

MP300 C2/CL2

A high quality dual interface smartcards and micro-modules test and personalisation solution

- ◆ Provides interface for contact and contactless components
- ◆ Electric testing available for the contact interface
- ◆ Contact and contactless interfaces can be accessed simultaneously
- ◆



OVERVIEW :

- Possibility to install up to 2 MP300 C2 and 2 MP300 CL2 modules on the same mother board
- Support of the ISO/IEC 7816-3 and ‐4 protocols
- Compatible with ISO/IEC 14443-3 and -4, ISO/IEC 15693, Mifare TM, FeliCa TM, Innovatron TM specifications
- Full implementation of the T=0, T=1 and T=CL protocols
- Support of numerous memory chips
- Great flexibility for the physical definition of the test conditions on both interfaces
- Open for implementation of custom protocols
- Endless possibilities of protocolary customisation
- Support of the fastest smartcards
- Compatible with wafers, micro-modules, smartcards, M2M components
- Fast hardware assisted data transmission mechanism, ensuring the maximum throughput for CPU and memory modules
- Advanced electrical test and measurement features (open/short, leakage, chip consumption, ...)
- Open platform : integrate the MP300 C2/CL2 inside your own personalisation environment
- Compatible with the MVPi production machine interface

This production tester will typically be used in the following contexts :

- OS loading, pre-personalisation, or personalisation of micro-modules and smartcards
- Personalisation of SIM, U-SIM, and banking cards
- Reel to reel test handlers
- Electrical test of micro-modules

SPECIFICATIONS :

MP300 C2 : Supported protocols

| ISO/IEC 7816-3 | |
|-----------------------|---|
| T=0 and T=1 protocols | 100% implemented, managed by firmware |
| Hardware acceleration | Transmission and reception of characters managed by the MicroSmart technology |

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|--|--|
| USB 2.0 | |
| Available speeds | Low speed, full speed |
| Classes | ISO/IEC 7816-12, mass storage, custom protocols |
| Synchronous chips (memory chips) | |
| Available libraries | T2G Eurochip SLE 4442 SLE 4407 AT24CXX |
| Custom protocols development | Available |
| Hardware acceleration | Available |
| Raw mode | |
| Gives the possibility to exchange frames without any Protocolary encapsulation | |
| Out of standard chips support | |
| Benefit from Micropross\'experience in smart card programming | |

MP300 C2 : Programmable parameters

| | |
|---|---|
| Physical parameters | |
| Voltages | |
| Vcc | 0V to 10V |
| Vol | 0V to 5V |
| Voh | 1V to 7V |
| Vil | 0,2V to 5V |
| Vih | 1V to 6,8 |
| Frequency | |
| ISO 7816 clock frequency | 10kHz to 20MHz |
| ISO 7816 clocy duty cycle | 30% to 70% |
| Pin states | |
| All pins are independent from each other, and can be separately managed | |
| ISO 7816 communication parameters | |
| ETU width | From 1 to 4096 clock cycles (bit sampling adjustable) |
| BGT, initial ETU width | Adjustable in clock cycles |
| BWT, CWT, EGT, RGT, WWT | Adjustable in ETUs |
| Clock stop at high or low state | Adjustable |
| Clock stop tG and tH timings | Adjustable in clock cycles |
| Parity control | Can be forced to 0, 1, odd, even |
| Input parity error checking | Can be disabled |
| Pull-up resistor | 5k Ω ; or 22k Ω ; |

MP300 C2 : Available tests

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| Electrical tests | |
| Open/short test | |
| Available contacts | Contact C1, C2, C3, C4, C5, C6, C7, C8 |
| Forced current | Adjustable between $\pm 500\mu\text{A}$ and $500\mu\text{A}$ |
| Leakage current measurement | |
| Available contacts | Contact C1, C2, C3, C4, C6, C7, C8 |
| Measurement ranges | $\pm 5\text{mA}$ $\pm 500\mu\text{A}$ |

| | |
|---|---|
| Voltage measurement | |
| Available contacts | Contacts C1, C2, C3, C4, C6, C7, C8 |
| Range available | +/- 10V |
| Modes available | Dynamic mode : we give you an analog like vision of the voltage on the pin you chose from the moment you chose Static mode : we give you the instant voltage value |
| Current measurement | |
| Available contacts | Contacts C1, C2, C3, C4, C6, C7, C8 |
| Ranges available | +/- 100mA +/- 25mA +/- 5mA +/- 500µA |
| Modes available | Dynamic mode : we give you an analog like vision of the current on the pin you chose from the moment you chose Static mode : we give you the instant current value on the selected contact |
| Parametric tests | |
| Available contacts | Contacts C1, C2, C3, C4, C6, C7, C8 |
| Modes available | Force a current, measure a voltage Force a voltage, measure a current |
| Logical tests | |
| Anti tearing test | |
| Simulate the chip's immunity against tearing from the reader | |
| Timing measurement | |
| Measure the chip response to a command | |
| Personalisation assisted by hardware | |
| Do not lose a microsecond while sending data to the chip thanks to the hardware assisted data sending mechanism | |

MP300 CL2 : Supported protocols

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|--|---|
| ISO/IEC 14443-3 (proximity cards) | |
| Type A | Supported |
| Type B | Supported |
| Anticollision | Managed by firmware |
| T=CL protocol | Managed by firmware |
| Supported baudrates | 106, 212, 424, 828 kbps Asymmetrical baudrates supported |
| B^v (Innovatron) | |
| Supported | |
| ISO/IEC 15693 (vicinity cards) | |
| Coding type | Manchester |
| Encoding modes | 1 out of 4 1 out of 256 |
| ISO 18000-3 Mode 1 | |
| Supported | |
| Mifare TM | |

| | |
|--|---|
| Types supported | Classic Light Ultra Light Ultra Light C Many more |
| Encryption | Assisted by hardware |
| FeliCa™ | |
| Available baudrates | 212 and 424 kbps |
| Encryption | Available through an external device |
| Raw mode | |
| Gives the possibility to exchange frames without any protocolary encapsulation | |
| Out of standard chips | |
| Benefit from Micropross\experience in smartcard programming | |

MP300 CL2 : Programmable parameters

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|--|----------------------------|
| Physical parameters | |
| Field strength | Adjustable |
| Modulation index | From 0% to 100% |
| Field rise time | 0ms to 5ms |
| Carrier frequency | 12.56MHz to 14.56MHz |
| Modulation rise and fall times | 0µs to 10µs |
| Logical parameters | |
| Type A pause width | 0 to 4.4µs |
| Frame waiting time | Adjustable in ETU |
| Type B framing (SOF, EGT, EOF, bit duration) | Adjustable in clock cycles |
| Communication speed | 106, 212, 424, 848 kbps |

MP300 CL2 : SAM (Security access module) plug available

An ISO 7816-3 compliant SIM chip reader is available on each CL2 module, in case security features are needed

MP300 CL2 : Available tests

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| Automatic testing |
| Send type A command, wait, send type B command and receive answer (for type B cards) |
| Send type B command, wait, sent type A command and receive answer (for type A cards) |
| Switch on field, wait, send request command (A or B), receive answer |
| Send request, wait, send request, receive the answer |
| Antitearing |
| PICC reset characterization |
| Check minimum FDT (frame delay time) |
| Testing through API manipulation |
| Response time measurement |
| Sending of out of standard frames |
| Sending misformed blocks (wrong number of bits) |
| Retro modulation ratio measurement |
| Distance simulation checking |

MP300 CL2 : Communication parameters

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|--------------------|
| USB 2.0 |
| TCP/IP 10/100 Mbps |
| RS 232 |

MP300 CL2 : Software development

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| Remote development (the code is executed from the PC) | |
| Elements available | MPSDK .NET library available on demand Communication Dll supplied |
| Supported programming languages | C, C++, VB, Java, .NET Any language that supports Dll |
| Embedded development (the code is executed directly by the MP300) | |
| Recommended cross compiler | Windriver compiler (preferred version : 4.4b) |

MP300 CL2 : User Interface

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| MPIManager, MVPi |
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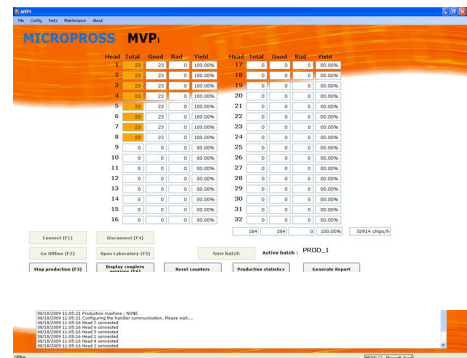
SOFTWARES :

The MP300 C2/CL2 can be accessed using several ways :

First, using the driver dll that we supply, which enables the user to access all functionalities of the MP300 C2/CL2 from any programming language that supports Dll

For users preferring to embed their code directly inside the MP300 C2/CL2, Micropross has designed the SORB interface, which completely encapsulates all programming tasks related to the management of embedded applications, and lets the user focus on the smartcard oriented code
Finally, we can also supply our own user interface, MVPi, which elegantly conciliates convenience of use, high throughput and stability.

MVPi is able to handle up to 32 test heads at the same time, but upgrades are easily possible.

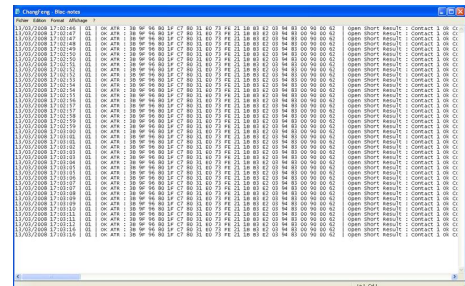


Statistics are available, either separated between all test heads, or displayed for the whole system

More statistics are available, showing the current test time, as well as the average one.

| Details about production | | | | | | |
|--------------------------|-------|------|-----|-----------|----------------|-------------------|
| | Total | Good | Bad | Test time | Avg. test time | Test result |
| 1 | 319 | 311 | 8 | 515 | 513 | ATR : Card mute!! |
| 2 | 319 | 311 | 8 | 515 | 513 | ATR : Card mute!! |
| 3 | 319 | 311 | 8 | 516 | 514 | ATR : Card mute!! |
| 4 | 319 | 311 | 8 | 515 | 512 | ATR : Card mute!! |
| 5 | 319 | 311 | 8 | 516 | 514 | ATR : Card mute!! |
| 6 | 319 | 311 | 8 | 516 | 513 | ATR : Card mute!! |
| 7 | 319 | 311 | 8 | 516 | 513 | ATR : Card mute!! |
| 8 | 319 | 311 | 8 | 516 | 513 | ATR : Card mute!! |
| 9 | | | | | | |
| 10 | | | | | | |

As smartcards are being produced, logfiles are also generated, that allow to keep track of the produced components. The content of this logfile is controlled by the user.



ACCESSORIES :

Micropross supplies a complete range of accessories for the MP300 C2/CL2, that include :

- Various sizes of rack housing, who allow to protect the Micropross testers from any kind of danger
- Different types of antennas
- External smartcard readers
- Software for production machines (MVPi)

We also supply packages to extend the warranty of the tester. Please ask us for the maintenance contracts available.

