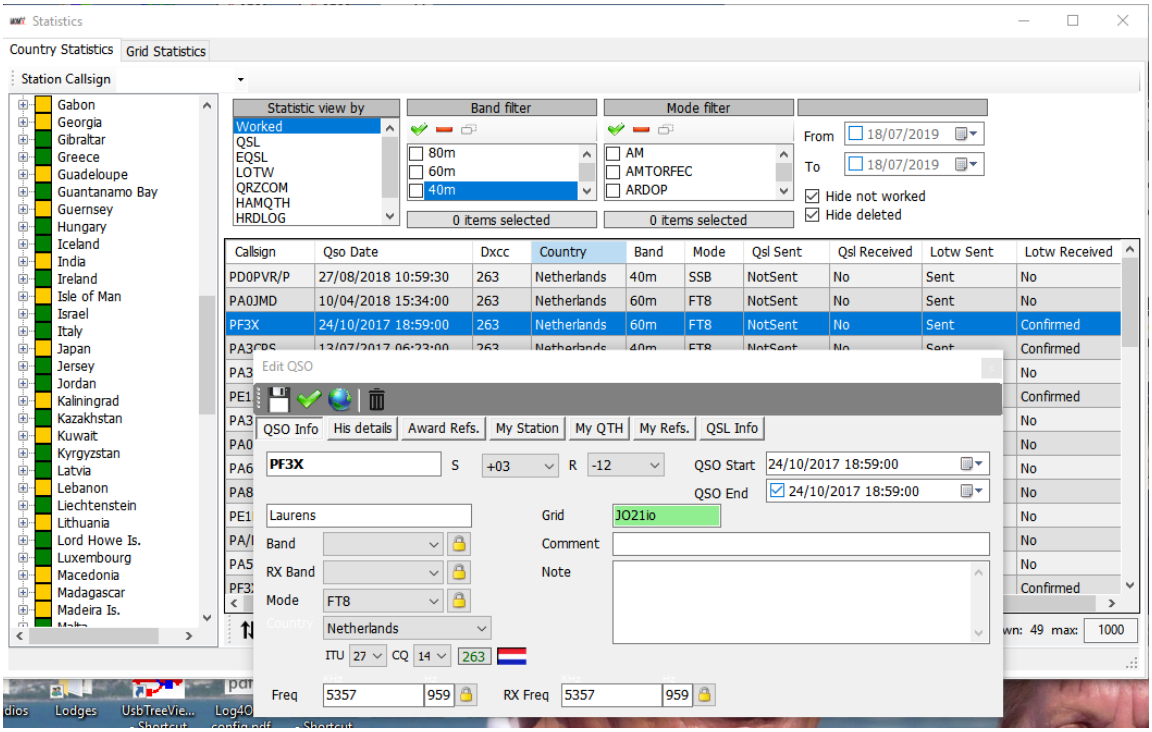
These filters are applied by using the selection menus at the top of the window.



Selecting a country in the left hand country list will display all contacts with that country.



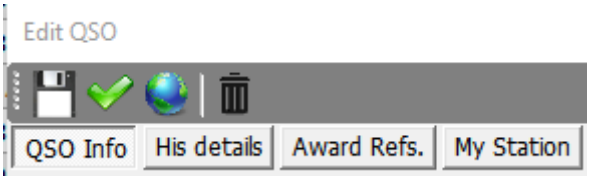
Double clicking on an entry in the list will open the editor window.



Editing data

At the top of the editor window are 4 icons:

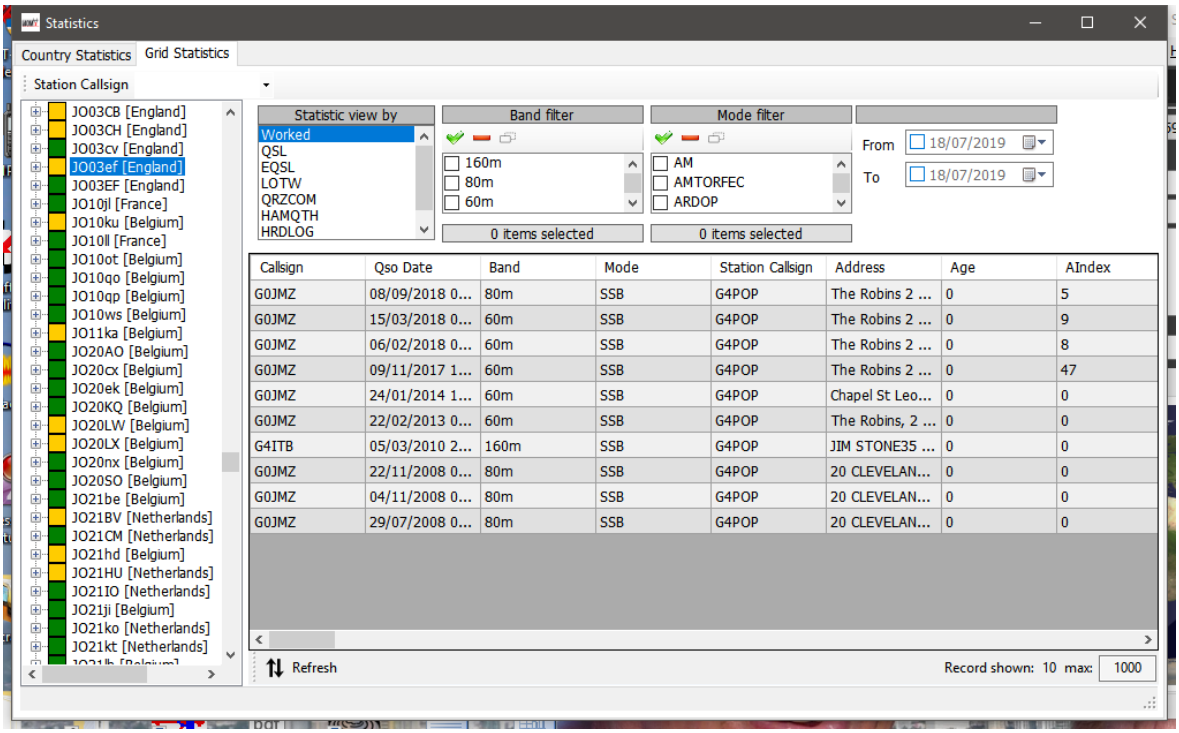
- The extreme left icon like a floppy disk saves any changes made
- The second, check mark icon saves and changes and closes the window
- The third icon which is globe shaped performs an on line lookup of the call sign and updates any missing information.
- The right hand icon resembling a dustbin deletes the record.



The various tabs provide editing of the other stations data, the users data and QSO information, including updating QSL confirmations and award references.

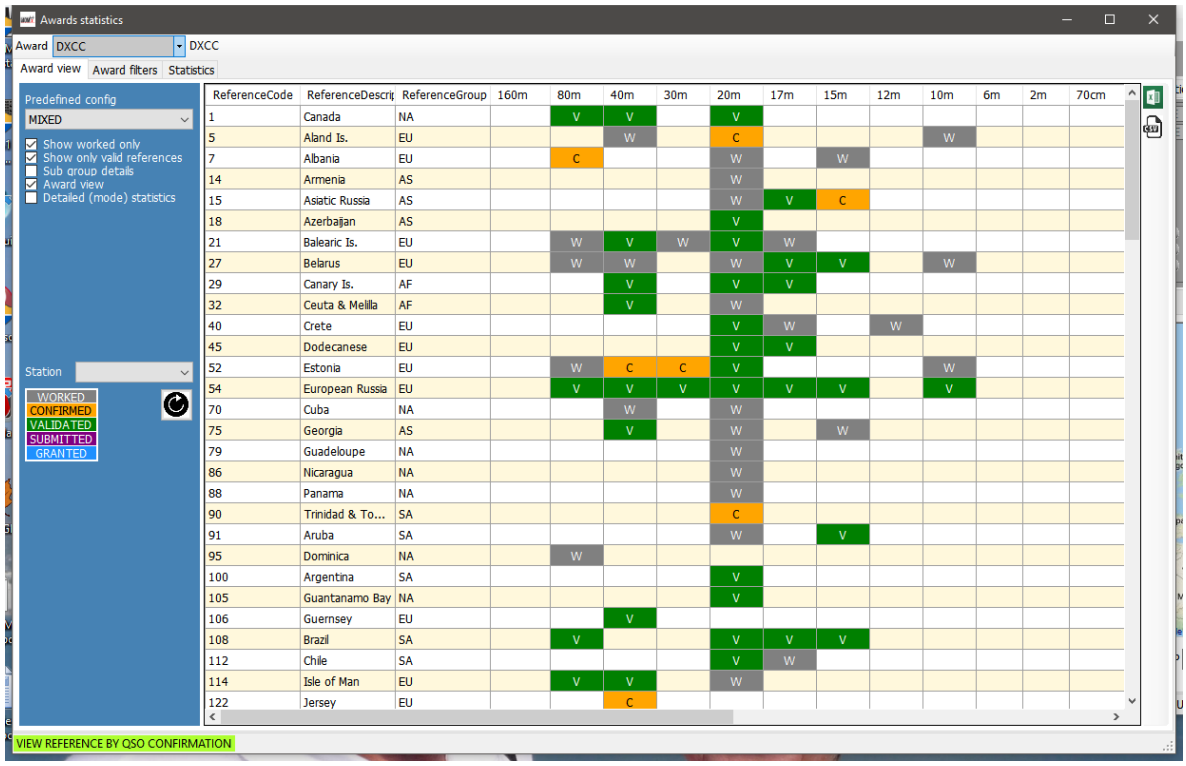
Statistics for Grid references worked and confirmed

The grid statistics tab in the main window provides similar information and filtering possibilities to the countries confirmations grid for Maidenhead grid References.

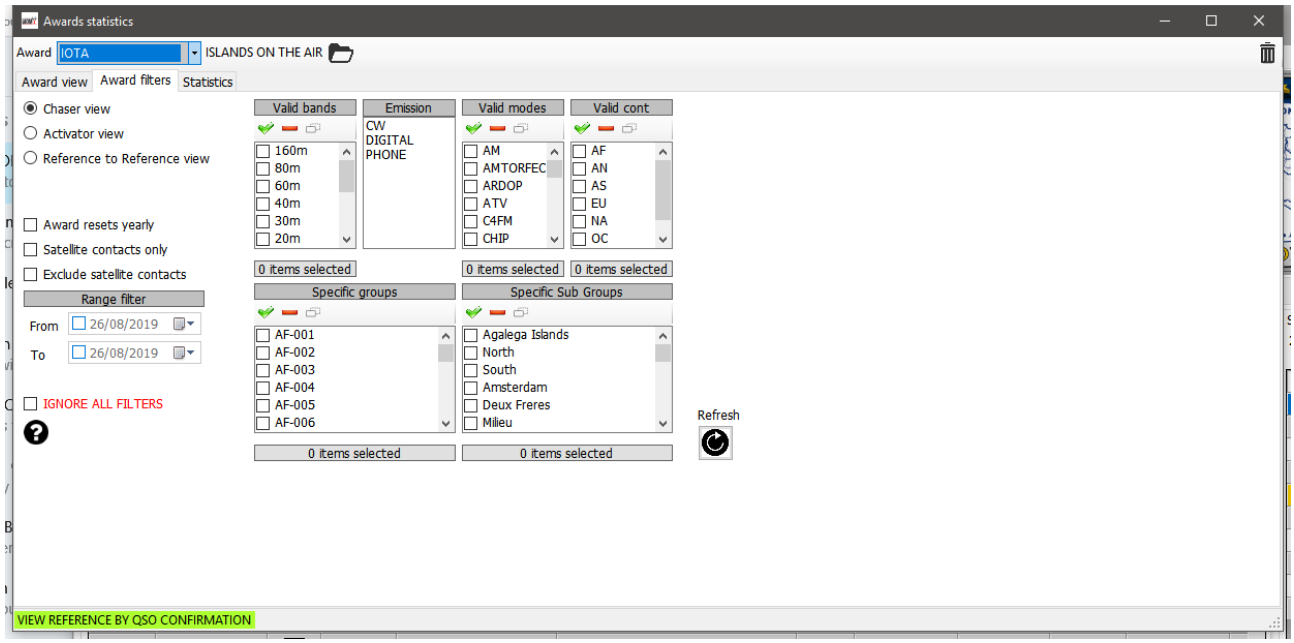


Award statistics

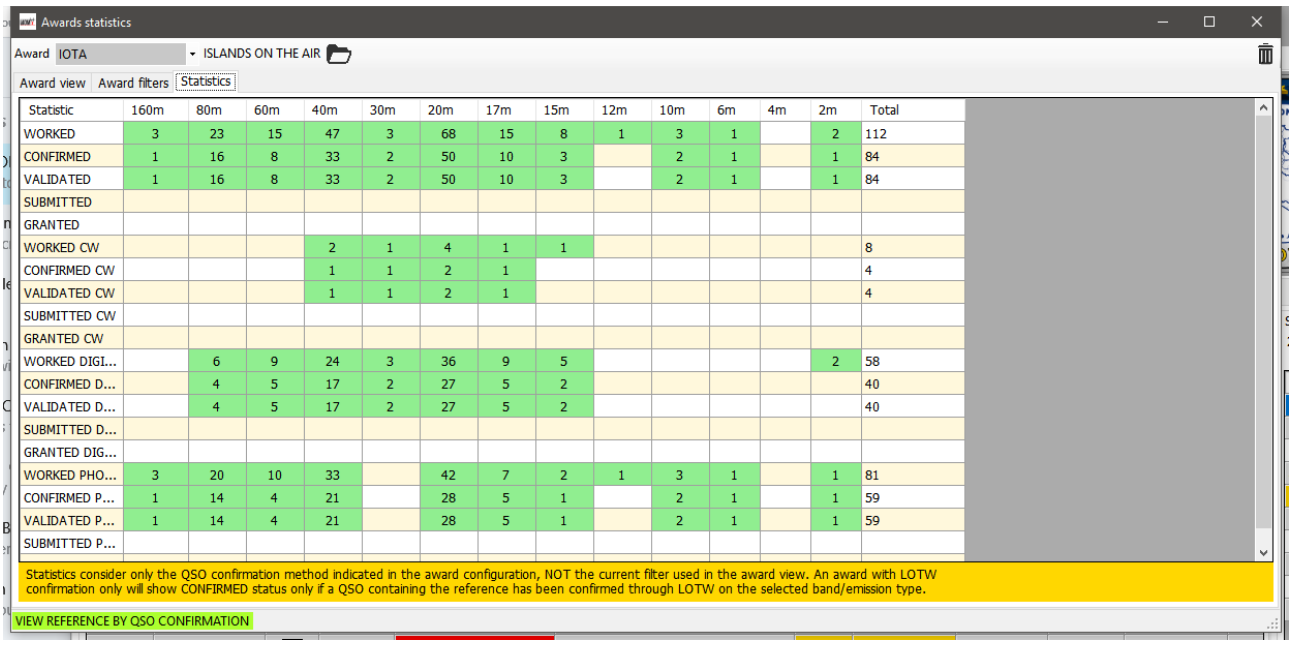
The status of award confirmations, submissions and credit is displayed in the Awards Statistics form (View/Awards Statistics) by selecting DXCC from the awards menu and the type of DXCC award from the Preferred config. menu.



The awards filters tab enables advanced filtering of awards (Not major default awards like DXCC etc)



Complete statistics for confirmation and award credited status is displayed in the 'Statistics' tab

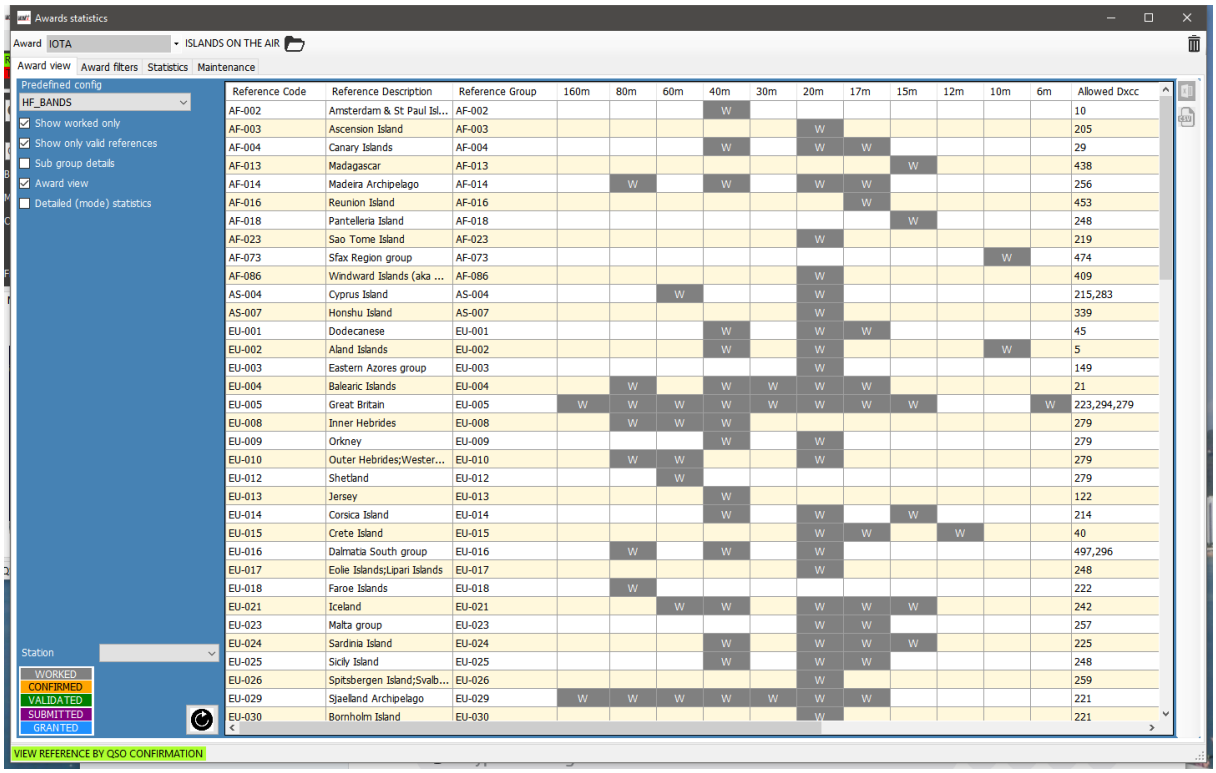


Statistic	160m	80m	60m	40m	30m	20m	17m	15m	12m	10m	6m	4m	2m	Total
WORKED	3	23	15	47	3	68	15	8	1	3	1		2	112
CONFIRMED	1	16	8	33	2	50	10	3		2	1		1	84
VALIDATED	1	16	8	33	2	50	10	3		2	1		1	84
SUBMITTED														
GRANTED														
WORKED CW				2	1	4	1	1						8
CONFIRMED CW				1	1	2	1							4
VALIDATED CW				1	1	2	1							4
SUBMITTED CW														
GRANTED CW														
WORKED DIGI...		6	9	24	3	36	9	5					2	58
CONFIRMED D...		4	5	17	2	27	5	2						40
VALIDATED D...		4	5	17	2	27	5	2						40
SUBMITTED D...														
GRANTED DIG...														
WORKED PHO...	3	20	10	33		42	7	2	1	3	1		1	81
CONFIRMED P...	1	14	4	21		28	5	1		2	1		1	59
VALIDATED P...	1	14	4	21		28	5	1		2	1		1	59
SUBMITTED P...														

Viewing confirmations in awards that rely on upload management

Some awards do not require confirmation by the normal methods of paper QSL's, LOTW, eQSL etc because the awards are confirmed and credited by an upload to the award manager only e.g. IOTA and SOTA.

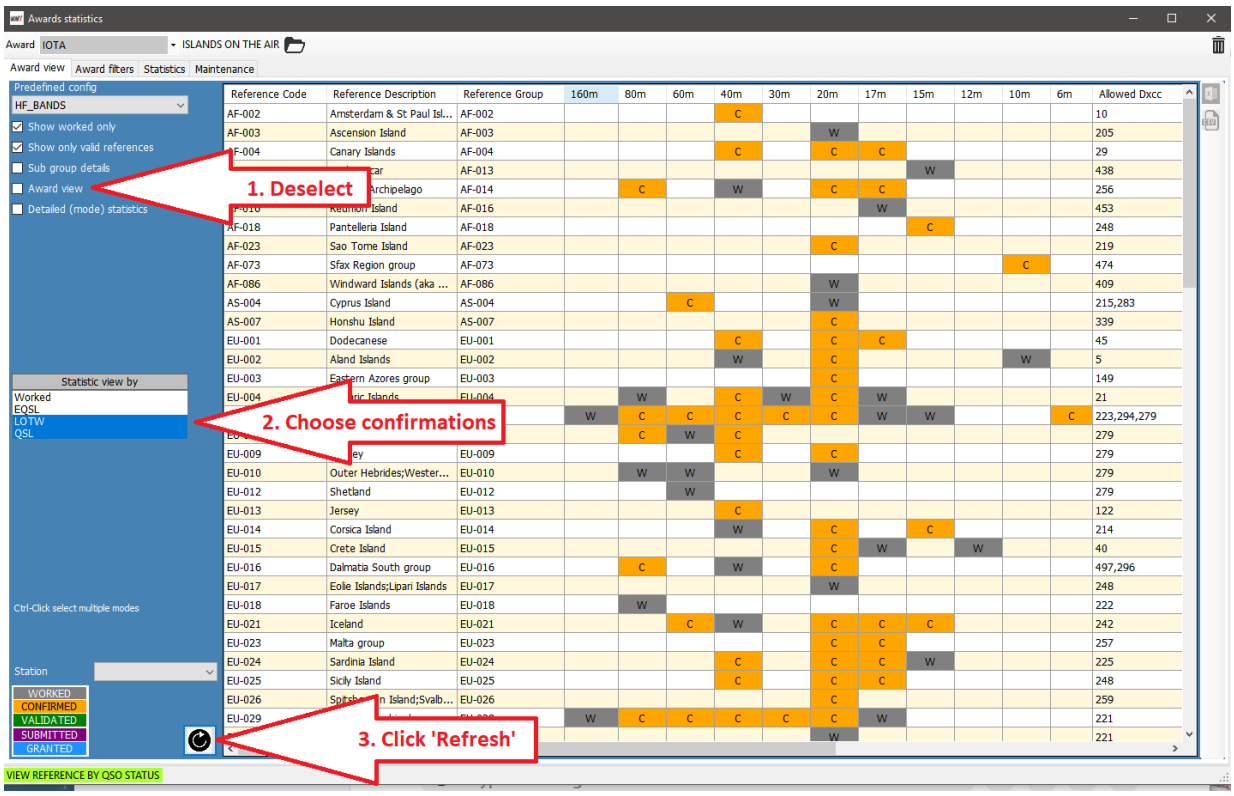
With these awards the display will only provide a grey 'Worked' status cell for the references worked as below.



Reference Code	Reference Description	Reference Group	160m	80m	60m	40m	30m	20m	17m	15m	12m	10m	6m	Allowed Dxcc
AF-002	Amsterdam & St Paul Isl...	AF-002				W								10
AF-003	Ascension Island	AF-003						W						205
AF-004	Canary Islands	AF-004				W		W	W					29
AF-013	Madagascar	AF-013								W				438
AF-014	Madeira Archipelago	AF-014		W		W		W	W					256
AF-016	Reunion Island	AF-016							W					453
AF-018	Pantelleria Island	AF-018								W				248
AF-023	Sao Tome Island	AF-023						W						219
AF-073	Sfax Region group	AF-073										W		474
AF-086	Windward Islands (aka ...	AF-086						W						409
AS-004	Cyprus Island	AS-004			W			W						215,283
AS-007	Honshu Island	AS-007						W						339
EU-001	Dodecanese	EU-001				W		W	W					45
EU-002	Aland Islands	EU-002				W		W				W		5
EU-003	Eastern Azores group	EU-003						W						149
EU-004	Balearic Islands	EU-004		W		W	W	W	W					21
EU-005	Great Britain	EU-005	W	W	W	W	W	W	W	W			W	223,294,279
EU-008	Inner Hebrides	EU-008		W	W	W								279
EU-009	Orkney	EU-009				W		W						279
EU-010	Outer Hebrides;Wester...	EU-010		W	W			W						279
EU-012	Shetland	EU-012			W									279
EU-013	Jersey	EU-013				W								122
EU-014	Corsica Island	EU-014				W		W		W				214
EU-015	Crete Island	EU-015						W	W		W			40
EU-016	Dalmatia South group	EU-016		W		W		W						497,296
EU-017	Eolie Islands;Lipari Islands	EU-017						W						248
EU-018	Faroe Islands	EU-018		W										222
EU-021	Iceland	EU-021			W	W		W	W	W				242
EU-023	Malta group	EU-023						W	W					257
EU-024	Sardinia Island	EU-024				W		W	W	W				225
EU-025	Sicily Island	EU-025				W		W	W					248
EU-026	Spitsbergen Island;Svalb...	EU-026						W						259
EU-029	Sjaelland Archipelago	EU-029	W	W	W	W	W	W	W					221
EU-030	Bornholm Island	EU-030						W						221

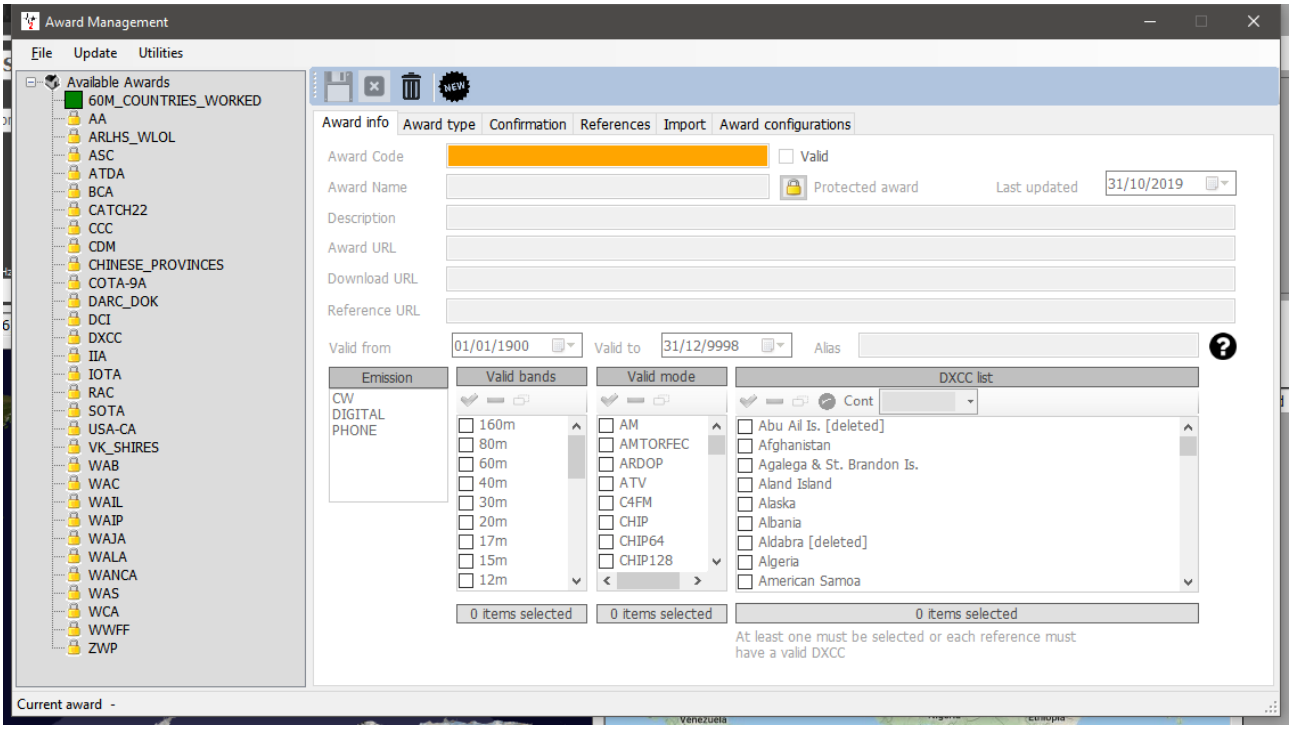
It is possible to choose to display confirmations by:

1. By de-selecting the 'Award view' check box
2. Selected the confirmation types from the 'Statistics view by' menu
3. Click on the refresh button.

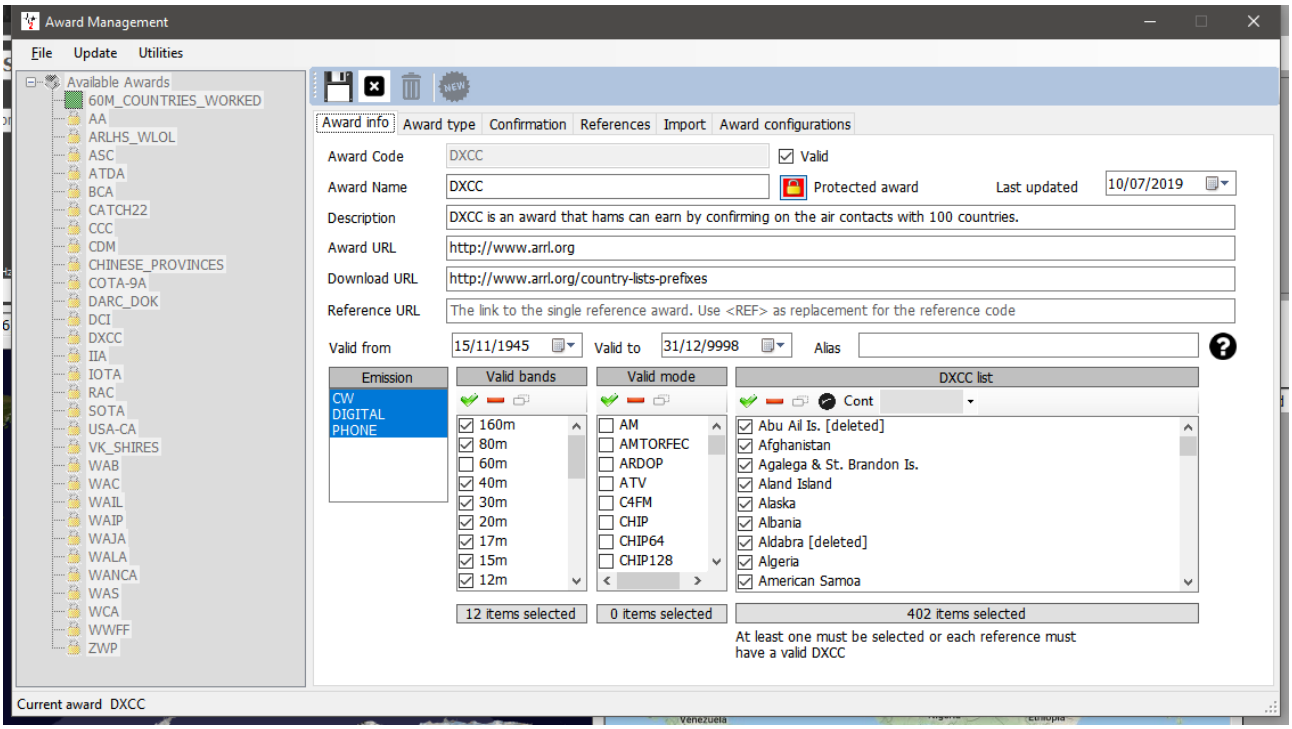

Awards statistics
Award
IOTA
ISLANDS ON THE AIR
Award view
Award filters
Statistics
Maintenance
Predefined config
HF_BANDS
Show worked only
Show only valid references
Sub group details
Award view
Detailed (mode) statistics
1. Deselect
Statistic view by
Worked
EQSL
LOTW
QSL
2. Choose confirmations
Ctrl-Click select multiple modes
Station
WORKED
CONFIRMED
VALIDATED
SUBMITTED
GRANTED
3. Click 'Refresh'
VIEW REFERENCE BY QSO STATUS

Awards Manager - Basic use

It is possible to edit, create, import and export awards using the Awards Manager (Utilities/Award manager)



Double left clicking any award in the left hand pane will open it ready for editing



Awards can be backed up, imported and exported using the File menu and updated via the update menu while the Utilities menu provides Excel file management for merging files.

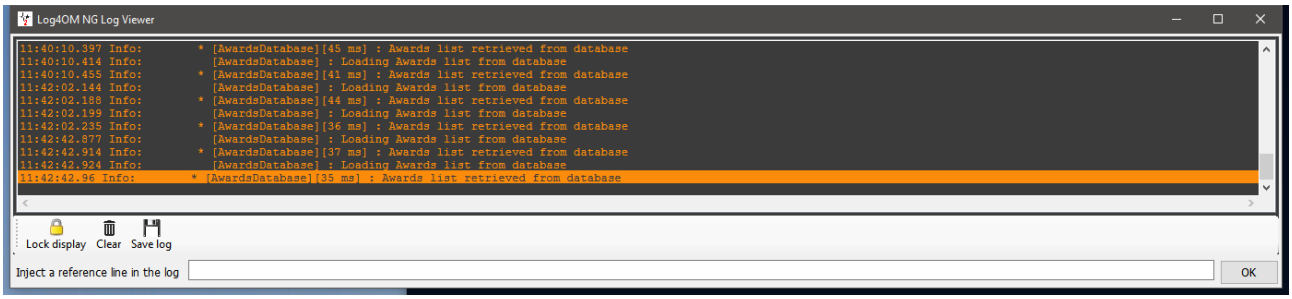
Exporting an award

Select the award by double clicking on it in the left hand pane.

- Select File/Export award
- Select a location, provide a name and save.

Importing an Award

- Go to Utilities/Award manager then File/Import award - select file - close award manager.
- Go to Settings/maintenance/rescan QSO References (This will take some time but you can watch its progress in the Help/Real time log window



- When the bottom line says 'Award update complete', the log window can be closed

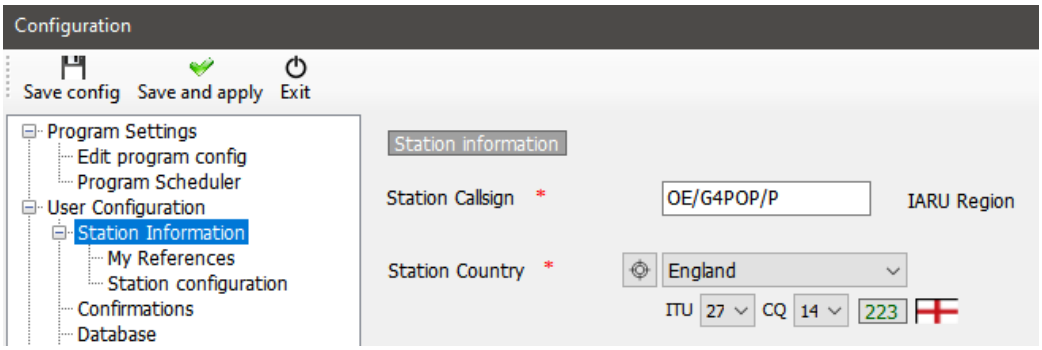
SOTA Awards

There are occasions where an operator is activating a summit in another country, because the SOTA summit list is filtered by call sign it will display only references for the country of the actual call sign, not the prefix in use.

Another anomaly is when the activator is in one country but because of location is activating a summit in the adjacent country.

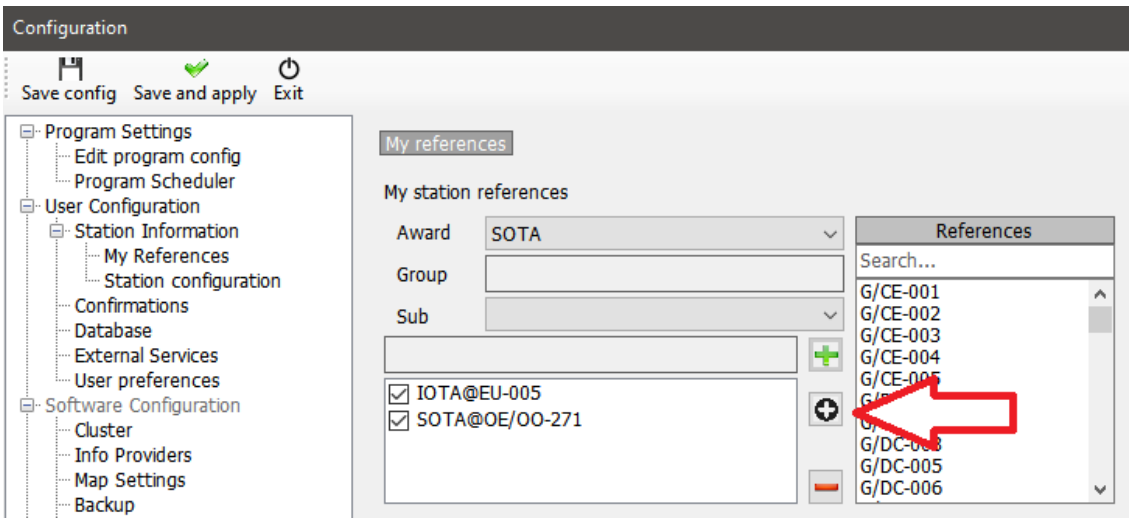
In these instances use the procedure detailed below to enter the activation reference:

1. Change the station call sign in Settings/Program Configuration/station information e.g. OE/G4POP/P



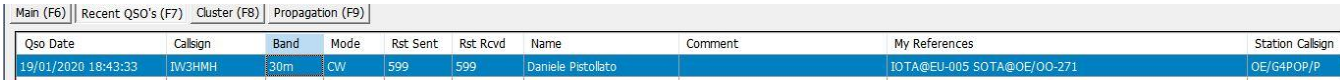
2. In the Settings/Program Configuration/station information/My References selected the SOTA award.

3. Because the list of SOTA references are filtered by the call sign prefix to display just references for that Call sign the required reference will not be listed. Click the Black + (Plus or Add) sign - Enter the Reference then press the enter key on the PC keyboard. That ref will appear in the references box bottom left.



4. Click save and apply

When a contact is made this is the resultant QSO log entry with the correct My SOTA reference and station call sign.



NOTE: After entering the activation QSO's edit the station call sign in Settings/Program Configuration/station information and then uncheck the OE/OO-271 box in Settings/Program Configuration/station information/My References and click save and apply

Awards - For Advanced users

Theory of QSO References

The advanced user will appreciate the reference and confirmation methods used by Log4OM which provide probably the most advanced award management system available.

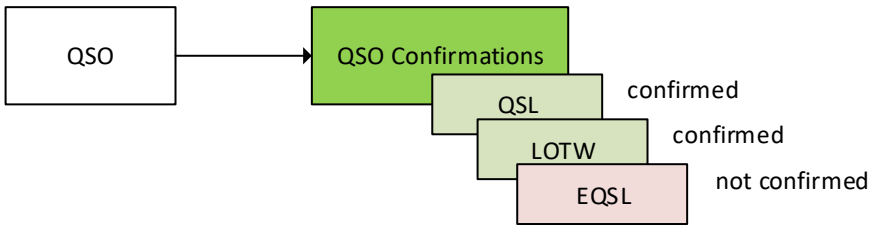
QSO CONFIRMATION

Each QSO is considered as an instant event and is the basis of all Log4OM statistical information.

A QSO has a number of attributes. Country, call sign, start date etc are all basic attributes of the QSO.

The QSO is the basic unit of information and contains real and accurate information about the QSO itself.

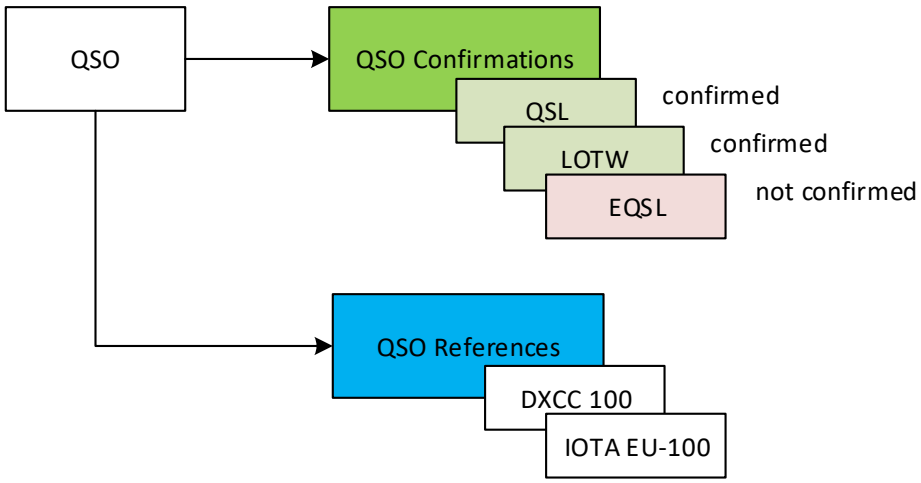
A QSO can receive a CONFIRMATION. A confirmation is proof that the contact described in the QSO itself is real and valid. Confirmations are a concept tied to the QSO itself.



When the user analyses the log through statistics, it is analyzed by grouping different QSO's and extracting the final result of all confirmations according to the filters applied.

QSO REFERENCES

QSO references, there can be more than one, are attributes that indicate that the QSO took place in a given context or that its characteristics identify it within a specific award. These QSO references are specific to the QSO. Aggregation may happen but the reference information is **closely connected** to the QSO.



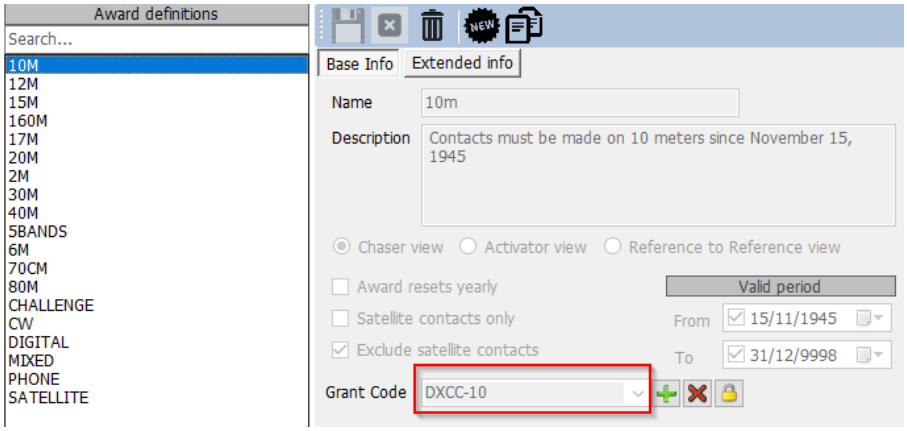
A reference contains a list of information:

AwardCode: The award code of the reference (AC in the ADIF export)
ReferenceCode: The reference code (R in the ADIF export)
ReferenceStatus: The reference status. May assume those values:

- INVALID: when the reference is not valid for some reasons
- UNCONFIRMED: the reference has not been confirmed with required QSO confirmations or external confirmation source
- CONFIRMED: the reference has been confirmed with required QSO confirmations or from an external confirmation source. Reference is not yet validated, so can't be used to request an award (as example, QSL require card checker verification). CONFIRMED status means the QSO is possibly useable for further validation
- VALIDATED: Reference has been validated by QSO confirmations or external source. Validated QSO can be submitted for award request and can receive "grant" tags.

ReferenceGroup: The reference group attribute [not strictly required] (G in the ADIF export)
ReferenceSubGroup: The reference sub group attribute [not strictly required] (SG in the ADIF export)
Submitted: The list of award confirmations for which the QSO has been submitted for validation. As example, DXCC-10 for DXCC 10 meters award. (SUB in the ADIF export)
Granted: The list of award confirmations for which the QSO has received a credit confirmation from the award manager. Example DXCC-10 for DXCC 10 meters. (GRA in the ADIF export)

List of SUBMITTED and GRANTED can be set in the AWARD CONFIGURATIONS for the specific award subtype.
As an example, in the 10M configuration of the DXCC award, the configuration will show submitted and granted statuses based on the DXCC-10 tag of the reference



REFERENCE CONFIRMATIONS

A reference is an attribute of the QSO itself. It states that the QSO was made with another station in a specific location or within a specific situation or with a specific call sign that was involved in a specific event.

In order to claim a reference for an award proof is required of the contact itself. Not all confirmations types (LOTW, EQSL, QSL) are accepted for a specific reference.

e.g. a LOTW confirmation is considered valid (AWARD CONFIRMED) for DXCC award, because it is managed by the ARRL that is the originator of the DXCC award. A QSL card is not considered valid for DXCC award by default because the QSL card requires validation by an ARRL card checker to be considered valid.

DATA display

Log4OM provides two different displays of award status.

Users can view award status by focusing on QSO CONFIRMATIONS, in order to check if users have basic requirements in order to proceed with a request to the award manager for award credit. In that case, Log4OM will show the award status focusing on QSO CONFIRMATIONS.

This is possible also for confirmations that do not count for the award itself, users may want to see how many DXCC references have been confirmed with EQSL although EQSL is not be accepted as valid confirmation for the reference itself.

References related to awards follow the rules of the award itself.

A QSO REFERENCE may have different REFERENCE CONFIRMATION STATUS.

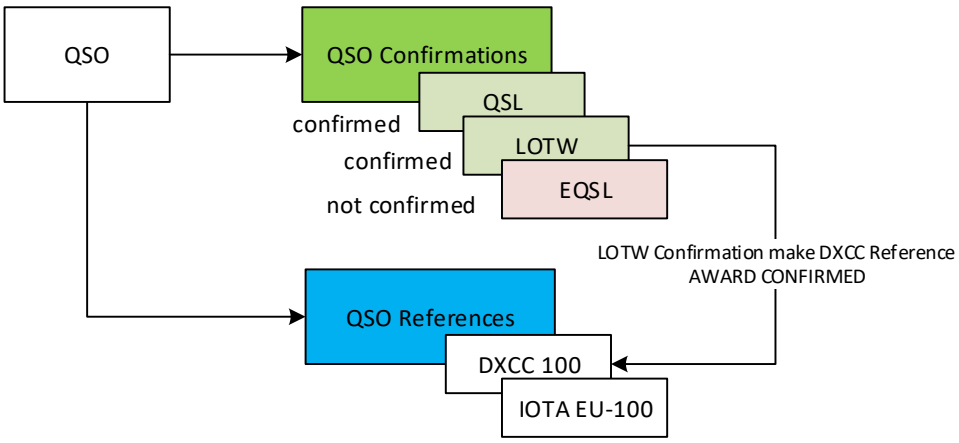
- NOT CONFIRMED means no confirmations of the required type has been received.
- CONFIRMED means a QSO CONFIRMATION of the required type has been received.
- AWARD CONFIRMED means a the QSO REFERENCE has been confirmed directly by the award manager. Award confirmed is NOT an automatically managed status, it can be set only for specific awards when Log4OM receives valid external information.

Only LOTW and IOTA are able to mark references “AWARD CONFIRMED” automatically by reading the IOTA export files and LOTW downloaded ADIF files. More awards can be automated by CSV files if and when they will provide an useable status report.

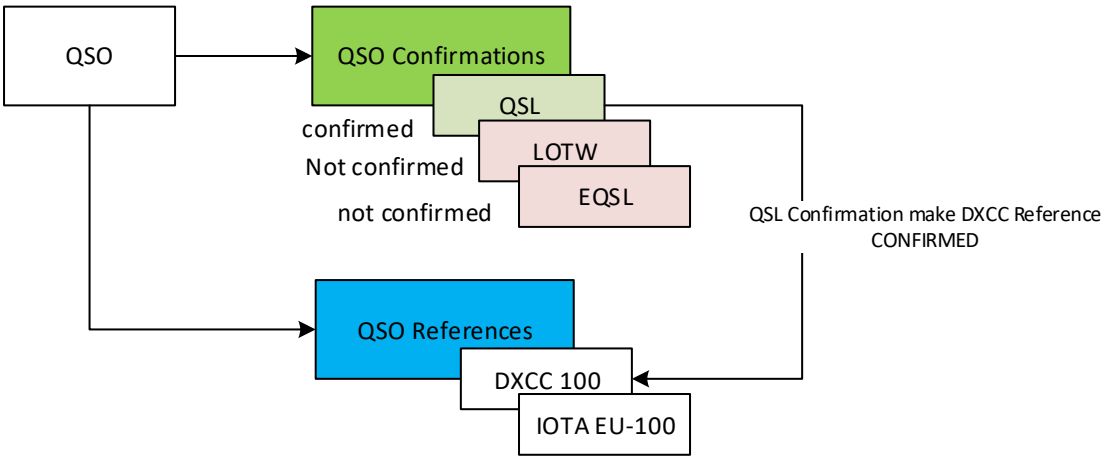
If the award requires a QSL confirmation, the reference will automatically be verified by the arrival of a QSL-type confirmation. If the award supports more than one confirmation mode, the reference will automatically be validated by the arrival of the compatible confirmation. These confirmations are always "real", linked to the QSO and not aggregated by mode or band as in the traditional vision of an award.

DXCC EXAMPLE

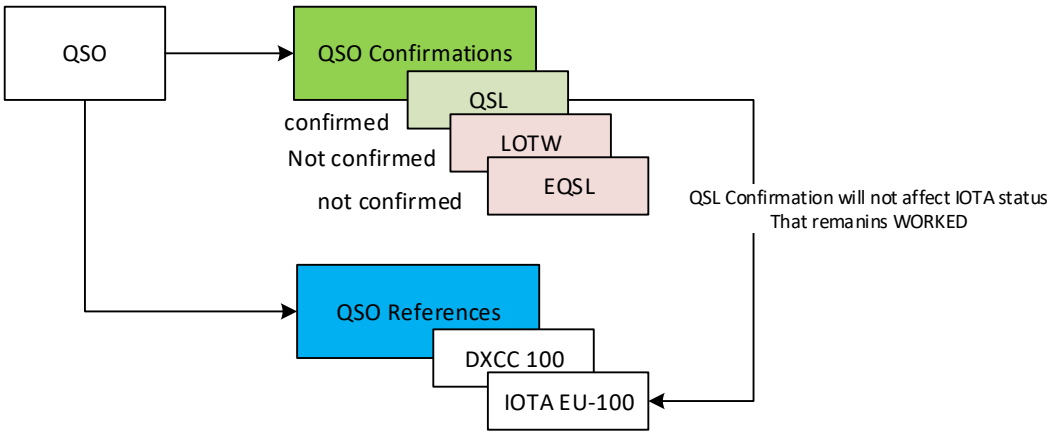
A QSO confirmation by LOTW always causes the DXCC reference to be marked as AWARD CONFIRMED.



In this example the REFERENCE is CONFIRMED but not confirmed for the AWARD.

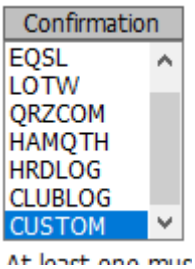


IOTA EXAMPLE



The IOTA program relies on external data to mark two way QSO confirmed and references to be validated, only an external input may mark a QSO REFERENCE of IOTA Award “AWARD CONFIRMED”.

This is because IOTA do not use any kind of QSO confirmation, as is indicated in the Award Editor for IOTA award. CUSTOM means the award is only manageable with external information. No QSO confirmations are used for REFERENCE CONFIRMATION.

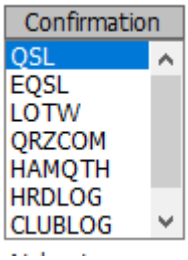


MANAGEMENT OF CONFIRMED STATUS

While not so “strong” as AWARD CONFIRMED status for the purpose of award request, the confirmed status is managed by Log4OM automatically following award characteristics defined in the award management system.

DARC DOK award use QSL as confirmation method, this means that users need to have a QSL in order to require award credits.

DARC DOK is configured to use QSL as confirmation method in award management.



When Log4OM receives a confirmation it will always scan the QSO in order to find references that, according to award parameters, are “CONFIRMED” by the confirmation received.

In this case, a paper QSL received on a QSO with a DARC DOK reference recorded will mark the reference itself as CONFIRMED when “view by ref. Confirmation” is set.

Award Editor

The management of awards in Log4OM is fully customizable. It is possible to create an award in a few minutes, integrating it perfectly into the system and ready for immediately use.

Important information.

The Log4OM Awards can be of 3 types: References, QSO Fields and Call sign.

[REFERENCE TYPE AWARD]

The "REFERENCE" type awards are characterized by having a unique code for each reference that identifies it. This reference can often be found in the notes of the cluster or it can be entered by hand, it can also be derived from a lookup on an external system (e.g. QRZ.COM) or it can be automatically retrieved by Log4OM from the notes of a previously imported QSO.

Example of REFERENCE type awards are:
World Wide Flora & Fauna award reference: IFF-1369
IOTA award reference: EU-166
World Castles award reference: I-12874

[QSO FIELDS]

"QSO FIELDS" provide award data automatically, the information is retrieved automatically from the standard QSO data that is collected and saved at the time a QSO is recorded. These awards are not visible in the main user interface of the program (Awards reference fields in the F3 tab of the QSO input window), because they are automatically derived by analyzing the normal QSO data.

In order to create a QSO FIELDS award it is necessary to indicate a field among those available, which will be used by the program to search for references used in the calculation of the award.

Examples of QSO FIELDS awards are:
DXCC award: This award is based on the 'DXCC' field
WAS award: This award is based on the STATE field
WORKED ALL ITALIAN PROVINCES AWARD: This award is based on the abbreviation of the province contained in the ADDRESS field.

To limit the number of "false contacts" it is possible to limit the Award to work only on the DXCCs for which the award is valid.

e.g. Filtering an award by DXCC entity numbers 291, 110 & 6 and the STATE field provides the WAS (Worked all States) award results, only for the United States of America, Hawaii and Alaska.

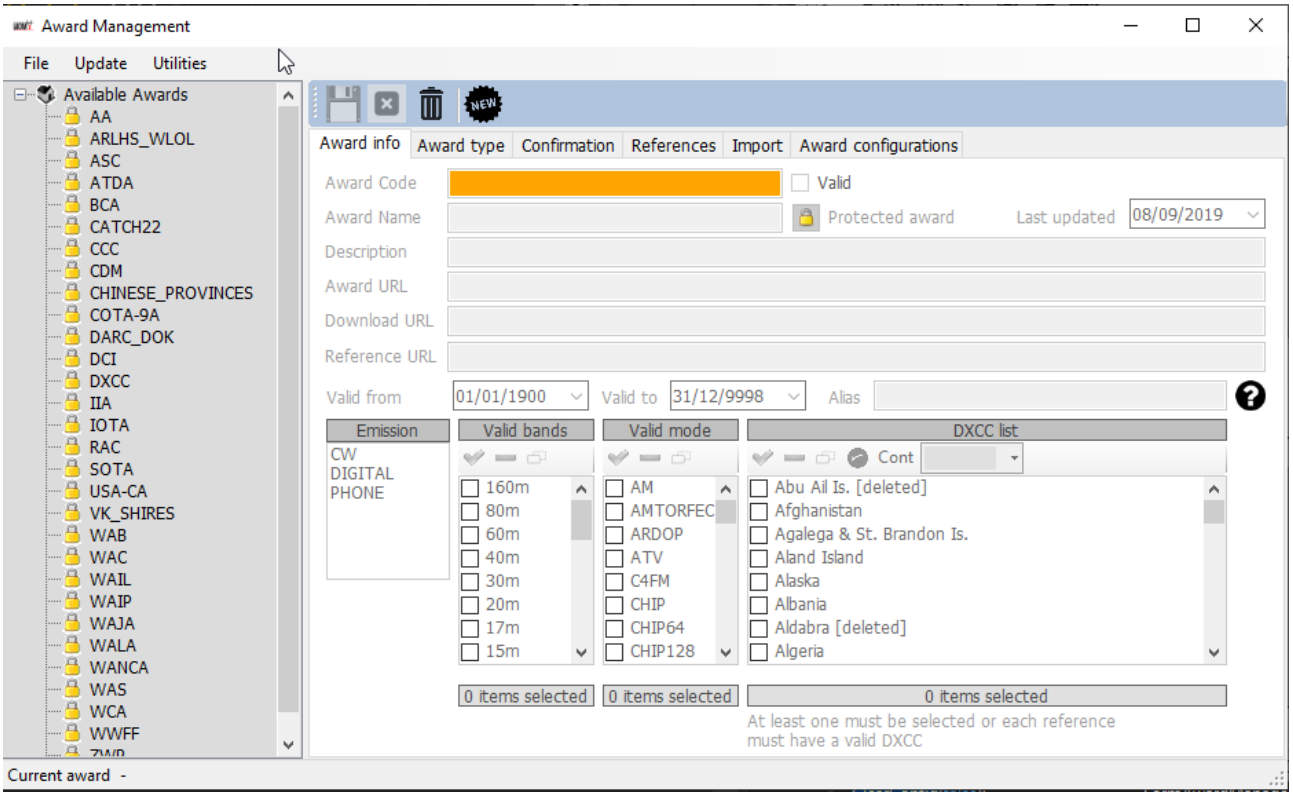
In the case of the WAIP (Worked all Italian Provinces) award will be filtered by DXCC entity number 248 and the STATE field to provide just results for WAIP

[CALLSIGN TYPE]

A CALLSIGN award uses the QSO contact's call sign to retrieve any references. It is also possible to operate on parts of the call sign (e.g. on the prefix).

An example of CALLSIGN awards are the commemorative awards, where there are several stations and the connection with these stations, from the known call sign or specific special prefix e.g. GB500nnn, produces useful references for achieving the award.

Award management usage



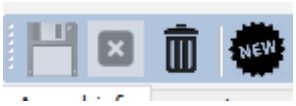
In the area to the left of the screen users will find the awards available in Log4OM. The number of awards will increase over time, the program will be automatically updated with revised versions of existing awards and new awards will be added periodically.

The padlock symbol indicates that the award is PROTECTED, i.e. that it is an award which is managed by the Log4OM team. This does not prevent users from editing it or adding references, however such edits and additions will be overwritten automatically with new program updates therefore users are advised to backup their awards file to another folder.

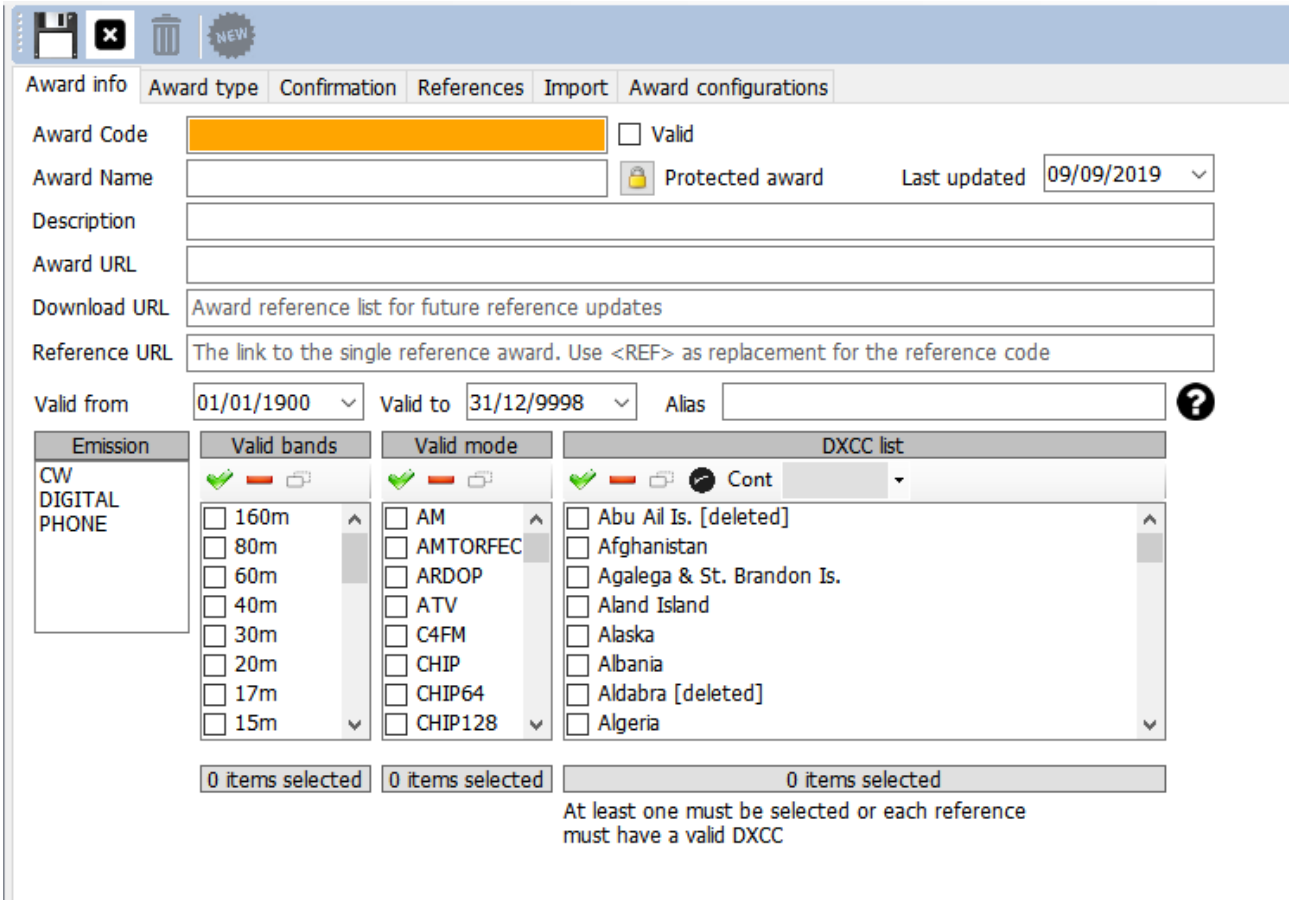
In the area on the right is the management area for the individual awards.

Icon toolbar functions:

Save current award | Cancel edit | Delete award | New award



Award Info



Award Code: Is the award key of the award. References are saved in the form <AWARD CODE>@<REFERENCE CODE>. This key is unique in the awards list. No duplicates are allowed.

Valid: If checked, the award is valid and can be used by Log4OM

Award Name: The user friendly name of the award.

Description: A brief description of the award characteristics

Award URL: The award home page web address

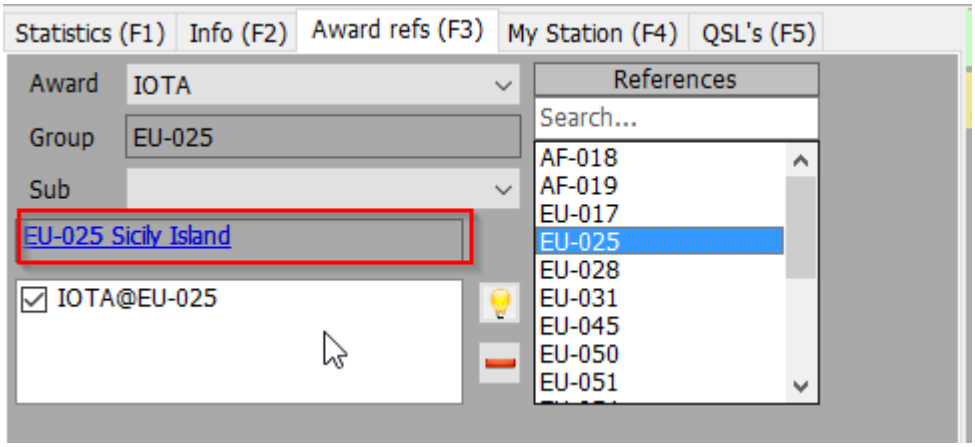
Download URL: [RECOMMENDED] Contains the page where the awards references can be retrieved. Useful for award managers to find reference lists to be updated.

Reference URL: If the award has a webpage that allows users to lookup the reference, this is the place where users should put the Web page address. Replace the reference code with <REF>. Log4OM will place the current reference at runtime.

As example, for IOTA: https://www.iotamaps.org/grpref/<REF>

(https://www.iotamaps.org/grpref/EU-025)

A hyperlink will be placed in award reference screen as below:

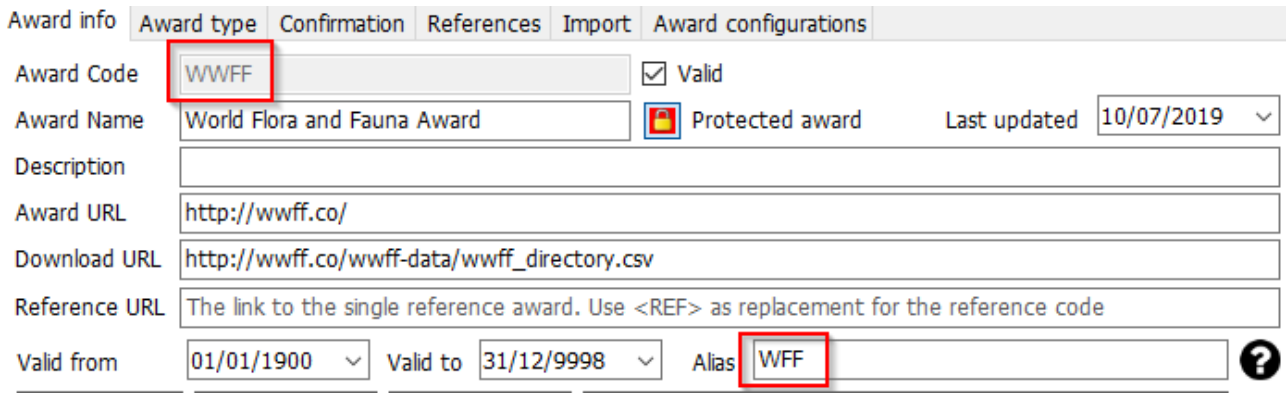


Valid From and Valid To: This is the valid period of the award. QSO outside this range will not be considered.

For awards that change references yearly users must use "AWARD CODE" + YEAR format in the award code field, so users will not lose their old references for previous participations to those awards.

Alias: If an award will change his name users may want to change his award code. Old QSO will be accepted and assigned to this award if their references matches the award code OR the award alias.

An example: WFF (World Flora Fauna) changed its code (and references) from WFF to WWFF. Log4OM V1 has references in format WFF@IFF-123, Log4OM V2 has the award code changed to WWFF. Log4OM added an alias to WFF in order to automatically convert old references into new.



Emission: Valid emission types for this award. QSO's which are not made in the emission type selected are not considered for the award and the award will not be listed in the available awards for the contact.

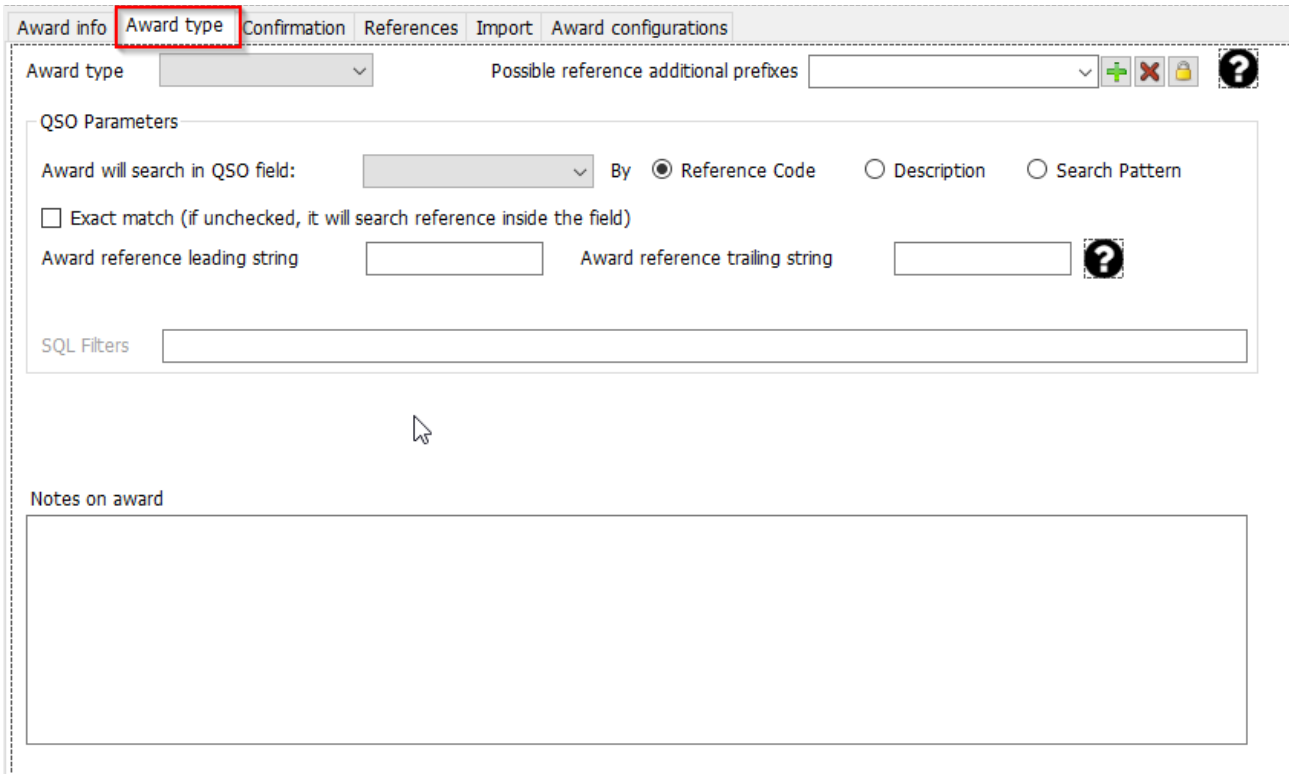
Valid emission types are: CW, DIGITAL, PHONE. At least one must be selected.

Valid Bands / Valid Modes: Users can limit bands and modes for the award by selecting specific bands and modes, if nothing is selected all bands, and/or, all modes are valid.

DXCC List: The list of the DXCC where this award is valid. Country specific awards must have the country DXCC set. At least one DXCC must be selected.

HINT: Log4OM is able to retrieve DXCC list from references itself, where DXCC field is mandatory (at least one for each reference, multiple allowed). If Log4OM is not able to find a list of valid DXCC for the award from the award DXCC list or from the reference list (because reference list is empty), the award will not be saved.

AWARD TYPE



Possible reference additional prefixes

Some awards have references mapped with strings that are not usually the same as those used when an operator spots a call sign on the cluster.

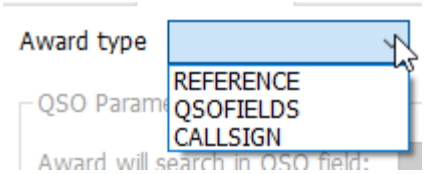
As example, DME award has references in form “045678”. Usually those references are mapped as DME-045678

Using its internal logic, Log4OM compares “45678” with “DME-45678” and “DME45678” coming from the spot, and would not find a match in this case. However if in the “Possible additional prefixes” for the DME Award, the user inserts the string “DME”, Log4OM will try to find a match:

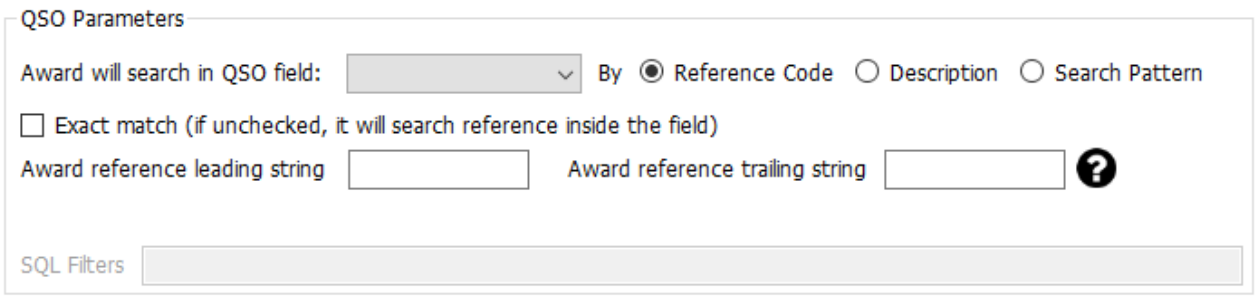
It will associate “45678” with “DME45678” but also the opposite way it will associate “DME45678” with “45678”, thus obtaining a positive match for the award.

Award type

This field require one value. REFERENCE, QSOFIELDS or CALLSIGN.



If QSOFIELDS is selected, some options become available



QSO Field

Contains the list of QSO fields that the award may explore. Users can select only one of them (and at least one, if QSOFIELDS award type is selected)

Search by: this will indicate to Log4OM what part of the reference must be searched in the field.

Reference code

Log4OM will search the reference code in the indicated field. As example: Award DXCC, field is DXCC and this field is searched by Reference Code (the DXCC number)

Description

If an award is searching for a string in a field, and this string is not the reference code itself but the description, users must select By Description. Log4OM will search this inside the QSO field, instead of reference code.

As example: an award will grant users a reference for each QSO made with operators with Judi, Michael and David in the operator name, and reference code are J for JURI, M for Michael and D for David.

In this case Log4OM will search the field: NAME for Michael, David or Judi and will assign according reference code to the QSO, that are the J, D and M reference descriptions

By Search Pattern: Users can use a regular expression to search inside the field for the required string. When matched, the award reference is assigned (Award reference must have a valid search pattern set)

Exact match

If checked, the field must be EXACTLY the reference code or the description selected. If unchecked, the field will be parsed successfully if contains reference code or description.

Reference leading and trailing

Assume users have an award that is scanning for ITALIAN PROVINCES.

Italian provinces are made by 2 letters, usually enclosed in brackets. WAIP award is made to scan address field searching those letters, but those 2 letters may appears everywhere in the address and Log4OM must be sure to catch only the address that contains the province. In Italy, usually, address is in the form:

Roma street, 164/G
30020 – Quarto D'Altino (VE)
Italy

Province, in this case, is VE, and reference is VE. A search by reference code without exact match will easily find this address as belonging to VE province (and it's correct).

However another address will also match…

Example: Venezia Street, 30 - 00100 Rovigo (RO) - Italy

Here, a scan of the address will detect **Ve**nezia (and Rovigo RO province), creating a false reference for Venice. In that case Log4OM resolves the situation by adding start and end brackets "(" and a ")" to the reference code. During scan, Log4OM will not search just for VE inside the string, but for "(VE)", catching the first reference as VENICE (VE) and the second as ROVIGO (RO)

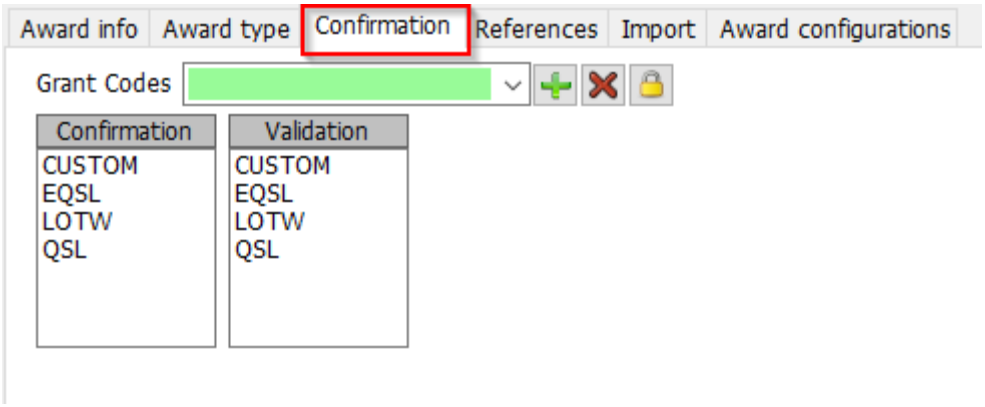
Sql Filters

Reserved for future development.

Notes on award

Here users can type everything useful on the award. As example: "send email to xyz@gmail, for an updated reference list"

CONFIRMATION



This is one of the most complex and powerful things of Log4OM.

In Log4OM a reference can assume 3 states - UNCONFIRMED, CONFIRMED or VALIDATED.

Unconfirmed means the Reference is registered but the user has not received any confirmation. As example, an award that requires a QSL to make the reference valid, has reference status UNCONFIRMED (WORKED ONLY) when the QSO is made.

Awards may have multiple kind of validations.

Some awards do not require any confirmation from the other station (activator) because the activator provides a list of QSO to the award manager, an example of this is IOTA.

Some awards will require a user to provide a QSL paper card confirmation, but they must validate them before the QSO is confirmed as valid for use to obtain the award.

Some awards will automatically grant users the qso as VALID when users receive the confirmation. As example, all EQSL awards. When users receive a QSL they automatically know that the contact is confirmed and valid for EQSL.

How these fields work:

Confirmation

What confirmation is required to have the reference confirmed? (confirmed means users can use the confirmation for further requests to the award management).

Values are: EQSL, LOTW, QSL and /or CUSTOM (multiple selection is allowed)

For IOTA the CONFIRMATION is unnecessary. Confirmation are provided by IOTA website itself in form of a downloadable file. For IOTA confirmations the users should select CUSTOM.

For DXCC a confirmation with LOTW or QSL is valid and can be used to request an award (a QSL card must be validated but it is acceptable as a confirmation). For LOTW users should select LOTW + QSL

If award require an EQSL confirmation users should set EQSL.

Validation

What kind of validation is need to mark a QSO validated and then useable for award request?

If award is completely managed by external organisations like IOTA, the user must set CUSTOM as the confirmation type, in this case Log4OM will **not** automatically confirm or validate user award references by monitoring arrival of QSO confirmations of any kind.

For DXCC, validation will arrive from an external data flow (LOTW file download), so Log4OM will receive this information and only when a LOTW contact is marked VALIDATED can users consider it validated (even if it's confirmed). Again, confirmation must be set as CUSTOM for LOTW, as it must not be automatically set by Log4OM on confirmation registration.

For EQSL awards, the presence of the EQSL confirmation is both confirming and granting a credit for the award itself. So users can set VALIDATION = EQSL. Log4OM will automatically set the references of this award as VALIDATED when an EQSL is received.

Special situations

Assume an award that is accepting QSL and EQSL as a confirmation. The QSL must be validated by a card checker, but they have direct access to EQSL to validate a users EQSL confirmations.

In this case users should set CONFIRMATION to EQSL + QSL / VALIDATION to EQSL + CUSTOM
When users receive an EQSL the reference will be confirmed and validated. When users receive a paper QSL the reference will be CONFIRMED and may be manually updated to VALIDATED when card checker approves it.

Grant codes:

Log4OM is able to import a text file in CSV format from any source and search for validations/confirmations in the file itself. It's also able to scan LOTW downloaded ADIF searching for peculiar LOTW fields.

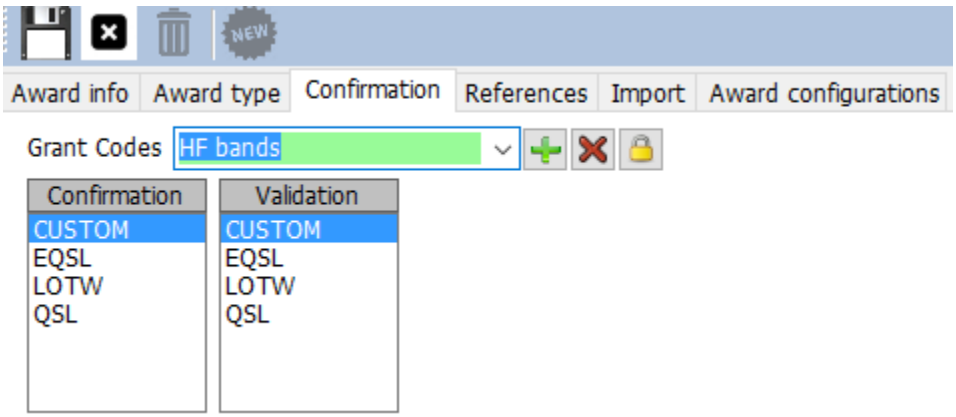
An example of award that provide confirmation / validation status in a CSV format is the IOTA program.

When users retrieve the IOTA confirmation file and pass it through Log4OM file checker, it will search for field: "count for" for the string "HF bands". This will mark the QSO CONFIRMED in IOTA.

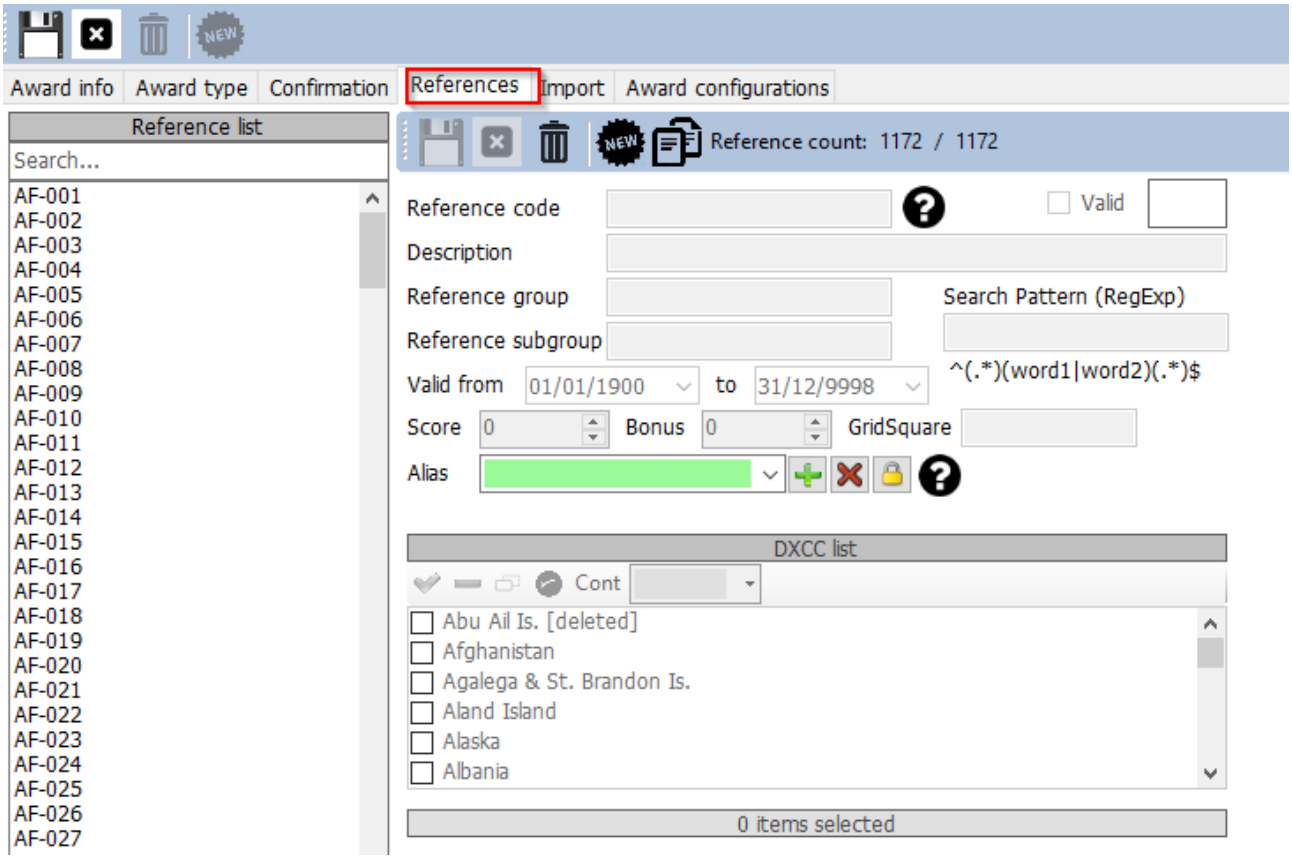
```
"Ref. No.","Callsign","UTC","Count for","Method","Status"
"AF-004","EA8ADL","2012-05-01 16:17:00","HF bands","DXCC matches one IOTA","Active"
"AF-005","D4A","2012-03-24 14:41:00","HF bands","Accepted Operation","Active"
"AF-014","CQ3L","2012-03-24 14:17:00","HF bands","Accepted Operation","Active"
"AF-016","TO19A","2019-04-29 09:26:00","HF bands","DXCC matches one IOTA","Active"
"AF-028","7O6T","2012-05-14 16:43:00","HF bands","Accepted Operation","Active"
```

In order to have this QSO confirmed in Log4OM users should import that file, but users also need to inform Log4OM that the string "HF bands" means CONFIRMED. To do that, users must add a GRANT CODE in the confirmation section, to reflect that:

This is how an IOTA award is configured in Log4OM



AWARD REFERENCES



This is the core of the award. The references.

Reference group and subgroup are optional but group is strongly suggested to provide more filtering options to the award itself.

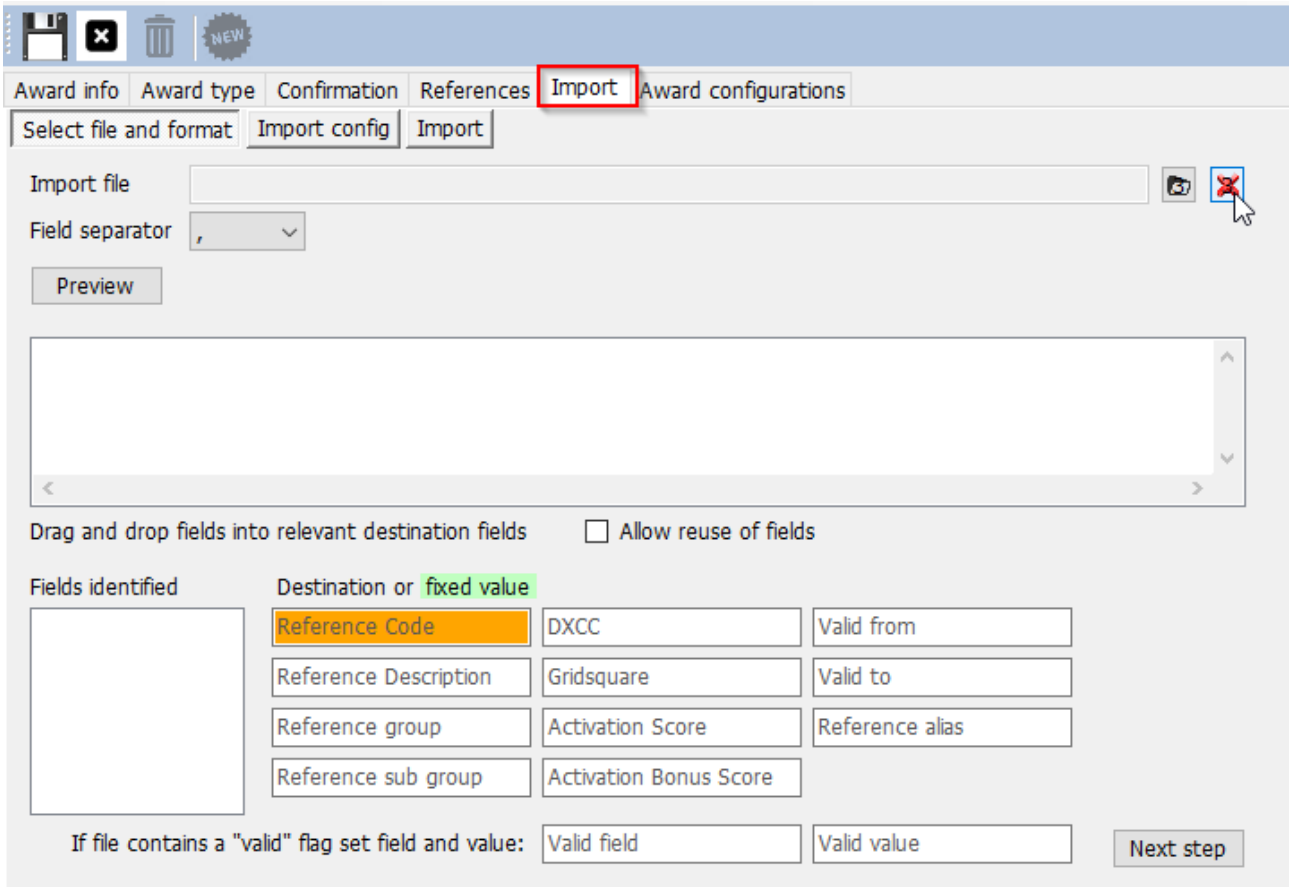
Reference code must contain a call sign for CALLSIGN type awards.

All fields are self explanatory.

Alias field is used to account for award reference renaming or when a reference has multiple codes or has a worldwide award code and regional codes referring to the same place.

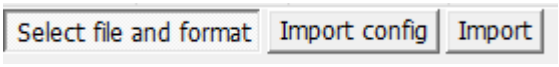
As example, if a castle has reference IT-123 in the WORLD CASTLES AWARD and the ITALIAN CASTLES AWARD has reference ITA-999 for the same reference, users may add IT-123 as alias for ITA-999. In this case, adding IT-123 (or reading that from cluster) will automatically give users reference for IT-123 in the world castles award and will find ITA-999 reference in the Italian castles award.

Import award references



The very powerful Log4OM automatic import function for references reduces the user workload considerably..

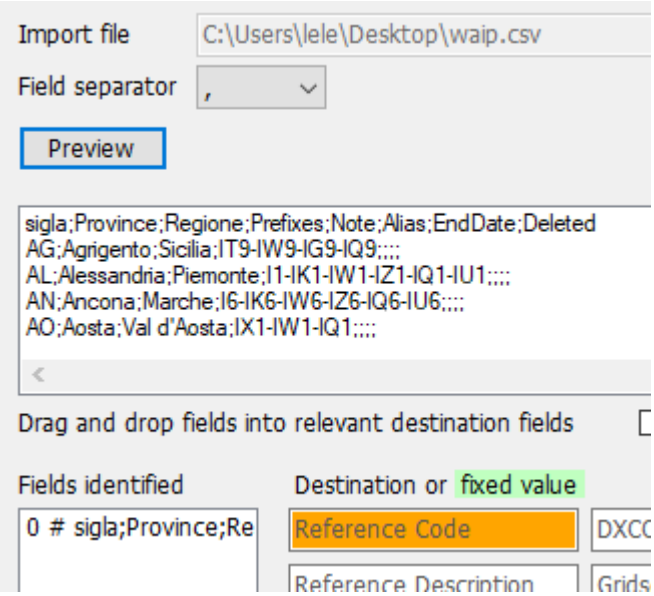
The 'Import' is in 3 sections.



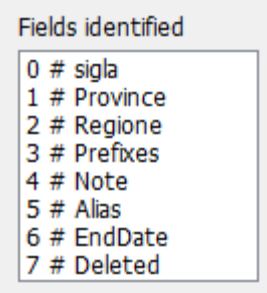
Select file and format

Field separator: the text file field separator.

Preview: Will show a preview of the file to help users find the correct separator character. In this case, the comma is bad, because Log4OM can only identify one field, the semi colon (;) should have been selected.



The right separator is ";", and after a preview, this is the list of fields:

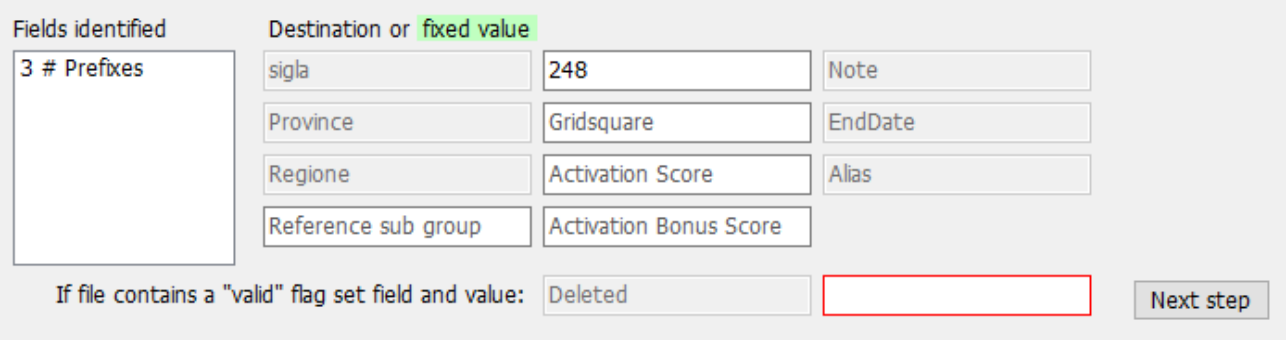


For Worked All Italian Provinces Log4OM selects this configuration. Log4OM knows that the NOTE fields contain the START date of the reference, while the END DATE, if any, contains the END DATE.

Some provinces were renamed through the years, Alias will resolve that field.

Deleted field contains a note when a province is deleted, Log4OM will assume the value set as the VALID value, so leaving it blank will allow Log4OM to have all provinces marked as valid, and DELETED (this is different from blank) as INVALID.

If a CSV file doesn't have a header users will see on the FIELDS IDENTIFIED a list of the values of the first row. This will not create any kind of issue on further activities. Simply drag and drop the right field in the right place.



Note that DXCC field has been typed manually (and not dragged from the fields) as its fixed.

Log4OM manually updated the province of Sardinia after import, because the DXCC field was not available in the file. Users can edit the file in excel and save some time and complexity.

Import Config

Here users can inform Log4OM if the reference format expected is a number (e.g. DXCC field) or a string.

Users can also provide the date format used in the CSV file, by selecting the correct format.

A reference may contains multiple DXCC codes, as example for a park that is shared between multiple countries. In this case, users can set the separator of the multiple DXCC fields to allow Log4OM to identify them correctly.

For awards that report DXCC fields as a PREFIX LIST, users must mark the “DXCC is char PREFIX” Log4OM will try retrieving the right DXCC code from the prefix.

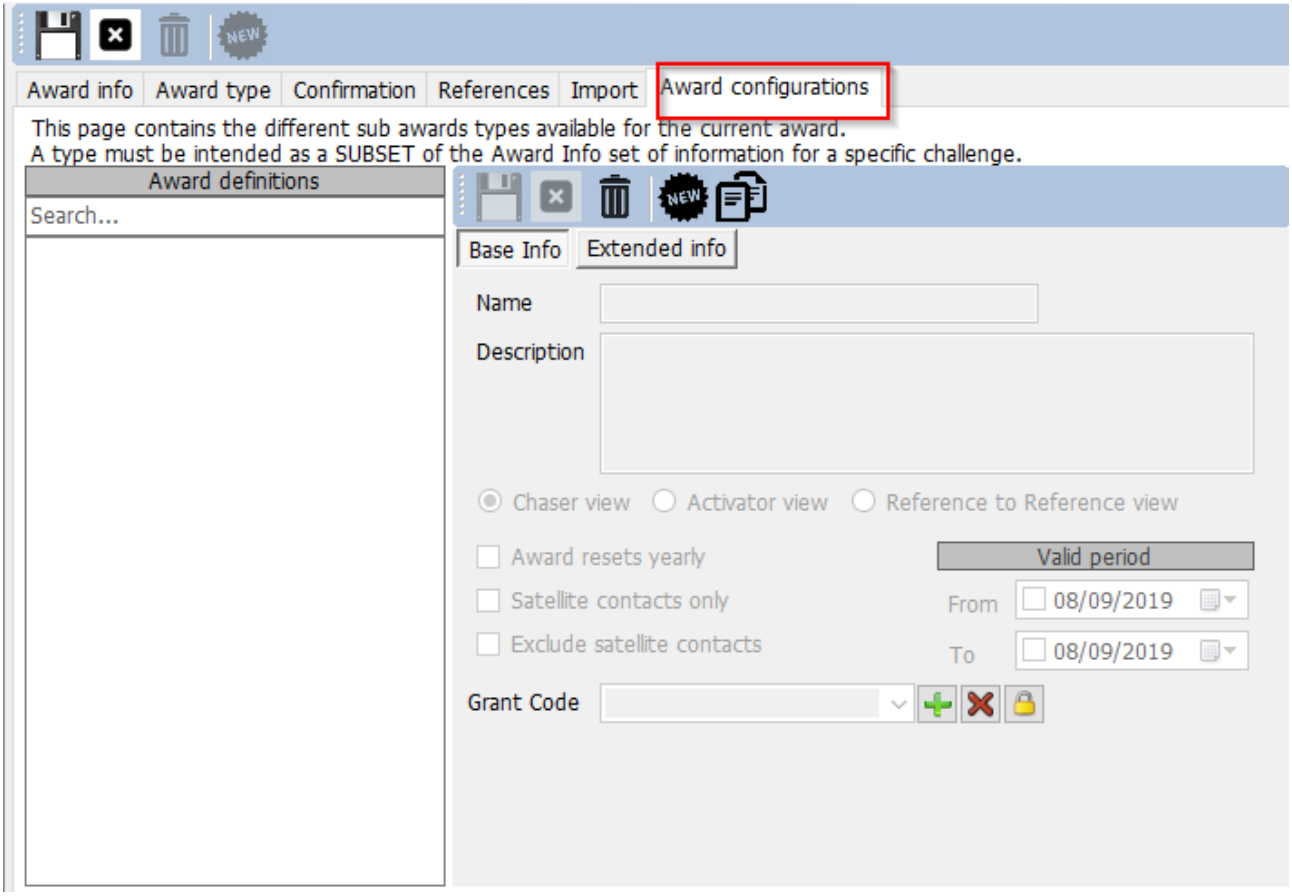
Merge: Actual reference list will be merged with the imported one.

Skip first row: If the CSV field contains header, users must set this flag.

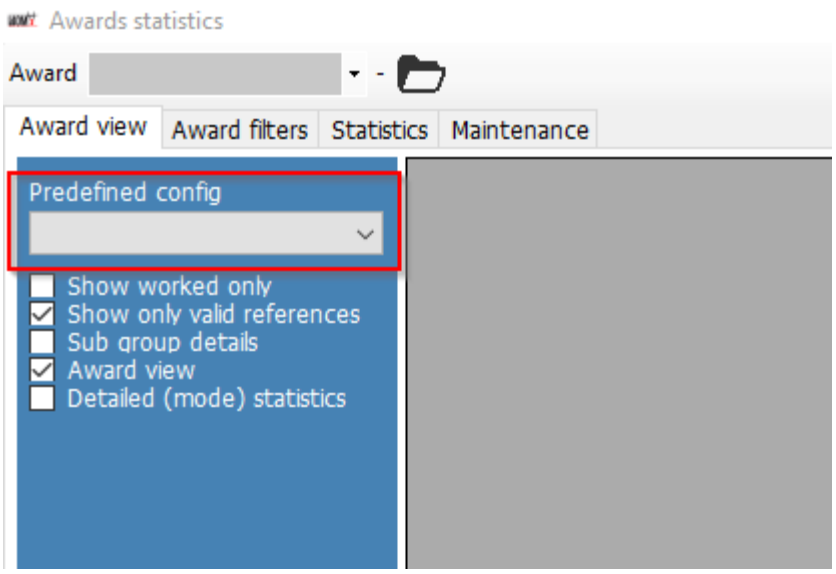
Import: This will import the file…

AWARD CONFIGURATIONS

Award view may be configured to reflect multiple situations.

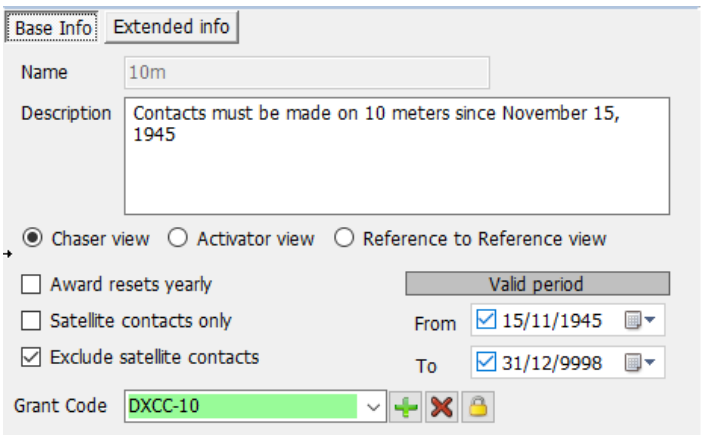


As example, DXCC has a lot of sub-awards that may be useful to view in depth.
With award configurations users can create filters that will be shown in the award statistics screen in the “predefined config”.



DXCC is a clear example of this:

In detail, let's examine 10M configuration



Chaser view: Show the typical "chaser" view, the QSO shown from user's point of view as a chaser.

Activator view: The award will be presented from the point of view of an activator. Only QSO where users have a STATION REFERENCE as activator of the same award will be shown.

Reference to reference view: Only QSO made FROM a reference in the award with operators in a valid reference of the same award are shown. This is the SOTA "summit to summit" view.

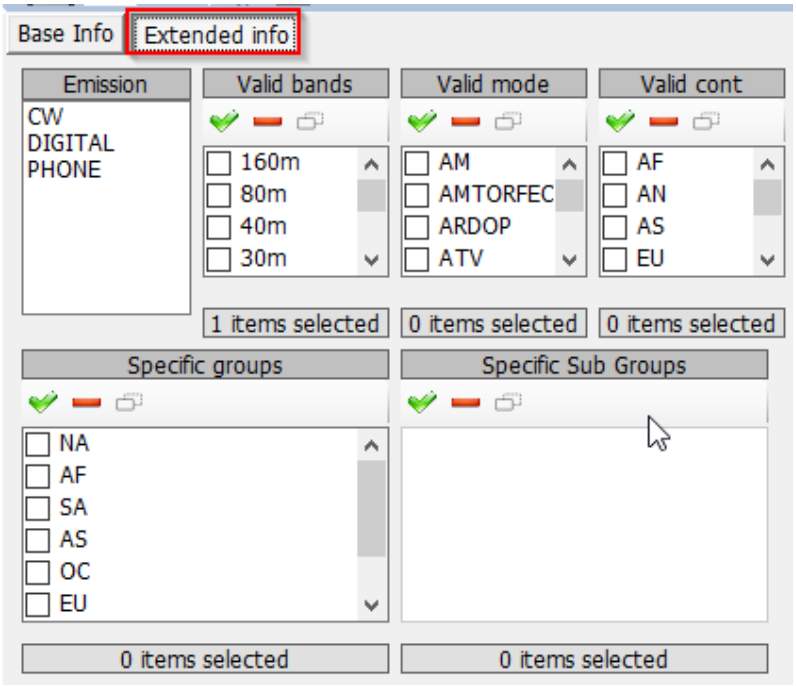
Award reset yearly: Statistics are shown and filtered in the award statistics for the selected year. This option will enable the "year filter".

Satellite contacts only: Only satellite contacts are considered

Exclude satellite contacts: Satellite contacts will be excluded from the view.

Grant code: for the DXCC award, this is the GRANT CODE that is retrieved from LOTW download. If Log4OM finds DXCC-10 in the list of granted codes received from LOTW it mark the contact VALIDATED for the current SPECIFIC award view.

A specific configuration can be personalized in depth to show only a subset of references using the extended info:



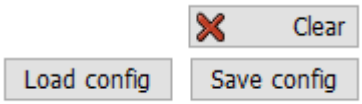
External confirmation import

For all awards that have “external management”, like IOTA, Log4OM is able to import a CSV text file containing info about the reference status.

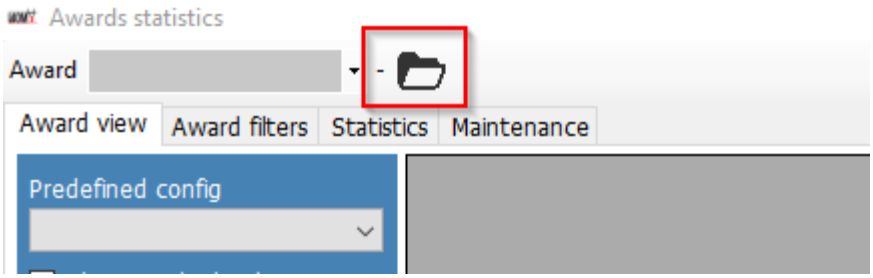
The interface is complex and powerful, but Log4OM provides predefined schema for known awards. Log4OM made the confirmation import so “complex” because Log4OM wanted to provide users with the most powerful and complete tool to manage their log and their awards.

For the “casual user” Log4OM provides, for standard awards, a predefined set of configurations, based on the award standard files provided by the award managers.

To load predefined config, simply press the Load Config button. Save Config will export the config in the Log4OM awards database.



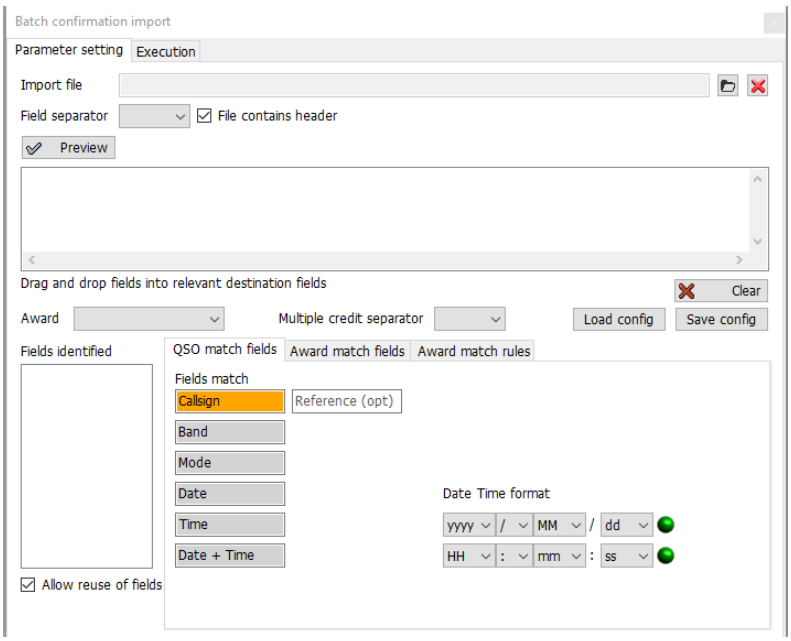
The import function is available through the award statistics screen, in the top bar:



The import screen is divided into sub sections for clarity.

Log4OM will import a IOTA status file, as example. Here a section of an IOTA file:

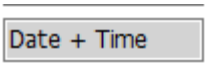
```
"Ref. No.","Callsign","UTC","Count for","Method","Status"
"AF-004","EA8ADL","2012-05-01 16:17:00","HF bands","DXCC matches one IOTA","Active"
"AF-005","D4A","2012-03-24 14:41:00","HF bands","Accepted Operation","Active"
"AF-014","CQ3L","2012-03-24 14:17:00","HF bands","Accepted Operation","Active"
"AF-016","TO19A","2019-04-29 09:26:00","HF bands","DXCC matches one IOTA","Active"
"AF-012","FT4JA","2016-04-02 15:34:43","HF bands","Accepted Operation","Accepted"
"AF-002","FT5ZM","2014-01-29 11:21:00","HF bands","QSL","Accepted"
"AF-003","ZD8Z","0000-00-00 00:00:00","HF bands","QSL","Accepted"
"AF-004","EA8AJO","0000-00-00 00:00:00","HF bands","QSL","Accepted"
```



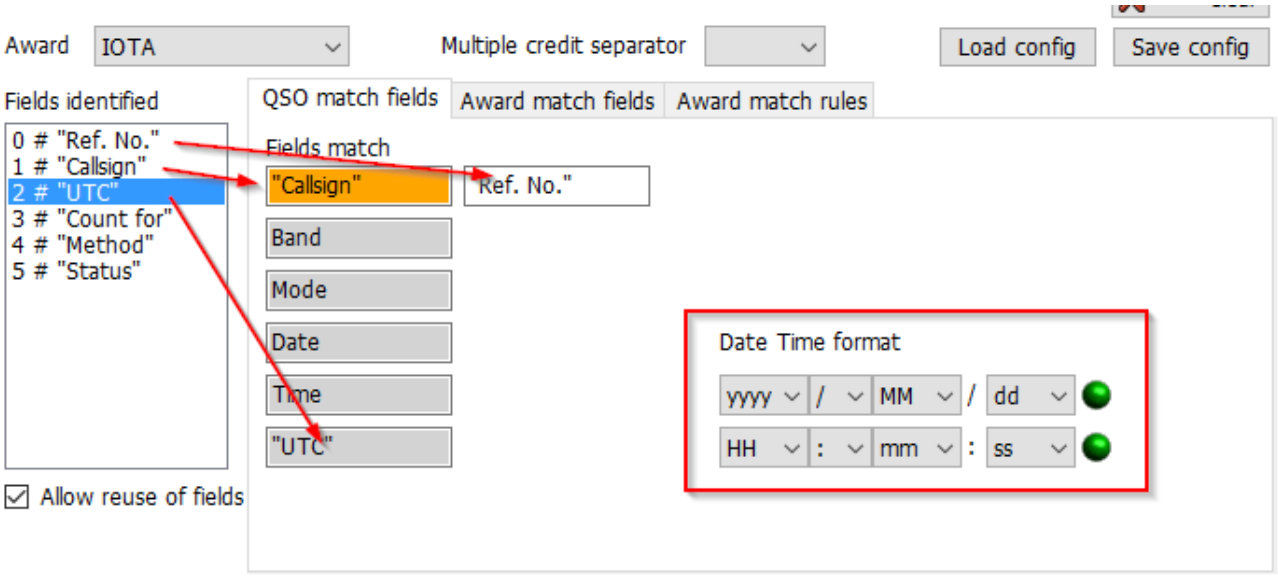
Qso Match fields:

This section allow users to identify data in the import that can help Log4OM identify the QSO. Some of those fields may be missing, in this case Log4OM will make some analysis of the data, trying to find the right QSO (or multiple QSO in some cases)

Drag and drop fields to the correct places. If DATE is provided, drag the date field in the Date position. If TIME is provided do the same. If format is DATE + TIME (as in our case) the right field is this:

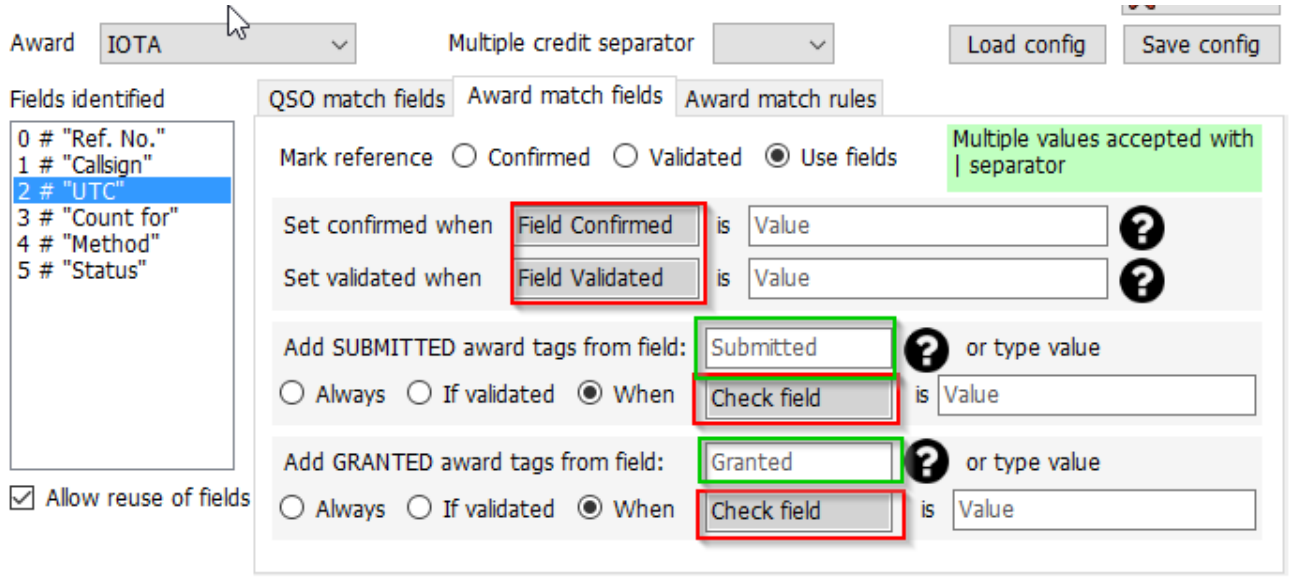


In this situation Log4OM only has CALLSIGN, REFERENCE and UTC date+time.



Remember to check the date-time format used in the file.

Award match fields



Red fields Will accept drag/drop from file columns

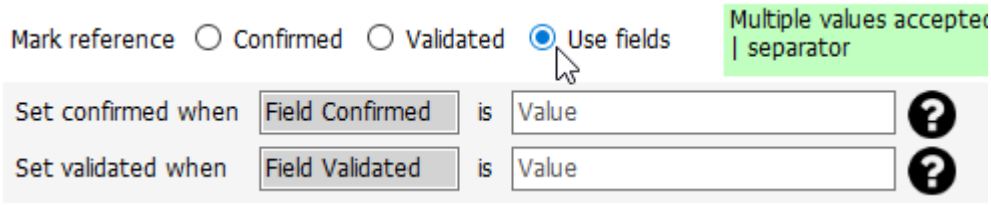
Green fields Will accept drag/drop and direct typing

Mark reference:

CONFIRMED: when a QSO is found in the file, the Reference is automatically marked CONFIRMED

VALIDATED: when a QSO is found in the file, the Reference is automatically marked VALIDATED

USE FIELDS: If the file contains both CONFIRMED and VALIDATED information. Further filters are required.

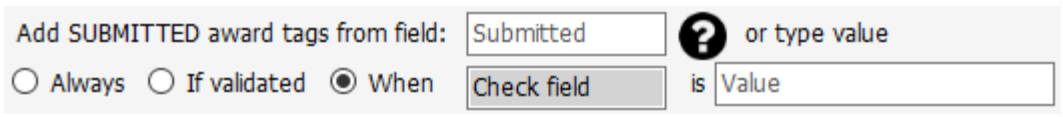


Users can analyze confirmed and validated status, from QSO fields. When the indicated string is found, the QSO is considered CONFIRMED (or VALIDATED) **and SUBMITTED/GRANTED values are IGNORED**

Submitted status

After validation, some awards require another step, that is the submission of the reference for the final grant of the award. Log4OM is able to manage this phase working with external files, other than with single references.

When a QSO is submitted users can mark it with a TAG. As an example, users may want to mark the QSO with IOTA_MIXED tag, or users may have a file that contains the list of submitted QSO for the IOTA MIXED award.



In this case users can use a field from the file, if any, or directly type the tag value in the field.

Users can select:
ALWAYS: All QSO are marked SUBMITTED. This is typically the case of a file that reports SUBMITTED QSO.

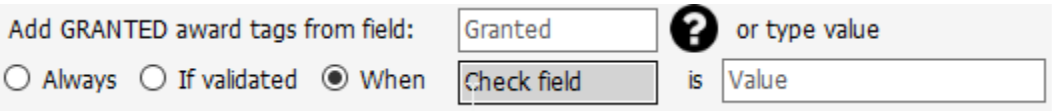
IF VALIDATED: Add the tag if the reference is validated

WHEN: Add the tag if the indicated field has the set value

If nothing is indicated in the **Submitted** field nothing is done

Granted status

After submission, users may import a GRANTED file from the award. This will finally mark the QSO as GRANTED for the selected award / award code.



In this case users can use a field from the file, if any, or directly type the tag value in the field.

Users can select:
ALWAYS: All QSO are marked GRANTED. This is typically the case of a file that reports GRANTED QSO.

IF VALIDATED: Add the tag if the reference is validated

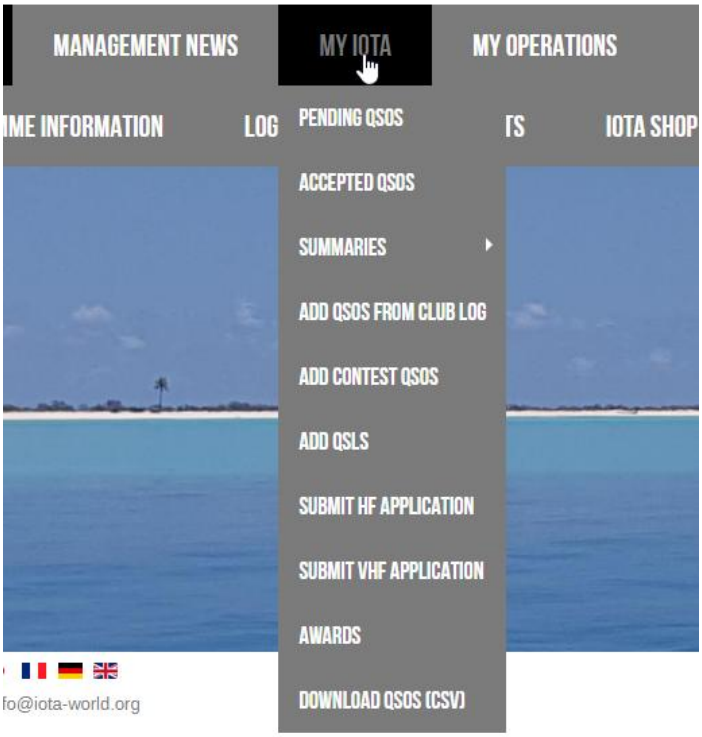
WHEN: Add the tag if the indicated field has the set value.

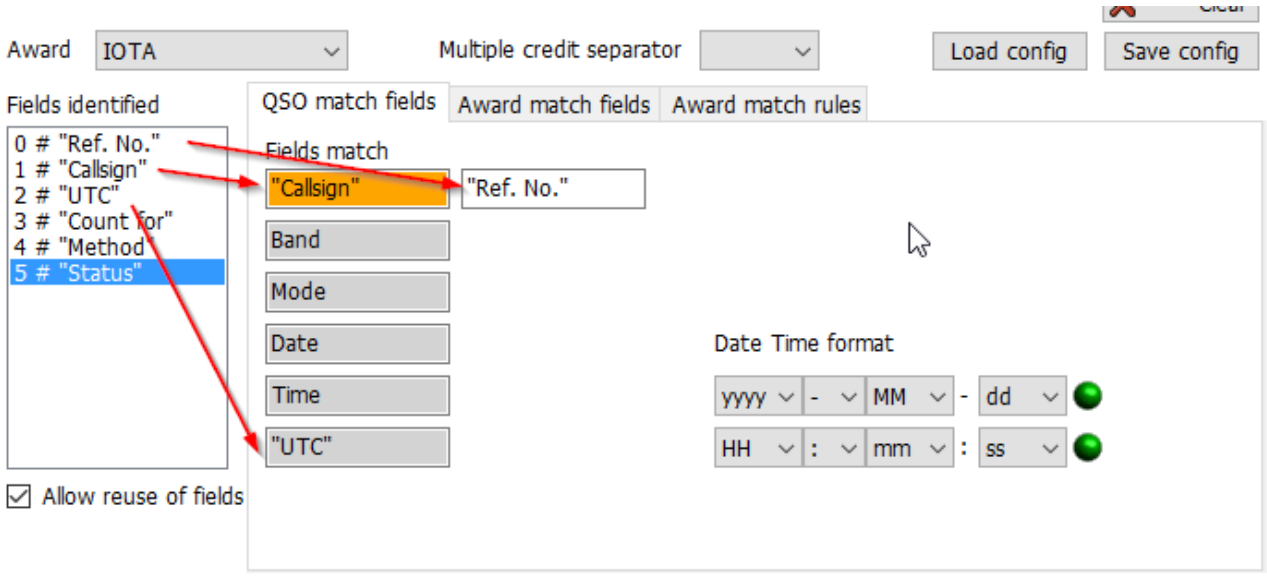
If nothing is indicated in the **Granted** field, nothing is done

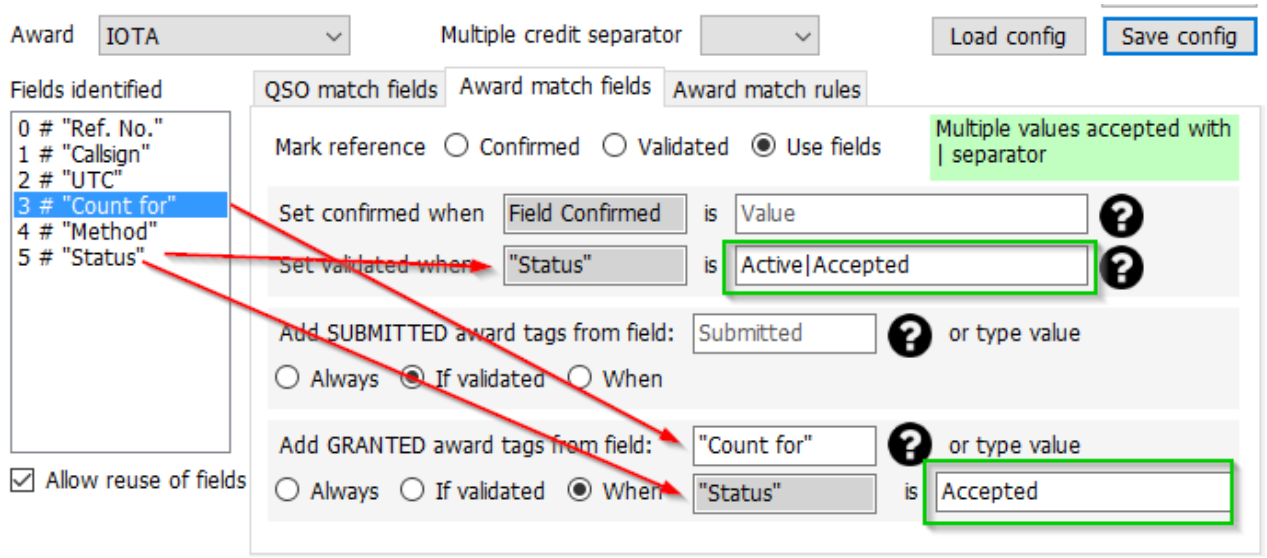
IOTA settings

Users can download an IOTA status file from https://www.iota-world.org/

And selecting DOWNLOAD QSOS (CSV) after login.



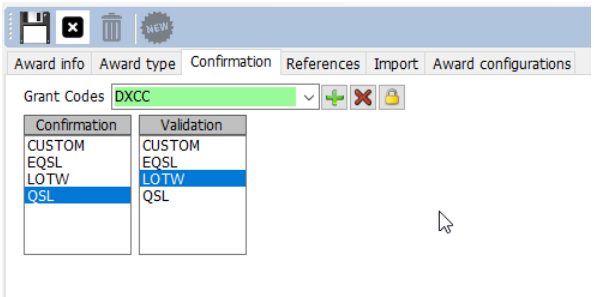




Award Submitted and Granted display

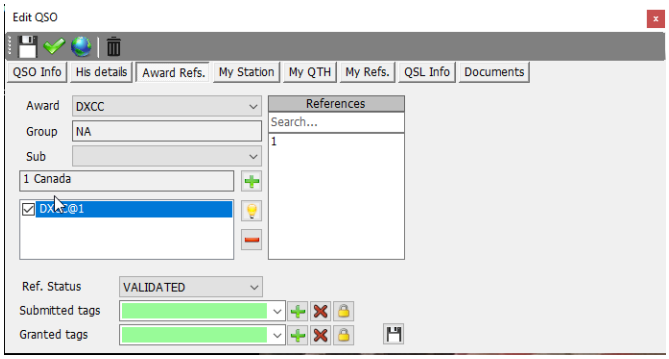
Award definitions may require an optional additional definition of a GRANT CODE.

This code will be used to manage display of SUBMISSION and GRANTED status **at award level**.

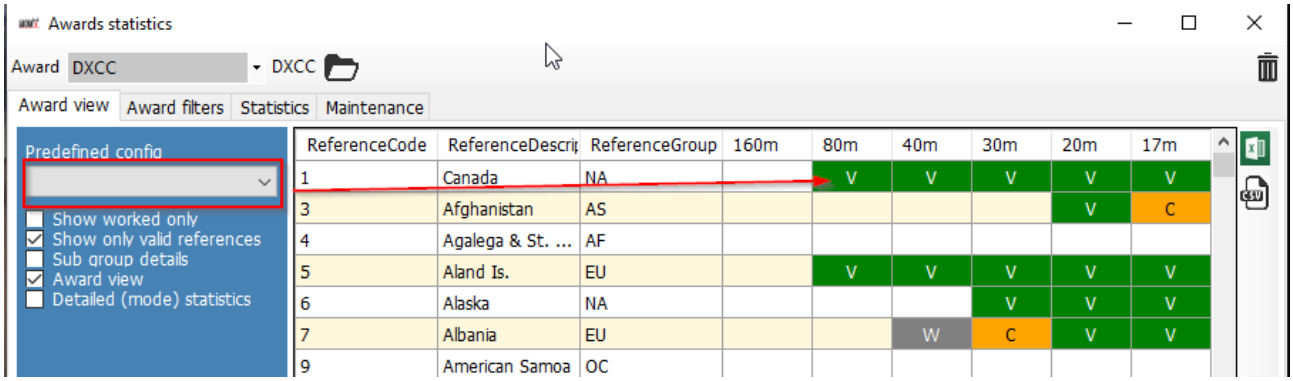


How this field works:

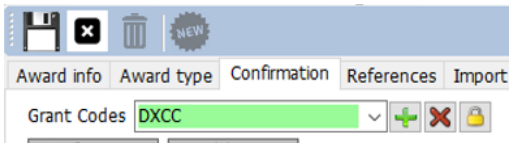
This was a QSO with CANADA on 80 meters

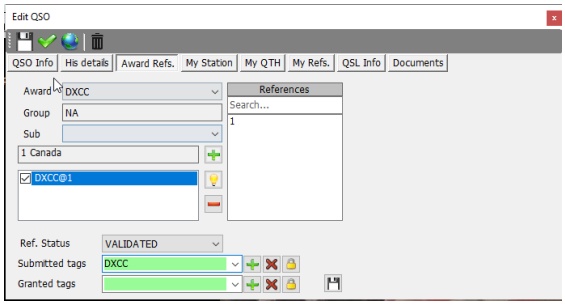


It has been VALIDATED but has NO SUBMITTED or GRANTED tags attached to it in the PREDEFINED config, this qso marks the 80M DXCC , because there is no 'Predefined Config' as VALIDATED.



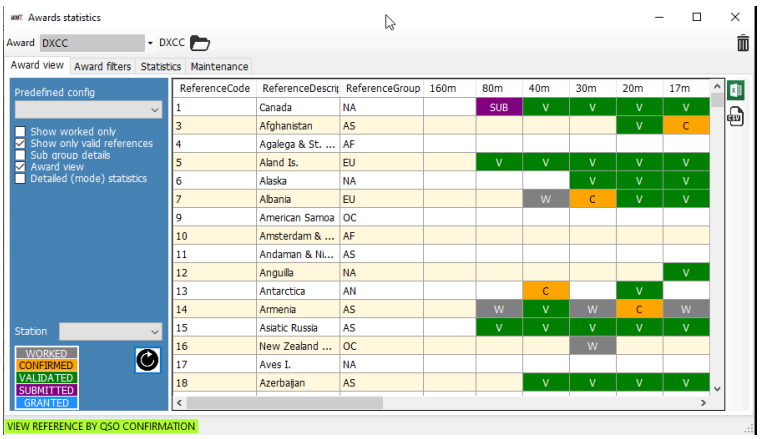
Mark the QSO... as submitted by adding a “DXCC” tag to the SUBMITTED tags. DXCC tag is the one set in the award definition here, as shown some rows above:



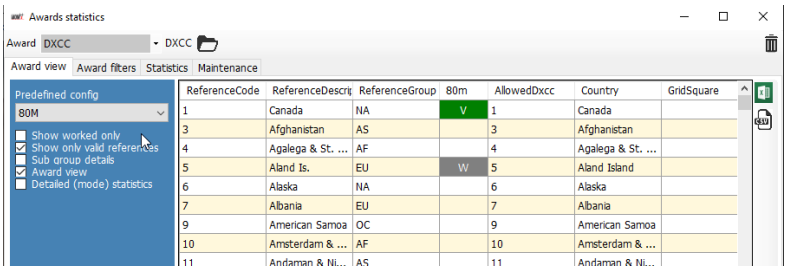


Log4OM has now set DXCC as submitted tags. Press the SAVE button to apply the changes (the small floppy icon) and the QSO is SAVED using the top bar buttons to permanently save the changes in the database.

Refreshing the statistics causes the Award statistics to change to SUBMITTED in CANADA 80M, because the AWARD default submit/grant code is matching the DXCC value in the QSO tags:

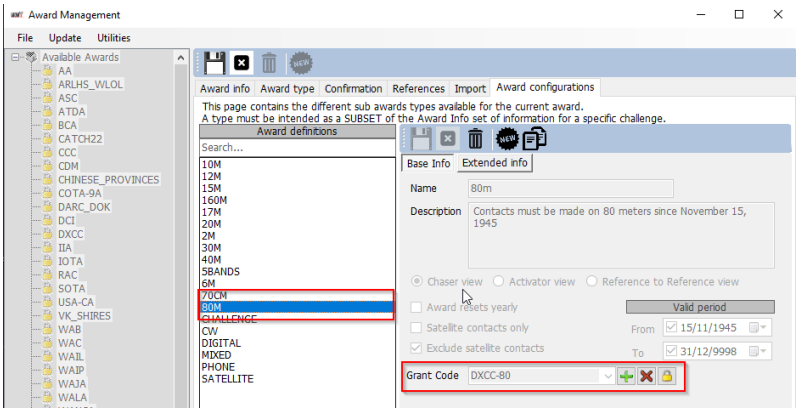


When selecting the 80 meters view using the specific sub-award view (available from the PREDEFINED CONFIG drop down)



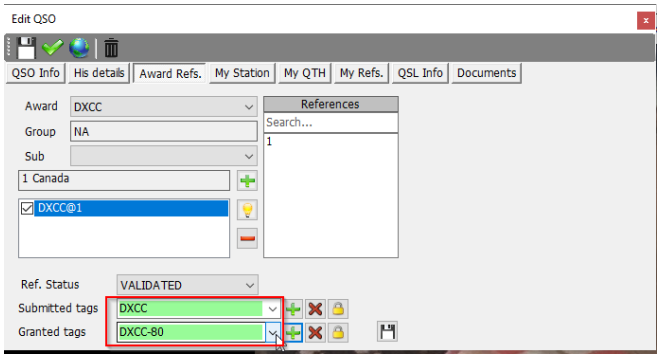
The award status is still showing VERIFIED, because QSO is verified and no suitable tags are found to mark this QSO submitted or granted for the 80meters DXCC sub award.

The 80M specific 'tags' (that Log4OM, for DXCC, retrieves automatically from LOTW import functions) are defined by the ARRL itself as ADIF Field. Those “tags” are selected in Log4OM Award Configuration screen:



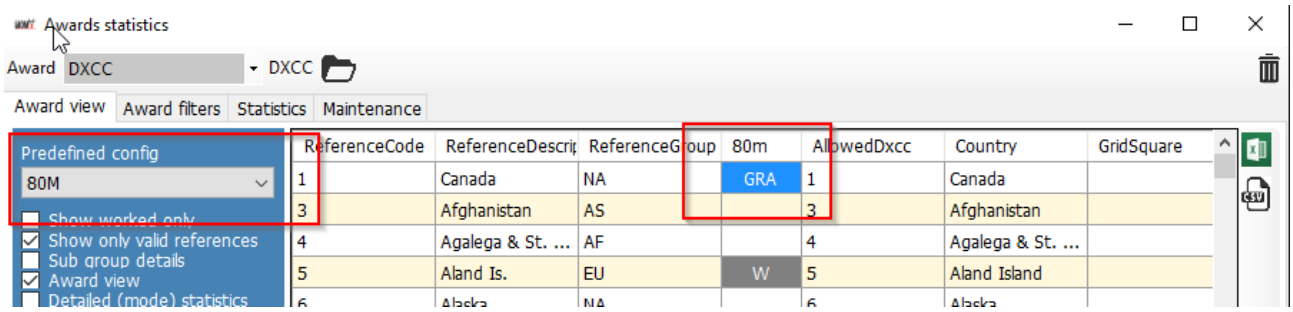
For DXCC, the ADIF code that represent a SUBMITTED/GRANTED status for 80M award is DXCC-80. Incidentally DXCC program will not support “SUBMITTED” feedback, but only GRANTED, through their ADIF download functions, so Log4OM will never show SUBMITTED status for DXCC. This feature is available for any other kind of award.

To simulate receipt of a DXCC-80 GRANTED status from the latest LOTW downloaded ADIF.



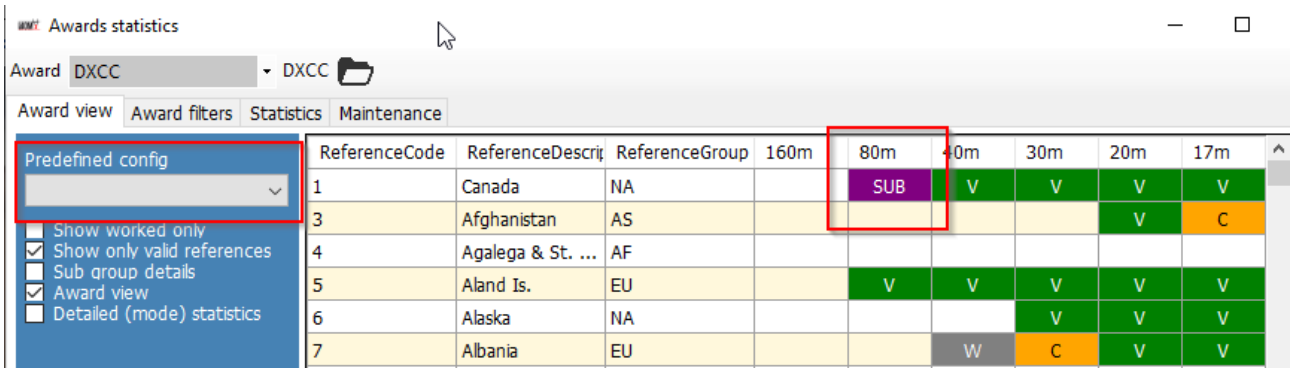
The Log4OM reference will automatically receive the DXCC-80 tags from the ADIF download, but the user can manually force it to simulate the situation, or to manually mark the granted status for an award that doesn't support or provide update information in electronic format.

After having pressed the SAVE (Floppy disc icon) button the reference is now stored in the QSO data, save the QSO itself to permanently save the information in the database and refresh the award statistics, selecting 80M award in the "predefined config" section.



80M now displays GRANTED, because 80M is searching for DXCC-80 tag in the submitted or granted fields and changed the display accordingly.

Predefined "award wide" situation is still showing the GRANTED status, because no changes have been made on that side.



In the "real world" the DXCC-80 is always accompanied by "DXCC" tag in the ADIF file from LoTW, so those displays may be marked received, submitted or granted, but the main view will show the GRANTED status from a mix of sub awards, this can create confusion if the user is not aware of what is happening in the background.

For the DXCC award, Log4OM automatically takes care of all of these aspects, for other awards the user can manually mark tags in the references with custom codes, or use the IMPORT feature to load files provided by the award program managers.

Log4OM V2 connections explained

Log4OM supports an increasing number of external services (inbound and outbound), through a highly flexible configuration mechanism.

UDP network services

Inbound services description

[INBOUND] ADIF MESSAGE:
This service is able to receive an INCOMING adif message via UDP, containing an ADIF string. The string is then processed and added to the Log4OM database. Messages received through this system are passed through Log4OM data quality routines and uploaded to external services, if configured and available.

[INBOUND] N1MM MESSAGE:
Log4OM is able to receive N1MM messages.

Supported messages are:

- ContactInfo (new QSO added),
- ContactReplace (QSO update),
- ContactDelete (QSO removal)

[INBOUND] JT MESSAGE:
Log4OM is able to receive UDP messages generated by JTDX / WSJT-X applications.

Inbound message from JTDX/WSJT-X update the Log4OM main QSO input fields with Call, Band, Frequency and mode, thus enabling users to view all lookup and worked before information in Log4OM for the station currently being contacted in JTDX/WSJT-X.

All other messages are discarded from this UDP connection.

[INBOUND] MESSAGE LISTENER:
This is a technical type of inbound message which is useful for debugging purposes and to detect if the other service is sending messages properly.

Everything received by the 'Message listener' is saved into the Log4OM program log.

Outbound services description

[OUTBOUND] ADIF MESSAGE:
Log4OM will broadcast every new QSO added to the database through user interface, ADIF automatic import (ADIF monitor) and UDP inbound messages.

ADIF messages can be chained together, so Log4OM can receive an UDP ADIF message (inbound) from an application, save it and re-broadcast (outbound) to another application, listener or another Log4OM instance that is listening for inbound UDP messages

[OUTBOUND] PSTROTATOR:
Messages directed to PST Rotator. Please note after configuring PSTRotator in program settings the user **must** create an outbound connection of PSTROTATOR type to actually send messages to PSTRotator.

[OUTBOUND] CALLSIGN:
The Call signs entered into the input field of the main Log4OM user interface, Winkeyer interface or contest interface are broadcasted as UDP messages using this outbound service type.

Multiple connections - Inbound and Outbound

Log4OM is able to receive via a virtually unlimited number of ports for each inbound message.

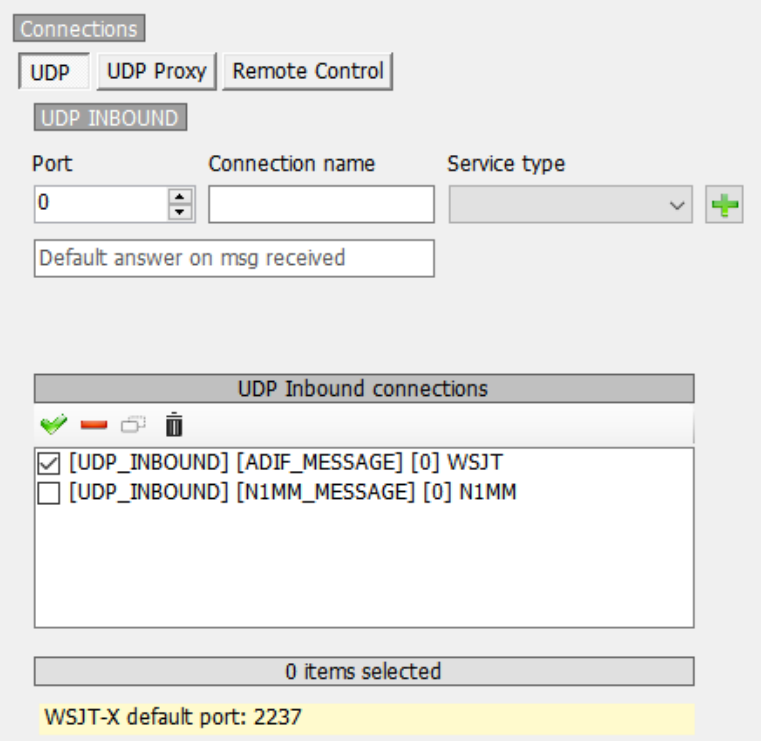
The user may listen for multiple ADIF MESSAGE senders that are working on different ports, or receive JT messages from both WSJT-x and JTDX running concurrently.

At the same time, each message type forwarded to the outbound UDP channel will be sent on all services of the required type. Users can create multiple [OUTBOUND] ADIF MESSAGE services (on different ports).

When Log4OM sends an ADIF message, this will also be sent to all outbound services of that type you have enabled.

UDP network services – Settings

Inbound



Port: The port Log4OM is listening to for UDP messages

Connection name: Friendly name for the connection

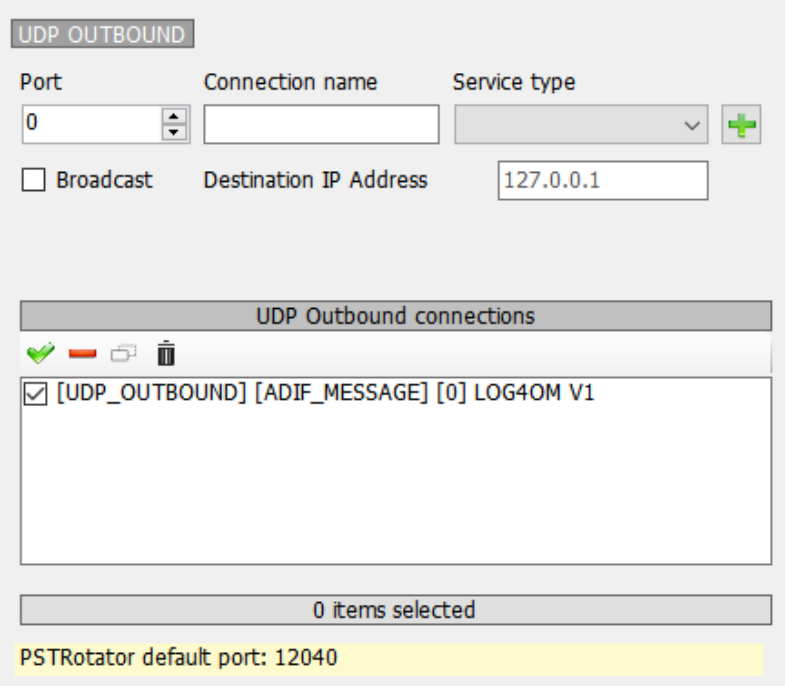
Service Type: Inbound service type

Default answer: A message that is sent back to the sender when a packet is received (may be required as acknowledge from other applications)

UDP services can be enabled/disabled by ticking the checkbox near their description, once you have added them to the UDP inbound connection list.

To add a new service, press the button.

Outbound



Port: The port Log4OM is using to transmit UDP messages

Connection name: Friendly name for the connection

Service Type: Outbound service type

Broadcast: Send broadcast UDP message

Destination IP address: Default (empty) is 127.0.0.1 (loopback – local host)

UDP Proxy

UDP data can only be received by one listener at a given time. Multiple listeners on the same port will compete for the same packet but only one, without reproducible rules, will be able to retrieve it.

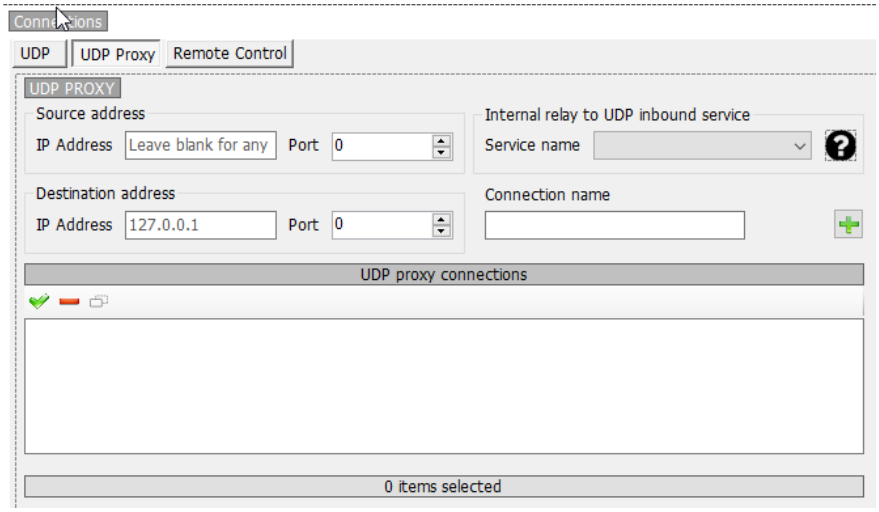
Some applications send UDP packets that are used by other applications, but those packets may be of Log4OM interest. In order to allow Log4OM to listen those packets, a proxy function is implemented in Log4OM.

Log4OM offers an UDP proxy that receives a packet, uses it and then resends the same packet on another port (or another IP/port if necessary). It can be used to forward UDP messages through firewall port 80 or other requirements, while still being able to use the captured messages

Proxy should have a “service type” indicated. All messages received will be managed from Log4OM like inbound messages of the inbound type indicated. e.g. Log4OM can read an incoming ADIF data with the [INBOUND] ADIF MESSAGE UDP and rebroadcast the data to another instance of Log4OM, possibly at a remote location.

Proxy will extend capabilities of UDP inbound by adding packet forwarding.

If it is required to listen for messages that do not need to be repeated (Forwarded) elsewhere, you should use an UDP INBOUND configuration instead.

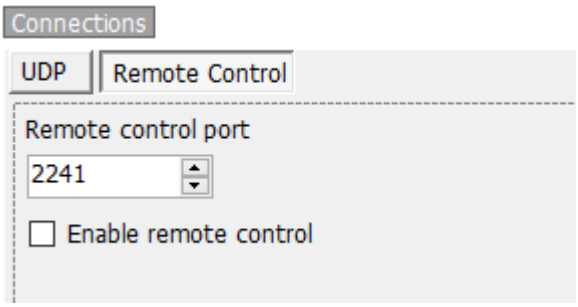


Source address: The address of the server that is sending the message. IP can be blank (any) while PORT is necessary.

Destination address: The IP of the target computer where the message should be sent. The local computer is 127.0.0.1

Remote Control

Log4OM has a feature that allows other applications to remotely interact with the software. It's called REMOTE CONTROL and is available on the Remote Control tab. More messages will be added in future.



Messages are in the format:

<MESSAGE TYPE><KEY>PARAM<KEY>PARAM…

Supported messages:

CALLSIGN

Message format: <CALLSIGN>{callsign}

Response: <RESULT>OK

Usage: Log4OM will put the provided callsign in the lookup area of the active windows

WORKED

Message format: <WORKED>{callsign}

Available responses:

<RESULT>YES

<RESULT>NO

WORKED + BAND

Message format: <WORKED>{callsign}<BAND>{band}

Available responses:

<RESULT>YES_SAME_BAND

<RESULT>YES
<RESULT>NO

ADIF Functions (Settings/Program Configuration/ADIF Functions)

ADIF Monitor

Log4OM can listen to multiple ADIF file changes at the same time. When a difference on the ADIF file is detected, Log4OM will perform the import action.

There are some options on the import phase. Those options are:

Upload QSO to external services

Delete ADIF file after load

Import only QSO containing station call sign. This option is useful when sharing common station using a single instance of WSJT-X, JTDX or other digital mode software that only allow you to change the call sign. We strongly suggest to avoid use of the DELETE FILE with IMPORT ONLY QSO CONTAINING STATION CALLSIGN to avoid deleting other OM QSO's

Please note the IMPORT ONLY QSO CONTAINING STATION CALLSIGN will also import QSO where the STATION CALLSIGN is missing.

Log4OM can also monitor for remote files over internet. In that case a file check is performed every 60 minutes (fixed) if an internet connection is available.

In this case the application is not able to delete ADIF file, but can call a remote URL passing parameters via a query string (GET) to a remote listener that may take actions on the remote file automatically (some web programming skills are required).

Log4OM for local files keeps track of the last character read and starts an import from this character if a file is not smaller than expected (aka new). A button to reset currently file position is available and works on the selected file (only local files are affected, remote files are always downloaded and parsed fully)

ADIF output

Log4OM is able to write an output ADIF file on each QSO saved into the database (via the user interface, UDP message or ADIF monitor). A bulk ADIF import will not trigger this function.

ADIF post

Log4OM is able to send a POST/GET message to an external website, passing custom parameters and required payloads.

Available payloads that can be passed either by GET or POST are:

<ADIF>: The adif string
<STATIONCALLSIGN>: The sender station callsign
<DATETIME>: current date + time in yyyyMMddHHmmss format

<DATE>: current date in yyyyMMdd format
<TIME>: current time (UTC) in HHmmss format

ADIF output usage scenario

Imagine a shared club station installation of Log4OM. Each QSO being entered can be:

Exported to an ADIF file at the end of activities and loaded into your main log

Sent through UDP to your home pc, assuming you have Log4OM running and firewall ports are open and correctly configured

Sent to a remote website (your hosting, your home NAS, …) that is sharing a specific web page.

This information can be retrieved at a later time using ADIF MONITOR to read the remote file created on the server, or by opening a custom coded page that will retrieve previously sent QSO's that may have been saved somewhere, in a remote file or a remote database.

Here is an example of a small page that you can used as template (PHP).

This page will receive a POST message with some parameters, will save the ADIF in a field called “your callsign.txt” on the server that you can point to at some later from the users home instance of Log4OM.

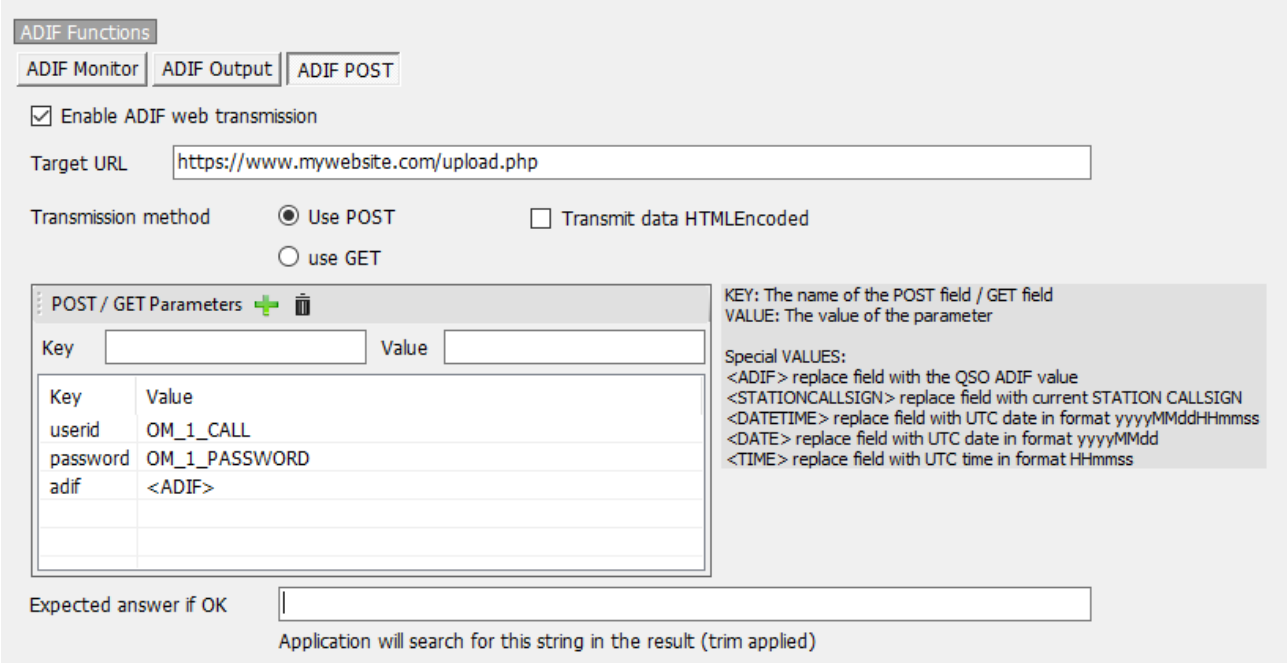
upload.php

```
<?php

$allowedPassword = array("OM_1_CALL|OM_1_PASSWORD", "OM_2_CALL|OM_2_PASSWORD",
"OM_3_CALL|OM_3_PASSWORD");

if ( in_array($_POST["userid"] . "|" . $_POST["password"], $allowedPassword) )
{
     $my_file = $_POST["userid"] . '.txt';
     $handle = fopen($my_file, 'a') or die('Cannot open file:  '.$my_file);

      if (flock($handle, LOCK_EX))
     {
           $data = $_POST["adif"] .PHP_EOL;
           fwrite($handle, $data);
           echo "OK";
           fflush($handle);            // flush output before releasing the lock
           flock($handle, LOCK_UN);    // release the lock
      }
     else
     {
           // should never happen as flock is a blocking call
           echo "AGAIN";
      }
      fclose($handle);
}
else
{
      echo "USER/PASSWORD UNKNOWN (required fields are userid/password/adif)";
}
?>
```

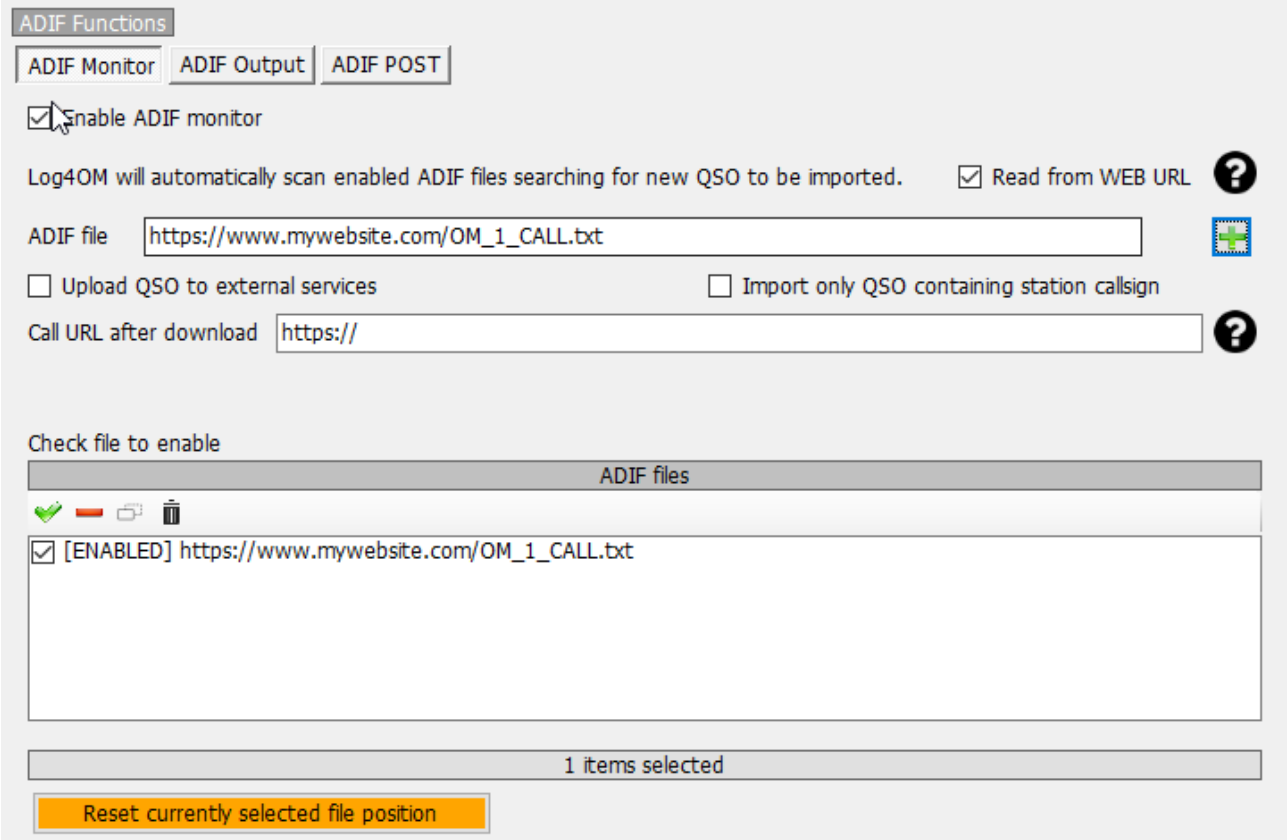
Assume this page is placed here: https://www.mywebsite.com/upload.php
The page is not returning anything (nothing on ECHO returned if everything is OK)

This page will receive 3 parameters:
userid, password, adif

An example of how the page can be configured:



The page will generate a file called OM_1_CALL.txt in the same folder, so that it can retrieved with ADIF monitor:



There is not a “remote delete” service in the web page, so the URL called after the download is empty in our example.

Configuration

Program Configuration

Log4OM V2 can be as powerful or as simple as the user requires according to how the software is configured, it is suggested that the user selects the configuration settings most suitable to his/her method of operating.

What follows is a brief description of each tab in the Settings/Program configuration menu for a more detailed explanation of each function see the function specific areas of this user guide.

Common functions

At the top of the main configuration window are three icons as follows:

1. Save config - This saves the settings without exiting the configuration menu
2. Save and apply - This saves the settings and closes the configuration window
3. Exit - This exits the configuration window without saving any changes made.

Program Settings

This tab sets the basic parameters of the software and is generally self explanatory but some expansion of some selections is required.

Default Log level

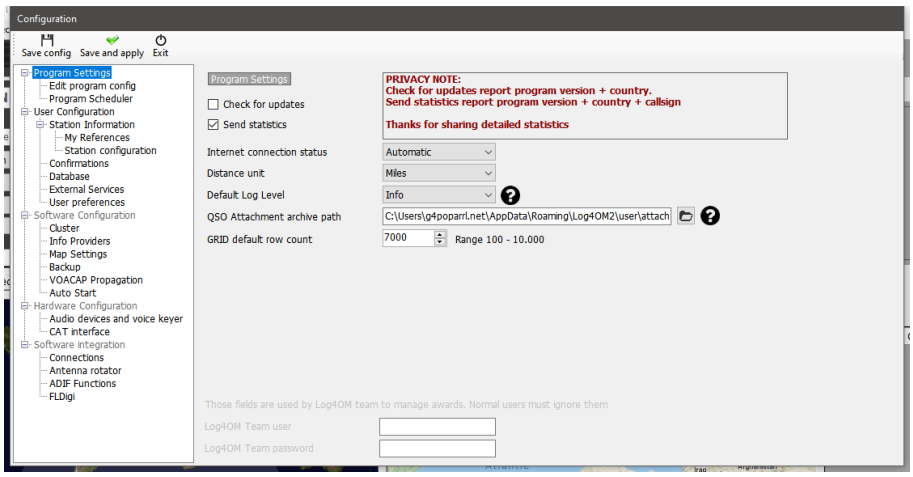
This should generally remain at 'Info' unless one of the Log4OM support team requests it to be changed for trouble shooting.

QSO Attachment archive path

Set a location here for downloaded images etc to be stored, a useful location is C:\.....\AppData\Roaming\Log4OM2\user\attachments

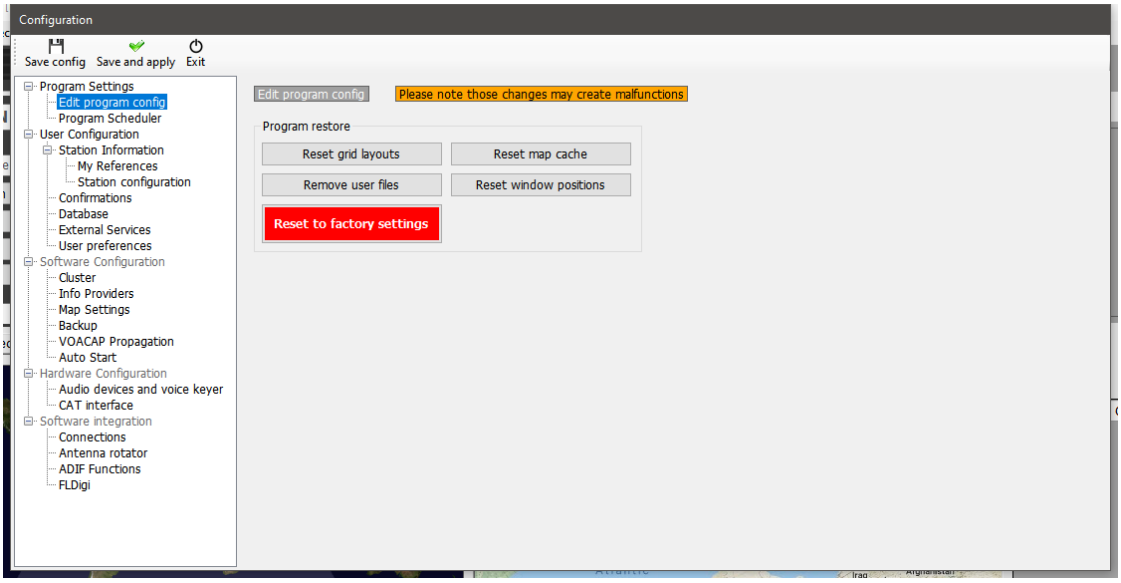
Grid default row count

The number of entries displayed in the data grids like Recent QSO's. It is not necessary to display all entries which might slow down the display in the case of very large logbooks. Regardless of the number of entries being displayed all lookups, sorting and filtering is done on the complete database.



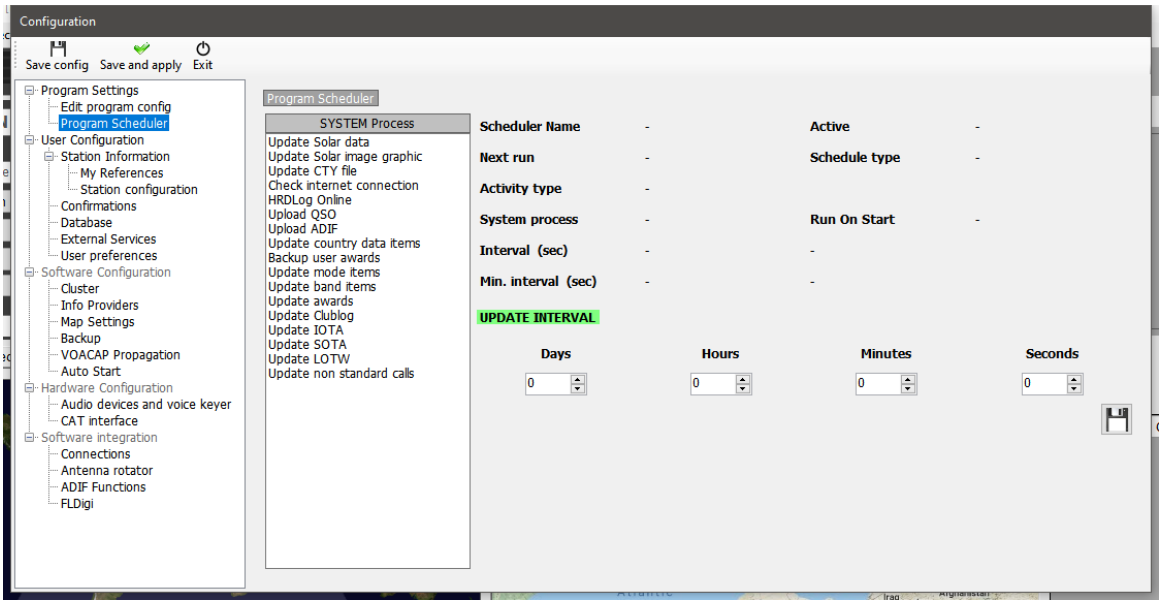
Edit Program config

This provides a method to revert to the program defaults in situations where the user regrets the changes made to layouts and settings.



Program Scheduler

Log4OM imports and updates many data files in an endeavour to provide the most accurate information for its users, this window allows the user to set the frequency with which those files are updated. Each change must be saved by clicking the small 'Save' floppy disk icon at the lower right.



User Configuration

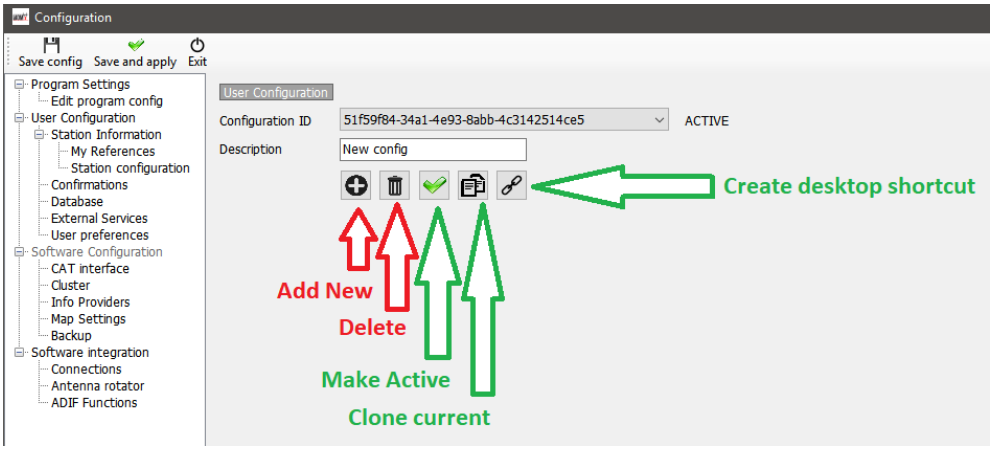
The user may have as many different configurations (Identities or setups) required, perhaps a Club, home, cabin, contest, special event, DXPedition or another family member configuration.

- Create a completely new identity by clicking on the + 'Add new config' button.
- By cloning an existing configuration by clicking the 'Folders' icon 'Clone current config' button, this saves time if the new configuration is similar to the original, perhaps just a /P call with different Location.

Creating a desktop shortcut for a new ID

A desktop shortcut can also be created for each current config by clicking the 'Chain' icon 'Create link on desktop'

Configs are deleted by first selecting the config to be deleted from the drop down list followed by clicking on the 'Trash can' Icon

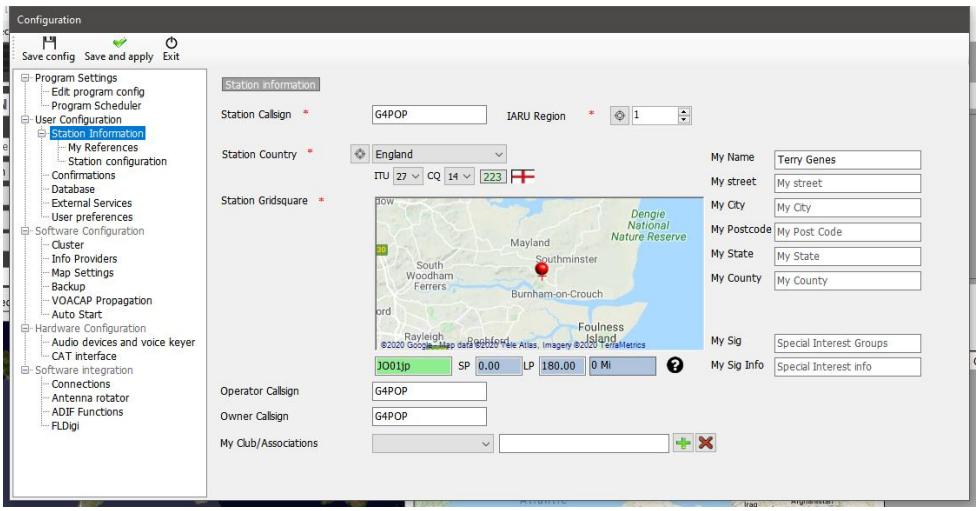


Creating a new Identity (Config)

- Either click the New or Clone icon as identified above
- Add a name for the ID in the Description field
- If a new ID is being created complete the various information for a new configuration or if 'cloning' an existing config make whatever changes are required for the new configuration.
- Click the 'Chain' desktop shortcut icon to create a new desktop shortcut
- Click the green check mark to make the configuration active
- Click 'Save and Apply'

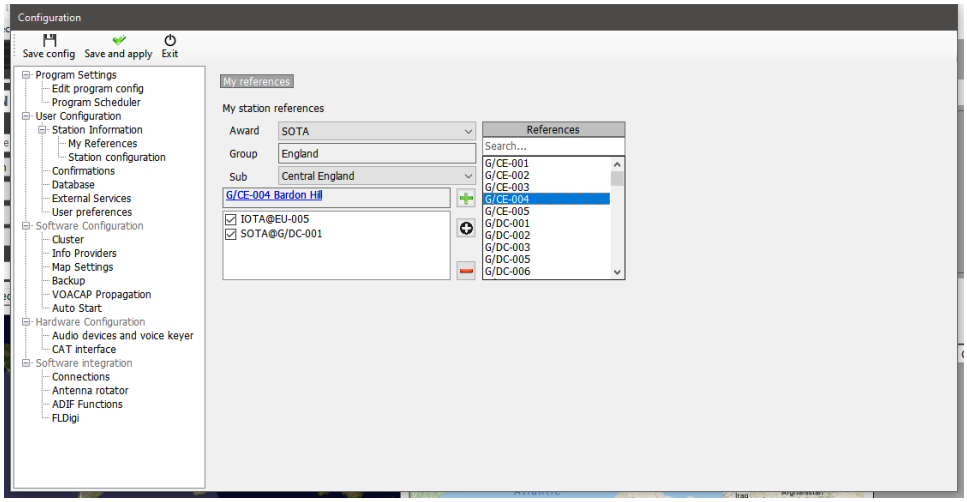
Station Information

This tab contains all of the information relating to the user it should be completed fully to allow the program to function to its fullest capabilities. The fields marked with a red asterisk are mandatory.



My References

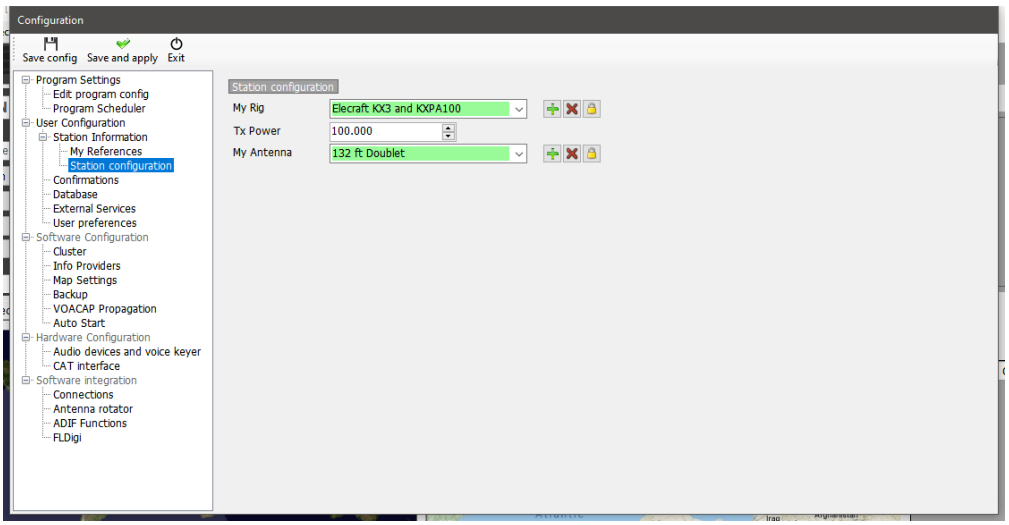
If the user is active in one of the award schemes as an activator, e.g. activating a summit for SOTA or an island for IOTA this is where the activators (Users) references are set.



- Select the award from the award drop down menu
- Choose the relevant group and sub group
- Double click the reference being activated or select and click the Plus + sign
- Save and apply

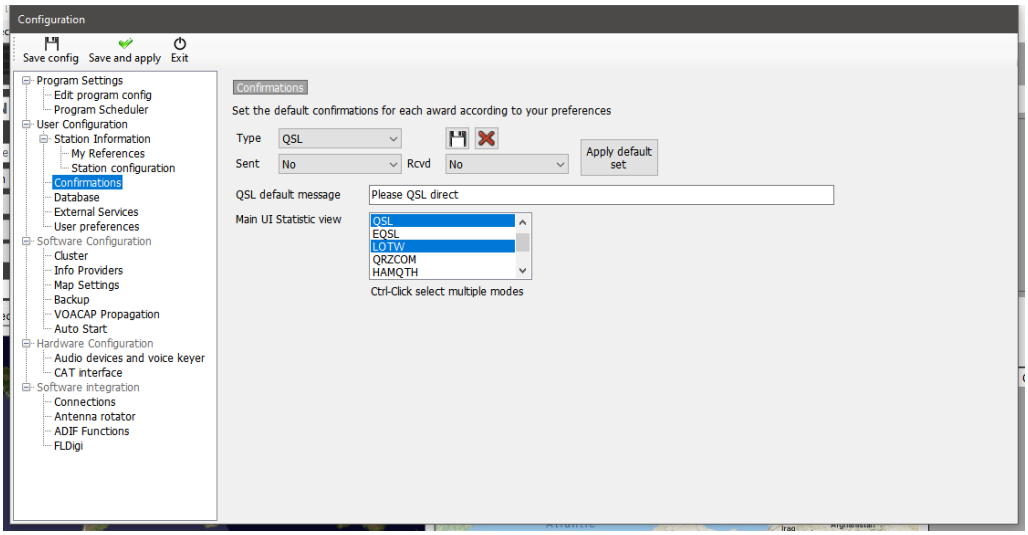
Station Configuration

Enter details of the users station (Rig, Power & Antenna) and click on the plus + sign to save or add more equipment.



Confirmations

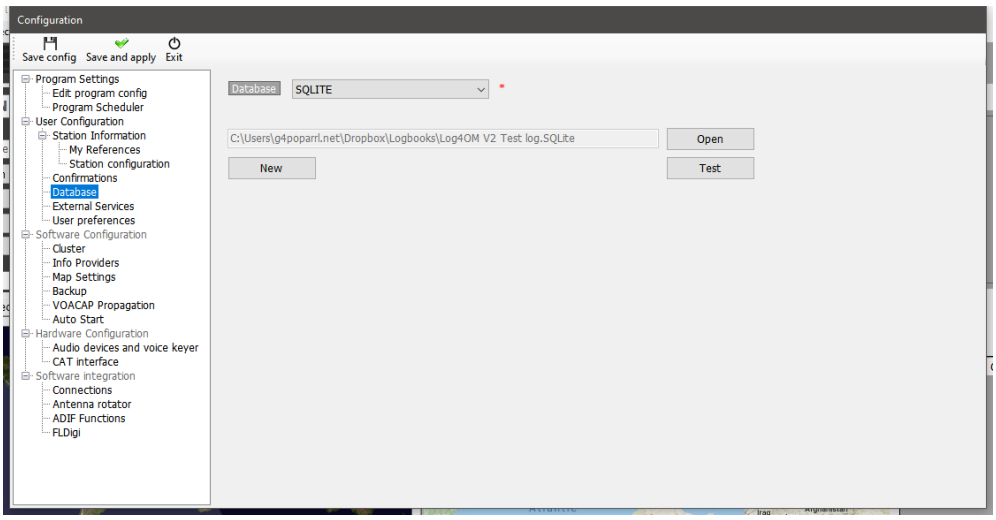
There are many methods for confirming a QSO and the user may need to mark the status differently for each, the confirmations tab provides personalisation of user confirmation requirements and display.



Database

The user may create as many logbooks (Databases) as required, perhaps Home, Portable, Club, Contest call etc.

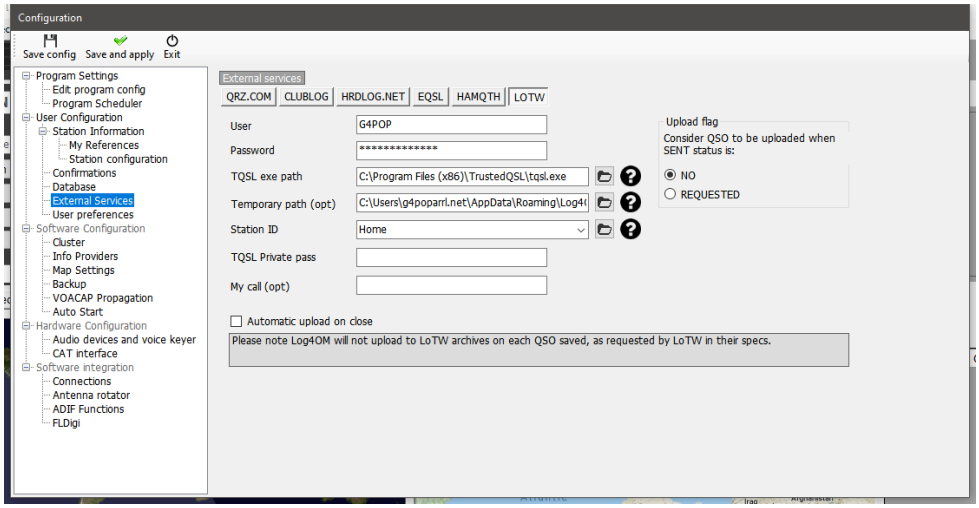
The standard database format is SQLite which will be ideal for the average user, if multiple stations require simultaneous logging to a common database, perhaps a contest group or Expedition where there could be a station set up for each band then the MySQL database should be selected.



External services

Log4OM provides both manual and automatic real time upload of QSO's to online logbooks like QRZ, Clublog, HRDLog, eQSL, HamQTH and LOTW.

User names, passwords, Station ID, Nicknames and API codes can be entered for each of the on-line logbooks and if automatic upload is required selected by checking the appropriate check box.

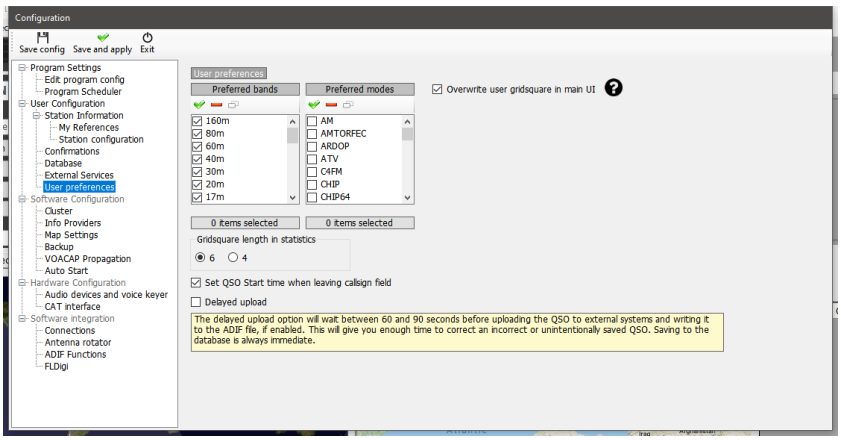


Passwords, API Keys and user names are case sensitive!

User preferences

The user should select the bands and modes of operation and interest and the preferred grid reference format (6 or 4 digits)

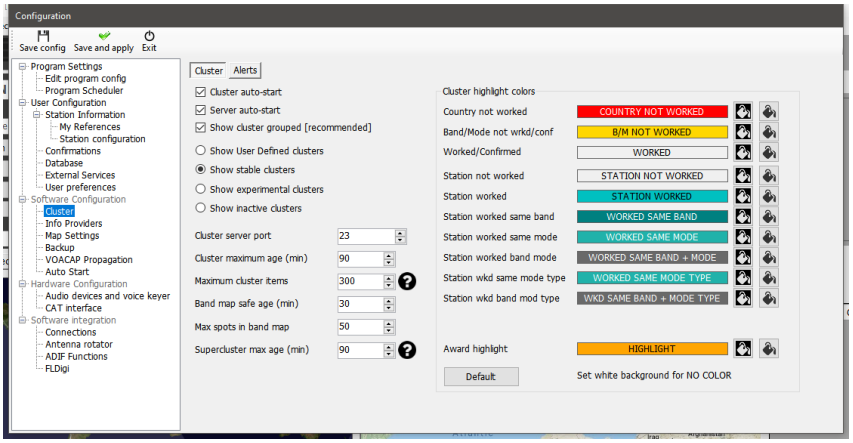
Checking the 'Set QSO start time when leaving the call sign field' box makes keyboard only operation very easy. Enter the call sign while waiting to call the station, when contact is made tab out of the call sign field to set the start time and adjust RST or add comments etc, when the QSO ends press the enter key on the keyboard to automatically record the QSO end time and save the QSO to the log - If automatic upload to the on-line logbooks/QSL systems is selected the QSO will automatically upload.

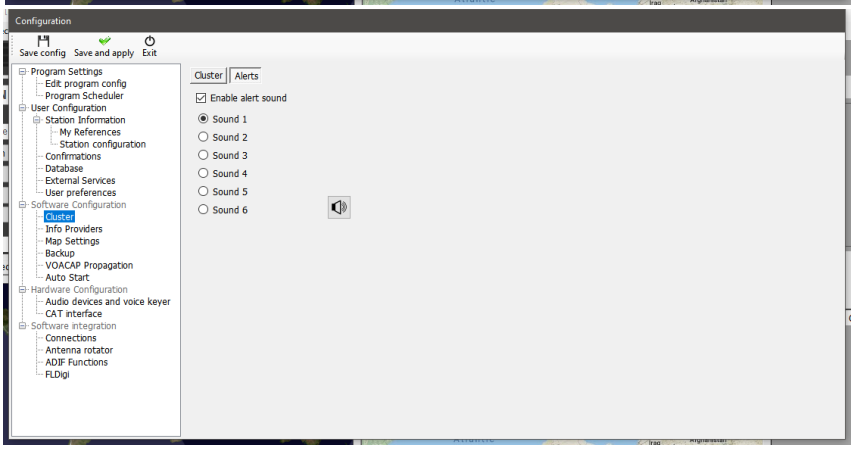


Software Configuration

Cluster

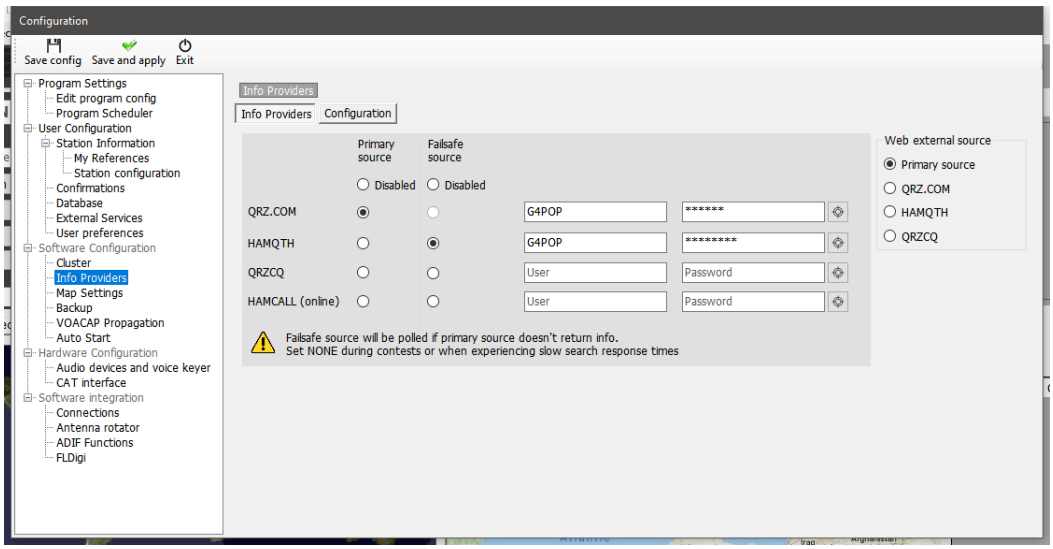
All settings for cluster colours, operation and spot alert sounds





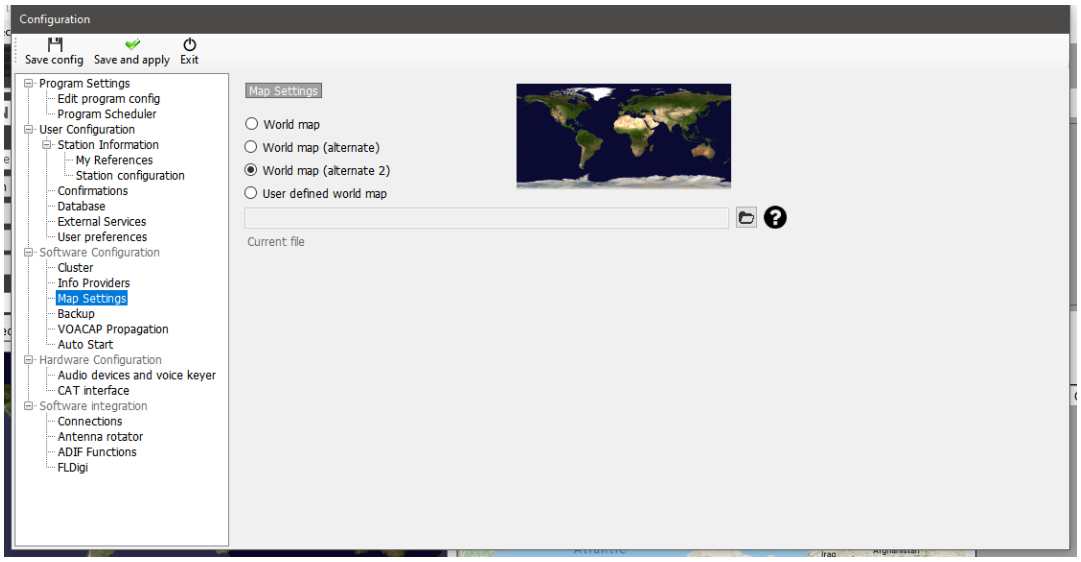
Info Providers

Log4OM V2 is unique in providing on line look up facilities with a fail-safe or fall back option should the prime on line lookup provider be off line or not provide data on the call sign being checked.



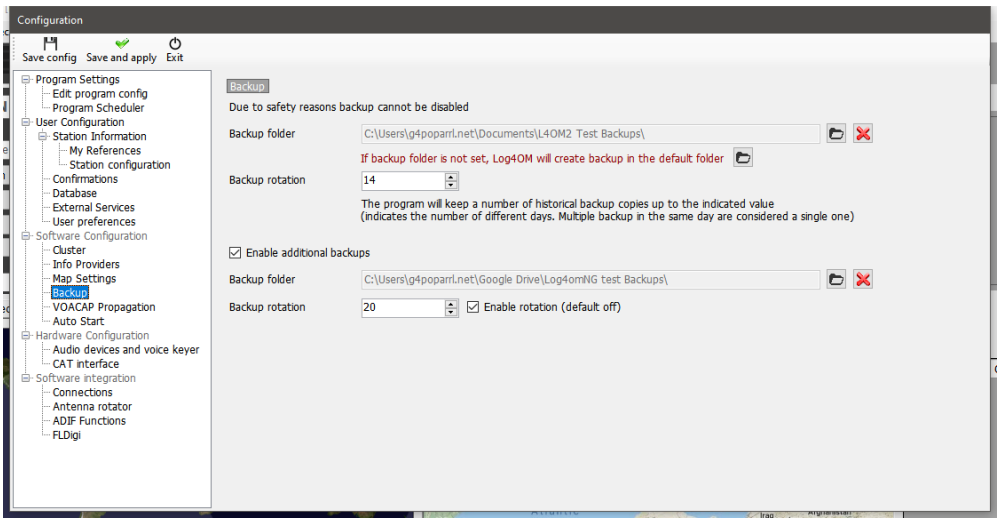
Map settings

Select a default map display or add a user defined world map.



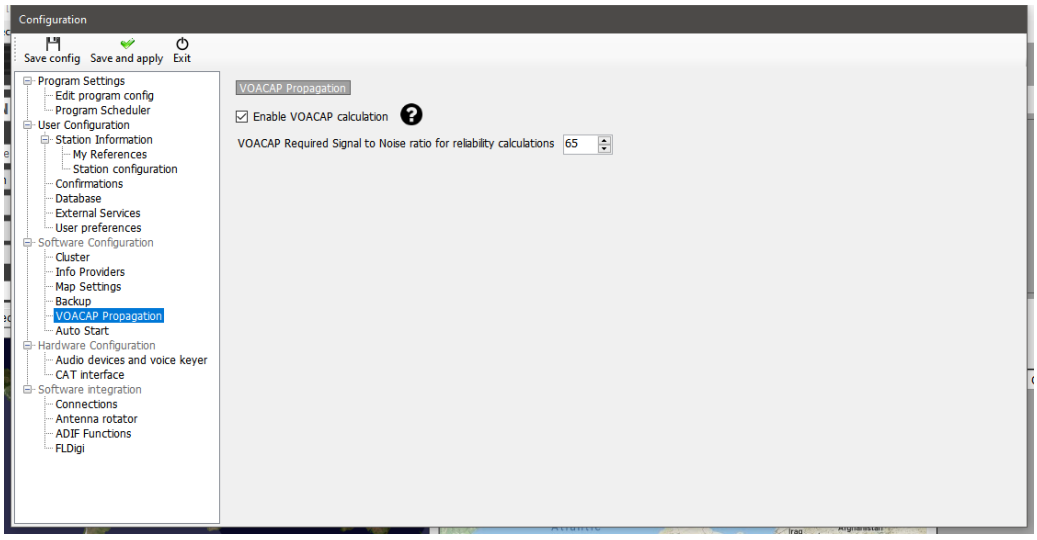
Backup

It is advisable to set automatic backups, preferably in two separate locations e.g. Documents folder on the hard drive and cloud storage like Dropbox or Google Drive for ultimate security of user data.



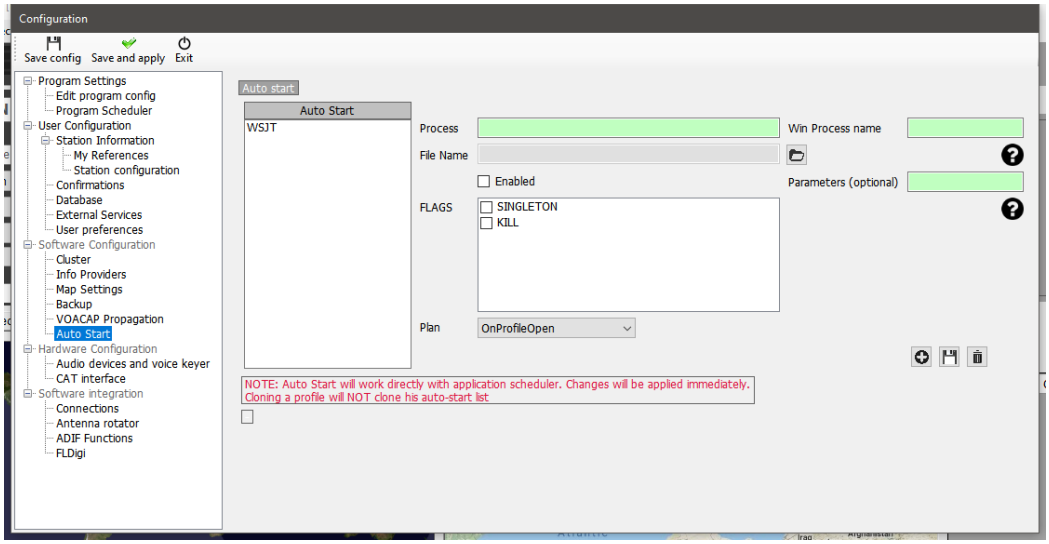
VOACAP Propagation

Enable the powerful propagation tool and the Signal to noise ratio threshold.



Auto Start

Set integrated programs to automatically start or close and add start-up parameters

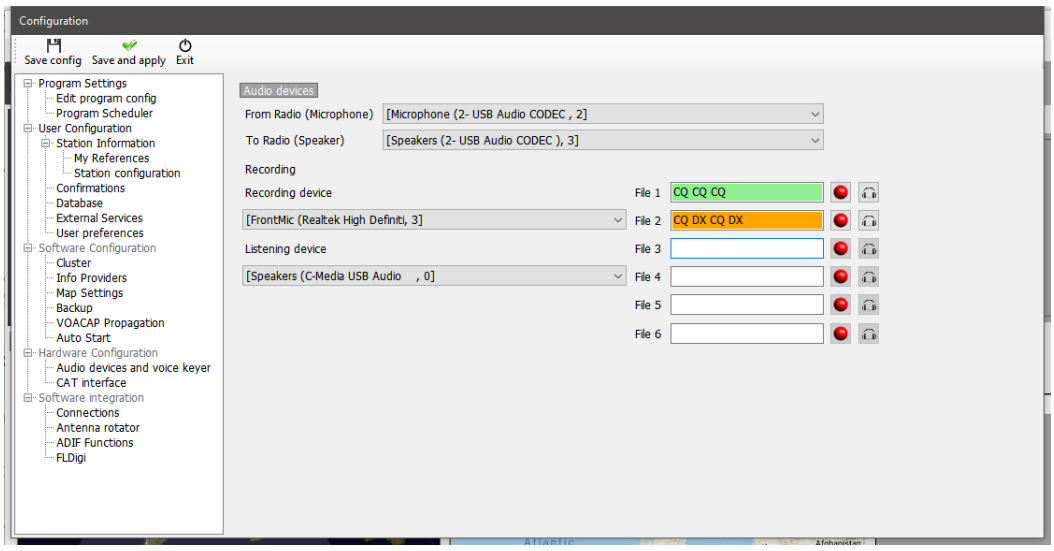


Hardware Configuration

Audio devices and Voice Keyer

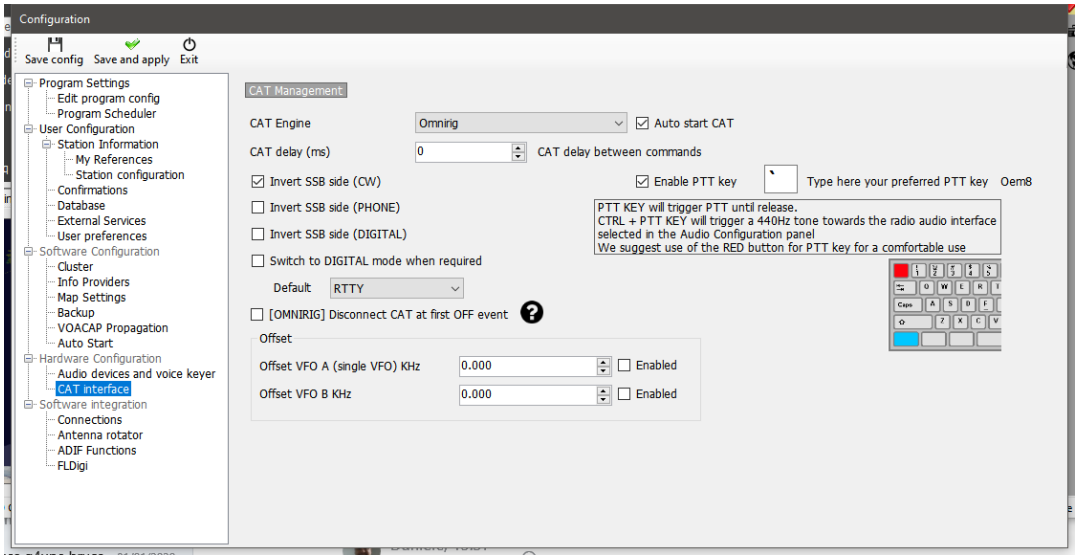
Log4OM provides a voice keyer facility which has six memories

1. Select the devices to be used for the transmission of the keyer messages in the 'From Radio and To Radio' drop down menu's
2. Choose the recording and Listening devices under 'Recording'
3. Provide a 'File name' for each memory.
   Note: Until a recording is completed the file name box will be highlighted Orange.
4. Hold down the red button to the right of a memory and record a message using a microphone connected to the computer – At the end of the recording release the record button.
   Note: The file name box will change to green to indicate that it contains a message.
5. Click on the headphone symbol to the right of the recording button to playback the recording for that memory.



CAT interface

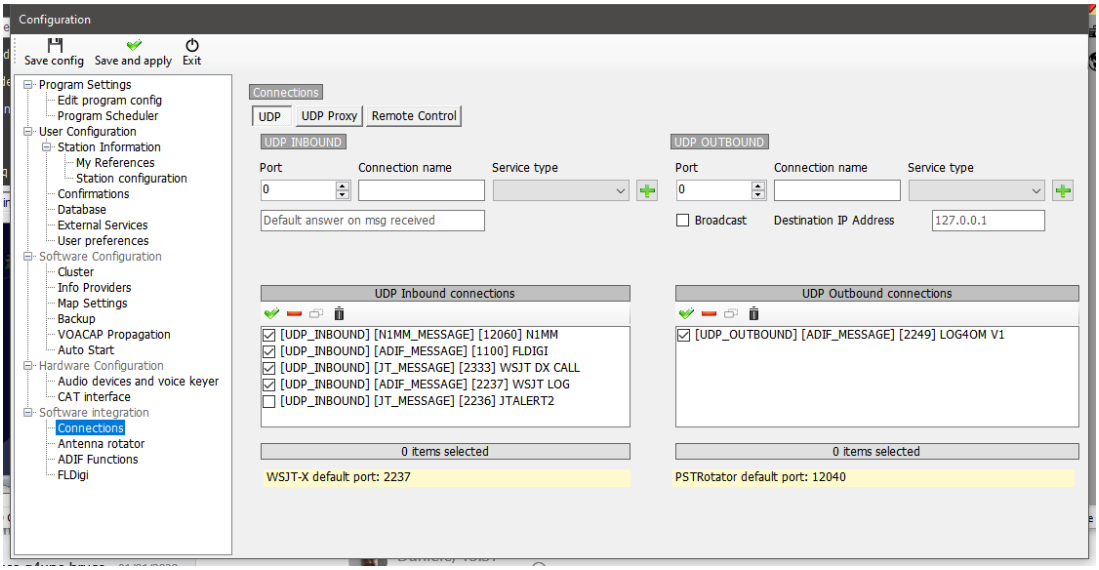
The CAT interface provides a choice of radio control either via Hamlib or Omnirig



Software Integration

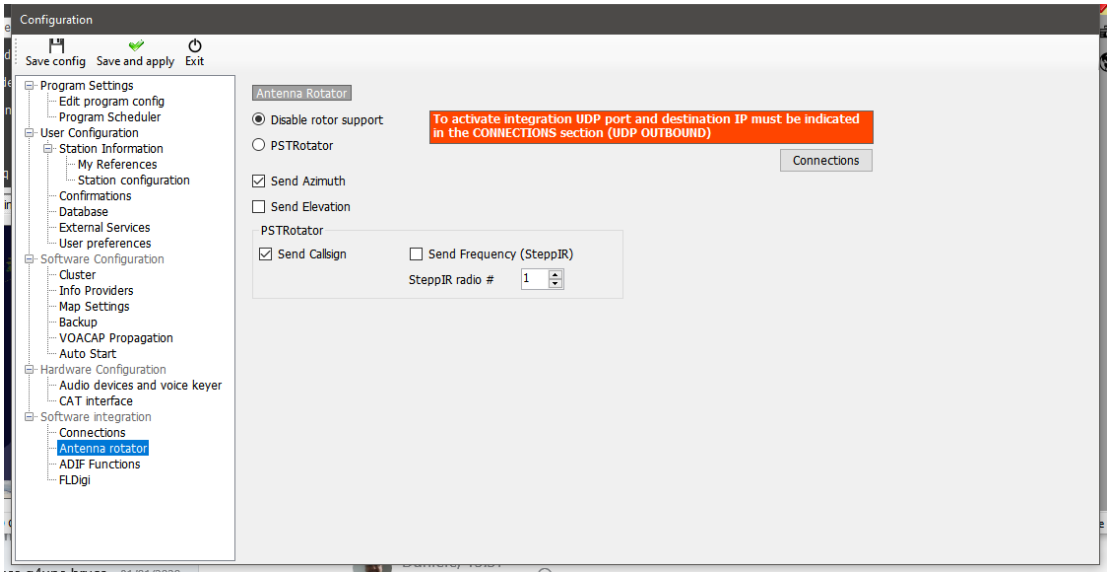
Connections

The connections tab provides three types of connection, UDP Inbound/Outbound (For integration with other software), UDP Proxy (Relay of data messages) & Remote control to enable software control via the internet. See the relevant sections of this user guide for further details.



Antenna rotator

Control of rotators via PSTrotator for Azimuth and elevation plus StepIR antenna setting.

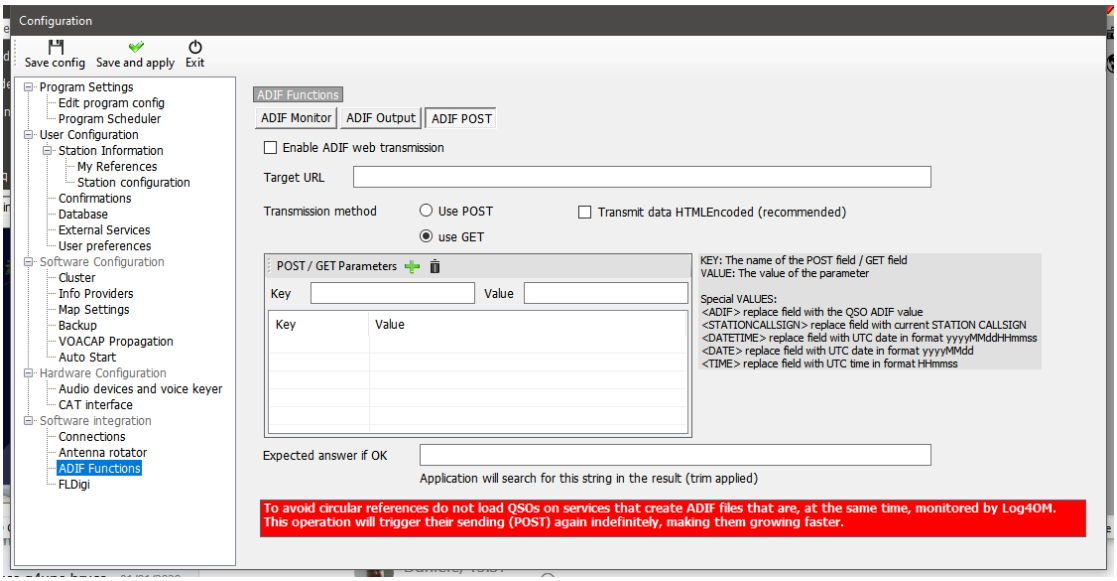


ADIF Functions

ADIF Monitor to automatically scan ADIF files searching for QSO's to automatically add to the Log4OM Logbook.

ADIF output broadcast ADIF information for use by other software.

ADIF POST will 'Post' or 'Get' QSO data to/from a website



Integration with external programs

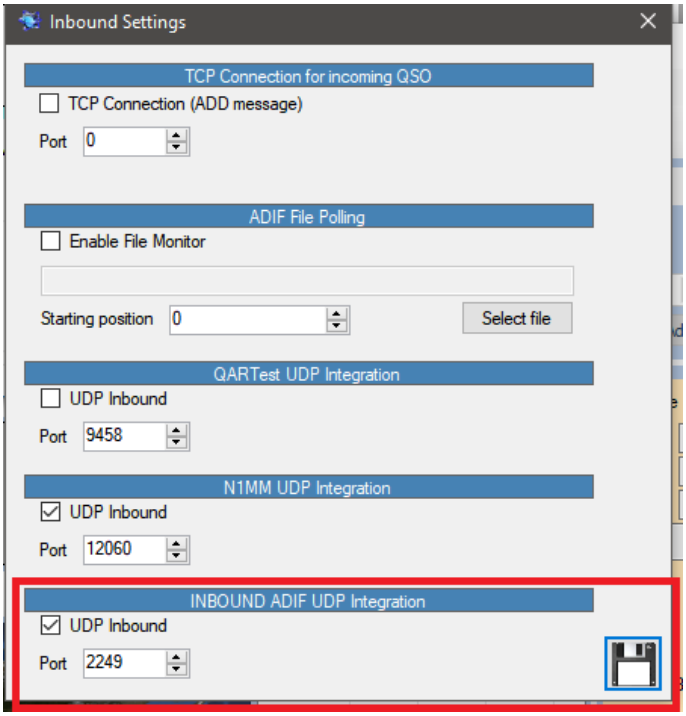
Log4OM will integrate (Connect to) many external programs via UDP or TCP connections for receiving data (Inbound) and broadcasting data (Outbound) using the Settings/Program Configuration/Software integration/connections tab.

Logging automatically to Log4OM version 1

The powerful UDP support in Log4OM enables a user of version 2 to have the program automatically add QSO's being logged to the version 1 logbook.

In version 1 follow the following steps:

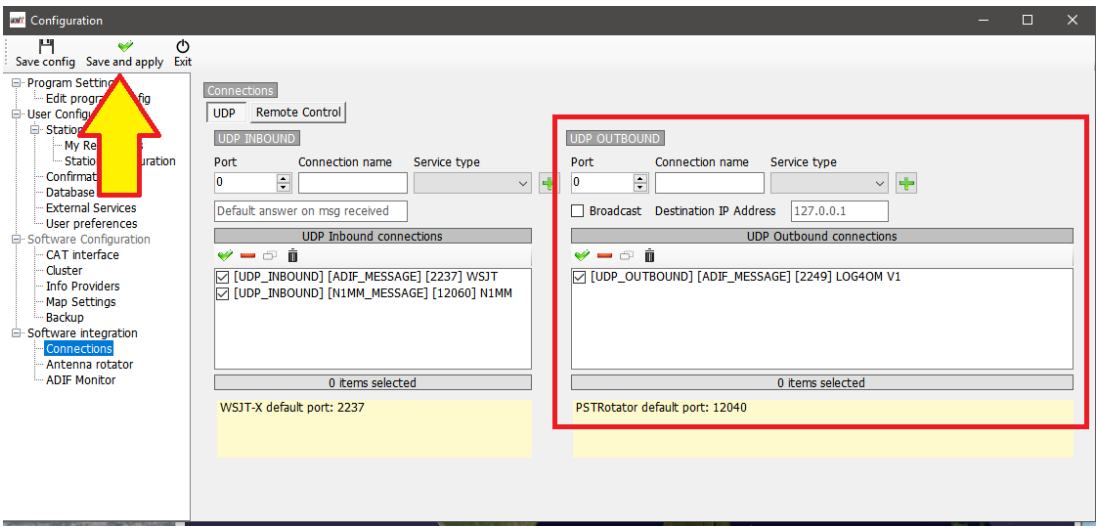
1. Open the communicator and click the Red stop button
2. Go to the Communicator 'Settings/inbound/inbound settings menu
3. Check the check box at the bottom marked UDP Inbound under 'Inbound ADIF UDP Integration' and enter Port number 2249 (See below)



4. Click the floppy disk 'Save' button and close the Inbound settings window.
5. Restart the communicator by clicking the Green 'Start' button.
6. **Minimise the Communicator - Do not close it**

In version 2 follow the following steps:

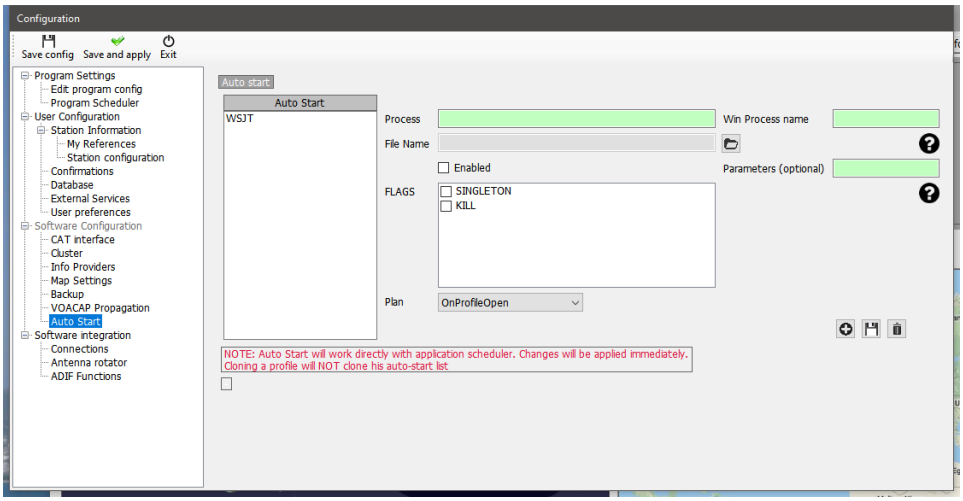
1. Open the 'Settings/Program configuration/software integration/connections' menu
2. In the UDP Outbound fields - Enter port number 2249 - Enter the 'Connection name' Log4OM V1 - Select 'ADIF Message' from the Service type drop down menu.
3. Click on the Green + sign to add the connection to the list box below - Ensure the service check box is checked! as in the image below.
4. Click 'Save and Apply'
5. Close and reopen both versions of Log4OM



Now QSO's logged in Log4OM Version 2 whether by manual entry in Log4OM Version 2 or automatically logged from an external program connected to Log4OM version 2 e.g. WSJT, JTAlert, FLDigi, N1MM etc will also be automatically logged to version 1, providing Version 1 is running.

Auto Start of external programs

It is possible to select which other programs will be started when Log4OM is started from the Program Configuration/Auto start tab.



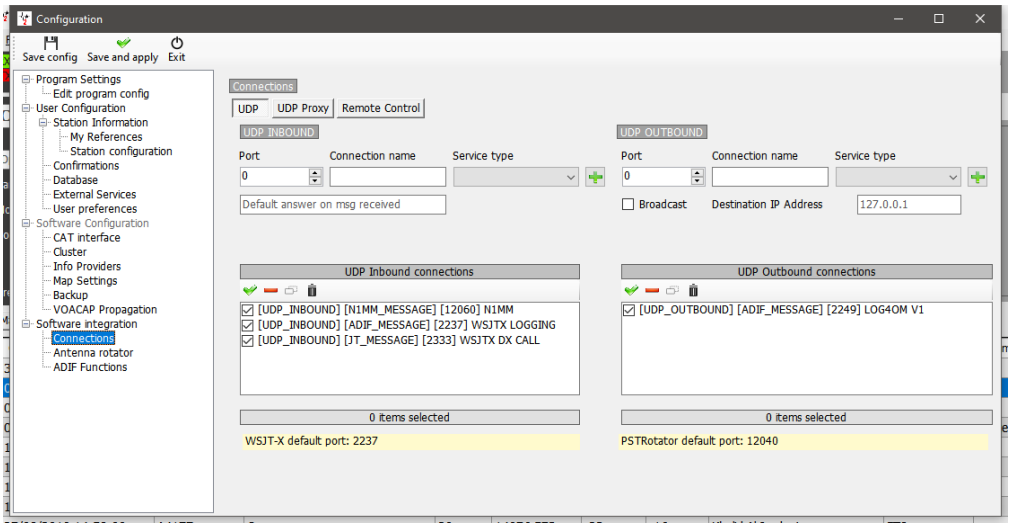
- Provide a process name
- Browse to the start exe for that program by clicking the folder icon to the right of the file name field
- Click 'Enable'
- Click the floppy disk save icon followed by the + button to add it to the auto start list
- Click Save and exit

Extra windows processes and parameters may be included

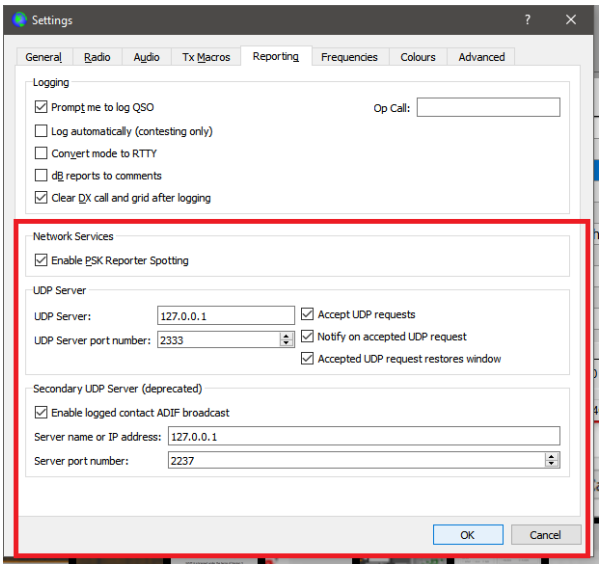
Connecting direct to WSJT/JTDX

In Log4OM settings/program configuration/software integration/Connections UDP inbound

- Enter port number 2237 in the port field
- Complete the connection name field, in this case WSJT LOGGING
- Select 'Service type' ADIF_Message
- Click the green cross (+) to add the connection to the list as in the image below
- Enter port number 2333 in the port field
- Complete the connection name field, in this case WSJT DX CALL
- Select 'Service type' JT_MESSAGE
- Click the green cross (+) to add the connection to the list as in the image below
- Click 'Save and Apply'



In the WSJT File/Settings/Reporting tab complete the settings outlined in red in the image below, close both programs and restart

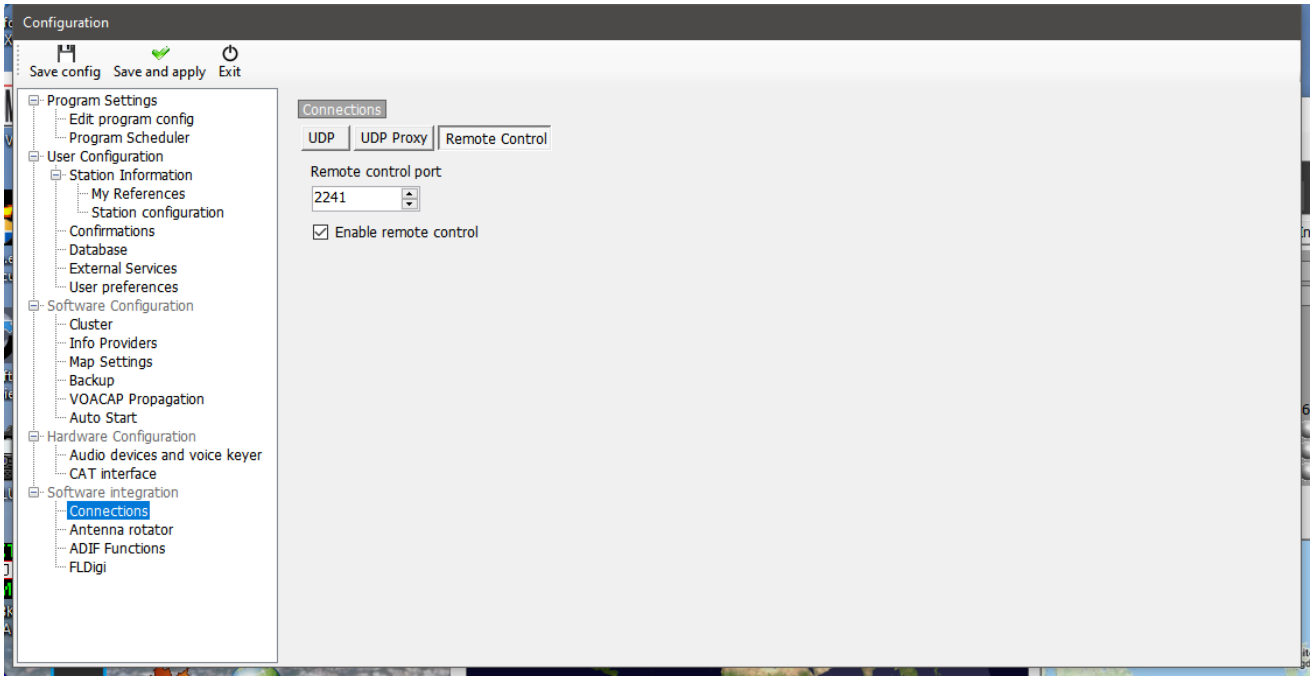


In WSJT File/Settings/Radio tab select whichever Omnirig rig is being used for WSJT

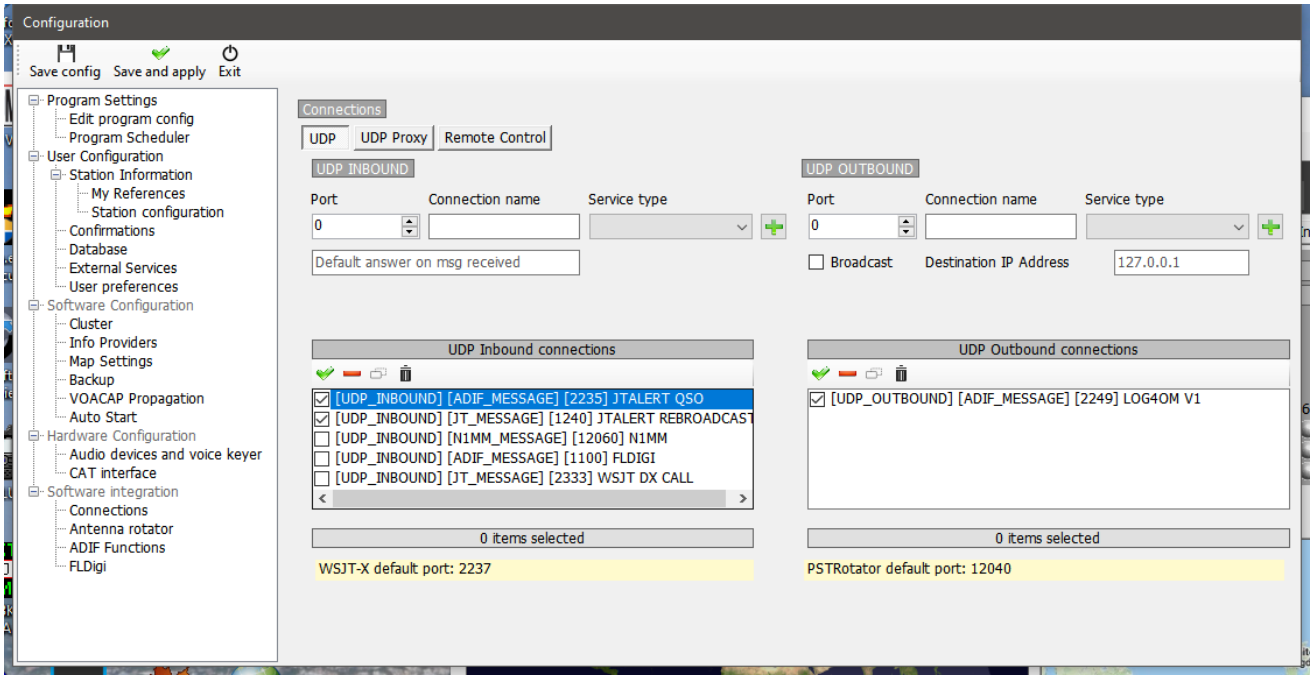
Calls entered in WSJT will be sent to Log4OM for lookup and QSO's logged in WSJT will auto-log to Log4OM

JTAlert and WSJT/JTDX set up

1.Enable the Remote Control port in Log4OM V2 with a UDP Port number of 2241

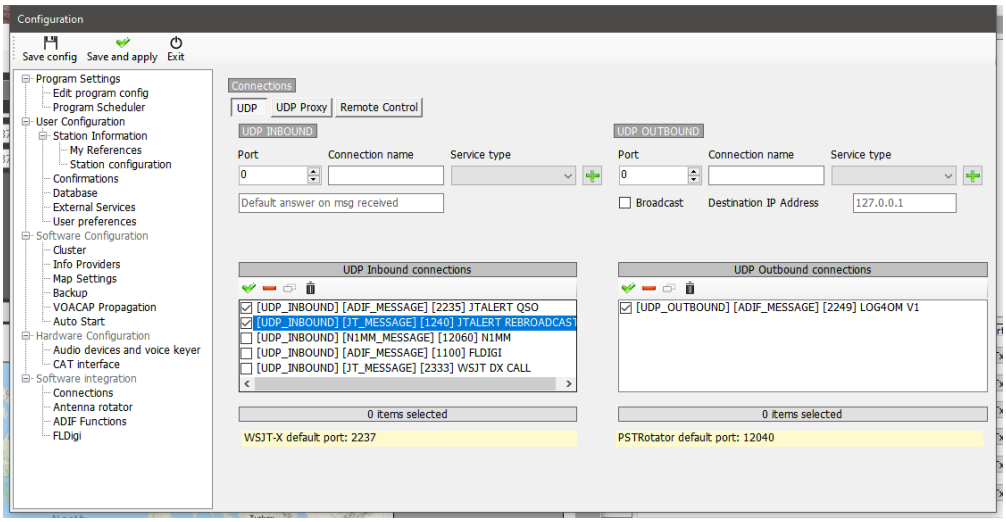


2.Create an "ADIF_MESSAGE" inbound connection in Log4OM V2 with a UDP Port number of 2235

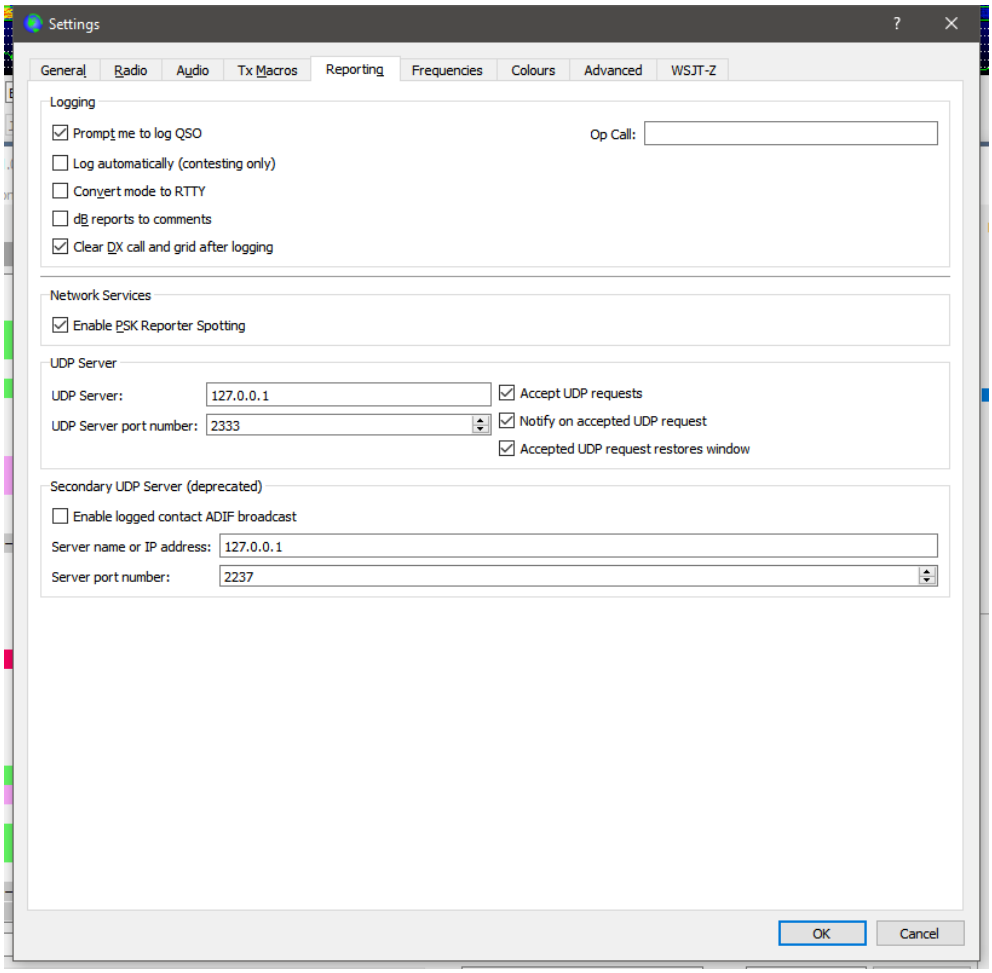


3. Create a "JT_MESSAGE" inbound connection in Log4OM V2 called JTALERT REBROADCAST with a UDP Port number of 1240

Port numbers are arbitrary but must match in the various applications



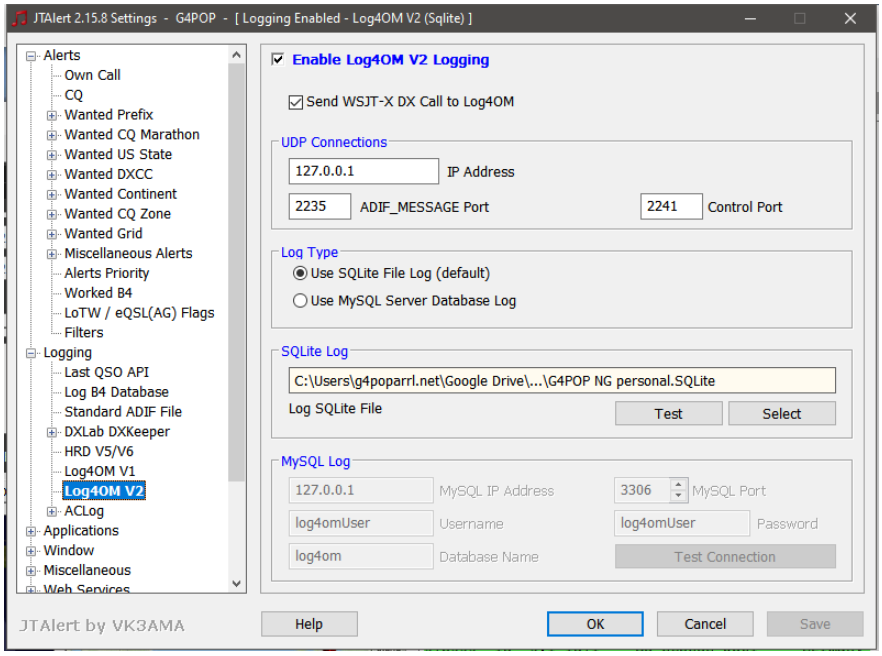
4. In WSJT/JTDX File/Settings/reporting check the boxes and set the ports as shown below.



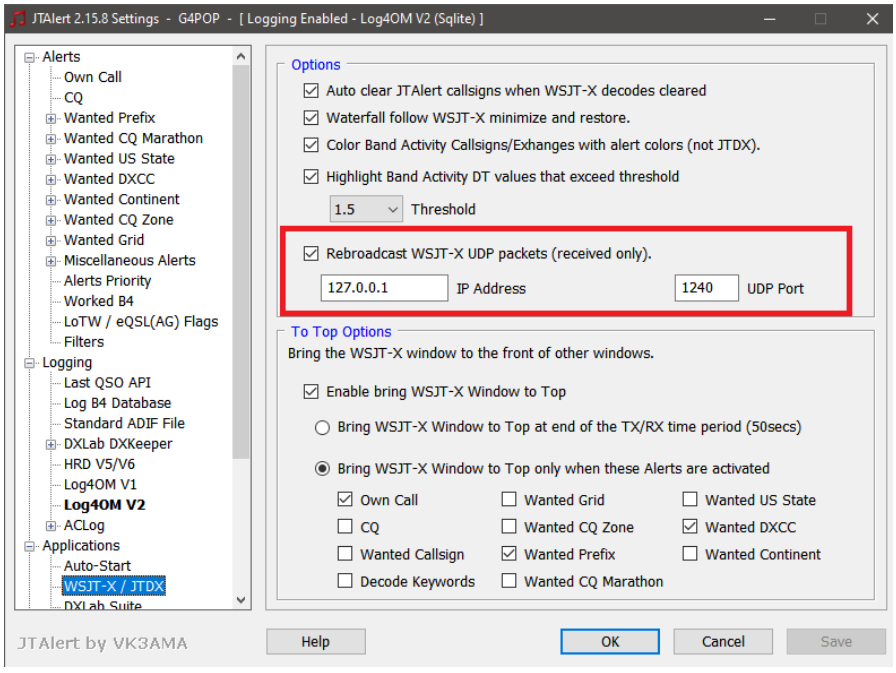
5.Enable the "Send WSJT-X DX call to Log4OM" and "Enable Log4OM V2 Logging" in settings/manage settings/Logging/Log4OM V2 in JTAlert.

6.Set the Control port in JTAlert to match the port used in Log4OM V2 (Step 1.)

7.Set the ADIF_MESSAGE port in JTAlert to match the port used in Log4OM V2 (Step 2.)

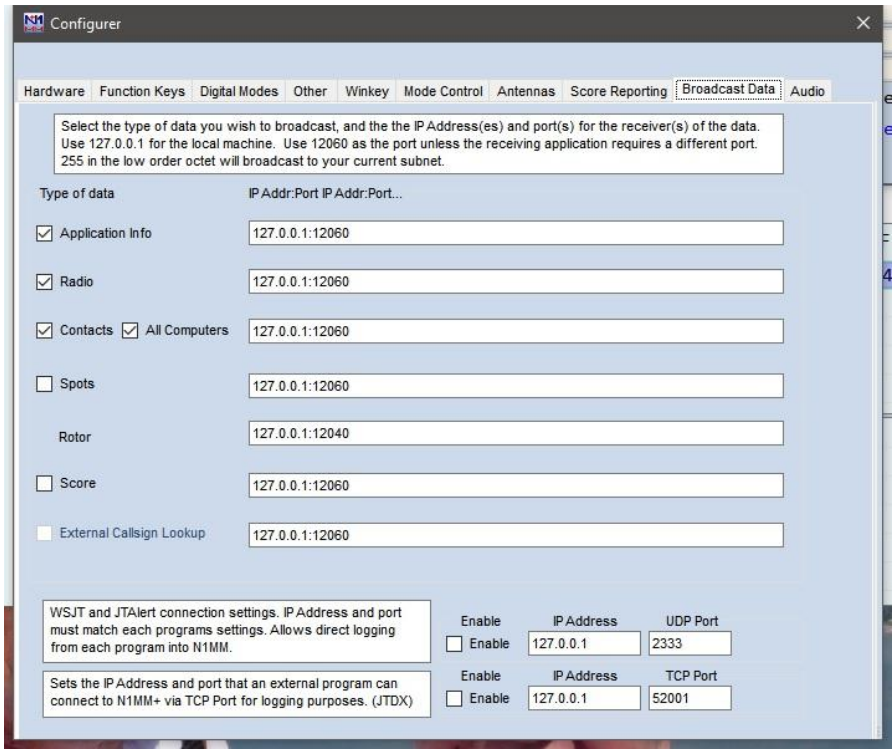


8. In settings/manage settings/applications/WSJT-X/JTDX in JTAlert enable "Rebroadcast WSJT-X UDP Packets (received only)" and set the IP Address to 127.0.0.1 and UDP Port number to match that set in Log4OM V2 step 3

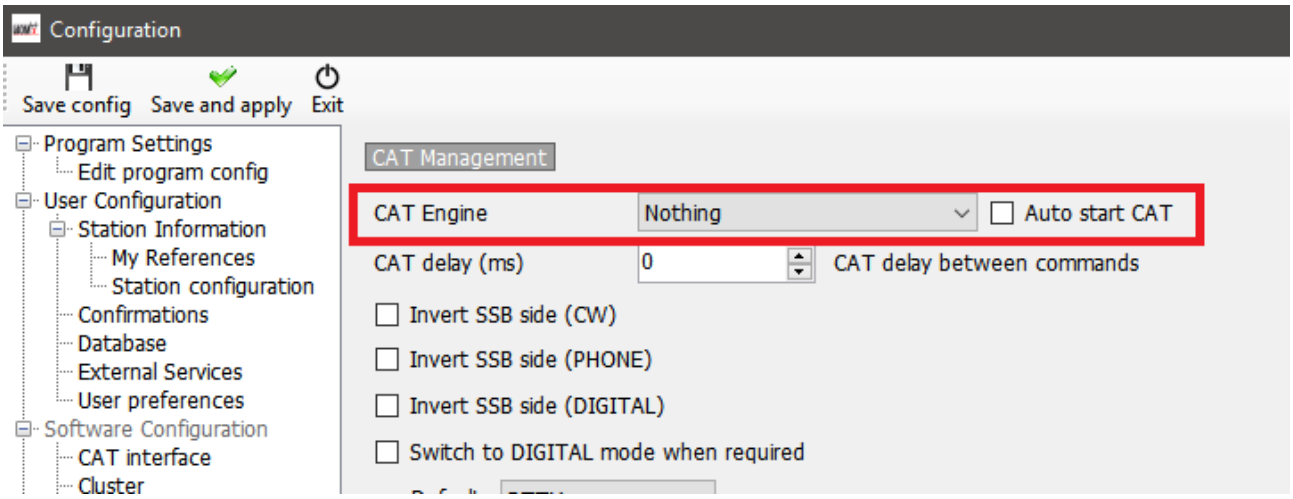


N1MM Contest Logger Integration

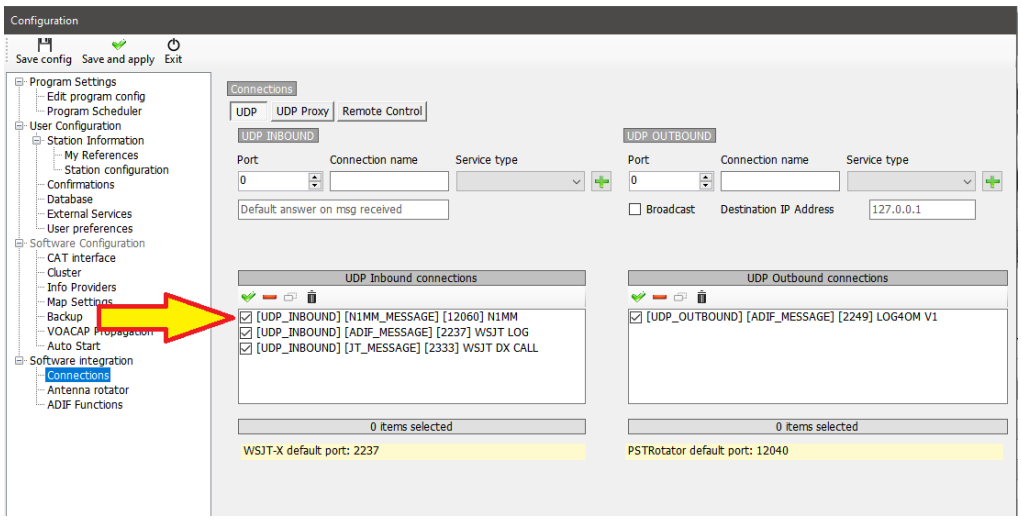
1. In the N1MM Config/Configure ports, mode control and other select the 'Broadcast Data tab
2. Check the top three check boxes and ensure the IP addresses and port numbers are equal to 127.0.0.1:12060 as below



3. In Log4OM choose 'Nothing' in the Configuration/CAT tab



4. Open the Configuration/Software Integration/Connections tab
5. Add an inbound UDP connection - Service type = N1MM_Message on Port number = 12060



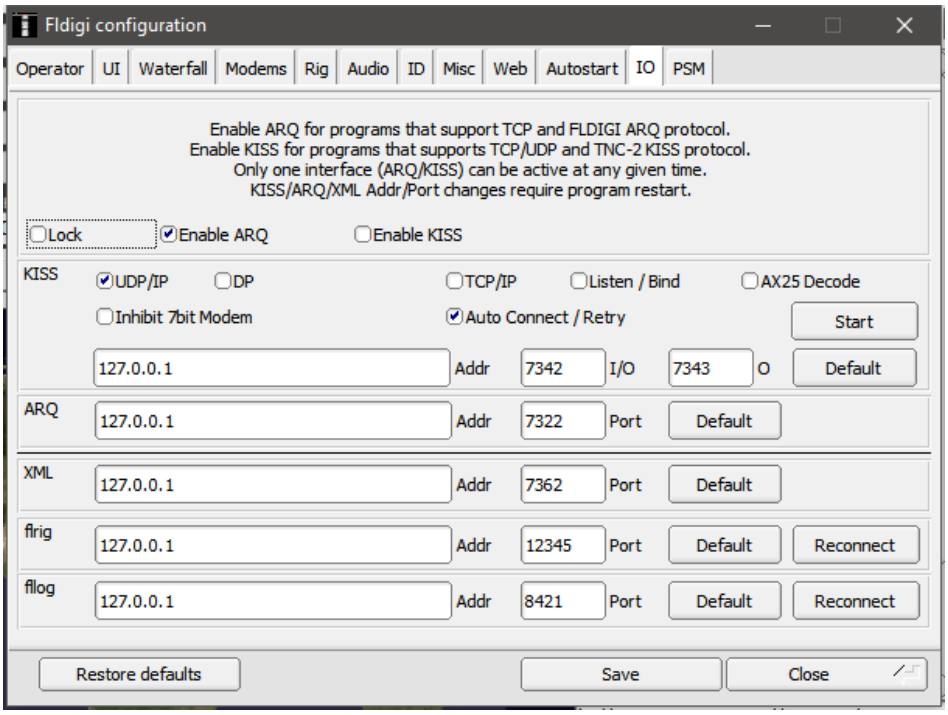
6. Click 'Save and Apply' **Restart both programs** and commence logging in N1MM and you will see the QSO's added to Log4OM as you add the QSO in N1MM

QSO's will be automatically be updated from whichever on line lookup system the user has selected to add the data not normally saved by N1MM.

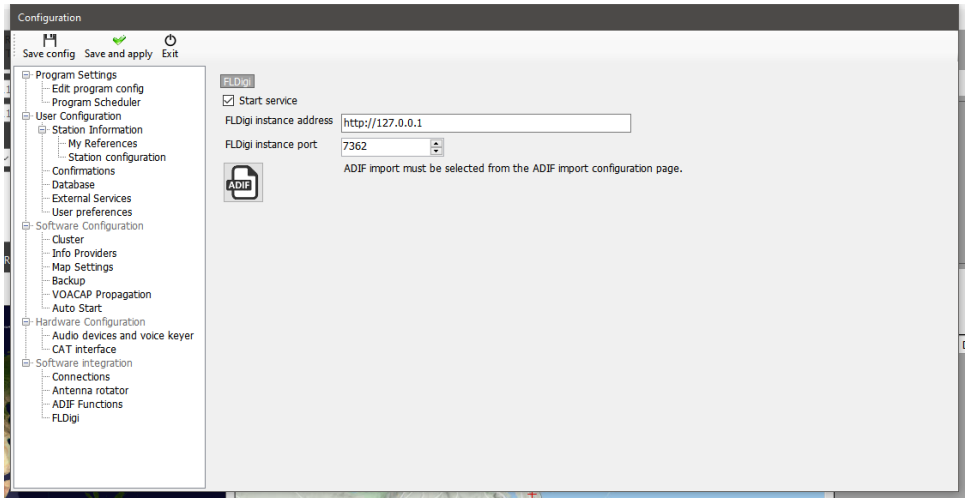
FLDigi Integration

All popular data modes, CW and RTTY are provided by FLDigi which is easily to interface with Log4OM version 2.

- In FLDigi ensure that Rig control is not activated in the Configuration/Rig tabs
- In FlDigi go to the Configure/other/IO tab
- Ensure that enable ARQ is selected and that the XML interface is set as shown below.
- Check the 'Lock' check box, save and close



- In Log4OM go to the Settings/Program configuration menu and select the FLDigi tab
- Ensure that the FLDigi instance address is set to http://127.0.0.1 and the FLDIG Port instance to 7362 (The same as in the FLDigi XML menu above)

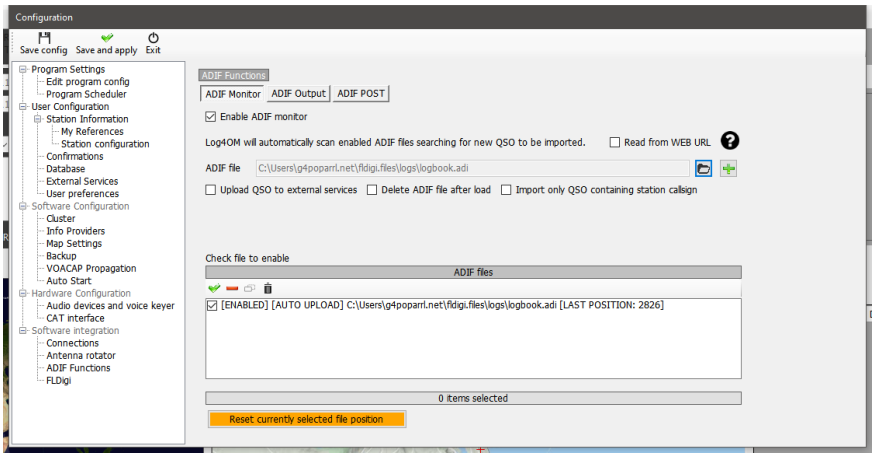


- Check the 'Start service' check box and click the save config icon at the top left corner.

The above actions connect Log4OM to FLDigi to enable Log4OM to send the frequency and mode to FLDigi and the entered call sign in FLDigi to be displayed and looked up in Log4OM.

FLDigi does not send the frequency and mode to Log4OM its one way traffic!

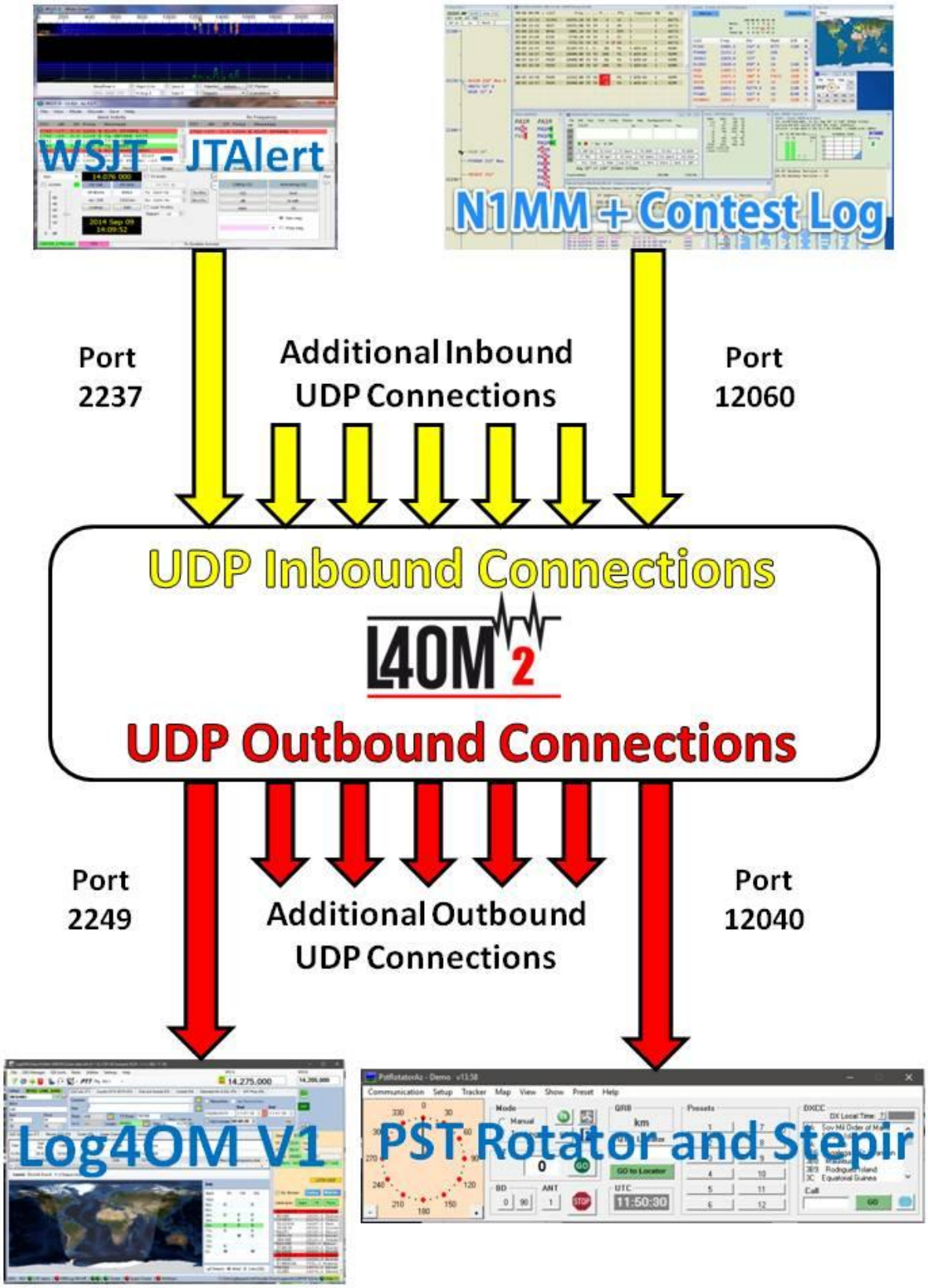
- Click on the ADIF icon in the Log4OMSettings/Program configuration/FLdigi tab



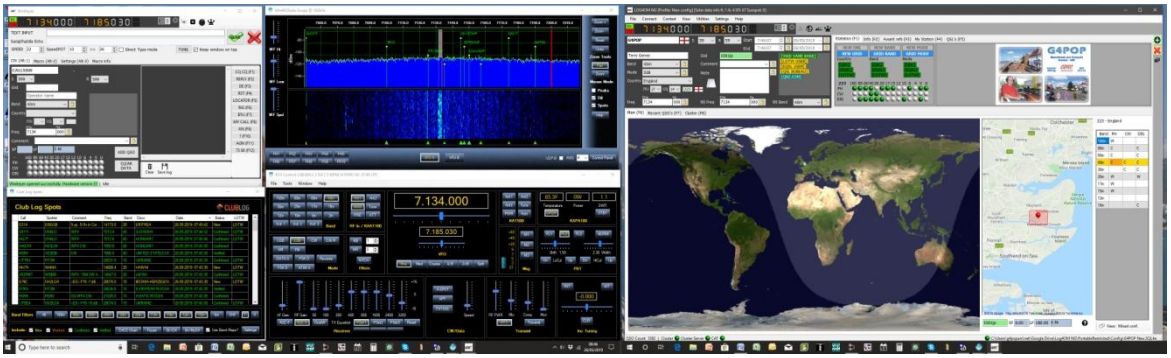
- In the resulting ADIF functions/ADIF monitor tab check the 'Enable ADIF monitor' check box
- Click the button to the right of the 'ADIF file' field
- Navigate to the location of the FLDigi logbook ADIF file (Usually C:\Users\YOUR USER NAME\fldigi.files\logs\Logbook.adi)
- Click on the green **+** to the right of the ADIF File path field to insert it into the file list window and ensure the check box is checked.
- Click on 'Save and apply'

Setting the ADIF monitor in Log4OM causes each new QSO logged in FLDigi to be added to the Log4OM logbook.

UDP Connection Possibilities



Win4K3, Win4Icom & Win4Yaesu Suites Integration (By Tom VA2FSQ)

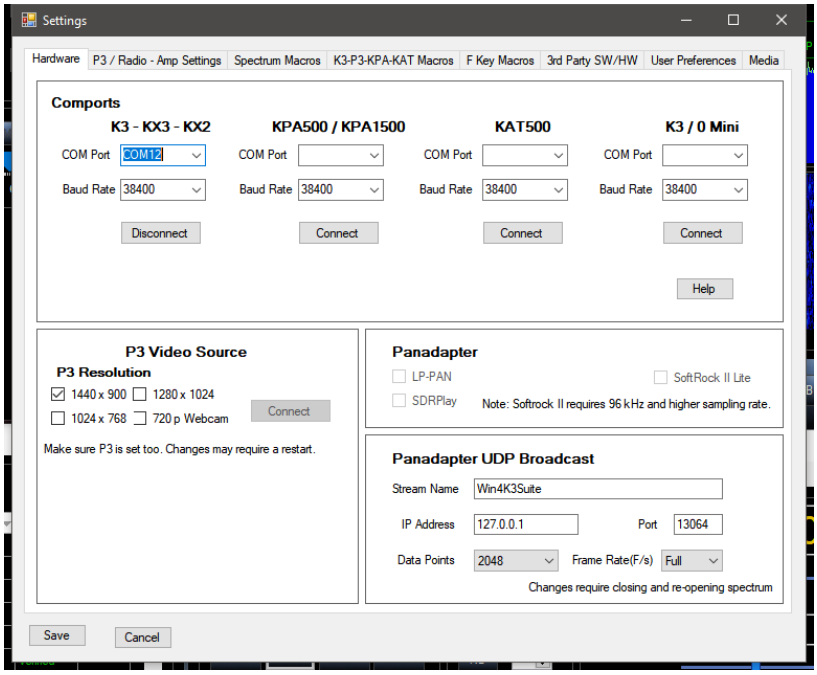


Win4K3Suite has a robust and trouble free comport sharing mechanism built in. Please take a few minutes to understand the concept below. Below the concept are specific examples.

Concept

Win4K3Suite supports many third party products by providing 4 auxiliary ports that accept CAT commands. These ports provide an interface that for all purposes look just like a K3, KX3 or Icom radios to the third party product.

First establish CAT control with the radio using the Hardware tab of the Win4(nn) suite Tools/settings menu using the Com port the radio is connected to and baud rate set in the radio menu.



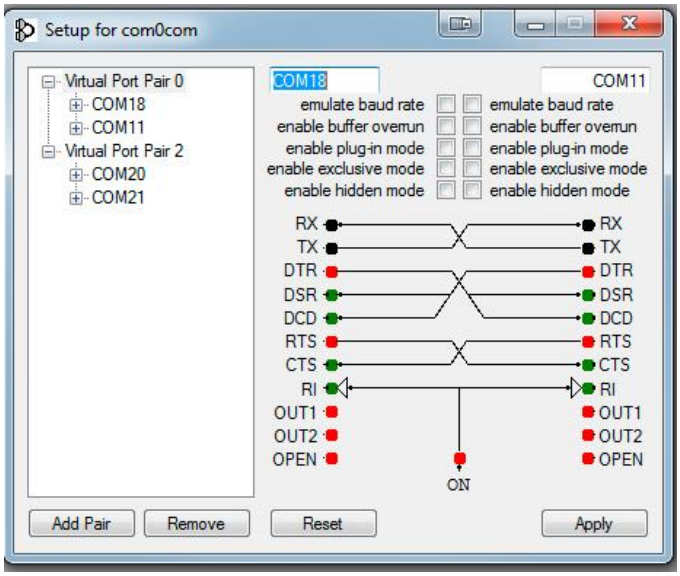
In order to use this feature you will need to download a third party utility that provides virtual serial port pairs to Windows.

The recommended utility which is free, is COM0COM which is open source and available at:
http://sourceforge.net/projects/com0com/files/com0com/2.2.2.0/

Be sure to use the version for your operating system. There is one for 32 bit (com0com 2.2.2.0 – i386-fre.zip) and another “Signed” for 64 bit (com0com-2.2.0-x64-fre-signed.zip). Only the version at this link is signed. You must use this version.

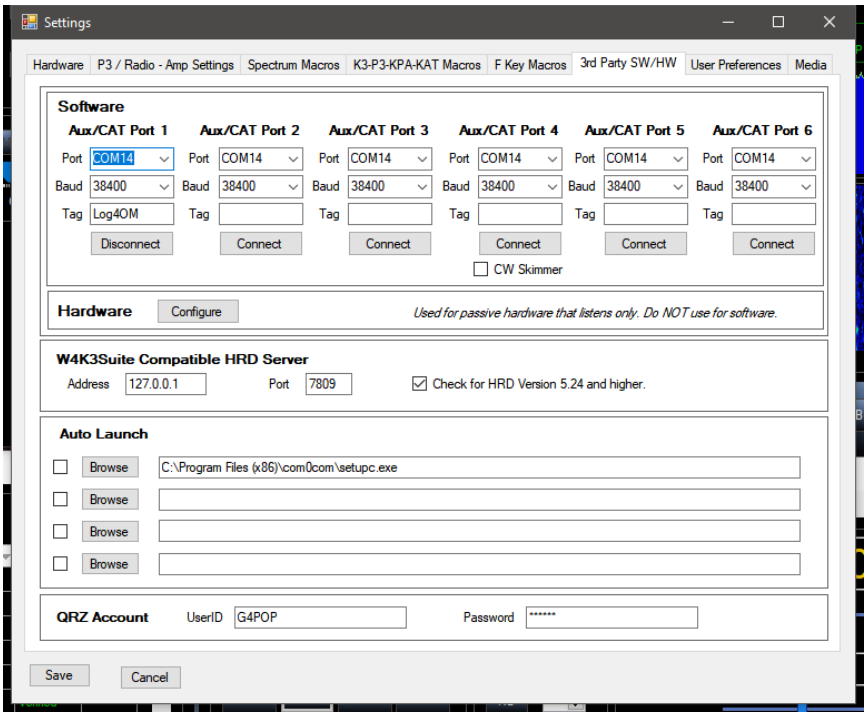
If a newer version is downloaded that is NOT signed there will be many errors even if the program is uninstalled it and then try to install this version. If this happens, contact support for how to fix the errors (for those in the know, use the device manager and delete the driver file, then reinstall).

After installation this, open the Windows start menu and in the com0com folder run “Setup.” (Don’t run Setup Command line).



There will be by default one pair already defined with weird letter names. Just click on the names and change the names of the comports to a comport name that **does not exist on your system**. In the above I chose COM13 and COM14 for one pair. Please note that many older software packages may not know about comports with numbers higher than COM9.

Once the comport pair is created, start up Win4K3Suite and select Tools, Settings, and the 3rd Party SW/HW tab. You will see the following screen:



In this screen there are 4 AUX/CAT ports. Each one can connect to a comport of a virtual comport pair. In this example, AUX/CAT Port 1 is connected to comport 18. The others are currently to other virtual port pairs.

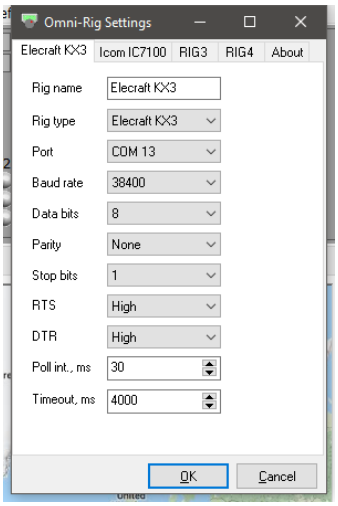
All you need to do now is save the settings and then configure your third party product to connect to comport 11 which is the second comport of the COM11-COM18 pair. This has effectively connected the two products together via a null modem cable.

If you wish to connect a hardware device to your system such as an antenna tuner that supports the K3 or Kenwood radios, just plug it into an available serial port on your computer and enter that comport number in one of the AUX/CAT ports. No need for a comport pair.

There are other packages available that create virtual comport pairs such as one from Eltima ($$) and VSPE. Please note that while these work, none seem to be as stable as COM0COM.

DTR and RTS: Win4K3Suite does not support the use of DTR or RTS through it's virtual port facility. Always use software based PTT. A consequence is that software that can produce CW via DTR signal control will not work. (An example is N1MM's CW keying). Use a WinKey (best) or another serial port with a keying mod.

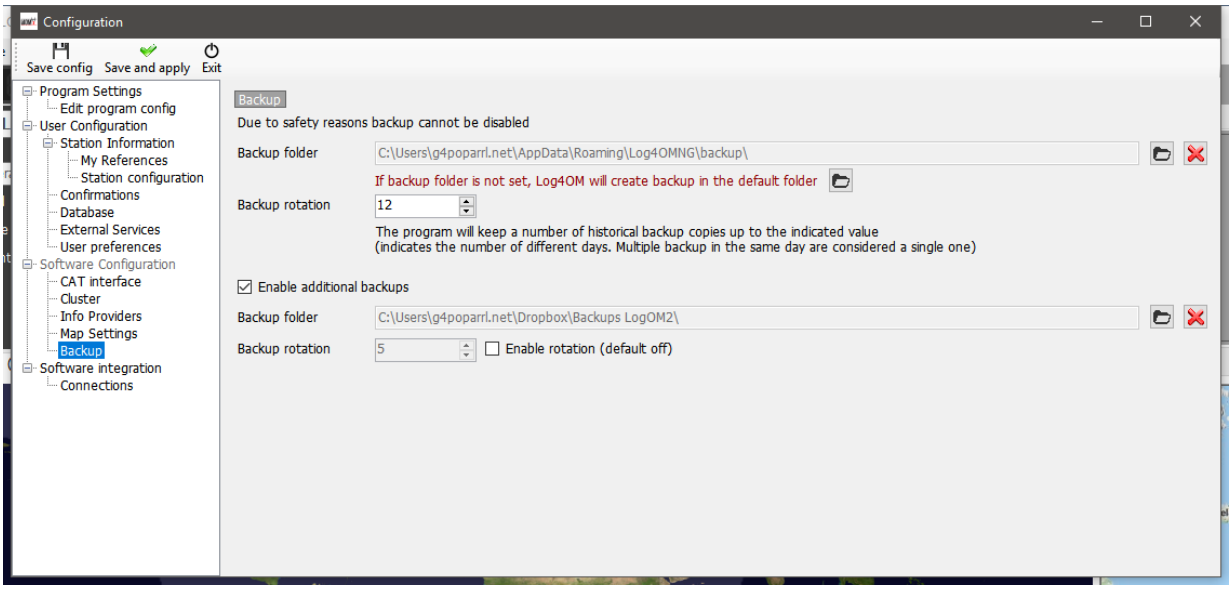
In the LOG4OM V2 Connect/CAT/Show Cat interface menu select the other end of the ComOcom pair, in this example port 13 and match the baud rate setting.



Program start sequence must now be first ComOcom then Win4(nn) suite and lastly LOG4OM V2Troubleshooting

Restoring Log4OM after a crash or failure

Backup files are saved every time Log4OM is closed providing the user has selected that function in the options/settings 1 menu as shown below.



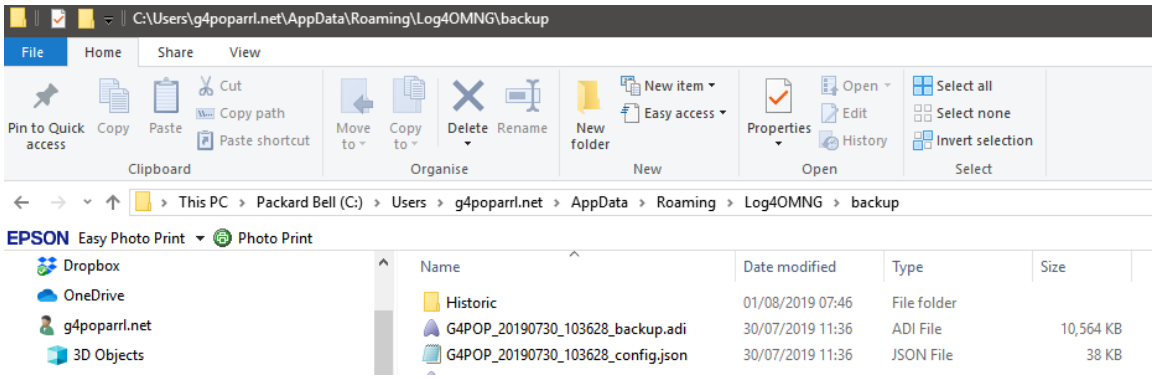
The backup files contain copies of the following critical files.

- ADIF file of the database
- Main Configuration file

The files are saved in a default folder at:

C:\Users\YOUR USER NAME\AppData\Roaming\LogOMNG\Backup

Unless a specific folder(s) have been selected in the options/settings 1 menu



If no backup has been set.

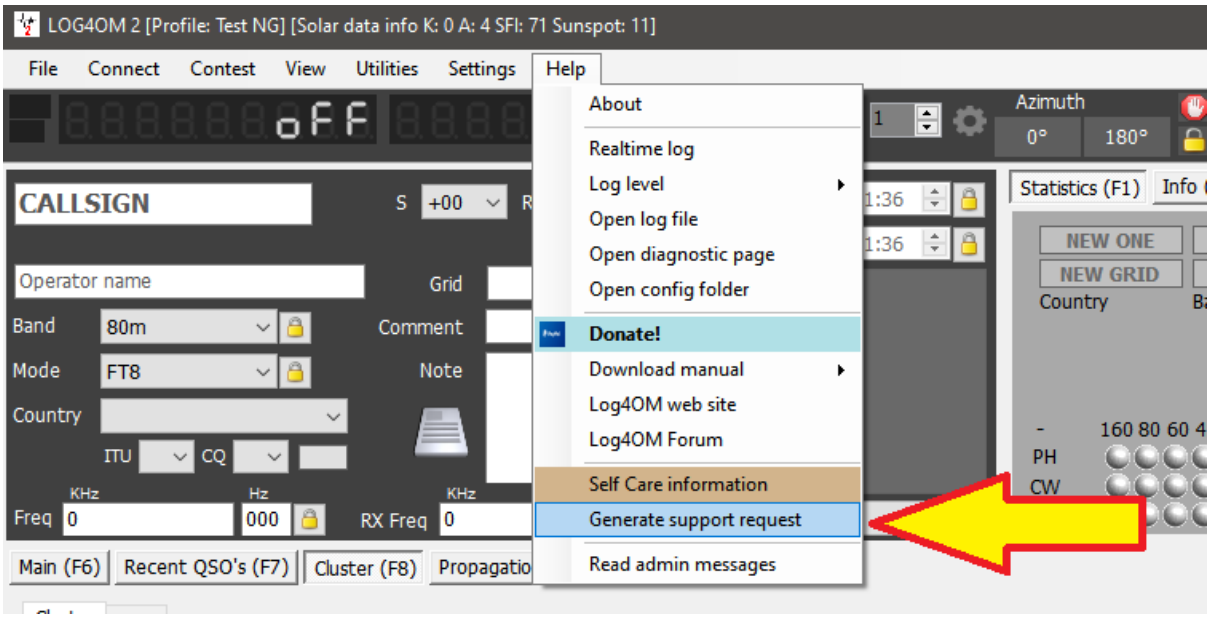
There is a 'Historic' file that saves the previous months set up files to ensure that the bulk of date is preserved and only the time elapsing from the end of the month saved is lost.

The 'Historic' files are saved to:
C:\Users\YOUR USER NAME\AppData\Roaming\LogOM\Backup\historic

How to generate a support request

How to prepare log file for support review. Please do this only when asked for the log file package:

- Enable an higher log level. Usually errors are found by “trace mode” information that is not usually saved in the program log file to avoid unnecessary size of the file itself. The support team will ask you for the log level require. Debug is usually enough, but sometime we need an higher level of trace.
  Debug and trace mode can be set from HELP MENU
- REPRODUCE THE ISSUE. - The log will save the events for the current day only, it is removed daily, so an issue that happened yesterday will not be available in the log today.
- Take note of the time of day (UTC) when the issue happens. The log will usually produce thousands of lines, and this could help us identify the issue.
- Open the help menu an select SEND BUG report, please check the box “include ADIF backup”, answer all questions listed as fully as possible, then click on “prepare support request”.



- **Send the ZIP file** to the provided email address.

To debug remote calls and other things, the log will also store web URL and other information related to how the software works. Usually that information is safely stored on your PC, but you should be advised that we can see some information (password for online services like QRZ/HAMQTH or similar) from your log. That information, if needed, will be used to reproduce the issue and provide a better support, and will be deleted and never disclosed when we close the incident request.

If you feel un-comfortable about the above you can send a log extract purged of that non relevant information (it’s a text file) editing the log file(s) (log4om and communicator) contained in the support request.

Log files are stored in your pc roaming folder - Help/open configuration folder

The authors of Log4OM and its associated documentation and visual aids take no responsibility for any defects or malfunctions cause by its use or interpretation. E&OE