



APPLICATIONS

Motor drives are used in a wide range of power values, from few watts up to many thousands of kilowatts, in applications ranging from high precision position control in robotics to variable speed drives for regulating the rate of flow in pumps.

In all drives where speed and position must be controlled, a power electronics converter is needed as interface between input power and motor.

Constant, or slightly variable according to load, speed drives use almost exclusively induction motors, thanks to their simple, robust and cheap construction, in addition to the fact that they do not need special maintenance.

However, the multi-phase motors supplied at constant network voltage and frequency have a rigid relationship between supply frequency and speed.

Direct current motor drives are mainly used in applications requiring the control of the speed of the motor (DCA 205.1). In variable speed drives direct current machines are used everywhere; however, today, with the development of power electronics, induction motor drives are also widely used .

In these cases, the speed of the motor can be varied in three different ways: by varying the number of polar couples, by varying the slip speed (DCA 205.2), by varying the supply frequency (DCA 205.3).

LIST OF EXPERIMENTS

DCA 205.1 DC MOTOR DRIVE

- Single-quadrant drive with converter B2C
- Single-quadrant drive with converter B2C and armature voltage feedback
- Single-quadrant drive with converter B2C and armature voltage feedback with RI compensation
- Single-quadrant drive with converter B2C and tacho-voltage feedback
- Single-quadrant drive with converter B2C and tacho-voltage feedback with inner current loop
- Two-quadrant drive (I-IV) with converter B2C
- Two-quadrant drive (I-III) with converter (B2C)2I
- Two-quadrant drive (I-III) with converter (B2C)2I and tacho-voltage feedback with inner current loop
- Four-quadrant drive with converter (B2C)2I
- Four-quadrant drive with converter (B2C)2I and tacho-voltage feedback with inner current loop
- Single-quadrant drive with converter B6C
- Single-quadrant drive with converter B6C and tacho-voltage feedback with inner current loop

DCA 205.2 AC SLIP-RING MOTOR DRIVE

- Control of stator voltage with transformer
- Control of stator voltage with controller W3C
- Control of stator voltage and tacho-voltage feedback
- Rotor starter
- Rotor pulsed resistor
- Rotor pulsed resistor and tacho-voltage feedback
- Scherbius static drive
- Scherbius static drive and tacho-voltage feedback

DCA 205.3 AC SQUIRREL CAGE MOTOR DRIVE

- Preliminary investigation of the squirrel cage motor
- Six-pulse PAM
- Pulsed square-wave triggering
- Trapezoidal modulation
- Pulse width modulation (PWM)
- Voltage vector control (VVC)
- Motor magnetization for linear U/f characteristic



POWER ELECTRONICS



- Extra start magnetization
- IxR compensation
- Operation in standard converter setting
- Slip compensation
- Motor operation in star connection
- Brake chopper
- Speed control with tacho-voltage feedback

Code	Description	DCA 205.1	DCA 205.2	DCA 205.3	Total quantities
DL 2603	GROUP OF DIODES		1		1
DL 2605	GROUP OF SCR	2	1		2
DL 2609	IGBT		1		1
DL 2613	DC POWER SUPPLY	1	1	1	1
DL 2614	VOLTAGE REFERENCE GENERATOR	1	1	1	1
DL 2615	TRIGGER POINT LIMITER	1	1		1
DL 2616	TWO PULSE CONTROL UNIT	1			1
DL 2617	SIX PULSE CONTROL UNIT	1	1		1
DL 2619	PWM/PFM/TPC CONTROL UNIT		1		1
DL 2620	RUN-UP CONTROL UNIT	1	1		1
DL 2622	PID CONTROLLER	1	1	1	1
DL 2623	ABSOLUTE VALUE GENERATOR	1			1
DL 2624	ADAPTIVE PID CONTROLLER	1			1
DL 2625	MATCHING AMPLIFIER	1			1
DL 2626	MAINS TRANSFORMER	1	1		1
DL 2628	SUPER FAST FUSES	1	2		2
DL 2630	CURRENT TRANSFORMER	1			1
DL 2631	TRIGGER PULSE SWITCH	1			1
DL 2632	SWITCHING LOGIC	1			1
DL 2634	VOLTAGE DIVIDER 20:1	1			1
DL 2635	LOAD	1	1	1	1
DL 2636	SOCKETS WITH LAMPS	1			1
DL 2637	STABILIZED POWER SUPPLY	1			1
DL 2642	ISOLATION AMPLIFIER	1	1	1	1
DL 2643	SUPPORT WITH 3 SHUNTS 1 OHM	1	1		1
DL 2646	FREQUENCY CONVERTER			1	1
DL 2648	PWM CONTROL UNIT			1	1
DL 2655	VARIABLE THREE PHASE TRANSFORMER		1		1
DL 2025DT	TACHOMETER	1			1
DL 2108SAL	SINGLE PHASE SUPPLY UNIT			1	1
DL 2108TAL-SW	THREE PHASE SUPPLY UNIT		1		1
DL 2109T33	TRUE RMS METER	2	2	1	2
DL 2109T3PV	MOVING IRON VOLTMETER		1		1
DL 2109T2A5	MOVING IRON AMMETER	1	1		1
DL 10115A1	SQUIRREL CAGE THREE PHASE MOTOR			1	1
DL 10120A1	SLIP RING THREE PHASE MOTOR		1		1
DL 10120RA	ROTOR STARTER		1		1
DL 10200A1	SHUNT EXCITATION DC MOTOR	1			1
DL 10250A1	SHUNT EXCITATION DC GENERATOR	1			1
DL 10300P	POWDER BRAKE		1	1	1
DL 2006D	LOAD CELL		1	1	1
DL 10300PAC	POWDER BRAKE CONTROL UNIT		1	1	1
DL 10400	BASE	1	1	1	1
DL 10410	FLYWHEEL			1	1
DL 2100-3M	FRAME	2	2	2	2
DL 1001-1	WORKING BENCH	1	1	1	1
DL 1155POW	CONNECTING LEADS	1	1	1	1
	Accessory:				
DL 2100TA	STORAGE CABINET	1	1	1	1
	For the Countries where the 3-phase mains supply is different from 380V:				
DL 2600TT	THREE PHASE TRANSFORMER	1	1	1	1