

AZRAS System User Guide

Initial Release / Windows / 2026-08

This guide explains how first-time users can begin operating the AZRAS products 01-08 included in the distribution ZIP files, using the attached PDFs and Project JSON files for the three construction methods.

1. First Step - Extract the ZIP Files

1. Download all ZIP files for “AZRAS System Initial Release” from GitHub Software Releases at the URL below.
2. <https://github.com/ace-consul-akatsu/Adaptive-Zero-Rebuild-Asset-System-AZRAS>
3. Extract the ZIP files. A separate folder will be created for each ZIP.
4. Products 01-08 are distributed as separate ZIP files. Extract all of them.
 - Do not run BAT or Python files directly from inside a ZIP file. After extraction, start each product using the file shown below.
 - 01_AZRAS_Planning_Basic : run_AZRAS_Planning_Basic_without_build
 - 02_AZRAS_Compare : run_AZRAS_Compare_without_build
 - 03_AZRAS_Evaluation : run_AZRAS_Evaluation_without_build
 - 04_AZRAS_Feasibility : run_AZRAS_Feasibility_without_build
 - 05_AZRAS_Disaster : run_AZRAS_Disaster_without_build
 - 06_AZRAS_Professional : run_AZRAS_Professional_without_build
 - 07_AZRAS_Twin : run_AZRAS_Twin_without_build
 - 08_Installer : run_AZRAS_Installer_without_build

Keep all extracted product folders together in the same parent folder.

2. Initial Environment Setup - 08_Installer

1. Open the “08_Installer” folder.
2. Double-click “run_AZRAS_Installer_without_build.bat” in the extracted folder.
3. Check whether Python is detected in the Installer.
4. After installing Python, click “Recheck” and confirm the detection result.

The following Python installation is required.

- Python: Required to run the distributed source version. Download it from the URL below.
- Download and install the recommended version, Python 3.13 (64-bit).

<https://www.python.org/downloads/windows/>

Open the page and download the following:

Stable Releases

→ Python 3.13.15 - Aug. 5, 2026

→ Download Windows installer (64-bit)

3. Basic Procedure Using the Attached Samples

For your first use, the attached PDFs and Project JSON files for AZRAS, 2×6, and RC frame make it easier to understand the input format and comparison procedure.

Yellow fields are user-editable; light-blue fields are automatically populated.

1. Start 01_AZRAS_Planning_Basic.
2. Click “Load”, select 10_JSON\260818_工法未設定_azras_サンプル_module0_data, and double-click it.
3. At this point, all information stored in the sample can be viewed. For 02_AZRAS_Compare, select at least two JSON files from AZRAS, 2×6, and RC frame.

For the other products, select the JSON file you want to review.

Use the sample data to become familiar with the overall system.

4. 01_AZRAS_Planning_Basic - Basic Operation

Set the basic project conditions.

1. Extract “01_AZRAS_Planning_Basic.zip” and run “run_AZRAS_Planning_Basic_without_build.bat”.
2. Open “1. Building Planning / Basic Conditions”.
3. Enter the project name.
4. Click “Generate Management Number” once to insert an AZRAS project number.
5. Select the country and enter the city, address, and building use.
6. Click “Open Google Maps” and obtain the latitude and longitude of the specified location.
7. Click “Paste Google Coordinates”; the latitude and longitude fields are filled automatically. Then click “Apply Coordinates to Each Module”.
8. Use “Change Save Location” to choose the destination, then click “Save”.
9. A new Project JSON is now created.
- 10.
11. Open “2. Drawing Analysis / Quantity & Building Performance - New Analysis”.
12. Prepare a PDF from which floor plans, elevations, sections, principal dimensions, openings, structural information, and insulation specifications can be read.
13. In the PDF drawing field, specify the PDF file containing the prepared basic drawings.
14. Note: The PDF should be generated directly from CAD data. If there are multiple drawings, combine them into one multi-page PDF.

15. Enter the building system, structure, construction-method details, true-north angle, equipment capacity, and operating conditions.
16. Click “Drawing Analysis / Quantity Calculation” to the right of “Select PDF”; values will be populated automatically.
17. Click “Update and Save Project JSON”.
18. Next, open “Environment / CO2 / Regional 8760-Hour Analysis”.
19. Select the first-floor construction type and insulation position.
20. Modify editable fields as required for the project conditions.
21. Click “Run 8760-Hour Environmental Calculation”.
22. Click “Update and Save Project JSON”.
23. Open “Regional Project Generation”.
24. Select a city, then click “Acquire EPW for Selected City” on the right.
25. Then reselect the same city from the City list.
26. Cities for which EPW data has been acquired are shown with “Registered” after the city name.
27. After selecting multiple cities, click “Calculate Additional Regional JSON and Save to Project Folder” at the upper right.
28. Saving may take approximately 15 seconds.
29. Next, click “Regional Comparison / Specified Date-Time Graph”.
30. Various graphs are displayed automatically.
 - Automatic judgments and online retrieval results are supplementary information. Failure to find information does not mean that construction is impossible.
 - The Project JSON is the authoritative project-data file passed between AZRAS products.

5. 03_AZRAS_Evaluation - Evaluation Procedure

Using the Project JSON created or updated in Planning Basic, evaluate repair/renewal/demolition, the 200-year environment, construction cost, long-term cost, and business cash flow in sequence.

1. Open the “03_AZRAS_Evaluation” folder and double-click “run_AZRAS_Evaluation_without_build.bat”.
2. On the first screen, click “Open Project JSON” and select the Project JSON saved in 01_AZRAS_Planning_Basic.
3. Open Module 3, “Repair / Renewal / Demolition Scenario”. Check renewal cycles and repair/demolition conditions for each component and system, edit the necessary yellow fields, then calculate and save.
4. Open Module 4, “Long-Term / 200-Year Environmental Evaluation”. Check the evaluation period, energy change rate, electricity CO2-factor change rate, etc., then click “Run Long-Term Environmental Evaluation”. Review the results and click “Update and Save Project JSON”.

5. Open Module 5, “Construction Cost Estimate”. Check regional unit prices, overhead, contingency, design/supervision fees, tax rate, additional equipment costs, etc., then click “Calculate Construction Cost / Schedule”. Review the results and update/save the Project JSON.
6. Open Module 7, “Repair / Renewal / Demolition Cost Estimate”. Calculate and save future repair, renewal, and demolition costs based on the Module 3 scenario and Module 5 unit prices.
7. Open Module 6, “200-Year Business Cash Flow / Asset Value”. Check annual rent, vacancy rate, rent growth, operating expense ratio, discount rate, loan conditions, etc., then click “Calculate Investment Evaluation”.
 - After “Calculate Investment Evaluation” is clicked, Module 6 “Discount Rate Sensitivity Analysis” compares NPV at 50, 100, 150, and 200 years for 2%, 3%, 4%, 5%, 6%, and the currently entered discount rate.
 - If an upstream Module condition is changed, downstream Modules may require recalculation. Follow the warnings/status indicators and recalculate the necessary Modules.
 - Construction costs, project costs, LCC, revenue, NPV, etc. are reference values for planning and comparison. For actual estimates, contracts, financing, taxation, or investment decisions, replace assumptions with current project-specific conditions and verify them.

6. 04_AZRAS_Feasibility - Constructability and Country-Specific Business Evaluation

Load the Project JSON created in 03_AZRAS_Evaluation and additionally evaluate constructability, logistics, materials, labor, taxation, and business conditions for the target country/region.

1. Open the “04_AZRAS_Feasibility” folder and run “run_AZRAS_Feasibility_without_build.bat”.
2. From “Open Project JSON”, select the Project JSON updated in 03_AZRAS_Evaluation.
3. Review country/region, constructability, material supply, logistics, labor, laws/regulations, permits, and other items. Even where automatically retrieved/default values exist, verify that they match actual local conditions.
4. If additional cost, CO2, schedule, or other burdens are adopted, confirm the selected items and save them.
5. For tax and business evaluation, verify the conditions of the target country/region. Do not treat unverified tax rates, systems, subsidies, etc. as confirmed values.
6. To reflect additional burdens adopted in 04 back into 03, return to 03_AZRAS_Evaluation and recalculate/save Modules 4, 5, 6, etc. as indicated.
 - In the Initial Release, Japanese conditions are the primary verified scope; unverified countries are treated as reference information.
 - Automatic constructability judgments are screening results. “Unknown” or “Conditional” does not immediately mean construction is impossible.

7. 05_AZRAS_Disaster - Disaster Recovery Evaluation

Set disaster conditions such as earthquake, flooding, and wind damage, and compare recovery cost, recovery period, business interruption, waste, CO2, energy, etc.

1. Open the “05_AZRAS_Disaster” folder and run “run_AZRAS_Disaster_without_build.bat”.
2. Select the target Project JSON. Use the latest JSON updated in Planning Basic or Evaluation.
3. Click “Open Disaster Recovery / Resilience Evaluation”.
4. Set the target disaster and conditions. Yellow fields are user-editable; enter values appropriate for the building and region.
5. Run the calculation and review recovery cost, recovery schedule, business interruption period, waste volume, CO2 emissions, energy, insured amount, etc.
6. Save CSV data as needed and update/save the results to the Project JSON.
 - The disaster evaluation is a comparative assessment based on assumed scenarios. It does not guarantee actual damage scale, insurance payments, or recovery duration.

8. 02_AZRAS_Compare - Comparison of Multiple Construction Methods

Load multiple Project JSON files created with the same region, use, scale, and assumptions, and compare construction methods side by side.

1. Open the “02_AZRAS_Compare” folder and run “run_AZRAS_Compare_without_build.bat”.
2. Use “Select” for Construction Methods 1-7 to specify Project JSON files for comparison. At least two are required.
3. For the attached samples, select the three Project JSON files for AZRAS, 2×6, and RC frame.
4. Click “Load Core JSON / Compare Construction Methods”.
5. Open the construction-method comparison, regional comparison, specified-region comparison, graph, and other tabs to review annual/monthly electricity, PV, heating/cooling, cumulative CO2, construction cost, 200-year cash flow, etc.
6. Save the comparison-data CSV as needed.
 - As far as possible, use the same region, building scale, use, equipment conditions, and price date for all Project JSON files being compared.
 - Compare references Project JSON files as read-only and does not write calculation results back to the original JSON files.

9. 06_AZRAS_Professional / 07_AZRAS_Twin (Reference Functions)

These two functions are reference functions in the Initial Release. They have not yet been sufficiently used by the developer through a complete real-project workflow.

AZRAS Professional

1. Open the “06_AZRAS_Professional” folder and run “run_AZRAS_Professional_without_build.bat”.

2. From “Load Project JSON”, select a Project JSON created in Planning Basic, Evaluation, etc. Professional is not used to create a new Project JSON.
3. For drawing input, use detailed-drawing PDFs exported directly from CAD or similar software. Image PDFs made by scanning paper drawings are excluded in principle.
4. Prepare PDFs containing readable floor plans, elevations, sections, details, and other information required for analysis, and specify them in the relevant Module.
5. Review materials, environment, 8760-hour analysis, construction cost, business feasibility, final design report, etc. in detail.
 - Direct extraction from CAD/DWG/DXF is not a standard operating method in the Initial Release.
 - When loading a Project JSON from the simplified version into Professional, review the Module results already stored and recalculate only the necessary items.

AZRAS Twin

6. Open the “07_AZRAS_Twin” folder and run “run_AZRAS_Twin_without_build.bat”.
7. Load the Project JSON and review the basic building information.
8. You can add/edit/delete equipment and appliance register entries, obtain basic replacement-timing suggestions, save Twin JSON, and save the equipment-register CSV.
 - Twin in the Initial Release is a prototype. For real projects, users must carefully verify displayed and saved content.

10. Automatic Input/Calculation and User-Editable Values

AZRAS uses automatic retrieval and calculation to reduce input work. As a general rule, yellow fields are user-editable and light-blue fields are automatically populated/calculated.

- Automatic input/calculation: values retrieved or calculated from PDF drawings, Project JSON, regional information, default databases, EPW weather data, linked Module results, 8760-hour analysis results, etc.
- User-entered/editable values: location, latitude/longitude, use, scale, construction method, equipment conditions, price/schedule, economic conditions, disaster conditions, optional adopted values, and other editable yellow fields.
- Where both manual and automatically calculated values exist, confirm which value is adopted. Users should also verify that automatically populated values match the drawings, specifications, region, and project conditions.
- Pay attention to units. mm, m, m², m³, kWh, MJ, kg-CO₂, JPY, %, etc. are used.

11. About the Attached Project JSON Files for the Three Construction Methods

The attached Project JSON files for AZRAS, 2×6, and RC frame contain general initial conditions and assumed values for operational checks and three-method comparison.

- The sample JSON files are provided to help users understand AZRAS operation and the calculation flow.
- Values in the samples are not standard values, official benchmark values, or guaranteed values.
- For a new project, change the values to match the building drawings, region, specifications, quantities, unit prices, schedule, economic conditions, disaster conditions, etc.
- When modifying a sample, it is recommended that you retain the original sample JSON and save the modified version under a different name.

12. PDFs Used for a New Project

For a new building, prepare detailed-drawing PDFs containing the information required for analysis, similar to the attached samples.

- Floor plans
- Elevations
- Sections
- Details of foundations, floors, walls, roofs, openings, etc., as required
- Principal dimensions, floor heights, and opening dimensions
- Required structural, insulation, finish, equipment, and other specifications

Use PDFs exported directly from CAD or similar software. If there are multiple drawings, they may be combined into one multi-page PDF using PDF editing software.

Image PDFs created by scanning paper drawings, PDFs made from smartphone photographs, etc. are excluded in principle from the Initial Release.

If drawing information is insufficient, automatic analysis, quantities, building-performance results, and other outputs may also be incomplete.

13. Using ChatGPT When You Need Help

ChatGPT has been used in the development of the AZRAS System. If you have questions about operation, input fields, screen displays, errors, etc., ChatGPT can be used for operational assistance.

1. State the product you are using, for example: 01_AZRAS_Planning_Basic, 03_AZRAS_Evaluation, or 06_AZRAS_Professional.
2. Attach a screenshot of the screen.
3. If an error message is displayed, provide it exactly as shown.
4. Explain specifically what you were trying to do. Example: "I calculated the investment evaluation in Module 6, but the discount-rate sensitivity analysis is not displayed."
5. If you want the JSON content checked, attach the relevant Project JSON and specify the Module/item you want reviewed.

- ChatGPT may not always know the latest AZRAS version or the user's PC environment. Cross-check its answers against the actual screen, distributed README, Project JSON, and calculation results.
- Before sending personal information, confidential drawings, or data that cannot be disclosed to third parties to an AI service, users should review the applicable data-handling terms.

14. Final Notes

For first-time use, begin with the attached sample PDFs and Project JSON files for AZRAS, 2×6, and RC frame to understand the roles of products 01-08 and the data flow.

For a new project, prepare detailed-drawing PDFs exported directly from CAD or similar software, create a new Project JSON in 01_AZRAS_Planning_Basic, and calculate/save the required Modules in sequence.

Each calculation result is reference information for planning and comparison and depends on the input conditions. Users must verify the information themselves before making important decisions concerning design, construction, regulatory compliance, estimates, contracts, financing, investment, or other matters.

Be sure to review “12_Disclaimer for Use” for the terms of use and scope of responsibility for this software.

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