Scope

A new era of Industrial production has started with Industrie 4.0. The proliferation of connected devices multiplies the risk of attacks on Cyber Physical Systems. In industrial Automation, many Industrial Control Systems integrate the CODESYS technology from 3S-Smart Software Solutions. The Embedded Security Shield extends Kaspersky’s Security System (KSS) for a complete integration into CODESYS and to secure the main communication channel, the CODESYS Gateway.

Target Applications. Control systems in different vertical markets:
- Factory Automation – PLC, HMI, Motion Controller
- Process Automation – DCS, SCADA, Process controllers
- Energy production and distribution – RTU, Gateways, SCADA
- Building Automation – BAS, HMI
- Mobile Automation - ECU

Functionality
- Cyber-security of the ICS
- Protection of the CODESYS Gateway communication channel
- Configuration of security policies directly in CODESYS
- Trusted communication channel with the CODESYS Development System
- Execution of the CODESYS Runtime in a secure environment
- Extendable framework to secure customer specific software tools and communication channels

Integration of the Embedded Security Shield in CODESYS
The CODESYS Runtime System is divided into 2 domains:

- Communication
- Core

All communication to the ICS is handled through the Communication runtime. The Core runtime is isolated from any external communications happening through the CODESYS Gateway (communication with CODESYS, OPC, PLCHandler, data server, etc...).

All requests to the ICS come to the Communication Runtime. Their execution is checked by the Kaspersly Security System, a secure, mathematically proven, engine.

KSS checks the requests with the existing security policies and allows or denies them. The verdict cache retains previous requests to speed up execution of known past requests.

Security policies are defined and configured by the User’s Security Administrator using the ESS Security Editor provided as an additional plug-in in CODESYS.

Secure communication for data exchange (security policies configuration, secure audit trail) between the ESS Security Editor and KSS is managed through specific trusted channel.
Software Package includes

- Embedded Software:
  - Embedded Security Shield
  - Kaspersky Security System (KSS)
  - CODESYS Runtime extensions
- Development software:
  - ESS Security Editor plug-in for CODESYS

Configuration of the security modes

Secure Audit

Engagement model

How to get?

<table>
<thead>
<tr>
<th>Product</th>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Sales Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embedded Security Shield Toolkit</td>
<td>BE.services GmbH</td>
<td>0230113</td>
<td><a href="mailto:info@be-services.net">info@be-services.net</a></td>
</tr>
<tr>
<td>Maintenance and Support package for ESS</td>
<td>BE.services GmbH</td>
<td>0230150</td>
<td><a href="mailto:info@be-services.net">info@be-services.net</a></td>
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</tbody>
</table>
Technical data

<table>
<thead>
<tr>
<th>General system information</th>
<th>Performance data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Runtime size</strong></td>
<td><strong>Command</strong></td>
</tr>
<tr>
<td>Code(Data)</td>
<td>Without ESS</td>
</tr>
<tr>
<td>2.7 MB/3.3 MB(with/without ESS)</td>
<td>2.98 s</td>
</tr>
<tr>
<td>0.8 MB/1.0 MB(with/without ESS)</td>
<td>28.80 s</td>
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<tr>
<td><strong>Communication</strong></td>
<td><strong>Application download (302 kB)</strong></td>
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<tr>
<td>UDP/Serial/USB Trusted channel</td>
<td>2.98 s</td>
</tr>
<tr>
<td><strong>Supported CPUs</strong></td>
<td><strong>File transfer (1.5 MB)</strong></td>
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<tr>
<td>X86, ARM, ARM Cortex, PowerPC Others on demand</td>
<td>28.80 s</td>
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<tr>
<td><strong>Supported operating systems</strong></td>
<td><strong>OPC access (2000 variables of type byte)</strong></td>
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<tr>
<td>Linux Others on demand</td>
<td>2.98 s</td>
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**Evaluation Kit:**

Evaluate the Embedded Security Shield on the Xilinx Zynq ZC702. More information under: www.be-services.net/industrie-40/xilinx.html

**Support**

Please contact info@be-services.net

www.be-services.net