



Digital DC Drive

Product Catalog-DC900



CODE AUTOMATION

DC900 Series Digital DC Drive

Product Range

The DC900 Series DC Digital Drive is designed for use in a suitable enclosure, with associated control equipment. The unit accepts a variety of standard three-phase AC supply voltages depending upon the model, and is suitable for the powering of DC shunt field and permanent magnet motors, providing controlled DC output voltage and current for armature and field.

All units are designed for simple and economical panel mounting using keyhole slots. Plug-in control connectors simplify the fitting and removal of the unit to the panel.

Where possible, standard parts are used throughout the range thereby reducing the variety of spare parts required to maintain a multi-drive system.

The control circuit is totally isolated from the power circuit thus simplifying the interconnection of controllers within a system and improving operator safety. The coding circuitry adjusts automatically to accept supply frequencies between 45-65Hz and possesses high immunity to supply-borne interference. The armature controllers are phase rotation insensitive.

With the software blocks like torque, setpoint sum, diameter, the drive can support a number of applications in various markets like **metal, cable, wire drawing, extrusion, plastics, film lines** to name a few.



Control and Communications

The drive is controlled by a 32 bit Microcontroller providing advanced features such as:

- **Complex control algorithms** which provide highly precise and accurate controls.
- **Software-configurable control circuitry** built around standard software blocks.
- **Serial link communications** with other drives or a for advanced process systems.
- **USB communication port** with a PC for system programming or configuration.

The Keypad gives access to parameters, diagnostic messages, trip settings and full application programming.



Integrated Speed Feedback

Armature Voltage Feedback

Analog Tacho Calibration

Encoder Feedback

All the three feedback options are integrated in the control card as standard.

Communication:

RS485/RS422

Profibus-DP

Profinet

Technical Features:

Power Supply	3Phase, 50/60Hz, earth-referenced (TN) and non earth-referenced supply (IT).
Operation Voltage Tolerance	±10%
Supply voltage range	Standard product 110 to 500V
Overload	150% 30s; 200% 10s.
Field Current	10 to 30A depending upon the rating
Armature Voltage	$V_{ac} \times 1.2$
Field Voltage	$V_{ac} \times 0.9$
Operating temperature	0°C to +45°C Output current values should be derated by 1% per degree Centigrade above rated temperature up to a maximum of 55°C.
Storage temperature	-25°C to +55°C
Transportation temperature	-25°C to +70 °C
Product Enclosure Rating	IP00 [Frame 1 unit is IP20] If the product enclosure is totally enclosed, the exposed metal surface dissipates approximately 50W/m ² for a 10°C temperature rise of internal air above ambient.
Altitude	If >500 metres above sea level, derate Motor Power rating by 1% per 200 metres to a maximum of 2,000 metres.
Humidity	Maximum 85% relative humidity at 40°C non-condensing
Atmosphere	Non flammable, non corrosive and dust free
Vibration	Test Fc of EN60068-2-6 10Hz ≤ f ≤ 57Hz sinusoidal 0.075mm amplitude 57Hz ≤ f ≤ 150Hz sinusoidal 1g 10 sweep cycles per axis on each of three mutually perpendicular axis
Climatic Conditions	Class 3k3, as defined by EN60721-3-3 (1995)
Over-voltage Category	Over-voltage Category III (3-phase supply), Overvoltage Category II (auxiliary supply)
Pollution Degree	Pollution Degree 2

Control Features

Control	Control Circuits	Fully isolated from power circuit (SELV)
	Output Control	<ul style="list-style-type: none"> • Fully controlled 3-phase thyristor bridge • Microprocessor implemented phase control extended firing range • For use on 50 or 60Hz supplies with a frequency compliance range of 45 to 65Hz • Phase control circuits are phase rotation insensitive
	Control Action	<ul style="list-style-type: none"> • Fully digital • Advanced PI with fully adaptive current loops for optimum dynamic performance • Self Tuning Current Loop utilising "Autotune" algorithm • Adjustable speed PI with integral defeat
	Speed Control	<ul style="list-style-type: none"> • By Armature Voltage feedback with IR compensation • By Encoder feedback or analog tachogenerator
	Speed Range	100 to 1 typical with tachogenerator feedback
	Steady State Accuracy	<ul style="list-style-type: none"> • 0.01 % Encoder Feedback with Digital setpoint • 0.1 % Analog Tach Feedback • 2 % Voltage Feedback <p>Long term analog accuracy is subject to tacho generator temperature stability.</p>
	Adjustments	All adjustments in software can be altered by the keypad or via serial communications.
Protection		<ul style="list-style-type: none"> • High Energy MOVs • Over Current (instantaneous) • Over Load (inverse time) • Field Failure • Speed Feedback Failure • Motor Over temperature • Thyristor Stack Overtemperature • Thyristor "Trigger" Failure • Thyristor Snubber Network • Zero-speed Detection • Standstill Logic • Stall Protection
Diagnostics		<ul style="list-style-type: none"> • Fully computerised with first fault latch and automatic display • Digital LCD monitoring • Full diagnostic information available on RS422/RS485 • LED circuit state indication

INPUT/OUTPUT

ANALOG INPUT

(5 way 12bit Bipolar input, dual external clamp)

1 way speed setpoint (-10V~+10V)

4 way programmable inputs

ANALOG OUTPUT

(3 way 12bit output, dual external clamp)

1 way armature current output (-10~+10V or 0-10V)

2 way programmable outputs

DIGITAL INPUT

(9 way input —Max24V, 15mA)

1 way programmable stop

1 way external trip stop

1 way coast stop

1 way START/RUN

5 way programmable inputs

DIGITAL OUTPUT

(3 way output —24V (Maxim 30V) 100mA, with short circuit protection)

3 way programmable outputs

REFERENCE VOLTAGE

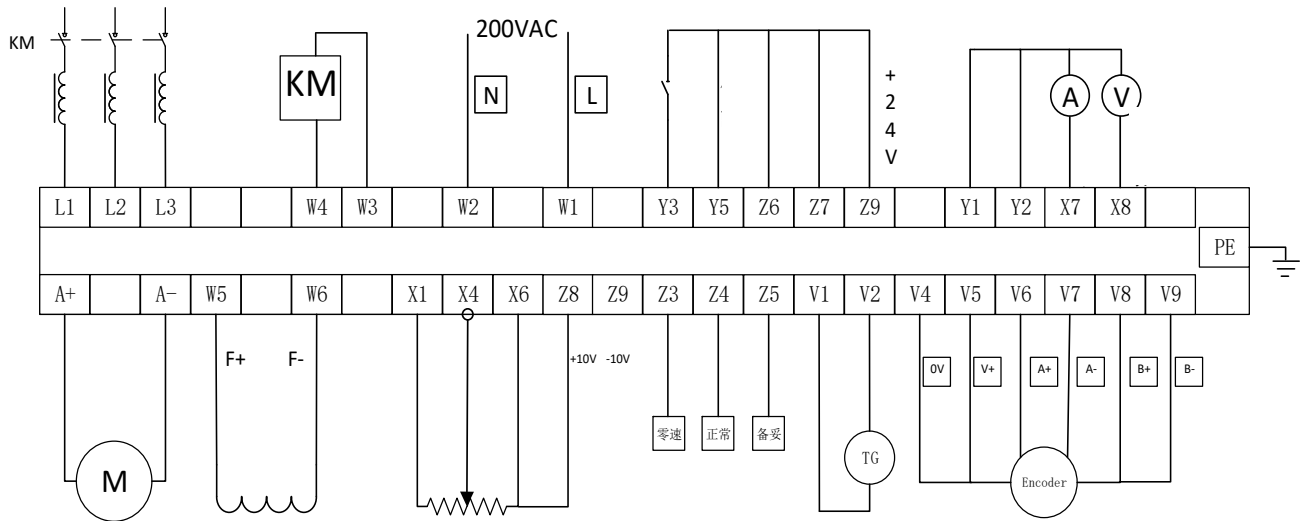
0--+10VDC

0-- -10VDC

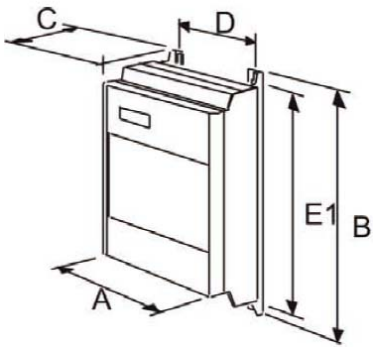
0—24VDC



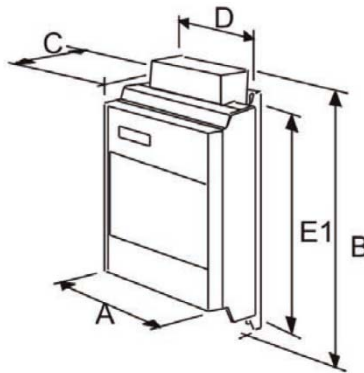
Connection Diagram



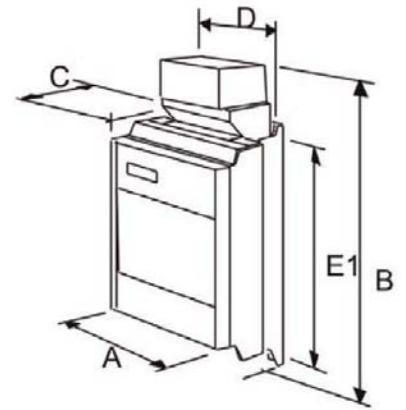
Mechanical Installation



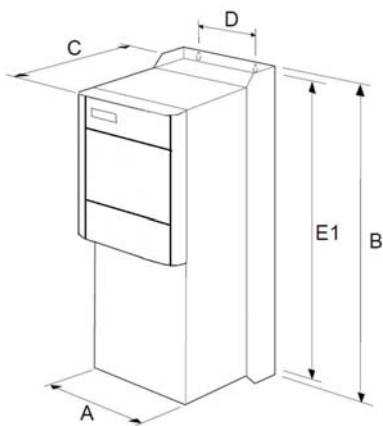
40-80A



120-160A



200-280A



400-900A

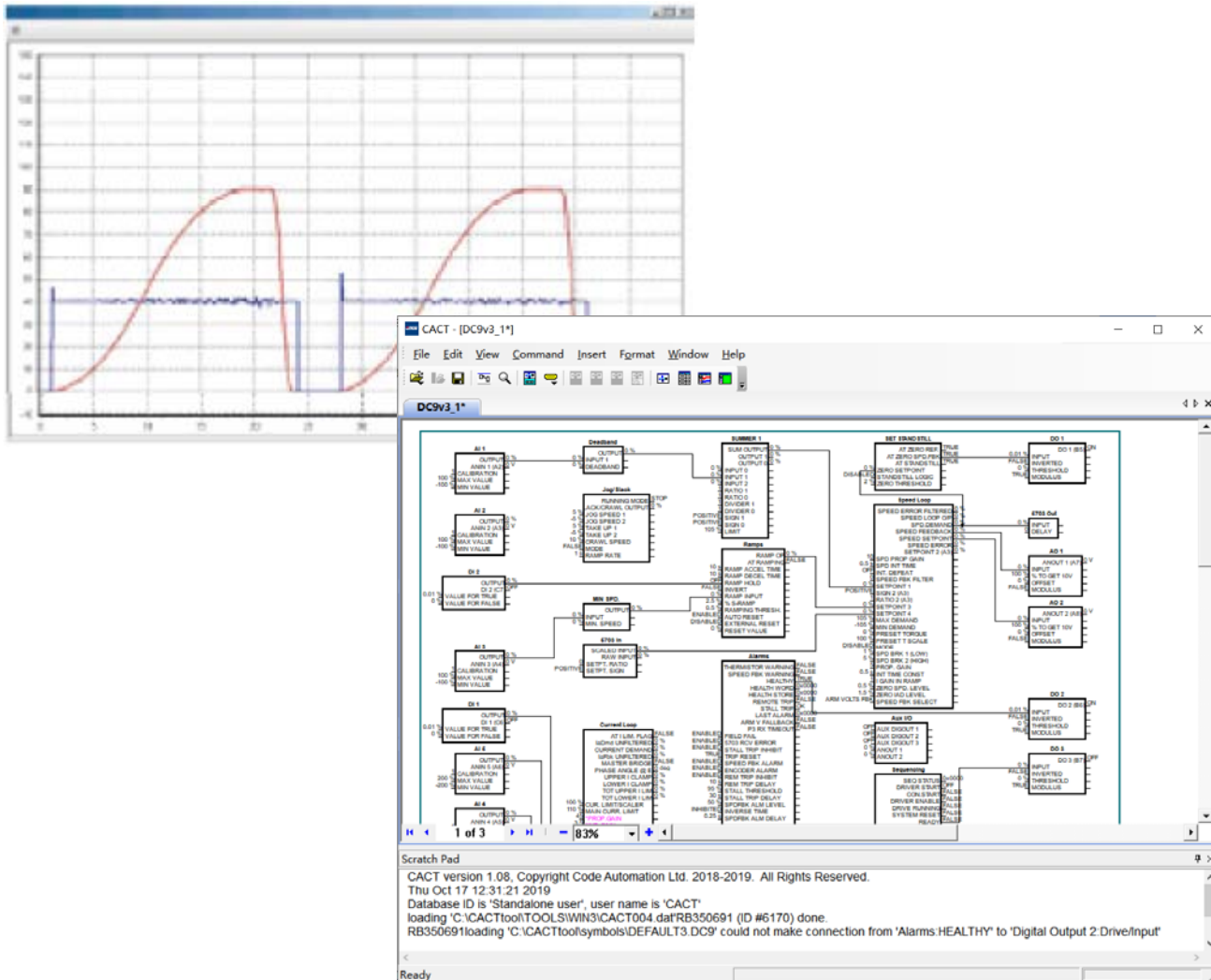
Current Rating (A)	Overall dimensions			Fixing Center	
	A	B	C	D	E1
40-80	250	415	171	200	400
120-160	250	451	171	200	400
200	250	485	213	200	400
280	297	485	213	200	400
400-900	253	700	235	150	680

Dimensions are in millimeters

CACT Configure Tool

Description

CACT control tool is a Code Automation's Windows-based block programming software. It has a graphical user interface and drawing tool to allow you to create block programming diagrams quickly and easily. It is easy to configure the drive, monitor and diagnose the parameters. When the drive is running, CACT is able to online monitor the waveform as a telescope. CACT can be used to create drive parameters and its Marco blocks configured for application like speed control, diameter calculation, PID control and S-ramp setting to name a few.



**Product Coding Scheme
DC900 Series**

		Block 0	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Block 7	Block 8
Product Series	DC900 Series	DC900								
Family	Regen DC converter Non-regen DC converter		4 2							
Rating Data	Supply Voltage	Output Current (A)	Field Current (A)							
	110-220v 3ph			200						
		40	10		40	10				
		80	10		80	10				
		120	20		120	20				
		160	20		160	20				
		200	20		200	20				
		280	20		280	20				
		400	30		400	30				
		550	30		550	30				
		700	30		700	30				
		850	30		850	30				
		900	30		900	30				
	220-500v 3ph			500						
		40	10		40	10				
		80	10		80	10				
		120	20		120	20				
		160	20		160	20				
		200	20		200	20				
		280	20		280	20				
		400	30		400	30				
		550	30		550	30				
		700	30		700	30				
		850	30		850	30				
		900	30		900	30				
	500-690v 3ph			690						
		40	10		40	10				
		80	10		80	10				
		120	20		120	20				
		160	20		160	20				
		200	20		200	20				
		280	20		280	20				
		400	30		400	30				
		550	30		550	30				
		700	30		700	30				
		850	30		850	30				
		900	30		900	30				
Auxiliary supply	1ph 110VAC (±10%) , 50/60HZ 1ph 220VAC (±10%) , 50/60HZ						0 1			
Comms	None RS485/RS422 Profibus DP Profinet							0 RS DP PN		
Language	Chinese English								0 1	
Special Option	None Documented special options (01-99)									0 D



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