

DXCOMPASS

User's Guide

Beam Heading, Station Time, DX Information, and Custom Map Utility

For amateur radio operators

Developed by KOMLD • Version 2.0 • August 2026

PURPOSE: DXCompass puts the destination, true beam heading, distance, local time, DX time, grid, and map route in one operating view—so the operator can spend less time looking things up and more time working DX.

Operational scope

DXCC entity and QRZ callsign lookup • short- and long-path headings • custom map profiles • Auto Zoom • live grayline

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READING PATH: New users should read Sections 1–3, then keep Appendix A near the operating position. Sections 6–9 are reference material for map creation and configuration.

1. First-Time Setup: Establish the Home Map

1.1 Why the home map comes first

Before DXCompass can produce meaningful headings, distances, times, and plotted routes, it must know the operator's geographic origin. The active home-map profile establishes that origin. It should therefore be created, imported, activated, and verified before normal DX operation begins.

FOUNDATION RULE: The active home map is the coordinate foundation of DXCompass. Every short-path heading, long-path heading, distance, and plotted route begins at its stored center coordinates.

1.2 Obtain Your Six-Character Home Grid

The normal first-use method begins with the operator's six-character Maidenhead grid. No QRZ XML subscription or QRZ_CONFIG.ini file is required. If the shack computer is offline, use a smartphone or another internet-connected device to view the public QRZ callsign page and record the grid.

1. On a smartphone or other internet-connected device, open qrz.com and look up your own callsign.
2. Sign in to QRZ.com, then select the Detail tab on the callsign page.
3. Find Grid Square and record the six-character locator exactly as shown.
4. Enter that locator in DXCompass Create Map and click Use Grid Center.

Biography	Detail	Logbook	Web 680	Awards 17
Lookups	55766 (156034)			
QRZ Record#	2135767			
QRZ Admin	K0MLD			
Date Joined	2001-03-17 19:57:31			
Last Update	2026-06-23 00:06:25			
Class	Extra	Codes:	HVIE	
Effective	2017-03-21			
Expires	2027-03-20			
Grid Square	DM79hm			
Geo Source	Geocoded Address			
US State	Colorado			
US County	Jefferson			
Sunrise	12:07:54 UTC			
Sunset	02:00:14 UTC			
ITU Zone	7			
CQ Zone	4			
GMT Offset	-7 hours			

Figure 1. Find the six-character Grid Square on the public QRZ Detail tab.

GRID-CENTER PRECISION: DXCompass calculates the center coordinates of the six-character grid. At Colorado latitudes, that grid covers approximately 2.9 by 4.4 miles, so the calculated origin may differ from the operator's actual location by as much as about 2.7 miles. This is generally insignificant for HF beam headings, but it is less precise than coordinates returned by a QRZ XML lookup.

1.3 Create the Initial Home Map

Use the procedure that matches the internet access available at the shack. Both methods produce the same grid-origin home map and do not require QRZ_CONFIG.ini.

PREFERRED ORIGIN: Use a callsign-origin home map when QRZ XML provides accurate station coordinates. Use the grid-origin procedures below when XML lookup is unavailable or when the center of a specific six-character grid is intentionally desired.

1.3.1 Internet-Connected Shack Computer

1. Place DXCompass.exe, config.ini, and cty.csv together in the program directory. DXCompass creates the Maps subfolder automatically when required.
2. On the shack computer, obtain the operator's six-character home grid from QRZ.com as described in Section 1.2.
3. Start DXCompass, open Create Map, select Grid, enter the six-character grid, and click Use Grid Center.
4. Confirm the displayed grid and the calculated center latitude and longitude.
5. Open the Azimuthal Map Generator and enter the values supplied by the DXCompass assistant.
6. Generate and download the PNG without resizing, cropping, editing, renaming, or converting it.
7. Leave the downloaded PNG in the shack computer's Downloads directory.
8. Return to DXCompass and click Import Downloaded Map.
9. Confirm that the new profile is active, then select a known DXCC entity and verify that the station marker and short-path direction are plausible.

1.3.2 Shack Computer Without Internet Access

This method separates the DXCompass work from the two internet-dependent tasks: obtaining the grid from QRZ.com and generating the background map. A smartphone, another computer, or an internet-connected helper may be used.

ORDER IS IMPORTANT: DXCompass imports the newest suitable PNG from the shack computer's Downloads directory. Complete the website generation and transfer the unmodified PNG into that directory before selecting Import Downloaded Map.

1. On a smartphone or another internet-connected computer, look up the operator's callsign on QRZ.com and record the six-character grid exactly.
2. On the offline shack computer, start DXCompass and open Create Map.
3. Select Grid, enter the recorded six-character grid, and click Use Grid Center.
4. Record or photograph all values and selections supplied by the DXCompass assistant, including the calculated latitude and longitude.
5. Take those values to the internet-connected device or helper.
6. Open the Azimuthal Map Generator and enter the values exactly as supplied by DXCompass.
7. Generate and download the PNG without resizing, cropping, editing, renaming, or converting it.
8. Transfer the downloaded PNG to the offline shack computer using removable media or another available file-transfer method.
9. Place the transferred PNG in the Downloads directory of the shack computer running DXCompass.
10. Only after the PNG is in Downloads, return to DXCompass and click Import Downloaded Map.
11. Confirm that the new profile is active, then select a known DXCC entity and verify that the station marker and short-path direction are plausible.

HELPER COMPUTER SECURITY: If the operator signs in to QRZ.com on another person's computer, sign out afterward and decline password saving. Transfer only the downloaded map PNG; never share QRZ_CONFIG.ini.

1.4 Azimuthal Map Generator Website

Website: <https://azimuthalmap.com/>

DXCompass uses the Azimuthal Map Generator to produce the background-map PNG. The website groups its controls into Center Location, Title & Appearance, and Map Elements. Use the DXCompass Create Map Assistant as the authoritative checklist while locating the corresponding controls shown below.

CREATE MAP ASSISTANT
Use the white fields as copy sources for the map website. The checkboxes shown below represent the required final settings and should match the website before the PNG is downloaded.

CENTER LOCATION

Origin source:

☐ Callsign: KOMLD **Resolve**

☐ Grid: DM79HM **Use Grid Center**

Origin label: KOMLD

Lat: +39.51872 **Copy** Lng: -105.34813 **Copy**

KOMLD resolved to DM79HM — +39.51872, -105.34813

☐ Limit visible range

TITLE _APPEARANCE

Projection: Azimuthal Equidistant Projection

☐ Show title

☐ Show coordinates

Image size: 1200px

Background (Bg): 0,0,0

Ocean: 71,170,240

Land: 221,206,151

Borders: Grid:

MAP ELEMENTS

☐ Lat/long grid

☐ Distance rings

☒ Ring labels

☒ Bearing labels

☐ Center marker

☐ Scale legend

Open Map Website **Import Downloaded Map** **Close**

Figure 2. DXCompass Create Map Assistant—the authoritative source for website values and selections.

Azimuthal Map Generator

☒ Equal Distance ☐ Equal Area

Center Location

Search for a city...

Lat Lng

☐ Limit visible range

Title & Appearance

Azimuthal Equidistant Projection

☒ Show title
☒ Show coordinates

Image size:

Width & height of exported image

Bg Text Ocean Land

Borders Grid

Map Elements

☒ Lat/long grid
☒ Distance rings
☒ Ring labels
☒ Bearing labels
☐ Center marker
☒ Scale legend

Download

Figure 3. Azimuthal Map Generator control layout.

DO NOT COPY THE SCREENSHOT VALUES: The illustrated Lat 0, Lng 0, and 800px are website defaults or examples. Enter the signed latitude and longitude supplied by DXCompass, select the image size required by the assistant, reproduce its colors and checkbox states, and download PNG—not SVG.

1.4.1 Create Map Assistant-to-Website Field Correspondence

Match every applicable Create Map Assistant value or selection to the corresponding Azimuthal Map Generator control. The assistant is authoritative; the website screenshot shows only its default or example state.

ASSISTANT-ONLY FIELDS: Origin source, Callsign, Grid, Resolve, Use Grid Center, and Origin label establish the map origin inside DXCompass. They do not have separate website controls; their result is represented by the Lat and Lng values copied to the website.

Group	Create Map Assistant	Azimuthal Map Generator
Center Location (Latitude)	Lat (copiable)	Paste from map assistant
Center Location (Longitude)	Lng (copiable)	Paste from map assistant
Center Location	Limit visible range	Leave unchecked
Title & Appearance	Azimuthal Equidistant Projection	Do not change
Title & Appearance	Show title	Uncheck
Title & Appearance	Show coordinates	Uncheck
Title & Appearance	Image size	Set to 1200px
Title & Appearance	Background (Bg)	Use RGB values specified
Title & Appearance	Ocean	Use RGB values specified
Title & Appearance	Land	Use RGB values specified
Title & Appearance	Borders color swatch	Leave unchanged
Title & Appearance	Grid color swatch	Leave unchanged
Map Elements	Lat/long grid	Leave unchecked
Map Elements	Distance rings	Leave unchecked
Map Elements	Ring labels	Leave checked
Map Elements	Bearing labels	Leave checked
Map Elements	Center marker	Uncheck
Map Elements	Scale legend	Uncheck

1.4.2 Final Check Before Downloading PNG

- ☐ Equal Distance is selected—not Equal Area.
- ☐ Lat and Lng exactly match the resolved values shown by DXCompass, including minus signs.
- ☐ Title text, image size, and Limit visible range match the assistant.
- ☐ Background, Ocean, Land, Borders, and Grid colors match the assistant.
- ☐ All six Map Elements checkboxes match the assistant exactly.
- ☐ PNG is selected for download—not SVG.

DOWNLOAD ONLY AFTER THE CHECKLIST MATCHES: Click the website's PNG download button only after every item above has been confirmed. Do not resize, crop, edit, rename, or convert the downloaded file before DXCompass imports it.

1.5 What DXCompass Does

After the home map is established, DXCompass becomes a focused Windows utility for the moment when a DX operator needs an immediate, usable answer. Select a DXCC entity—or resolve a callsign if QRZ XML capability is configured—and the program gathers the geographic and operating context onto one screen.

- Resolves the destination latitude, longitude, and six-character Maidenhead grid.
- Calculates short-path and long-path true headings.
- Displays distance in the preferred primary units, with the alternate units also available.
- Shows local time, UTC, and estimated time at the DX destination.
- Displays DXCC reference information such as prefix, continent, CQ zone, ITU zone, and UTC offset.
- Plots the short-path route on the active custom map profile.
- Displays a live UTC-based grayline overlay with daylight, civil twilight, and nighttime shading.
- Marks the subsolar point with a projected gold Sun symbol.
- Automatically adjusts DX-label color for readability in daylight and darkness.
- Copies a formatted heading summary to the Windows clipboard.

1.6 Program Files and Optional Support Files

Item	Purpose
config.ini	Station, display, map, and saved MapZoom-window settings.
cty.csv	AD1C DXCC reference data used to populate the entity list and related fields. (do not edit)
QRZ_CONFIG.ini	Optional. QRZ XML credentials used only for callsign resolution and callsign-origin maps; not required for grid-origin setup or ordinary DXCC selection.
Maps\	Created automatically by DXCompass when required; contains map-profile folders with a PNG map and matching .map.ini sidecar.

IMPORTANT: Keep each program support file with the deployed copy of DXCompass.exe. Do not substitute a similarly named file from an older build without first preserving the working installation.

1.7 First Startup Check

1. Confirm the configured station or active-map origin appears in STATION (HOME).
2. Confirm the footer reports that the DXCC entities were loaded from `cty.csv`.
3. Confirm a startup entity is selected, if one is configured.
4. Confirm the route map is visible and the Auto and Grayline checkboxes are selected.
5. If QRZ lookup will be used, resolve a known callsign once to test `QRZ_CONFIG.ini`.

2. A Tour of the Main Window

The main form is divided into six operational regions. Everything needed for normal use remains visible without opening a menu.

Region	What it shows or controls
1. Station (Home)	Active origin callsign or label, grid, latitude, and longitude.
2. DXCC Destination	Entity selector, DX callsign entry, primary prefix, continent, CQ zone, ITU zone, and UTC offset.
3. Beam Heading	Large short-path and long-path true headings plus distance.
4. Station Times	Local time, UTC, estimated DX time, and optional dates/seconds.
5. DX Information	Destination coordinates, resolved grid, route map, zoom control, Auto, Grayline, and MapZoom.
6. Operator Controls	Copy Heading, Create Map, Settings, and Exit.

2.1 Status footer

The footer provides a quick health check. It reports readiness or errors, the number and filename of loaded DXCC entities, the data-file load time, and the reminder that headings are True (T).

3. Everyday Operating Procedures

3.1 Select a DXCC entity

1. Open the DXCC entity list and select the desired entity.
2. DXCompass uses the entity reference coordinates from `cty.csv`.
3. Review the prefix, continent, CQ and ITU zones, UTC offset, and destination coordinates.

4. Read the short-path or long-path true heading and distance.
5. Check the estimated DX local time.
6. Use the compact map or open MapZoom for a larger route display.

ACCURACY NOTE: An entity selection uses the reference coordinates in `cty.csv`. It is ideal for general direction and context, but a callsign lookup usually provides the most precise station location. For most entities, higher precision will not be required for most DX beam headings.

3.2 Optional: Enable Precise Callsign Lookup with QRZ XML

This optional enhancement is not needed to create or use a grid-origin home map. Configure it when the operator wants the greater positional precision of QRZ XML for callsign-origin maps or DX callsign lookups. DXCompass requires internet access at the time of each XML lookup. A QRZ.com username and password alone are not enough; the account must also have an active QRZ XML Logbook Data subscription.

WHEN QRZ XML IS REQUIRED: QRZ XML access is required for a callsign-origin home map, an additional callsign-origin map, or a DX callsign lookup. It is not required for a six-character grid-origin map or for ordinary DXCC entity selection from cty.csv.

Create QRZ_CONFIG.ini beside DXCompass.exe using the established format below. Enter the operator's own QRZ username and password, and retain the supplied DXCompass agent value exactly as shown.

username = YOUR_QRZ_USERNAME

password = YOUR_QRZ_PASSWORD

agent = ABCD-EFGH-IJKL-MNOP (Find on QRZ Settings Page)

Save the file as QRZ_CONFIG.ini, not QRZ_CONFIG.ini.txt. The password is stored as readable text; do not publish, distribute, or place a completed credential file in a shared package. Start DXCompass and resolve a known callsign to verify the subscription and file before using precise callsign features.

SUBSCRIPTION DISTINCTION: A normal QRZ.com login may authenticate but does not provide the complete XML callsign data DXCompass needs. The active XML Logbook Data subscription is the functional requirement. See the QRZ subscription page for details.

3.3 Resolve a DX Callsign with QRZ

1. Click the DX Callsign field and enter the callsign.
2. Initiate the lookup using the program's callsign action (or the accepted keyboard behavior in the current build).
3. DXCompass queries QRZ and replaces the generic entity destination with the returned station coordinates.
4. Confirm the resolved six-character grid and destination values.
5. Review the recalculated heading, distance, time, and map route.

QRZ REQUIREMENT: Callsign lookup requires working QRZ credentials and service settings in QRZ_CONFIG.ini. If lookup fails, DXCompass reports the returned error rather than mixing new identity data with an earlier location.

3.4 Copy a Heading Summary

1. Confirm the intended destination is active.
2. Click Copy Heading.
3. Paste the formatted summary into a logger note, message, or other application.

4. Understanding the Results

Result	Meaning
Short path	The shorter great-circle route from the active map origin to the destination.
Long path	The reciprocal great-circle direction around the longer route, when enabled.
True heading	Bearing referenced to geographic north. DXCompass labels headings as True (T).
Distance	Great-circle distance between the active origin and destination.
DX local time	Estimated local time derived from the destination UTC offset in the reference or lookup data.
Resolved grid	Six-character Maidenhead grid associated with the active destination coordinates.

DAYLIGHT-SAVING TIME: Home local time normally follows the Windows time-zone and daylight-saving settings. Estimated DX local time is calculated from the UTC offset in the available reference or lookup data and may differ by one hour while daylight-saving time is observed at the destination. Confirm the destination's current local time when precise timing is important.

4.1 Active map origin versus configured station

The active map profile is authoritative for the geographic origin used by the map and calculations. A profile may include a callsign, grid, and precise coordinates. The permanent [Station] settings remain configuration defaults and are not silently rewritten when a custom map is created.

5. Using the Map and MapZoom

5.1 Compact map

The compact map in DX INFORMATION plots the short-path route from the active map origin to the selected destination. Its zoom readout remains synchronized with the selected zoom factor. When Grayline is checked, the map also shows the current UTC-based day, twilight, and night regions.

5.2 Auto Zoom

- Auto is enabled at startup.
- After an entity selection or QRZ resolution, DXCompass chooses the greatest validated zoom that keeps the destination safely visible.
- The manual slider is disabled while Auto is checked.
- Clear Auto to choose a manual zoom from 1.00X through 5.00X.
- Re-select Auto to resume automatic framing.

WHY VIEWS CAN DIFFER: The compact map and the larger MapZoom window calculate safe zoom independently. Because their viewports differ, their automatic zoom values may also differ.

5.3 Large MapZoom window

1. Click MapZoom to open the modeless large map.
2. Move or resize it as desired, including onto another monitor.
3. Continue selecting entities or resolving callsigns in the main window; MapZoom updates immediately.
4. Use Auto or manual zoom in either view. Auto/manual zoom and the Grayline setting are synchronized between the views.
5. Close MapZoom normally. Its position, size, maximized state, zoom, and Auto/manual state are retained as implemented by the current build.

5.4 Grayline display

Check Grayline beside the zoom controls to display the live solar overlay. Clear it to return to the unshaded map. The setting applies immediately to both the compact map and MapZoom and is retained for the next program session.

The unshaded portion represents daylight. An amber band marks civil twilight near the day-night boundary, and the dark translucent overlay marks the nighttime hemisphere. DXCompass recalculates the overlay from UTC approximately once per minute; no internet connection or external astronomical service is required.

5.5 Overhead-Sun marker

The small gold Sun symbol identifies the subsolar point: the geographic location where the Sun is directly overhead at that moment. It is projected with the same calibrated map geometry as the route and markers. The symbol moves with the map while retaining a fixed readable size. It is hidden when Grayline is cleared or when the projected point lies outside the visible window.

5.6 DX-label visibility

DXCompass evaluates solar elevation at the destination. Below -6 degrees, the destination is treated as being in darkness and its label uses a lighter coral color. At -6 degrees or above, the label uses a brighter coral-red. Both versions use bold 10-point text with a black outline. The destination marker remains red with a white border.

5.7 Grayline and zoom behavior

The overlay uses the active map profile's center, calibration, bearing correction, distance correction, and image dimensions, so it remains aligned while either map is resized or zoomed. Its cached 900-pixel rendering is smooth at ordinary operating scales. Slight edge pixelation may be visible above approximately 4.00X and is normal.

5.8 Validated operating envelope

Limit	Value
Minimum zoom	1.00X
Maximum zoom	5.00X
Adjustment increment	0.10X
Map source used during validation	2048 × 2048 PNG
Verified close-route statement	Accurate from global scale down to approximately 75 miles at 5.00X

6. Creating Additional Custom Maps

6.1 Before you begin

After the initial home map is working, the same Create Map Assistant can produce additional maps for another amateur, another operating location, or a grid-only origin. It is a visual checklist for producing the required azimuthal map at azimuthalmap.com. It does not automate the website. DXCompass prepares the exact origin values and required appearance settings, then validates and packages the downloaded PNG.

Refer to Figures 2 and 3 for the Assistant and website control layouts. The assistant—not the screenshot—is authoritative for the values and selections used for the new map.

NEW TRANSACTION RULE: Create Map always begins blank. It does not inherit the active profile, configured HomeGrid, current map center, or current DX destination.

6.2 Opening state

- Callsign is selected as the origin source.
- Callsign, grid, origin label, latitude, and longitude are blank.

- Keyboard focus is in the callsign field.
- Open Map Website and Import Downloaded Map are disabled.
- The status requests a map-origin callsign and Resolve.

6.3 Create a Callsign-Origin Map

1. Click Create Map.
2. Leave Callsign selected.
3. Enter the map-origin callsign and click Resolve.
4. Confirm that the returned callsign, six-character grid, origin label, latitude, and longitude all describe the intended location.
5. Complete the website-generation, PNG-download, and import procedure described in Sections 1.3 and 1.4.
6. Confirm that the new profile is active and test at least one known destination.

QRZ XML REQUIRED: A callsign-origin map requires a configured QRZ_CONFIG.ini, internet access during lookup, and an active QRZ XML Logbook Data subscription. See Section 3.2.

6.4 Create a Grid-Only Map

1. Click Create Map and select Grid.
2. Enter a valid six-character Maidenhead grid.
3. Click Use Grid Center.
4. Confirm the calculated grid-center latitude and longitude.
5. Complete the appropriate connected- or offline-computer procedure in Section 1.3, using the Assistant-to-website correspondence and final checklist in Section 1.4.
6. Confirm that the new profile is active and test at least one known destination.

6.5 Resolution state and safe editing

Open Map Website and Import Downloaded Map remain unavailable until a callsign has been successfully resolved or a valid grid center has been calculated. If the callsign or grid is edited afterward, the resolved state is invalidated. Click Resolve or Use Grid Center again before continuing.

7. Managing Map Profiles

7.1 Profile identity

A map package identity is separate from its geographic grid. This allows multiple amateurs in the same six-character grid to have distinct maps and precise origins.

Element	Purpose
ProfileId	Unique identifier for the complete map package.
Center.Grid	Geographic Maidenhead grid of the map origin.

Element	Purpose
Center.Callsign	Amateur callsign when the origin was resolved by callsign.
Center.Label	Independent label displayed at the map center.
ImageFile	PNG filename used by the profile.

7.2 Package naming

Callsign-origin example:

Maps\K0MLD-DM79HM\ → K0MLD-DM79HM.png and K0MLD-DM79HM.map.ini

Grid-only example:

Maps\DM79HM\ → DM79HM.png and DM79HM.map.ini

Unsafe callsign filename characters are normalized when the package identifier is constructed.

7.3 Backward compatibility

Legacy grid-centric packages remain valid and do not need conversion. A legacy DM79HM package may coexist with K0MLD-DM79HM and W0ABC-DM79HM. Only the selected profile is active. Deleting an older duplicate is optional housekeeping after the replacement has been tested.

PRESERVE FIRST: Before manually renaming, moving, or deleting a map package, make a recoverable copy of the complete MAPS subfolder. Keep the PNG and the matching .map.ini companion file together.

8. Settings and Configuration

Normal operator changes should be made through Settings when the current build exposes the option. Close DXCompass before editing config.ini manually, preserve a backup, and retain the section/key spelling.

8.1 config.ini reference

Section and key	Function
[Station] Callsign	Permanent/default operator callsign; not a substitute for active-profile map identity.
[Station] HomeGrid	Default four- or six-character Maidenhead station grid.
[Reference] CountryFile	DXCC reference-data filename, normally cty.csv.
[Display] DistanceUnits	Preferred primary distance units, such as Miles.
[Display] ShowLongPath	True displays the long-path heading.

Section and key	Function
[Display] HeadingDecimals	Heading precision, constrained by the program to 0–2 decimal places.
[Display] ShowLocalTime	Show or hide station local time.
[Display] ShowUtcTime	Show or hide UTC.
[Display] ShowDxTime	Show or hide estimated DX local time.
[Display] ShowSeconds	Include seconds in time displays.
[Display] Use24HourClock	True selects 24-hour time; False selects 12-hour time.
[Display] ShowDxDate	Show the DX date when applicable.
[Display] StartupEntity	DXCC entity selected at startup; blank permits the normal default behavior.
[Map] ActiveProfile	ProfileId of the map loaded at startup.
[Map] ValidateHomeLocation	Controls the current build's home/profile validation behavior.
[MapView] Left / Top	Saved large-window position; negative values are valid on a monitor left of the primary display.
[MapView] Width / Height	Saved normal window dimensions.
[MapView] Maximized	Restores MapZoom maximized when True.
[Map] ShowGrayline	True displays the live grayline, nighttime shading, twilight band, and overhead-Sun marker at startup. False starts with the overlay hidden.

ACTIVEPROFILE: Do not remove ActiveProfile merely because Create Map opens blank. It is required to select the map used by the main program; it is intentionally ignored as a starting value for a new map.

9. Program Files and Reference Data

9.1 AD1C cty.csv

cty.csv is the DXCC reference foundation of DXCompass. It supplies the entity list and related reference information, including primary prefix, continent, CQ zone, ITU zone, UTC offset, and representative coordinates.

The file is maintained by Jim Reisert, AD1C, and is available from the Amateur Radio Country Files website:

Website: <https://www.country-files.com/>

Direct CSV download: <https://www.country-files.com/cty/cty.csv>

The copy supplied with DXCompass should normally remain in place. An updated file is required only when a change to the DXCC entity list affects the reference data used by DXCompass or when the existing file must be corrected.

Before replacing `cty.csv`, preserve a copy of the working file. Save the replacement beside `DXCompass.exe` using the exact filename `cty.csv`, restart DXCompass, and confirm that the footer reports a reasonable entity count and the expected filename.

9.2 QRZ_CONFIG.ini

`QRZ_CONFIG.ini` contains the username, password, and fixed DXCompass agent identifier required by the QRZ lookup service. Reliable callsign-coordinate lookup requires an active QRZ XML Logbook Data subscription, not merely a QRZ.com account. Deployment and cleanup procedures should preserve the operator's file. Do not publish or distribute a copy containing personal credentials.

9.3 Map files

A current map is a package: one folder, one PNG, and one matching `.map.ini` companion file. The profile provides calibration, center identity, image filename, and display metadata. A loose PNG without valid profile data cannot provide the same calibrated behavior.

10. Troubleshooting

Symptom	Check
Startup failed	Confirm <code>config.ini</code> , <code>cty.csv</code> , and the configured paths exist beside <code>DXCompass.exe</code> . Read the full error message.
No or implausible entity count	Confirm <code>CountryFile</code> points to the intended AD1C <code>cty.csv</code> and that the file is not empty or damaged.
QRZ lookup fails	Confirm network access and <code>QRZ_CONFIG.ini</code> . Retry a known callsign. Do not reuse stale coordinates.
Create Map buttons remain disabled	Resolve the callsign or click Use Grid Center after entering a valid six-character grid. Re-resolve after editing.
Wrong map loads	Check <code>[Map] ActiveProfile</code> and confirm that profile's folder, PNG, and sidecar agree.
No valid profile warning	Restore a valid profile package. The program may use the DM79HM recovery calibration only when its expected recovery map exists.
Destination is clipped	Enable Auto. If using manual zoom, reduce the zoom factor.
MapZoom opens off screen	Close it after moving it to a visible monitor, or correct/remove the saved <code>[MapView]</code> placement values while DXCompass is closed.
DX time appears unexpected	Remember it is based on the available UTC offset; verify daylight-saving and local political time rules independently.
Station label does not match map	Inspect the active profile's <code>Center.Callsign/Label</code> and <code>[Map] ActiveProfile</code> . Do not force <code>[Station] Callsign</code> to impersonate a profile identity.

Symptom	Check
Grayline does not appear	Check Grayline beside the zoom controls. If it will not remain selected, close DXCompass and verify [Map] ShowGrayline=True in config.ini.
Grayline position appears wrong	Confirm the Windows date, time, time zone, and UTC conversion are correct. The astronomical calculation depends on accurate UTC.
Sun marker is not visible	Confirm Grayline is checked. The projected subsolar point may be outside the current zoomed window.
Grayline edge looks pixelated	Slight pixel structure above approximately 4.00X is expected. Reduce zoom if a smoother boundary is preferred.

10.1 Safe recovery sequence

1. Close DXCompass.
2. Copy the current installation folder to a timestamped backup location.
3. Restore one known-good item at a time: config.ini, cty.csv, QRZ_CONFIG.ini, or the affected map package.
4. Restart and check the footer/status before changing anything else.
5. Test one DXCC entity, one QRZ callsign, and the active map route.

Appendix A. Quick Reference

Task	Shortest path
Initial home map	Obtain six-character grid → Create Map → Grid → Use Grid Center → Azimuthal Map Generator → place PNG in Downloads → Import → verify STATION (HOME).
Entity direction	Select entity → read Short Path (T) → check DX time.
Precise station direction	Enter DX callsign → resolve with QRZ → confirm grid → read heading.
Copy result	Confirm destination → Copy Heading → paste.
Large map	MapZoom → position/resize → continue operating in main window.
Map display controls	Clear Auto to select manual zoom from 1.00X to 5.00X. Check or clear Grayline; the compact map and MapZoom update together.
New callsign map	Create Map → Callsign → Resolve → Azimuthal Map Generator → download PNG → Import.
New grid map	Create Map → Grid → six-character grid → Use Grid Center → Azimuthal Map Generator → Import.

Task	Shortest path
Change startup map	Select through Settings when available, or set [Map] ActiveProfile to a valid ProfileId.

Operator checklist

- Correct active origin
- Correct destination source: entity or callsign
- Short path versus long path consciously selected
- Heading interpreted as True (T)
- DX time treated as an estimate
- Auto Zoom enabled unless manual framing is intended
- Grayline enabled when current daylight and nighttime context is desired

Appendix B. Map Package Reference

B.1 Callsign-origin sidecar example

[Profile]

ProfileId=K0MLD-DM79HM

DisplayName=K0MLD - DM79HM

ImageFile=K0MLD-DM79HM.png

[Center]

Source=Callsign

Grid=DM79HM

Callsign=K0MLD

Label=K0MLD

B.2 Grid-only sidecar example

[Profile]

ProfileId=DM79HM

DisplayName=DM79HM

ImageFile=DM79HM.png

[Center]

Source=Grid

Grid=DM79HM

Callsign=

Label=DM79HM

B.3 Design rule

ACCEPTED BASELINE: The current map belongs to the active profile. A new map begins blank and acquires its identity only when the operator explicitly resolves a callsign or calculates a grid center.