




Installation and User Guide

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Introduction

This user guide offers full startup and use instructions for Digital Twin Studio (SimTrack) at the  facility, including registering devices on the Power Packet portal, adding devices to the Modbus, and adding entities for utilization tracking.

Base Navigation

Asset Tracking and **Utilization** pages may be accessed from the home page.

Asset Tracking

Displays asset quantity, locations, and general information about each asset.

Asset Lookup



To view a list of assets by location, select the location from the dropdown menu under **Locations**. Dropdown menus are accessible via the arrows next to location names. Use the text fields to search assets via their UPI/asset tag, badge number, or description. Select **Lookup** to view results.

Asset Count by Type

Displays total asset quantity by selected location.



Utilization Tracking

Select **Utilization** from the home page.

System Summary

Displays total number of assets and average utilization among them as a percentage.

Reporting

Displays asset utilization according to the following categories:

Utilization per Location

Utilization by Time

Utilization by Date

Average Overall Utilization

Average Overall Utilization from the **Summary** section is broken down here into graphs displaying utilization over periods of seven and 30 days.

System

RFID Monitor

Monitors the RFID readers active at a given site. A green box indicates a reader is connected and running, a red box indicates the reader is either off or disconnected. *Last 30 Read Tags* displays a list of recently read tags. *IPs Overview* displays the statuses and connection records of the RFID readers associated with each IP address.

The screenshot shows the SimTrack RFID Monitor interface. At the top, there is a navigation bar with 'Home', 'System', 'Entity Control', 'SimTrack Login', and 'Utilization'. Below this is the 'RFID MONITOR' header with a 'GO BACK' link. The main area contains six status cards for different RFID readers:

- RB_SpecialLabs_S_Cor At 10.246.124.105: Status: Connected (Green)
- RB_2_225_5_Corridor At 10.246.124.107: Status: Disconnected (Red)
- RB_2_225_Lab At 10.246.124.109: Status: Connected (Green)
- RB_SpecialLabs_N_Cor At 10.246.124.106: Status: Connected (Green)
- RB_2_225_N_Corridor At 10.246.124.108: Status: Connected (Green)
- At 10.246.124.110: Status: Disconnected (Red)

Below the status cards are two tables:

Last 30 Read Tags

Tag	Location	Model	Last Update	Speed	Direction
No records found					

IPs Overview

IP	Status	Last Updated	Message
10.72.9.228	Connected	7/6/2022 1:03:00 AM	Client at 10.72.9.228 has been connected
10.72.9.228	Connected	7/6/2022 1:02:50 AM	Client at 10.72.9.228 has been connected
10.72.9.228	Connected	7/6/2022 1:02:40 AM	Client at 10.72.9.228 has been connected
10.72.9.228	Connected	7/6/2022 1:02:17 AM	Client at 10.72.9.228 has been connected



Power Monitoring

Additional readers or power monitors may be added from this page.

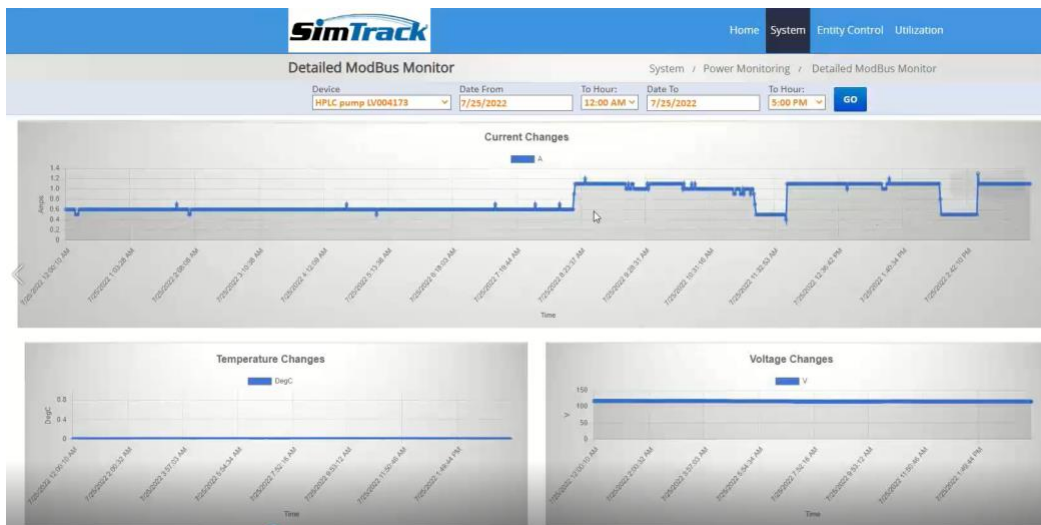
Monitor Bus

Displays fluctuation in current for a specific device, selected from the *Modbus* dropdown menu. Changes in amperage, voltage, and temperature are displayed for each unit, if applicable.



Detailed ModBus Monitor

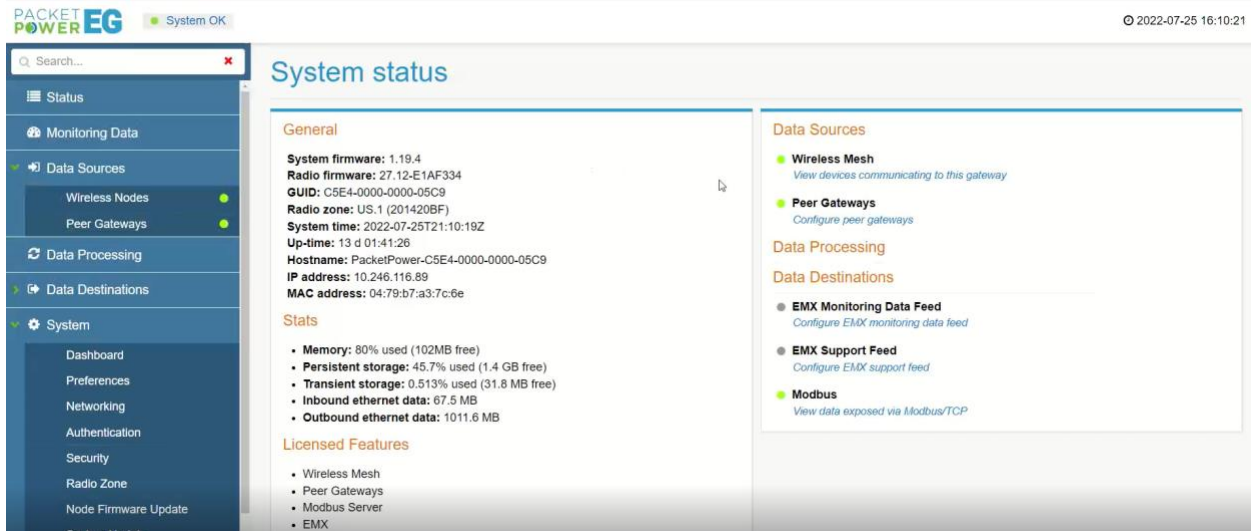
Displays fluctuations in amperage, voltage, and temperature from a user-defined date and time range. The values on the y-axis which determine idle and usage status are configured on each device.





Packet Power

Registering a Device



PACKET POWER EG System OK 2022-07-25 16:10:21

System status

General

- System firmware: 1.19.4
- Radio firmware: 27.12-E1AF334
- GUID: C5E4-0000-0000-05C9
- Radio zone: US.1 (201420BF)
- System time: 2022-07-25T21:10:19Z
- Up-time: 13 d 01:41:26
- Hostname: PacketPower-C5E4-0000-0000-05C9
- IP address: 10.246.116.89
- MAC address: 04:79:b7:a3:7c:6e

Stats

- Memory: 80% used (102MB free)
- Persistent storage: 45.7% used (1.4 GB free)
- Transient storage: 0.513% used (31.8 MB free)
- Inbound ethernet data: 67.5 MB
- Outbound ethernet data: 1011.6 MB

Licensed Features

- Wireless Mesh
- Peer Gateways
- Modbus Server
- EMX

Data Sources

- Wireless Mesh
View devices communicating to this gateway
- Peer Gateways
Configure peer gateways










Data Processing

Data Destinations


- EMX Monitoring Data Feed
Configure EMX monitoring data feed
- EMX Support Feed
Configure EMX support feed
- Modbus
View data exposed via Modbus/TCP


To register a new device, select the *Data Destinations* dropdown menu, then *Modbus* and *Node Map*.

Modbus Node Map

Node	Slave ID (0-254)	Modbus Map	Register Offset	Register window	Readings
0B00-0000-0001-C220	9	2ndMap Copy	0	199	
2A00-0000-0001-C21A	3	PacketPower Standard Map (v.1.	0	199	
3200-0000-0001-6BD9	1	PacketPower Standard Map (v.1.	0	199	
3900-0000-0001-C21D	4	PacketPower Standard Map (v.1.	0	199	
4C00-0000-0001-C219	6	PacketPower Standard Map (v.1.	0	199	
B200-0000-0001-C222	8	2ndMap Copy	0	199	
B500-0000-0001-C216	7	PacketPower Standard Map (v.1.	0	199	
BE00-0000-0001-6BD2	2	PacketPower Standard Map (v.1.	0	199	
D400-0000-0001-C221	5	2ndMap Copy	0	199	

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 Add New Item

Select the  icon to add a new item.



Add New Item [Close]

Node:

Slave ID (0-254):

Modbus Map: [v]

Register Offset:

Register window:

Node is the identifier for the Node.

Slave ID must be unique, and will correspond to the *ModBus ID* on the SimTrack portal. Care must be taken to not enter a duplicate, as this will override the previous entry.

Register Offset must be set to 0, and *Register window* must be set to 199.

Select *Add* to register the item.



Entity Control

Adding an Entity

To add a new entity, the entity must first be registered as outlined in **Registering a Device** (pg. 5).

Once an entity has been registered in the gateway, hover over *System*, then *Power Monitoring* and select *Add Node*.

Name	Description	Model Number	Time Of Deployment	IP Address	Port	ModBus ID	
Gateway	Modbus Gateway	EG4	3/14/2022 4:06:00 PM	10.246.116.89	502	0	
Polar Brea (RB)	Polar Bear (RB)	???	1/6/2022 12:00:00 AM		0	2	
SPECTROMETER, MASS	SPECTROMETER, MASS		3/15/2022 2:38:10 PM		0	1	
HPLC Detector	HPLC Dectector RB	No Number	4/25/2022 7:52:46 AM		0	3	
HPLC autosampler LV004174	HPLC autosampler LV004174		4/29/2022 6:22:18 AM		0	4	
HPLC pump LV004173	HPLC pump LV004173		4/29/2022 6:24:46 AM		0	5	
UPLC pump LV934112	UPLC pump LV934112		4/29/2022 6:27:10 AM		0	6	
UPLC autosampler LV935098	UPLC autosampler LV935098		4/29/2022 6:32:44 AM		7	7	
UPLC detector LV934121	UPLC detector LV934121		4/29/2022 6:34:00 AM		0	8	
Test Monitor	Monitor - For Testing Purposes	Testing	5/11/2022 11:09:46 AM		0	9	

Select the **+** icon and add the node with its *Description*, *Model Number*, and the *ModBus ID* which corresponds to the *Slave ID* defined in the *Modbus Node Map*.

An entity with the defined *Modbus* may now be created. Select *Add New Entity* from the *Entity Search* page.

Entity	Type	Location	Asset ID	Asset Tag	Entity Desc	Tag ID	Date Recvd	Expires On	Wire Tag	Update
No records found										



Add New Entity

Badge/Description: <input type="text" value="Enter Badge #"/>	AbbVie ID: <input type="text" value="Employee ID"/>
UPI/Asset: <input type="text" value="UPI/Asset Tag"/>	Tag ID: <input type="text" value="Auto-Generated"/>
Type: <input type="text" value=""/>	Home Location: <input type="text" value=""/>
Date Issued: <input type="text" value="2022-04-13"/>	Expires On: <input type="text" value="2024-04-13"/>
Entity Description: <input type="text" value="EntityDesc"/>	Modbus: <input type="text" value=""/>
Upload: <input type="button" value="Choose Files"/> No file chosen	
Idle Current: <input type="text" value=""/>	% Current Variation: <input type="text" value=""/>
Idle Minutes to 0 Utilization: <input type="text" value=""/>	Utilized Current: <input type="text" value=""/>

The Modbus will now be listed under the *Modbus* dropdown menu. Select *Add New Entity* to add the entity. The entity is now available for tracking under *Utilization*.

Home Location

Displays a list of all locations. Select *Update* in a location's row to modify that location.

SimTrack									
Home System Entity Control SimTrack Login Utilization									
Location									
Entity Control / Location <input type="button" value="Add New Location"/>									
Location	Description	Type	Parent	Floor Level	Max Occupancy	Occupied Cost per hour	Unoccupied Cost per hour		Update
ABC	ABC	All Types	Site	1	0	0	0		Update
Lighthouse	Lighthouse	All Types	Site	1	0	0	0		Update
North Chicago	North Chicago	All Types	Site	1	0	0	0		Update
R19	R19	Building	North Chicago	1	0	0	0		Update
R19 125	R19 125	Manufacturing	R19	1	0	0	0		Update
R19 325	R19 325	Manufacturing	R19	3	0	0	0		Update
R12	R12	Building	North Chicago	1	0	0	0		Update
R12 Kilo Lab	R12 Kilo Lab	Manufacturing	R12	1	0	0	0		Update
R12 Potent Lab	R12 Potent Lab	Manufacturing	R12	1	0	0	0		Update
R8	Building R8	Building	North Chicago	1	0	0	0		Update
R8 2 NW Lab	R8 2 NW Lab	Lab	R8	2	0	0	0		Update
R8 2 SE Lab	R8 2 SE Lab	Lab	R8	2	0	0	0		Update
R8 3 SE Lab	R8 3 SE Lab	Lab	R8	3	0	0	0		Update
R8 Lab 225	R8 Lab 225 (2nd Floor)	Lab	R8	2	20	41.62	40.66		Update
R8 Potent Lab	R8 Potent Lab (1st Floor)	Manufacturing	R8	1	555	2.81	1.19		Update
R8 Special Labs	R8 Special Labs (1st Floor)	Manufacturing	R8	1	1	7.68	6.71		Update
R8_224_Office	R8_224_Office	Lab	R8 Lab 225	2	0	0	0		Update
R8_225_Lab	R8_225_Lab	Lab	R8 Lab 225	2	0	0	0		Update
R8_225_M_Corridor	R8_225_M_Corridor	Lab	R8 Lab 225	2	0	0	0		Update
R8_225_S_Corridor	R8_225_S_Corridor	Lab	R8 Lab 225	2	0	0	0		Update
R8_SpecialLabs_AirLock	R8_SpecialLabs_AirLock	Manufacturing	R8 Special Labs	1	2	0	0		Update
R8_SpecialLabs_Entry	R8_SpecialLabs_Entry	Manufacturing	R8 Special Labs	1	0	0	0		Update
R8_SpecialLabs_M_Corridor	R8_SpecialLabs_M_Corridor	Manufacturing	R8 Special Labs	1	0	0	0		Update
R8_SpecialLabs_S_Corridor	R8_SpecialLabs_S_Corridor	Manufacturing	R8 Special Labs	1	0	0	0		Update
R8	R8	Building	North Chicago	1	0	0	0		Update

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Update Home Location

Update Home Location

Location Name: <input style="width: 90%;" type="text" value="Lighthouse"/>	Location Description: <input style="width: 90%;" type="text" value="Lighthouse"/>
Parent Location: <input style="width: 90%;" type="text" value="Site"/>	Max Occupancy: <input style="width: 90%;" type="text" value="0"/>
Occupied Cost Per Hour: <input style="width: 90%;" type="text" value="0"/>	Floor Level: <input style="width: 90%;" type="text" value="1"/>
UnOccupied Cost Per Hour: <input style="width: 90%;" type="text" value="0"/>	Type: <input style="width: 90%;" type="text" value="All Types"/>

RFID Tag Assignment

Write tags or instruct tablet to write tags. Select *Write Tag* to command tablet to write a tag. Select *Add New Entity* to add a new entity.

SimTrack												
Home System Entity Control Utilization												
RFID Tag Assignment												
Entity Control / RFID Tag Add New Entity / Status: Service Stopped												
Locations												
Status: <input type="text"/> Type: <input type="text" value="All Assets"/> RFID: <input type="text"/> Select From: <input type="text" value="02/02/2022"/> Select To: <input type="text" value="07/26/2022"/> <input style="background-color: #0070c0; color: white; padding: 2px 5px; border: none;" type="button" value="SEARCH"/>												
Badge/Desc	Status	Type	Home Location	Abblew ID	UP/Asset Tag	Entity Desc	RFID Tag	Date Issued	Expires On	UploadedFilePath	Write Tag	Update
123456	Not Written/Invalid	Scientist	North Chicago	123456	123456	test	789078907890789078907890	3/16/2022 12:00:00 AM	3/16/2022 12:00:00 AM	N/A	Write Tag	Update
123456	Not Written/Invalid	Scientist	North Chicago	123456	123456	test	789078907890789078907890	3/16/2022 12:00:00 AM	3/16/2023 12:00:00 AM	N/A	Write Tag	Update
123456	Not Written/Invalid	Scientist	North Chicago	123456	123456	test	789078907890789078907890	3/17/2022 12:00:00 AM	3/18/2022 12:00:00 AM	Untitled.png	Write Tag	Update

Updating Entities

Select *Update* in an entity's row to update the entity. The value in the *Tag ID* field is what is written to the RFID device. The *Modbus* field refers to the parent which is providing the entity with power utilization data.

The *Upload* field allows an image to be uploaded for display.

The *Idle Current*, *% Current Variation*, *Idle Minutes to 0 Utilization*, and *Utilized Current* fields are where current levels are defined.

- *Idle Current* defines the current level when the device is not in use.
- *% Current Variation* defines acceptable current variance, expressed as a percentage.



- *Idle Minutes to 0 Utilization* defines the time, measured in minutes, that the device must be at the *Idle Current* level in order to be considered not in use.
- *Utilized Current* defines the current level when the device is in use.

Update Entity

Badge/Description:	<input type="text" value="123456"/>	AbbVie ID:	<input type="text" value="123456"/>
UPI/Asset:	<input type="text" value="123456"/>	Tag ID:	<input type="text" value="789078907890789078907890"/>
Type: *	<input style="border: none; background-color: #f0f0f0; width: 100%;" type="text" value="Scientist"/>	Home Location: *	<input style="border: none; background-color: #f0f0f0; width: 100%;" type="text" value="North Chicago"/>
Date Issued:	<input type="text" value="2022-03-17"/>	Expires On:	<input type="text" value="2022-03-18"/>
Entity Description:	<input type="text" value="test"/>	Modbus	<input style="border: none; background-color: #f0f0f0; width: 100%;" type="text" value="Gateway"/>
Upload	<input type="button" value="Choose Files"/> No file chosen		
Idle Current	<input type="text" value="0"/>	% Current Variation	<input type="text" value="0"/>
Idle Minutes to 0 Utilization	<input type="text" value="0"/>	Utilized Current	<input type="text" value="0"/>

Entity Search

Search for entities by badge number, location, type, or description.