



NOVEL POWER TECHNOLOGISTS OPERATION COMPANY

ALMAS

Automation Product

Brochure

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This manual

This manual provides thorough information on the ALMAS software.

Guarantee

To inquire about the terms of guarantee from nPTO Company, kindly contact their customer support or sales department directly (info@npto.ir). They will be able to provide you with detailed information regarding their guarantee policy, including coverage, duration, and any applicable terms and conditions.

Advanced Local Monitoring and Scada ALMAS

Novel Power Technologists Operation (nPTO) is an Iranian company specializing in substation automation software solutions. Their flagship product, ALMAS, is a powerful and versatile software solution that enables real-time monitoring and control of critical equipments in transmission, sub-transmission and distribution substations, as well as industrial plants.

Utilizing a variety of protocols, including IEC-61850 edition 1 and 2, IEC60870-5-101, IEC60870-5-104 and Modbus, ALMAS can seamlessly integrate with a wide range of equipment and systems, making it an ideal solution for clients in various industries. The software offers a range of features, including event analysis, predictive maintenance, trends, alarm lists, and report lists, among others, to help prevent equipment failures and minimize downtime.

With a commitment to providing advanced software solutions, Novel Power Technologists Operation is an ideal partner for clients looking to improve the reliability and efficiency of their systems.

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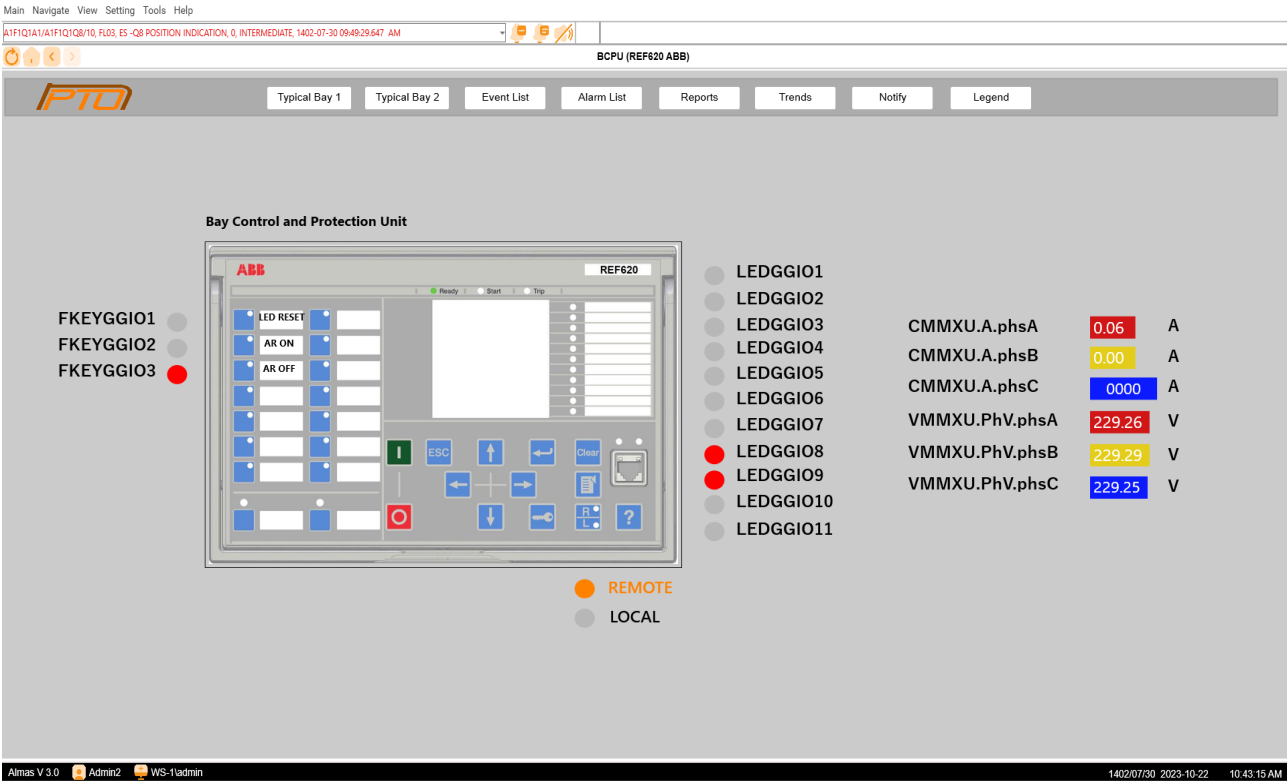
The highlights of ALMAS P12

Functionality

With **ALMAS**, you can rest assured that you have invested in a comprehensive solution for real-time monitoring and control of critical equipment in transmission, sub-transmission and distribution substations. Its user-friendly interface provides safe and efficient access to protection and control IEDs, enabling operators to quickly respond to any potential issues and ensure the optimal functioning of your power system. Whether you are looking to **enhance your monitoring capabilities or expand your control functionalities**, ALMAS offers a flexible and scalable solution that can grow with your evolving needs.

Security and availability

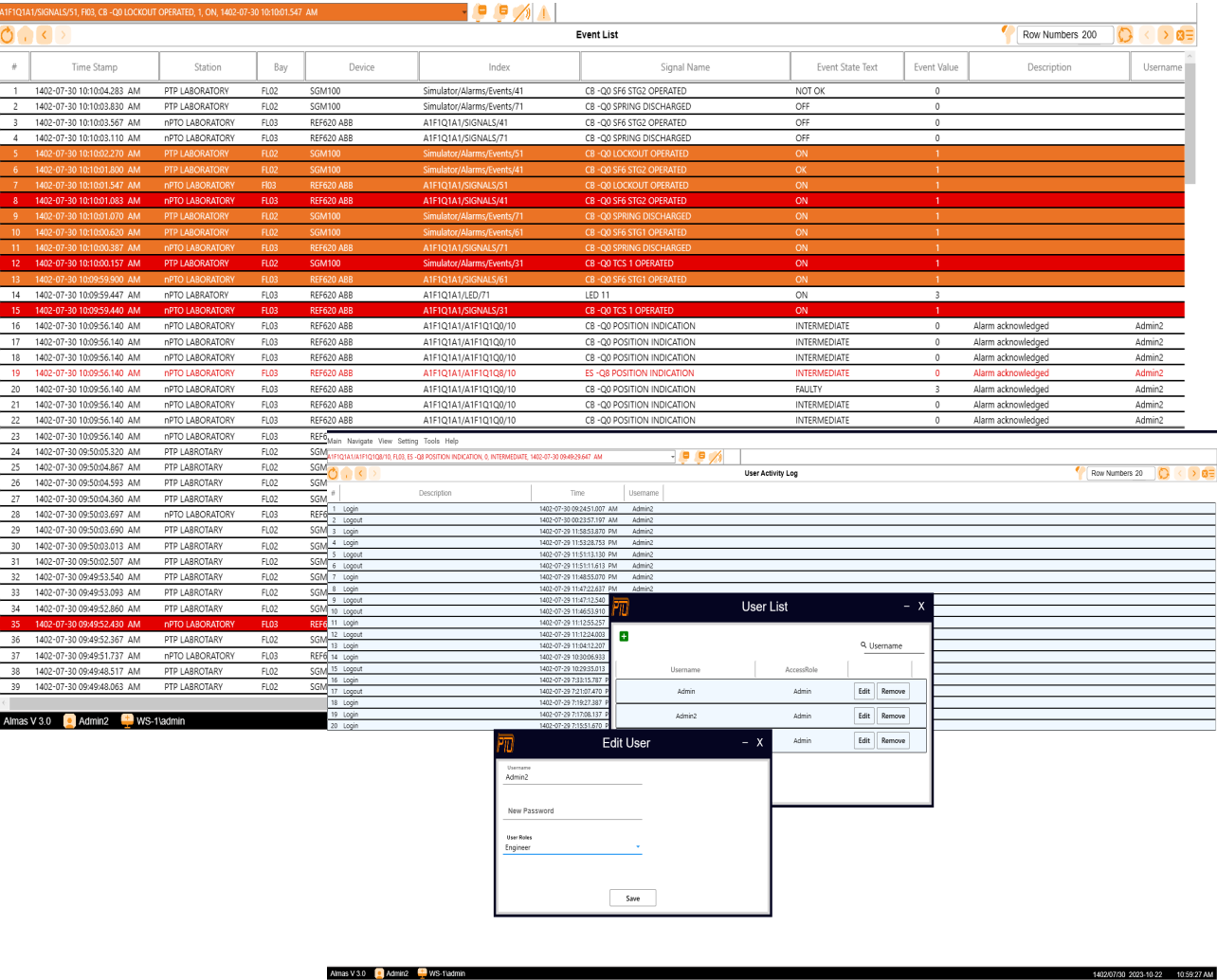
Ensuring correct and secure operations heavily relies on the availability of accurate and reliable information. With ALMAS, availability is optimized by enabling **redundant system** at all substations, under any circumstances. This way, ALMAS guarantees the availability of real-time data and **facilitates decision-making**, leading to improved efficiency and productivity of your power system.



Staff safety

ALMAS provides a multitude of features to ensure maximum personal safety in sub-station operations. The control of breakers and disconnectors is done from a control room to minimize the risk of personnel injuries. It also includes features to prevent the operation of equipment during maintenance. In case of ongoing maintenance work, notifications can be attached to the HMI (event and alarm lists), and inform operators about the situation. Additionally, ALMAS has the capability to define different authorization levels for users, preventing unauthorized actions.

The human machine interface (HMI) of ALMAS is designed to increase the visual comfort of the operator, such as pre-defined color schemes, selectable icons and harmony of different parts of the application. This way, the operator can quickly learn the system and become familiar with it.



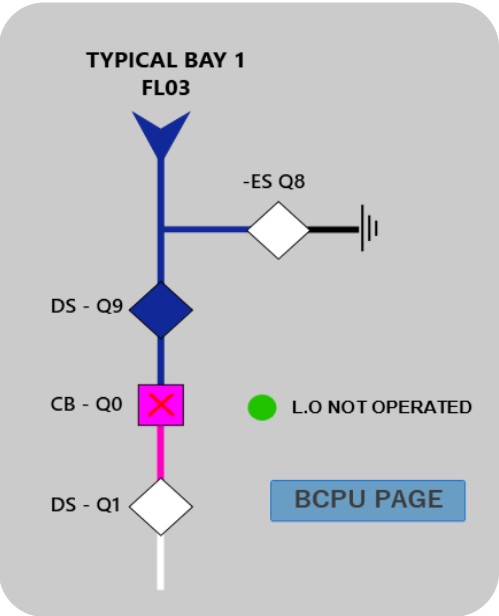
2. Event list and authorization levels

Apparatus safety

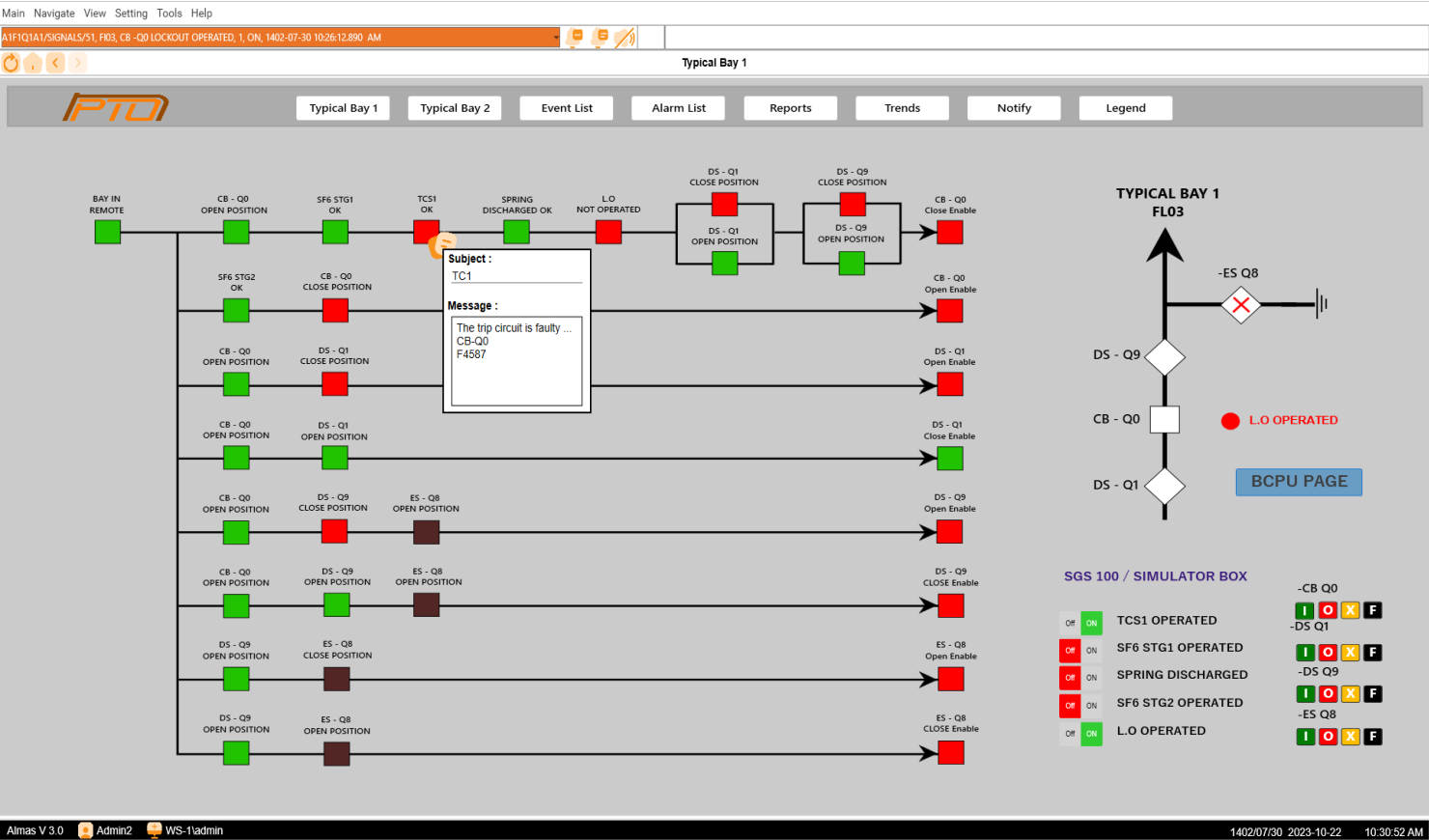
ALMAS puts safety at the forefront of its operations, employing various points to ensure that personnel injuries and equipment damage are avoided. The application prevent any concurrent operations that could result in unsafe situations. Additionally, the integration of station-wide interlocking schemes, which complement the bay level interlocking, serves to further prevent hazardous operations that may compromise the system's security. These interlocking schemes are only accessible by authorized users, ensuring strict adherence to safety protocols. Safety regulations stipulate that mechanical or electrical equipment be locked out and tagged out (sticky note) before maintenance or servicing work can commence. ALMAS integrates a lock-out/tag-out function that meets these requirements and assures that the control of equipment in the application or other operations are correctly secured before any maintenance work begins.

The dynamic busbar coloring function of ALMAS provides operators with instant access to critical information on the busbar's powered, unpowered, and earthed components. This function, combined with the coloring of the objects. The alarming objects are also presented in a visual format, enabling operators to monitor and detect potential issues quickly.

With these safety parameters in place, ALMAS prioritizes the reduction of risks, ensuring the safe and reliable operation of primary equipment.



3. Dynamic busbar coloring



3. Interlocking scheme

Main Navigate View Setting Tools Help									
Simulator/Alarms/Events/61, FL02, CB-Q0 SF6 STG1 OPERATED, 1, ON, 1402-07-30 10:26:12.890 AM									
Alarm List									
#	Time Stamp	Index	Station	Bay	Device	Signal Name	Event State Text	Username	Event Value
1	1402-07-30 10:10:00.620 AM	Simulator/Alarms/Events/61	PTP LABORATORY	FL02	SGM100	CB-Q0 SF6 STG1 OPERATED	ON		1
2	1402-07-30 10:26:12.890 AM	AT1F1Q1A1/SIGNALS/61	PTP LABORATORY	FL02	REF620 ABB	CB-Q0 SF6 STG1 OPERATED	ON		1
3	1402-07-30 10:26:54.440 AM	AT1F1Q1A1/SIGNALS/91	PTP LABORATORY	FL03	REF620 ABB	CB-Q0 TCS 1 OPERATED	ON		1
4	1402-07-30 09:49:29.647 AM	AT1F1Q1A1/AT1F1Q1B/10	PTP LABORATORY	FL03	REF620 ABB	ES-Q8 POSITION INDICATION	INTERMEDIATE		0
5	1402-07-30 00:24:59.347 AM	PWESH M111/VOLTAGE/14	PTP LABORATORY	FL03	PWESH M111	VOLTAGE PHASE A	HighWarning		HighWarning

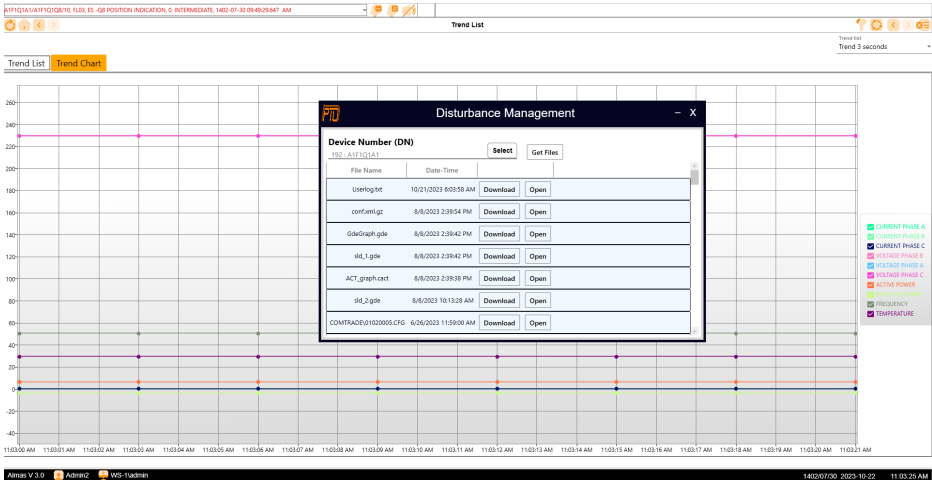
Main Navigate View Setting Tools Help									
Simulator/Alarms/Events/61, FL02, CB-Q0 SF6 STG1 OPERATED, 1, ON, 1402-07-30 10:10:00.620 AM									
Alarm List									
#	Time Stamp	Index	Station	Bay	Device	Signal Name	Event State Text	Username	Event Value
1	1402-07-30 10:10:01.083 AM	AT1F1Q1A1/SIGNALS/41	PTP LABORATORY	FL03	REF620 ABB	CB-Q0 SF6 STG2 OPERATED	ON		1
2	1402-07-30 10:10:01.070 AM	Simulator/Alarms/Events/71	PTP LABORATORY	FL02	SGM100	CB-Q0 SPRING DISCHARGED	ON		1
3	1402-07-30 10:10:00.387 AM	AT1F1Q1A1/SIGNALS/71	PTP LABORATORY	FL03	REF620 ABB	CB-Q0 SPRING DISCHARGED	ON		1

Main Navigate View Setting Tools Help									
Almas V 3.0 Admin2 WS-1admin 1402/07/30 2023-10-22 10:10:12 AM									

4. Alarm list

Disturbance analysis

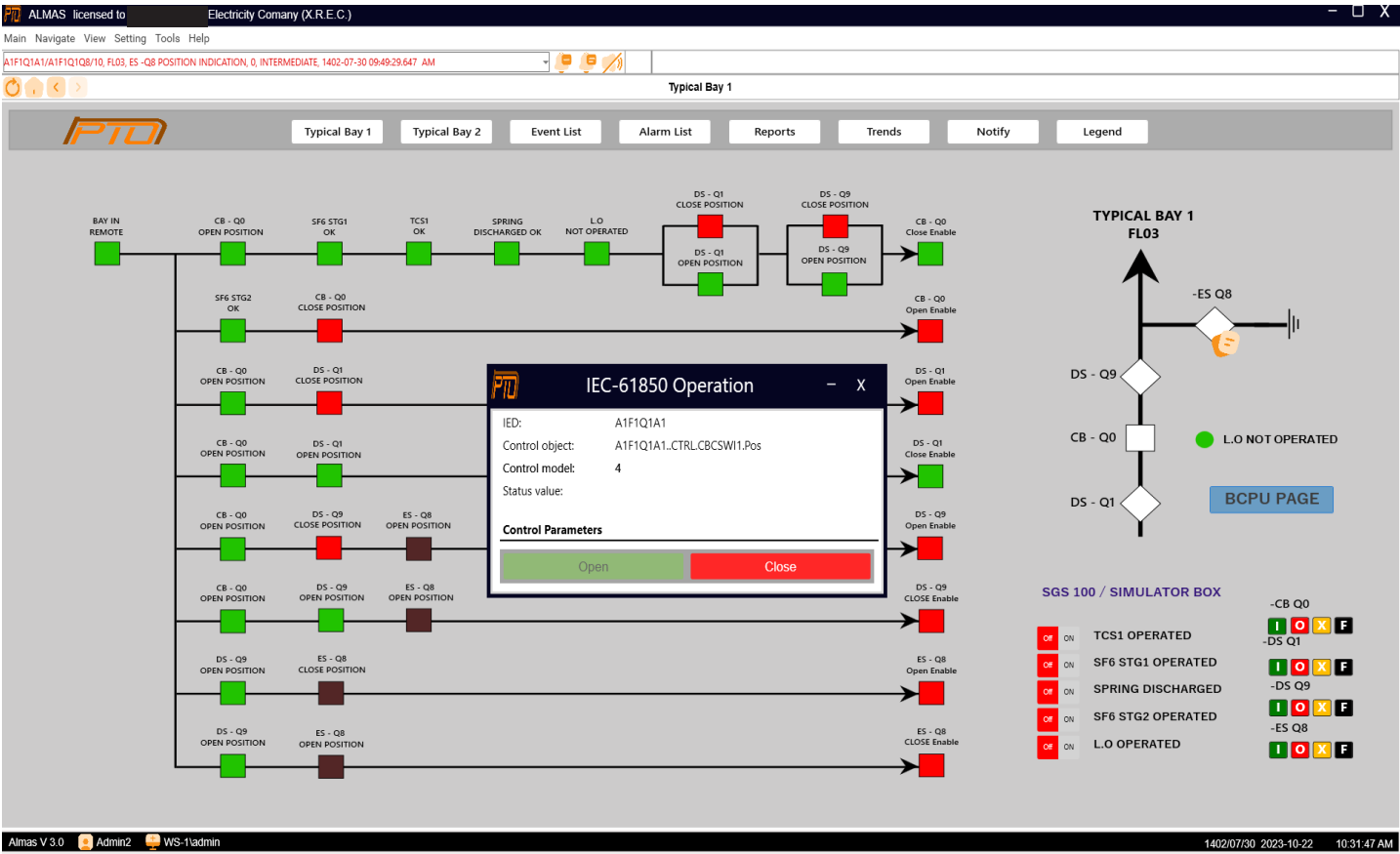
ALMAS is designed to provide a comprehensive and refined approach to data access and analysis. With advanced event logging and analysis capabilities, including time filtering, ALMAS ensures that you have access to the precise information you require to optimize the selectivity scheme of your protection system and address different types of faults. Through accurate time synchronization and tagging of events in protection and control IEDs, the system offers a reliable basis for precise disturbance analysis. In addition, trend analysis tools enable you to analyze process behavior, identify patterns, and take appropriate corrective measures to ensure the safe and efficient operation of equipment.



5. Trend

Control

ALMAS provides versatile object control capabilities and enabling efficient management of equipment including breakers, disconnectors, etc.



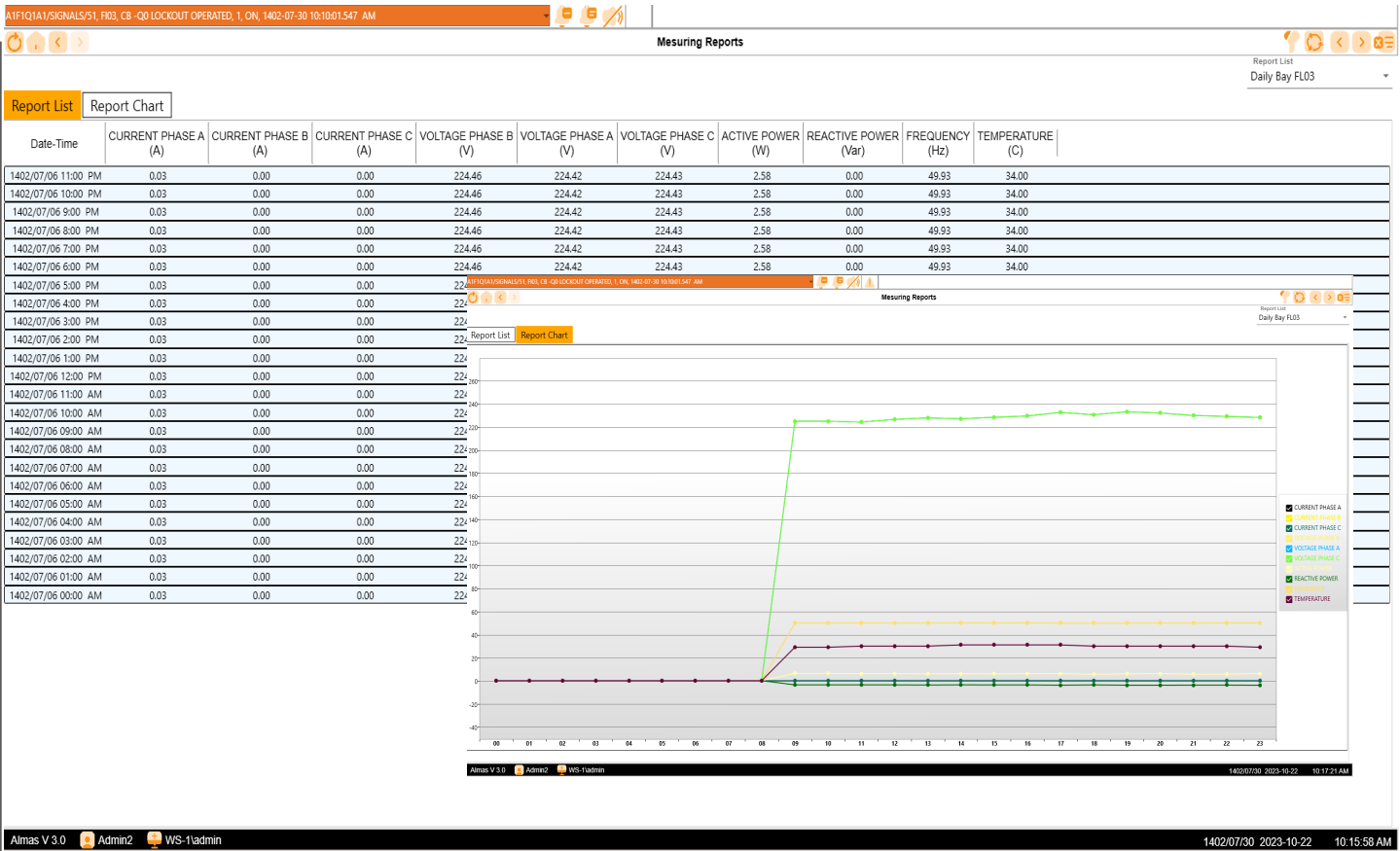
6. IEC-61850 control dialog

Additionally, the system offers a customizable control dialog box, which permits users to tailor the control interface to their specific operational needs. This includes the ability to generate shortcuts to activate or deactivate specific functions in protection and control IEDs, such as the auto-recloser or synch on/off.

Power quality monitoring

The ALMAS substation automation system offers a comprehensive solution for optimizing power quality. Through advanced monitoring and presentation of harmonic distortions, voltage drops, and peaks, as measured by the protection and control IEDs, ALMAS ensures that your power system meets the requirements for power quality.

This not only helps prevent damages and bad power quality that may shorten the life-time of your equipment but also promotes efficiency in power transmission and distribution. The ability to analyze power quality data in real-time allows for proactive measures to be taken to maintain optimal power quality levels.



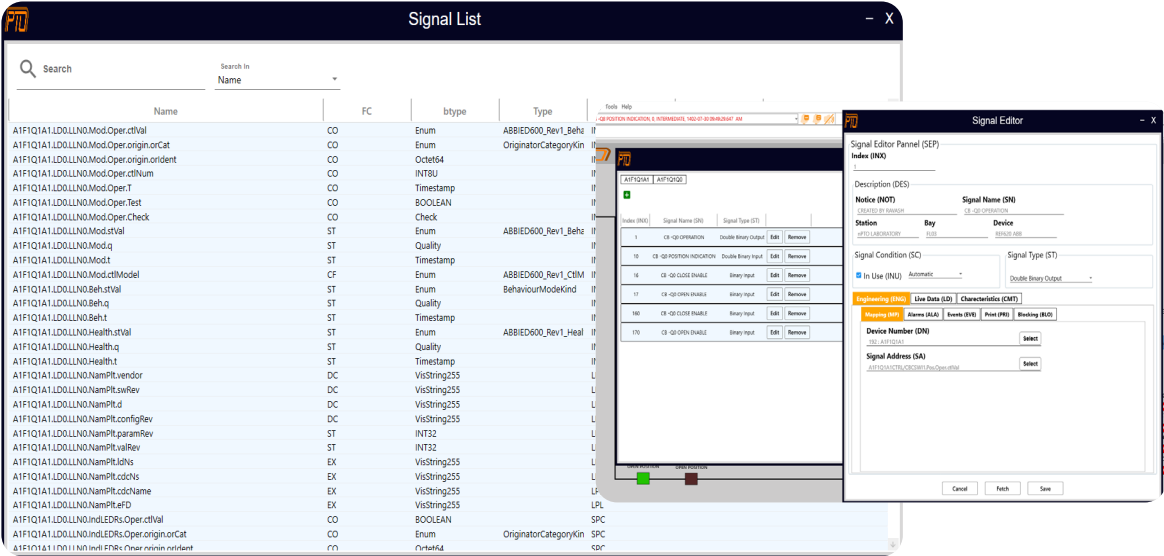
7. Report

Flexible system

The substation automation systems (SAS) developed by ALMAS possess an inherent adaptability and effortless customization as per your distinct specifications. The interface aesthetics, for instance, can be effortlessly tailored to align with your organizational guidelines. The system's in-built resilience empowers seamless incorporation of add-on functionalities, communication modules and automatic operations, without necessitating a shutdown of ongoing processes. This serves to enable an unparalleled degree of agility and operational flexibility for your substation automation infrastructure.

IEC-61850 compliant

ALMAS has been designed to adhere to the IEC-61850 standard for substation automation (SA) and ensuring seamless integration with IEDs, tools, and systems that also comply with the same standard. This makes system engineering and integration more efficient and straightforward and providing users with greater flexibility and convenience. Additionally, ALMAS can be easily integrated with various market-specific systems and devices (ABB, Siemens, Schneider Electric, GE, etc). With IEC 61850 compliance, ALMAS is equipped to provide robust and reliable communication and connectivity options to its users.



7. IEC-61850 ALMAS configurator

Training programs

We offer a comprehensive range of standard training programs and personalized training options to fully equip your engineers and operators with the knowledge and skills required to effectively operate the ALMAS system. Our training courses are designed with a practical and hands-on approach, providing your personnel with in-depth knowledge of the system’s functionalities and capabilities. Our training exercises are extensively documented, ensuring that your personnel are equipped to handle system operations seamlessly, as well as effectively manage any potential disturbance scenarios.

THE HIGHLIGHTS OF ALMAS

Fully IEC-61850 compliant substation automation solutions ALMAS’s full compliance with the IE-C61850 standard for substation automation (SA) guarantees that it can operate alongside IEC-61850-compliant IEDs, tools, and systems. This simplifies system engineering and allows for seamless communication and connectivity opportunities.

Flexible station bus topologies including multiple networks ALMAS offers flexible station bus topologies, including multiple networks and enabling efficient data exchange and communication between devices. This results in a more robust and reliable substation automation system.

State-of-the-art station HMI ALMAS system HMI provides a user-friendly interface for operators and engineers. It enables intuitive operation and monitoring of the system and leading to faster decision-making.

Scalable architecture and functionality ALMAS’s scalable architecture and functionality allow for easy modification and expansion of the system as per the changing needs of the power grid. This ensures that the system can adapt to future demands and making it a valuable long-term investment.

Integration of control and protection ALMAS integrates control and protection functionalities, leading to a more comprehensive and efficient substation automation system. This enables faster and more accurate response to power system disturbances and improving power quality and system reliability.

Simplified future extendibility in functionality and size ALMAS’s modular architecture enables easy expansion of the system’s functionality and size and ensuring that it can keep up with the evolving needs of the power grid. This makes it a cost-effective and future-proof solution for substation automation.

Easy integration De-facto standard interfaces enable smooth connection to other systems and tools, allowing for seamless integration with the existing infrastructure. This results in an efficient and reliable substation automation system.

Implementation and system performance proven by in-house System Verification Center (SVC) ALMAS’s implementation and system performance have been thoroughly tested and verified by its in-house System Verification Center. This ensures that the system is reliable, robust, efficient and a trusted solution for substation automation systems.



nPTO COMPANY

Novel Power Technologists Operation Company is a knowledge-based company that was founded in 2021 by a team of highly skilled electrical engineering graduates. The company specializes in substation automation software, providing advanced solutions for monitoring, control, and protection of electrical power systems. Their team of experts is dedicated to delivering high-quality, reliable, and efficient software solutions that are tailored to meet the unique needs of each client.