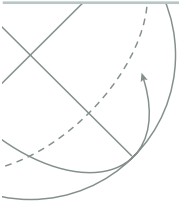


## iMPULSE™ Series of Rate Tables Industrial Inertial Guidance Test and Calibration Systems



Building on 45 years of leadership in motion simulation, Acutronic is proud to take inertial testing one step further, by offering the all-new line of iMPULSE™ rate tables and its dedicated digital control system, the ACUTROL® iIMPACT™.

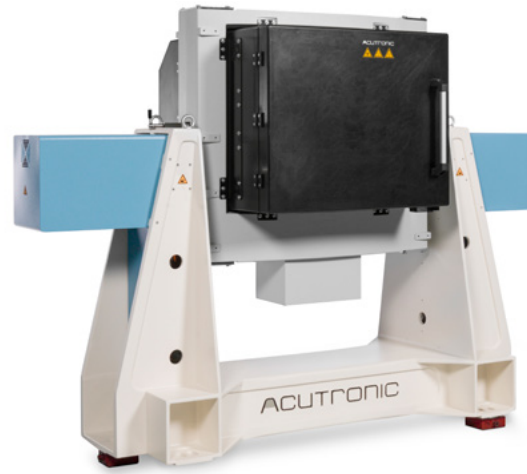
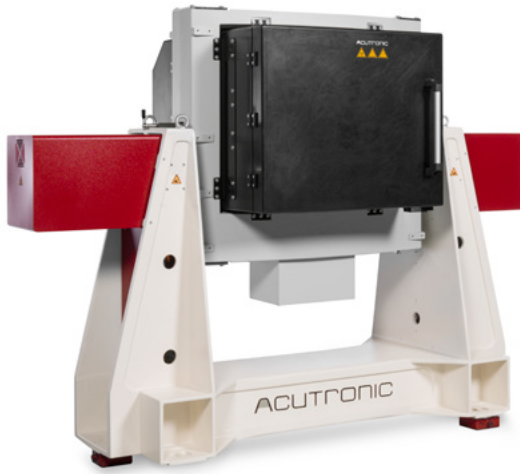
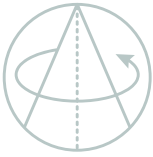
The iMPULSE™ series provides robust, modular and flexible solutions that are perfectly suited to the needs of the modern industrial environment. These products are designed for the development and production of single and multi-axis inertial sensors and systems, whether consumer, automotive, or navigation grade.

Our tables are “Internet-of-Things” / “Industry 4.0”-ready and adapted to serve across a range of R&D or production environments.

Customers can expect Acutronic-quality at a highly attractive price point.

Our quotes include installation of the system at the customer’s facility and an extended 3-year warranty period on non-wear parts. Basic systems usually ship within 12 to 20 weeks of receipt of order or export license (unless custom features or standard options, subject to prior sale, are required). Options related to temperature chambers and slipping upgrades affect the delivery date.

The new ACUTROL® iIMPACT™ controller, available exclusively with iMPULSE™ rate tables, has already earned customer praise for its intuitive user interface, compact electronic hardware, and unrivaled cost. Acutronic is pleased to offer annual software licenses that will offer an extremely attractive entry price, free software support, free updates, and modular functionality that can be customized to meet customer needs.



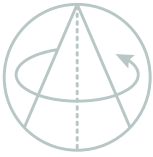
## iMPULSE™ GL2™ Two-Axis Rate Table

Specifications: GL2™	Inner Axis	Outer Axis
Angular Freedom	continuous	continuous (Option: limited to +/- 180°)
Position Accuracy	+/- 1 arc sec	+/- 1 arc sec
Command resolution	0.00001 deg	
Repeatability	< 1 arc sec	
Rate		
Range	± 1500 deg/sec (Option: ±3000 deg/sec)	± 600 deg/sec (Option: ±1000 deg/sec) (± 100 deg/sec with limited rotation)
Stability - over 360 deg (≥50deg/sec up to full rate)	0.0001%	0.0001%
- over 10 deg (5deg/sec ≤ rate ≤ 50 deg/sec)	0.0036%	0.0018%
- over 1 deg (rate ≤5 deg/sec)	0.036%	0.018%
Mechanical		
Wobble	<5 arc sec	
Orthogonality	<5 arc sec (Option: <1 arc sec)	
Nominal Load	Up to 75 kgs	
Table Top Diameter	700mm (Option: 850mm without temperature chamber)	

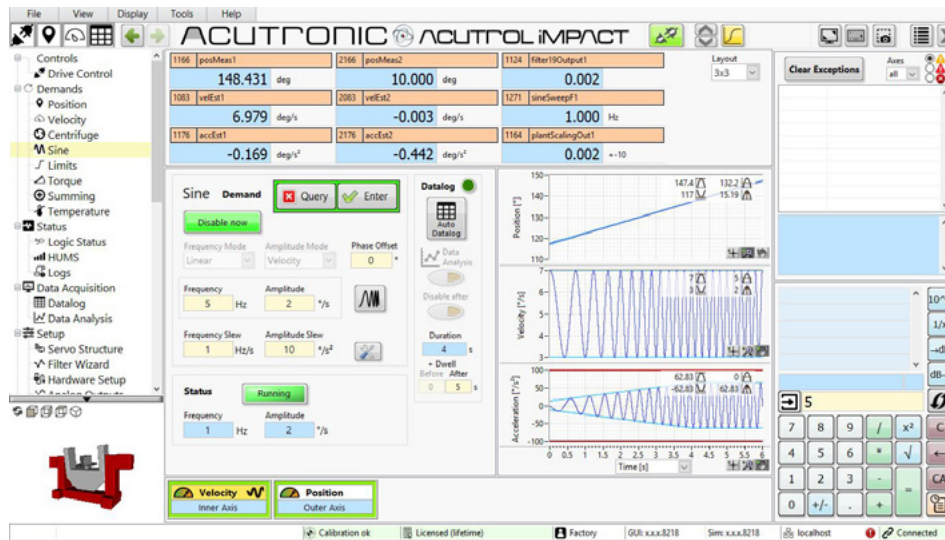
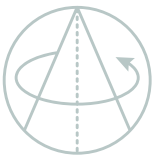
Temperature Chamber	
Temperature Range	-55°C to +125°C (Option: +150°C)
Temp. Ramp Rate, Mechanical	+/- 4°C per min. w/o thermal load
Temp. Ramp Rate, LN2	+/- 5°C per min. (Option: +/- 15°C per min.)

Electrical Access Configurations	
Basic (2M revolutions)	48 lines @ 2A / 240VAC (Option: 100Mbit/s contactless ethernet line)
Premium (20M revolutions)	100 lines @ 2A / 150VDC (Option: 100Mbit/s contactless ethernet line) or 50 lines @ 2A / 150VDC and 4 lines @ 20A / 400VAC (Option: 100Mbit/s contactless ethernet line on demand or 1Gbit/s contactless ethernet line)

Note: the use of basic sliprings is not recommended for high-speed or real-time applications. Basic sliprings may be subject to higher noise.



Code Features & Options: GL2™		
	Standard product without temperature chamber (TC)	
	- with ACUTROL® iMPACT™ & standard cabinet	Standard
	- inner axis rate: +/-1500 deg/sec outer axis rate: +/-600 deg/sec	Standard
	- table top diameter of 700mm	Standard
	- sliping with 48 customer lines @ 2A (basic)	Standard
	- outer axis stowlock	Standard
	- measuring adapter (required for PVs)	Standard
	- extended 3 year Warranty on non-wear parts/mechanical cooling	Standard
<b>Temperature Chamber Options (select only 1 option)</b>		
100	Closed-Loop Mechanical Cooling (requires water supply)	Stock Item
101	LN2 Cooling	Stock Item
<b>Sliping Upgrades / Twistcables (select only 1 option)</b>		
200	Upgrade sliping to 48 lines @ 2A + 100Mbit/s contactless ethernet line (basic)	Stock Item
201	Upgrade sliping to 100 lines @ 2A (New premium)	Stock Item
202	Upgrade sliping to 100 lines @ 2A + 100Mbit/s contactless ethernet line (New premium)	Stock Item
203	Upgrade sliping to 50 lines @ 2A and 4 lines @ 20A (New premium)	Stock Item
204	Upgrade sliping to 50 lines @ 2A and 4 lines @ 20A + 1Gbit/s contactless ethernet line (premium)	Stock Item
205	Outer axis twistcable and inner axis sliping with 48 lines (basic)*	Upon Request
206	Outer axis twistcable and inner axis sliping with 48 lines + 100Mbit/s contactless ethernet line (basic)*	Upon Request
207	Outer axis twistcable and inner axis sliping with 100 lines (New premium)*	Upon Request
208	Outer axis twistcable and inner axis sliping with 100 lines + 100Mbit/s contactless ethernet line (New premium)*	Upon Request
209	Outer axis twistcable and inner axis sliping with 54 lines (New premium)*	Upon Request
210	Outer axis twistcable and inner axis sliping with 54 + 1Gbit/s contactless ethernet line (premium)*	Upon Request
<b>Features</b>		
300	Upgrade to table top diameter 850mm (without TC only)	Stock Item
301	Upgrade peak rate to IA: +/-3000 deg/sec and OA: +/-1000 deg/sec (with premium sliping, limited to 10M revs.)	Stock Item
302	Upgrade orthogonality to <1 arc sec	Stock Item
303	Brake on OA	Stock Item
304	Limitation on OA (always included with twistcables)*	Upon Request
305	Base plate	Stock Item
306	North alignment	Stock Item
307	Dual Door Safety cage (purchase w/o safety cage only possible w/ approved enclosure, wiring & conformity assurance)	Upon Request
309	GUI PC	Stock Item
310	Remote emergency stop button	Stock Item
311	Remote pilot box	Stock Item
312	Setup mode	Stock Item
313	Power supply transformer for USA 115V/3x200V (without TC)	Stock Item
314	Power supply transformer for USA 115V/3x200V	Stock Item
315	TC policeman regulator	Stock Item
316	Temperature gradient of 15°C/min (only available with LN2 Cooling, min. 5 bar pressure)	Upon Request
317	Maximum temperature of 150°C	Stock Item
318	Mechanical cooling unit modified for chiller (only available w/ option 100)	Upon Request
319	Mechanical cooling INDOOR chiller (only available w/ option 318)	Upon Request
320	Proportional Valve for Mechanical Cooling (w/ option 100)	Stock Item
321	Proportional Valve for LN2 Cooling (w/ option 101)	Stock Item
324	Modification of GL2 for Airdryer (only compatible w/ option 203)	Upon Request
325	Mechanical cooling OUTDOOR chiller (only available w/ option 318)	Upon Request
326	Airdryer assembly (only available w/ option 324)	Upon Request
327	60Hz conversion kit (only available w/ option 100)	Upon Request
<b>Wear Parts (not covered by Warranty)</b>		
400	Inner axis sliping with 48 lines @ 2A (basic)	Upon Request
401	Outer axis sliping with 48 lines @ 2A (basic) including Power sliping capsule	Upon Request
402	Inner axis sliping with 100 lines @ 2A (New premium)	Upon Request
403	Outer axis sliping with 100 lines @ 2A (New premium)	Upon Request
404	Inner axis sliping with 54 lines (New premium)	Upon Request
405	Outer axis sliping with 54 lines (New premium)	Upon Request
406	Inner axis sliping with 54 lines + 1Gbit/s contactless ethernet line (premium)	Upon Request
407	Outer axis sliping with 54 lines + 1Gbit/s contactless ethernet line (premium)	Upon Request
408	Additional wear parts (incl. drivepack bearings; fan bearings; TC hinges; door knobs; door seals; refrigerant valves; cooling unit dryer; cooling unit filters; electrical relays, switches, buttons).	Upon Request
<b>Services</b>		
500	Factory acceptance test (FAT)	Option
501	Servo-optimization for customer load (price per load, during installation/CAT)	Option
<b>Custom Features</b>		
600	Customized sliping (premium)	Upon Request
601	Customized tabletop	Upon Request



## ACUTROL® iMPACT™ Industrial Multi-Axis Digital Motion Control System

Available exclusively with our iMPULSE™ rate tables, the new iMPACT™ controller brings the ACUTROL® series into the Industrial “Internet-of-Things” / “Industry 4.0” era. The leading motion control system for high precision single and multi-axis inertial guidance, electro-optic test systems and stabilized platforms now comes with industrial grade components and modelgenerated software. The iMPACT™ controller offers a robust, modular and flexible control architecture. It is compatible with the well-established and time-tested ACUTROL® Control Language (ACL).

### Industrial

- Industrial interconnected EtherCAT modules for flexibility and reliability
- Payload Wizard for ease of servo compensation
- Health and Usage Monitoring Systems (HUMS)
- Industrial security monitoring systems
- Remote access to simulator via Local (LAN) or Wide (WAN) Area Network
- In-application support (offline help)

### Modular Packages

- Controller features can be scaled according to user needs.

Expert level features include:

- State of the art, embedded Data Logger
- Integrated temperature chamber controller
- Optional touch screen display

### Performance

- Compensation of deterministic cogging and position errors resulting in high position accuracy and smooth rate performance
- EtherCAT: High speed and low jitter Ethernet-based real-time fieldbus system
- Synchronous axis control
- Motion profile previsualisation

### ACUTROL® Heritage

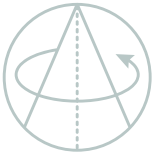
- Compatible with the ACUTROL® Control Language (ACL)
- Intuitive Windows 10 GUI with user-friendly access to menus, operator inputs, control and security features
- Asynchronous control in remote operation
- Adaptable servo topology, including freely configurable digital filters allowing customized control strategies to match the application
- System optimization for different payloads
- Look-up tables for error correction

### Customization

- Tabs can be configured, organized and optimized according to the user experience
- Customizable analog inputs and outputs
- Software examples for developers (LabVIEW, C++ and Matlab)

### Technology

- EtherCAT communication digitalizes the transmission of signals, making the system more robust and easier to maintain
- Software based on LabVIEW and Simulink guarantees stability, quality and expandability



Code	Features & Options: iIMPACT™
<b>License Options</b>	
Annual Subscription License (payable at the end of every 12-month period)	
10	Basic Annual License, starting 12 months after delivery (incl. software support & updates)
11	Basic and Advanced Annual License for all Features (at the time of system installation, incl. software support & updates)
12	Upgrade from Basic to Basic+Advanced License (during the lifetime of the system)
<b>Lifetime License (payable 1 time, upfront)</b>	
20	Basic Lifetime License (incl. software support & updates during the first 12 months after delivery only)
21	Lifetime License for all Basic and Advanced Features (at the time of system delivery)
22	Lifetime License for all Basic and Advanced Features (at the time of system delivery) with annual software update
23	Annual software support & updates, starting 12 months after delivery
<b>Software Features (all advanced features are activated for the trial mode of 90 days)</b>	
<b>Basic Features</b>	
30	Drive Enable: allows enabling of the servo drives (interlock close)
31	Position Mode is a primary mode of motion
32	Velocity Mode is a primary mode of motion
33	Sine Mode is a secondary mode motion (legacy synthesis mode)
34	G-Mode is a primary mode of motion designed for centrifuge applications - Automatic boom arm compensation is included
<b>Advanced Features (some SW features require hardware - see below)</b>	
40	Analog Output: enables the use of two configurable analog outputs per system if available
41	Demand Summing: summing of primary modes of motion with internal or external motion command (if analog input is available)
42	Event Pulse: enables the programmable, configurable pulse for synchronization or measurement purposes
43	Datalogger: datalog and export the controller's variable to a file for Excel, Matlab or Labview
44	Payload Change Wizard: measures and adjusts automatically the inertia of the customer's payload
45	Temperature Controller Interface: use ACL commands for Setpoint and Fan speed control
46	GPIB: enables the GPIB interface if available
47	ACL Macro : use ACUTROL3000 syntax to generate macros (motion sequences) on the iIMPACT GUI
48	G-Mode for rate table: enables primary mode of motion on GM1/GL1 or inner axis of GL2 Series
49	RS-232: enables the RS-232 Interface if available
50	VMIC: enables the VMIC Reflective Memory Interface if available (will be released in 2022)
<b>Hardware (The Software License has to be selected separately)</b>	
80	Analog Input/Output: D-sub connector located at the base of the iIMPACT cabinet; required for Features 40 and 41
81	GPIB Interface: USB to IEEE 488 converter located at the base of the iIMPACT cabinet; required for Feature 46
82	RS-232 Interface: Ethernet to RS converter located at the base of the iIMPACT cabinet; required for Feature 49
83	I/O BNC Panel
84	VMIC Interface: required for Feature 50 (will be released in 2022)
<b>Special Software</b>	
95	System Emulator: a simulation software to emulate the rate table's behavior and response, for development and training purpose

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