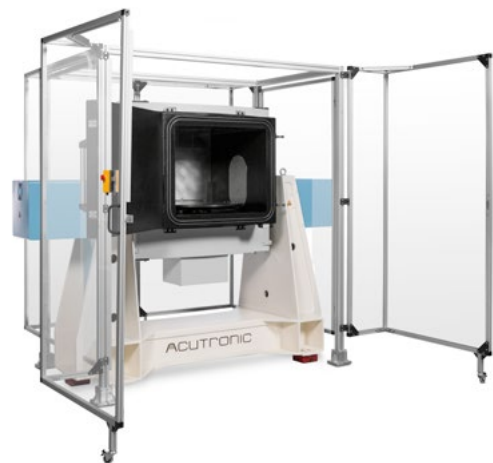
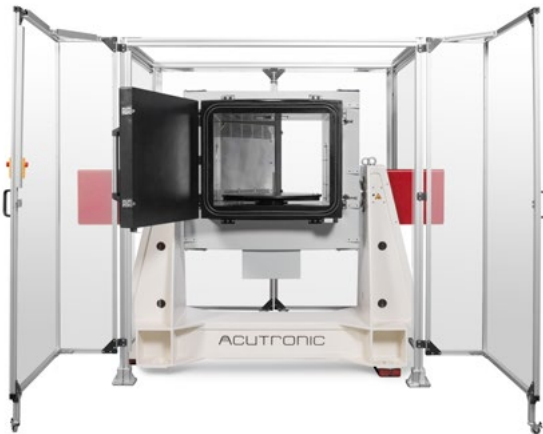
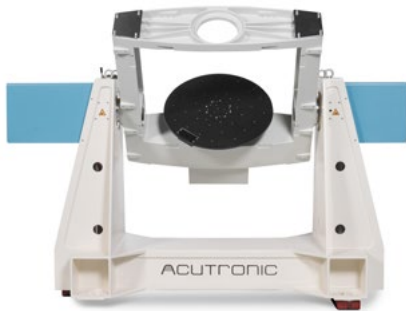


iMPULSE™ Series of Rate Table Products

Industrial Inertial Guidance Test and Calibration Systems



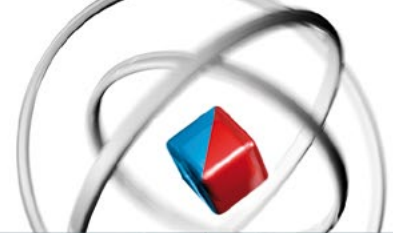
Building on 45 years of leadership in motion simulation, ACUTRONIC is proud to take inertial testing one step further, by releasing the all-new line of iMPULSE™ rate tables and its dedicated digital control system, the ACUTROL® iIMPACT™.

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. Systems usually ship within 4 weeks of receipt of order or export license (unless custom features are required).

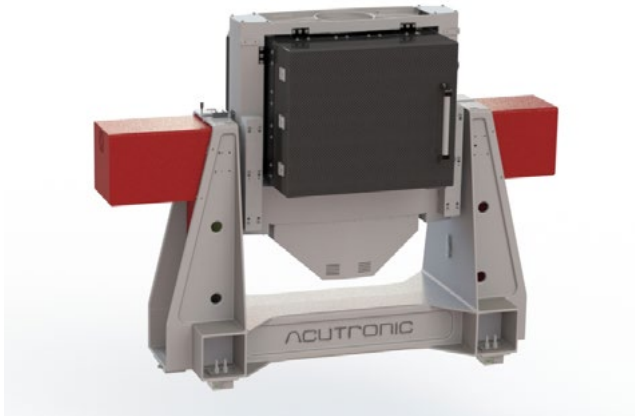
The new ACUTROL® iIMPACT™ controller, available exclusively with iMPULSE™ rate tables, has already earned customer praise for its intuitive user interface, compact electronic hardware, and unrivaled cost. ACUTRONIC is pleased to offer annual software licenses that will offer an extremely attractive entry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

Introductory offer – Limited time only:

Free lifetime license on controller software with EVERY PURCHASE of an IMPULSE™ rate table.



iMPULSE™ GL2™ Two-Axis Rate Table Product

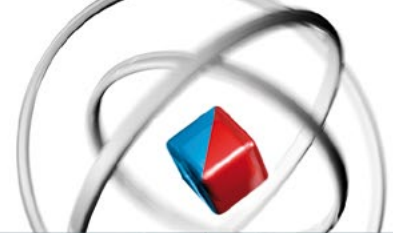


Specifications: GL2™	Inner Axis	Outer Axis
Angular Freedom	continuous	continuous (Option: limited to +/- 180°)
Position Accuracy	+/- 1 arc sec RSS	+/- 1 arc sec RSS
Command resolution	0.00001 deg	
Repeatability	< 1 arc sec	
Rate		
Range	± 1500 deg/sec (Option: ±3000 deg/sec)	± 600 deg/sec (Option: ±1000 deg/sec) (± 100 deg/sec with limited rotation)
Stability - over 360 deg (up to full rate)	0.0001%	0.0001%
- over 10 deg (rate >5 deg/sec)	0.0036%	0.0018%
- over 1 deg (rate <5 deg/sec)	0.036%	0.018%
Mechanical		
Wobble	<4 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)	

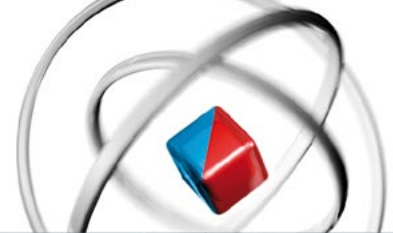
Temperature Chamber		
Temperature Range	-55°C to +125°C (Option: +150°C)	
Temp. Ramp Rate, Mechanical	+/- 4°C per min. w/o load	
Temp. Ramp Rate, LN2	+/- 5°C per min. w/o load (Option: +/- 15°C per min.)	

Electrical Access Configurations		
Basic (2M revolutions)	48 or 100 lines @ 2A (Option: 100Mbit/s contactless ethernet line)	
Premium (20M revolutions)	50 lines @ 2A + 4 lines @ 20A (Option: 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 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
	- slipring with 48 customer lines @ 2A (basic)	Standard
	- outer axis stowlock	Standard
	- system installation (CAT) and extended 3 year Warranty on non-wear parts/mechanical cooling	Standard
	- ships in 4 weeks (subject to prior sale)	Standard
	Temperature Chamber Options (select only 1 option)	
100	Closed-Loop Mechanical Cooling (requires water supply)	Stock Item
101	LN2 Cooling	Stock Item
	Slipring Upgrades / Twistcables (select only 1 option)	
200	Upgrade slipring to 48 lines @ 2A + 100Mbit/s contactless ethernet line (basic)	Stock Item
201	Upgrade slipring to 100 lines @ 2A (basic)	Stock Item
202	Upgrade slipring to 100 lines @ 2A + 100Mbit/s contactless ethernet line (basic)	Stock Item
203	Upgrade slipring to 50 lines @ 2A and 4 lines @ 20A (premium)	Stock Item
204	Upgrade slipring to 50 lines @ 2A and 4 lines @ 20A + 1Gbit/s contactless ethernet line (premium)	Stock Item
205	Outer axis twistcable and inner axis slipring with 48 lines (basic)*	Stock Item
206	Outer axis twistcable and inner axis slipring with 48 lines + 100Mbit/s contactless ethernet line (basic)*	Stock Item
207	Outer axis twistcable and inner axis slipring with 100 lines (basic)*	Stock Item
208	Outer axis twistcable and inner axis slipring with 100 lines + 100Mbit/s contactless ethernet line (basic)*	Stock Item
209	Outer axis twistcable and inner axis slipring with 50 lines (premium)*	Stock Item
210	Outer axis wistcable and inner axis slipring with 50 + 1Gbit/s contactless ethernet line (premium)*	Stock Item
	Features	
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 slipring, 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)*	Stock Item
305	Base template	Stock Item
306	North alignment	Stock Item
307	Safety cage (purchase w/o safety cage only possible w/ approved enclosure, wiring & conformity assurance)	Stock Item
308	Measuring adapter (required for PVs)	Stock Item
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 (with TC)	Stock Item
315	TC policeman regulator	Stock Item
316	Temperature gradient of 15°C/min (with LN2 Cooling only)	Stock Item
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 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
	Wear Parts (not covered by Warranty)	
400	Inner axis slipring with 48 lines @ 2A (basic)	Stock Item
401	Outer axis slipring with 48 lines @ 2A (basic)	Stock Item
402	Inner/Outer axis slipring with 100 lines @ 2A (basic)	Stock Item
403	Inner axis slipring with 50 lines (premium)	Stock Item
404	Outer axis slipring with 50 lines (premium)	Stock Item
405	Inner axis slipring with 50 lines + 1Gbit/s contactless ethernet line (premium)	Stock Item
406	Outer axis slipring with 50 lines + 1Gbit/s contactless ethernet line (premium)	Stock Item
407	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
	Services	
500	Factory acceptance test (FAT)	Option
501	Servo-optimization for customer load (price per load, during installation/CAT)	Option
502	System installation (CAT)	Included
	Custom Features	
600	Customized slipring (premium)	Upon Request
601	Shipping costs	Upon Request
602	Travel and accomodation	Upon Request



iMPULSE™ GL1™ One-Axis Rate Table Product

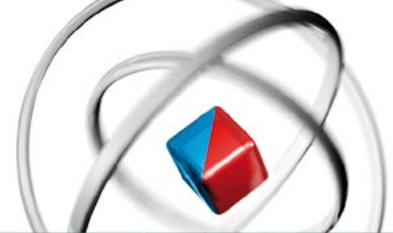


Specifications: GL1	Single Axis
Angular Freedom	continuous
Position Accuracy	+/- 1 arc sec RSS
Rate	
Range	± 1500 deg/sec (Option: ±3000 deg/sec)
Stability - over 360 deg (up to full rate)	0.0001%
- over 10 deg (rate >5 deg/sec)	0.0036%
- over 1 deg (rate <5 deg/sec)	0.036%
Mechanical	
Wobble	<4 arc sec
Nominal Load	Up to 75 kgs
Table Top Diameter	700mm (Option: 850mm without temperature chamber)

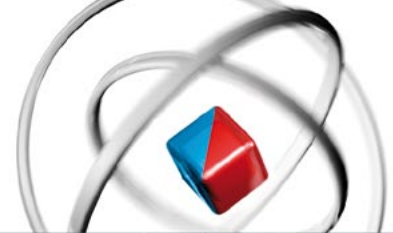
Temperature Chamber	
Temperature Range	-55°C to +125°C (Option: +150°C)
Temp. Ramp Rate, Mechanical	+/- 4°C per min. w/o load
Temp. Ramp Rate, LN2	+/- 5°C per min. w/o load (Option: +/- 15°C per min.)

Electrical Access Configurations	
Basic (2M revolutions)	48 or 100 lines @ 2A (Option: 100Mbit/s contactless ethernet line)
Premium (20M revolutions)	50 lines @ 2A + 4 lines @ 20A (Option: 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: GL1™	
Standard product without TC		
	- with ACUTROL® iMPACT™ & standard cabinet	Standard
	- rate: +/-1500 deg/sec	Standard
	- table top diameter of 700mm	Standard
	- sliping with 48 customer lines @ 2A (basic)	Standard
	- system installation (CAT) and extended 3 year Warranty on non-wear parts/mechanical cooling	Standard
	- ships in 4 weeks (subject to prior sale)	Standard
Temperature Chamber Options (select only 1 option)		
100	Closed-Loop Mechanical Cooling (requires water supply)	Stock Item
101	LN2 Cooling	Stock Item
Sliping Upgrades / Twistcables (select only 1 option)		
200	Upgrade sliping to 46 lines @ 2A + 100Mbit/s contactless ethernet line (basic)	Stock Item
201	Upgrade sliping to 100 lines @ 2A (basic)	Stock Item
202	Upgrade sliping to 100 lines @ 2A + 100Mbit/s contactless ethernet line (basic)	Stock Item
203	Upgrade sliping to 50 lines @ 2A and 4 lines @ 20A (premium)	Stock Item
204	Upgrade sliping to 50 lines @ 2A and 4 lines @ 20A + 1Gbit/s contactless ethernet line (premium)	Stock Item
Features		
300	Upgrade to table top diameter 850mm (without TC only)	Stock Item
301	Upgrade peak rate to +/-3000 deg/sec (with premium sliping, limited to 10M revs.)	Stock Item
307	Safety cage (purchase w/o safety cage only possible w/ approved enclosure, wiring & conformity assurance)	Stock Item
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 (with TC)	Stock Item
315	TC policeman regulator	Stock Item
316	Temperature gradient of 15°C/min (with LN2 Cooling only)	Stock Item
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 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)	
322	Upgrade to tilt stand	Upon Request
Wear Parts (not covered by Warranty)		
400	Sliping with 48 lines @ 2A (basic)	Stock Item
402	Sliping with 100 lines @ 2A (basic)	Stock Item
403	Sliping with 50 lines (premium)	Stock Item
405	Sliping with 50 lines + 1Gbit/s contactless ethernet line (premium)	Stock Item
407	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
Services		
500	Factory acceptance test (FAT)	Option
501	Servo-optimization for customer load (price per load, during installation/CAT)	Option
502	System installation (CAT)	Included
Custom Features		
600	Customized sliping (premium)	Upon Request
601	Shipping costs	Upon Request
602	Travel and accomodation	Upon Request



iMPULSE™ GM1™ One-Axis Rate Table Product

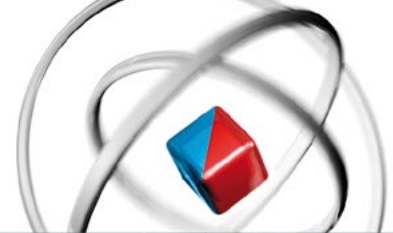


Specifications: GM1	Single Axis
Angular Freedom	continuous
Position Accuracy	+/- 1 arc sec RSS
Rate	
Range	± 1500 deg/sec (Option: ±3000 deg/sec)
Stability - over 360 deg (up to full rate)	0.0001%
- over 10 deg (rate >5 deg/sec)	0.0036%
- over 1 deg (rate <5 deg/sec)	0.036%
Mechanical	
Wobble	<4 arc sec
Nominal Load	Up to 50 kgs
Table Top Diameter	450mm

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

Electrical Access Configurations	
Basic (2M revolutions)	48 or 100 lines @ 2A (Option: 100Mbit/s contactless ethernet line)
Premium (20M revolutions)	50 lines @ 2A + 4 lines @ 20A (Option: 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.

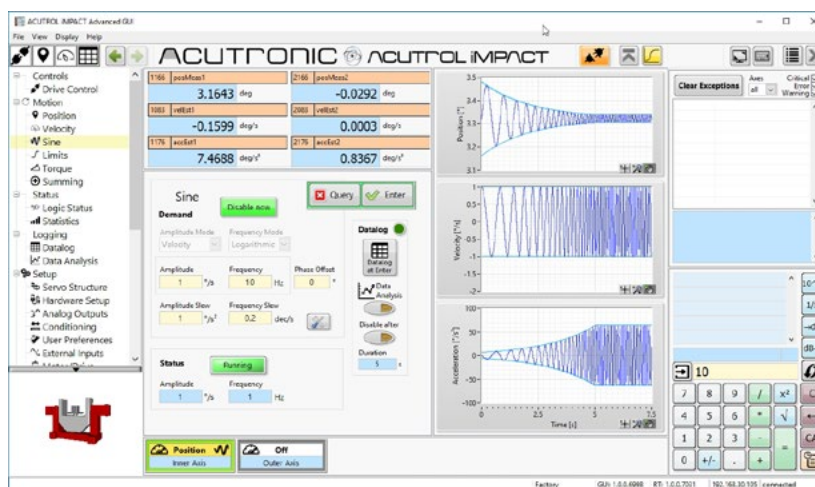


Code	Features & Options: GM1™	
Standard product without TC		
	- with ACUTROL® iMPACT™ & standard cabinet	Standard
	- rate: +/-1500 deg/sec	Standard
	- table top diameter of 450mm	Standard
	- slipring with 48 customer lines @ 2A (basic)	Standard
	- system installation (CAT) and extended 3 year Warranty on non-wear parts/mechanical cooling	Standard
	- ships in 4 weeks	Standard
Temperature Chamber Options (select only 1 option)		
100	Closed-Loop Mechanical Cooling (integrated TC & air-cooled compressor)	Stock Item
101	LN2 Cooling	Stock Item
Slipring Upgrades / Twistcables (select only 1 option)		
200	Upgrade slipring to 48 lines @ 2A + 100Mbit/s contactless ethernet line (basic)	Stock Item
201	Upgrade slipring to 100 lines @ 2A (basic)	Stock Item
202	Upgrade slipring to 100 lines @ 2A + 100Mbit/s contactless ethernet line (basic)	Stock Item
203	Upgrade slipring to 50 lines @ 2A and 4 lines @ 20A (premium)	Stock Item
204	Upgrade slipring to 50 lines @ 2A and 4 lines @ 20A + 1Gbit/s contactless ethernet line (premium)	Stock Item
Features		
301	Upgrade peak rate to +/-3000 deg/sec (with premium slipring, limited to 10M revs.)	Stock Item
307	Safety cage (purchase w/o safety cage only possible w/ approved enclosure, wiring & conformity assurance)	Stock Item
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 (with TC)	Stock Item
315	TC policeman regulator	Stock Item
316	Temperature gradient of 15°C/min (only available with LN2 Cooling)	Stock Item
317	Maximum temperature of 150°C	Stock Item
321	Proportional Valve for LN2 Cooling (w/ option 101)	Stock Item
322	Upgrade to tilt stand	Upon Request
Wear Parts (not covered by Warranty)		
400	Slipring with 48 lines @ 2A (basic)	Stock Item
402	Slipring with 100 lines @ 2A (basic)	Stock Item
403	Slipring with 50 lines (premium)	Stock Item
405	Slipring with 50 lines + 1Gbit/s contactless ethernet line (premium)	Stock Item
407	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
Services		
500	Factory acceptance test (FAT)	Option
501	Servo-optimization for customer load (price per load, during installation/CAT)	Option
502	System installation (CAT)	Included
Custom Features		
600	Customized slipring (premium)	Upon Request
601	Shipping costs	Upon Request
602	Travel and accomodation	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 model-generated 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 and Playback tool
 - Scripting tool and enhanced motion profiles including white noise, vibration, and trapeze
 - 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: ultra high-speed real-time ethernet:
- Synchronous axis control
- System visualization graphics

ACUTROL® Heritage

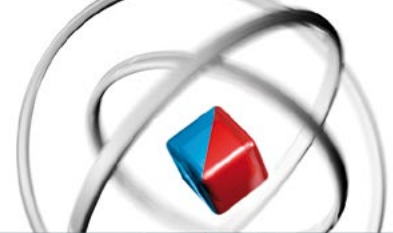
- Compatible with the ACUTROL® Control Language (ACL)
- Intuitive GUI with user-friendly access to menus, operator inputs, control and security features
- Asynchronous control in remote operation
- Adaptable servo topology, including freely configurable digital filters allowing customized control strategies 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 packages for developers

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™	Customer Price	
Annual Subscription License (payable at the end of every 12-month period)			
100	Basic Annual License, starting 12 months after delivery (incl. software support & updates)	CHF	2,000
101	Annual License for each additional function*	CHF	100
Lifetime License (payable 1 time, upfront)			
200	Basic Lifetime License (incl. software support & updates during the first 12 months after delivery only)	CHF	14,000
201	Lifetime License for each additional function*	CHF	700
202	Annual software support & updates, starting 12 months after delivery	CHF	500
Features			
300	*Additional features to be released in mid-2019		

Introductory offer – Limited time only:

Free lifetime license on controller software with EVERY PURCHASE of an IMPULSE™ rate table.

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