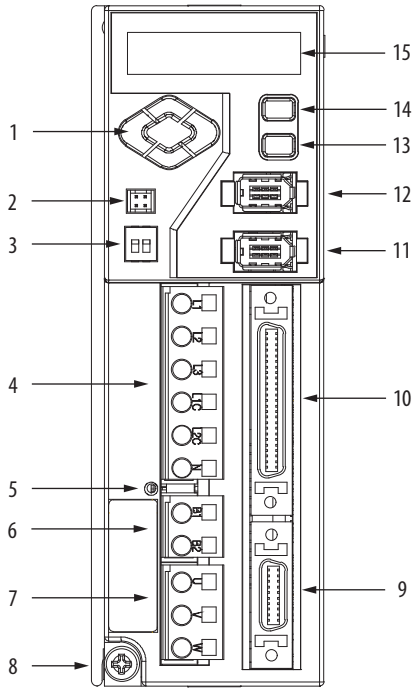
Kinetix 3 Component Servo Drives

The Kinetix 3 component servo drive provides a cost-effective motion control solution for smaller, low-axis count applications. By providing the ability to apply the appropriate level of control for the application along with download-able configuration software and automatic motor recognition, the Kinetix 3 servo drive delivers a motion solution that is easy to use at minimum cost. Its compact size and lower power ranges make it ideal for a variety of applications including indexing tables, medical manufacturing, laboratory automation equipment, and semiconductor processing.

Kinetix 3 Drive Features and Indicators



Item	Description
1	Left/right and up/down keys
2	Analog output (A.out) connector
3	RS-485 communication termination switch
4	Input power (IPD) connector
5	Main power status indicator
6	Shunt power (BC) connector
7	Motor power (MP) connector
8	Ground lug
9	Motor feedback (MF) connector
10	Input/output (IOD) connector
11	Serial interface (Comm0B) down
12	Serial interface (Comm0A) up
13	Enter key
14	Mode/set key
15	7-segment status indicator

Technical Specifications - Kinetix 3 Component Servo Drives

Kinetix 3 Servo Drive Power Specifications

Attribute	2071-AP0	2071-AP1	2071-AP2	2071-AP4	2071-AP8	2071-A10	2071-A15
AC input voltage	170…264V rms						
AC input phase	Single-phase				Three-phase/ Single-phase	Three-phase	
AC input frequency	47…63 Hz						
Mains AC input current (1) Nom (rms) Max inrush (0-pk)	1.30 A 21.9 A	2.38 A	3.68 A	7.14 A	6.25 A (three-phase) 10.52 A (single-phase) 22.6 A	8.75 A	12.37 A
Mains AC line loss ride through	20 ms						
Nominal bus output voltage	311V DC						
Bandwidth (2) Velocity loop Current loop	 550 Hz 2000 Hz						
PWM frequency	10 kHz						
Control power AC input voltage	170…264V rms						
Control power input current Nom (rms) Max inrush (0-pk)	 0.1 A 31 A						
Continuous output current (rms)	0.61 A	1.11 A	1.72 A	3.33 A	5.05 A	7.07 A	9.90 A
Continuous output current (0-pk)	0.85 A	1.56 A	2.40 A	4.67 A	7.07 A	9.90 A	13.99 A
Peak output current (rms)	1.80 A	3.30 A	5.10 A	9.90 A	14.99 A	18.88 A	29.69 A
Peak output current (0-pk)	2.55 A	4.67 A	7.21 A	14.0 A	21.21 A	26.70 A	41.99 A
Continuous output power	50 W	100 W	200 W	400 W	800 W	1.0 kW	1.5 kW
Bus overvoltage	405V DC						
Bus undervoltage	190V DC						
Internal shunt resistor	N/A			50 Ω	30 Ω		
Internal shunt Continuous power Peak power	 N/A N/A			 30 W 300 W	 70 W 700 W		
Shunt on	390V DC						
Shunt off	380V DC						
Efficiency	90%						
Bus capacitance	390 µF	780 µF			1170 µF		
Capacitive energy absorption	13 J	26 J			39 J		
Short-circuit current rating	100,000 A (rms) symmetrical						

(1) Kinetix 3 drive modules are limited to 1 AC mains power cycling every 2 minutes.

(2) Bandwidth values vary based on tuning parameters and mechanical components.

Fuse/Contactor Specifications

Make sure the selected components are properly coordinated and meet acceptable codes including any requirements for branch circuit protection. The following fuse examples are recommended for use with Kinetix 3 drives.

Fuse and Contactor Specifications

<table>
<tr><th>Drive Cat. No.</th><th>AC Input Power (1) (2) (3)
Recommended Fuse</th><th>Control Power (2) (4)
Recommended Fuse</th><th>Contactor (5)</th></tr>
<tr><td>2071-AP0</td><td rowspan="2">FNQ-R-7</td><td rowspan="7">FRS-R-2-1/2
FNQ-R-7-1/2
LPJ-6</td><td rowspan="2">100-K05xy</td></tr>
<tr><td>2071-AP1</td></tr>
<tr><td>2071-AP2</td><td>100-K09xy</td></tr>
<tr><td>2071-AP2</td><td>FNQ -R-10</td><td>100-K12xy</td></tr>
<tr><td>2071-AP8</td><td rowspan="2">FNQ-R-20
LPJ-20</td><td rowspan="2">100-C16xy</td></tr>
<tr><td>2071-A10</td></tr>
<tr><td>2071- A15</td><td>FNQ-R-30
LPJ-30</td><td>100-C23xy</td></tr>
</table>

(1) Fuses specified are Bussmann fuses.
(2) FNQ-R fuses are described as time-delay fuses, Class CC.
(3) LPJ fuses are described as dual-element time-delay fuses, Class J.
(4) FRS-R fuses are described as dual-element time-delay fuses, Class RK5.
(5) For contactors: *x* represents coil voltage, *y* represents the number of contacts.

Power Dissipation Specifications

Use this table to size an enclosure and calculate required ventilation for your Kinetix 3 drive system.

Drive Cat. No.	Usage as % of Rated Power Output (watts)				
	20%	**40%**	**60%**	**80%**	**100%**
2071-AP0	19.3	20.0	20.6	21.3	22.0
2071-AP1	20.1	21.6	23.1	24.6	26.2
2071-AP2	21.7	24.6	27.6	30.6	33.7
2071-AP4	25.6	31.9	38.4	45.2	52.2
2071-AP8	26.4	32.3	38.6	45.1	52.0
2071-A10	30.9	40.2	50.1	60.5	71.5
2071-A15	37.4	50.1	63.8	78.4	93.9

Weight Specifications

Drive Cat. No.	Weight, approx kg (lb)
2071-AP0	0.70 (1.5)
2071-AP1	0.75 (1.6)
2071-AP2	
2071-AP4	1.0 (2.2)
2071-AP8	1.75 (3.9)
2071-A10	
2071-A15	

Maximum Feedback Cable Lengths

Although motor power and feedback cables are available in standard lengths up to 90 m (295.3 ft), Kinetix 3 drive maximum feedback cable length is 30 m (98.4 ft). These tables assume the use of recommended cables as shown in the Kinetix Motion Accessories Technical Data, publication KNX-TD004.

Maximum Cable Lengths for Compatible Motors and Actuators

Rotary Motor Cat. No.	Incremental/TTL (5V) Encoder m (ft)	Absolute High-resolution (5V) 17-bit Encoder m (ft)
TL-A*xxxx*-B		30 (98.4)
TLY-A*xxxx*-B		
TLY-A*xxxx*-H	30 (98.4)	

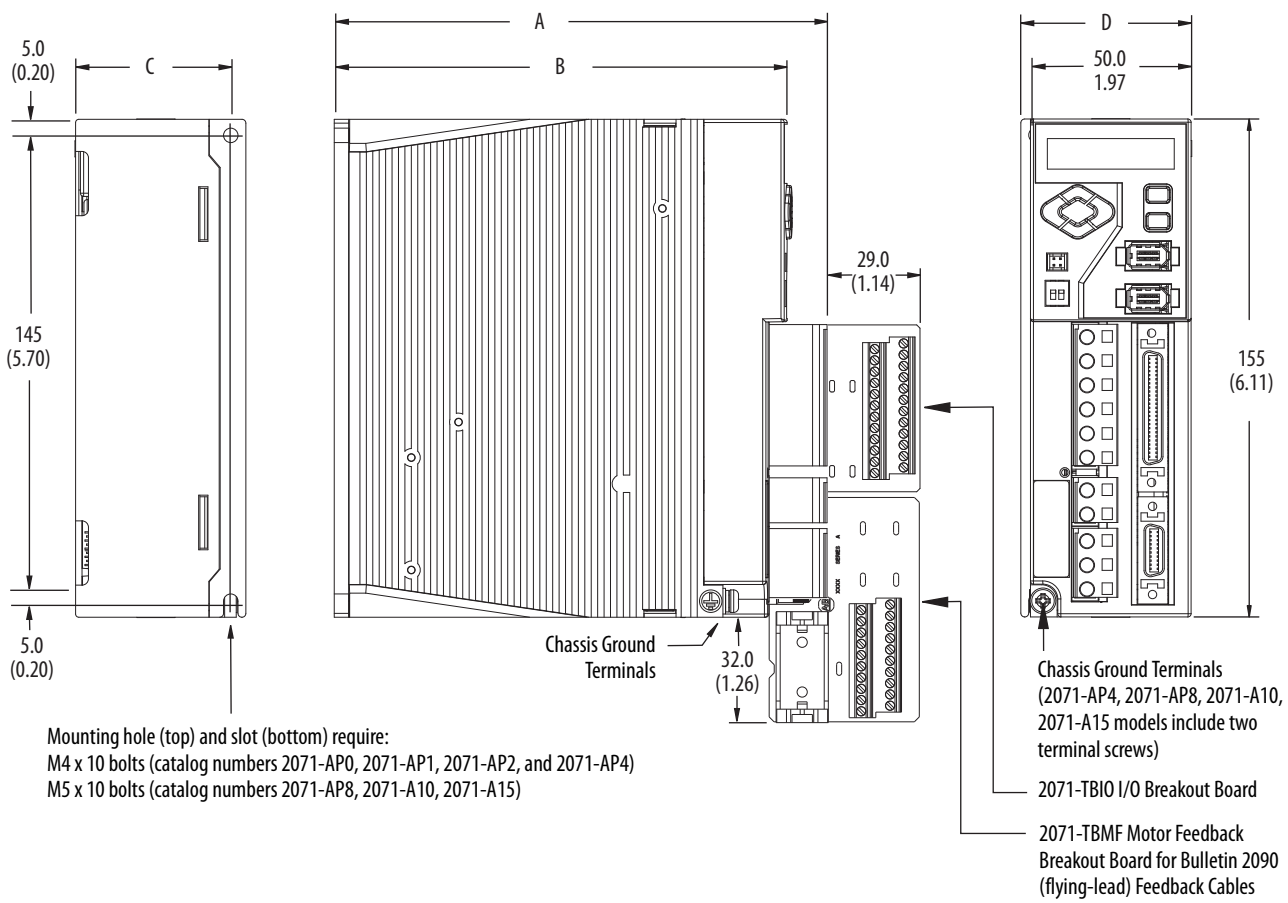
Actuator Cat. No.	Incremental/TTL (5V) Encoder m (ft)	Absolute High-resolution (5V) 17-bit Encoder m (ft)
MPAS-A*xxxx* (direct drive)	30 (98.4)	
LDAT-S*xxxxxx-x*B*x*	30 (98.4)	

Linear Motor Cat. No.	Incremental/TTL (5V) Encoder m (ft)
LDC-Series or LDL-Series	30 (98.4)

Dimensions - Kinetix 3 Component Servo Drives

Dimensions are in mm (in.)

2071-AP0 drive is shown.



Kinetix 3 Drive Dimensions

Drive Cat. No.	A mm (in.)	B mm (in.)	C mm (in.)	D mm (in.)
2071-AP0	153 (6.04)	141 (5.55)	48.3 (1.90)	53.0 (2.09)
2071-AP1				
2071-AP2				
2071-AP4				58.0 (2.29)
2071-AP8	198 (7.82)	186 (7.33)	59.0 (2.32)	81.0 (3.19)
2071-A10				
2071-A15				

Environmental Specifications - Kinetix 3 Component Servo Drives

Attribute	Operational Range	Storage Range (nonoperating)
Temperature, ambient	0…50 °C (32…122 °F)	-25…+85 °C (-13…+185 °F)
Relative humidity	5…95% noncondensing	5…95% noncondensing
Altitude	1000 m (3281 ft) 3000 m (9843) with derating	3000 m (9843 ft) during transport
Vibration	5…55 Hz @ 0.35 mm (0.014 in.) double amplitude, continuous displacement; 55…500 Hz @ 2.0 g peak constant acceleration (10 sweeps in each of 3 mutually perpendicular directions)	
Shock	15 g, 11 ms half-sine pulse (3 pulses in each direction of 3 mutually perpendicular directions)	

Certifications - Kinetix 3 Component Servo Drives

Certification (1) (when product is marked)	Standards
c-UL-us	UL Listed to U.S. and Canadian safety standards (UL 508 C File E59272).
	This drive provides integral solid-state short-circuit protection, but does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes. This drive provides solid-state motor overload protection that is adjustable. Refer to the Kinetix 3 Component Servo Drives User Manual, publication 2071-UM001, for more information.
CE	European Union 2004/108/EC EMC Directive compliant with IEC 61800-3:2004 + A1:2012: Adjustable Speed Electrical Power Drive Systems - Part 3; EMC Product Standard including specific test methods.
	European Union 2006/95/EC Low Voltage Directive compliant with IEC 61800-5-1:2007 - Adjustable speed electrical power drive systems.
C-Tick	Australian Radiocommunications Act, compliant with: • Radiocommunications Act: 1992 • Radiocommunications (Electromagnetic Compatibility) Standard: 1998 • Radiocommunications (Compliance Labelling - Incidental Emissions) Notice: 1998 • AS/NZS CISPR 11: 2002 (Group 2, Class A)
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: • Article 58-2 of Radio Waves Act, Clause 3 • Registration number: KCC-REM-RAA-2071-A15 • Registration number: KCC-REM-RAA-2071-AP4

(1) When product is marked, refer to publication 2071-CT001 for the Kinetix 3 servo drives EU Declaration of Conformity certificate.

Accessories - Kinetix 3 Component Drives

Kinetix 3 drive accessories include drive-mounted 20-pin and 50-pin breakout boards for making flying-lead motor feedback and I/O connections. For control and configuration serial interface cable specifications, refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004.

Motor Feedback Breakout Board

Use the 2071-TBMF breakout board with 2090-CFBM6DF-CBAA*xx* flying-lead feedback cables or when your motor or actuator has high-resolution encoder feedback.

Motor Feedback Breakout Board Specifications

Attribute	Value
Wire size	1.5…0.2 mm^2 (16…24 AWG)
Change in depth of drive (1)	29 mm (1.14 in.)
Change in height of drive (1)	32 mm (1.26 in.)

(1) Add this value to the dimensions of your Kinetix 3 drive. Refer to Dimensions - Kinetix 3 Component Servo Drives on page 112.

The customer-supplied 3.6V lithium battery, when installed in a motor feedback breakout board, provides multi-turn encoder operation to TL-Series™ (Bulletin TL and TLY) motors.

Battery Specifications

Attribute	Value
International size reference	1/2AA, ER14252
Capacity, nom @ 0.5 mA, to 2V	1.2 Ah
Rated voltage	3.6V
Recommended continuous current, max	50 mA

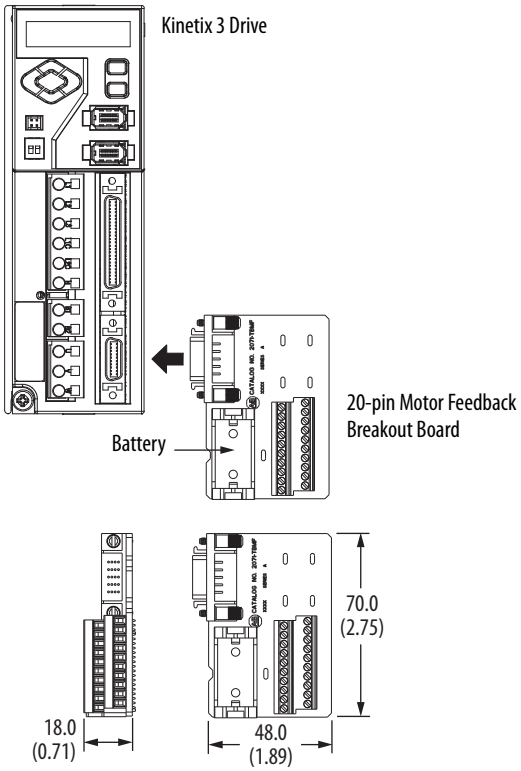
I/O Breakout Board

Use the 2071-TBIO breakout board for making flying-lead cable connections to twenty-four of the most commonly used terminals in the 50-pin IOD connector.

I/O Breakout Board Specifications

Attribute	Value
Wire size	1.5…0.2 mm^2 (16…24 AWG)
Change in depth of drive (1)	29 mm (1.14 in.)

(1) Add this value to the dimensions of your Kinetix 3 drive. Refer to Dimensions - Kinetix 3 Component Servo Drives on page 112.



Dimensions are in mm (in.)