



JQA-QMA16427



**SMACH turns smart
in any motor.**

SMACH

SMART TECHNOLOGY

Universal Inverter Driver



SMACH
Technology

SMACH CO.,Ltd.

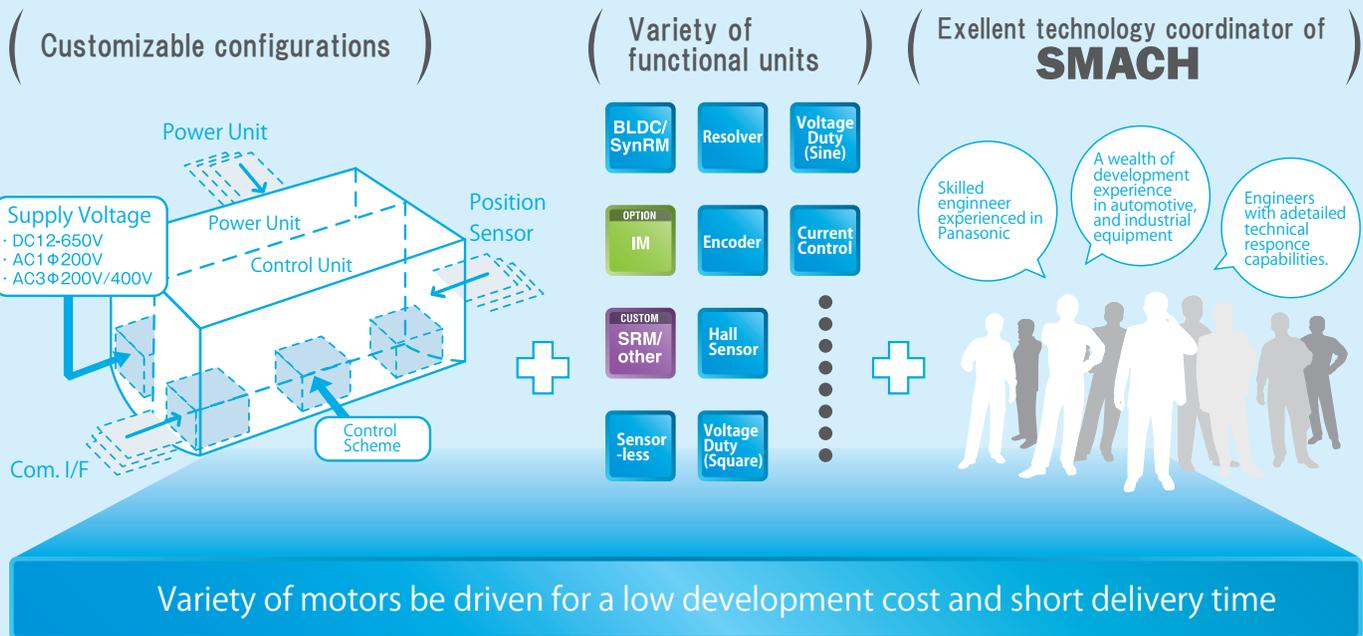
Packed with SMACH's technologies! Motor Driver that "CAN" drive variety of motors

"Universal Inverter Driver" is a motor driver of new ideas packed with SMACH's technologies. Customizable configurations have made it possible to drive a variety of motors. With short delivery time and low cost, SMACH can provide a motor driver that meets each customer's needs. For customization, SMACH's technical coordinators will provide finely tuned support services for even advanced development requests. With detailed parameter settings, SMACH has received high reputation from the professionals of motor driving technologies.

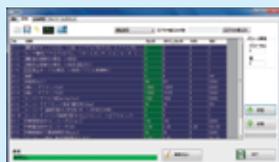


SMACH
Universal inverter driver

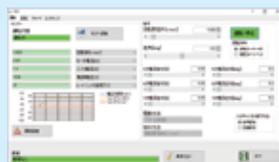
With the customizable configurations, a variety of motors "CAN" be driven.



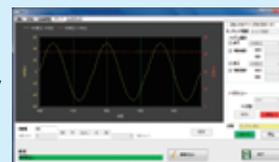
Engineers with little experience in motor driving technologies "CAN" use S2C (GUI operation software)



Parameter setting screen
Set motor parameters, various controller gains, various control value modulation methods, and carrier frequency, etc.



Drive control screen
Select drive method and command method, control current and advance angle, and monitor speed, motor current, etc.



Drive status screen
Display various operation status such as voltage, current, speed, etc., and time chart.



Auto tuning screen
Automatically measure the electric constant of a motor and offset position of a position sensor.



Analog output setting screen
Set range for analog output such as current.



Map setting screen
Set maximum torque control and field weakening control.

Specifications of PC Software "S2C"

- Set sensor parameters (such as encoder pulse count), set motor parameter (such as number of poles, R, L, ϕ_s), set various limit levels (such as current, voltage, number of rotations), switch control methods (such as current vector control), switch command methods (such as current command, number of rotation command, and duty command), and set advance angle values.
- The PC software "S2C" communicates with an inverter through RS-232C. The communications can be customized to meet customer's needs.
- The optional operation board can be selected instead of the "S2C" Inverter parallel operation using CAN or RS-485 or RS-422 is also available.

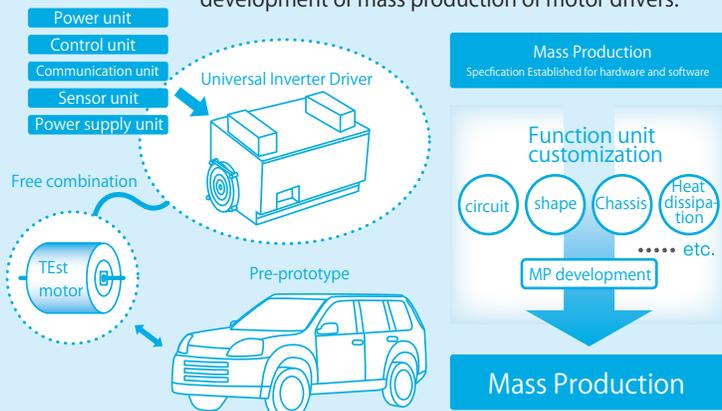
Customizable functional units "CAN" expand drive fields

Motor Compatibility BLDC/SynRM Brushless DC motor, Synchronous reluctance motor (w/ or w/o sensor) OPTION IM Induction motor (One inverter for synchronized motor and induction motor, thus higher facility efficiency) CUSTOM SRM/other Special motors can be driven with customized inverters.	Sensors Sensorless Extended induced voltage method for estimating rotor position and driving a motor. Resolver Highly reliable resolver is used for position sensor Encoder Highly precise encoder is used for position sensor Hall Sensor Hall sensor with high cost performance is used for position sensor	Operation Conditions wide input voltage line-up Motor driver's input rated voltage ranges from 12V to 650V wide output current line-up Motor driver's maximum output current ranges from 25A to 650A CUSTOM Water & dust resistance Operation is guaranteed in an environment where water and dust dance CUSTOM AC input Motors can be driven with commercial alternating current supply.	Additional Functions Carrier frequency swing To reduce noise by dispersing switching carrier frequency Carrier frequency switching To optimize efficiency and controllability by changing carrier frequency in accordance with motor rotation speed. position sensor offset adjustment To automatically adjust the offset position of position sensor OPTION Load torque fluctuation compensation To reduce vibration by applying feed-forward control to torque fluctuation. MAP drive function To optimize operation by automatically changing various control parameters. Pattern drive function To drive motor with a pattern of operation set up beforehand Control gain auto adjustment To automatically set optimal control gain when a cutoff frequency is put in Electric constant off-line identification To automatically measure electronic constants needed for determining sensorless drive and speed control gain OPTION Induction voltage identification To automatically measure motor induction voltage constants	Additional Functions Sensorless control gain automatic adjustment Automatically calculate sensorless control gain based on an input constant or an off-line identification results. OPTION identification of electric constant To measure various settings that change depending on operation conditions while driving motors OPTION Highly efficient preMAP To map optimal operation points beforehand based on various settings that change depending on operation conditions OPTION Brake resistance To shorten the control time taken for motor to stop by having energy consumed with resistance at the time of motor braking OPTION Output cutoff relay To reduce failure due to overvoltage by preventing regeneration of energy to DC bus side at the time of motor braking Chart function To display major variables/parameters on a chart with GUI "S2C." Monitor function To check inverter status by GUI "S2C." GUI with easy operation To control motor with a sense of direct operation through GUI "S2C."

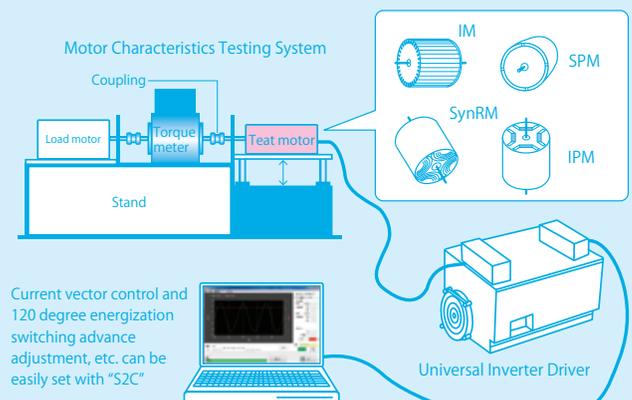
SMACH's flexible technical capabilities "CAN" satisfy new custom needs evolving with time and trend

Universal Inverter Driver "CAN" be used as:

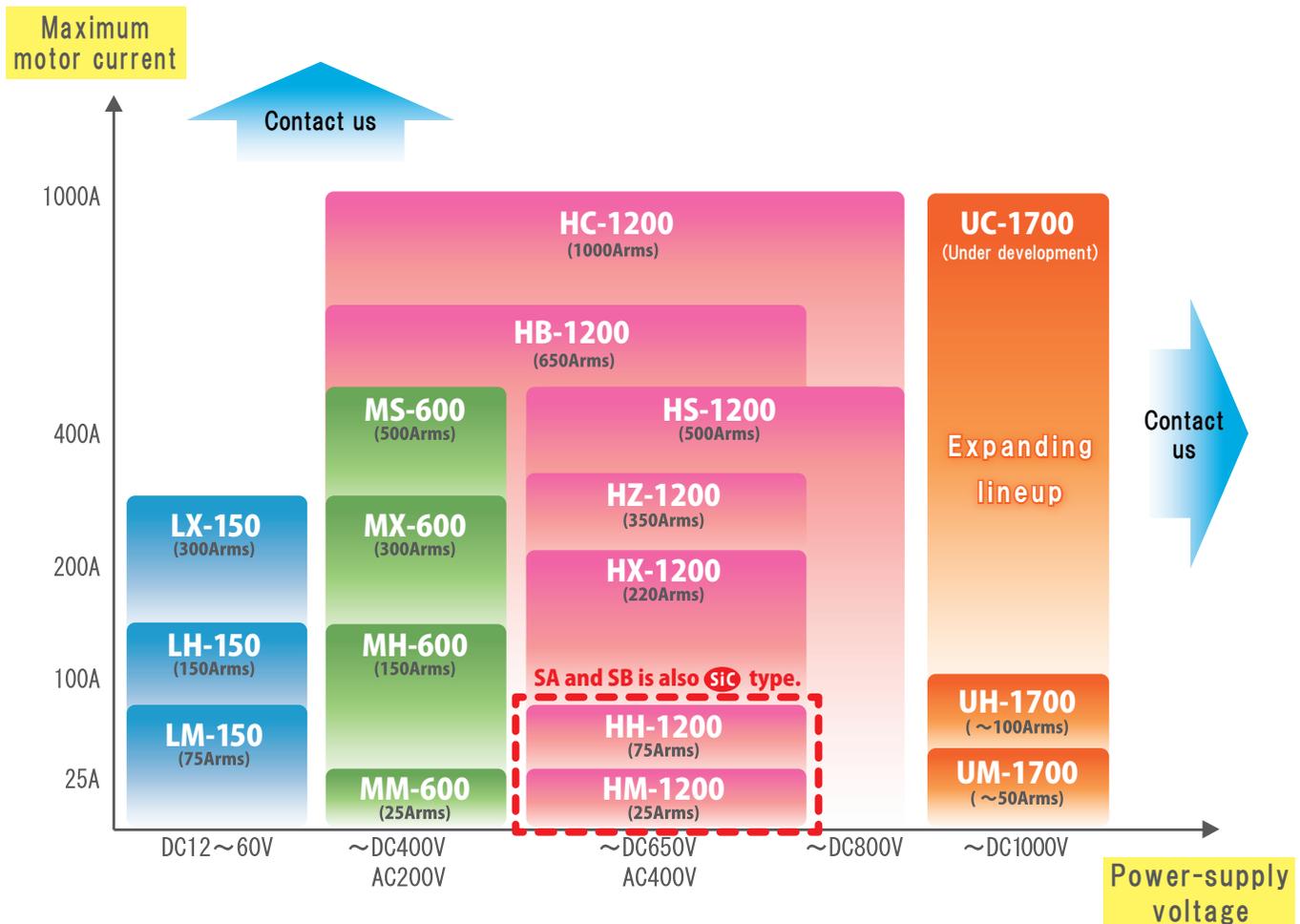
- Pre-prototype driver for mass production development**
 Customizable functionality units of Universal Inverter Driver help reduce costs and delivery time for development of mass production of motor drivers.



- Driver for special motors in research and development phases**
 Variety of motors in research and development phases can be driven with customized functional units.



Specifications of Universal Inverter Drivers



Specifications																		
Body series	L-series (Low-voltage)			M-series (Medium-voltage)				H-series (High-voltage)					U-series (Ultra high-voltage)		SiC-series			
Model name	LM-150	LH-150	LX-150	MM-600	MH-600	MX-600	MS-600	HM-1200	HH-1200	HX-1200	HZ-1200	HB-1200	HS-1200	HC-1200	UM-1700	UH-1700	SA	SB
Power-supply voltage	DC12V ~ 60V			DC60V ~ 400V				DC300V ~ 650V					DC300V ~ 800V		DC400V~1000V		DC100V ~ 650V	
Maximum motor current	75A	150A	300A	25A	150A	300A	500A	25A	75A	220A	350A	650A	500A	1000A	50A	100A	50A	100A
Cooling method	Forced air cooling			Forced air cooling			Water cooling	Forced air cooling			Water cooling			Forced air cooling		Forced air cooling		

● Adopted for the Inspection Line of EV motor factory. ● Obtained CE marking. We support export to overseas.

Inverter Driving System	<ul style="list-style-type: none"> Current vector control voltage control (square wave, sine wave) 	Driving Motor	Permanent Magnet Synchronous Motor(IPM, SPM), SynRM, SRM and Induction motor
Interface	Communication:RS232C, RS422, RS485, CAN, Ethernet(HC) Command by external signal	Rotor angle sensor	<ul style="list-style-type: none"> Resolver Encoder Hall Sensor ※Sensorless drive is also possible.
Protective Function	Overvoltage • Over current • heating • Overturn, etc.		

※Specifications, etc. are subject to change without notice.

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