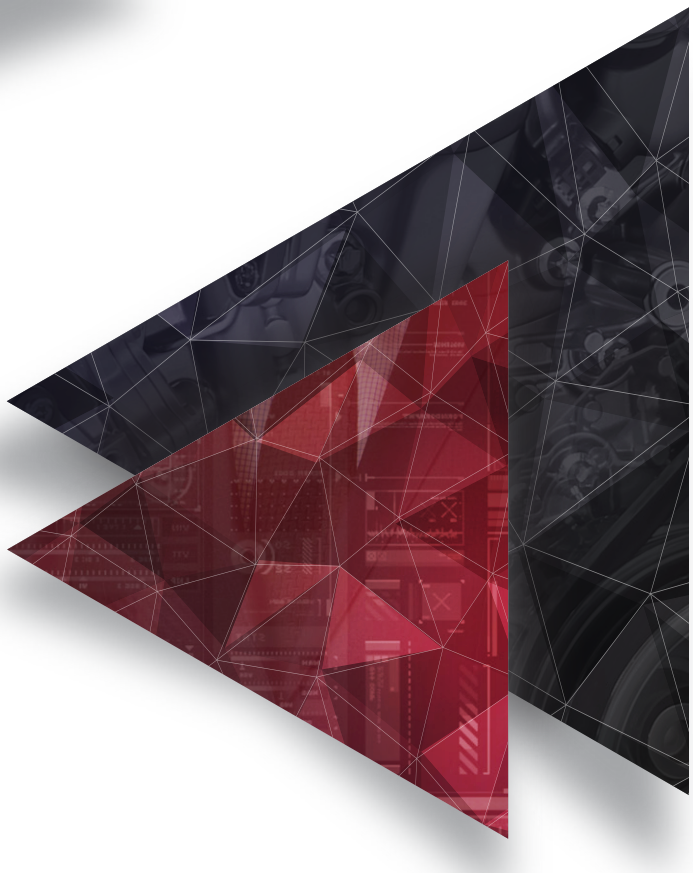
MTCON Multi Purpose Industrial Controller

TAILORED FOR EXCELLENCE



MULTI-AXIS HIGH SPEED CONTROLLER

HARDWARE & SOFTWARE

www.mpicon.com

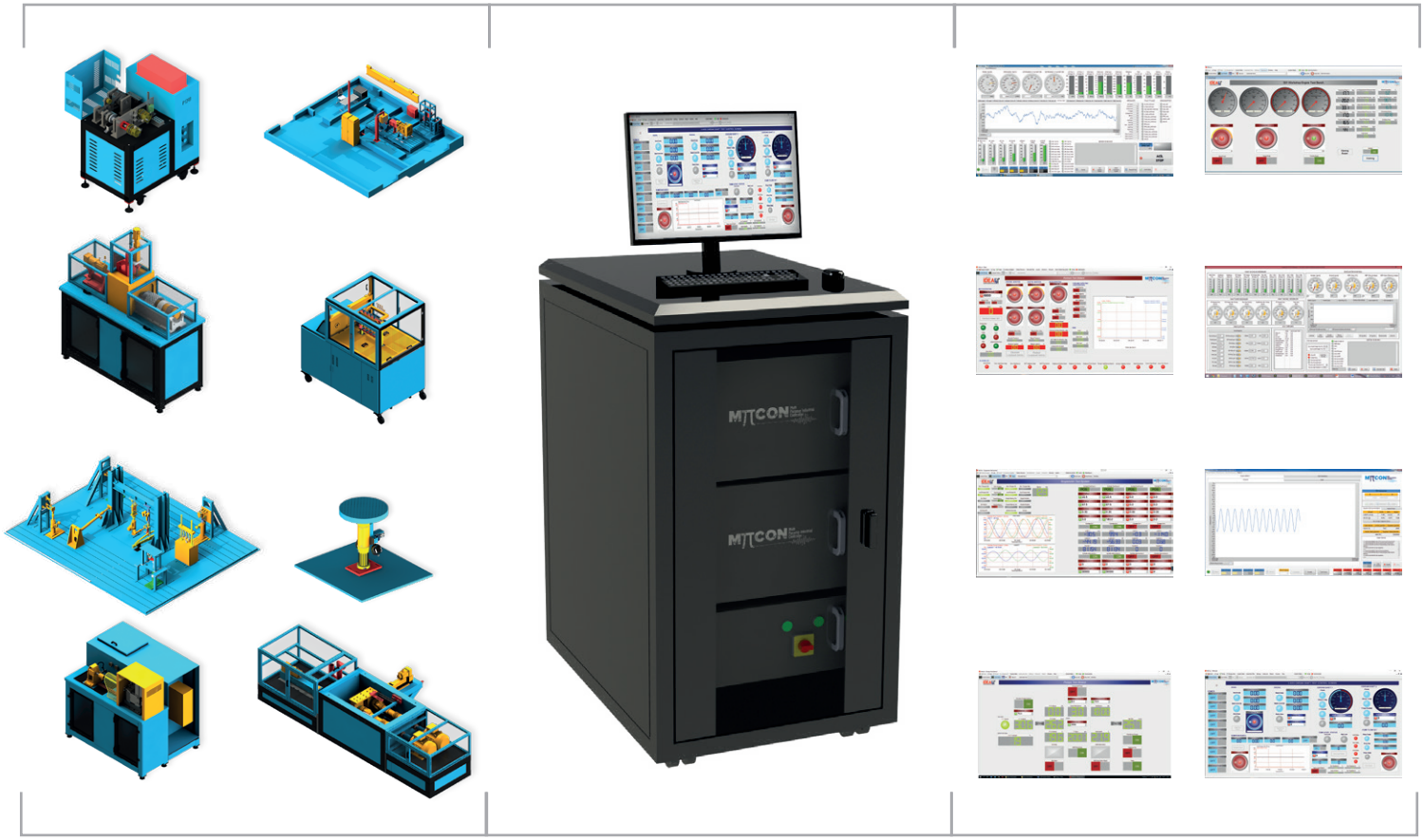
PRODUCT BROCHURE EN

CONTROLLER

MpiCON is an innovation-driven brand delivering tailored control and automation solutions to automotive, defence, railway and industrial production industries. With more than two decades of experience providing solutions to world's leading automotive companies, MpiCON undoubtedly contributes exceptional application expertise, extensive range of case studies, deep know-how, proven quality and high performance to every project.

- TAILOR-MADE
- MODULAR
- USER-FRIENDLY
- FLEXIBLE

SINGLE CONTROLLER,
MULTI-PURPOSE USER INTERFACE



MTCON Multi Purpose Industrial Controller

CONTROLLER

MpiCON offers two models of custom-made multi purpose controllers, both of which are modular, flexible and user-friendly.

Multi Function Controller

Multi Function Controller provides **tailor-made control and automation solutions** with modular design, flexible and user friendly software.

This model is compatible to work with various test benches and applications such as but not limited to Electric Motor Dynamometer, Engine Dynamometer, End of Line Test System.

19" rack cabinet controller hardware has a **customizable** chassis which can be easily configured for different input and output channels.

Moreover, the Multi Function Controller is suitable for the applications **up to 1 kHz control loops** and data-logging.

Additionally, the **user-friendly software** provides easy to use and configurable interface using drag & drop features.

High Speed Pro+ Controller

High Speed Pro+ Controller is designed for **high-frequency control and data-logging applications** such as servo-hydraulics shakers, durability test rigs (RLD data applications) and many more.

Pro+ Controller has an **FPGA based hardware** that ensures the applications to be real-time. Moreover, it uses high-frequency control loops (up to 10 kHz) provides the best **closed-loop control** on the actuators.

The user interface interactions and data-logging operations do not overlap with the real-time operations at the back-end, that's why the control performance never gets affected.

When the test signal is sinusoidal, **automatic amplitude and offset compensation** control features provides **automatic adjusting** of the applied signals on durability tests. In other words, the tests are not interrupted to arrange the PID constants to match the changing input and output signals due to changing conditions of the test material and/or environment.

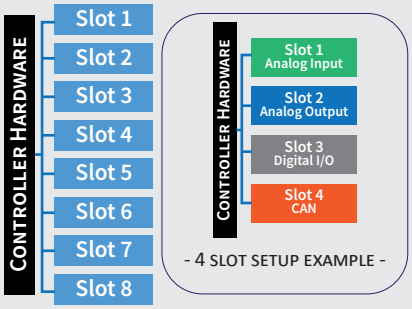
NATIONAL INSTRUMENTS

POWERED BY LabVIEW

Hardware & Software Infrastructure

Customizable Hardware Infrastructure

- 4 or 8 slot controller hardware options
- Adjustable hardware with different types of analog and digital card options
- Off the shelf I/O cards
- AD/DA conversion
- Signal conditioning
- Security functions



MpiCON Control Software

- Data acquisition
- Closed loop control
- PID
- Peak & amplitude compensation
- Mode control calculations
- Filtering

User Interface

- Test system operation
- Signal visualization
- System & alarm logging
- Calibration
- Evaluation, analysis
- Post-process
- Script interface
- Automated test scenario menu

HARDWARE

The modular hardware infrastructure, which is built upon customer needs and demands, enables the operation of automation, control and simulation software as well as interfaces of various I/O cards, measuring devices.

The system has the ability to record multi-channel load, speed, torque, displacement, temperature, pressure, etc. measurements and to run automatic tests, which allows users to easily adapt and define different control modes.

Hardware Features

- MpiCon digital control and measurement system
- Adjustable input / output channel numbers
- 19” rack cabinet chassis (customizable)
- Integrated UPS
- Emergency stop
- Industrial PC
- Isolated power and control levels
- Ready to connect analog / digital input / output connectors
- Control algorithm – PID, PIDF, cascade
- Control accuracy static < 99,9 % dynamic < 9 %
- Digital filtration
- Big quantity of available software modules

CONTROLLER UNIT

POWER UNIT

MTCON Multi Purpose Industrial Controller

HARDWARE

	MULTI FUNCTION CONTROLLER	HIGH SPEED PRO+ CONTROLLER
Configuration	Flexible configuration	Configurable input/output channel numbers and specifications » NI CompactRio hardware compatible » Labview software on FPGA
Data-logging	up to 1 kHz/channel on multiple channels	up to 5 kHz/channel on multiple channels
Sample rate	300 Hz net for each measurement channel 1 kHz (for CAN)	10 kHz net for each measurement channel
Test frequency	up to 10 Hz (for Servo-hydraulic actuators) up to 1 kHz (for CAN)	up to 500 Hz (for Servo-hydraulic actuators)
Resolution	16-bit AD/DA	24 bit AD/DA
Loop update rate	1 kHz	10 kHz
Control architecture	1 kHz PID control architecture	10 kHz real-time PID control architecture

SOFTWARE

The MpiCON control software can create automated test scenarios, calibrate, collect & save data, monitor & control test systems. Alarm and / or warning features can be fully customized. This is the control interface where all system monitoring and control works are carried out.

Test system control software, which works with USB dongle, can perform data feeding to the test system, reading sensors, driving actuators with special control interface.

Software Features of MpiCON Controllers

- Configurable for different applications such as using pneumatic, hydraulic, electromechanical and electric actuators
- Input/output channel number configured with respect to the customer needs: digital, analog, communication, counter etc.
- Sensor calibration menu
- Automatic test with configurable test steps
- Test scenarios via test file (The ability to define unlimited number of test steps)
- Scripting feature for condition monitoring and/or control
- Optional CAN interface
- Digital filtration
- Process, failures, ability to receive action records
- System control mode continuous recording taken while the database with the possibility of fault detection
- Relative humidity, atmospheric pressure and temperature correction factor to account
- The ability to record to a SQL database
- PID regulation with the ability to make regulation of all outdoor units
- Scripts can be created thanks to the ability of various control algorithms
- Ability to produce report output can be defined by the enterprise
- Remote software debugging capability
- Drag & drop feature on user interface
- Warning and alarm definitions (The ability to define unlimited number of alarms)
- Automatic test reports in .xls, .doc and .pdf file formats
- Arithmetic tools for mathematical functions
- User level determination system
- Hardware connection status and speed controls
- Software based on user-defined calibration and tracking capability.
- User requests by the programming (scripting) ability
- Automatic conditional SMS and e-mail messages

MPTCON Multi Purpose Industrial Controller

SOFTWARE

MpiCON test control software is the user interface to the digital control system. The system allows to configure the test system and set up the loading sequence, monitors the progress of your test, handles the data acquisition and finally gives you the results.

The user interface is very easy to handle with drag & drop options. It is also easy to copy test interface & automated test setup, and configure with the new test requirements.

The software runs on Windows based PC without special hardware requirements.

Add-On Software Features of PRO+ Controller

- High-frequency control and data logging applications
- Conditional warning and alarm definitions
- Intuitive sensor calibration menu
- Automatic offset compensation
- Automatic amplitude compensation
- 24 bit ADC (analog / digital conversation)

Software Infrastructure

Control, Signal Generation & Data Logging

- User Interface
- Test Sequencer (Automatic or Manuel)
- Test Sequence Variables
- Signal Recording
- Application Criteria
- Criteria and Actions
- Emergency limits

- Test Run Control
- Control & Regulation
- PID Control
- Peak and Offset Control
- Manual Generator

Monitoring

- Signal table view
- Signal viewer and editor
- Adjustable user menu
- Dynamic charts time, XY, FFT

- Multi language support
- Help
- License manager (dongle)
- User level & account manager

Recorder

- Analog, Digital Cards
- CAN
- RS232/485
- Ethernet
- AD/DA Converters

Post-Process

- Automated report generation
- FFT
- PVC (Process Variation Control)
- SQL Server Interface

MODULAR SOLUTIONS

MpiCON offers tailor made industrial control and automation solutions, from the production lines to the full-scale manufacturing plant management, performing custom analysis to the customer's diverse necessities and designs specific solutions that fulfill these requirements.

Software Modules

Applications

- Electric Motor Testing
- Hydraulic Shaker
- Engine Dyno
- Vibration Testing
- Steering System Testing
- Spring Brake Testing
- Shaft Testing

Monitoring

- Acceleration Monitor
- Peak Value Monitoring
- Trend Monitor

Control

- Peak Compansation
- Amplitude Compansation
- Offset Control
- Cascade Control
- Regulation Package (Free Definable Control Structures)
- Extended Generation (Sweep, Noise, Formula)

Communication

- Ethernet
- RS 232/485
- CAN Bus

CONFIGURATION

There are currently four MpiCON Controller models with different configurations.

	MpiCON 1100 - 1400	MpiCon 2100 - 2400	MpiCon Pro+ 1100-1400	MpiCon Pro+ 2100-2400
Number of Analog Outputs (servo-valves, actuators)	1-4	1-8	1-4	1-8
Base Frame	4 or 8 slot chassis	8 slot chassis (extensible to 2)	4 slot chassis	8 slot chassis (extensible to 2)
Max number of I/O modules	8	16	4	16
Operator Computer	Laptop or Industrial PC	Laptop or Industrial PC	Industrial PC	Industrial PC
Electric Power & UPS	220V, 1KvA	220V, 1KvA	220V, 1KvA	220V, 1KvA
Control Loop	1 Khz	1 Khz	10 Khz	10 Khz
Cabinet Size mm (HxWxD)	1400 x 730 x 930	1600 x 730 x 930	1400 x 730 x 930	1600 x 730 x 930
Weight Kg	150	170	160	180

REFERENCES

MpiCON has established trusted relationships with many leading automotive companies and governmental institutions, building an excellent reputation for delivering projects on time, to budget and with an outstanding accuracy record.

We, as MpiCON, take great pride in providing outstanding quality to our client partners through an open and honest approach, which has led to the establishment of many long-lasting relationships.

Mercedes-Benz	Ford Otosan	Tofaş Türk Otomobil Fabrikası A.Ş.	BMC
Türkhavacılık Uzaysanayii	Republic of Turkey Ministry of Agriculture and Forestry	TİRSAN	arçelik
TEI Tusaş Motor Sanayii A.Ş. Tusaş Engine Industries, Inc.	Kale Arge	İstanbul Teknik Üniversitesi 1773	Marmara Üniversitesi 1883
FNSS	altınay Teknoloji Grubu	PAVOTEK	BASE
ARFESAN	Tekno Kauçuk	BRIST	NESAN
GENTEX | NORBO	REPKON	ESEN	ATEL

LOCATIONS

At MpiCON, we understand the importance of forging smart, strategic partnerships. We also know that the projects you choose to undertake and the businesses you partner with is a big decision.

When you partner with MpiCON, you are teaming with a squad of engineers backed by years of expertise and experience.

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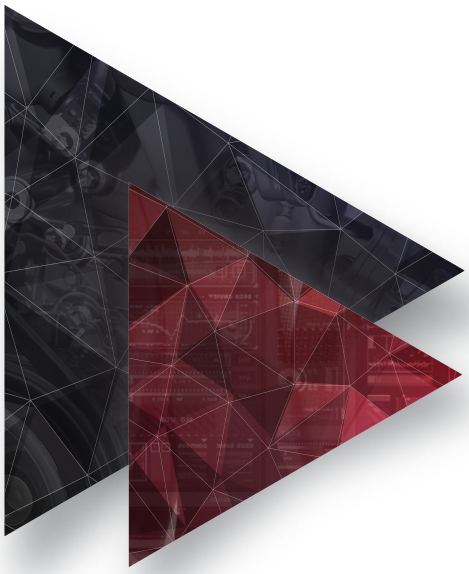

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