EXPERION® TERMINAL MANAGER

Product Information Note

Experion® Terminal Manager is an advanced application that handles receipt and dispatch of liquid and gaseous products at bulk storage terminals. The software uses Honeywell's state-of-the-art SCADA/DCS, Experion® PKS, as its platform, providing field integration, monitoring and control of terminal operations. Experion Terminal Manager is highly scalable and addresses customer needs ranging from small independent marketing terminals to refinery terminal operations.

The Challenges: Implementing a robust, reliable and scalable terminal automation solution integrating disparate systems can be difficult and expensive.

Terminal operators with Brownfield terminals face challenges in upgrading and integrating old, obsolete and disparate systems, thus they look for long-lasting, non-customized software and hardware solutions, from a proven vendor with experience of integrating such systems.

At the same time, terminal operators with Greenfield terminal opportunities want their investment well-protected and well-served for the next couple of decades with trouble-free commissioning and long-lasting support of their operations.

The Solution: Experion Terminal Manager

Terminal Manager, built on the best-in-class Experion platform, addresses the challenges of terminal operators in a structured and standardized way. The system can be extended with a comprehensive range of related Honeywell solutions, becoming a one-stop-shop for all terminal automation needs.

Honeywell's Terminal Manager software integrates with the Experion® Process Knowledge System (PKS) platform to provide a complete terminal automation solution.

FEATURES & BENEFITS

Visualization

- Web-based application requires no software installation on client PC
- HMI Standard Features: Built-in navigation, native tabbed displays, standard point faceplates and detail displays, custom displays, custom application menu choices

Business System

- SAP system interface over XML/IDOC
- ERP system interface over XML/CSV/text files
- FTP/Web Services support
- TAB/TDS System over PIDX standards

Workflow Tools

- Configurable Workflow Tool
- Attribute Configuration Tool
- Notifications
- Built-in SCADA Historian on production servers (no additional licenses needed)

SCADA/DCS Functionality

- Comprehensive SCADA solution continuously enhanced over 25+ years
- Powerful core SCADA features, trending, real-time database, open connectivity, alarm/event infrastructure

SCADA/DCS Functionality (Cont'd)

- HTML-based graphics – scales to screen size, multiple device – no re-work or conversion needed
- Native displays based on Asset Model and Equipment Type templates

Terminal Manager integrates with sub-systems, both Honeywell and third-party, such as tank gauging, fire and gas, emergency safety, and access control, providing a fully integrated terminal automation system.

Terminal Manager also optionally integrates with various business systems like Enterprise Resource Planning (ERP) and Data Clearing Houses (DCHs) such as SAP, TABS, TDS or even in-house systems, to provide vertically integrated order and shipment scheduling operations and management.

Experion Terminal Manager addresses the challenges of terminal operators in a structured and standardized way.

Enterprise-Level Multi-Terminal Capabilities

Terminal Manager helps terminal operators make timely and informed, enterprise-wide decisions. It is designed to provide a single, real-time view of all terminal operations. Reflecting Honeywell's extensive experience and end-to-end offerings for the midstream sector, Terminal Manager's Enterprise Node enables companies to:

- Manage the bi-directional flow of information (enterprise to terminal and terminal to enterprise) to gain unprecedented insight into terminal management and operations
- Combine the operations of multiple terminals and apply consistent and standard practices across them
- Measure how each terminal is performing relative to each other (for example, identifying which terminals have spare capacity)

Terminal Manager's enterprise capability supports aggregating transactions from each individual terminal, and updates business systems (e.g., ERP/SAP) for further billing and invoicing needs. As a result, customers need not invest in separate business system interfaces at each individual terminal level—saving cost and effort to setup and maintain multiple interfaces.

The Terminal Manager solution comes with a rich set of Key Performance Indicators (KPIs) through dashboards and analytics to help operators make timely and informed decisions from the centralized office or local terminal. This allows business operations and processes to be optimized across the terminals. It also assists in reducing manual/human errors by maintaining the highest levels of accuracy.

Terminal Manager's Enterprise Node can be deployed as a traditional installation per a perpetual license, or as a Honeywell-delivered Software-as-a-Service (SaaS) cloud deployment, which is a perfect option for existing multi-terminal operators to add enterprise-level features.

Integration with Third-party Business Systems

For operating companies, accounting software at a corporate level requires real-time loading/unloading information from terminals to bill customers in a timely and accurate manner. For this reason, Terminal Manager supports integration with third-party business system such as SAP and JD Edwards.

Using our standardized approach, even custom internal systems can be integrated via either offline (XML, Text, CSV file transfers) or online (Web Services, IDOC) solutions wherever standard interfaces are not available.

Terminal Manager also supports interfacing with DCH systems to perform credit checks and validate allocation before authorizing product loading from the terminal. This is performed online to solutions like TABS and TDS using PIDX standard interface mechanisms.

No Single Point of Failure

Large terminal operations can't afford to have failures and downtime that would halt their operations. Terminal Manager addresses redundancy at various levels, including application, network, field communication, web server, and data base, providing options for no single point of failure across the terminal, and keeping the system up and running 24/7, 365 days.

Configurable Workflows

No two terminals operate the same, with various security, measurement and automation differences. Traditionally, this was addressed using extensive custom modifications to meet differing workflow demands. This posed a threat when it came to maintaining and upgrading systems, as it required individual site knowledge and separate code bases.

Instead, Terminal Manager comes with a workflow configuration tool that caters to various terminal needs that are supported through maintenance and upgrade tasks.

Wide Variety of Reports

- *Product receipt and reconciliation*
- *Load slips (also called FAN)*
- *BOL (bill of lading)*
- *Load details and summaries (sorted by bay, product, customer or stock owner)*
- *Product stock reconciliation (hourly online or on demand)*
- *Weigh bridge reports on tare and net weight, including LPG trucks*
- *Vehicle movement (guardhouse)*
- *Average loading, waiting duration (segregated for each load type)*
- *Monthly and another MIS*
- *Alarm journal, safety interlocks and trips*
- *Audit trails*
- *Proving*
- *Trans-loading*

Blending Support

- *Ratio*
- *Side Stream*
- *Sequential*

BCU Support

- *Honeywell MSCL*
- *Honeywell 1010*
- *Accuload*
- *Multiload*

Workflows Support

- *Manned Terminal*
- *Unmanned Terminal*

Products Support

- *White oil*
- *Black oil*
- *Chemical*
- *Gaseous product*

Loading Type

- *Top*
- *Bottom*
- *Swing*

Flexible Data Structures

With variation in terminal management practices, extra information sometimes is exchanged between terminal and business systems. Terminal Manager provides configuration options to add extra fields to entities to store, transmit and display this information.

Language Support

Users prefer software in their local language for ease of use and accuracy. Like Experion PKS, Terminal Manager comes with a localization toolkit for language support.

Honeywell goes one step further by providing around 25 language packs for the Honeywell batch controller, MSC-L, for easy driver interactions in the field.

Windows Sign On

Terminal Manager uses Windows-based user authentication via domains or workgroups. This enables operators to enact companywide policy enforcement of user security.

Role-based Access Permissions

Terminal Manager supports multiple user roles and provides flexibility in configuring permissions for each individual role. Roles supported as standard are Operator, Supervisor, Manager, and Administrator. This can be further customized through configuration of various other sub-roles like Ship Loading Operator, Truck Loading Operator, etc. For example, Ship Loading Operators get access to those assets belonging to ship loading areas, Truck Loading Operators get access to truck loading areas, etc. As such, incorrect assignments of truck-to-berth or ship-to-bay will not be possible.

Gate Access Control

Entry and exits of the carriers and their drivers in a terminal are closely monitored through various authorization checks based on secured data in Terminal Manager. Identification includes PINs, access cards, RFID, biometrics, TWIC cards, perform driver, and vehicle and shipment authentication and permission. Traffic lights, barrier gates, and large LCD or magnetic displays can be used to regulate access.

Modes of Transport Support

Terminal Manager supports multiple modes of transportation, such as Truck, Marine, Rail and Pipeline operations. It provides a single, integrated solution for all terminals.

Receipts/Dispatch Operations

Customer prefers having single software to support both receipts and dispatch operations within a terminal, so they can reconcile the stock receipt and dispatches, bill the customer accordingly, and replenish stock whenever demand is higher.
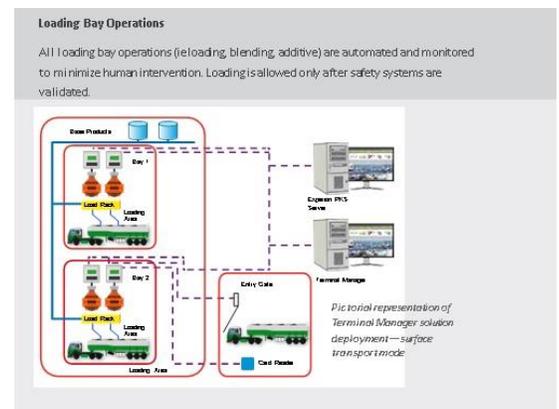
Terminal Manager focuses on both receipt and dispatch operations, enabling billing and reconciliation of stock at the end of the day. This provides a holistic view of the terminal's stock availability and demand to better make informed decisions.

Loading/Unloading (Bay/Berth) operations

With Terminal Manager, all loading/unloading operations, including blending and additive injection, are automated and monitored to minimize human intervention. Various interlocks can be incorporated. The software supports most popular batch control units/preset controllers and flow computers on the market, including the Honeywell MSC-L and 1010. Multiple arms are supported, as is top/bottom loading, swing arms, multiple arms per bay, and multiple BCU's per bay.

Support for a Virtual Preset is an additional feature where simple workflows without a physical preset controller are needed to start and stop filling.

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Weight-based Loading/Unloading Operations

Most major weight-based systems can be interfaced with Terminal Manager, either over Modbus or proprietary protocols through Experion SCADA interfaces. This supports weigh-based loading/unloading either through weigh bridges or mass flow meters in the field for measuring and recording tare and loaded/unloaded weights of the vehicles.

Notifications and Audit Trial

Terminal Manager comes with an audit trail to record all changes to the system, both in the field or at the control room. Events are presented for easy diagnostic and troubleshooting of any incidents. Process alarms and events are also recorded and presented in Experion's alarm summary.

Driver Waiting Area and Queue Displays

Large screen displays can be installed at driver waiting areas to display bay information and queues. This regulates traffic and ensures smooth operations.

Terminal Manager has bay queue algorithms based on shipment information, which take into consideration of bay manifestation, product requested, minimum movement of vehicle within the bay, and queue optimization to improve the turnaround time for drivers. These algorithms can be modified where standard logic is not optimal.

Email/SMS Notifications

Email/SMS is supported for notifications to customers, shareholders, carrier companies, and other stakeholders to provide real-time updates of terminal operations. This can improve productivity and assist in decision-making.

Multiple Shifts and Holiday Configurations

Terminal Manager supports multiple shifts to be setup for terminal operations. This also enables end of shift and end of day reports, which can be scheduled to be sent to respective stakeholders via email. Holidays can be configured to restrict the unusual terminal operations.

Database Backup and Disaster Management

Terminal Manager takes daily full backups of the database and incremental backups at the configurable interval needed to safeguard against data loss. These data backups can be scheduled to copy on the tape or any other backup system like NAS—either locally or to a remote location—to address the disaster management requirement of the customer. Data can be retrieved back to the system in the event any unusual incident happens at the terminal from these backups to the last backup point. Some customers prefer having their data archived for next 10 years or so to meet various Government regulations.

Honeywell also supports taking image backup in regular intervals using the EBR application apart from data backup in case of machine failure, so it can be restored from these images. This process can be scheduled to take a backup of images for all the nodes used in the terminal, or only the critical ones, depending on the customer's preference.

Terminal Manager keeps only an active record of 3-6 months in its current active table and pushes the rest of the data to an internal history table for better performance. This parameter can be fine-tuned and configured directly by the customer based on the load in the terminal.

Business Continuity Plan

Terminal Manager addresses the Business Continuity plan at multiple locations by allowing for workaround or offline adjustments. Should there be a communication failure between business systems, or business system downtime, terminal operators can continue creating orders and shipments from the front-end Graphical User Interface (GUI) of Terminal Manager. They can proceed with normal operations once communication is restored, with back data synchronized automatically with the L4 business system.

In a similar way, if there are issues with communication with field devices like BCU/FC, the driver can proceed with local loading and continue the operations. Once a link is established, the system will pool records from the BCU/FC and present them to the operator for mapping lifting to the shipment.

KPI – Dashboards

Terminal Manager provides built-in KPI dashboards for operators and management providing real-time stock availability in the terminal, orders pending to process, ongoing shipments, bay wise queue displays, leakages, alarms from the field, etc.

Staff/Visitor Management

Terminal Manager tracks visitors to the terminal and their last access location within the facility, and also provides automatic reports in case of emergency situations. In addition, it handles fatigue management of staff members working more than stipulated, mandated hours.

Topup/Decanting

Terminal Manager supports Topup/Decanting of small volume to/from the vehicle to accommodate and match the dipped manual measurement. Drivers accept only dipped readings; thus, this adjustment functionality is a must for Terminal Manager software.

Product Lifting and Restriction Enforcement

Customer and government regulations restrict the amount of product that can be lifted from the terminal in a given day. This requirement couples with the need
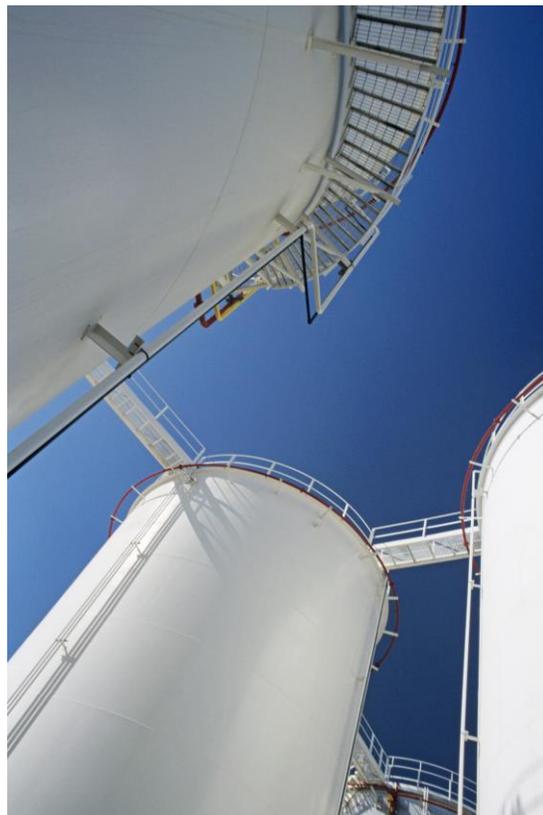
Wide Range of Support Services

- *Telephone and e-mail support*
- *Remote diagnosis and troubleshooting*
- *Software patches and enhancements*
- *On-site field support for troubleshooting*
- *Routine and preventive maintenance*
- *Spare parts management*
- *Database, configuration backup, software version management, and site documentation maintenance*
- *System upgrades and technology refresh programs*
- *Refresh training programs and test bed maintenance*

for software to measure and protect emission control in the terminal. Terminal Manager supports this feature on a carrier-wise, shareholder-wise, or customer-wise basis.

In addition, Terminal Manager enables more than one shareholder to hold and claim stocks in a tank. This allows shareholders to exchange agreements and products inside or outside the terminal. Based on product demand, they can enter into agreements with other shareholders to serve their customer in a prompt and cost-effective manner.

Trans-loading Feature

Terminal Manager supports direct transfer of product from marine to truck or rail to truck without intermediate storage. This helps to reduce cost and enable efficient handling of the terminal operations.

For More Information

Learn more about how Honeywell's Experion Terminal Manager, visit www.honeywellprocess.com/terminals or contact your Honeywell account manager, distributor or system integrator.

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