Eaton[®] Predict*Pulse*™

User Guide





p/n: P-164000932 Revision 04

IMPORTANT SAFETY INSTRUCTIONS · SAVE THESE INSTRUCTIONS

This manual contains important instructions that you should follow during installation and maintenance of the UPS and batteries. Please read all instructions before operating the equipment and save this manual for future reference.

CONSIGNES DE SÉCURITÉ IMPORTANTES – CONSERVER CES INSTRUCTIONS

Ce manuel comporte des instructions importantes que vous êtes invité à suivre lors de toute procédure d'installation et de maintenance des batteries et de l'onduleur. Veuillez consulter entièrement ces instructions avant de faire fonctionner l'équipement et conserver ce manuel afin de pouvoir vous y reporter ultérieurement.

To ensure you have the most up-to-date content and information for this product, please review the latest manual revision on our website, https://www.eaton.com/us/en-us/catalog/backup-power-ups-surge-it-power-distribution/eaton-predictpulse-na.html.

Eaton reserves the right to change specifications without prior notice. Microsoft, Edge, and Windows are registered trademarks of Microsoft Corporation. Google and Chrome are trademarks of Google LLC. Mozilla and Firefox are trademarks of the Mozilla Foundation. Safari is a registered trademark of Apple Inc. All other trademarks are property of their respective companies.

©Copyright 2023 Eaton, Raleigh, NC, USA. All rights reserved. No part of this document may be reproduced in any way without the express written approval of Eaton.



EATON END-USER LICENSE AGREEMENT

IMPORTANT, READ CAREFULLY, THIS END USER LICENSE AGREEMENT (THE "AGREEMENT") IS A BINDING CONTRACT BETWEEN YOU, THE END-USER (THE "LICENSEE") AND EATON INTELLIGENT POWER LIMITED, IRELAND, OR ONE OF ITS AFFILIATES (EATON" OR "LICENSOR"). BY OPERATING THIS <u>UNINTERRUPTIBLE</u> <u>POWER SUPPLY</u> (UPS) PRODUCT INCLUDING SOFTWARE EMBEDDED IN IT (RIRWWARE), YOU, THE LICENSEE, ARE AGREEINED TO BE BOUND BY THE TERMS, CONDITIONS, AND LIMITATIONS OF THIS AGREEMENT. READ THE TERMS AND CONDITIONS, AND LIMITATIONS OF THIS AGREEMENT. READ THE TERMS AND CONDITIONS OF THIS AGREEMENT CAREFULLY BEFORE, INSTALLING OR OPERATING THE PRODUCT. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, PROMPTLY RETURN THE UNUSED PRODUCT TO EATON.

1.0 DEFINITIONS

 Documentation. "Documentation" means the user guides and manuals for the installation and use of the UPS, whether made available over the internet, provided in CD-ROM, DVD, hard copy or other form.

1.2 Firmware. "Firmware" means software programs that are embedded in the product for which License is granted a license hereunder, the Documentation therefore and, to the extent available, Updates thereto. The Firmware is licensed hereunder in object code (machinereadable) form only except that certain software programs may include limited portions in source code (human-readable) form. 1.3 Update: "Update" means a subsequent release of the Firmware, if and when developed by Eaton. An Update does not include any release, new version, option, or future product, which

Eaton licenses separately,

2.0 FIRMWARE LICENSE

2.1 Ownership. Eaton or its third party licensors retains all title, copyright and other proprietary rights in, and ownership of the Firmware regardless of the media upon which the original or any copy may be recorded or fixed.

2.2 License Grant. Eaton grants to Licensee a limited, revocable, non-exclusive, non-assignable license to use the Firmware in conjunction with the operation of the product to which the Firmware pertains or other products as described by Eaton in the Documentation. Licensee does not acquire any rights, express or implied, other than those expressly granted in this Agreement.

2.3 Restrictions and Requirements. Licensee will not, nor will it permit others to, modify, 2.3 Restrictions and Requirements. Licensee will not, not will be permit orders to , mounty, adapt, translate, reverse engineer, decompile, or disassemble the Firmware or any component thereof (including the Documentation), or create derivative works based on the Firmware (including the Documentation), except to the extent such foregoing restriction is prohibited by applicable law or applicable open source license to, and only to, any open source software component that is incorporated into the Firmware (if any). Copyright laws and international treates protect the Firmware, including the Documentation. Unauthorized copying of the Firmware, the Documentation or any part thereof, is expressly prohibited. For avoidance of doubt, Eaton does not grant Licensee a license to any of Eaton's brands, logos, designs, trade

down, calor oces not grant Electrise to any of Earlier to valido, outport, early of earlier to valido, outport, earlier to valido, earlier to valido, earlier to valido e in part. Licensee agrees to install or allow installation of all corrections of substantial defects, security patches, minor bug fixes and updates, including any enhancements, for the Firmware in accordance with the instructions and as directed by Eaton.

accorrance with the instructions and as directed by Eaton. 2.4 Transfer and Assignment Restrictions. Licensee will not sell, resell, assign, lease, sublicense, encumber, or otherwise transfer its interest in this Agreement or in the Firmware, or the Documentation in whole or in part, or allow any other person or entity, including any parent or subsidiary of Licensee or other subsidiary of Licensee's parent, to copy, distribute, or otherwise transfer the Firmware without the prior written consent of Eaton. Licensee may transfer the Firmware directly to a third party only in connection with the sale of the Eaton product in which it is installed.

3.0 TERMINATION

3.1 Termination. This Agreement and the license granted hereunder automatically terminates if Licensee breaches any provision of this Agreement. Eaton may terminate this license at any time with or without cause.

3.2 Effect of Termination. Immediately upon termination of this Agreement or the license 3.2 Effect of refinitiation: miniators and solution of the application of the refield of the indication of the solution of

4.1 Infringement. If Licensee learns of a threat, demand, allegation, or indication that the UPS with its firmware infringes or misappropriates any third party intellectual property rights (including but not limited to any patent, copyright, trademark, trade dress, or trade secret) ("Intellectual Property Claim"), Licensee will notify Eaton promptly of such claim. Eaton may, in its sole discretion, elect to assume sole control of the defense and settlement of said Intellectual Property Claim and Licensee will provide reasonable information and assistance to Eaton for

Floperty Claim and Licensee will provide reasonable information and assistance to Eaton for the defense of such claim.
4.2 Disclaimer of Warranties. THE FIRMWARE IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EATON DOES NOT WARRANT THAT THE FIRMWARE WILL BE ERROR-FREE OR SECURE FROM UNAUTHORIZED ACCESS. THE LICENSEE EXPRESSLY ACKNOWLEDGES THAT TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE USE OF THE PRODUCT IS AT LICENSEE'S SOLE RISK. 5.0 GENERAL PROVISIONS

5.0 GENERAL PROVISIONS 5.1 Update Policy. Eaton may from time to time, but has no obligation to, create Updates of the Firmware or components thereof. 5.2 Limitation on Liability. NOTWITHSTANDING ANY PROVISION OF THIS AGREEMENT TO THE CONTRARY, LICENSEE EXPRESSLY UNDERSTANDS AND AGREES THAT EATON, ITS AFFILIATES, AND ITS LICENSORS, WILL NOT BE LIABLE FOR: (A) ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES WHICH MAY BE INCURRED BY LICENSEE OR ANY THIRD PARTY, HOWEVER CAUSED AND UNDER ANY THEORY OF LIABILITY. THIS WILL INCLUDE, BUT NOT BE LIMITED TO, ANY LOSS OF PROFIT (WHETHER INCURRED DIRECTLY OR DIVIDECT UNDER OF CONSTRUE OR DIVIDENT DIRECT UNDER DIRECTLY OR BUT NOT BE LIMITED TO, ANY LOSS OF PROFIT (WHETHER INCORRED DIRECTLY OK INDIRECTLY), ANY LOSS OF GOODWILL OR BUSINESS REPUTATION, ANY LOSS OF DATA SUFFERED, COST OF PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES, OR OTHER INTANGIBLE LOSS; (B) ANY LOSS OR DAMAGE WHICH MAY BE INCURRED BY LICENSEE OR ANY THIRD PARTY. THESE LIMITATIONS ON EATON'S LIABILITY WILL APPLY WHETHER OR NOT EATON HAS BEEN ADVISED OF OR SHOULD HAVE BEEN

APPLY WHETHER OR NOT EATON HAS BEEN ADVISED OF OR SHOULD HAVE BEEN AWARE OF THE POSSIBILITY OF ANY SUCH LOSSES ARISING. TO THE EXTENT PERMITTED BY LAW, THE TOTAL LIABILITY OF EATON, ITS AFFILIATES, AND ITS LICENSORS, FOR ANY CLAIMS UNDER THESE TERMS, INCL UDING FOR ANY IMPLIED WARRANTIES, IS LIMITED TO THE AMOUNT PAID FOR THE UPS. THIS SECTION 5.2 STATES EATON'S ENTIRE LIABILITY AND LICENSEE'S SOLE AND EXCLUSIVE REMEDY UNDER THIS AGREEMENT, AND IS SUBJECT TO ALL LIMITATIONS STATED IN SECTION 4.2 STATED IN SECTION 4.2.

5.3 Notices. All notices required to be sent hereunder will be in writing and will be deemed to

P-110000654-001 Revised: December 21st, 2018

have been given when mailed by first class mail to the address shown below:

LICENSE NOTICES Eaton Intelligent Power Limited Eaton House

- 30 Pembroke Road. Dublin 4
- D04 Y0C2 Ireland

5.4 Severability. If any provision of this Agreement is held to be invalid or unenforceable, the

remaining provisions of this Agreement will remain in full force. **5.5 Waiver**. The waiver by either party of any default or breach of this Agreement will not constitute a waiver of any other or subsequent default or breach. Failure to enforce or delay in enforcing any provision of this Agreement will not constitute a waiver of any rights under any visions of this Agreement.

5.6 Entire Agreement. This Agreement constitutes the complete agreement between the parties and supersedes all prior or contemporaneous agreements or representations, written or oral, concerning the subject matter of this Agreement. This Agreement may not be modified or oral, concerning the subject matter of this Agreement. This Agreement may not be modified or amended except in a writing specifically referencing this Agreement and signed by a duly authorized representative of each party. No other act, document, usage or custom will be deemed to amend or modify this Agreement. The Firmware, or portions thereof, may also be subject to additional paper or electronic license agreements. In such cases, the terms of this Agreement will be supplemental to those in the additional agreements, to the extent not inconsistent with the additional agreements. If a copy of this Agreement in a language other than English is included with the Firmware or Documentation, it is included for convenience and the English language version of this Agreement will control. **5.7 Heirs, Successors, and Assigns.** Each and all of the covenants, terms, provisions and agreements herein contained will be binding upon and inure to the benefit of the parties hereto and. to the extent excessive permitted by this Agreement fur respective hereis. lead

hereto and, to the extent expressly permitted by this Agreement, their respective heirs, legal representatives, successors and assigns.

5.8 Export Restrictions. Licensee agrees to comply fully with all relevant export laws and regulations of the United States and all other countries in the world (the "Export Laws") to assure that neither the Firmware nor any direct product thereof are (0) exported directly or indirectly, in violation of Export Laws; or (ii) are intended to be used for any purposes prohibited by the Export Laws. Without limiting the foregoing, Licensee will not export or re-export the Firmware: (i) to any country to which the U.S. has embargoed or restricted the export of goods or services (see http://www.treasury.gov/resource-center/sanctions/Program/Pages/ Programs.aspx), or to any national of any such country, wherever located, who intends to transmit or transport the Firmware back to such country (ii) to any end user who Licensee knows or has reason to know will utilize the Firmware in the design, development or production of nuclear, chemical or biological weapons; or (iii) to any end-user who has been prohibited from participating in U.S. export transactions by any federal agency of the U.S. government. 59.U.S. Government Restricted Rights. The Firmware is a "commercial item" as that term is defined at 48 C.F.R. § 2.101, consisting of "commercial computer software" and "commercial

computer software documentation², as such terms are used in 48 C.F.R. § 12.212, and is provided to the U.S. Government only as a commercial end item. Consistent with 48 C.F.R. § 12.212 and 48 C.F.R. §§ 22.77202.1 Hrough 227.7202.4 all U.S. Government End Users acquire the Firmware with only those rights set forth herein. Contractor/manufacturer is Eaton Corporation, 1000 Eaton Boulevard, Cleveland, Ohio 44122,

5.10 Third Party Intellectual Property Rights. The Firmware may contain components (including open source software components) that are owned by third parties ("Third Party Licensors") and are provided with, incorporated into, or embedded in, the Firmware pursuant to license arrangements between Eaton and such third parties. Third Party Licensor components subject to the Third Party Licensors' license agreements. Licensee will not modify, delete, or object to the Third Party Licensors' license agreements. Licensee will not modify, delete, or object and any copyright or other proprietary rights notices of Third Party Licensors contained in the Firmware

5.11 Indemnity. Licensee shall defend, indemnify and hold Eaton and its officers, directors, employees, and agents harmless from and against all losses, damages, liabilities, aclaims, actions, and associated costs and expenses (including reasonable attorneys' fees and expenses) by reason of injury or death to any person or damage to any tangible or intangible property arising or resulting from the negligence or willful misconduct of the Licensee, its employees, contractors, or agents, in connection with Licensee's use of Firmware and Documentation. Licensee shall be responsible for any breach of this Agreement by its officers, directors, employees, contractors, or agents. Licensee shall defend, indemnify, and hold Eaton and

its officers, directors, employees, and agents harmless from and against any and all losses, damages, liabilities, claims, actions, and associated costs and expenses (including reasonable attorneys' fees and expenses) anising out of or in connection with any breach of this Agreement. 5.12 Open Source Software. The Firmware may contain certain components owned by Eaton that are provided with, incorporated into, linked to, or embedded in the Firmware that are subject to third are ported may more licenses ("Eaton Open Source Components"). Eaton Open Source Components are subject to the open source licenses corresponding to the particular software component. To the extent there are any conflicts between the terms of this Agreement and any open source license corresponding to Eaton Open Source Components or additional and any open source incise or component source incise of the pen source component of additional obligations by such open sources license that are not set forth in this Agreement, the terms of the open source license will control. **5.13 Confidentiality.** Licensee acknowledges that confidential aspects of the Firmware

(including any proprietary source code) are a trade secret of Eaton, the disclosure of which would cause substantial harm to Eaton that could not be remedied by the payment of damages alone and such confidential aspects of the Firmware shall not be disclosed to third parties without the prior written consent of Eaton. Accordingly, Eaton will be entitled to preliminary and permanent injunctive and other equitable relief for any breach of this Section 5.13.

5.14 Note on JAVA Support. The Firmware may contain support for programs written in JAVA. JAVA technology is not fault tolerant and is not designed, manufactured, or intended for use or resale as online control equipment in hazardous environments requiring fail-safe performance, such as in the operation of nuclear facilities, aircraft navigation or communications systems, air such as in the operation of nuclear racinities, aircraft navigation of communications systems, and traffic control, direct life support machines, or weapons systems, in which the failure of JAVA technology could lead directly to death, personal injury, or severe physical or environmental damage. EATON DISCLAIMS ALL DAMAGES INCLUDING DIRECT, INDIRECT AND CONSEQUENTIAL DAMAGES RELATING TO THE FAILURE OF ANY SOFTWARE INCLUDING JAVA PROGRAMS AND/OR JAVA TECHNOLOGY.

5.15 Governing Law. This Agreement will be interpreted and enforced in accordance with the laws of Ireland, without regard to choice of law principles. Any claim or suit with respect to this Agreement shall be brought in the Courts of Ireland, unless mandatory law imposes otherwise.

Eaton EULA

Table of Contents

Welcome to PredictPulse Remote Monitoring Service. 1 How to Contact Eaton 1 User Interface 1 Navigation 1 Login Screen 3 Overview Screen 4 Device List Screen 7 Device Detail Screen 7 Device Detail Screen 10 Monthly Reports 10 Alarms, Events, and Notifications 12 Lost Communication/Partial Telemetry 21 User Enrollment and Activation 22 Activating Devices 24 Preferences 28 How to Notify Me 30 Alarm Notification 22 Lost Communication / Partial Telemetry 36 Call Priority 37 Time Zone and Language 38 Telemetry Preferences 39 Reports 39 Alarm Digest 39 Reports 40 Other Features 41 Achowledge 41 Achowledge 41 Achowledge 42 Predictive Analytic	Eaton PredictPulse™ User Guide	
How to Contact Eaton 1 User Interface 1 Navigation 1 Login Screen 3 Overview Screen 4 Device List Screen 7 Device Detail Screen 7 Monthly Reports 8 Invite User Screen 10 Monthly Reports 10 Alarms, Events, and Notifications 12 Lost Communication/Partial Telemetry 21 User Enrollment and Activation 22 Activating Devices 24 Preferences 28 How to Notify Me. 30 Alarn Notification 32 Lost Communication / Partial Telemetry 36 Predictive Alerts 36 Call Priority 37 Time Zone and Language. 38 Telemetry Preferences 49 Acknowledge 41 Acknowledge 41 Acknowledge 41 Acknowledge 41 Acknowledge 49 Capacitor Remaining Useful Life (CAP-RUL) 49 VRLA Batter	Welcome to Predict <i>Pulse</i> Remote Monitoring Service	
User Interface	How to Contact Eaton	
Navigation1Login Screen3Overview Screen4Device List Screen7Device Detail Screen8Invite User Screen10Monthly Reports10Alarms, Events, and Notifications12Lost Communication/Partial Telemetry21User Enrollment and Activation22Activating Devices24Preferences28How to Notify Me.30Alarm Notification32Lost Communication / Partial Telemetry36Predictive Alerts36Call Priority37Time Zone and Language38Telemetry Preferences39Alarm Digest39Reports40Other Features41Acknowledge41Snooze42VRLA Battery End of Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction52Troubleshooting53Glossary53Glossary53	User Interface	
Login Screen.3Overview Screen.4Device List Screen.7Device Detail Screen.8Invite User Screen.10Monthly Reports.10Alarms, Events, and Notifications.22Lost Communication/Partial Telemetry.21User Enrollment and Activation.22Activating Devices.24Preferences.28How to Notify Me30Alarm Notification / Partial Telemetry.36Call Priority.37Time Zone and Language.36Telemetry Preferences.39Alarm Digest.39Alarm Digest.39Alarm Digest.30Alarm Digest.39Reports.41Snooze.42Ventry Preferences.39Alarn Digest.30Alarn Digest.31Snooze.42Monthly Report Enhancements.45Predictive Alarytics.39Capacitor Remaining Useful Life (CAP-RUL).49VRLA Battery End of Useful Life Prediction.52Troubleshooting.53Glossary.53	Navigation	
Overview Screen4Device List Screen7Device Detail Screen8Invite User Screen10Monthly Reports10Alarms, Events, and Notifications12Lost Communication/Partial Telemetry21User Enrollment and Activation22Activating Devices24Preferences28How to Notify Me30Alarm Notification32Lost Communication / Partial Telemetry36Call Priority37Time Zone and Language38Telemetry Preferences39Alarm Digest39Alarm Digest39Alarm Digest41Snooze42Monthly Reports40Other Features41Snooze42Vedictive Alerts45Predictive Analytics49Capacitor Remaining Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction53Glossary53Glossary53Slossary53	Login Screen	
Device List Screen.7Device Detail Screen.8Invite User Screen.10Monthly Reports.10Alarms, Events, and Notifications.12Lost Communication/Partial Telemetry.21User Enrollment and Activation.22Activating Devices.24Preferences.28How to Notify Me.30Alarm Notification.32Lost Communication / Partial Telemetry.36Call Priority.37Time Zone and Language.38Telemetry Preferences.39Reports.40Other Features.40Other Features.41Acknowledge.41Snoze.42Verdictive Alerts.43Predictive Alaytics.49Capacitor Remaining Useful Life (CAP-RUL).49Capacitor Remaining Useful Life Prediction.52Troubleshooting.53Glossary.53Glossary.53Slossary.53	Overview Screen	4
Device Detail Screen	Device List Screen	7
Invite User Screen10Monthly Reports10Alarms, Events, and Notifications12Lost Communication/Partial Telemetry21User Enrollment and Activation22Activating Devices24Preferences28How to Notify Me30Alarm Notification32Lost Communication / Partial Telemetry36Predictive Alerts36Call Priority37Time Zone and Language39Alarm Digest39Alarm Digest40Other Features41Snooze42Monthly Report Enhancements45Predictive Analytics49VRLA Battery End of Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction53Glossary53Glossary53	Device Detail Screen	
Monthly Reports10Alarms, Events, and Notifications12Lost Communication/Partial Telemetry21User Enrollment and Activation22Activating Devices24Preferences28How to Notify Me30Alarm Notification32Lost Communication / Partial Telemetry36Predictive Alerts36Call Priority37Time Zone and Language38Telemetry Preferences39Alarm Digest39Alarm Digest39Alarm Digest40Other Features41Acknowledge41Snooze42Wonthly Report Enhancements49VRLA Battery End of Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction53Glossary53Glossary53Glossary53	Invite User Screen	
Alarms, Events, and Notifications. 12 Lost Communication/Partial Telemetry 21 User Enrollment and Activation. 22 Activating Devices 24 Preferences 28 How to Notify Me. 30 Alarm Notification. 32 Lost Communication / Partial Telemetry. 36 Predictive Alerts. 36 Call Priority 37 Time Zone and Language 38 Telemetry Preferences 39 Alarm Digest 39 Reports. 40 Other Features. 41 Acknowledge 41 Snooze 42 Monthly Report Enhancements 45 Predictive Analytics 49 Capacitor Remaining Useful Life (CAP-RUL) 49 VRLA Battery End of Useful Life Prediction 53 Glossary 53	Monthly Reports	
Lost Communication/Partial Telemetry21User Enrollment and Activation22Activating Devices24Preferences28How to Notify Me30Alarm Notification32Lost Communication / Partial Telemetry36Predictive Alerts36Call Priority37Time Zone and Language39Alarm Digest39Alarm Digest39Reports40Other Features41Acknowledge41Snooze42Wonthly Report Enhancements45Predictive Analytics49VRLA Battery End of Useful Life Prediction53Glossary53Glossary53	Alarms, Events, and Notifications	
User Enrollment and Activation22Activating Devices24Preferences28How to Notify Me30Alarm Notification32Lost Communication / Partial Telemetry36Predictive Alerts36Call Priority37Time Zone and Language38Telemetry Preferences39Alarm Digest39Reports40Other Features41Acknowledge41Snooze42Monthly Report Enhancements45Predictive Analytics49Capacitor Remaining Useful Life Prediction52Troubleshooting53Glossary53	Lost Communication/Partial Telemetry	
Activating Devices24Preferences28How to Notify Me30Alarm Notification32Lost Communication / Partial Telemetry36Predictive Alerts36Call Priority37Time Zone and Language38Telemetry Preferences39Alarm Digest39Reports40Other Features41Acknowledge41Snooze42Monthly Report Enhancements45Predictive Analytics49Capacitor Remaining Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction53Glossary53	User Enrollment and Activation	
Preferences28How to Notify Me.30Alarm Notification32Lost Communication / Partial Telemetry36Predictive Alerts.36Call Priority37Time Zone and Language38Telemetry Preferences39Alarm Digest39Reports40Other Features41Acknowledge41Snooze42Monthly Report Enhancements45Predictive Analytics49Capacitor Remaining Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction53Glossary53	Activating Devices	
How to Notify Me.30Alarm Notification.32Lost Communication / Partial Telemetry.36Predictive Alerts.36Call Priority37Time Zone and Language.38Telemetry Preferences.39Alarm Digest.39Reports.40Other Features.41Acknowledge41Snooze42Monthly Report Enhancements.45Predictive Analytics.49Capacitor Remaining Useful Life (CAP-RUL).49VRLA Battery End of Useful Life Prediction.53Glossary53Glossary53	Preferences	
Alarm Notification32Lost Communication / Partial Telemetry36Predictive Alerts36Call Priority37Time Zone and Language38Telemetry Preferences39Alarm Digest39Reports40Other Features41Acknowledge41Snooze42Monthly Report Enhancements45Predictive Analytics49Capacitor Remaining Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction53Glossary53Glossary53	How to Notify Me	
Lost Communication / Partial Telemetry36Predictive Alerts.36Call Priority37Time Zone and Language38Telemetry Preferences39Alarm Digest39Reports40Other Features41Acknowledge41Snooze42Monthly Report Enhancements45Predictive Analytics49Capacitor Remaining Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction53Glossary53Glossary53	Alarm Notification	
Predictive Alerts.36Call Priority37Time Zone and Language38Telemetry Preferences39Alarm Digest39Reports40Other Features.41Acknowledge41Snooze42Monthly Report Enhancements45Predictive Analytics49Capacitor Remaining Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction53Glossary53	Lost Communication / Partial Telemetry	
Call Priority37Time Zone and Language38Telemetry Preferences39Alarm Digest39Reports40Other Features41Acknowledge41Snooze42Monthly Report Enhancements45Predictive Analytics49Capacitor Remaining Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction53Glossary53	Predictive Alerts	
Time Zone and Language38Telemetry Preferences39Alarm Digest39Reports40Other Features41Acknowledge41Snooze42Monthly Report Enhancements45Predictive Analytics49Capacitor Remaining Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction53Glossary53	Call Priority	
Telemetry Preferences39Alarm Digest39Reports40Other Features41Acknowledge41Snooze42Monthly Report Enhancements45Predictive Analytics49Capacitor Remaining Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction53Glossary53	Time Zone and Language	
Alarm Digest39Reports40Other Features41Acknowledge41Snooze42Monthly Report Enhancements45Predictive Analytics49Capacitor Remaining Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction52Troubleshooting53Glossary53	Telemetry Preferences	
Reports40Other Features41Acknowledge41Snooze42Monthly Report Enhancements45Predictive Analytics49Capacitor Remaining Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction52Troubleshooting53Glossary53	Alarm Digest	
Other Features. 41 Acknowledge 41 Snooze 42 Monthly Report Enhancements. 45 Predictive Analytics. 49 Capacitor Remaining Useful Life (CAP-RUL). 49 VRLA Battery End of Useful Life Prediction. 52 Troubleshooting. 53 Glossary 53	Reports	
Acknowledge41Snooze42Monthly Report Enhancements45Predictive Analytics49Capacitor Remaining Useful Life (CAP-RUL)49VRLA Battery End of Useful Life Prediction52Troubleshooting53Glossary53	Other Features	
Snooze 42 Monthly Report Enhancements 45 Predictive Analytics 49 Capacitor Remaining Useful Life (CAP-RUL) 49 VRLA Battery End of Useful Life Prediction 52 Troubleshooting 53 Glossary 53	Acknowledge	
Monthly Report Enhancements 45 Predictive Analytics 49 Capacitor Remaining Useful Life (CAP-RUL) 49 VRLA Battery End of Useful Life Prediction 52 Troubleshooting 53 Glossary 53	Snooze	
Predictive Analytics 49 Capacitor Remaining Useful Life (CAP-RUL) 49 VRLA Battery End of Useful Life Prediction 52 Troubleshooting 53 Glossary 53	Monthly Report Enhancements	
Capacitor Remaining Useful Life (CAP-RUL) 49 VRLA Battery End of Useful Life Prediction 52 Troubleshooting 53 Glossary 53	Predictive Analytics	
VRLA Battery End of Useful Life Prediction	Capacitor Remaining Useful Life (CAP-RUL)	
Troubleshooting 53 Glossary 53	VRLA Battery End of Useful Life Prediction	
Glossary	Troubleshooting	
	Glossary	

Table of Contents

List of Figures

Figure 1.	Sidebar Menu	2
Figure 2.	Pop-up Tool-Tip	3
Figure 3.	Login Screen from Browser	3
Figure 4.	Login Screen from Mobile Device	4
Figure 5.	Overview Screen	5
Figure 6.	Device List Screen	7
Figure 11.	Add Load Device Screen	
Figure 12.	Monthly Summary Report	
Figure 13.	Monthly Details Report	
Figure 14.	Device Banner with Lost Communication State	21
Figure 15.	New User Registration Page	
Figure 16.	PredictPulse Verification Code	
Figure 17.	Verify Email Address Page	
Figure 18.	Create User Page	24
Figure 19.	Web Portal Sidebar Menu	
Figure 20.	PredictPulse Organization Code	
Figure 21.	PredictPulse Wizard Popup Window	
Figure 22.	PredictPulse Device Activation Page	27
Figure 23.	Device Activation Complete Confirmation	
Figure 24.	Site User Preferences Page from Browser	
Figure 25.	Preferences Page from Mobile Device	
Figure 26.	Site Administrator Preferences Page from Browser	
Figure 27.	PredictPulse Connectivity Test Email Notification	
Figure 28.	PredictPulse Connectivity Test SMS Notification	
Figure 29.	Alarm Notification Page — Default Template	
Figure 30.	Create Alarm New Template Window	
Figure 31.	New Alarm Template Confirmation Window	
Figure 32.	Alarm Notification Preferences Updated Email	
Figure 33.	Alarm Notification Page — Select Template	
Figure 34.	Alarm Notification Page — Alarms Filtered by Severity	
Figure 35.	Site Administrator Alarm Notification Page — Setting Preferences by User	
Figure 36.	Set Preferences for All User Confirmation Window	
Figure 37.	Alarm Notification Preferences Updated Successfully	
Figure 38.	Lost Communication / Partial Telemetry Page	
Figure 39.	Predictive Alerts Page	
Figure 40.	Sample Predictive Alerts Email	
Figure 41.	Call Priority Page	
Figure 42.	Time Zone & Language Page	
Figure 43.	Language Selection During New User Registration	

List of Figures

Figure 44.	Telemetry Preferences Page	39
Figure 45.	Alarm Digest Page	40
Figure 46.	Sample Alarm Digest Email	40
Figure 47.	Reports Page	41
Figure 48.	Customer Acknowledgement of Alarm	41
Figure 49.	Confirm Alarm Acknowledgement	41
Figure 50.	Customer Ack Tag Added to Timeline	42
Figure 51.	Snoozing Device Alarms	42
Figure 52.	Device Details Screen — Device Snoozed	43
Figure 53.	All Events Screen — Device Snoozed	43
Figure 54.	All Details Screen — Device Snoozed	43
Figure 55.	All Devices Screen — Device Snoozed	44
Figure 56.	Site Overview Screen — Device Snoozed	44
Figure 57.	Resume Device Notifications	45
Figure 58.	Monthly Report Site Summary Page	46
Figure 59.	Monthly Report Organization Overview Page	47
Figure 60.	Timeline Section	48
Figure 61.	Device Details Page with Capacitor Life Notifications	49
Figure 62.	Capacitor Life Warnings	50
Figure 63.	CAP-RUL Prediction Details Page	50
Figure 64.	CAP-RUL Capacitor Life Graph	51
Figure 65.	Battery Degradation Detected Notification	52
Figure 66.	Replace Batteries Notification	52

List of Tables

Table 1.	Health Score Factors	5
Table 2.	Alarms and Events that Trigger a Customer Call from Eaton	3

List of Tables

Eaton PredictPulse™ User Guide

Welcome to PredictPulse Remote Monitoring Service

Eaton Predict*Pulse* is a cloud-based subscription service for data center power infrastructure devices that allows Eaton to remotely monitor and manage system health 24x7, as well as to notify users to events and critical alarms with an expedited response. This user help guide will introduce you to this innovative application interface, key features predictive analytics, and a glossary of terms.

How to Contact Eaton

Getting started with PredictPulse is quick and easy, and Eaton is ready to help you with any questions (USA call 800.843.9433, option 2, option 5 or email <u>predictpulseoperations@eaton.com</u>).

User Interface

PredictPulse includes a simple set of summary and detailed views of your connected devices. You can view PredictPulse with either a computer browser, such as Google Chrome™, or any mobile device. Eaton uses a progressive web application (PWA) technology instead of native apps, so the same application can run on most browsers and mobile devices and adapt based on your device and screen size. Most features will work on either computer browsers and mobile with two exceptions: phone calls can only be made from mobile devices and devices and device activation (wizard) can only be run from a computer on the device's network.

i	NOTE	You may need to occasionally clear your browser cache, click your reload button to refresh the PredictPulse app, or adjust your browser resolution settings. New features and updates will be released over time and clearing the browser cache or adjusting the browser resolution settings often corrects login or data visibility issues.
i	NOTE	The internet browsers supported include Google Chrome, Mozilla Firefox™, Microsoft Edge®, and Safari®. Do not use Microsoft Internet Explorer.

The layout of information will adapt to your device's screen. PredictPulse uses scrolling to view more information and expanding/collapsing menu selections. PredictPulse includes five screens:

- <u>Login Screen</u> New enrollment, password reset
- <u>Overview Screen</u> At-a-glance summary view of all devices
- <u>Device List Screen</u> Navigation buttons (overview, invite-user, user, devices, help)
- <u>Device Detail Screen</u> More details views (expand/collapse)
- <u>Invite User Screen</u> Invite new users or view current users

Navigation

Navigation within PredictPulse includes scrolling up and down (mobile) to view more information, clicking on a device or icon to drill down to a specific device, and using the back arrow or sidebar menu icon for preferences.

Click the icon in the top left corner of the screen to display the sidebar menu (see <u>Figure 1</u>). The sidebar menu is used to access user functions such as setting notification preferences, editing user information, and activating devices.

Figure 1. Sidebar Menu



Many of the icons in PredictPulse include pop-up *tool-tip* explanations, which are displayed by clicking the icon. The example shown in <u>Figure 2</u> can be viewed by clicking the **PulseScore** letter grade (B+ in <u>Figure 2</u>). Click **Learn More** for more details.

Figure 2. Pop-up Tool-Tip



Login Screen

<u>Figure 3</u> shows the PredictPulse login screen as viewed on an internet browser; <u>Figure 4</u> shows the login screen as viewed on a mobile device. From the login screen the user can enter a new enrollment, reset the password, or log in to open the overview (home) screen (see <u>Overview Screen</u>).

Figure 3. Login Screen from Browser

PredictPulse Web Portal × + ← → C	- □ × ⊛ ★ ❷ :
EXECUTION <i>Powering Business Worldwide</i>	ETT-IN PredictPulse Email Address * Password * Remember Me Log In Forgot your password? Don't have an account? Sign Up

Figure 4. Login Screen from Mobile Device

Fat•N PredictP	Pulse
Email Address *	
Password *	
Remember Me	Log In
Forgot your passwo	ord?
Don't have an account?	Sign Up

Overview Screen

The overview screen (see Figure 5) provides an at-a-glance status summary of all devices. The overview screen shows the overall number of devices, alarms, events, predictions and overall health score (*PulseScore*).

- **Devices** are UPS systems actively subscribed and sending data to PredictPulse. A parallel UPS would equal two devices since each UPS can be monitored separately.
- Alarms come from a device and may be informational or urgent. PredictPulse assigns alarms to categories such as On Battery, Internal Fault Detected, and so on. The Eaton monitoring team places a call to the customer point of contact for urgent alarms.
- **Events** are informational and do not come from a device. Lost communications, high temperature, and alarm acknowledgments are examples of events.
- **Predictions** are predictive alerts for PredictPulse Insight subscribers. A prediction indicates that the health conditions of one or more components need attention and that an Eaton analyst will be in contact to discuss or arrange a site verification visit.
- **Snoozed Devices** shows the number of devices that are in the *snoozed* state. When a device is in the snoozed state, notifications are suspended for a time period selected by the user. See the section for more information.
- PulseScore is a summary of device conditions, including operational status, recent alarms (factoring in the alarm criticality), component health, age, and service history. When viewing multiple devices, the average of all devices is displayed as an overall score and letter grade (A+ to F). The health score scale is 1 100, is dynamic and can change at any time. Table 1 lists the factors that determine the health score.

Figure 5. Overview Screen

Eaton Raleigh 10 UPS Devices Healthy	
10 Alarms	B+
i 2 Events	91/100 Overall Econ
C 1 Prediction	Overali Score
1 Snoozed Device	

Table 1. Health Score Factors

Letter Grade	Value	Points
Healthy	A+	100
Healthy	А	96-100
Healthy	A-	93-95
Healthy	B+	90-92
Healthy	В	87-89
Healthy	В-	84-86
Average Health	C+	81-83
Average Health	С	78-80
Average Health	C-	75-77
Poor Health	D+	72-74
Poor Health	D	69-71
Poor Health	D-	66-68
Poor Health	F	65 or below
Device Parametric Data	Value	20 Points
Device Parametric Data Load % overall	Value > 81%	20 Points -10
Device Parametric Data Load % overall Load % overall	Value > 81% > 91%	20 Points -10 -15
Device Parametric Data Load % overall Load % overall Temperature	Value > 81% > 91% < 64 °F (18 °C)	20 Points -10 -15 -5
Device Parametric Data Load % overall Load % overall Temperature Temperature	Value > 81% > 91% < 64 °F (18 °C)	20 Points -10 -15 -5 -2
Device Parametric Data Load % overall Load % overall Temperature Temperature Temperature	Value > 81% > 91% < 64 °F (18 °C)	20 Points -10 -15 -5 -2 -4
Device Parametric Data Load % overall Load % overall Temperature Temperature Temperature Temperature	Value > 81% > 91% < 64 °F (18 °C)	20 Points -10 -15 -5 -2 -4 -6
Device Parametric Data Load % overall Load % overall Temperature Temperature Temperature Temperature Temperature	Value > 81% > 91% < 64 °F (18 °C)	20 Points -10 -15 -5 -2 -4 -6 -12
Device Parametric Data Load % overall Load % overall Temperature Temperature Temperature Temperature Relative Humidity	Value > 81% > 91% < 64 °F (18 °C)	20 Points -10 -15 -5 -2 -4 -6 -12 -5
Device Parametric Data Load % overall Load % overall Temperature Temperature Temperature Temperature Relative Humidity Relative Humidity	Value > 81% > 91% < 64 °F (18 °C)	20 Points -10 -15 -5 -2 -4 -6 -12 -5 -5 -5 -5
Device Parametric Data Load % overall Load % overall Temperature Temperature Temperature Temperature Relative Humidity Relative Humidity Service History	Value > 81% > 91% < 64 °F (18 °C)	20 Points -10 -15 -5 -2 -4 -6 -12 -5 -5 15 Points
Device Parametric DataLoad % overallLoad % overallTemperatureTemperatureTemperatureTemperatureRelative HumidityRelative HumidityService HistoryBattery age	Value > 81% > 91% < 64 °F (18 °C)	20 Points -10 -15 -5 -2 -4 -6 -12 -5 -5 15 Points 0
Device Parametric DataLoad % overallLoad % overallTemperatureTemperatureTemperatureTemperatureRelative HumidityRelative HumidityService HistoryBattery ageBattery age	Value > 81% > 91% < 64 °F (18 °C)	20 Points -10 -15 -5 -2 -4 -6 -12 -5 -5 -5 15 Points 0 -2

Battery age	6 years +	-6
Capacitor age	> 5 years	-3
Capacitor age	NA	0
Capacitor age	> 7 years	-6
Emergency SR's in last year	> 0	-5
Emergency SR's in last year	0	0
Configuration	Value	2 Points
Parallel redundant	NOT	-2
Device Age	Value	5 Points
Less than 5 years		0
Between 5 and 10 years		-1
Between 11 and 15 years		-2
Between 16 and 20 years		-4
Best Practices – Extra Credit	Value	3 Points
ESS/VMMS mode	ON	1
OEM Service	Eaton	1
Load less than 90%	< 90%	1
		•
Device Status	Status	30 Points
Device Status Status must be one state	Status Shutdown/ Offline	30 Points -20
Device Status Status must be one state	Status Shutdown/ Offline On Battery	30 Points -20 -5
Device Status Status must be one state	Status Shutdown/ Offline On Battery Online VMMS	30 Points -20 -5 0
Device Status Status must be one state	Status Shutdown/ Offline On Battery Online VMMS Online ESS	30 Points -20 -5 0 0
Device Status Status must be one state Default	Status Shutdown/ Offline On Battery Online VMMS Online ESS Online - Double Conversion	30 Points -20 -5 0 0 0 0 0
Device Status Status must be one state Default	Status Shutdown/ Offline On Battery Online VMMS Online ESS Online - Double Conversion On Bypass	30 Points -20 -5 0 0 0 -5 -5
Device Status Status must be one state Default	Status Shutdown/ Offline On Battery Online VMMS Online ESS Online - Double Conversion On Bypass Lost Communications	30 Points -20 -5 0 0 0 -5 -5 -15
Device Status Status must be one state Default Alarms/Events Within Past 24 Hours	Status Shutdown/ Offline On Battery Online VMMS Online ESS Online - Double Conversion On Bypass Lost Communications Severity	30 Points -20 -5 0 0 0 -5 -15 25 Points
Device Status Status must be one state Default Alarms/Events Within Past 24 Hours Default	Status Shutdown/ Offline On Battery Online VMMS Online ESS Online - Double Conversion On Bypass Lost Communications Severity Null	30 Points -20 -5 0 0 0 0 -5 -15 25 Points 0
Device Status Status must be one state Default Alarms/Events Within Past 24 Hours Default 1 or more	Status Shutdown/ Offline On Battery Online VMMS Online ESS Online - Double Conversion On Bypass Lost Communications Severity Null Critical	30 Points -20 -5 0 0 0 -5 -15 25 Points 0 -10
Device Status Status must be one state Default Alarms/Events Within Past 24 Hours Default 1 or more 1 or more	Status Shutdown/ Offline On Battery Online VMMS Online ESS Online - Double Conversion On Bypass Lost Communications Severity Null Critical Major	30 Points -20 -5 0 0 0 -5 -15 25 Points 0 -10 -5
Device Status Status must be one state Default Alarms/Events Within Past 24 Hours Default 1 or more 1 or more 1 Critical + 3 > Minor	Status Shutdown/ Offline On Battery Online VMMS Online ESS Online - Double Conversion On Bypass Lost Communications Severity Null Critical Major Critical + Minor	30 Points -20 -5 0 0 0 -5 -15 25 Points 0 -10 -5 -12
Device Status Status must be one state Default Alarms/Events Within Past 24 Hours Default 1 or more 1 or more 1 Critical + 3 > Minor 1 Critical + 1 Major	Status Shutdown/ Offline On Battery Online VMMS Online ESS Online - Double Conversion On Bypass Lost Communications Severity Null Critical Major Critical + Major Critical + Major	30 Points -20 -5 0 0 0 -5 -15 25 Points 0 -10 -5 -12 -15
Device Status Status must be one state Default Alarms/Events Within Past 24 Hours Default 1 or more 1 or more 1 Critical + 3 > Minor 1 Critical + 1 Major 1 Major + 3 > minor	Status Shutdown/ Offline On Battery Online VMMS Online ESS Online - Double Conversion On Bypass Lost Communications Severity Null Critical Major Critical + Minor Critical + Major Major + Minor	30 Points -20 -5 0 0 0 -5 -15 25 Points 0 -10 -5 -12 -15 -10
Device Status Status must be one state Default Alarms/Events Within Past 24 Hours Default 1 or more 1 or more 1 Critical + 3 > Minor 1 Critical + 1 Major 1 Major + 3 > minor 3 or more	Status Shutdown/ Offline On Battery Online VMMS Online ESS Online - Double Conversion On Bypass Lost Communications Severity Null Critical Major Critical + Minor Critical + Major Major + Minor Major + Minor	30 Points -20 -5 0 0 0 -5 -15 25 Points 0 -10 -5 -12 -15 -10 -3

Table 1. Health Score Factors (Continued)

Device List Screen

Click the **Devices** icon to open the device list (see Figure 6). Each device associated with the organization's account is displayed based on the health or alarms, in descending order from worst health to best health.

Click a specific device to open a detail view for that device (see *Device Detail Screen*).

Figure 6. Device List Screen

Eaton Raleigh Healthy Judis Devices Jourset Device	
UPS Devices	
EU475ZDXD4-9315 Area 17 On Battery On Soit BROOKER CREEK BLVD, OLDSMAR, FL, 34677, US	0,0% 🔿 15h42m 🌲 Snoozed
KGXUS8092-93PM Main Substation Lost Communication	20,0% Ø 1h27m
BN104FBB02-9155-Boller1 Lost Communication 0 1015 MEDICAL CENTER PKWY, SELMA, AL, 36701, US	 63,4% O 0h50m
B0355400024-9-Water Treatment Double Conversion 0 400 N 4TH ST, BISMARCK, ND, 58501, US	15,3% Ø 1h37m
EC021CBA05-9390-Room 10 Double Conversion • Test1, Test2, New Jercy, TX, 54321, US	14,9% Ø 1h21m
PRADAIRF05-5P1000RC-Bailer2 Connected	60,0% Ø 1h3m
EL185Bjj01-9395P- BU Substation Double Conversion	14,3% O 276h40m G 1
EK254CBC04-9390 Double Conversion • -	10,4% Ø 8h2m
BG282JBA12-9355 Double Conversion Q 20700 SWENSON DR, STE 100, WAUKESHA, WI, 53186, US	0,0% () 7hSm
EN495UXXX2-93PM Double Conversion V 101 KAPPA DR, PITTSBURGH, PA, 15238, US	25,4% Õ 1h52m

Device Detail Screen

The device detail screen (see Figure 7 through Figure 10) show all details for the selected device.

Each *key performance indicator (KPI)* icon at the top of the device detail view includes a pop-up tool-tip aid, or direct to the detailed information, to explain what the icon represents.

Figure 7. Device Detail Screen

Figure 8. Device Detail Screen – More Details

÷	FC021CBA	05-9390-Ro	â	÷	← EC	← EC021CBA0	← EC021CBA05-9390-Ro
- -	Test1. Test2. N	ew lercy. TX, 543.				Luton huicign	As of 02:45 Pl
ĺ	Double Conver	sion		He	Healthy	Healthy Load	Healthy Load Estimated
l	aton Raleigh Note: All times a	are displayed in ET		0	Status	Status	Status Doub
		As of 02:45 PM E	T 01 Jul 2022		Output	Output Power (kW)	Output Power (kW)
A-		0	-	•			Input Volt
94/100	14,9%	1h21m ± 8m	100%		mparv	input void beginnen	
Healthy	Load	Estimated	Battery		Output	Output Volt. L-L 🗩 L-N	Output Volt. LLC LAN 483,
Stat	tus	Double	Conversion	\odot	Output	Output Current (A)	Output Current (A) 2
Out	put Power (kW)		21,5	٥	O Humidi	O Humidity	O Humidity
Input	ut Volt. L-L () L-N	484,4,4	485,1, 486,3	8	👌 Tempe	🖁 Temperature 🕬 🖝	🖁 Temperature 🚎 🔹 c 💈 2
Out	put Volt. L-L 🗩 L-	483,2,4	482,7, 480,8	Clos	Close More	Close More Details	Close More Details
🛇 Out	put Current (A)	23,	7, 28,9, 29,9	19636960			
Ô Hur	nidity	33,	3% 🔪 33,1%	٩	🔧 Last Se	🔾 Last Service	🔾 Last Service
🖁 Tem	nperature 🖅 📻 🕫	26,5	°c ∕ 26,4°C	ē	İ Installa	installation Date	Installation Date
Open Mo	ore Details		~	Ē	📅 Warrar	📅 Warranty/Contract E	Warranty/Contract End
				Seria	Serial Numb	Serial Number	Serial Number
Load			30 Days 🔻	Mod	Model	Model	Model
20%							All Details
15%		and the second second	1	Ant	All Details	All Details	All Details

Figure 10. Device Detail Screen - Connected Loads,

Predictions, Timeline, Score Breakdown



Figure 9. Device Detail Screen – Load, Components, Connected Loads

The **Connected Loads** section of the device detail screen (highlighted in <u>Figure 10</u>) displays the downstream loads (such as servers) associated with the selected device. This is user-entered optional information.

To add new information, click **+ Add Load** to display the **Add Load Device** screen (see <u>Figure 11</u>). Enter the load name, asset tag, load type, and notes (optional), and click **Save**. Once saved, all users with access can view this information. To edit or delete a connected load, click the saved connected load name.

×	Add Load I Eaton Demo	Device
Name	•	
Please	e enter device name	
Asse	t Name/Tag	
Load 1 Serve	ype er	-
Note	s	
	Cancel	Save

Figure 11. Add Load Device Screen

Invite User Screen

Administrators can invite other users or coworkers to enroll in PredictPulse either as a user or as an administrator. To invite another user, click **Invite-Users** from the sidebar menu (see <u>Figure 1</u>). You will be prompted for the name, email address, and role (administrator or user). When the invited user has completed their enrollment and has access to the account, their status will display as *Registered*. Users that have not completed enrollment will be displayed as *Invited*.

If you are not an administrator but want other coworkers to have access to your PredictPulse account, either contact your administrator and have them invite the user(s) or contact Eaton PredictPulse support to have the user(s) invited. The customer's administrators ultimately have authority to manage, control, invite and delete all users. Once new users are enrolled, they can view all device data associated with the account.

Monthly Reports

Monthly summary and details reports are automatically sent to all users (see Figure 12 and Figure 13).



If an F letter grade is returned and/or there is no current data displayed for a device, verify the communication status of the device.

Figure 12. Monthly Summary Report

Demo Site Int [®] PulseSave Pro All Devices	evented Losses		PredictPuls June 2022 Monthly Report	e
Summary In June 2022, Eaton utility incidents that lasted for more than	devices and PredictPulse pre have occurred across all dev 60 seconds.	vented 8 potential load loss ices and 3 of such incidents	8 Utility Events	! 34 Critical Alarms
Started	Duration	Device Name	Event	
06/15/2022 06:50 A	м	TB232A0348-BLADEUPS	Partial Tele	emetry
06/26/2022 09:39 A	М	USAPXG9390-9390	🕲 UPS On Ba	attery
06/27/2022 05:34 A	М	USAPXG9390-9390	Lost Comn	nunication
06/15/2022 06:55 A	M 88 h 40 min	G125M08005-5P	Partial Tele	emetry
06/23/2022 11:41 A	м	G125M08005-5P	Partial Tele	emetry
06/23/2022 03:36 A	M 08 h 05 min	G125M08005-5P	Lost Comm	nunication
06/25/2022 07:28 A	M 06 min 32 sec	BF512FB807-9155	(8) UPS On Ba	attery
06/25/2022 07:28 A	M 01 h 07 min	BF512FBB07-9155	(a) UPS On Ba	attery
06/25/2022 07:28 A	M 01 h 07 min	BF512FB807-9155	(2) UPS On Ba	attery
06/22/2022 01:26 P	M 31 min 46 sec	BF512FBB07-9155	Lost Com	nunication
06/10/2022 01:01 P	M 14 min 35 sec	BF512FBB07-9155	Partial Tele	emetry
		3	© Eaton. All PredictPulse, and PulseScore are All other trademarks are property of	Rights Reserved. Eaton, registered trademarks. their respective owners.



Demo Site	BB07-9155 Details				PredictPulse [™] June 2022 Monthly Report		
Summary In June 202 had 22 Cri with an ov	y 122, BF512FBB07-91 i tical Incidents, 0 F ierall System PulseS	55 Predictions, core of 86 (B-).			22 Events	0 Predictions	B- 86/100 PulseScore
20m Dn Battery	100% Availability	17% Avg Load	42% Avg Humidity	71.6°F Avg Temp	62V Avg Input	119V Avg Output	OA Avg Output
Load Tre	end			Load Devices			
100% 75%				Load 12 A2			
50%							
25%							
Jun	1 Jun 1	1 Jun 2	i) 	Details			
Timeime	artial Telemetry	Jun	9, 2022 01:01 PM -	Warranty End Date			22
C Pa	F512FBB07-9155	Jun 2	9, 2022 01:16 PM	Contract End Date		ĩ	
	ypass Source Out Of Tolerar	nce Jun 2	7, 2022 10:56 PM -	Contract End Date			October 31, 2025
 Pi Bi By <	ypass Source Out Of Tolerar F512FB807-9155 artial Telemetry F512FB807-9155	nce Jun 2 Jun 2 Jun 2	17, 2022 10:56 PM - 17, 2022 10:56 PM 16, 2022 01:01 PM - 16, 2022 01:01 PM	Serial Number			October 31, 2025 BF512FBB07
 Pa By <	ypass Source Out Of Tolerar F512FB807-9155 artial Telemetry F512FB807-9155 Justomer call completed F512FB807-9155	nce Jun : Jun : Jun 2 Jun 2 Jun 2 Jun 2	77, 2022 10:56 PM - (7, 2022 10:56 PM - 5, 2022 10:56 PM - 5, 2022 01:01 PM - 16, 2022 01:01 PM - 16, 2022 01:01 PM - 16, 2022 08:29 AM - 5, 2022 08:20 000 000 000 000 000 000 000 000 000	Serial Number Model Number Last Service		F	October 31, 2025 BF512FBB07 9155-12-15 rebruary 04, 2020
 Person By By By By By By By By Construction Constructio	ypass Source Out Of Tolerar F512FB807-9155 artial Telemetty F512FB807-9155 ustomer call completed F512FB807-9155 ustomer call completed F512FB807-9155	nce Jun : Jun 2 Jun 2 Jun 2 Jun 2 Jun 2 Jun 2 Jun 2 Jun 2	17, 2022 10:56 PM - (17, 2022 10:56 PM - (16, 2022 01:01 PM - (16, 2022 01:01 PM - (15, 2022 08:29 AM - (15, 2022 08:29 AM - (5, 202 08) (5, 202 08) (5, 202 08)	Sertal Number Model Number Last Service		r	October 31, 2025 BF512FBB07 9155-12-15 lebruary 04, 2020
	ypass Source Out Of Toleran F512FB807-9155 S12FB807-9155 Ustomer call completed F512FB807-9155 Ustomer call completed F512FB807-9155	nce Jun ; Jun ; Jun ; Jun ; Jun ; Jun ; Jun ; Jun ; Jun ; Jun ;	7, 2022 10:56 PM - (7, 2022 10:56 PM - (5, 2022 10:56 PM - (5, 2022 10:17 PM - (5, 2022 10:07 PM - (5, 2022 20:29 AM - (5, 2022 20) (5, 2022 20) (5, 2022 20) (Sertal Number Model Number Last Service		F	October 31, 2025 BF512FBB07 9155-12-15 ebruary 04, 2020
Pieres Pi	ypass Source Out Of Toleran FS12F8807-9155 striat Telemetry FS12F8807-9155 ustomer call completed FS12F8807-9155 ustomer call completed FS12F807-9155 striated completed FS12F8807-9155	nce Jun ; Jun ; un i un i un i un i un i un i un i un i	17, 2022 10:56 PM - (17, 2022 10:56 PM - (16, 2022 01:01 PM - (16, 2022 01:01 PM - (15, 2022 00:29 AM - (15, 2022 00:23 AM - (Serial Number Model Number Last Service		F	October 31, 2025 BF512FBB07 9155-12-15 ebruary 04, 2020
	ypass Source Out Of Toleran F512F8807-9155 artial Telemetry F512F8807-9155 ustomer call completed F512F8807-9155 ustomer call completed F512F8807-9155 PS On Battery F512F8807-9155 PS On Battery F512F8807-9155	nce Jun ; Jun ;	77, 2022 10:56 PM 6 17, 2022 10:56 PM 1 16, 2022 01:01 PM 1 16, 2022 01:01 PM 1 15, 2022 00:29 AM 1 5, 2022 07:28 AM 1	Serial Number Model Number Last Service		F	October 31, 2025 BF512FBB07 9155-12-15 ebruary 04, 2020

Alarms, Events, and Notifications

Alarms come from a device and may be informational or urgent. PredictPulse assigns alarms to categories such as *On Battery, Internal Fault Detected,* and so on. The Eaton monitoring team places a call to the customer point of contact for urgent alarms. Alarms are sent with approximately a one-minute latency.

Events are non-critical alerts, status change events and informational notices. Lost communications, high temperature, and alarm acknowledgments are examples of events.

Notifications can be managed using the sidebar menu Preferences settings as described in the section.

<u>Table 2</u> lists the alarms and events that will trigger a notification phone call from Eaton to the customer. Users can choose the notification method based on their individual preferences (see the section). *Yes* in the **Call** column indicates that a user can receive a phone call if the preference is set to ON in the alarm template; *No* indicates that the alarm is not available to receive a phone call from Eaton monitoring team.

NOTE SMS text messages may result in charges per text message.

Table 2. Alarms and Events that Trigger a Customer Call from Eaton

i

Alarm type	Event Description	Severity	Call	SMS	Email
Internal Fault	Battery charge current low critical	Critical	Yes	Yes	Yes
Internal Fault	Battery charger fault	Critical	Yes	Yes	Yes
Internal Fault	Battery discharge current high critical	Critical	Yes	Yes	Yes
Internal Fault	Battery discharge current low critical	Critical	Yes	Yes	Yes
Internal Fault	Battery fuse fault	Critical	Yes	Yes	Yes
Internal Fault	Battery charge current high critical	Critical	Yes	Yes	Yes
Internal Fault	Bypass AC module failure	Critical	Yes	Yes	Yes
Internal Fault	Calibration fault	Critical	Yes	Yes	Yes
Internal Fault	DCDC converter failure	Critical	Yes	Yes	Yes
Internal Fault	Input AC module failure	Critical	Yes	Yes	Yes
Internal Fault	Internal configuration failure	Warning	Yes	Yes	Yes
Internal Fault	Internal failure	Critical	Yes	Yes	Yes
Internal Fault	DC bus + too high	Warning	Yes	Yes	Yes
Internal Fault	DC bus - too high	Warning	Yes	Yes	Yes
Internal Fault	DC bus + too low	Warning	Yes	Yes	Yes
Internal Fault	DC bus - too low	Warning	Yes	Yes	Yes
Internal Fault	DC bus unbalanced	Warning	Yes	Yes	Yes
Internal Fault	Inverter fuse fault	Critical	Yes	Yes	Yes
Internal Fault	Inverter internal failure	Critical	Yes	Yes	Yes
Internal Fault	Inverter limitation	Critical	Yes	Yes	Yes
Internal Fault	Inverter overload*	Critical	Yes	Yes	Yes
Internal Fault	Inverter short circuit	Critical	Yes	Yes	Yes
Internal Fault	Inverter thermal overload*	Critical	Yes	Yes	Yes
Internal Fault	Inverter voltage too high	Warning	Yes	Yes	Yes
Internal Fault	Inverter voltage too low	Warning	Yes	Yes	Yes
Internal Fault	Max charger voltage	Warning	Yes	Yes	Yes
Internal Fault	Min charger voltage	Warning	Yes	Yes	Yes
Internal Fault	Output frequency out of range	Warning	Yes	Yes	Yes
Internal Fault	Output short circuit	Critical	Yes	Yes	Yes
Internal Fault	Power overload*	Warning	Yes	Yes	Yes
Internal Fault	Overload alarm*	Warning	Yes	Yes	Yes
Internal Fault	Output over current	Warning	Yes	Yes	Yes
Internal Fault	Output voltage too high	Warning	Yes	Yes	Yes

Alarm type	Event Description	Severity	Call	SMS	Email
Internal Fault	Output voltage too low	Warning	Yes	Yes	Yes
Internal Fault	Rectifier failure	Critical	Yes	Yes	Yes
Internal Fault	Rectifier fuse fault	Critical	Yes	Yes	Yes
Internal Fault	Rectifier overload*	Critical	Yes	Yes	Yes
Internal Fault	Rectifier short circuit	Critical	Yes	Yes	Yes
Internal Fault	UPS power supply fault	Critical	Yes	Yes	Yes
Internal Fault	Fan fault	Critical	No	Yes	Yes
Internal Fault	Overload pre-alarm*	Warning	No	Yes	Yes
Battery Alert	Battery information	Info	No	Yes	Yes
Battery Alert	Battery BMS failure	Warning	Yes	Yes	Yes
Battery Alert	Communication with battery lost	Warning	Yes	Yes	Yes
Battery Alert	No battery	Critical	Yes	Yes	Yes
Battery Alert	Battery fault	Critical	Yes	Yes	Yes
Battery Alert	Battery low	Critical	No	Yes	Yes
Battery Alert	Battery voltage high critical	Critical	Yes	Yes	Yes
Battery Alert	Batteries are aging. Consider replacement	Warning	No	Yes	Yes
Battery Alert	Battery discharge current high warning	Warning	No	Yes	Yes
Battery Alert	Battery discharge current low warning	Warning	No	Yes	Yes
Battery Alert	Battery State Of Charge below limit	Warning	No	Yes	Yes
Battery Alert	Battery State Of Health below limit	Warning	No	Yes	Yes
Battery Alert	Battery temperature high warning	Warning	No	Yes	Yes
Battery Alert	Battery temperature low warning	Warning	No	Yes	Yes
Battery Alert	Battery temperature unbalanced	Warning	No	Yes	Yes
Battery Alert	Battery test failed	Critical	No	Yes	Yes
Battery Alert	Battery voltage too high	Warning	No	Yes	Yes
Battery Alert	Battery voltage high warning	Warning	No	Yes	Yes
Battery Alert	Battery low voltage	Warning	No	Yes	Yes
Battery Alert	Battery voltage low warning	Warning	No	Yes	Yes
Battery Alert	Battery voltage unbalanced	Warning	No	Yes	Yes
Battery Alert	Battery warning	Warning	No	Yes	Yes
Battery Alert	Battery charge current high warning	Warning	No	Yes	Yes
Battery Alert	Battery charge current low warning	Warning	No	Yes	Yes
Battery Voltage Low	Battery voltage low critical	Critical	Yes	Yes	Yes
Breaker Status	Utility breaker open	Warning	Yes	Yes	Yes
Breaker Status	Bypass breaker open	Warning	Yes	Yes	Yes
Breaker Status	Output breaker open	Warning	Yes	Yes	Yes
Breaker Status	Battery breaker open	Warning	No	Yes	Yes
Breaker Status	At least one breaker in battery is open	Warning	No	Yes	Yes
Breaker Status	Maintenance bypass breaker closed	Warning	No	Yes	Yes

Table 2. Alarms and Events that Trigger a Customer Call from Eaton (Continued)

Alarm type	Event Description	Severity	Call	SMS	Email
Bypass Alarm	Bypass AC Over Voltage	Warning	No	Yes	Yes
Bypass Alarm	Bypass AC Under Voltage	Warning	No	Yes	Yes
Bypass Alarm	Bypass frequency out of range	Warning	No	Yes	Yes
Bypass Alarm	Bypass not available	Warning	No	Yes	Yes
Bypass Alarm	Bypass phase out range	Warning	No	Yes	Yes
Bypass Alarm	Bypass voltage out of range	Warning	No	Yes	Yes
Bypass Alarm	Bypass mode	Warning	No	Yes	Yes
Communication Alert	Upgrading limited communication	Info	No	Yes	Yes
Communication Alert	Protection agent is starting	Info	No	Yes	Yes
Communication Alert	Protection communication lost with agent	Warning	No	Yes	Yes
Communication Alert	Protection agent is in unknown state	Info	No	Yes	Yes
Communication Alert	Communication lost (with EMP)	Warning	No	Yes	Yes
Communication Alert	Firmware watchdog reset	Critical	No	Yes	Yes
Communication Alert	No UPS connected	Info	No	Yes	Yes
Communication Alert	Schedule restart date reached	Info	No	Yes	Yes
Communication Alert	Protection sequential shutdown in progress	Info	No	Yes	Yes
Communication Alert	Protection immediate shutdown in progress	Warning	No	Yes	Yes
Communication Alert	Protection sequential shutdown scheduled	Info	No	Yes	Yes
Communication Alert	Protection agent is stopped	Info	No	Yes	Yes
Communication Alert	Protection agent is stopping	Info	No	Yes	Yes
Communication Alert	Schedule shutdown date reached	Info	No	Yes	Yes
Communication Alert	Communication lost (with UPS)	Info	No	Yes	Yes
Communication Alert	UPS not supported	Info	No	Yes	Yes
Critical Alarm	Bypass overload*	Critical	Yes	Yes	Yes
Critical Alarm	Bypass thermal overload*	Critical	Yes	Yes	Yes
Critical Alarm	Compatibility failure	Warning	Yes	Yes	Yes
Critical Alarm	Maintenance bypass	Critical	No	Yes	Yes
Critical Alarm	Parallel negative power	Critical	Yes	Yes	Yes
Critical Alarm	Parallel UPS communication lost	Warning	Yes	Yes	Yes
Critical Alarm	Parallel UPS measure inconsistent	Critical	Yes	Yes	Yes
Critical Alarm	Parallel UPS not compatible	Critical	Yes	Yes	Yes
Critical Alarm	Parallel UPS protection lost	Critical	Yes	Yes	Yes
Critical Alarm	Parallel UPS redundancy lost	Warning	Yes	Yes	Yes
Environmental Alarm	Battery temperature low critical	Critical	Yes	Yes	Yes
Environmental Alarm	Battery temperature high critical	Critical	Yes	Yes	Yes
Environmental Alarm	Bypass temperature alarm	Critical	Yes	Yes	Yes
Environmental Alarm	Temperature alarm	Critical	Yes	Yes	Yes
Environmental Alarm	Battery temperature alarm	Warning	No	Yes	Yes
Environmental Alarm	Charger temperature alarm	Warning	No	Yes	Yes

Alarm type	Event Description	Severity	Call	SMS	Email
Environmental Alarm	Humidity is critically high (EMP)	Critical	No	Yes	Yes
Environmental Alarm	Humidity is critically low (EMP)	Critical	No	Yes	Yes
Environmental Alarm	Humidity is low (EMP)	Warning	No	Yes	Yes
Environmental Alarm	Humidity is high (EMP)	Warning	No	Yes	Yes
Environmental Alarm	Temperature is low (EMP)	Warning	No	Yes	Yes
Environmental Alarm	Temperature is high (EMP)	Warning	No	Yes	Yes
Environmental Alarm	Temperature is critically high (EMP)	Critical	No	Yes	Yes
Environmental Alarm	Temperature is critically low (EMP)	Critical	No	Yes	Yes
Environmental Alarm	Building alarm (through dry contact)	Critical	No	Yes	Yes
Environmental Alarm	Building alarm (through Network module)	Critical	No	Yes	Yes
Environmental Alarm	Contact is active (EMP)	Settable	No	Yes	Yes
Input Power Issue	Input AC unbalanced	Warning	No	Yes	Yes
Input Power Issue	Input AC voltage out of range (+)	Warning	No	Yes	Yes
Input Power Issue	Input AC frequency out of range	Warning	No	Yes	Yes
Input Power Issue	Input AC not present	Warning	No	Yes	Yes
Input Power Issue	Input AC voltage out of range (-)	Warning	No	Yes	Yes
Load Status	Load unprotected*	Critical	No	Yes	Yes
On Battery	Battery discharging	Warning	No	Yes	Yes
On Battery	On battery	Warning	No	Yes	Yes
Operating Mode	UPS Shutoff requested	Warning	Yes	Yes	Yes
Output Alert	Group is OFF	Info	No	Yes	Yes
Output Alert	On high efficiency	Info	No	Yes	Yes
Output Alert	Group 1 is OFF	Info	No	Yes	Yes
Output Alert	Group 2 is OFF	Info	No	Yes	Yes
Output Alert	On AVR (Boost)	Info	No	Yes	Yes
Output Alert	On AVR (Buck)	Info	No	Yes	Yes
Shutdown Sequence	Shutdown Imminent	Critical	No	Yes	Yes
UPS State	Emergency power OFF	Critical	Yes	Yes	Yes
UPS State	Load not powered*	Warning	No	Yes	Yes
Warranty	End of warranty	Warning	No	Yes	Yes
Wiring Fault	Bypass bad wiring	Warning	Yes	Yes	Yes
Wiring Fault	Input bad wiring	Warning	Yes	Yes	Yes
System Not Redundant	System Not Redundant	Major	Yes	Yes	Yes
System Not Redundant	Redundancy Loss Due To Overload*	Major	Yes	Yes	Yes
UPS On Battery	UPS On Battery	Major	No	Yes	Yes
UPS On Bypass	UPS On Bypass	Major	Yes	Yes	Yes
Output Overload	Phase A Overload*	Critical	Yes	Yes	Yes
Output Overload	Phase A Overload (Extreme Level/Level 3)*	Critical	Yes	Yes	Yes

Table 2. Alarms and Events that Trigger a Customer Call from Eaton (Continued)

Alarm type	Event Description	Severity	Call	SMS	Email
Output Overload	Phase A Overload (High Level/Level 2)*	Critical	Yes	Yes	Yes
Output Overload	Phase B Overload*	Critical	Yes	Yes	Yes
Output Overload	Phase B Overload (Extreme Level/Level 3)*	Critical	Yes	Yes	Yes
Output Overload	Phase B Overload (High Level/Level 2)*	Critical	Yes	Yes	Yes
Output Overload	Phase C Overload*	Critical	Yes	Yes	Yes
Output Overload	Phase C Overload (Extreme Level/Level 3)*	Critical	Yes	Yes	Yes
Output Overload	Phase C Overload (High Level/Level 2)*	Critical	Yes	Yes	Yes
Output Overload	Output Overload*	Critical	Yes	Yes	Yes
Output Overload	Output Watts Overload*	Critical	Yes	Yes	Yes
Output Overload	Output Load Over 100%*	Critical	Yes	Yes	Yes
Output Overload	Inverter overload*	Critical	Yes	Yes	Yes
Output Voltage Out of Tolerance	Output AC Under Voltage	Major	Yes	Yes	Yes
Output Voltage Out of Tolerance	Output Under Or Over Frequency	Major	Yes	Yes	Yes
Output Voltage Out of Tolerance	Output AC Over Voltage	Major	Yes	Yes	Yes
Shutdown Imminent	Shutdown Imminent	Critical	Yes	Yes	Yes
Maintenance Bypass Mode	Maintenance Bypass Mode	Major	No	Yes	Yes
Neutral Overload	Neutral Overload*	Critical	No	Yes	Yes
Neutral Overload	Neutral Overload Warning*	Critical	No	Yes	Yes
Ambient Humidity High	Ambient Humidity High	Major	No	Yes	Yes
Ambient OverTemperature	Ambient Over Temperature	Critical	Yes	Yes	Yes
Automatic Shutdown Pending	Automatic Shutdown Pending	Major	No	Yes	Yes
Automatic Startup Pending	Automatic Startup Pending	Major	No	Yes	Yes
Input Source Out Of Tolerance	Input AC Over Voltage	Major	No	Yes	Yes
Input Source Out Of Tolerance	Input Phase Rotation Error	Major	Yes	Yes	Yes
Input Source Out Of Tolerance	Multi Phase Rotation	Major	Yes	Yes	Yes
High Input Current	Rectifier Input Over Current	Critical	No	Yes	Yes
High Input Current	Phase A Rectifier Current Limit	Major	No	Yes	Yes
High Input Current	Phase B Rectifier Current Limit	Major	No	Yes	Yes
High Input Current	Phase C Rectifier Current Limit	Major	No	Yes	Yes
High Input Current	Rectifier Current Over 125%	Major	No	Yes	Yes
High Output Current	Output short circuit	Major	Yes	Yes	Yes
High Output Current	Phase A Inverter Current Limit	Major	Yes	Yes	Yes

Alarm type	Event Description	Severity	Call	SMS	Email
High Output Current	Phase B Inverter Current Limit	Major	Yes	Yes	Yes
High Output Current	Phase C Inverter Current Limit	Major	Yes	Yes	Yes
High Output Current	Inverter Output Over Current	Major	Yes	Yes	Yes
Emergency Shutdown	Emergency Shutdown Command	Major	Yes	Yes	Yes
Emergency Shutdown	Remote Emergency Power Off	Major	No	Yes	Yes
Bypass Source Out Of Tolerance	Bypass AC Over Voltage	Major	No	Yes	Yes
Bypass Source Out Of Tolerance	Bypass AC Under Voltage	Major	No	Yes	Yes
Bypass Source Out Of Tolerance	Bypass Power Loss	Major	No	Yes	Yes
Bypass Source Out Of Tolerance	Bypass Under Or Over Frequency	Major	No	Yes	Yes
Bypass Source Out Of Tolerance	Bypass Source Out Of Tolerance	Major	No	Yes	Yes
Bypass Source Out Of Tolerance	Bypass Phase Rotation	Major	Yes	Yes	Yes
Check Air Filter	Check Air Filter	Critical	No	Yes	Yes
Check Battery	Check Battery	Critical	Yes	Yes	Yes
Check Grounding	Ground Current Overload*	Critical	No	Yes	Yes
Check Grounding	Ground Current Warning	Critical	No	Yes	Yes
Check Neutral Connection	Neutral Fault Alarm	Critical	No	Yes	Yes
Check Neutral Connection	Site Wiring Fault	Critical	Yes	Yes	Yes
Battery Disconnected	Battery Disconnected	Major	Yes	Yes	Yes
Battery Over Temperature	Battery Over Temperature	Critical	Yes	Yes	Yes
Battery Totally Discharged	Battery Totally Discharged	Critical	No	Yes	Yes
Battery Totally Discharged	Low Battery Shutdown	Critical	Yes	Yes	Yes
Internal Fault Detected	A/D Error	Critical	No	Yes	Yes
Internal Fault Detected	Abnormal Output Voltage At Startup	Critical	Yes	Yes	Yes
Internal Fault Detected	Absolute DCOV/ACOV (Interrupt)	Critical	No	Yes	Yes
Internal Fault Detected	AC Under Voltage Timeout	Critical	No	Yes	Yes
Internal Fault Detected	Analog Board A/D Reference Fail	Critical	No	Yes	Yes
Internal Fault Detected	Analog Processor Failure	Critical	No	Yes	Yes
Internal Fault Detected	Check Analog Input Processor	Critical	No	Yes	Yes
Internal Fault Detected	Check Backfeed Switchgear	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Battery Switchgear	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Bypass	Critical	Yes	Yes	Yes

Table 2. Alarms and Events that Trigger a Customer Call from Eaton (Continued)

Alarm type	Event Description	Severity	Call	SMS	Email
Internal Fault Detected	Check Bypass Switchgear	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Heatsink Temperature Sensor	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Input Switchgear	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Inverter	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Inverter Switchgear	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Logic Power Supply	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Parallel Board	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Power Supply	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Precharge	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Secondary Power Supply	Critical	No	Yes	Yes
Internal Fault Detected	Check Static Switch	Critical	Yes	Yes	Yes
Internal Fault Detected	Check System Interface Board	Critical	No	Yes	Yes
Internal Fault Detected	Configuration Error	Critical	Yes	Yes	Yes
Internal Fault Detected	CPU ISR Error	Critical	No	Yes	Yes
Internal Fault Detected	Current Balance Failure	Critical	No	Yes	Yes
Internal Fault Detected	DC Link Over Voltage	Critical	Yes	Yes	Yes
Internal Fault Detected	DC Over Voltage Timeout	Critical	No	Yes	Yes
Internal Fault Detected	DC Under Voltage Timeout	Critical	No	Yes	Yes
Internal Fault Detected	DC/DC Converter Tripped	Critical	Yes	Yes	Yes
Internal Fault Detected	DCUV While Charger Is Full On	Critical	No	Yes	Yes
Internal Fault Detected	Internal Communication Failure	Critical	Yes	Yes	Yes
Internal Fault Detected	Inverter AC Over Voltage (Interrupt)	Critical	No	Yes	Yes
Internal Fault Detected	Inverter On/Off Stat Failure	Critical	No	Yes	Yes
Internal Fault Detected	Service Required	Major	Yes	Yes	Yes
Internal Fault Detected	Inverter AC Over Voltage	Critical	Yes	Yes	Yes
Internal Fault Detected	Inverter Output Failure	Critical	Yes	Yes	Yes
Internal Fault Detected	Inverter Phase Bias Error	Critical	No	Yes	Yes
Internal Fault Detected	Inverter Phase Rotation	Critical	No	Yes	Yes
Internal Fault Detected	Inverter Startup Failure	Critical	Yes	Yes	Yes
Internal Fault Detected	Inverter Tripped	Critical	Yes	Yes	Yes
Internal Fault Detected	Inverter Under Or Over Frequency	Critical	Yes	Yes	Yes
Internal Fault Detected	Inverter DC Bias Error	Critical	No	Yes	Yes
Internal Fault Detected	Inverter Voltage Feedback Error	Critical	No	Yes	Yes
Internal Fault Detected	Inverter Voltage Too Low For Ramp Level	Critical	No	Yes	Yes
Internal Fault Detected	Loss Of Sync Bus	Critical	Yes	Yes	Yes
Internal Fault Detected	The breaker has been commanded open/closed but does not indicate that position	Critical	Yes	Yes	Yes
Internal Fault Detected	Output DC Over Voltage	Critical	Yes	Yes	Yes
Internal Fault Detected	Program Stack Error	Critical	Yes	Yes	Yes

Alarm type	Event Description	Severity	Call	SMS	Email
Internal Fault Detected	Ramp Up Failed	Critical	No	Yes	Yes
Internal Fault Detected	Tap-Switching Relay Failure	Critical	No	Yes	Yes
Internal Fault Detected	External Communication Failure	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Charger	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Fan	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Inverter Temperature Sensor	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Rectifier	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Rectifier Power Capacitors	Critical	No	Yes	Yes
Internal Fault Detected	Check Rectifier Temperature Sensor	Critical	Yes	Yes	Yes
Internal Fault Detected	Rectifier EEPROM Failure	Critical	No	Yes	Yes
Internal Fault Detected	Rectifier EPROM Failure	Critical	No	Yes	Yes
Internal Fault Detected	Rectifier Failed Self-Test	Critical	No	Yes	Yes
Internal Fault Detected	Selective Trip Of Module	Critical	Yes	Yes	Yes
Internal Fault Detected	Front Panel Self-Test Failure	Critical	No	Yes	Yes
Internal Fault Detected	Inverter A/D Converter Self-Test Failed	Critical	Yes	Yes	Yes
Internal Fault Detected	Inverter Control Board Failed Self-Test	Critical	Yes	Yes	Yes
Internal Fault Detected	Inverter CPU Self-Test Failed	Critical	Yes	Yes	Yes
Internal Fault Detected	Inverter Ramp Up Test Failed	Critical	No	Yes	Yes
Internal Fault Detected	Nonvolatile Data Checksum Failure	Critical	No	Yes	Yes
Internal Fault Detected	Non-Volatile Memory Failure	Critical	Yes	Yes	Yes
Internal Fault Detected	Program Checksum Failure	Critical	Yes	Yes	Yes
Internal Fault Detected	RAM Device Self-Test Failure	Critical	No	Yes	Yes
Internal Fault Detected	Software Incompatibility Detected	Critical	Yes	Yes	Yes
Internal Fault Detected	Network Not Responding	Critical	Yes	Yes	Yes
Internal Fault Detected	Inverter Low Level Test Timeout	Critical	No	Yes	Yes
Internal Fault Detected	Neutral Current Limit	Critical	No	Yes	Yes
Internal Fault Detected	Battery Voltage High	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Battery Ground	Critical	Yes	Yes	Yes
Internal Fault Detected	Check Fuse	Critical	Yes	Yes	Yes
Internal Fault Detected	Charger Tripped	Critical	Yes	Yes	Yes
Internal Fault Detected	Unable To Charge Battery	Critical	Yes	Yes	Yes
Internal Fault Detected	Rectifier Tripped	Critical	Yes	Yes	Yes
Internal Fault Detected	Charger Over Voltage Or Current	Critical	Yes	Yes	Yes
Internal Over- Temperature	Charger Over Temperature	Critical	Yes	Yes	Yes
Internal Over- Temperature	Heatsink Over Temperature	Critical	No	Yes	Yes
Internal Over- Temperature	Inverter Over Temperature	Critical	Yes	Yes	Yes

Table 2. Alarms and Events that Trigger a Customer Call from Eaton (Continued)

Alarm type	Event Description	Severity	Call	SMS	Email
Internal Over- Temperature	Inverter Over Temperature Trip	Critical	Yes	Yes	Yes
Internal Over- Temperature	Power Supply Over Temperature	Critical	No	Yes	Yes
Internal Over- Temperature	Rectifier Over Temperature	Critical	Yes	Yes	Yes
Internal Over- Temperature	Rectifier Over Temperature Trip	Critical	Yes	Yes	Yes
Internal Over- Temperature	Static Switch Over Temperature	Critical	Yes	Yes	Yes
Internal Over- Temperature	Transformer Over Temperature	Critical	Yes	Yes	Yes
Internal Over- Temperature	UPS Cabinet Over Temperature	Critical	Yes	Yes	Yes
Load Power Off	Load Dumped (Load Power Off)*	Critical	Yes	Yes	Yes
* These events are also a	applicable as load risk alarms.				

Lost Communication/Partial Telemetry

An Eaton Gigabit Industrial Gateway X2 card (part number INDGW-X2), Industrial Gateway minislot card (INDGW-M2), Gigabit Network card (Network-M2), or Power Xpert Gateway Minislot UPS card (PXGMSUPS) that is configured for 15-minute data transmission will enter a lost communication state if there is no communication received within 40 minutes.

Typical resolutions for a lost communication state include upgrading to current connectivity card firmware, verifying no changes have occurred on the network connected to PredictPulse, or a simple reboot of the card.

A device will enter a partial telemetry state if it is missing an environmental monitoring probe or has missing or invalid data.

Typical resolutions for partial telemetry include upgrading to current connectivity card firmware, verifying that an environmental monitoring probe is attached to the connectivity card, or verifying the connectivity card is appropriately configured for PredictPulse.

When a Lost Communication or Partial Telemetry alarm occurs, all users at a site who have their email and/or SMS notification preference turned ON will receive an email and SMS advising them of the alarm. This notification will only be sent when the alarm first occurs, however, within the PredictPulse portal, the banner of the device will remain gray and the Lost Communication or Partial Telemetry alarm will show as active until the alarm is cleared.

Figure 14. Device Banner with Lost Communication State

← USADEMO000-9390 Lost Communication Demo	4721
ACTIVE: Lost Communication	_

When communication with the device has resumed or the partial telemetry has cleared, the alarm will automatically clear and the status will update accordingly on the dashboard.

User Enrollment and Activation

New users enroll online at <u>https://predictpulseapp.eaton.com</u> using a two-step authentication process for security. A valid email address, mobile (or phone) number, and unique password are required for enrollment. After submitting the initial user enrollment request, a verification email is sent enabling you to complete your enrollment.

The first user enrolled is designated as an *administrator* for the account and can invite any number of other *users*. Administrators have special privileges, including the ability to manage other users, add and delete devices, and manage overall account security. Users can manage their own preferences, activate new devices, and edit their personal contact information, but cannot invite other users or change devices.

There can be an unlimited number of administrators, but every account must have at least one administrator capable of managing other approved users. If an administrator leaves the company or no longer wants to be an administrator, any authorized user can contact Eaton PredictPulse support to have another user designated as an administrator.

To enroll as a new user:

1. From your computer or smart phone, go to the PredictPulse web portal login screen, <u>https://predictpulseapp.eaton.com</u> (see or).

i	NOTE	The internet browsers supported include Chrome, Firefox, Edge, and Safari. Do not use Microsoft Internet Explorer.
i	NOTE	If there are already activated devices for your account, your PredictPulse administrator should invite you to that account instead of creating a new account.

2. Click Sign Up to go to the New User Registration page (see Figure 15).

Figure 15. New User Registration Page

FIT-N PredictPulse				
New User Registration				
To sign up for PredictPulse access, enter the required information below. You will need to verify your email address to continue registration.				
Left First Name *	Last Name *			
Email Address *	Confirm Email Address *			
Already have an account? Log Ir	ı			
	NEXT			

3. Enter your name and email address and click **NEXT**.

- 4. Review and accept *Eaton's PredictPulse Terms and Conditions*.
- 5. You will receive an email with a verification code for your email address (see Figure 16).

Figure 16. PredictPulse Verification Code

F.T.N Predict <i>Pulse</i> [™]
Hi Eaton Customer,
In order to complete your PredictPulse account registration you must verify your email address. Click the link below, or input the verification code provided to continue.
381988 Venification Code
Verify Email Address
If you didn't attempt to verify your email address with PredictPulse, please disregard or delete this email.

6. Click Verify Email Address to display the Verify Email Address page (see Figure 17).

Figure 17. Verify Email Address Page

ET•N PredictPulse				
Verify Email Address				
An email has been sent to Eat the verification code or follow	onCustomer@yahoo the link provided to	o.com. Enter continue.		
Verification Code *	Resend Code			
ВАСК		NEXT		

7. Enter the verification code from the email and click **NEXT** to display the **Create User** page (see Figure 18).

Figure 18. Create User Page

E:T•N PredictPulse					
Create User					
To complete your PredictPulse User registration, enter the required information below.					
	First Name * Last Name *				
•	Eaton	Customer			
	Title/Role				
	Country Code *				
L	(+1) United States	Mobile Phone *			
		<u>0 </u>			
07	Password *	Confirm Password *			
	Show Password				
A	Password Criteria				
	One uppercase				
	character				
	One lowercase character				
	One number				
	One special character				
	At least 8 characters				
		NEXT			

8. Enter the required information and click **NEXT** to return to the web portal login page. Enter your email address and password to display the PredictPulse overview screen (see).

Activating Devices

(i)

NOTE Activation must be performed using a Windows device and cannot be done from a mobile phone.

To activate a device, download and run the PredictPulse Wizard tool as follows:

1. From your computer's internet browser, open the web portal sidebar menu (see Figure 19).

\equiv **Predict***Pulse* Eaton Demo User EatonDemo@eaton.com Overview Devices . Invite-User = -User C Predictions Download Wizard G Activation Code \sim 2 Preferences Terms & Conditions \bigcirc 0 **Privacy Policy** Help © Eaton. E'T •N All Rights Reserved.

Figure 19. Web Portal Sidebar Menu

2. Click **Download Wizard**. The wizard executable file (ActivatePredictPulse.exe) downloads and a PredictPulse organization code is sent to your email address (see Figure 20).



If **Download Wizard** does not appear in the sidebar menu, ensure that the internet browser is maximized and/or adjust the browser resolution settings.

Figure 20. PredictPulse Organization Code



3. Run the wizard. A popup window displays (see Figure 21).

Figure 21. PredictPulse Wizard Popup Window

F.T. Predict <i>Pulse</i> [™]			
Activation Wizard v1.44			
Enter the following information to begin registration. The Organization Code has been e-mailed to you.			
Organization Code E-Mail Address			
Begin Registration Cancel			
Need help? Get the PredictPulse™ Quick Start Guide. <u>Download Quick Start Guide</u>			
© Eaton. All Rights Reserved.			

 Retrieve the email containing the PredictPulse organization code. Enter the organization code and your email address and click **Begin Registration**. The **PredictPulse Device Activation** page displays (see <u>Figure 22</u>).

PredictPulse™ Device Activation			X
PredictPulse [™]	1 Upload CSV	Q Search IP Range	Organization Code USDM-999999 tomrlaux@eaton.com
Enter the IP Address(es) of your compatibl scan, or upload a CSV of UPS IP address	le Eaton UPS(s) below to ad es to continue.	d them to PredictPulse. You	may also enter an IP Range to
IP Address	Serial Number		
	Enter IP Address to fi	nd	
			≡ ₊ <u>Add UPS</u>
© Eaton. All Rights Reserved.			Finish

Figure 22. PredictPulse Device Activation Page

- 5. Enter the IP address for the device to be found and click **+Add UPS** or press the **Tab** or **Enter** key. The wizard attempts to connect to a device at that IP address. If successful, the wizard determines if the device is a UPS, identifies the connectivity card being used, reads the serial number, and validates the connectivity card firmware.
 - If a firmware upgrade is required, a pop-up window displays showing the current and required revisions, along with a link to the firmware download page.
 - If the required firmware version is present, the wizard displays the serial number and a window to enter another IP address. Repeat this step for each IP address.

- 6. When all IP addresses have been found, click **Finish**.
 - The PredictPulse wizard activates each card. Upon completion, the wizard displays a confirmation message (see Figure 23). If the user is running Microsoft Outlook, an activation email is sent automatically to Eaton's PredictPulse servers. If the user is not running Outlook, the email components are saved in the user's *My Documents* folder and instructions are provided for sending the activation email manually.

Figure 23. Device Activation Complete Confirmation

Activation Complete
The following serial numbers have been successfully activated in PredictPulse: FF524UXX03
Close

Preferences

Click **Preferences** (wrench) icon to display the Preferences page. Figure 24 shows the Preferences page as viewed by a site user using an internet browser on a desktop computer, laptop computer, or tablet device. The Preferences page allows the user to view and test notifications via email or SMS; set up alarm notifications using individual or site user templates; choose delivery method for lost communication and partial telemetry events and predictive alerts for UPS device components (applicable during the 90-day free trial period and for PredictPulse Insight users); set the time zone and language; set telemetry data preferences; and enable alarm digest and reports.

<u>Figure 25</u> shows the Preferences page as viewed on a mobile device web browser. The mobile device Preferences page provides a limited ability to view and test notifications via email or SMS; set the time zone and language; and set telemetry preferences. To set up additional preferences, it is recommended to access the application using a desktop computer, laptop computer, or tablet device.

<u>Figure 26</u> shows the Preferences page as viewed by a site administrator using an internet browser on a desktop computer, laptop computer, or tablet device. In addition to the functions available to a site user, the site administrator's Preferences page allows the administrator to set up the **Call Priority**.

Figure 24. Site User Preferences Page from Browser

≡ Pi	redictPulse			
		How to Notify Me		
	How to Notify Me Alarm Notification LC / PT Predictive Alerts Time Zone & Language Telemetry Preferences Alarm Digest Reports	Email Preferences Eaton Demo SMS Preferences Eaton Demo Go to User Profile to change the SM	S phone number.	Test Email
٩				
0				
0				
0				

Figure 25. Preferences Page from Mobile Device

≡ PredictPulse
How to Notify Me Time Zone & Language Telemetry
Email Preferences 🛛 Test Email
🚊 Eaton Demo
eatondemo@eaton.com
SMS Preferences 📮 Test SMS
To setup additional preferences, please access the application using a desktop, laptop or tablet device.

= P	redictPulse			
	learer bise			
		How to Notify Me		
	How to Notify Me	Email Preferences		🎽 Test Email
:=	Aleren Natification			
•		🚊 Eaton Demo	📓 EatonDemo@eaton.com	
C				
0	Predictive Alerts			
0	Call Priority	SMS Preferences		Test SMS
\geq	Time Zone & Language			
	Telemetry Preferences	💄 Eaton Demo	+1 800-843-9433	
	Alarm Digest	Go to User Profile to change the SM	IS phone number.	
	Reports			
2				
0				
•				
0				

Figure 26. Site Administrator Preferences Page from Browser

How to Notify Me

The **How to Notify Me** page (see <u>Figure 24</u> through <u>Figure 26</u>) lets the user view the email address and telephone number that will be used for alarm notifications, user verification, and device activation.

This page can also be used to verify basic email and SMS connectivity with the PredictPulse application.

• To test email connectivity, click the **Test Email** option. An email such as the one shown in <u>Figure 27</u> will be sent to the listed email address. The test is passed when an email is received. If the test email is not received within a few minutes, troubleshoot the problem at the local level; contact the Eaton monitoring team for assistance in diagnosing the issue.

← ≪ → …
Thu 6/30/2022 1:19 PM

PredictPulse: Test Email Notification		
P PredictPulseSupport@Eaton.com To: eatondemo@Eaton.com		
	FredictPulse"	

This is a successful test notification sent from PredictPulse. If you have any questions or need to schedule onsite service, contact Eaton at 800-843-9433.

> Eaton. All Rights Reserved.

Figure 27. PredictPulse Connectivity Test Email Notification

Hello Eaton Demo,

Note:Log in to your site for more details

To test SMS connectivity, click the **Test SMS** option. An SMS message such as the one shown in
 <u>Figure 28</u> will be sent to the listed telephone number. The test is passed when a the message is received.
 If the message is not received within a few minutes, troubleshoot the problem at the local level; contact
 the Eaton monitoring team for assistance in diagnosing the issue.

Figure 28. PredictPulse Connectivity Test SMS Notification

This is a successful test notification sent from PredictPulse. Have questions or need service? Contact Eaton at 800-843-9433

Alarm Notification

The **Alarm Notification** page (see Figure 29) allows a user to set up individual preferences to receive notifications of device events via a phone call, email, and SMS text message using a template.

Device events are the events or alarms generated when the device health or operating status is changed or deteriorated, or a condition that requires attention arises. These could be actual alarms (critical, major), warning, or informational events. lists the alarms and events that trigger a notification. Users can choose the notification method based on their individual preferences. *Yes* in the **Call** column indicates that a user can receive a phone call if the preference is set to ON in the alarm template; *No* indicates that the alarm is not available to receive a phone call from Eaton monitoring team.

Load risk events are a special category of critical or major alarms that can be triggered when the device output is depleted and service shutdown is expected.

A default template (see <u>Figure 29</u>) is assigned to the user; this template can be modified and saved as desired. A blank template is assigned to a newly registered user. Users created before July 15, 2022 are assigned a blank template if they had alarm notifications turned OFF or a template with all events selected if they had alarm notifications turned ON.

In the template, a list of alarms (device and load risks events) is pre-populated based on the type of device and model the site is hosting. If a new device or model is added to the site, the alarm template will display new alarms if applicable.

	Alarm Notification				
How to Notify Me	Select Alarm Template * Default	Filter by Severity	▼ Filter	r by Alarm Name	٩
Alarm Notification	Device Events Load Risk Events				
LC / PT	Alarm Name	Severity	Туре	Notify	
Predictive Alerts	Static Switch Over Temperature	CRITICAL	Device Alarm	L 🖸 🖻	
Time Zone & Language	Transformer Over Temperature	CRITICAL	Device Alarm	د 🖻 🖻	
Telemetry Preferences	UPS Cabinet Over Temperature	CRITICAL	Device Alarm	L 🗆 🖻	
Alarm Digest	Maintenance Bypass Mode			ت 🖻	
Reports	Maintenance Bypass Mode	MAJOR	Device Alarm	ت 🖻 🗖	
	Ambient Humidity High			L. 🖸 🗖	1
	Ambient Humidity High	MAJOR	Device Alarm	L 🖸 🗖	
	Ambient OverTemperature			د 🖻 🖻	
	Ambient Over Temperature	CRITICAL	Device Alarm	۵ 🖻	
	147 Alarms Selected		Reset	Save Create New Tem	ıplate

Figure 29. Alarm Notification Page — Default Template

To create a new template, select the alarms from the default template and click **Create New Template** in the lower right corner. When a new template is created, the update permission remains with the template creator – no other user can override the permission. The **Create New Template** window displays as shown in <u>Figure 30</u>. Enter a unique name for the template and click **Create**.

Figure 30. Create Alarm New Template Window

Create New Template		
Alarm Template Name * ABC Site Template		
	Control	Great

After the new template is created and assigned to the user, a confirmation message is displayed (see <u>Figure 31</u>) and an email is sent to the user confirming that their notification preferences have been updated (see <u>Figure 32</u>).

Figure 31. New Alarm Template Confirmation Window



Figure 32. Alarm Notification Preferences Updated Email

Your alarm notification prefere	nces have been updated	
PredictPulseSupport@Eaton.com	m	
	PredictPulse"	
	Hello Eaton Demo, A change has been applied to your event/alarm notification preferences by the admin. Note: Log in to your site for more details.	

A user can use any template created by another site user to update their notification preference. To do so, click the **Select Alarm Template** drop-menu, select the desired template name, and click **Save** (see Figure 34)



	Alarm Notification			
low to Notify Me	Select Marm Tengana * No Call	Filter by Severity	 Filter by Alarm Name 	٩
Narm Notification	Device Events Load Risk Events			
.C / PT	Alarm Name	Severity	Type Notify	
redictive Alerts	Battery breaker open	WARNING	Device Alarm 📞 🖾 🗖	
ime Zone & Language	Bypass breaker open	WARNING	Device Alarm 📞 🖸 🗖	
elemetry Preferences	Uutput breaker open	WARNING	Device Alarm 📞 🖾 🗖	
larm Digest	Battery breaker should be closed	INFD	Device Alarm 📞 🖸 🗖	
eports	Utility breaker open	WARNING	Device Alarm 📞 🖾 🗖	
	At least one breaker in battery is open	WARNING	Device Alarm 🥄 🖾 🗖	
	Maintenance bypass breaker closed	WARNING	Device Alarm 📞 🖾 🗖	
	Internal Fault		5 🖂 🖻	
	Battery charger fault	CRITICAL	Device Alarm 📞 🖸 🗖	
	Bynass AC module failure	CRITICAL	Desire Marm	

Figure 33. Alarm Notification Page — Select Template

Alarms can be filtered based on the severity (Critical, Info, Major, Minor, Settable, and Warning) to create a new template. Click the **Filter by Severity** drop-down menu, select one or more levels of severity, and click **Create New Template** at the bottom right bottom. Enter a unique name for the new template and click **Create** to complete the process.

ow to Notify Me	Select Alarm Template * Default *	Fitter by Severity	Filter by Alarm Na	Filter by Alarm Name		
arm Notification	Device Events Load Risk Events	INFO INFO				
:/PT	Alarm Name	MAJOR	Туре	C N	otify	
edictive Alerts	DCDC converter failure	SETTABLE	Device Alarm	6		1
me Zone & Language	I Fan fault	WARNING	Device Alarm	e.		
elemetry Preferences	Input AC module failure	CRITICAL	Device Alarm	ς.		
arm Digest	Internal failure	CRITICAL	Device Narm	6		
ports	Inverter Internal failure	CRITICAL	Device Alarm	C		(
	Inverter short circuit	CRITICAL	Device Alarm	C		
	Output short circuit	CRITICAL	Device Alarm	e		
	Inverter Temperature too high	CRITICAL	Device Alarm	c		
	Rectifier failure	CRITICAL	Device Alarm	C		
	UPS power supply fault	CRITICAL	Device Alarm	6		

Figure 34. Alarm Notification Page - Alarms Filtered by Severity

Site Administrator–Specific Permission

A site administrator can use the **All Site Users** option to set up alarm preferences for a single user or all the site users. Click **All Site Users** at the upper right of the screen, select the user from the **Select User** drop-down menu and the alarm template from the **Select Alarm Template** drop-down menu, and click **Save** (see Figure 35).

	Alarm Notification			All Site Users
ow to Notify Me	Select site users to update the preferences All Users	¥		
rm Notification	Seven Alarm Templane " Load Risk *	Filter by Severity	👻 Filter by Alarm Name	٩
/ PT	Device Events Load Risk Events			
dictive Alerts	Alarm Name	Severity	Туре	Notify
Priority	Critical Alarm			L 🛛 🗖
2 Zone & Language	Bypass overload	CRITICAL	Device Alarm	L 🖸 🗖
metry Preferences	Bypass thermal overload	CRITICAL	Device Alarm	L 🖸 🗖
n Digest	Internal Fault			
orts	V Inverter overload	CRITICAL	Device Alarm	
	Inverter thermal overload	CRITICAL	Device Alarm	
	Rectifier overload	CRITICAL	Device Alarm	
	Power overload	WARNING	Device Alarm	L 🛛 🗖
	.			
	28 Alarms Selected		Reset Save	Create New Template

Figure 35. Site Administrator Alarm Notification Page – Setting Preferences by User

A pop–up window displays, requesting confirmation of the change (see <u>Figure 36</u>). Click **Yes**. A pop-up window confirms the change (see <u>Figure 37</u>)-and an email notification is sent to inform the user(s) of the change.

Figure 36. Set Preferences for All User Confirmation Window

Alarm Notification
You are trying to set the user preferences to all the users in the site Eaton Raleigh (EATO-761212).
Are you sure to make the changes?
No Yes

Figure 37. Alarm Notification Preferences Updated Successfully



Lost Communication / Partial Telemetry

The **Lost Communication / Partial Telemetry** (LC/PT) (see <u>Figure 38</u>) page allows the user to select the type of notification (SMS text message, email, or both) for lost communication and partial telemetry alarm/device status. By default, the SMS and email settings are turned OFF. To turn either selection ON, click the toggle switch for that selection.

Figure 38. Lost Communication / Partial Telemetry Page

	Lost Communication / Partial Telemetry	
How to Notify Me	LC/PT Lost Communication / Partial Telemetry	
Alarm Notification		-
LC / PT	Email	
Predictive Alerts	Email	
Call Priority		
Time Zone & Language		
Telemetry Preferences		
Alarm Digest		
Reports		Save

Predictive Alerts

The **Predictive Alerts** page (see <u>Figure 39</u>) allows the user to enable or disable SMS text messages and email notifications for upcoming maintenance, component replacement, or end of useful life expiration. By default, both the selections are turned ON. To turn either selection OFF, click the toggle switch for that selection

Figure 40 is a sample predictive alert email for film capacitors replacement.



Figure 39. Predictive Alerts Page

	Predictive Alerts	
How to Notify Me	Predictive Events Upcoming Maintenance, etc	
Alarm Notification	D SMS	-
Predictive Alerts	🖂 Email	
Call Priority		
Time Zone & Language		
Telemetry Preferences		
Alarm Digest		
Reports		Save

Predictive Alerts	
PredictPulseSupport@Eaton.com To eatondemo@Eaton.com	
	PredictPulse
	Predictive Alert: Service Film Capacitors
	Action
	Replace film capacitors before Jan 28, 2023
	SerialNumber
	PREDFICA02
	Device Name
	PREDFICA02-9315
	Site Name
	Eaton - Raleigh
	Description
	The UPS Capacitors need to be inspected, and if verified, replaced. This inspection can be performed during your next planned maintenance visit or when convenient. This recommendation is based on your UPS, service history and expected component life.
	Log in to your site for more details.
	Log In

Figure 40. Sample Predictive Alerts Email

Call Priority

The **Call Priority** page (see <u>Figure 41</u>) is available only to site administrators, and allows administrators to define the priority order in which the Eaton monitoring team is to make phone calls to the site points of contact for urgent alarms. To change the call priority order, drag and drop the users to the desired sequence and click **Save**.

Figure 41. Call Priority Page

	Call Priority			
How to Notify Me	Call Priority Use drag & drop to organize the call priority in which if will be constanted.	aton will attempt to contact a user whenever a Gall to Customer is r	equired. Once Eaton reaches a ur	ser, no additional user
Alarm Notification	User	Role	Priority Level	C.
LC / PT Predictive Alerts	Joe Smith Joe.Smith@company.com	CustomerAdmin	1	~
Call Priority	Alex Steeman Alex Steeman@company.com	CustomerAdmin	2	
Time Zone & Language	Mark Piper Mark Piper@company.com	CustomerAdmin	3	
Telemetry Preferences Alarm Digest	Jennifer Nelson Jennifer Nelson@company.com	CustomerUser	4	\checkmark
Reports				
				Save

Time Zone and Language

The **Time Zone & Language** page (see <u>Figure 42</u>) allows the user to set the time zone and language in which data is displayed on screen and in notifications. The default settings are *(UTC-05:00) Eastern Time (US & Canada)* for the time zone and *English* for the language. A user can change the time zone to any of the supported time zones. For the language, PredictPulse currently supports English and Spanish.

To change the time zone, click the current time zone, scroll to and select the desired time zone, and click **Save**. The device details, all details, all events, component details, and prediction details screens will display a note about the current time zone setting. These screens also show the latest data refresh time and date. The device data is refreshed based on the heartbeat and events data; the predictions data is refreshed based on the component's prediction notification cycle.

To change the language, click the drop-down menu, select the desired language, and click Save.

	Time Zone & Language	
How to Notify Me	Settings for Time Zone & Language	
Alarm Notification	(UTC-05:00) Eastern Time (US & Canada)	
Predictive Alerts Call Priority	English *	
Time Zone & Language		
Telemetry Preferences		
Alarm Digest		
Reports		Save

Figure 42. Time Zone & Language Page

The language selection can also be made when registering a new user. At the **New User Registration** page (see <u>Figure 43</u>), click the drop-down menu and select the desired. All of the registration steps and the email communications are handled using the chosen language.

	E.T.•N. PredictPulse New User Registration To again of the PredictPulse access, enter the required informs To want and an end on our many address to reactions a participation	ion below,	English Spanish
E 'T.N		Last Name * Confirm Email Address *	
Penerry Bancen Weldhelte			Next

Figure 43. Language Selection During New User Registration

Telemetry Preferences

The **Telemetry Preferences** page (see Figure 44) allows the user to select the scale (Fahrenheit, Celsius, and so on) for temperature measurements, the decimal separator (point or comma) for numbers, and the date format. The application screens and notifications reflect the data when the selections are saved. The default settings are *Fahrenheit* for temperature, .(*Point*) decimal separator for numbers, and *MMM DD*, *YYYY* for the date format. To change a preference, click the desired selection, choose the desired format, and click **Save**.

The current application includes the following limitations that are planned for future revisions:

- The dynamic temperature values are implemented in this version; the static values are excluded.
- The monthly report does not represent the telemetry data based on user preferences of temperature, decimal separator, and date format.

	Telemetry Preferenc	es		
How to Notify Me	Telemetry Preferences Change Unit			
Alarm Notification	Units			
LC / PT	Tomporatura	or.		
Predictive Alerts	Temperature	F		
Call Priority	Decimal Separator	.(Point)		,(Comma)
Time Zone & Language				
Telemetry Preferences	Date Format			
Alarm Digest	ex. Jun 17, 2022		Date Format MMM DD, YYYY	*
Reports				Save

Figure 44. Telemetry Preferences Page

Alarm Digest

The **Alarm Digest** page (see <u>Figure 45</u>) allows the user to select the frequency (daily, weekly, or both) to receive a report for the site based on alarm severity. By default, there are no selections. To make a selection, click the desired checkbox(es) and click **Save**.

An email is sent each day by 7 AM local time for the previous day's daily digest (see <u>Figure 46</u>) and each Monday by 7 AM local time for the previous week's weekly digest.



The alarm digest includes only those to which the user is subscribed. Digests may differ from one user to another within the same site code.

Figure 45. Alarm Digest Page

	Alarm Digest	
How to Notify Me	Alarm Digest	
Alarm Notification	Alarm Severity	Email Frequency
Predictive Alerts	Critical	Daily Digest Weekly Digest
Call Priority	🛦 Major	Daily Digest Weekly Digest
Time Zone & Language	Minor	Daily Digest Weekly Digest
Alarm Digest	Information	Daily Digest Weekly Digest
Reports		Save

Figure 46. Sample Alarm Digest Email



Reports

The **Reports** page (see <u>Figure 47</u>) is used to select whether monthly reports are sent or not. Click the toggle button to set the preference to ON or OFF. If the setting is set to ON, a UPS monthly report is sent on the first day of the month for the prior month.

Figure 47. Reports Page

	Reports	
How to Notify Me	Reports Monthly System Recaps	
Alarm Notification	Email	
LC / PT	-	-
Predictive Alerts		
Call Priority		
Time Zone & Language		
Telemetry Preferences		
Alarm Digest		
Reports	\	Save

Other Features

Acknowledge

The *acknowledge* feature enables the user (irrespective of their role) to acknowledge a device alarm. When an alarm is acknowledged by a user, it is removed from the site user's device screen. No phone call is made by Eaton monitoring team, since the customer point of contact is already aware of the alarm. To acknowledge an alarm, click **Acknowledge** at the upper right of the device details screen (see Figure 48).

Figure 48. Customer Acknowledgement of Alarm

÷	EN495 Eaton I	iUXX02-93 Raleigh	PM 🖌							오
0	ACTIVE: I	Internal Fault D	letected							R Acknowledge
(+		Ō		Load	30 Days 👻	Connected Loads	^	Timeline	
99.	/100	Load	Estimated	Battery	40%		Add loads to this UPS to assist in planning and add		A Internal Fault Detected	Jul 19, 2022 12:29 AM NA
۲	Status		Dout	ble Conversion	Conversion 30%			Rypass Source Out Of Tol	Jul 12, 2022 11:12 PM-11:35 PM	
	Output Pov	wer (kW)		9.8	20%			-	Bypass Source Out Of Tol	Jul 12, 2022 11:12 PM-11:12 PM
•	Input Volt. L	LL JD LN	499.	2, 498.6, 498.6	10%		Predictions	^	All Events	>

Click Confirm on the pop-up window to complete the action (see Figure 49).

Figure 49. Confirm Alarm Acknowledgement

Acknowledge Alarm					
By selecting this o will be acknowled not just yourself. I will be performed sure you want to	ption, this alarm ged for all users, No further actions by Eaton. Are you proceed?				
Cancel	Confirm				

In the **Timeline** section of the device details screen, a tag of *Customer Ack.* is added next to the alarm (see Figure 50).

Figure 50. Customer Ack Tag Added to Timeline

Timeline	
Lustomer call completed	Jul 20, 2022 12:32 AM-12:32 AM
Internal Fault Detected Customer Ack.	Jul 19, 2022 12:29 AM-N/A
LINTERNAL Fault Detected	Jul 19, 2022 12:27 AM-12:28 AM
All Events	>

Snooze

The *snooze* feature allows a user to stop the alarms from the device for 30 minutes to 24 hours. When snoozing is in effect, all alarms generated from the device are suppressed for a phone call, email, and SMS text notifications for all site users. To set the device alarm snoozing, click **Snooze** at the top-right corner of the device details screen (see Figure 51), select the time duration, and click **Confirm**.

When the device enters in the snooze state, a banner message is added to the Device Details screen stating *Notifications Paused*, and a purple bell icon is shown in the **Timeline** section (see <u>Figure 52</u>). The snooze state is also reflected in the All Events, All Details, All Devices, and Site Overview screens (see <u>Figure 53</u> through <u>Figure 56</u>).

NOTE The PulseScore is not affected by alarms generated during the snooze period.

Figure 51. Snoozing Device Alarms

(1

On Battery Optimized Site-Test Site for I Note: All times are displayed in ET time ACTIVE: On Battery	NNCHESTER, NH, 03820, US lengthy name Test WX	WM WXW			A vel (100 MI II) as 14,2022
Co C 76/100 \ 18.9% 8h2	0 2m ± 48m 100%	Load	30 Days 👻	Connected Loads	Timeline
Average He Load Est	stimated Battery			Add loads to this UPS to assist in planning and add context to device use.	Internal Fault Detected Jun 16, 2022 Ob/03 AM-NVA
Status	On Battery			+ Add a Load	UPS On Battery Jun 16, 2022
Output Power (kW)	3.4	No trend data	No trend data Predictions		Lost Communication Jun 16, 2022
Input Voltage IN	500.7, 501.9, 498.8				All Events >
Output Volt. DUBLA	491.2, 491.5, 489.6			C There are no predictions.	
Output Current (A)	0.0, 0.0, 0.0				Score Breakdown
Humidity	34.1%	Components	^		
8 Temperature 7.38 10	85.3*F	Battery			C- 76 of 100 Average Health
Open More Details	~	PWHR1234W2FR	>		
		Capacitor	>		At Eaton we strive to be transparent in our monitoring and forecasting of
		🔹 Fan			Our PulseScore TM factors in the age and health of devices and components, total run-time, number of events and alarms, service
		Air Filter	>		We'll elevate any actions you can take to improve your score and overall health of your device.

Figure 52. Device Details Screen — Device Snoozed

← BG354KXX24-9-Water Treatment + 400 N 4TH 5T, BISMARCK, ND, 58501, US Double Conversion Eaton Raleigh Note: All times are displayed in ET time			Second for 1 hour
Notifications Will resume at 11:24 AM			
Image: Status Image: Status Double C Status Double C 207.1.20 Image: Status Double C 207.1.20 <t< th=""><th>Lad 30 Days 11m 20% 11m 10% 68, 2006 10% 11m 10% 1</th><th>Connected Loads Add loads to this UPS to assist in planning and add content to dence use. Add loads to this UPS to assist in planning and add</th><th>Timeline Timeline Timeline Timeline Timeline Popass Source Out Of ToL. M. Bypass Source Out Of ToL. Microsona Source Out Of ToL. Microsona Source Out Of ToL. Source Breakdown Source Breakdown Popass Source Out Of ToL. Popassource Out Of</th></t<>	Lad 30 Days 11m 20% 11m 10% 68, 2006 10% 11m 10% 1	Connected Loads Add loads to this UPS to assist in planning and add content to dence use. Add loads to this UPS to assist in planning and add	Timeline Timeline Timeline Timeline Timeline Popass Source Out Of ToL. M. Bypass Source Out Of ToL. Microsona Source Out Of ToL. Microsona Source Out Of ToL. Source Breakdown Source Breakdown Popass Source Out Of ToL. Popassource Out Of
	 ■ Capacitor ➡ Fan ● Air filter 	>	O – Phatdom ¹⁹ Wears to the age and heart distances and empresents, state a union, not of everts and allow scenes incidents, meanment data and more to create a simple intergraphic Weil Felence any actions you cancillate to improve your score and avoid it habits of your device.

Figure 53. All Events Screen — Device Snoozed

← All Events MW881WKX87-9 MW881WKX87 Note: All times are d	390 Isplayed in ET time					As of 01:05 AM ET Jun 16, 2022
Filter						Records 30 Days 👻
Event	Description	Severity	Occurred On	Start Time	End Time	
Internal Fault Detected	A critical failure has occurred with this device. This device is not protecting the loads and requires immediate service.	CRITICAL	Jun 16, 2022	05:03 AM	N/A	
UPS On Battery	This device has lost input power. Loads will be powered by the UPS battery per the battery time remaining until input power returns or the batteries are depleted.	MAJOR	Jun 16, 2022	05:00 AM	N/A	
Lost Communication	This device is not sending data and the UPS status is unknown.	CRITICAL	Jun 16, 2022	01:45 AM	N/A	
Customer call completed	A PredictPulse administrator has reviewed the alarm received and made a contact attempt to one or more users if call notifications are turned on. If onsite service is required of Kyou have any questions regarding the alarm, please call 800-843- 9433, option 1, option 1.		Jun 16, 2022	01:05 AM	01:05 AM	
Customer call completed	A PredictPulse administrator has reviewed the alarm received and made a contact attempt to one or more users if call notifications are turned on. If onsite service is required or IF you have any questions regarding the alarm, please call 800-843- 9433, option 1, option 1.		Jun 16, 2022	01:02 AM	01:02 AM	

Figure 54. All Details Screen — Device Snoozed

All Details BG35440024-9 Water Treatment Note: All times are displayed in ET time			Snoozed for 1 Hour As of 16:15 MM ET Jul 19, 2022
Current (6)	AC Voltage (9) Phase-Phase	DC Voltage (1)	Power (2)
Input Current Phase A 18.0 A	Input Voltage Phase A 207.1 V	Battery Voltage 235.4 V	Total Output kVA 4.2 kVA
Input Current Phase B 17.4 A	Input Voltage Phase B 206.8 V	Engineer (2)	Total Output kW 4.1 kW
Input Current Phase C 16.6 A	Input Voltage Phase C 209.6 V	Prequency (3)	
Output Current Phase A 14.7 A	Output Voltage Phase A 207.0 V	Input Frequency 60.0 Hz	
Output Current Phase 8 10.8 A	Output Voltage Phase B 206.1 V	Bypass Frequency 60.0 Hz	
Output Current Phase C 9.8 A	Output Voltage Phase C 206.5 V	Output Frequency 60.0 Hz	
	Bypass Voltage Phase A 210.6 V		
	Bypass Voltage Phase B 205.8 V		
	Bypass Voltage Phase C 207.8 V		



÷	Eaton Rale Healthy 10 UPS Devices 1 Snoozed Device	igh		
UPS D	evices			
0	BG354KXX24-9-Water T Double Conversion	eatment 400 N 4TH ST, BISMARCK, ND, 58501, US	🔮 14.0% 🕥 1h54m 🎄 Snoozed	>
0	EC021CBA05-9390-Roo On Battery	■ 10 ● Test1, Test2, New Jercy, TX, 54321, US	🔮 14.8%) () 1h21m	>
0	EU475ZXX04-9315 Area	9 T7 9 501 BROOKER CREEK BLVD, OLDSMAR, FL, 34677, US	© 6.0% Ø 15h42m	>
0	PXGXUS8092-93PM Ma Lost Communication	Substation 789 L AVE, 789 L AVE, 789 L AVEEE, NH, 03820, US	@ 20.0% Ø 1h27m	>
₿	BN104FBB02-9155-Boil Lost Communication	1015 MEDICAL CENTER PKWY, SELMA, AL, 36701, US	63.4%	>
A-	EN495UXX02-93PM Double Conversion	101 KAPPA DR, PITTSBURGH, PA, 15238, US	25.4% Ø 1h49m	>
A	PRADAIRF05-5P1000RC Connected	-Boiler2 9	60.0% Ø thäm	>
•	EL185BJJ01-9395P- BU Double Conversion	Substation 9 8200 CAMERON RD. AUSTIN, TX, 78754, US	🔮 13.9% 💍 280/H3m 🛛 🌀 1	>

Figure 56. Site Overview Screen - Device Snoozed

≡P	redictPulse
	Eaton Raleigh 7 UPS Devices
C	Poor Health
0	7 Zvents 72/100 7 Zvents Overall Score 1 Prediction
	1 Snoozed Device
ચ	
S	
0	
0	

When the snooze period expires, the device returns to a non-snoozed state. The *Notifications Paused* banner message and purple bell icon in the **Timeline** section are no longer displayed.

A user can also stop the alarm snoozing if the monitoring needs to be resumed. To do so, click the **Snooze** icon at the top-right of the device details screen and click **Resume Device Notifications** option (see Figure 57).

When monitoring resumes, any non-cleared alarms will display on the device screen along with the applicable banner color. Eaton monitoring team notify the point of contacts for the site.

Figure 57. Resume Device Notifications

¢	BG354KXX24 400 N 4TH ST, BIS Double Conversio Eaton Raleigh Note: All times are	-9-Water Tre MARCK, ND, 5850 n I displayed in ET tim	atment 🖍 n, us					Resume D	Device Notifications (1 Hotur Resume Device Notifications As of 10:15 AM ET Jul 19, 2022
â	Notifications P Notifications will resu	Paused Ime at 11:24 AM							
	B+ 90/100	▲ 14.0%	Ū 1h54m ± 11m	Load	30 Days 👻	Connected Loads	^	Timeline	\$
	Healthy	Load	Estimated	156	Law and the second second	Add loads to this UPS to assist in planning and add context to device use.		Bypass Source Out Of To	Jul 04, 2022 02:16 AM-N/A
0	Status		Double Conversion	105		+ Add a Load		Bypass Source Out Of To	Jun 23, 2022 01:42 AM-01:42 AM
COM	Output Power (kW)		4.1				_	All Events	>
•	Input Volt. LACOBIN		207.1, 206.8, 209.6	5%		Predictions	^	Score Breakdown	
0	Output Volt. D.C. B DN		207.0, 206.1, 206.5	0% Jun 20 Jun 27	jul 4 jul 11 jul 18	C There are no predictions.			
0	Output Current (A)		14.7, 10.8, 9.8			·			00 of 100
٥	Humidity		37.2% / 37.7%	Components	^			B+	Healthy
8	Temperature 17.38 %		74.1** 74.3 *F	Battery	>				
Clos	se More Details		^	Capacitor	>			At Eaton we strive to be transparent in our your system. Our PulseScore TM factors in the age and h total run-time, number of events and alar	ir monitoring and forecasting of weith of devices and components, ms. service incidents, environment
4	Last Service		Sep 13, 2019	😽 Fan	>			data and more to create a simple letter gr can take to improve your score and overa	ade. We'll elevate any actions you Il health of your device.
۵	Installation Date		Apr 19, 2014	Air Filter	>				
	Warranty/Contract E	nd	Sep 17, 2026						

Monthly Report Enhancements

The **Summary** page of the monthly report has been revised to show the total number of potential load loss utility incidents that have occurred across all devices and the number of such incidents that lasted for more than 60 seconds (see <u>Figure 58</u>). It also shows a summary table containing additional details of each occurrence and its duration.

NOTE A load loss utility incident is triggered when a UPS device loses utility power. Such an event could have a duration from a few seconds up to several hours.

The new monthly reports now show the PulseScore for each individual device (see Figure 59) along with some design enhancement of the data. The site or organization level PulseScore will not show up.

A minor change is introduced in the **Timeline** section to show the event cleared date (see <u>Figure 60</u>). This will help in understanding the event start day and end day along with the time when reading the report. The **Timeline** section also shows a blue tower icon to represent the load loss incidents that lasted more than 60 seconds.

Figure 58. Monthly Report Site Summary Page

Demo Site Int [®] PulseSave Preve All Devices	nted Losses		Predict Pulse" June 2022 Monthly Report
Summary In June 2022, Eaton devi utility incidents that hav lasted for more than 60	ices and PredictPulse pre e occurred across all dev seconds.	evented 8 potential load loss rices and 3 of such incidents	8 34 Utility Events Critical Alarms
Started	Duration	Device Name	Event
06/15/2022 06:50 AM		TB232A0348-BLADEUPS	Partial Telemetry
06/26/2022 09:39 AM		USAPXG9390-9390	UPS On Battery
06/27/2022 05:34 AM		USAPXG9390-9390	Lost Communication
06/15/2022 06:55 AM	88 h 40 min	G125M08005-5P	Partial Telemetry
06/23/2022 11:41 AM		G125M08005-5P	Partial Telemetry
06/23/2022 03:36 AM	08 h 05 min	G125M08005-5P	Lost Communication
06/25/2022 07:28 AM	06 min 32 sec	BF512FBB07-9155	UPS On Battery
06/25/2022 07:28 AM	01 h 07 min	BF512FBB07-9155	OPS On Battery
06/25/2022 07:28 AM	01 h 07 min	BF512FBB07-9155	On Battery
06/22/2022 01:26 PM	31 min 46 sec	BF512FBB07-9155	Lost Communication
06/10/2022 01:01 PM	14 min 35 sec	BF512FBB07-9155	Partial Telemetry
		3	© Estor. All Rights Reserved. Eston, PredictPulse, and PulseScore are registered trademarks. All other trademarks are property of their respective owners.

Der Org All D	no Site Janization Overview evices				Predict June 2022 Monthly Rep	Pulse" 2 ort	
Devi 12	ices	Avg.Lo	ad	2	Alarms	Predictions	Pa
6	BJB64KOCK02-9355 Healthy	27%	+ +	Max 28% Min 27%	 0	0	1
A-	BK192KXX05-9355 Healthy	20%	+ +	Max 20% Min 19%	 0	5	8
Ð	BL471JBA15-9355 Poor Health		+ +		0	0	1
A+	BM 104LXX03-93E Healthy	14%	-4 -7	Max 14% Min 12%	 0	1	1
B	BN306KXX01-9355 Healthy	12%	+ +	Max 12% Min 12%	 0	0	1
C+	Dispositivo UPS XX1 Avg. Health	18%		Max 18% Min 18%	 1	0	1
A-	EA053KXX04-9355aá Healthy	13%	÷	Max 13% Min 13%	 1	0	1
8+	EA053KXX05-9355TE Healthy	13%	+ +	Max 13% Min 13%	 0	0	2
8	EA091CAA01-9390 Healthy	22%	* *	Max 22% Min 21%	 0	0	2
B	EA091CAA04-9390 Healthy	20%	4 4	Max 20% Min 19%	 3	0	2
B	EA091CAA06-9390 Healthy	18%	+ +	Max 19% Min 18%	 5	2	2
Ø	EA341KXX09-9PXM-new Poor Health		+ *		4	0	2
Fa				6	PredictPulse, and	© Eaton, All Rights Reserve PubeScore are registered tra	d. Eaton, demarks.

Figure 59. Monthly Report Organization Overview Page

Figure 60. Timeline Section

	Partial Telemetry	Jun 29, 2022 01:01 PM -
U	BF512FBB07-9155	Jun 29, 2022 01:16 PM
	Bypass Source Out Of Tolerance	Jun 27, 2022 10:56 PM -
U	BF512FBB07-9155	Jun 27, 2022 10:56 PM
	Partial Telemetry	Jun 26, 2022 01:01 PM -
U	BF512FBB07-9155	Jun 26, 2022 01:01 PM
	Customer call completed	Jun 25, 2022 08:29 AM -
U	BF512FBB07-9155	Jun 25, 2022 08:29 AM
	Customer call completed	Jun 25, 2022 08:29 AM -
U	BF512FBB07-9155	Jun 25, 2022 08:29 AM
	Customer call completed	Jun 25, 2022 08:29 AM -
U	BF512FBB07-9155	Jun 25, 2022 08:29 AM
A	UPS On Battery	Jun 25, 2022 07:28 AM -
	BF512FBB07-9155	Jun 25, 2022 07:35 AM
A	UPS On Battery	Jun 25, 2022 07:28 AM -
	BF512FBB07-9155	Jun 25, 2022 08:36 AM
A	UPS On Battery	Jun 25, 2022 07:28 AM -
A	BF512FBB07-9155	Jun 25, 2022 08:36 AM

Predictive Analytics

Capacitor Remaining Useful Life (CAP-RUL)

Ĭ

The Capacitor Remaining Useful Life (CAP-RUL) algorithm in PredictPulse provides a remaining useful life prediction for your aluminum electrolytic capacitors. Capacitor ambient temperature and UPS load IoT data is used to determine the current health of the capacitor measured by the algorithm. The objective of the algorithm is to determine when the aluminum electrolytic capacitor is approaching the end of its design life. The two predictive thresholds at 20% and 35% are the basis for both budgetary planning and avoiding unplanned downtime. The algorithm raises notification warnings and alarms for users to act proactively.

NOTE The CAP-RUL algorithm currently has no impact on PulseScore. CAP-RUL algorithm will be integrated into PulseScore in a future release.

Figure 61. Device Details Page with Capacitor Life Notifications



Notifications

Warning – The first notification issued by the CAP-RUL algorithm will be a warning. This warning occurs when the aluminum electrolytic capacitor reaches 35% remaining useful life. Users will receive a prediction notification in PredictPulse (see <u>Figure 62</u>). SMS and email notifications will also be sent warning the user of the capacitors current state.

Figure 62. Capacitor Life Warnings

÷	FC383CAR06-9390	
		60103 115
		00155, 05
	happiestminds	
	Note: All times are displayed in ET time	
	ACTIVE: Lost Communication	
C	URGENT: Service Aluminum Electrolytic Capacitors	
C	URGENT: Service Aluminum Electrolytic Capacitors Predictions	^
C F (URGENT: Service Aluminum Electrolytic Capacitors Predictions Service Aluminum Electrolytic Capacitors Within 1 year	^ >

Alarm – The second notification issued by the CAP-RUL algorithm will be an alarm. This alarm occurs when the aluminum electrolytic capacitor reaches 20% remaining useful life. Users will receive a prediction notification in PredictPulse. SMS and email notifications will also be sent alerting the user of the capacitors current state.

CAP-RUL Prediction Details Page

Figure 63 displays the full CAP-RUL prediction details page.

Figure 63. CAP-RUL Prediction Details Page

	Service Aluminum Electrolytic Capacitors EC383CA806-9390 happiestminds Note Al times are displayed in ET time						
Based on your UPS operational use. Eaten forecasts that your capacitors will need replacement by May 2024 Innew Option Accountedge Details							
	Eaton has calculated — based on your actual UPS operational use — that yo	ur capacitors will reach end of life and require replacement by Mi	ay 2024				
	Evidence	Device Details		Aluminum Electrolytic Capacitor		Connected Loads	
	PredictPulse monitors multiple values to determine component issues. The items below are values related to this alarm.	Device Name EC383C	A806-9390	Installation Date	Feb 01, 2022	capacitorload load	
	Remaining Useful Life (RUL) 35% Based on load and temperature	Serial Number B	C383CAB05			Server Server	
	How Long Capacitors Typically Last	Model	9390				
	How Capacitors Degrade Over Time Under Normal Use \sim	Warranty/Contract End Se	ep 17, 2026				

<u>Figure 64</u> displays the graph on the prediction details page. The orange and red lines represent the capacitor reaching 35% and 20% remaining useful life. As the remaining useful life crosses those thresholds, a prediction is generated for when the capacitor will reach 0%. The dotted line in <u>Figure 64</u> shows a visual example.

Figure 64. CAP-RUL Capacitor Life Graph



VRLA Battery End of Useful Life Prediction

The VRLA Battery End of Useful Life prediction algorithm in PredictPulse provides details and notifications as the UPS batteries begin degrading. These notifications are the basis for budgetary planning and avoiding unplanned downtime of your UPS. Notifications will be issued in the PredictPulse application and through SMS and email, ensuring timely communication.

Notifications

The first notification issued by the prediction is *Battery Degradation Detected*. A message will appear within the prediction details indicating that the UPS batteries will likely require a replacement within 3–9 months (see Figure 65). This prediction is based on historical data and proprietary logic used in the algorithm.

Figure 65. Battery Degradation Detected Notification

Battery Degradation Detected BN013FBB01-9155 EATON				
Details The UPS batteries are showing degradation and will likely require replacement within remaining.	3-9 months based on the battery test data	we've been observing. V	/e'll alert you again when the batteries ha	ve 60 days of service life
Battery Algorithm	Battery Details		Device Details	
	Make	Eaton	Device Name	BN013FBB01-9155
RECENT EVENT DEGRADATION DETECTED	Model	PWHR1234W2FR	Serial Number	BN013FBB01
COMING UP 60 DAYS LEFT WARNING	Installed date	January 07, 2022	Model	9155
IMMINENT ALARM	Strings	2	Current Status	Double Conversion
95% CONFIDENCE LOWER LIMIT	Batteries	16	Warranty/Contract End	September 17, 2026
BATTERY END OF LIFE				

The second notification presented is *Replace Batteries*. A message will appear within the prediction details indicating that the UPS batteries need to be replaced within 60 days (see <u>Figure 66</u>). The recommendation presented is made with 95% confidence based on Eaton's domain expertise and new analytics.

Figure 66. Replace Batteries Notification

Replace Batteries DEMO150223-0395 Earon Rategh Mose: All times are displayed in 17 time.					Aurol (2014) AM (11 Feb (4, 2017
Replace bettery by 34 26, 2523 Kenne Options Acconverge Cestails					
The UPS batteries need to be replaced with Battery Algorithm	(from 60 days from May 28, 2023 to ensure your Id	ads remain protected. This recommendation is made with 30% of Battery Decals	infidence based on Eaton's domain exp	Device Details	
		Make	Eaton	Device Name	DEM0150223-9395
AREASANCES DETERMINE		Model	PWHR1254W2FR	Serial Namber	DEMO150223
	AL DATES . AN OVAL TOL, MANAGEME	installed date	jan 61, 2020	Model	9395
100		Degradation detected date	Oct 25, 2022	Current Status	Lost Communication
THE CONTRACT CONTACT OF		Stripp	2	Wanardy/Contract End	Dec 08, 2023
		Turburies.			

Troubleshooting

Data or visibility issues – You may need to occasionally clear your browser cache, click your reload button to refresh the PredictPulse app, or adjust your browser resolution settings. New features and updates will be released over time and clearing the browser cache or adjusting the browser resolution settings often corrects login or data visibility issues.

Cannot see Activation Wizard – This feature is only displayed on browsers (computer) where the screen size is 1024 x 926 or higher; mobile devices cannot see this feature.

Greyed out selections – In several screens, buttons may be grey and nonfunctional. Certain features will be added or turned on or off based on your subscription. Activation wizard will only appear on a computer browser and schedule service > call Eaton will only work on a mobile device.

Missing load trend chart – New devices with no history will display a blank or "missing load trend" until data has been collected over at least two days. If a device stops sending data, a trend chart may have a gap indicating missing data.

Lost communication – Devices will occasionally miss sending an email to PredictPulse. After two consecutive missed heartbeats, or telemetry emails, PredictPulse will automatically display a status of Lost Communication. Once a device sends an email, the status will revert to normal or its condition. Typically, this issue is due to a customer communication network change beyond the control of Eaton. A lost communications restored email will be sent upon restoration.

Partial telemetry – Occasionally a device will send an email and one of the required data attachments is incomplete, incorrect, or missing a value. PredictPulse will display valid information but certain values may be null or displayed as "—". Check if you have the latest firmware by going to <u>eaton.com/networkconnectivity</u>. Select your connectivity card, click **Resources**, then scroll down and expand the **Software, firmware, and applications** section. Download the current firmware and update your connectivity card.

PulseScore – Occasionally a PulseScore may be missing from a device or display an F grade in the portal and/or monthly report. Verify that an Environmental Monitoring Probe (EMP) is connected to the device's network card and that communication to the card has not been lost. If an EMP is missing, contact the Eaton monitoring team for replacement.

Email Edits – User email addresses are not editable fields. To change a user's email address, invite the new email address to the account. The old email address may then be deleted as a user.

Questions? In the US, call 800-843-9433, option 2, option 5 or email <u>predictpulseoperations@eaton.com</u>.

Glossary

Activation wizard: An executable tool downloaded from computer sidebar to configure a UPS device to send data to PredictPulse

Administrators: Administrators can invite, using the sidebar, other users or coworkers to enroll in PredictPulse either as a user or as an administrator.

Alarms: Come from a device and may be informational or urgent. PredictPulse assigns alarms to categories such as *On Battery, Internal Fault Detected*, and so on. The Eaton monitoring team places a call to the customer point of contact for urgent alarms.

Battery state of charge: Indicator of battery charge. 100% battery indicates the batteries are fully charged.

Battery Time Remaining: Estimated battery run time available based on current load and battery charge. Based on UPS data.

Devices: Infrastructure equipment (Eaton UPSs) capable of being monitored by PredictPulse, with an IP address, network card, and access to a SMTP email network or wireless broadband network (4G/LTE). A parallel UPS would equal two devices since each UPS can be monitored separately.

Device list view: List view screen viewed after clicking on home page; displays all subscribed devices

Device Detail view: Most detailed view of a single device, scroll to view all related information, alarms and health

EULA: End user license agreement, terms of use and terms and conditions

Events: Non-device information. Lost communications, high temperature, and alarm acknowledgments are examples of events.

GDPR: Global data privacy regulations

Load: Percentage of available UPS power protecting connected loads. A 60% load percentage indicates that 60% of the UPS is being used and another 40% is available.

Lost communication: Devices will occasionally miss sending an email to PredictPulse. After two consecutive missed heartbeats, or telemetry emails, PredictPulse will automatically display a status of Lost Communication. Once a device sends an email the status will revert to normal or its condition. Typically, this issue is due to a customer communication network change beyond the control of Eaton. A lost communications restored email will be sent upon restoration.

Users: Users can manage their own preferences and contact information but cannot invite other users or change devices.

Organization: A single account with users and devices. Enrolled and registered users will all see the same information.

Organization Code: PredictPulse assigns a unique organization code upon initial account set-up to maintain multi tenancy data privacy. Only users enrolled within the same organization code can see data from an account.

Overview screen: Home or main screen viewed after logging in

Partial telemetry: Occasionally a device will send an email and one of the required data attachments is incomplete, incorrect, or missing a value. PredictPulse will display valid information but certain values may be null or displayed as "—". Check if you have the latest firmware by going to <u>eaton.com/networkconnectivity</u>. Select your connectivity card, click **Resources**, then scroll down and expand the **Software, firmware, and applications** section. Download the current firmware and update your connectivity card.

Predictions: Predictive alerts for PredictPulse Insight subscribers. This will indicate one or more components health conditions need attention and an Eaton analyst will be in contact to discuss or arrange a site verification visit.

Privacy policy: Policy that defines personal data privacy rules

PulseScore: A summary of device conditions, including operational status, recent alarms (taking into consideration the alarm criticality), component health, age, and service history. When viewing multiple devices, the average of all devices is displayed as an overall score and letter grade (A+ to F). The health score scale is 1 - 100, is dynamic and can change at any time. lists the factors that determine the health score.

SMS: Short text messaging system

Glossary



P-164000932 04