TEST CONTROLLER

Technical datasheet

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Test Controller - Technical datasheet

	Test Controller 30	Test Controller 40	Test Controller 60	Test Controller 80	Test Controller 100
General					
Max Number of Controlled Axes	up to 2	up to 4	up to 8	up to 10	up to 10 up to 16 (optional)
Actuators as indipendent Axes	●	●	●	●	●
Actuators as synchronized Axes	●	●	●	●	●
Control Technology	High-performance Full Digital Controller based on the deterministic Ethercat® protocol				
Maximum Control Frequency (*)					
1 Axis	4 kHz	8 kHz	16 kHz	16 kHz	16 kHz
up to 2 Axes	2 kHz	4 kHz	8 kHz	16 kHz	16 kHz
up to 4 Axes	1 kHz	4 kHz	8 kHz	8 kHz	16 kHz
up to 8 Axes	○	○	4 kHz	4 kHz	8 kHz
up to 12 Axes	○	○	○	4 kHz	4 kHz
Integrated Control Channels per Axis					
Position Control	●	●	●	●	●
Speed Control	●	●	●	●	●
Motor Current Control	●	●	●	●	●
Integrated Feedback Channels per Axis					
Actuator Position Feedback	●	●	●	●	●
Actuator Speed Feedback	●	●	●	●	●
Actuator Current Feedback	●	●	●	●	●
Additional Control Channels					
Force control (requires a dedicated hardware force input channel)	●	●	●	●	●
Strain Control (requires a dedicated hardware strain input channel)	●	●	●	●	●
General-purpose control driven by a user-defined analog input (requires a dedicated hardware analog input channel)	●	●	●	●	●
HIL (Hardware-in-the-Loop): operates based on a setpoint received from an external controller	○	◐	◐	◐	◐

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Max Number of OPTIONAL Analog Input/Output channels (1)					
# channels @Control Frequency = 1 kHz	24	32	40	48	56
# channels @Control Frequency = 2 kHz	16	24	32	40	48
# channels @Control Frequency = 4 kHz	8	16	24	32	40
# channels @Control Frequency = 8 kHz	○	○	16	24	32
# channels @Control Frequency = 16 kHz	○	○	○	16	24
Analog Input channels					
Analog Input Resolution	16-bit or 24-bit, based on the hardware configuration				
MultiPurpose (¼, ½, Full Bridge; ±10 V, ±80 mV, 0...10 V)	◐	◐	◐	◐	◐
MultiPurpose (IEPE; ±10/5/2.5/1.25 V; ±640/320/160/80/40/20 mV)	◐	◐	◐	◐	◐
± 10 V Input type	◐	◐	◐	◐	◐
0...10 V Input type	◐	◐	◐	◐	◐
0...20 mA Input type	◐	◐	◐	◐	◐
4...20 mA Input type	◐	◐	◐	◐	◐
Thermocouple Input Type	◐	◐	◐	◐	◐
Pt100/Pt1000 Input Type	◐	◐	◐	◐	◐
Analog Output channels					
Analog Output Resolution	16-bit				
± 10 V Output type	◐	◐	◐	◐	◐
0...10 V Output type	◐	◐	◐	◐	◐
0...20 mA Output type	◐	◐	◐	◐	◐
4...20 mA Output type	◐	◐	◐	◐	◐

Symbol legend
Available ●
Available as an optional feature ◐
NOT Available ○

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Positioning Measurement channels					
SSI encoder interface type	◐	◐	◐	◐	◐
EnDat 2.2 interface type	◐	◐	◐	◐	◐
LVDT interface type	◐	◐	◐	◐	◐
Incremental encoder interface type	◐	◐	◐	◐	◐
Max Number of OPTIONAL Digital Input/Output channels (*) (1)					
Control Frequency @ 1kHz	8	16	32	32	32
Control Frequency @ 2kHz	8	16	32	32	32
Control Frequency @ 4kHz	8	16	32	32	32
Control Frequency @ 8kHz	○	○	32	32	32
Control Frequency @ 16kHz	○	○	○	32	32
Digital I/O channels					
Digital Inputs (24 VDC)	◐	◐	◐	◐	◐
Digital Inputs (5 VDC)	◐	◐	◐	◐	◐
Digital Inputs (Potential Free)	◐	◐	◐	◐	◐
Digital Outputs (24 VDC)	◐	◐	◐	◐	◐
Digital Outputs (5 VDC)	◐	◐	◐	◐	◐
Digital Outputs (Potential Free)	◐	◐	◐	◐	◐
Communication Protocols (4)					
OPC/UA (Step Lab as Master)	◐	◐	◐	◐	◐
Ethercat (Step Lab as Master)	◐	◐	◐	◐	◐
Ethercat (Step Lab as Slave)	◐	◐	◐	◐	◐
Profinet	◐	◐	◐	◐	◐
Profibus	◐	◐	◐	◐	◐
CanOpen	◐	◐	◐	◐	◐
EtherNet/IP	◐	◐	◐	◐	◐
CAN bus	◐	◐	◐	◐	◐
RS232/485	◐	◐	◐	◐	◐

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Control Loop Features					
Control channels	Any connected Analog input signal (such as load, strain, or position) or on derived variables computed within the control software				
Control strategies	PID, PIDFF (PID + Feedforward), Cascade PID, Friction Compensation, Compliance Compensation Available feedforwards: Velocity FF, Acceleration FF, Force FF				
Control Tuning	The control loop gains are tuned automatically; however, manual tuning is also possible				
Control enhancer	- PVC (Peak & Valley Control) - PS (Phase Shift Control) - HC (Hybrid Control): where peak and valley are controlled based on different Control Channels) - DF (Double Feedback): where amplitude is regulated by one channel, while the mean value is independently managed by another - AAC (Advanced Adaptive Control) - SAR (Smooth Amplitude Ramp) - SFR (Smooth Frequency Ramp)				
Waveform Frequency Generator	0.00001 to 250 Hz		0.00001 to 1000 Hz		
Minimum Waveform Frequency Resolution	0.00001 Hz				
Waveform Generation Resolution	64 bit				
Waveforms	Sine, Cosine, Triangle, Square, Haversine, 5th-degree Polinomial, Half-Sine, Half-Triangle, Ramp (Sawtooth), Double-Ramp, Trapezoidal, 5th-degree Asymmetric Polinomial, Sine Sweep, Sine on Sine				
Waveform point by point	◐	◐	◐	◐	◐
Time History or Random Profile	◐	◐	◐	◐	◐
History Series of Peak & Valleys points	◐	◐	◐	◐	◐
Signal Processing					
Acquisition Rate	Synchronous with the control loop rate				
Max Acquisition Rate	4 kHz	8 kHz	16 kHz	16 kHz	16 kHz
Digital Filters	- Independently configurable for each analog input and output channel - Up to three digital filters can be applied in cascade for each channel - Available Filters: Bessel, Butterworth, Moving Average				
Dimensions (with enclosure) (2)					
Width	600 mm	600 mm	600 mm	600 mm	600 mm
Height	220 mm	220 mm	220 mm	220 mm	220 mm
Depth	180 mm	180 mm	180 mm	180 mm	180 mm
Weight	8 kg	8 kg	12 kg	12 kg	12 kg
Electrical Power Requirements					
Voltage	Universal Input 100...240 VAC, single phase, 50...60 Hz				
Current Consumption @ 115 VAC (3)	2,6 A	2,6 A	3,4 A	3,4 A	3,4 A
Current Consumption @ 230 VAC (3)	1,3 A	1,3 A	1,7 A	1,7 A	1,7 A
Integrated UPS	●	●	○	○	○
External UPS	○	○	◐	◐	◐

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Installation					
Max Distance from Power Stage cabinet	20 mm				
Max Distance from HMI Station	20 mm				
Options					
Remote control with physical buttons	◐				
Remote control with touch screen	◐				
Environment					
Working conditions	Temperature Range: 5-40 °C, RH Range: 5-85 %				
Applications					
Static Tests	◐	◐	◐	◐	◐
Creep Tests	◐	◐	◐	◐	◐
Fatigue Tests (HCF and LCF)	◐	◐	◐	◐	◐
MultiActions (User Defined Test Procedures)	◐	◐	◐	◐	◐
Multi Axes	◐	◐	◐	◐	◐
Shock Absorber Tests	◐	◐	◐	◐	◐
DMA (Dynamic Mechanical Analysis)	○	○	◐	◐	◐
Spring Module	◐	◐	◐	◐	◐
EOL (End Of Line) Quality Control (only for 1 Axis version)	◐	◐	◐	◐	◐
HIL (Hardware In the Loop)	○	◐	◐	◐	◐
Time History or Random Profile Module	◐	◐	◐	◐	◐
Custom Test	◐	◐	◐	◐	◐
High Strain Rate	○	◐	◐	◐	◐
Crack Propagation	○	◐	◐	◐	◐
PSD (Power Spectrum Density)	○	◐	◐	◐	◐
4 Poster Module for Automotive Car testing	○	○	◐	◐	◐
High Frequency Module	○	○	◐	◐	◐

Remarks

(*) System capabilities depend on the combination of optional components. Results may differ accordingly.

(1) To house the total number of additional channels, additional cabinets might be necessary.

(2) Weight and dimensions of the base controller excluding optional components.

(3) Current consumptions of the base controller excluding optional components.

(4) Custom implementations tailored to the customer's needs.

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