

Small High-Performance Vector Control AC Inverter

EI-650 Series

220V Class (1-Phase Input) 1HP~ 3 HP

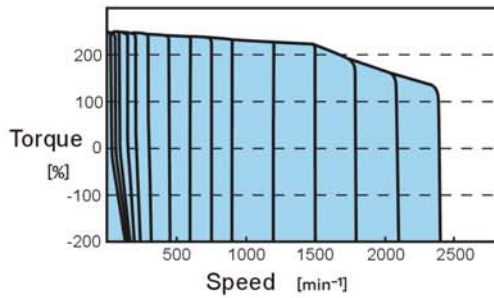
220V Class (3-Phase Input) 1HP~20HP

440V Class (3-Phase Input) 1HP~20HP



POINT 1

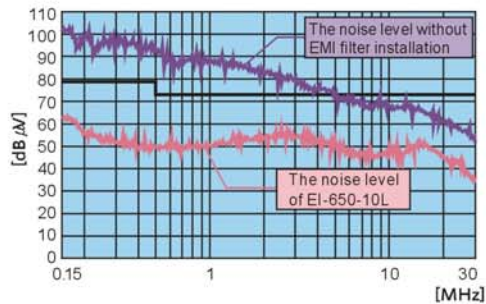
High Starting Torque



- EI-650 features the most advanced control technique of high-speed vector current control-200% output torque at 1Hz. In either starting area (motor acceleration) or braking area (motor deceleration), it keeps the stable and smooth operation to satisfy the requirement of application that needs large starting torque.
- Torque auto compensation can be achieved by auto-tuning after one parameter setting for EI-650 to reach the best efficiency.

POINT 2

Built-In EMI Noise Filter



- The built-in EMI noise filter (optional for under 2HP) can greatly decrease the RFI noise or current interruption produced from inverter.
- EI-650 also meets European EMC compliance.

POINT 3

Multiple Functions



- Configurable voltage / frequency characteristics: V/F constant torque control, variable torque control, automatic torque boost control, sensorless vector control, automatic energy savings, dynamic automatic energy-saving control and permanent-magnet motor control.
- Start/stop: Three-wire control, multifunctional input terminal, digital operator and RS485 communication control.
- Frequency reference: Built-in potentiometer, 4-20mA, 0-10V Δ , ∇ keys and serial communication.
- The sum of 2 analog signals (VIA/VIB) can be used as a frequency command value.
- 16 multi-speed setting, jog command, NPN, PNP input signal switch.
- PID feedback control with built-in 24VDC power supply for process transducer.
- All EI-650 units are equipped with built-in IGBT braking transistors.

Standard Specification

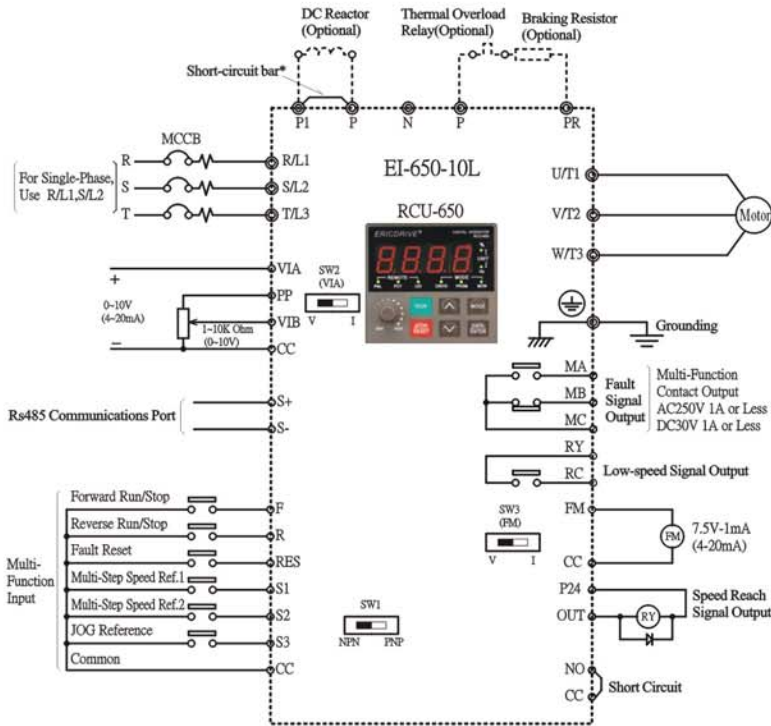
Voltage Class		220V Class single-phase			220V Class 3-phase							440V Class 3-phase									
Model EI-650-		S1L	S2L	S3L	O1L	O2L	O3L	O5L	O7L	10L	15L	20L	O1H	O2H	O3H	O5H	O7H	10H	15H	20H	
Max. Application Motor Output(HP)		1	2	3	1	2	3	5	7.5	10	15	20	1	2	3	5	7.5	10	15	20	
Output Features	Rated Output Current(A)	5	8	11	5	8	11	17.5	25	33	54	66	3.4	4.8	5.5	8.6	14.8	18	28	33	
	Max. Output Voltage(V)	3-phase 200~230V (Proportional to input voltage)			3-phase 200~230V (Proportional to input voltage)							3-phase 380~460V (Proportional to input voltage)									
	Max. Output Frequency(Hz)	400Hz (Programmable)																			
Power Supply	Rated Input Voltage and Frequency	Single-phase 200~230V 50/60Hz			3-phase 200~230V 50/60Hz							3-phase 380~460V 50/60Hz									
	Allowable Voltage Fluctuation	-15 ~ +10%																			
	Allowable Frequency Fluctuation	± 5%																			
Control Features	Control Method	Sine wave PWM (V/F control, Vector control selectable)																			
	Frequency Control Range	0.5 ~ 500.0Hz. Default: 0.5~80Hz, Max. frequency: 30~500Hz																			
	Frequency Accuracy (Temperature Change)	Digital reference: ±0.01% (-10°C ~ +50°C) Analog reference: ±0.5% (-25°C ~ ±10°C)																			
	Frequency Setting Resolution	Digital reference: 0.01Hz (less than 100Hz) · 0.1Hz(100Hz or more) Analog reference: 0.1Hz																			
	Output Frequency Resolution	0.01 Hz																			
	Overload Capacity	150% rated output current for one minute																			
	Frequency Reference Signal	DC0 ~ +10V(1~10KΩ), 4 ~ 20mA(250Ω), 0 ~ 20mA(250Ω) Frequency setting potentiometer (Selectable)																			
	Accel/Decel Time	0.0~3200sec. (3 accel/dec el time are independently programmed)																			
	Braking Torque	Short-term average deceleration torque 1HP: 100% or more · 2HP: 50% or more · 3HP: 20% or more Continuous regenerative torque: 20%(150% with optional braking resistor, braking transistor built-in)																			
	Voltage/Frequency Characteristics	V/F constant, variable torque, automatic torque boost, vector control, automatic energy-savings, dynamic automatic energy-saving control, auto-tuning																			
Protective Features	Motor Overload Protection	Electronic thermal overload relay																			
	Instantaneous Overcurrent	Motor coasts to a stop at approx. 250% of inverter rated current																			
	Overload	Motor coasts to a stop after 1 minute at 150% of inverter rated output current																			
	Overvoltage	Motor coasts to a stop if DC bus voltage exceeds 410V (220V Class) Motor coasts to a stop if DC bus voltage exceeds 820V (440V Class)																			
	Undervoltage	Motor coasts to a stop if DC bus voltage is less than 200V (220V Class) Motor coasts to a stop if DC bus voltage is less than 400V (440V Class)																			
	Momentary Power Loss	Following items are selectable: Stops if power loss is 15ms or longer / Continuous operation if power loss is approx. 0.5s or shorter / Constant running																			
	Cooling Fin Overheat	Protected by electronic circuit																			
	Stall Prevention Level	Can be set individual level during accel/dec el, provided/not provided available during coast to a stop																			
	Cooling Fan Fault	Protected by electronic circuit (fan lock detection)																			
	Ground Fault	Protected by electronic circuit																			
Other Functions	Power Charge Indication	ON until the DC bus voltage becomes 50V or less																			
	Multi-Function Input	Programmable to 76 functions such as forward/reverse run signal input, jog run signal input, operation base signal input and reset signal input, to assign to 8 input terminals. Logic selectable between SINK (Negative) (NPN) and SOURCE (Positive) (PNP)																			
	Multi-Function Output	Programmable to 58 functions such as upper/lower limit frequency signal output, low-speed detection signal output, specified speed reach signal output and failure signal output, to assign to M relay output, open collector output and RY output terminals.																			
	Dropping Function	When 2 or more inverters are used to operate a single load, this function prevents load from concentrating on one inverter due to unbalance																			
	Override Function	The sum of 2 analog signals (VIA/VIB) can be used as a frequency command value																			
	Digital Operator	RCU-650 is available to monitor frequency reference, output frequency, output current and fault message...etc.																			
	Terminals	Main circuit: screw terminal Control circuit: Plug-in screw terminal																			
Environmental Conditions	Wiring Distance between Inverter and Motor	100M or less																			
	Enclosure	IP20																			
	Cooling Method	Forced air cooling																			
	Ambient Temperature	Open chassis -10°C ~ +50°C																			
	Humidity	90%RH or less (non-condensing)																			
	Storage Temperature*1	-20°C ~ +60°C																			
Location	Indoor (free from corrosive gases or dust)																				
Elevation	1000M or less																				
Vibration	Up to 9.8m/S ² (1G) at 10 ~ 20Hz · Up to 2m/S ² (0.2G) at 20 ~ 50Hz																				

*1 Storage Temperature during shipping (for short period).

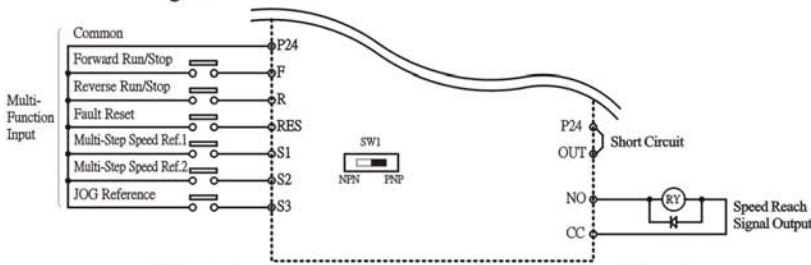
Standard Wiring

Connection Diagram 1: SW1 to NPN

Example: 220V/10HP



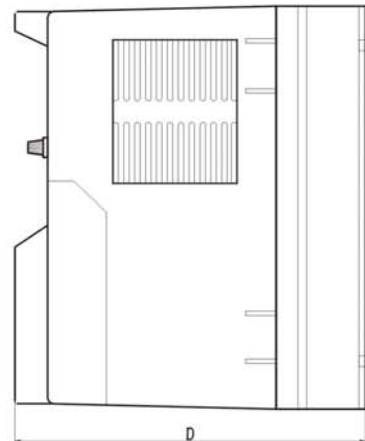
Connection Diagram 2: SW1 to PNP



* Short-circuit bar should be removed when connecting a DC reactor

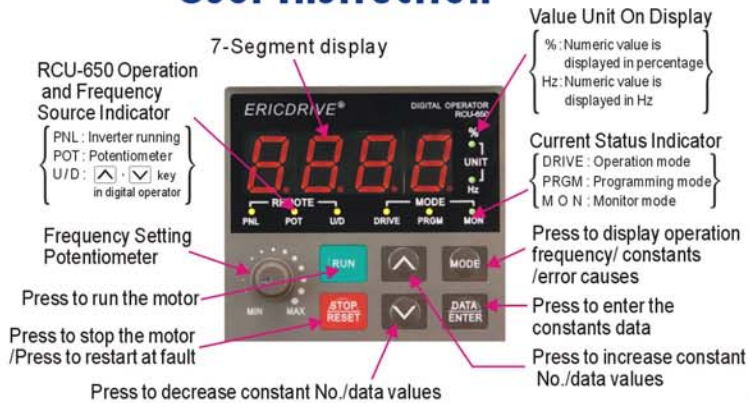
Dimension

Unit:mm



Digital Operator (RCU-650)

User Instruction



Voltage Class	Capacity (HP)	W	H	D	W1	H1	H2	Mass
220V single-phase	1HP	109	165	150	100	125	20	1.4
	2HP	137	185	161	128	145	20	2.0
	3HP	137	185	161	128	145	20	2.0
220V 3-phase	1HP	109	165	150	100	125	20	1.4
	2HP	137	185	161	128	145	20	2.0
	3HP	137	185	161	128	145	20	2.0
	5HP	191	280	168	181	224	28	5.3
	10HP	245	310	190	225	295	20	8.8
440V 3-phase	1HP	109	165	150	100	125	20	1.4
	2HP	137	185	161	128	145	20	2.0
	3HP	137	185	161	128	145	20	2.0
	5HP	191	280	168	181	224	28	5.3
	10HP	245	310	190	225	295	20	8.8