

Technical Data Digital Controllers



1.1 ELECTRONIC SPECIFICATION

Power Supply

Rack supply requires	24V, unregulated (18 to 36V)
Internal PSU provides	5V, for internal rack usage
	5V isolated for external use. 500mA and 1A options
	+/-15V for internal and external use, 500mA and 1A options

Real-Time Controller

Digital Signal Processor (DSP)	TMS320C5500 and TMS320C5400
	Precise, deterministic control with powerful signal processing capabilities
DSP clock	Up to 300MHz
Type	16 bit, fixed point processor
Additional Processor	Separate FPGA to handle digital I/O
Digital Transport delay	0.575 milliseconds on all channels(ADC input to DAC output).

PC interface

USB 2.0	Max. sustained data rate 14 Mbits/sec
	16 channels at 20KHz (16bit) requires 5.12Mbits/sec

Analogue Inputs

ADCs	16 bit, simultaneously sampled, max. 25KHz
Noise	< +/- 6 counts
No. of inputs	8 (standard spec. for single and dual axis controllers)
	16 (standard spec. for four to eight axis)
	Further analogue inputs can be added as required
Dynamic range	±10V. Max 11V.
Input impedance	2 MΩ
Gain	Jumper selectable 1, 5 or 10 and fine adjustment
Filters	Selectable 100Hz, 200Hz, 500Hz, 1kHz, 2kHz, 3kHz or 5kHz

Analogue Outputs

DAC's	16 bit, max. 25KHz
No. of outputs	Up to 16
Output	Jumper selectable ±10V, ±100mA, ±40mA, ±20mA, ±15mA, ±10mA or ±5mA
Filters	1kHz as standard on all channels, two pole

Discrete Inputs

	Low and high level inputs
	Low level – 5V CMOS logic Schmitt triggered
	Input impedance 120Ω
	High level – relay coil, 18 to 31V, input current 8.3mA

Discrete Outputs

	Watchdog protection on selected outputs
	All configurable as either DC logic level or relay contacts
	DC logic level – 0 and 5V, 5.7Ω output impedance, max. Current 350mA
	Relay contacts - SPST, voltage free or switch to common bus rail (configurable).
	Max. switch voltage 30V DC
	Max. current 5A (external source non-inductive load)
	Max. current 2A (external source inductive load)

PC requirements

Operating System	Windows XP Professional, VISTA
RAM	2 GByte (min)
Hard disk	20 GByte (min)
Interface	USB2
Screen	19 inch or a 2 off, 17 inch
Recommended PC	Dell Precision 380

Signal Conditioning

Instrumentation Amplifiers	All DC conditioned transducers
Carrier Amplifiers	LVDTs and AC conditioned transducers
Charge Amplifiers	Accelerometers
Strain Gauge & Trans Amplifiers	Load cell and low signal transducers
Thermocouple Amplifiers	Temperature
Freq. to Voltage Converters	Speed signals

MECHANICAL SPECIFICATION

Dimensions

CAA Desktop enclosure	430 x 85 x 320 or 360 (mm) – HxWxD
	19" rack, 360 mm deep

Operating Conditions

Operating temperature range	15 to 35°C
Storage temperature range	5 to 55°C

Rear Panel

Connectors	Standard: Tuchel, EDAC and XLR
	Variations: Cannon, Amphenol
	Any customer requests within rear panel dimensions can be accommodated
Dimensions	420 x 78 mm



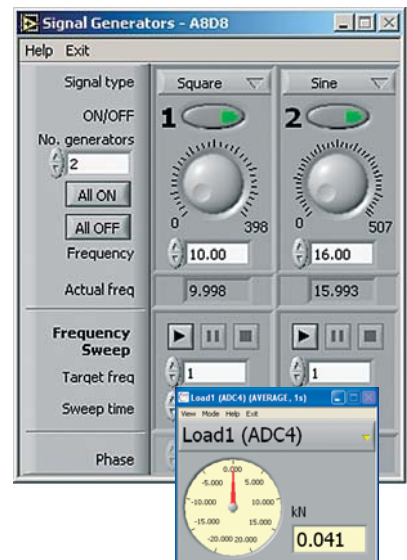
Series 4 rack mounted system.



2.1 BASE-LEVEL SOFTWARE



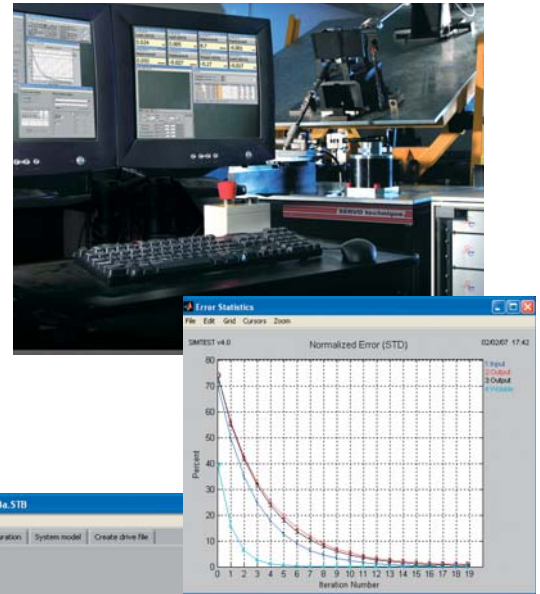
PID control	Automatic catch at start-up Bump-less transfer between modes Drives selectable from signal generators, replay file or ext. signal Fast on-line PID tuning with Velocity Feed forward Specimen Protect Mode for safe mounting of test samples Adaptive auto-tuning
Continuous Replay	With synchronised logging Common file formats supported; ASCII, RPCIII Can be run as logging alone at given duration
Trip Logging	Automatic pre and post-TRIP data logging Up to 25KHz Pop up display shows captured data and where TRIP occurred
Burst Replay	Periodic test with over and under peak limits
Oscilloscope	Four channel, easily selectable Comprehensive triggering (drag feature) Time base down to 4 milliseconds Easy to use fit-to-screen and auto scale Cursors to determine periods or frequencies Save scope data or display (to e-mail)
Monitors	Up to sixteen monitors View as numeric, gauge, slider or meter View max, min, average or RMS Filter options Stop watch timer
Limits	Readily configured up to twenty four real-time limits E-mail on TRIP or SHUT feature Records first limits hit Action on event option Max., min, and current value monitors
Signal Generation	Sine, 1-cosine, triangle, square or random Phase delay(+/-90 degs) Sweeps All real-time generated signals Up to four signal generators run in parallel
Transducer Calibration	Specify in transducer units, Five point calibration check Non linear correction, up to 64 point, only in non linear areas Shunt calibration options
Models	Up to six real time models With modelled stiffness, damping and actuator characteristics
Counters and timers	Apply to any system signal Display as count, frequency or velocity Hysteresis option for noisy signals Trigger level with ascending, descending or on both
Internet Connection	For monitor or control of test system Only requires a web browser on remote machine – no proprietary software
Database connectivity	For test files and transducer records



Configuration	Easy to use system configuration editor Saves as ASCII text file Configures user LED and Buttons Built in logic for pump, low and high pressure control
Data Viewer	Shows data from any logging function ASCII or RPC3 file formats Select channels to view

2.2 MODULES

Test Sequencer	Reduces complex test sequences to a single button press
Test Record	Test sheet and Report publishing Record selective rig events to diary Option for user
Trend analysis	Statistical analysis of replay and logged data files
MIMIC™	Drive file generation for in field data reproduction Up to sixteen inputs and sixteen outputs Easy to configure and use interface
Network Software	Monitor and access test information and data files over the network using only a standard browser.



2.3 BESPOKE APPLICATIONS

- Gearbox dyno
- Seat Belt Anchorage
- Seat Back and Head Rest
- Servovalve test
- Head Impact
- High Speed Damper test
- Wind-Tunnel Model and Belt
- Human Rated vibration
- Fatigue and Durability testing
- MAST Tables

