

Integrator Series AC Drives

AC690+ Series AC Drive

AC Drives 0.75kW - 1000kW

Description

The AC690+ Series is a single range of AC drives designed to meet the requirements of all variable speed applications from simple single motor speed control through to the most sophisticated integrated multi-drive systems.

The heart of the AC690+ is a highly advanced 32-bit microprocessor based motor control model. This provides an exceptional dynamic performance platform to which can be added a host of communications and control options, enabling you to tailor the drives to meet your exact requirements.

The AC690+ is available in 380-500V 3-phase 0.75 to 1000kW and 220V-240V 0.75 to 55kW.

Modes of Operation

The AC690+ can be user configured for 3 different modes of operation

Open-loop (volts/frequency) control

This mode is ideal for basic motor speed control, or multiple motors driven in parallel. The quick set-up menu and plain language display ensures the quickest and easiest, trouble free start up.

Sensorless vector control

High starting torque and tight speed regulation is provided by a sophisticated MRAS (Model Reference Adaptive System) motor control strategy. MRAS provides accurate speed simulation (without the need for any speed measuring transducer) by continually modelling the motor.

Closed-loop vector control

Full closed-loop flux vector performance can be achieved with the AC690+ by simply adding an encoder feedback 'technology box'. This provides 100% continuous full load standstill torque plus a highly dynamic speed loop (up to 45 Hz bandwidth); more than sufficient for the most demanding of applications.



AC690+ Series

Demanding Environments

For environments that have dusty, humid or corrosive atmospheres, the AC690+ can optionally be supplied with conformally coated circuit boards that improve the drives resistance to corrosion, thereby increasing reliability and service life.

Industries that would typically benefit from conformal coating could include:

- **Water and wastewater**
- **Paper and pulp processing**
- **Steel**
- **Marine and offshore**
- **Outdoor cranes**
- **Wind & wave power generation**
- **Food processing.**

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Features

Encoder feedback option with encoder technology box

The AC 690+ is converted from open-loop control to high performance closed-loop control by simply adding the plug-in encoder feedback technology box.

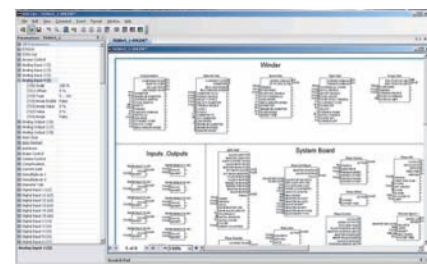
High performance systems expansion module

The optional add-on "systems" expansion module is available for more advanced applications and includes phase locking between drives and register control. It fits behind the main control board and provides the following functionality:

- 5 configurable digital Inputs / outputs
- Converts existing 4 analogue inputs to high resolution (12 bit plus sign)
- 2 encoder inputs
- 2 high speed register mark inputs

Integrated function blocks

- Winder Control
- Process PID,
- Raise / Lower
- Spinning Load Start



Mechanical protection options to suit all environments

A choice of mechanical protection options allows the drive to be mounted in a variety of different operating environments.

- **IP20** - for mounting inside an electrical enclosure.
- **IP40/NEMA 1** - The optional top cover, with cable gland plate enables the drive to be directly wall or machine mounted. (Frames B to E)
- **IP54** - Ideal for mounting in aggressive environments. Higher levels of protection are available as a special build option on request. A multitude of control options can be added to the drive using our FASTPACK option.
- **Through panel mounting** - This option allows the drive to be mounted with the major heat producing components and heatsink outside the enclosure, keeping the electronics clean and cool. (Frames C,D and E)

Programming / Operator controls

The AC690+ HMI provides access to all of the drive's functions in a logical and intuitive manner. The readout is backlit and displays all functions in plain language and engineering units. The HMI can be mounted on the drive itself, or alternatively it can be supplied loose, with a mounting kit, for mounting remotely on a panel door, for example.

Open standard fieldbus communications

The AC690+ has a whole host of communication technology box options allowing seamless multi-vendor integration into networked systems using the most common industrial fieldbus communications protocols :

- Profibus-DP
- Ethernet
- Devicenet
- Modbus RTU
- CANopen,
- Controlnet
- Link (Parker SSD proprietary bus)

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AC Drive 0.75kW - 1000kW

Vector control with / without encoder feedback

Power ratings 0.37 to 1000kW

Supplied in enclosure above 355kW

Pre-programmed application Macros

Programmable over communications

Programming identical to DC 590+ DC drive

Variable torque ratings

Class B EMC filters



Technical Specification

Power Supply	380-460V (±10%) 3-phase 0.75 to 1000kW ; 380-500V (±10%) 3-phase 2.2 to 110kW; 220-240V (±10%) 1-phase 0.37 to 2.2kW; 220-240V (±10%) 3-phase 0.37 to 37 kW.
Environment	Constant torque - 0-45°C (40°C with IP40 cover) derating possible up to 50°C max Max altitude: 1000m, derate by 1% for every 100m above 1000m
Overload	Constant torque: 150% for 60 seconds, 180% for 1 second; Variable torque - 115% for 10 seconds
Output Frequency	0-480Hz
Switching Frequency	Frame B 3,6 or 9kHz; Frame C, D, E and F 3 or 6kHz - All with audibly silent switching frequency
Dynamic Braking	Each drive can be fitted with an internal dynamic brake switch Frame B and C : standard; Frame D,E and F : optional
Analogue Inputs	4 Configurable, 10bits (13 bits with optional system card). 0-10V, 0±10V, 0-20mA, 4-20mA
Analogue Outputs	3 Configurable, 10 bits. 0-10V, 0±10V, 0-20mA, 4-20mA
Digital Inputs	7 Configurable, nominal 24V dc (30V dc max)
Digital Outputs	3 Configurable, relay contacts 3A/230 Vac
Reference Supplies	+10V dc, -10V dc, +24V dc
Motor Thermistor input	

Function Block Programming	Function block programming allows a tremendously flexible control structure to be created with ease. An almost infinite combination of user functions can be realised often alleviating the need for an external PLC. However, the drive is pre-configured so it can be used straight from the box as a standard AC drive without further adjustment.
Analogue Functions	If So, summing, subtractor, multiplier, divider, if higher then lower then If, Counter, Timer
Boolean Functions	Not, And, Nand, Or, Nor, Xor, Trigger, Flip-Flop
Application Macros	Simple speed control, Forward/Reverse, Raise/Lower, Process PID, Preset speeds, Winder control.
6901 Operator Keypad	The 6901 keypad is designed for setting-up, configuring and operating the AC690+ drive. The intuitive menu navigation and parameter display is simple and easy to use. Main features: <ul style="list-style-type: none"> • Remote mounting capability on front of enclosure • Backlit display • Multilingual 2x16 alphanumeric display • Customizable display • Local Control : Speed setpoint, Start/Stop, Jog and Direction • Password protection • Quick set-up mode
Systems Expansion Module	The optional systems expansion module allows for advanced applications such as phase locking between drives and register control. Key features include: <ul style="list-style-type: none"> • 5 Additional user configurable Inputs / Outputs • 4 High resolution analogue inputs (12 bits plus sign) • 2 Additional encoder inputs • 2 High speed register mark inputs

AC690+ Series

Integrator Series AC Drive

AC690+ Series AC Drive
400kW - 1000kW



- Energy Saving**
- Fast return on investment in pump and fan applications**
- Improved power factor**
- Flux vector control with / without encoder and V/F control**
- Reduced harmonics through 12 or 18 pulse coupling**
- Improved HVAC control**

Standards

The AC690+ series meets the following standards when installed in accordance with the relevant product manual.

- CE Marked to EN50178 (Safety, Low Voltage Directive)
- CE Marked to EN61800-3 (EMC Directive)
- UL Listed to US safety standard UL508C.
- cUL Listed to Canadian standard C22.2 #14.



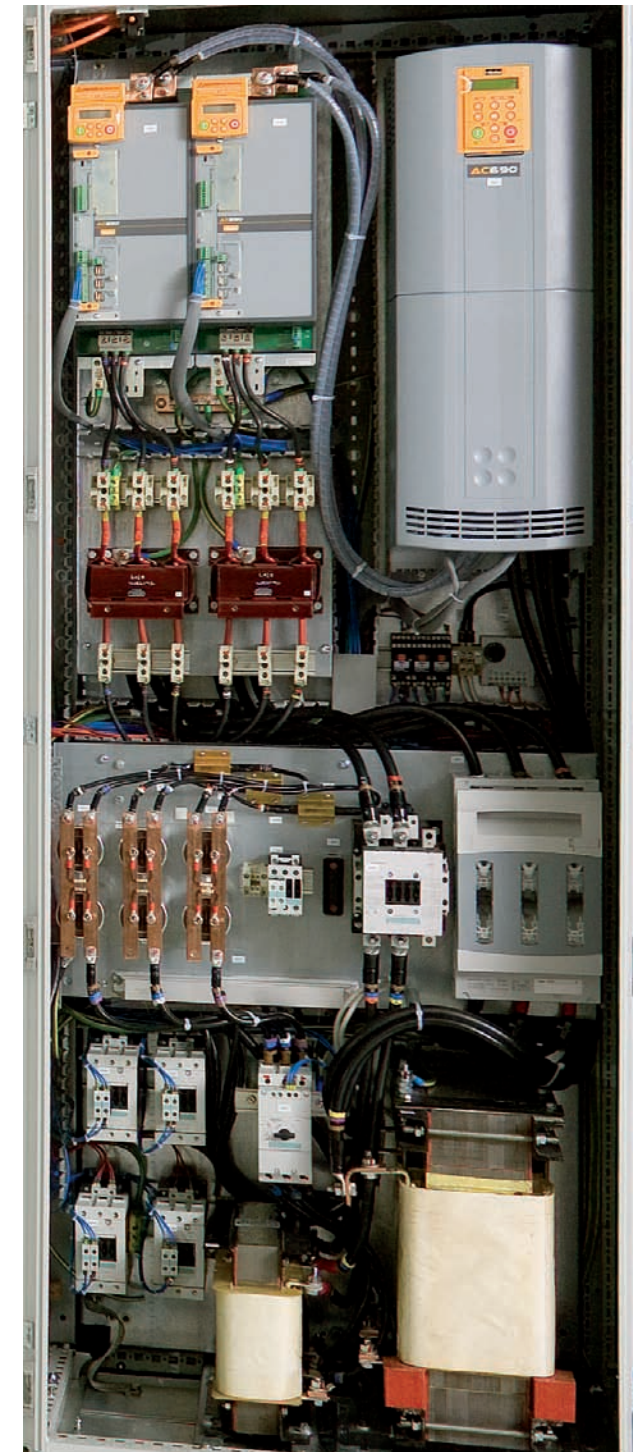
Enclosure specifications

(above 355kW for constant torque)

6 pulse Model	Power Rating	Constant torque : 355 - 900 kW Variable torque : 400 - 1000 kW
	Supply Voltage	380-460Vac (±10%) 3-phase
	Disconnect Switch	Standard
	Input inductance	Standard for limiting harmonic current
	Output Choke	Standard
	Operator Panel	6901 operator keypad mounted on enclosure door
12 pulse model (optional)	Harmonics	Reduced harmonic current
	Power Rating	Constant torque : 355 - 600 kW Variable torque : 400 - 650 kW
	Supply Voltage	380-460Vac (±10%) 3-phase
	Disconnect Switch	Standard
	Input Transformer	(not included in the enclosure) optional 2 secondaires U/D
	Operator Panel	6901 operator keypad mounted on enclosure door
18 pulse model (option)	Harmonics	Total harmonic distortion (current) in accordance with limits of IEEE 519 (1992)
	Power Rating	Constant torque : 630 - 900 kW Variable torque : 750 - 1000 kW
	Supply Voltage	380-460Vac (±10%) 3-phase
	Disconnect Switch	Standard
	Input Transformer	(not included in the enclosure) optional 3 secondaires phase shifted by 20°
	Operator Panel	6901 operator keypad mounted on enclosure door

4 Quadrant Power Module

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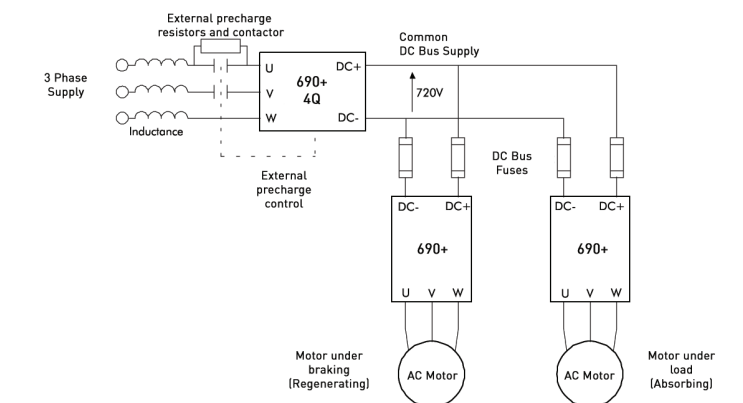


Description

In many applications the overall power consumed by the system is less than the sum of power of the installed motors. Indeed, all sections of a machine do not consume energy at the same time. Typically, some motors will be driven electrically while others are being driven by the momentum of the machine.

For such applications, it is economically advantageous to connect the drives of all sections of the machine to a common DC bus: the energy-generating sections are then fed into the energy-consuming sections, which reduces the overall energy consumption of the system.

The drive AC690+ configured in 4 quadrant mode is the ideal solution to power such systems. Thanks to the 4Q functionality of the AC690+, the excess energy in the system is returned to the network and not dissipated in the form of heat through braking resistors. The current waveforms are almost sinusoidal, which minimizes network harmonics.



- Energy saving**
- No maintenance (No braking resistor)**
- Reducing the size of the supply required by distributing energy through the DC bus system**
- Reduced harmonics meeting the limits of IEEE 519**
- High power factor (cos φ ~ 1)**

Electrical Characteristics

AC690+ Integrator Series AC Drive



Power Supply 380-460V (±10%) 50/60 Hz 3-phase

Old Reference	New Order Reference	Frame	Constant Torque		Variable Torque		Inductance	Braking Module
			Nominal Power (kW)	Output Current (A)	Nominal Power (kW)	Output Current (A)		
690B-0007-43-xx	690-431250B0-B...	B	0.75	2.5	-	-	N/A	Standard
690B-0015-43-xx	690-431450B0-B...	B	1.5	4.5	-	-		
690B-0022-43-xx	690-431550B0-B...	B	2.2	5.5	-	-		
690B-0040-43-xx	690-431950B0-B...	B	4.0	9.5	-	-		
690B-0055-43-xx	690-432120B0-B...	B	5.5	12	-	-		
	690-432120C0-B...	C	5.5	12				
	690-432140B0-B...	B	6.0	14			Standard - Internal Inductance DC Bus	
690C-0075-43-xx	690-432160C0-B...	C	7.5	16	11	23		
690C-0110-43-xx	690-432230C0-B...	C	11	23	15	31 (UL=27)*		
690C-0150-43-xx	690-432300C0-B...	C	15	31	18.5	38		Option
	690-432310D0-...	D	15	31	18.5	38		
690D-0180-43-xx	690-432380D0-...	D	18.5	38	22	45		
690D-0220-43-xx	690-432450D0-...	D	22	45	30	59(UL=52)*		
690D-0300-43-xx	690-432590D0-...	D	30	59	37	73		
	690-432590E0-...	E	30	59	37	73	Standard - Inductance Internal 3-phase	
690E-0370-43-xx	690-432730E0-...	E	37	73	45	87		
690E-0450-43-xx	690-432870E0-...	E	45	87	55	105		
690F-0550-43-xx	690-433105F2-...	F	55	105	75	145		
690F-0750-43-xx	690-433145F2-...	F	75	145	90	165		
690F-0900-43-xx	690-433180F2-...	F	90	180	110	205		
690G-1100-43-xx	690-433216G2-...	G	110	216	132	260	External Inductance	
690G-1320-43-xx	690-433250G2-...	G	132	250	150	302		
690G-1600-43-xx	690-433316G2-...	G	160	316	180	361		
690G-1800-43-xx	690-433361G2-...	G	180	361	220	420		
690H-2000-43-xx	690-433375H2-...	H	200	375	250	480		
690H-2200-43-xx	690-433420H2-...	H	220	420	250	480		
690H-2500-43-xx	690-433480H2-...	H	250	480	300	545		
690H-2800-43-xx	690-433520H2-...	H	280	520	315	590		
690J-3150-43-xx	690-433590J2-...	J	315	590	355	650		
690GM1800-43-xx	690GM1800-43-xx + 690GS1800-43-xx	K	355	685	400	798		
690HM2200-43-xx	690HM2200-43-xx + 690HS2200-43-xx	K	400	798	475	912		
690HM2800-43-xx	690HM2800-43-xx + 690HS2800-43-xx	K	500	988	600	1120		
690JM3150-43-xx	690JM3150-43-xx + 690JS3150-43-xx	K	600	1120	650	1235		
690GM1800-43-xx	690GM1800-43-xx + 2 x 690GS1800-43-xx	K	550	1028	630	1197		
690HM2200-43-xx	690HM2200-43-xx + 2 x 690HS2200-43-xx	K	630	1197	750	1368		
690HM2800-43-xx	690HM2800-43-xx + 2 x 690HS2800-43-xx	K	800	1482	900	1681		
690JM3150-43-xx	690JM3150-43-xx + 2 x 690JS3150-43-xx	K	900	1681	1000	1852		

Electrical Characteristics

AC690+ Integrator Series AC Drive



Power Supply 380-500V (±10%) 50/60 Hz 3-phase

Old Reference	New Order Reference	Frame	Constant Torque		Variable Torque	
			Nominal Power (kW)	Output Current (A)	Nominal Power (kW)	Output Current (A)
690B-0022-53-xx	690-531500B0-B...	B	2.2	5.0	-	-
690B-0040-53-xx	690-531800B0-B...	B	4.0	8.0	-	-
690B-0055-53-xx	690-532110B0-B...	B	5.5	11	-	-
	690-532110C0-B...	C	5.5	11	7.5	14
690C-0075-53-xx	690-532140C0-B...	C	7.5	14	11	21
690C-0110-53-xx	690-532210C0-B...	C	11	21	15	27
690C-0150-53-xx	690-532270C0-B...	C	15	27	18.5	34
	690-532280D0-...	D	15	28	18.5	36
690D-0180-53-xx	690-532360D0-...	D	18.5	36	22	42
690D-0220-53-xx	690-532420D0-...	D	22	42	30	52
690D-0300-53-xx	690-532520D0-...	D	30	52	37	65
	690-532540E0-...	E	30	54	37	67
690E-0370-53-xx	690-532670E0-...	E	37	67	45	79
690E-0450-53-xx	690-532790E0-...	E	45	79	55	98
690F-0550-53-xx	690-533100F2-...	F	55	100	75	125
690F-0750-53-xx	690-533125F2-...	F	75	125	90	156
690F-0900-53-xx	690-533156F2-...	F	90	156	110	180

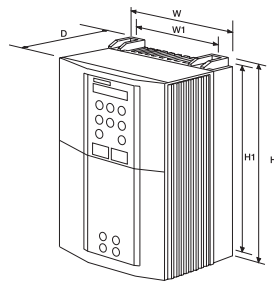
Power Supply 220-240V (±10%) 50/60 Hz

Old Reference	New Order Reference	Number of phases	Frame	Constant Torque		Variable Torque		Inductance	Braking Module
				Nominal Power (kW)	Output Current (A)	Nominal Power (kW)	Output Current (A)		
690B-0007-21-xx 1	690-211400B0-B...	1	B	0.75	4.0	-	-	No	Standard
690B-0015-21-xx 1	690-211700B0-B...	1	B	1.5	7.0	-	-		
690B-0022-21-xx 1	690-212105B0-B...	1	B	2.2	10.5	-	-		
690B-0007-23-xx 3	690-231400B0-B...	3	B	0.75	4.0	-	-		
690B-0015-23-xx 3	690-231700B0-B...	3	B	1.5	7.0	-	-		
690B-0022-23-xx 3	690-232105B0-B...	3	C	2.2	10.5				
690B-0040-23-xx 3	690-232165B0-B...	3	C	4.0	16.5				
690C-0055-23-xx 3	690-232220C0-B...	3	C	5.5	22	7.5	28		
690C-0075-23-xx 3	690-232280C0-B...	3	C	7.5	28	11	42		
690D-0110-23-xx 3	690-232420D0-...	3	D	11	42	15	54	Standard - Internal inductance DC Bus	Option
690D-0150-23-xx 3	690-232540D0-...	3	D	15	54	18.5	68		
690D-0180-23-xx 3	690-232680D0-...	3	D	18.5	68	n.a.	n.a.		
690E-0220-23-xx 3	690-232800E0-...	3	E	22	80	30	104		
690F-0300-23-xx 3	690-233104F2-...	3	F	30	104	37	130	Standard - 3-phase Inductance	
690F-0370-23-xx 3	690-233130F2-...	3	F	37	130	45	154		
690F-0450-23-xx 3	690-233154F2-...	3	F	45	154	55	192		

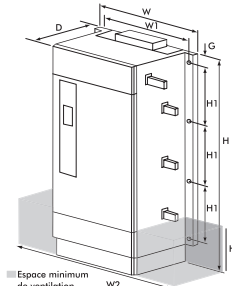
Power ratings stated based on a supply voltage of 230Vac

Dimensions

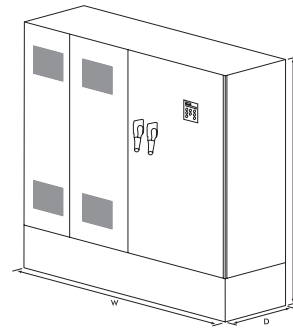
AC690+ Integrator Series AC Drive



Frame B,C,D,E,F



Frame G,H,J



Frame K

Dimensions

Model	Dimensions (mm)				Mounting Centres (mm)					Weight (kg)
	H without brake	H with brake	W	D	W2	H2	H1	W1	G	
Frame B	233	233	177	181	-	-	223	130	-	4.3
Frame C	348	348	201	208	-	-	335	150	-	9.3
Frame D	453	453	252	245	-	-	440	150	-	17.4
Frame E	669	669	257	312	-	-	630	150	-	32.5
Frame F	720	720	257	349	-	-	700	150	-	41.0
Frame G	1042	1490	455	465	675	225	300	420	16	100
Frame H	1177	1750	570	465	805	360	300	536	16	125
Frame J	1288	1825	1177	465	825	333	300	641	16	170
Frame K 355/400kW*	2000	2000	1600	600	-	-	-	-	-	-
Frame K 400/475kW*	2000	2000	1600	600	-	-	-	-	-	-
Frame K 500/600kW*	2000	2000	1600	600	-	-	-	-	-	-
Frame K 600/650kW*	2000	2000	2000	600	-	-	-	-	-	-
Frame K 550/630kW*	2000	2000	2400	600	-	-	-	-	-	-
Frame K 630/750kW*	2000	2000	2400	600	-	-	-	-	-	-
Frame K 800/900kW*	2000	2000	2400	600	-	-	-	-	-	-
Frame K 900/1000kW*	2000	2000	3000	600	-	-	-	-	-	-

Selection and Order Codes

AC690+ Integrator Series AC Drive (230V)



		Block 1	Block 2	Block 3	Block 4
Example ▶		690	- 21 1400 B 0	- B 0 0 P 00	- A 0 0 0
Product Family	AC690+ Integrator Series AC Drive	690			
	AC690+ Integrator Series AC Drive (Conformal Coating)	C690			
		Constant Torque	Variable Torque		Frame
		kW/A @230Vac	HP/A @230Vac	kW/A @230Vac	HP/A @230Vac
Power / Current Rating	Supply Voltage	230V 1-phase		21	
		0.75/4.0	1.0/4.0	B	1400 B
		1.5/7.0	2.0/7.0	B	1700 B
		2.2/10.5	3.0/10.5	B	2105 B
	230V 3-phase			23	
		0.75/4.0	1.0/4.0	B	1400 B
		1.5/7.0	2.0/7.0	B	1700 B
		2.2/10.5	3.0/10.5	B	2105 B
		4.0/16.5	5.0/16.5	B	2165 B
		5.5/22	7.5/22	7.5/28	10/28
		7.5/28	10/28	11/42	15/42
		11/42	15/42	15/54	20/54
		15/54	20/54	18.5/68	25/68
		18.5/68	25/68		
		22/80	30/80	30/104	40/104
		30/104	40/104	37/130	50/130
		37/130	50/130	45/154	60/154
		45/154	60/154	55/192	84/192
Auxiliary Supply	Not Required (frames B-E)			0	
	115V 1-ph (frame F only)			1	
	230V 1-ph (frame F only)			2	
Brake Switch	Not fitted (option for frames D - F)			0	
	Brake switch fitted - (must be fitted on frames B & C. Optional on frames D - F)			B	
Filter	Not fitted (option for frame B, fitted filter not available for frames C - F)			0	
	Filter fitted (option on frame B only)			F	
System Board	Not fitted			0	
	System card fitted			S	
Mounting	Panel mount (option on frames B - E, must be selected on frame F)			P	
	Wall mount (option on frames B - E only)			W	
	Through panel mount (option for frames C-E only)			T	
Special Options	None			00	
	Documented special options (01-99) (refer to local sales office)				
Language	English (50Hz)			A	
	English (60Hz)			B	
	German			D	
	Spanish			E	
	French			F	
	Portuguese			G	
	Italian			I	
	Polish			L	
	Swedish			S	
Keypad	None (option on frames B - F)			0	
	6901 keypad fitted (option on frames B - F)			4	
Speed Feedback	None			0	
	HTTL encoder			3	
Communications	None			0	
	ControlNet			C	
	DeviceNet			D	
	Ethernet			E	
	Johnson Metasys			J	
	Link			L	
	Modbus +			M	
	CaNOpen			N	
	Profibus			P	
	RS485 (EI Bisynch)			R	
	Siemens Apogee			S	
	LonWorks			W	

AC690+ Series

Selection and Order Codes

AC690+ Integrator Series AC Drive (400/460V, <55 kW)



	Block 1	Block 2	Block 3	Block 4
Example ▶	690	- 43 1450 B 0	- B 0 0 P 00	- A 0 0 0
Product Family	AC690+ Integrator Series AC Drive	690		
	AC690+ Integrator Series AC Drive (Conformal Coating)	C690		
		Constant Torque	Variable Torque	
Supply Voltage		kW/A HP/A @400Vac @460Vac	kW/A HP/A @400Vac @460Vac	Frame
Current / Power Rating	400/460V 3-ph			43
		0.75/2.5 1.0/2.5		B 1250 B
		1.5/4.5 2.0/4.5		B 1450 B
		2.2/5.5 3.0/5.5		B 1550 B
		4.0/9.5 5.0/9.5		B 1950 B
		5.5/12 7.5/11		B 2120 B
		6.0/14 10/14		B 2140 B
		5.5/12 7.5/12 7.5/16 10/16		C 2120 C
		7.5/16 10/14 11/23 15/21		C 2160 C
		11/23 15/21 15/30 20/27		C 2230 C
		15/30 20/27 18.5/37 25/34		C 2300 C
		15/31 20/31 18.5/38 25/38		D 2310 D
		18.5/38 25/38 22/45 30/45		D 2380 D
		22/45 30/45 30/59 40/52		D 2450 D
		30/59 40/52 37/73 50/65		D 2590 D
		30/59 40/59 37/73 50/73		E 2590 E
		37/73 50/73 45/87 60/87		E 2730 E
		45/87 60/87 55/105 75/105		E 2870 E
Auxiliary Supply	Not required (frames B-E)			0
Brake Switch	Not fitted (option on frames D - E)		0	
	Fitted (mandatory on frames B & C, option on frames D - E)		B	
Filter	Not fitted (option on frame B, fitted filter not available on frames C & E)		0	
	Filter fitted (option on frame B only)		F	
System Board	Not fitted		0	
	System board fitted		S	
Mounting	Panel mount (option on frame B, must be selected for frames C - E)		P	
	Wall mount (option on frames B -E only)		W	
	Through panel mount (option on frames C-E only)		T	
Special Options	None			00
	Documented special options (01-99) (refer to local sales office)			
Language	English (50Hz)			A
	English (60Hz)			B
	German			D
	Spanish			E
	French			F
	Portuguese			G
	Italian			I
	Polish			L
	Swedish			S
Keypad	None (option on Frames B -E)			0
	6901 keypad fitted (option on frames B - E)			4
Speed Feedback	None			0
	HTTL Encoder			3
Communications	None			0
	ControlNet			C
	DeviceNet			D
	Ethernet			E
	Johnson Metasys			J
	Link			L
	Modbus +			M
	CaNOpen			N
	Profibus			P
	RS485 (EI Bisynch)			R
	Siemens Apogee			S
	LonWorks			W

Selection and Order Code

AC690+ Integrator Series AC Drive(400/460V, > 55 kW)



	Block 1	Block 2	Block 3	Block 4
Example ▶	690	- 43 3105 F 1	- B 0 0 P 00	- A 0 0 0
Product Family	AC690+ Integrator Series AC Drive	690		
	AC690+ Integrator Series AC Drive (Conformal Coating)	C690		
		Constant Torque	Variable Torque	
Supply Voltage		kW/A HP/A @400Vac @460Vac	kW/A HP/A @400Vac @460Vac	Frame
Current / Power Rating	400/460V 3-ph			43
		55/105 75/100	75/145 100/125	F 3105 F
		75/145 100/130	90/165 125/156	F 3145 F
		90/180 125/156	110/205 150/180	F 3156 F
		90/180 150/180	110/205 150/180	F 3180 F
		110/216 175/216	132/260 200/260	G 3216 G
		132/250 200/250	150/302 250/302	G 3250 G
		160/316 250/316	180/361 300/361	G 3316 G
		180/361 300/361	220/420 350/420	G 3361 G
		200/375	250/480	H 3375 H
		220/420 350/420	250/480 400/480	H 3420 H
		250/480 400/480	300/545 450/545	H 3480 H
		280/520 450/520	315/590 505/590	H 3520 H
		315/590 500/590	355/650 550/650	J 3590 J
Auxiliary Supply	115V 1-ph (frames F - J only)			1
	230V 1-ph (frames F - J only)			2
Brake Switch	Not fitted (option on frames D - J)			0
	Brake switch fitted (must be fitted on frames B & C, option on frames D - J)			B
Filter	Not fitted (option on frame B, fitted filter not available for frames C - F)			0
	Filter fitted (option on frame B only)			F
System Board	Not fitted			0
	System board fitted			S
Mounting	Panel Mount (must be specified for frames F - J)			P
Special Options	None			00
	Documented special options (01-99) (refer to local sales office)			
Language	English (50Hz)			A
	English (60Hz)			B
	German			D
	Spanish			E
	French			F
	Portuguese			G
	Italian			I
	Polish			L
	Swedish			S
Keypad	None (option on frame F)			0
	6901 keypad fitted (option on frame F, must be specified for frames G - J)			4
Speed Feedback	none			0
	HTTL Encoder			3
Communications	None			0
	ControlNet			C
	DeviceNet			D
	Ethernet			E
	Johnson Metasys			J
	Link			L
	Modbus +			M
	CaNOpen			N
	Profibus			P
	RS485 (EI Bisynch)			R
	Siemens Apogee			S
	LonWorks			W

AC690+ Series

Selection and Order Code

AC690+ Integrator Series AC Drive (400/500V)



		Block 1		Block 2		Block 3			Block 4		
Example ▶		690	- 53	1500	B 0	- B 0 0	P 00	- A 0 0	0 0		
Product Family	AC690+ Integrator Series AC Drive	690									
	AC690+ Integrator Series AC Drive (Conformal Coating)	C690									
Current / Power Rating		Constant Torque		Variable Torque		Frame					
	Supply Voltage	kW	Current (A)	kW	Current (A)						
	400/500V 3-ph					53					
		2.2	5.0			B	1500	B			
		4.0	8.0			B	1800	B			
		5.5	11			B	2110	B			
		5.5	11	7.5	14	C	2110	C			
		7.5	14	11	21	C	2140	C			
		11	21	15	27	C	2210	C			
		15	27	18.5	34	C	2270	C			
		15	28	18.5	36	D	2280	D			
		18.5	36	22	42	D	2360	D			
		22	42	30	52	D	2420	D			
		30	52	37	65	D	2520	D			
		30	54	37	67	E	2540	E			
		37	67	45	79	E	2730	E			
		45	79	55	98	E	2870	E			
		55	100	75	125	F	3105	F			
		75	125	90	156	F	3145	F			
		90	156	110	180	F	3156	F			
Auxiliary Supply	Not required (frames B-E)					0					
	115V 1-ph (frame F only)					1					
	230V 1-ph (frame F only)					2					
Brake Switch	Not fitted (option for frames D - F)					0					
	Brake switch fitted (mandatory for frames B & C, option on frames D - F)					B					
Filter	Not fitted (option on frame B, fitted mandatory on frames C - F)					0					
	Filter fitted (option on frame B only)					F					
System Board	Not fitted					0					
	System board fitted					S					
Mounting	Panel mount (option on frames B - E, must be selected for frame F)					P					
	Wall mount (option on frames B -E only)					W					
	Through panel mount (option on frames C-E only)					T					
Special Options	None					00					
	Documented special options (01-99) (refer to local sales office)										
Language	English (50Hz)					A					
	English (60Hz)					B					
	German					D					
	Spanish					E					
	French					F					
	Portuguese					G					
	Italian					I					
	Polish					L					
	Swedish					S					
Keypad	None (option on frames B -F)					0					
	6901 keypad fitted (option on frames B - F)					4					
Speed Feedback	None					0					
	HTTL Encoder					3					
Communications	None					0					
	ControlNet					C					
	DeviceNet					D					
	Ethernet					E					
	Johnson Metasys					J					
	Link					L					
	Modbus +					M					
	CaNOpen					N					
	Profibus					P					
	RS485 (EI Bisynch)					R					
	Siemens Apogee					S					
	LonWorks					W					

Accessories and Options

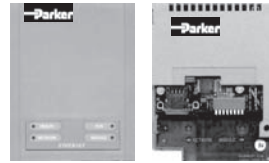
AC690+ Integrator Series AC Drive



Options	Frame	Fitting	Order Reference	Page
Operator Keypad				
AC690+ (removable)	B - J	Option	6901-00-G	51
Advanced operator keypad (removable)	B - J	Option	6911-01-00-G	
Remote mounting kit	B - J	Option	6052/00	
Communication Cards				
Ethernet Modbus/TCP and Ethernet IP	B	Option	6053-ETH-00	48
	C - J	Option	6055-ETH-00	
ControlNet	B	Option	6053-CNET-00	
	C - J	Option	6055-CNET-00	
Modbus Plus	B	Option	6053-MBP-00	
	C - J	Option	6055-MBP-00	
DeviceNet	B	Option	6053-DNET-00	
	C - J	Option	6055-DNET-00	
RS485 / Modbus	B	Option	6053-EI00-00	
	C - J	Option	6055-EI00-00	
Profibus-DP	B	Option	6053-PROF-00	
	C - J	Option	6055-PROF-00	
CANopen DS402	B	Option	6053-CAN-00	
	C - J	Option	6055-CAN-00	
LonWorks	B	Option	6053-LON-00	
	C - J	Option	6055-LON-00	
Link	B	Option	6053-LINK-00	
	C - J	Option	6055-LINK-00	
Speed Feedback / Systems Module				
HTTL Encoder Card	B	Option	LA467461	49
	C - J	Option	6054/HTTL/00	
Systems Expansion Module	B	Option	LA467471U002	50
	C - J	Option	AH463889U001	
Accessories				
Brake Resistor				92
Chokes				95
IP40 Cover for Wall Mounting	B	Option	LA467452	
	C	Option	LA465034U002	
	D	Option	LA465084U002	
	E	Option	LA465058U002	
DSE Lite Programming Software				86
HMI Operator interace 3 to 15"				87
Motors				
Asynchronous Motors				96

Communication Cards

AC690+ Integrator Series AC Drive



The AC690+ Communication cards allow the AC690+ to be connected to the most common industry standard fieldbuses

Features

- Communications cards can be factory fitted as part of the drive, or purchased separately for fitting on-site
- Dimensions H x W x D : 127mm x 76.2mm x 25.4mm
- LED indication of network and card status

Ethernet Communications Interface	
*Order Code: 6053-ETH-00 and 6055-ETH-00	
Supported Protocols	Modbus/TCP and Ethernet IP
Communication Speed	10/100M bits/s
Station Address	Selectable via switch or Internet Explorer
Suitable for	AC690+ version 4.7+ DC590+ version 7.1+

ControlNet Communications Interface	
*Order Code: 6053-CNET-00 and 6055-CNET-00	
Supported Messages	Polled I/O
Station Address	Selectable via Software
Suitable for	AC690+ version 4.7+ DC590+ version 5.17+

Devicenet Communications Interface	
*Order Code: 6053-DNET-00 and 6055-DNET-00	
Supported Protocols	DeviceNet Drive Profile Drive – Group 2 slave only
Station Address	DeviceNet Drive Profile Drive – Group 2 slave only
Suitable for Drives	AC690+ DC590+ version 5.x+

Modus Plus Communications Interface	
*Order Code: 6053-MBP-00 and 6055-MBP-00	
Supported Protocols	Modbus Plus
Cabling	RS485 2 or 4 wire
Communication Speed	1 M bits/s
Station Address	Selectable via Software
Suitable for	AC690+ version 4.7+ DC590+ version 7.1+

CANopen Communications Interface	
*Order Code: 6053-CAN-00 and 6055-CAN-00	
Profile	DS402
Supported Messages	SDO, PDO, NMT, SYNC
Communication Speed	20K, 50K, 125K, 250K, 500K, 1M bits/s selectable
Station Address	Selectable via Switch
Suitable for	AC690+ DC590+ version 5.x+

Profibus-DP Communications Interface	
*Profibus-DP (6053-PROF-00 and 6055-PROF-00)	
Supported Protocols	Profibus-DP
Communication Speed	Automatically Detected
Station Address	Selectable via Software
Suitable for	AC690+ version 1.x+ DC590+ version 5.x+

RS485/Modbus Communications Interface	
*Order Code: 6053-EI-00 and 6055-EI-00	
Supported Protocols	Modbus RTU, EI Bisynch ASCII
Cabling	RS485 2 or 4 wire
Communication Speed	300 to 115200 bits/s
Station Address	Selectable via Software
Suitable for	AC690+ version 4.7+ DC590+ version 5.17+

LonWorks	
*Order Code: 6053-LON-00 and 6055-LON-00)	
Supported Protocols	LonWorks
Delivered	with a resource file compatible with LonMaker software (or equivalent)
Suitable for	AC690+ version 5.1+

Johnson Controls	
*Order Code: 6053-JMET-00 and 6055-JMET-00)	
Supported Protocols	Johnson Controls N2

* Refer to page 45 for details of drive frame compatibility

HTTL Encoder Feedback Card

AC690+ Integrator Series AC Drive



Description

The HTTL Encoder Feedback Card allows an incremental encoder to be connected to the AC690+ AC drive, allowing users to take full advantage of the integrated torque control and speed regulation functionality.

The HTTL Encoder Feedback card has the following features:

- 4 Optically isolated differential inputs A, B, M and H
- Adjustable isolated 10 - 20V encoder power output

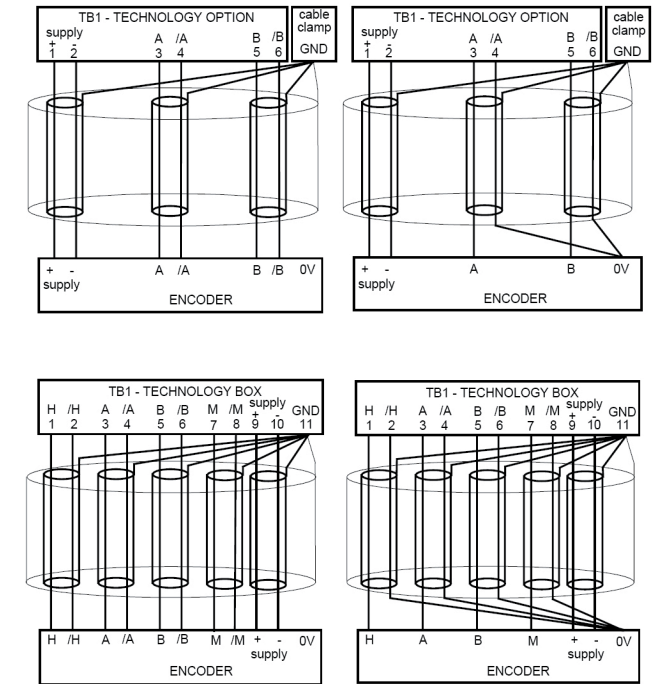
Specifications

Maximum Input Frequency	250kHz
Receiver current consumption	≤10mA per channel
Input Format	2-channels in quadrature, clock / direction, or clock only
De-phasing	>1μs
Differential Input Voltage	10 - 30V Maximum
Encoder Power	Maximum Load: Card AH467407U001: 200mA or 2W Housing 6054/HTTL/00: 250mA or 2.5W Voltage 10-20V software adjustable.

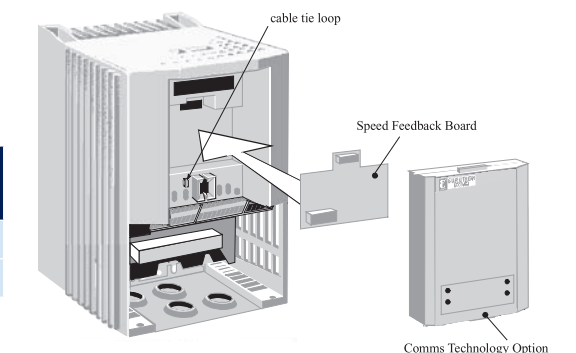
Product Codes

Order Code	Drives
AH467407U001	AC690+ Frame B (690-xxxxxB...) drives
6054/HTTL/00	AC690+ Frames C - K drives

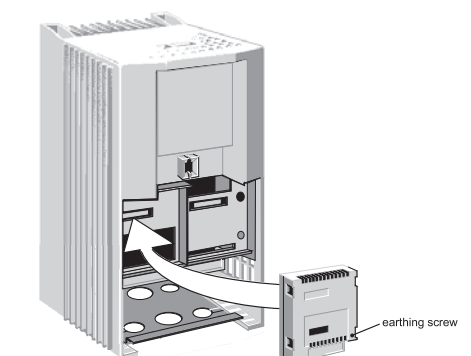
Installation and cabling



AC690+ Frame B AC Drives



AC690+ Frames C-K Drives



System Expansion Module

AC690+ Integrator Series AC Drive

Description

With the System expansion module, the AC690+ can be used in sophisticated applications, or where a small amount of automation is required to be used in conjunction with the drive.

The following features are available:

Analogue Inputs AIN1-4 are become high resolution (12 bit plus sign)

5 isolated I/O points, configurable as either inputs or outputs

Variable isolated output power for encoders

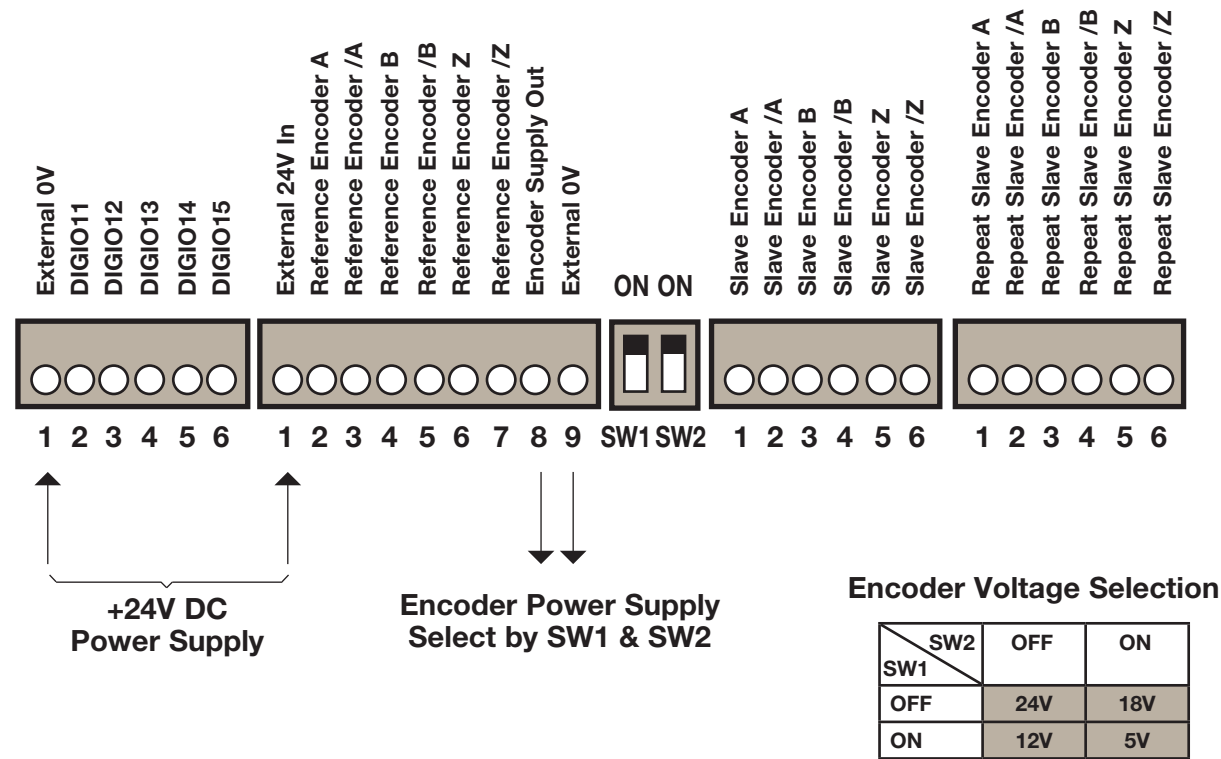
Master encoder inputs (Isolated HTTL): A, A/, B, B/, Z and Z/

Slave encoder inputs (Isolated HTTL): A, A/, B, B/, Z and Z/

Slave encoder output retransmission (Isolated HTTL): A, A/, B, B/, Z and Z/.

External Power Supply

An external 1A / 24Vdc(±10%) must be connected to the card.



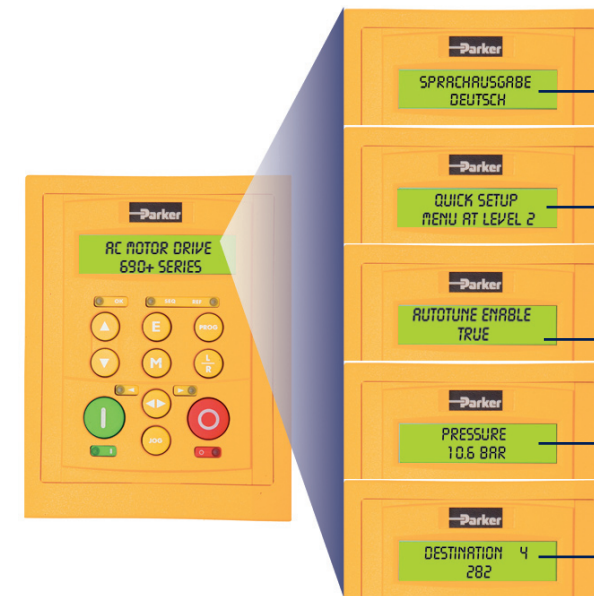
Operator Keypads

AC690+ Integrator Series AC Drive

Standard operator keypad 6901-00-G

Features

- Local motor control : start, speed, direction, diagnostics
- Operator menus and parameter configuration
- Quick setup menu
- Password protection for parameter configuration



Multilingual

English · French · German · Italian · Portuguese · Swedish · Polish

Quick setup menu

Intuitive menus allowing easy and quick setup of the drive

Auto-tuning

Automatic tuning of motor parameters ensures maximum dynamic motor performance

Diagnostics messages

Display input and output parameters as well as drive operating units

Drive configuration

Advanced operator keypad 6911-01-00-G

Features

- 128 x 64 pixels semi-graphical resolution
- RS232 and RS485 ports
- Recording of parameters to keypad and restore to drive (Memory card 256Mb to 2Gb)

