

Overview

Ashling provides a range of tools designed to allow debugging, program-execution analysis, optimisation and validation of applications running on NXP's SmartMX2 contact and contactless secure controllers including support for latest SmartMX2 P60 Step Up! secure microcontroller.



Ashling tools for SmartMX2 include:

- SmartICE hardware: emulator available in three hardware configurations – see SmartICE Products below
- SmartICE software: PathFinder source-level debugger and driver plug-in for Keil μ Vision4 debugger
- Real Time Performance Analysis Tool to monitor software execution in real time non-intrusively: see separate datasheet for Performance Analysis capabilities

SmartICE

- Full suite of run-time control features (program download, execute/halt/step, breakpoints, memory/register access, symbolic program variables access) and comprehensive source debugging capabilities.
- Contact/contactless card-reader interfacing with full support for Voltage Classes A, B and C
- Code-coverage to identify untested/tested code: viewed in C source, function level and module level, and assembly instruction level.
- Real-time trace for code execution and data access.
- Function Trace for high level function tracing
- Powerful trigger and filter mechanisms to trap complex bugs, difficult to solve without real-time tracing tools.
- Real Time Performance Analysis

SmartICE is controlled via USB2.0 from the host PC using either PathFinder or Keil μ Vision4 debuggers.



SmartICE Products

Product	Standalone Prototyping	Run-time	Breakpoints 16M	Trigger/Trace 4M X 128	Code Coverage	Performance Analysis	Supplied Software
SmartICE-XPK	Yes	Yes	Yes	Yes	Yes	Yes	PathFinder & Keil μ V4 driver
SmartICE-EPK	Yes	Yes	Yes	No	No	No	PathFinder & Keil μ V4 driver
SmartICE-PK	Yes	No	No	No	No	No	PKSC software

SmartCard Probe Connectors

IN-CLA7816USB-CL1/-CL2



IN-GSM



The **IN-CLA7816USB-CL1/-CL2** probes support the following smartcard interfaces:

- ▶ ISO7816 contact-based (located on the component side)
- ▶ Contactless via and an antenna located on the solder side
 - The -CL1 Adapter has a full-sized antenna
 - The -CL2 Adapter has a half-sized antenna
- ▶ USB interface via a USB type B connector

The **IN-GSM** is an INCLA adapter probe for SIM format connection. It connects directly to the 15-pin D-type socket (SmartCard I/F) located on the front-panel of the SmartICE system.

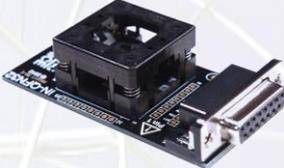
SmartICE adapters

Adapter Name	Description
IN-CLA7816USB-CL1	INCLA probe with full-sized antenna
IN-CLA7816USB-CL2	INCLA probe with half-sized antenna
IN-CLA7816 I/O Splitter	INCLA I/O data splitter adapter
IN-SO28	Adapter for SO28 packaged samples
IN-QFN32	Adapter for HVQFN32 packaged samples
IN-PCM-PDM	Adapter for PCM / PDM samples
IN-MOB4/6	Adapter for MOB4 / MOB6 samples
IN-ISO7816	Adapter for ISO7816 SmartCards
IN-GSM	INCLA probe for GSM footprint

The SmartICE main system connects to the target via a 15-pin D-type female socket (SmartCard I/F) located on the front-panel.

A variety of optional probes and adapters connect to this SmartCard Interface socket via a 15-way ribbon cable.

The table on the left lists the available probes and adapters. Images for each are shown above and below.

<p>IN-SO28</p>  <p>Adapter containing ZIF SOIC28 socket for use with IN-CLA7816USB-CL1/-CL2 or IN-GSM probes. Allows testing of SO28 samples.</p>	<p>IN-QFN32</p>  <p>Allows testing of HVQFN samples. Used with IN-CLA7816USB-CL1/-CL2 or IN-GSM probes.</p>
<p>IN-PCM-PDM</p>  <p>Allows testing of PCM / PDM samples. Used with IN-CLA7816USB-CL1/-CL2 or IN-GSM probes.</p>	<p>IN-MOB4/6</p>  <p>Allows testing of MOB4/6 samples. Used with IN-CLA7816USB-CL1/-CL2 or IN-GSM probes.</p>
<p>IN-ISO7816</p>  <p>Accepts standard ISO7816 smartcard format. Used with IN-CLA7816USB-CL1/-CL2 or IN-GSM probes.</p>	<p>IN-CLA7816 I/O Splitter</p>  <p>Allows measurement of the bi-directional IO pins (x4) between a Card and Reader as unidirectional signals (x8).</p>

Order Codes

Product	Order Code
SmartICE-XPK High-end emulator including trace & code-coverage for NXP SmartMX2 (P60) or SmartMX (P5) device - supplied with Ashling PathFinder debugger and Keil µVision4 drivers	SmartICE-XPK-P60 SmartICE-XPK-P5
SmartICE-EPK Entry-level emulator with run-time control for NXP SmartMX2 (P60) or SmartMX (P5) devices - supplied with Ashling PathFinder debugger and Keil µVision4 drivers	SmartICE-EPK-P60 SmartICE-EPK-P5
SmartICE-PK Prototyping kit with support for program download, storage and execution for NXP SmartMX2 (P60) or SmartMX (P5) devices - supplied with Ashling PKSC software	SmartICE-PK-P60 SmartICE-PK-P5
SmartICE P60 adapter - converts an existing P5 unit to a P60	AD-SmartICE-P60
SmartICE P5 adapter - converts an existing P60 unit to a P5	AD-SmartICE-P5
Smart Card Probe with ISO7816 format contacts, contactless antenna and USB (full-size)	IN-CLA7816USB-CL1
Smart Card Probe with ISO7816 format contacts, contactless antenna and USB (half size)	IN-CLA7816USB-CL2
INCLA I/O data splitter adapter used with IN-CLA7816USB-CL1/2 Smart Card probe	IN-CLA7816 I/O Splitter
Adapter for SO28 samples containing ZIF SOIC28 socket for use with INCLA7816USB or IN-GSM	IN-SO28
Adapter for HVQFN32 packaged samples	IN-QFN32
INCLA probe for GSM footprint	IN-GSM
Adapter for PCM / PDM samples	IN-PCM-PDM
Adapter for MOB4 / MOB6 samples	IN-MOB4/6
Adapter for ISO7816 SmartCards	IN-ISO7816

SmartICE is factory-fitted for either NXP SmartMX (P5) or SmartMX2 (P60) operation. Units may be reconfigured in the field by purchasing the appropriate adapter as outlined above. No software upgrade is necessary.