Motion Control

ULTIMET

ETEL

ULTIMET MOTION CONTROLLERS

For many decades, ETEL has focused on the development of high-end position controllers together with all the associated elements to ensure that they can communicate in a high performance network.

To achieve the best possible synergy between multiple motion axes, ETEL developed the proprietary TRANSNET communication bus and its master, the motion controller ULTIMET. This provides a fast, reliable, real-time communication as well as high performance level between all ACCURET controllers regardless of the number of axes required.

ULTIMET is a key element of the ETEL Motion Control product range and already has a proven worldwide track record for its unique performance in areas such as:

- Wafer process control
- Lithography
- Wafer and die level packaging
- Photovoltaic
- Test and control equipment
- Printing / scanning
- Placement machines
- Flat panel display (FPD)

ADVANCED FEATURES

The ULTIMET motion controller maximizes the performance of complex machines without the need for detailed management of timing considerations. It is the master on the TRANSNET bus and can manage up to 63 axes while ensuring **real-time** command management, **nanosecond synchronization** and **interpolation** of axes for elaborate motion profiles.
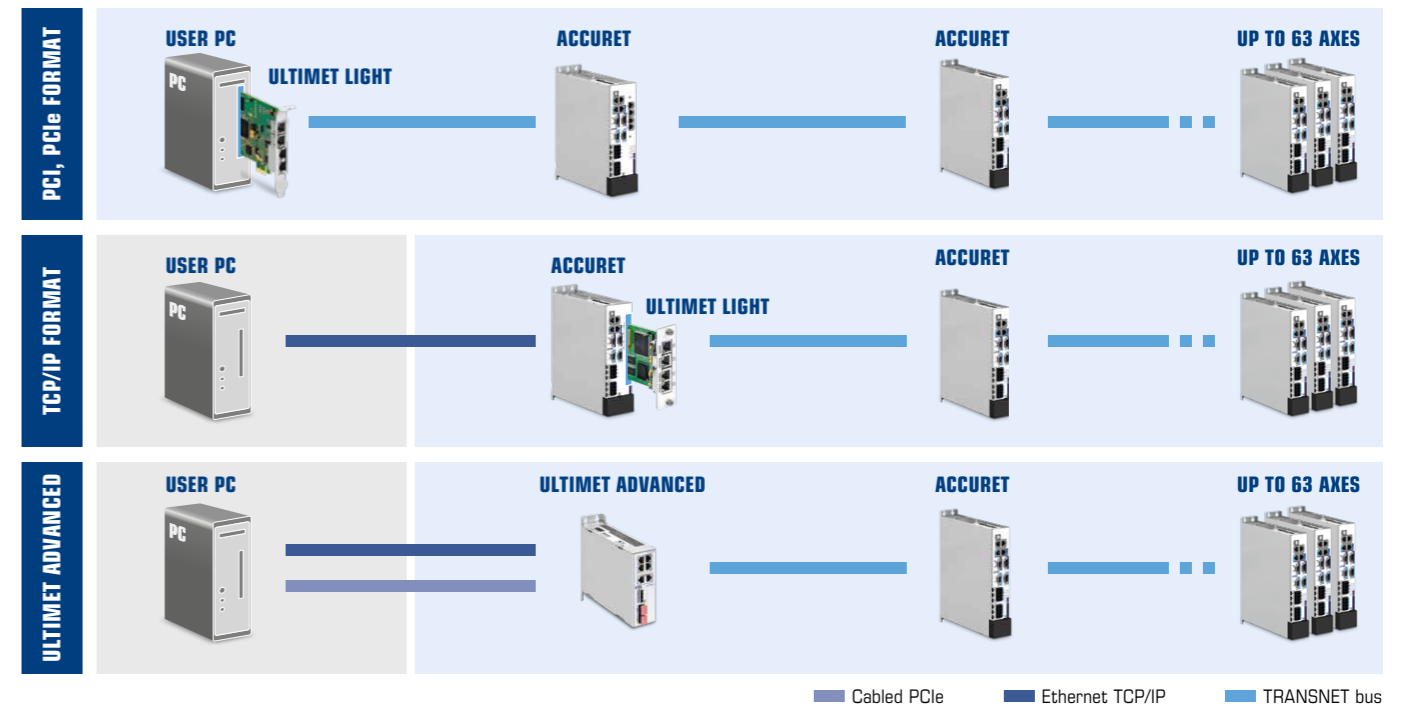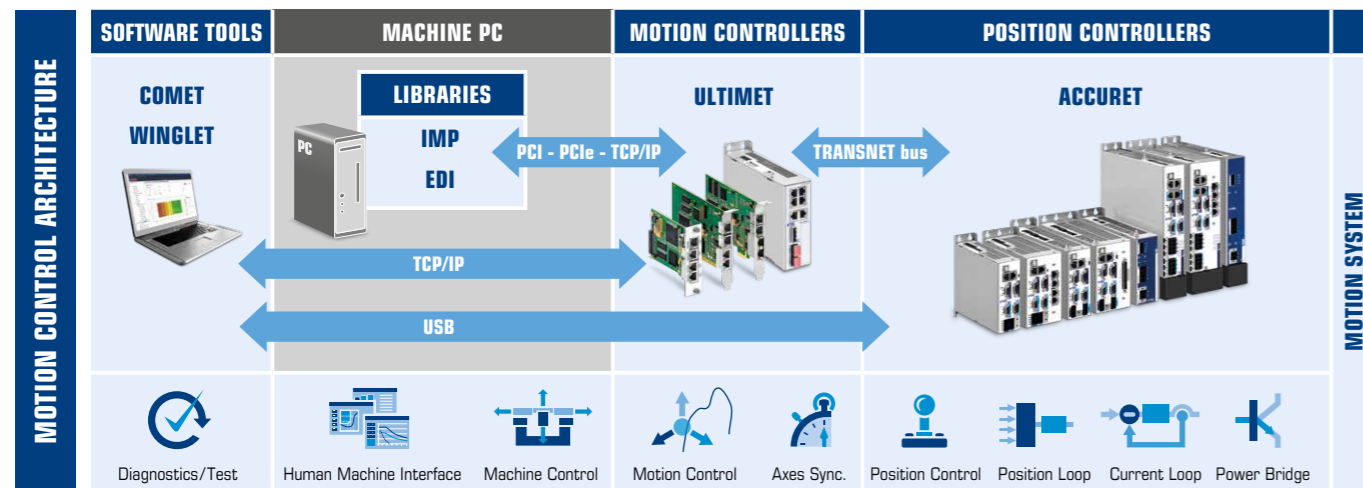
Features such as **3D mapping** can be easily managed using ULTIMET to provide the required precision at the machine tool point whatever the mechanical arrangement of the axes.

For gantry systems, a **Gantry Acceleration Feedforward** over TRANSNET can be used to anticipate the motor forces according to the tool point position. This feature significantly increases machine throughput thanks to a dramatic reduction in settling times.

To fit with all types of machine control architecture, ETEL has designed two versions of the motion controller:

- The ULTIMET LIGHT is available in three form factors: the PCI and PCI Express versions integrated into a PC for high speed applications requiring real-time deterministic communication and the TCP/IP version mounted inside an ACCURET position controller for stand-alone machines in which the need for time deterministic data transfer between motion system and machine PC is lower.

- The ULTIMET ADVANCED is a powerful and versatile high-end multi-axis standalone box motion controller suitable for processes requiring more computation power, data processing, interfacing and free real-time operating system.

MOTION CONTROL ARCHITECTURE

PCI, PCIe FORMAT

| USER PC | ACCURET | ACCURET | UP TO 63 AXES |
ULTIMET LIGHT

TCP/IP FORMAT

| USER PC | ACCURET | ACCURET | UP TO 63 AXES |
ULTIMET LIGHT

ULTIMET ADVANCED

| USER PC | ULTIMET ADVANCED | ACCURET | UP TO 63 AXES |

Cabled PCIe Ethernet TCP/IP TRANSNET bus

ULTIMET LIGHT — TCP/IP — PCI — PCIe

ULTIMET ADVANCED — TCP/IP or PCIe

For more information, consult our **Motion Control ACCURET Modular** leaflet.

SPECIFICATIONS	ULTIMET SMART GATEWAY	ULTIMET INTERPOLATION		ULTIMET ADVANCED
Movement types	Only synchronized	Synchronized and interpolated		Synchronized and interpolated
Communication protocol	PCI, PCIe or TCP/IP (embedded in the ACCURET)			TCP/IP and PCIe
No. of supported interpolation group	N/A	2		2
Max. number of degrees of freedom (DOFs) per interpolation group	N/A	4 (X, Y, Z, theta)		4 (X, Y, Z, theta)
Interpolation movement types	N/A	G-code, PVT, PT, ULM, LKT and kinematic transform functionalities		G-code, PVT, PT and kinematic transform functionalities
On board I/O	4 In / 4 Out	2 In / 2 Out	4 In / 4 Out	2 In / 2 Out	8x RS-485 fast digital I/Os (software programmable, SPI ready)
TRANSNET real-time communication bus	1 Gbps			
TRANSNET cycle time	100 µs (down to 50 µs)			100 µs
Number of supported axes on TRANSNET	up to 63			
Trace pre / post trigger functionnality	Yes			
Embedded programming language	3 threads of structured programming language sequences			Customer Software Module in C
Master/slave data exchange	Real-time at 10 kHz (including slave to slave communication capability)			

ULTIMET MOTION CONTROLLERS

MOTION CONTROL ARCHITECTURE

SOFTWARE TOOLS	MACHINE PC	MOTION CONTROLLERS	POSITION CONTROLLERS
COMET	LIBRARIES	ULTIMET	ACCURET
WINGLET	IMP		
	EDI		

PCI - PCIe - TCP/IP TRANSNET bus

TCP/IP

USB

MOTION SYSTEM

Diagnostics/Test — Human Machine Interface — Machine Control — Motion Control — Axes Sync. — Position Control — Position Loop — Current Loop — Power Bridge

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