TotalPlant™ Solution Modernization: Experion® Local Control Network

Solution Note

With Honeywell’s commitment to continuous technology evolution, plants can take what was once a legacy system and gradually, in a step-by-step fashion, move it forward to become part of a new, modern system while at the same time protecting existing asset investments.

Introduction
Honeywell continues to enable customers to take advantage of state of the art control system technology while protecting their intellectual property investment.

Honeywell’s on process incremental upgrade to Experion LCN modernizes the control system infrastructure and enables the Industrial Internet of Things (IIoT by Honeywell). Existing control strategy, field terminations, applications, history and graphics can be retained allowing users to focus on high value improvements.

This strategy maintains safe and reliable controls while modernizing and evolving with the most advanced technologies. It keeps established, reliable systems running longer, extends uptime, and preserves investments in hardware and network infrastructure.

Challenges
In an uncertain global economy, every manufacturer is under growing pressure to reduce costs while improving performance.

Plants running the TotalPlant™ Solution (TPS) system need to avoid obsolescence by employing modern technology. TPS introduced in 1998, helped establish open plant automation with a host of advanced applications. However, its users are now dealing with compliance issues related to new safety regulations, as well as increasing system support challenges.

The convergence of people, parts and planning issues has created a perfect storm threatening potential disruptions in the industrial sector.

The Perfect Storm, looming on the horizon for many customers, can be summarized into five main areas relating to age of the workforce, age of the technology, economic conditions, maintenance costs, and risk associated with change.
Perfect Storm | Perfect Solution
--- | ---
Aging Workforce | Train and enable next generation of employees on latest technologies to solve new challenges instead of re-writing legacy code
Missed Profit Opportunities due to aging technology (cost of doing nothing) | Leverage Experion and Advanced Software technologies (DynAMo) that are IIoT by Honeywell-ready and address Cybersecurity
Economic Conditions | Enable access to OPEX or CAPEX options (Hardware refresh, Assurance 360)
Cost to Maintain and Acquire Hardware | Modernize hardware, while retaining Intellectual Property (Experion LCN)
Risk of Change | Retain Intellectual Property

Figure 1. This table presents a quick overview of the challenges, along with appropriate solutions.

Honeywell offers solutions to address each of these areas, encapsulated in TotalPlant Solution Modernization. The introduction of Experion LCN is a key product to facilitate that modernization.

How Experion LCN Works
Expanding on the Enhanced TPS Node capabilities, the Experion LCN (ELCN) further enables continuous innovation for Honeywell customers. Using our proven Experion Fault Tolerant Ethernet (FTE) infrastructure, a new ELCN bridge connects Experion to Classic Coax LCN. Once this connection is established, the LCN coax connection can be removed one LCN node at a time. Instead of a hardware connection for every Experion TPS node, only one redundant ELCN bridge pair is needed to enable virtualization.

Benefits to Industrial Sites
Industrial operations concerned with transforming their legacy control system can realize numerous operational and business benefits from TPS modernization. This transformation can improve business results, enable expansions, and improve sustainability, while protecting existing infrastructure, production and intellectual property in terms of both applications and graphics.

Honeywell’s secure path to current technology offers seamless integration with architecture, with standards-based functionality, regulatory support capabilities, and integrated operation from the field, through the plant, to the business level.

Honeywell’s TPS modernization solution minimizes operating disruptions and maintains overall consistency, as well as delivering optional lifecycle advantages with virtualization. Honeywell is committed to helping you sustain your automation platform, and at the same time, take advantage of the most up-to-date technologies.

After modernization, the control system can have a common Human Machine Interface (HMI) and unified physical control network, allowing control devices to integrate/expand easily with the latest generation of Experion PKS controllers and safety systems. The advanced control solutions and the new functions within Experion PKS controllers can additionally improve the effectiveness of plant operations.

Modernization also opens the door to Honeywell’s IIoT, an approach that connects people to assets, automates predictive analytics, and enables increased collaboration.

An aging and rapidly retiring skills base and the ever increasing pace of technology development compound the challenges of legacy systems.

Industrial Internet of Things (IIoT) by Honeywell enables digital transformation by connecting people, assets, and processes.
Migration Planning

Success with modernization depends on developing a multi-year migration plan that can include support at every stage of the automation lifecycle. Service programs can include Assurance 360, Solution Enhancement Support Program (SESP), Kits & Enhancements, Hardware Refresh, and Lifecycle Management.

For instance, Assurance 360 transforms how you manage and maintain systems. Honeywell provides agreed service levels rather than prescribed quantities of materials and labor. Users prescribe quantities of materials and labor. Users take a strategic view to minimize the total cost of ownership, guarantees performance, and utilizes the automation system to improve business results.

Honeywell offers flexible solutions you can live with and grow with when you develop a modernization plan tailored to your unique site requirements. Without the need to “rip and replace” existing control systems, Honeywell modernization protects your intellectual property, retains physical assets, and leverages the value of your technology investments.

The ELCN bridge and appliance nodes use the universal embedded appliance with these specifications:

<table>
<thead>
<tr>
<th>MECHANICAL SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions</td>
</tr>
<tr>
<td>Approximate weight</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COMMUNICATION CABLE INTERFACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTE Cable A &amp; B</td>
</tr>
<tr>
<td>Down-link Ethernet Cable</td>
</tr>
<tr>
<td>Redundancy Cross cable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ELECTRICAL SPECIFICATION</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting</td>
<td>19 inches Shelf</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>Operating Temperature</td>
</tr>
<tr>
<td></td>
<td>(Cabinet- External)</td>
</tr>
<tr>
<td></td>
<td>Operating Temperature</td>
</tr>
<tr>
<td></td>
<td>(Cabinet- Internal)</td>
</tr>
<tr>
<td></td>
<td>Operational Transient</td>
</tr>
<tr>
<td></td>
<td>(0.25C/Min. for 1hr. Max)</td>
</tr>
<tr>
<td>Storage/Shipping Temperature</td>
<td>-35~70 ºC</td>
</tr>
<tr>
<td>Humidity(R-H) (All classes)</td>
<td>5-95%</td>
</tr>
<tr>
<td></td>
<td>Max Wet Bulb</td>
</tr>
<tr>
<td>Altitude (Feet) (All Classes)</td>
<td>Operating – Maximum</td>
</tr>
<tr>
<td></td>
<td>Shipping/Storage</td>
</tr>
<tr>
<td></td>
<td>Maximum</td>
</tr>
<tr>
<td>Dust (All Chasses)</td>
<td>Filters are effective down to</td>
</tr>
<tr>
<td></td>
<td>10 Microns</td>
</tr>
<tr>
<td>Input AC Voltage Requirement</td>
<td>90<del>264VAC @47</del>63Hz</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>AC Power for Redundant TCMI pair</td>
<td>Up to 100W @ 80% efficiency</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating Vibration (Sinusoidal)</th>
<th>Equipment mounted/set on the floor</th>
<th>Equipment mounted/set other than on the floor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(5-20Hz)</td>
<td>0.3mm/.012in</td>
<td>0.7mm/0.28in</td>
</tr>
<tr>
<td>(20-150Hz)</td>
<td>0.25g</td>
<td>0.5g</td>
</tr>
<tr>
<td>All three axes, 60 minutes each axis, 5 minutes/range (Six sweeps: 5-150-5) (20 Hz is approximate, extract crossover frequency is determined by the intersection of displacement and acceleration.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shipping Vibration (Random)</th>
<th>See curves</th>
</tr>
</thead>
<tbody>
<tr>
<td>(10-500Hz)</td>
<td>All three axes, 60 minutes each axis, random spectrum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shock</th>
<th>Site Induced</th>
<th>4g @25ms</th>
<th>4g @25ms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Shipping/Storage</td>
<td>0-10kg</td>
<td>10-20kg</td>
</tr>
<tr>
<td>Not packaged for shipping</td>
<td>Least of rotational drop height from intended installed orientation of 45 degrees about all edges</td>
<td>100mm</td>
<td>100mm</td>
</tr>
<tr>
<td>Packaged for shipping</td>
<td>Vertical drop height</td>
<td>900mm</td>
<td>750mm</td>
</tr>
</tbody>
</table>

For More Information

To learn more about Honeywell’s TotalPlant Solution Modernization and how Experion LCN can help to reduce risk while implementing new technology, visit our website [www.honeywellprocess.com](http://www.honeywellprocess.com) or contact your Honeywell account manager.

Honeywell Process Solutions

1250 West Sam Houston Parkway South
Houston, TX 77042

Honeywell House, Arlington Business Park
Bracknell, Berkshire, England RG12 1EB UK

Shanghai City Centre, 100 Zunyi Road
Shanghai, China 200051

[www.honeywellprocess.com](http://www.honeywellprocess.com)