ABOUT THIS DOCUMENT

This document describes how to integrate RDM feedback from a Pharos Designer control system with the ISAAC system from Smart Monkeys.

RDM is a protocol used in the lighting industry to configure, obtain status and reporting information from luminaires and feed it back to a control system.

The Pharos Designer products support both RDM via the physical ports on the controllers, the ports on the Pharos RIO D4 and EDN devices, and over the network using the Art-Net ArtRDM protocol.

This document will describe how to configure both systems for RDM reporting and demonstrate the feedback capabilities that can be used within the ISAAC system to show the monitored data.

This document assumes a good understanding of programming techniques for Pharos Designer and the ISAAC platform. If you are not familiar with these systems, please consult the training and help resources available at https://www.pharoscontrols.com/ and https://www.isaacplatform.com/

REQUIREMENTS

To configure a system integrating Pharos, ISAAC, and RDM, you will need:

- A copy of Pharos Designer software (feely available for download)
- One or more Pharos controllers
- An instance of ISAAC, either a physical device or a networked installation
- A functioning ethernet network connecting all systems.
    - ISAAC and the Pharos controller(s) must be on the same logical network.
- Luminaires which are compliant to the RDM standard
- Suitable DMX/RDM compliant cabling between the controllers and RDM devices
    - Note: in an RDM system compliant cabling and termination are particularly important – RDM may not function reliably without correct cabling.

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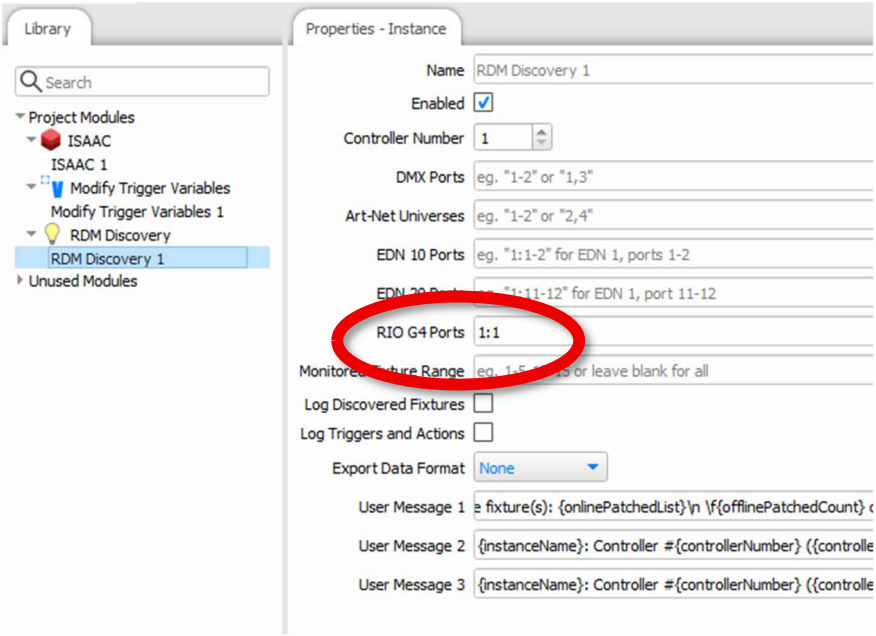
SOFTWARE CONFIGURATION – PHAROS DESIGNER

An example Pharos Designer project file is provided at https://dl.pharoscontrols.com/documentation/application_notes/ISAAC_RDM_DemoFile.pd2.

In the Pharos Designer software, we will use several Pharos IO Modules to perform RDM polling, feeding data to ISAAC, and associated functions.

In this example file, the controller is configured to communicate with a Pharos RIO G4 which is being used for DMX/RDM communication to 4 fixtures on its first port.

You will see that the configuration of the RDM module is set to match this, polling on port 1 of RIO G4 number 1. Adjust this as required for your project:



The triggers are configured as follows:

Trigger 1 initiates the RDM poll. In this project it is a soft trigger, but in a real project you would likely want to perform it at a regular interval, perhaps using a **Real Time** trigger to initiate it at a time the facility was unused.

Trigger 2 is fired when the RDM module first discovers a luminaire. This trigger will create a **Variable** within the ISAAC system. We will use these variables to indicate fixture status within ISAAC. On initial creation the variable is set to a value of 1; we will use a value of 0 to indicate “offline”, and 1 to indicate “online”.

The variable is created using a prefix of **RDM_FIXTURE_X** where X is the fixture number – this is achieved using the **Modify Trigger Variables** module to prepend text onto the variable.

Trigger 3 is fired when the RDM module discovers a missing luminaire. It sets the value of the ISAAC variable **RDM_FIXTURE_X** to 0, to indicate the fixture is offline.

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Finally trigger 4 sets the value of the variable back to 1 if the luminaire is re-discovered on a subsequent poll – e.g. it comes back online.

Once the project is properly configured and all of the expected fixtures are online, the project should be uploaded and the RDM Poll trigger should be run at least once. This will create the variables for all of the fixtures within the ISAAC system.

Once the variables have been created you can then configure your ISAAC system to appropriately alert and display your fixtures as described below.

SOFTWARE CONFIGURATION – ISAAC

We will use the RDM data provided to allow viewing of our four fixtures on a **Map** within the ISAAC system.

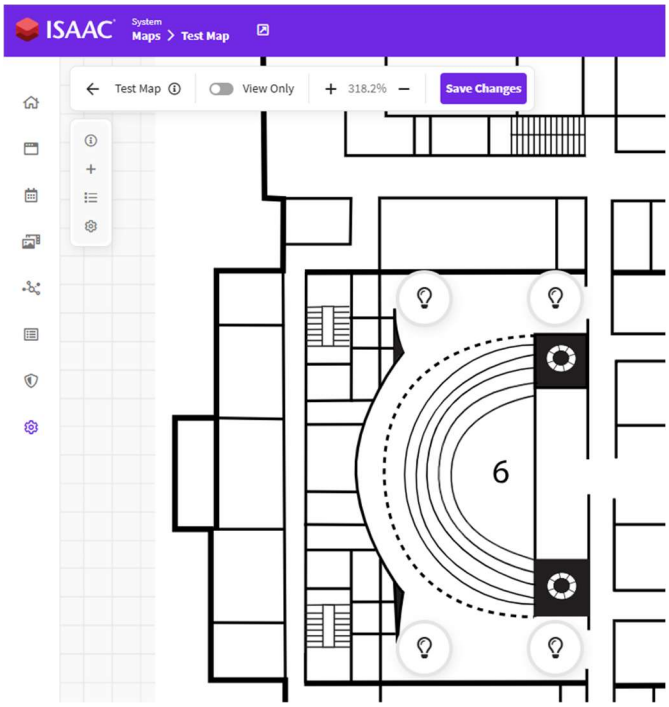
Log into your ISAAC system and create a new map using Settings -> Maps.

Add a new map using the **Add Map** button.

Enter a name, description and select an appropriate background image for your map.

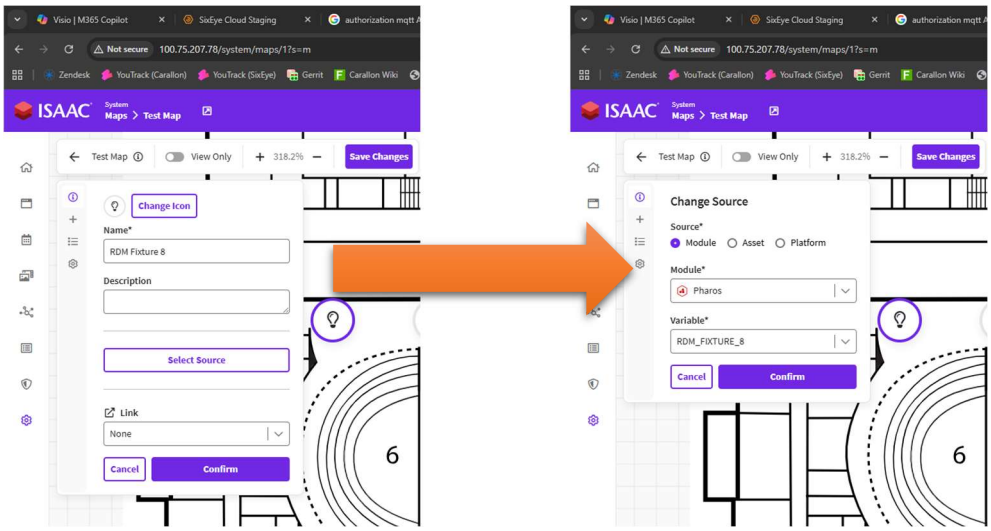
Now click on your newly added map to edit it.

Click the + button to add **Markers** to your map. You can use any icon desired – here I have used the Lightbulb icon:



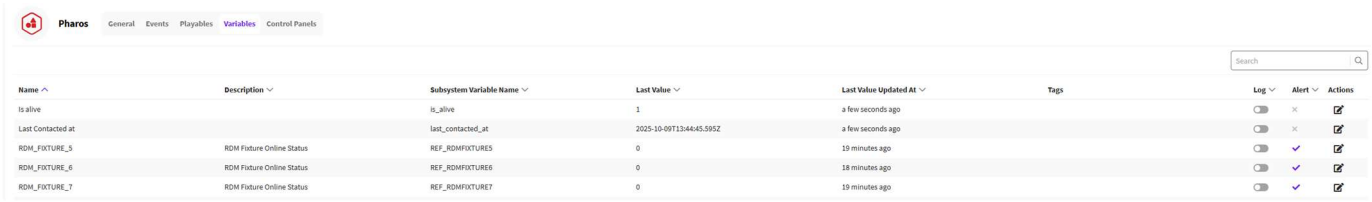
Once you have positioned your markers as desired, now associate them with the created variables as a Source – this means the variable will be used to control indication on the marker. Select a

marker and click the edit icon; then use Select Source to select the variable from Pharos as the data source:



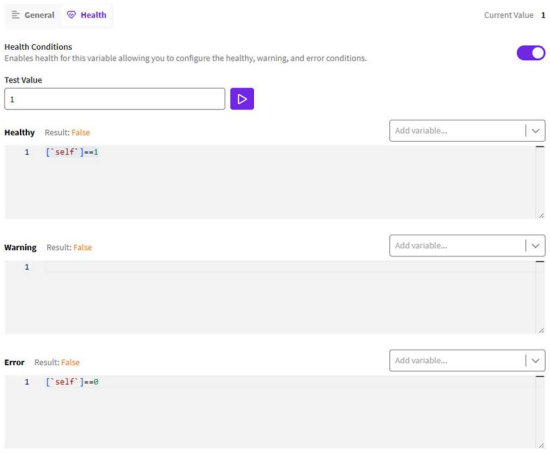
Once this is done, you will now need to set up each variable to have a configured health threshold in order for values of 1 to be represented as “Healthy” and values of 0 to be represented as “Errors”.

Navigate to the Settings -> Modules and the Pharos module; then select Variables.

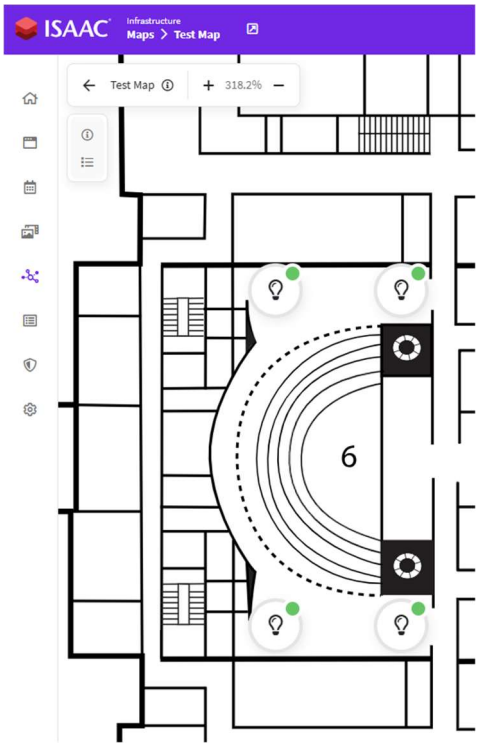


For each variable, click on the Edit action and then navigate to health.

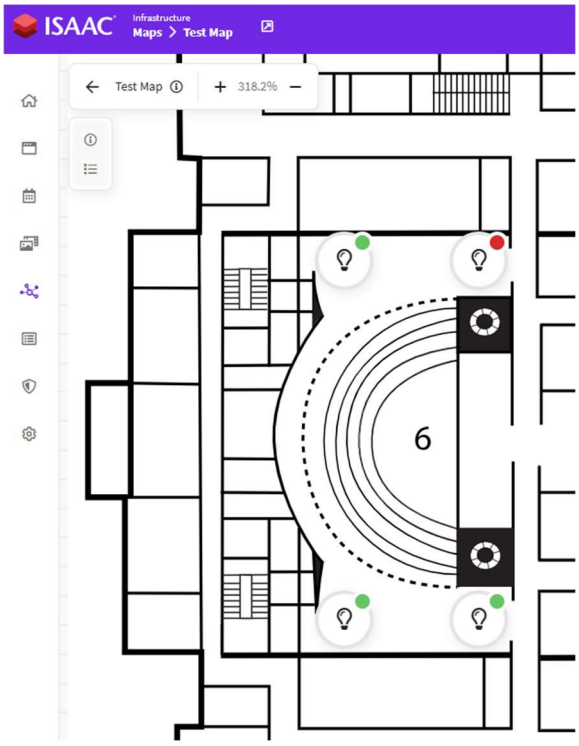
Enter expressions under Healthy to result in a value of True (healthy) if the reported value is 1, using the expression `[`self`]==1`; and under Error to return True (an error state) if the value is zero using `[`self`]==0`



Now, when you navigate back to the map, you will see a status shown with each of the fixtures:



At this point if I take a fixture offline and re-discover, I see the fixtures now shown as having errors with the red dot indicator.



EXTENSIONS AND NEXT STEPS

In a larger system it may be desired to reduce the number of variables presented to the ISAAC system.

This could be done using the trigger scripting functionalities in the Pharos system, to provide a summary of devices by area rather than the granularity of each individual RDM device reporting.

For further project assistance feel free to contact Pharos or ISAAC:

https://www.pharoscontrols.com/support/

https://www.isaacplatform.com/contact