ControlEdge HC900 Rocks Safety Control: “BACK in BLACK”
Agenda

1. About ControlEdge HC900
2. “Back in Black”
3. New Features in R650
4. SIL UIO features
5. Future Roadmap
HC900 Process and Safety

Is a Process Automation Controller (PAC)…

used for process and safety

…used for applications ranging from Process PLCs to DCSs and safety applications

such as BMS, ESD, spill prevention, etc.

Provides Safety and Control
HC900 Now in a New Look

Current Light Gray Plastics

New Black Look

“Back in Black”
HC900 is now ControlEdge™ HC900

ControlEdge HC900 (Process)

ControlEdge PLC

ControlEdge RTU

ControlEdge HC900 SIL2 (Safety)

ControlEdge UOC
Safety and Non-Safety in Separate Systems

A single flexible system for safety & process control

Faster start-up time, common engineering tools, reduced training, simplified maintenance and lowest cost of ownership
Safety and Non-Safety in Separate Systems

Safety and Process I/Os on Same CPU

Safety I/Os

Non-Interfering Process I/Os

Safety and Non-Safety I/O’s with common CPU
## Targeting Value Added Applications

<table>
<thead>
<tr>
<th>Target Verticals</th>
<th>Applications To Focus On</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining &amp; Metals</td>
<td>• Furnaces, Oven, Burner Management&lt;br&gt;• Thermal oxidizers, Smelters, Incinerators, Process heaters&lt;br&gt;• Vaporizers</td>
</tr>
<tr>
<td>Chemicals/ Pharmaceuticals</td>
<td>• Process Control</td>
</tr>
<tr>
<td>O&amp;G/ Refining</td>
<td>• Pipeline monitoring</td>
</tr>
<tr>
<td>Rail / HVAC / Data Centres / Commercial</td>
<td>• Metro/ Infra Tunnel Ventilation, Lighting Management etc.&lt;br&gt;• Accurate control of temperature and hot spot monitoring&lt;br&gt;• HC900 Accutune III powerful automatic self-tuning algorithm and Fuzzy Overshoot Suppression for optimum PID loop tuning and accuracy</td>
</tr>
<tr>
<td>Pulp &amp; Paper/ Food &amp; Beverages</td>
<td>• Process Control</td>
</tr>
<tr>
<td>Cement &amp; Glass</td>
<td>• Pre-heaters, Heat Exchangers, Furnaces&lt;br&gt;• Kilns, Reactors, Calciners, Dryers</td>
</tr>
<tr>
<td>Power</td>
<td>• Balance of Plant, Cooling Towers, Condenser&lt;br&gt;• Burner Management Systems (BMS)&lt;br&gt;• Combustion control, Boiler Control&lt;br&gt;• Emergency shutdown</td>
</tr>
</tbody>
</table>
Safety specific applications- ControlEdge HC900

Safety
- Heat Treatment
- Burner Management Systems (BMS)
- Combustion control
- Pipeline monitoring
- Spill prevention
- Emergency shutdown

Critical Control
- Electronics & semiconductor
- Cement
- Glass
- Textiles

Applications for BMS Solutions
- Furnaces
- Boilers
- Pre-heaters
- Kilns
- Ovens
- Reactors
- Calciners
- Dryers
- Thermal oxidizers
- Smelters
- Incinerators
- Process heaters
- Vaporizers
## How does ControlEdge™ HC900 compare to Competitors?

<table>
<thead>
<tr>
<th>Attributes</th>
<th>SIL Universal IO</th>
<th>Set point Programming for Heat Treatment Applications</th>
<th>Software License and Upgrades</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Honeywell ControlEdge HC900</strong></td>
<td>- Easily adapts late engineering changes &lt;br&gt;- Reduced hardware &lt;br&gt;- Few Spares &lt;br&gt;- Simplified engineering</td>
<td>- Setpoint schedulers with multiple ramp/soak outputs and 64-step sequencers &lt;br&gt;- Highest loop control accuracy with Accutune III auto-tuning and fuzzy logic capabilities</td>
<td>- No annual software license fee for HC Designer &lt;br&gt;- Free software WEB downloads for product enhancements</td>
</tr>
<tr>
<td><strong>Siemens S7-1500F</strong></td>
<td>- Purpose built IOs (AI, AO, DI, DO) &lt;br&gt;- Universal Analog or Universal Digital but lack full UIO module &lt;br&gt;- Support several IO families, including old generation IOs to lower system cost</td>
<td>- Lack specific programming function blocks for Heat Treatment applications &lt;br&gt;- Lack high accuracy auto tuning programs like Accutune III</td>
<td>- Have separate charges for SW license and renewals</td>
</tr>
<tr>
<td><strong>Rockwell ControlLogix</strong></td>
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</tr>
</tbody>
</table>

### So What?

- **Reduced Capex and Opex** due to reduced cabinets, field cables and inventory
- **Reduced project schedule risk** due to late changes allowed by UIO
- **Set point programmer allows easy programming** when ramp and soak temperature profiles are required for furnace and heat treatment applications
- **Saves engineering time** with pre-built blocks

- **Reduces the total cost of ownership (TCO)** for customers

---

Reduced project schedule risk, easy SW licensing and low TCO with ControlEdge HC900
ControlEdge HC900 – Perfect Solution for Process and Safety

High Performance
- Tighter control
- Accurate Diagnostics
- Fault-tolerant and reliable system

Easiest to Use and Engineer
- Simple intuitive tools
- Online maintenance
- Easy integration

Low Total Cost of Ownership
- Lowest product lifecycle cost
- Common software tools for Process & Safety
- Same I/O modules for Process & Safety

Enhances quality
Improves productivity
Maximizes profitability
High Performance

Tighter control

- Standard fuzzy logic of the HC900:
  - Prevents process overshoot
  - Provides accurate control
  - Increases throughput and efficiency
  - Minimizes energy costs
High Performance

Accurate diagnostics

- Advanced diagnostics at module and channel level that add reliability to system
- Diagnostics, alarms, early detection of sensor failures and system faults
- History backfill
Fault-tolerant and reliable

- Keep your system running continuously with redundancy
- Online Configuration, Monitoring, Removal & Insertion under power
- High availability ratings
Easy to Use and Engineer

Simple intuitive tools

- Easy to engineer using function blocks: Save 10-15% of engineering time
- Version control and change management built into the product
- Application specific function blocks especially for Gas (AGA), furnaces etc.
Easy to Use and Engineer

Online maintenance

- Run mode editing with minimal process disturbance
- Online monitoring for debugging and set up

Improves productivity with a running system
Easy to Use and Engineer

Custom libraries and easy replication for OEM’s

- Bulk edit, search and replace
- Copy/Paste special allowing bulk changes which are ideal for OEM’s

Improves productivity with bulk changes and easy replication
Easy to Use and Engineer

Easy integration

• Honeywell integrated products offer a one-stop shop solution
  – HMI (900 Control System)
  – Experion HS (SCADA Solution)
  – Matrikon OPC (3rd Party Integration)
Low total cost of ownership

Lowest product lifecycle cost

- Free Matrikon OPC license with every purchase
- No annual software license fee (HC Designer)
- Free software WEB downloads for product enhancements
- World-wide global product support

Maximizes Profitability with a simplified business model
Low total cost of ownership

Common software tools for process and safety

- Reduced training costs
- Reduces engineering time and cost

Maximizes profitability with lesser training with common tools
Low total cost of ownership

Same I/O modules for Process & Safety

- Reduced inventory costs
- Quick replacement of modules maximizes plant uptime

Maximizes profitability with minimal inventory
Software FB features
FUZZY OVERSHOOT SUPPRESSION

Function blocks that enhance product quality
Controls the enrichment gas and dilution air into the furnace, thus affecting carbon potential

Function blocks that enhance product quality
DEW POINT CONTROL

Function blocks that enhance product quality
This block is part of the *SP Program* category

- Runs a setpoint ramp/soak program that produces a setpoint output on a time-based profile that is loaded into the block
  - A single profile may be from 2 to 50 segments in length
  - Up to 70 stored profiles in controller memory
  - Each segment of the profile may be a ramp or soak except the last segment must be a soak

- Auxiliary analog output is provided for each step of program
  - It’s a fixed soak value

- A Setpoint guarantee function is provided
  - Holds the program if a process variable exceeds a predefined deviation from setpoint
  - Up to 3 Process Variables can be configured as inputs to the block for guarantee hold

Automated profiles reduce 10-15% engineering efforts
New Enhancements in R650
R650 - Enhancements

**Prior Offering**
- Existing Grey Plastics

**Enhancement**
- New Black Design

Same Form factor, with new plastics

**June 2018**
- New Black Plastics
- RoHS 2 and G3 Coating for Harsh Env.
- HC Designer in Mandarin

Aligned to ControlEdge Platform
### New model numbers

<table>
<thead>
<tr>
<th>Description</th>
<th>Existing Model Nos.</th>
<th>New Model Nos.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controllers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONTROLLER C30 CPU</td>
<td>900C30-0360-00</td>
<td>900C30-0460</td>
</tr>
<tr>
<td>CONTROLLER C50 CPU</td>
<td>900C50-0360-00</td>
<td>900C50-0460</td>
</tr>
<tr>
<td>CONTROLLER C70 CPU</td>
<td>900C70-0360-00</td>
<td>900C70-0460</td>
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<td>CONTROLLER C75 CPU</td>
<td>900C75-0360-00</td>
<td>900C75-0460</td>
</tr>
<tr>
<td>REDUNDANT CONTROLLER C75 CPU</td>
<td>900C75S-0360-00</td>
<td>900C75S-0460</td>
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<tr>
<td>CONTROLLER C30 CPU - SIL</td>
<td>900C30S-0360-00</td>
<td>900C30S-0460</td>
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<tr>
<td>CONTROLLER C50 CPU - SIL</td>
<td>900C50S-0360-00</td>
<td>900C50S-0460</td>
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<tr>
<td>CONTROLLER C70 CPU - SIL</td>
<td>900C70S-0360-00</td>
<td>900C70S-0460</td>
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<tr>
<td>CONTROLLER C75 CPU - SIL</td>
<td>900C75S-0360-00</td>
<td>900C75S-0460</td>
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<tr>
<td>I/O Scanners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I/O SCANNER (FOR REMOTE RACK)</td>
<td>900S50-0360-00</td>
<td>900S50-0460</td>
</tr>
<tr>
<td>I/O SCANNER - 2 PORT (1 PER I/O RACK)</td>
<td>900S75-0360-00</td>
<td>900S75-0460</td>
</tr>
<tr>
<td>I/O SCANNER - 1 PORT (1 PER I/O RACK) - SIL</td>
<td>900S50S-0360-00</td>
<td>900S50S-0460</td>
</tr>
<tr>
<td>I/O SCANNER - 2 PORT (1 PER I/O RACK) - SIL</td>
<td>900S75S-0360-00</td>
<td>900S75S-0460</td>
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<tr>
<td>RSM</td>
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<tr>
<td>REDUNDANT SWITCH MODULE</td>
<td>900RSM-0101</td>
<td>900RSM-0201</td>
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<tr>
<td>PSM</td>
<td></td>
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<tr>
<td>REDUNDANT POWER STATUS MODULE</td>
<td>900PSM-0101</td>
<td>900PSM-0201</td>
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<tr>
<td>Power Supply</td>
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<tr>
<td>POWER SUPPLY - 120/240VAC, 60W SIL</td>
<td>900P01-0201</td>
<td>900P01-0401</td>
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<tr>
<td>POWER SUPPLY 24VDC, 60W - SIL</td>
<td>900P24-0201</td>
<td>900P24-0401</td>
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<tr>
<td>POWER SUPPLY - 120/240VAC, 60W</td>
<td>900P01-0101</td>
<td>900P01-0301</td>
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<td><strong>RTP Cable</strong></td>
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<tr>
<td>8 CH A/O RTP CABLE (1.0M, 3.3FT)</td>
<td>900RTC-B910</td>
<td>900RTC-BA10</td>
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<tr>
<td>8 CH A/O RTP CABLE (2.5M, 8.2FT)</td>
<td>900RTC-B925</td>
<td>900RTC-BA25</td>
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<tr>
<td>8 CH A/O RTP CABLE (5.0M, 16.4FT)</td>
<td>900RTC-B950</td>
<td>900RTC-BA50</td>
</tr>
<tr>
<td>LV RTP CABLE (32/16 CHANNEL) (1.0M, 3.28FT)</td>
<td>900RTC-3310</td>
<td>900RTC-3410</td>
</tr>
<tr>
<td>LV RTP CABLE (32/16 CHANNEL) (2.5M, 8.2FT)</td>
<td>900RTC-3325</td>
<td>900RTC-3425</td>
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<tr>
<td>LV RTP CABLE (32/16 CHANNEL) (5.0M, 16.4FT)</td>
<td>900RTC-3350</td>
<td>900RTC-3450</td>
</tr>
<tr>
<td>LOW VOLTAGE RTP CABLE (1.0M, 3.28FT.)</td>
<td>900RTC-L110</td>
<td>900RTC-L210</td>
</tr>
<tr>
<td>LOW VOLTAGE RTP CABLE (2.5M, 8.2FT.)</td>
<td>900RTC-L125</td>
<td>900RTC-L225</td>
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<tr>
<td>LOW VOLTAGE RTP CABLE (5.0M, 16.4FT.)</td>
<td>900RTC-L150</td>
<td>900RTC-L250</td>
</tr>
<tr>
<td>HIGH VOLTAGE RTP CABLE (1.0M, 3.28FT.)</td>
<td>900RTC-H110</td>
<td>900RTC-H210</td>
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<td>900RTC-H125</td>
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<td>HIGH VOLTAGE RTP CABLE (5.0M, 16.4FT.)</td>
<td>900RTC-H150</td>
<td>900RTC-H250</td>
</tr>
<tr>
<td><strong>Terminals</strong></td>
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<td></td>
</tr>
<tr>
<td>FILLER BLOCK TERMINAL COVER</td>
<td>900TNF-0101</td>
<td>900TNF-0200</td>
</tr>
<tr>
<td>LOW VOLTAGE TERMINAL BLOCK (BARRIER STYLE)</td>
<td>900TBK-0101</td>
<td>900TBK-0200</td>
</tr>
<tr>
<td>LOW VOLTAGE TERMINAL BLOCK (US STYLE)</td>
<td>900TEK-0101</td>
<td>900TEK-0200</td>
</tr>
<tr>
<td>VOLTAGE TERMINAL BLOCK (36 CHANNEL)</td>
<td>900TCK-0101</td>
<td>900TCK-0200</td>
</tr>
<tr>
<td>HIGH VOLTAGE TERMINAL BLOCK (BARRIER STYLE)</td>
<td>900TBR-0101</td>
<td>900TBR-0200</td>
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<tr>
<td>HIGH VOLTAGE TERMINAL BLOCK (US STYLE)</td>
<td>900TER-0101</td>
<td>900TER-0200</td>
</tr>
</tbody>
</table>
R650 - Enhancements

Prior Offering
• Non RoHS components
• Not suited for Harsh/ Corrosive Environmental conditions

Enhancement
• RoHS 2 compliant electronics
• G3 Conformal coating for harsh industrial environment

New target applications in Harsh Corrosive Industrial environments
R650 - Enhancements

June 2018

New Black Plastics

RoHS 2 and G3 Coating for Harsh Env.

HC Designer in Mandarin

Prior Offering
• HC Designer Configuration tool in English Language

Enhancement
• Configuration and Help Files in Mandarin

Localization of software in Mandarin
**R650 – Enhancements (contd.)**

**Prior Offering**

- New UIO with SOE
- Line Monitoring
- SIL2 RTP
- Enhanced capacity - 15K Function Blocks

**June 2018**

**Enhancement**

- UIO with SOE
  - 16 channel, SIL 2
  - 1m-sec SOE
  - Line Monitoring, Voting & Validation
  - Model No: 900U02-0100

**Unavailable today**

- SOE for ESD, BMS

**SOE**

- 1 m-sec

**Competition**

- Unavailable today
- SOE for ESD, BMS

**SIL UIO features and differentiators plugging gaps**
R650 – Enhancements (contd.)

Prior Offering

UIO is Universal IO – allows various types of signals to terminate on a single IO module.

Today Purpose-Built IO

*5 systems with 400 IO’s each

Enhancement

SIL UIO Benefits

UIO with SOE, Voting & Validation

- Easily adapts to late changes
- Reduced hardware, simple engineering
- Fewer spares
  - One UIO module vs. four standard modules

$350-$400K savings on Cabinet, Junction box, field cables, control room and labor*

June 2018

New UIO with SOE

Line Monitoring

SIL2 RTP

Enhanced capacity - 15K Function Blocks

Reduced Cost and Project Schedule Risk with UIO
R650 – Enhancements (contd.)

June 2018

New UIO with SOE  Line Monitoring  SIL2 RTP  Enhanced capacity- 15K Function Blocks

Prior Offering

No Line Monitoring

- Could not bid for F&G projects
- Could not detect open and short circuit
- Lost numerous projects as minimum requirements could not be met.

Enhancement

- Now Bid competitively for F&G projects
- Meet minimum requirements for Line monitoring, SOE
SIL UIO SOE/ Line Monitoring Configuration
SIL UIO SOE / Line Monitoring Configuration
SIL SOE Report on Control Station

Latest 1000 SOE displayed on Control Station

millisecond resolution

SOE Filter

Run
09:08 PM
13-Mar-18
R650 – Enhancements (contd.)

Prior Offering

- Non-SIL certified RTP

Enhancement

- SIL2 RTP’s (Passive component)

Existing RTPs qualified as SIL Passive (Safety Non Interfering)
R650 – Enhancements (contd.)

Prior Offering
• Function blocks support for C70/C75 CPU at 5000 FBs per controller

<table>
<thead>
<tr>
<th>Function Blocks</th>
<th>C30 CPU</th>
<th>C50 CPU</th>
<th>C70/C75 CPU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function Blocks</td>
<td>400</td>
<td>2000</td>
<td>5000</td>
</tr>
</tbody>
</table>

Enhancement
• 3x increase in Function Block handling capacity at 15000 FBs per controller for C70/C75 CPUs

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<td>400</td>
<td>2000</td>
<td>15000</td>
</tr>
</tbody>
</table>

Enhanced capacity
• Compliments the 4608 IO and 12 IO rack support
• Larger systems with reduced overall cost

June 2018
New UIO with SOE
Line Monitoring
SIL2 RTP
Enhanced capacity- 15K Function Blocks

Function blocks enhanced by a factor of “3”
ControlEdge HC900 Roadmap (2018 to 2020)

- Support for HART, OPC UA
- Tighter Experion integration (Experion HS OI)
- Certifications (NFPA 72) for F&G applications
- Extended temperature range (-10 to 70°C)
- Ring network configuration, Dual Active Network gateway support
- IPv6 support
- BACNet support
- Cyber Security ISA99
- Ethernet, Serial, Profinet comm.

Future’19 and beyond
(Connectivity & Integration)

Dec’18
- FB enhancement for Thermal applications
- RTP Engineered I/O redundancy

June’18
- G3 Coating*
- RoHS compliance*
- HC900 hardware in black design
- SIL2 UIO with SOE and Line monitoring
- SIL2 certified RTPs
- Mandarin language
- Increased FB limit (from 5K to 15K)

May’17
- Speed Improvements (<100ms)
- CPU loading tool
- Safety protocol
- Increased rack capacity and IO count (max 4608 Digitals)

May’17
- G3 Coating*
- RoHS compliance*
- HC900 hardware in black design
- SIL2 UIO with SOE and Line monitoring
- SIL2 certified RTPs
- Mandarin language
- Increased FB limit (from 5K to 15K)

June’18
- G3 Coating*
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- HC900 hardware in black design
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- Mandarin language
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R630
- Speed Improvements (<100ms)
- CPU loading tool
- Safety protocol
- Increased rack capacity and IO count (max 4608 Digitals)

R640/ R650
- G3 Coating*
- RoHS compliance*
- HC900 hardware in black design
- SIL2 UIO with SOE and Line monitoring
- SIL2 certified RTPs
- Mandarin language
- Increased FB limit (from 5K to 15K)

May’17
- G3 Coating*
- RoHS compliance*
- HC900 hardware in black design
- SIL2 UIO with SOE and Line monitoring
- SIL2 certified RTPs
- Mandarin language
- Increased FB limit (from 5K to 15K)
EMEA HUG 2018 – Promotional Offer

ControlEdge™ PLC, HC900, RTU or UOC Starter Kit Offer – ONLY AT HUG!

Offer

- Purchase a ControlEdge™ PLC Starter Kit for €1699 – normal list price €10,000. The kit comes complete with PLC, 3 I/O modules (Universal I/O, 32-channel DI, 32-channel DO), and ControlEdge Builder software license.
- Purchase a ControlEdge™ HC900 Starter Kit for €1699 – normal list price €7,500. The kit comes complete with HC900 SIL controller, 3 I/O modules (SIL2 Universal I/O, 32-channel DI, 32-channel DO), and HC Designer software license.
- Purchase a ControlEdge™ RTU Starter Kit for €1299 – normal list price €7,000. The kit includes a controller with onboard I/O module (28 channels including HART), ControlEdge Builder software license, and a license for the flow calculation library.
- Purchase a ControlEdge™ UOC Starter Kit for €3099 – normal list price €11,000. The kit comes complete with UOC, 3 I/O modules (Universal I/O, 32-channel DI, 32-channel DO), and Experion LX software license.

Program

The promotion runs from October 2018 through January 2019 during the Honeywell User Group in EMEA. This is limited to one offer per company per site. Delivery of the kit will be within 11 weeks from order. This offer is only valid if purchase is committed at HUG EMEA and the order is placed through Channel Partners within 90 days of event close.

How to order:

1. Use Web Channel to place Orders and apply the Control Number
2. Starter Kit orders must be placed within 90 days of Control Number
3. End Users must place orders exclusively through Control Channel Partners
4. Ordering starts from 5th October 2018
5. All orders will be processed on Ex-Works basis
6. Discounts cannot be used with other discount programs
Links

Technical Specifications/ Documents

Pricing Tools
- HC900 Pricing Tool v3.0 available on CHAMP, Bulletin Board and HC900 Team Room
- Order for new parts can be placed in SAP and WebChannel

Team Room:

Bulletin Board
THANK YOU