Technical Specifications - Kinetix 5500 Servo Drives

Kinetix 5500 Input Power Specifications

Attribute		2198-H003-ERS 2198-H003-ERS2	2198-H008-ERS 2198-H008-ERS2	2198-H015-ERS 2198-H015-ERS2	2198-H025-ERS 2198-H025-ERS2	2198-H040-ERS 2198-H040-ERS2	2198-H070-ERS 2198-H070-ERS2
AC input voltage		195…264V rms, single-phase (240V nom) 195…264V rms, three-phase (240V nom) 324…528V rms, three-phase (480V nom)			195…264V rms, three-phase (240V nom) 324…528V rms, three-phase (480V nom)		
AC input frequency		47…63 Hz					
Main AC input current (1) 324…528V rms, three-phase 195…264V rms, single-phase		1.0 A 0.7 A	2.60 A 1.70 A	5.20 A 3.40 A	8.30 A N/A	13.4 A N/A	23.7 A N/A
Max inrush (0-pk)		15.0 A			30.0 A		60.0 A
Peak AC input current 324…528V rms, three-phase 195…264V rms, single-phase		3.0 A 2.1 A	7.8 A 5.1 A	15.6 A 10.2 A	24.9 A N/A	40.2 A N/A	71.1 A N/A
Line loss ride through		20 ms					
Control power DC input voltage		24V DC ±10%					
Control power DC input current (1) (2) (non-brake motors)		0.4 A_{DC}		0.8 A_{DC}			1.3 A_{DC}
Nominal bus output voltage		276…747V DC					
Continuous output current to bus 195…264V rms, single-phase 324…528V rms, three-phase		0.67 A_{DC} 1.0 A_{DC}	1.60 A_{DC} 2.40 A_{DC}	3.27 A_{DC} 4.90 A_{DC}	N/A 7.80 A_{DC}	N/A 12.7 A_{DC}	N/A 22.50 A_{DC}
Peak output current to bus (3) 195…264V rms, single-phase 324…528V rms, three-phase		2.0 A_{DC} 3.0 A_{DC}	4.8 A_{DC} 7.2 A_{DC}	9.8 A_{DC} 14.7 A_{DC}	N/A 23.4 A_{DC}	N/A 38.1 A_{DC}	N/A 67.5 A_{DC}
Continuous output power to bus Nom (230V rms, single-phase) Nom (230V rms, three-phase) Nom (480V rms, three-phase)		0.2 kW 0.3 kW 0.6 kW	0.5 kW 0.8 kW 1.6 kW	1.0 kW 1.6 kW 3.2 kW	N/A 2.5 kW 5.2 kW	N/A 4.0 kW 8.4 kW	N/A 7.2 kW 14.9 kW
Peak output power to bus Nom (230V rms, single-phase) Nom (230V rms, three-phase) Nom (480V rms, three-phase)		0.6 kW 1.0 kW 1.9 kW	1.6 kW 2.4 kW 4.9 kW	3.2 kW 4.9 kW 9.7 kW	N/A 7.8 kW 15.6 kW	N/A 12.7 kW 25.3 kW	N/A 22.4 kW 44.8 kW
DC input voltage (common bus follower)		276…747V DC					
DC input current (common bus follower)		1.0 A_{DC}	2.4 A_{DC}	4.9 A_{DC}	7.8 A_{DC}	12.7 A_{DC}	22.5 A_{DC}
Bus overvoltage	240V, nom AC input	440V DC					
	480V, nom AC input	810V DC					
Bus undervoltage	240V, nom AC input	138V DC					
	480V, nom AC input	275V DC					
Efficiency		97%					
Capacitive energy absorption		11.54 J		19.58 J	39.15 J	58.73 J	104.87 J
Short-circuit current rating		200,000 A (rms) symmetrical					

(1) All drives are limited to 1 power cycle per minute.
(2) For current values when motors include a holding brake and additional information, refer to Control Power Current Specifications on page 45.
(3) Peak output current duration equals 1.0 second.

Kinetix 5500 Output Power Specifications

Attribute	2198-H003-ERS 2198-H003-ERS2	2198-H008-ERS 2198-H008-ERS2	2198-H015-ERS 2198-H015-ERS2	2198-H025-ERS 2198-H025-ERS2	2198-H040-ERS 2198-H040-ERS2	2198-H070-ERS 2198-H070-ERS2
Bandwidth [1] Velocity loop, max Current loop	 300 Hz 1000 Hz					
PWM frequency	8 kHz	4 kHz				
Continuous output current (rms)	1.0 A	2.5 A	5.0 A	8.0 A	13.0 A	23.0 A
Continuous output current (0-pk)	1.4 A	3.5 A	7.1 A	11.3 A	18.4 A	32.5 A
Peak output current (rms) [2]	2.5 A	6.25 A	12.5 A	20.0 A	32.5 A	57.5 A
Peak output current (0-pk) [2]	3.5 A	8.8 A	17.7 A	28.3 A	45.9A	81.3A
Continuous power out (nom) 195…264V rms, single-phase 195…264V rms, three-phase 324…528V rms, three-phase	 0.2 kW 0.3 kW 0.6 kW	 0.5 kW 0.8 kW 1.6 kW	 1.0 kW 1.5 KW 3.2 kW	 N/A 2.4 kW 5.1 kW	 N/A 4.0 kW 8.3 kW	 N/A 7.0 kW 14.6 kW
Internal shunt resistance	100 Ω		60 Ω			40 Ω
Internal shunt power	30 W		50 W			75 W
Shunt on	775V plus 30V x bus regulator capacity/utilization [3]					
Shunt off	765V plus 30V x bus regulator capacity/utilization [3]					

(1) Bandwidth values vary based on tuning parameters and mechanical components.
(2) Peak current duration (T_{PKmax}) equals 1.0 second.
(3) The shunt on and shunt off voltages increase during periods of shunting activity to promote sharing of shunt power in multi-axis configurations. Shunt utilization is equivalent to the BusRegulatorCapacity tag in the Logix Designer application.

Control Power Current Specifications

Kinetix 5500 servo drives and the 2198 capacitor module have different 24V DC power consumption. Factors to consider when calculating the combined current demand from your 24V DC power supply include the following:

- Catalog number for each drive in the system
- Whether servo motors include the holding brake option
- Whether the system includes 2198 capacitor modules (1 to 4 modules are possible)

Control Power Current Specifications

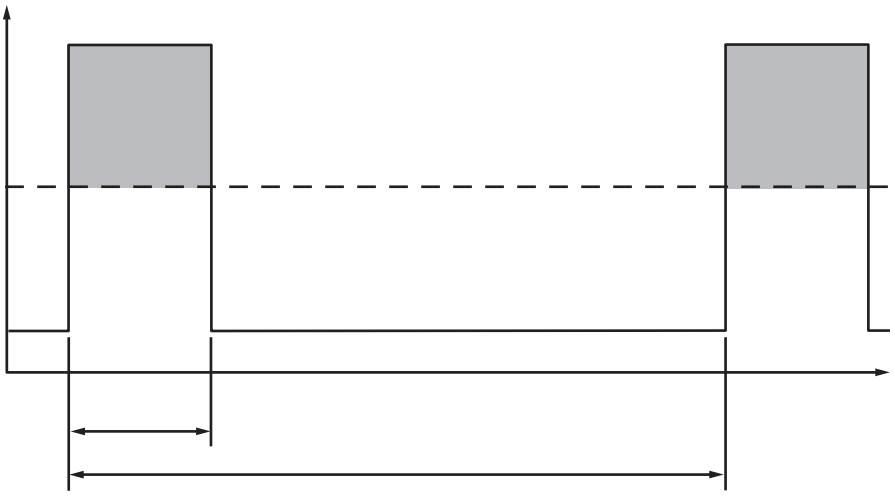
Drive Cat. No.	24V Current (non-brake motor) A_{DC}	24V Current (2 A brake motor) A_{DC}	24V Inrush Current [1] A
2198-H003-ERSx	0.4	2.4	2.0
2198-H008-ERSx			
2198-H015-ERSx	0.8	2.8	3.0
2198-H025-ERSx			
2198-H040-ERSx			
2198-H070-ERSx	1.3	3.3	
2198-CAPMOD-1300	0.3	N/A	2.0

(1) Inrush current duration is less than 30 ms.

Peak Current Specifications

Load Duty-cycle Profile Example

$$D = \frac{T_{PK}}{T} \times 100\%$$



Peak Duty Cycle Definition of Terms

Term	Definition [1]
Continuous Current Rating (I_{Cont})	The maximum value of current that can be output continuously.
Peak Current Rating (I_{PKmax})	The maximum value of peak current that the drive can output. This rating is valid only for overload times less than T_{PKmax}.
Duty Cycle (D)	The ratio of time at peak to the Application Period is defined as: $D = \frac{T_{PK}}{T} \times 100\%$
Time at Peak (T_{PK})	The time at peak current (I_{PK}) for a given loading profile. Must be less than or equal to T_{PKmax}.
Peak Current (I_{PK})	The level of peak current for a given loading profile. I_{PK} must be less than or equal to the Peak Current Rating (T_{PKMAX}) of the drive.
Base Current (I_{Base})	The level of current between the pulses of peak current for a given loading profile. I_{Base} must be less than or equal to the continuous current rating (I_{Cont}) of the drive.
Loading Profile	The loading profile is composed of I_{PK}, I_{Base}, T_{PK}, and D (or T) values and completely specify the operation of the drive in an overload situation. These values are collectively defined as the Loading Profile of the drive.
Application Period (T)	The sum of the times at I_{PK} (T_{PK}) and I_{Base}.

(1) All current values are specified as RMS.