

### Mechanical features

- Modular design
- Operating temperature  
–10 °C to +50 °C  
(+14 °F to +122 °F)
- Compact housing as a result of high power density
- Easy cable connection, mains and motor connections are separated for optimum electromagnetic compatibility
- Detachable operator panels
- Screwless control terminals

### Performance features

- Latest IGBT technology
- Digital microprocessor control
- Flux Current Control (FCC) for improved dynamic response and optimized motor control
- Linear  $V/f$  characteristic
- Quadratic  $V/f$  characteristic
- Multipoint characteristic (programmable  $V/f$  characteristic)
- Flying restart
- Slip compensation
- Automatic restart following mains failure or fault
- Internal PI controller for simple process control

### Protection features

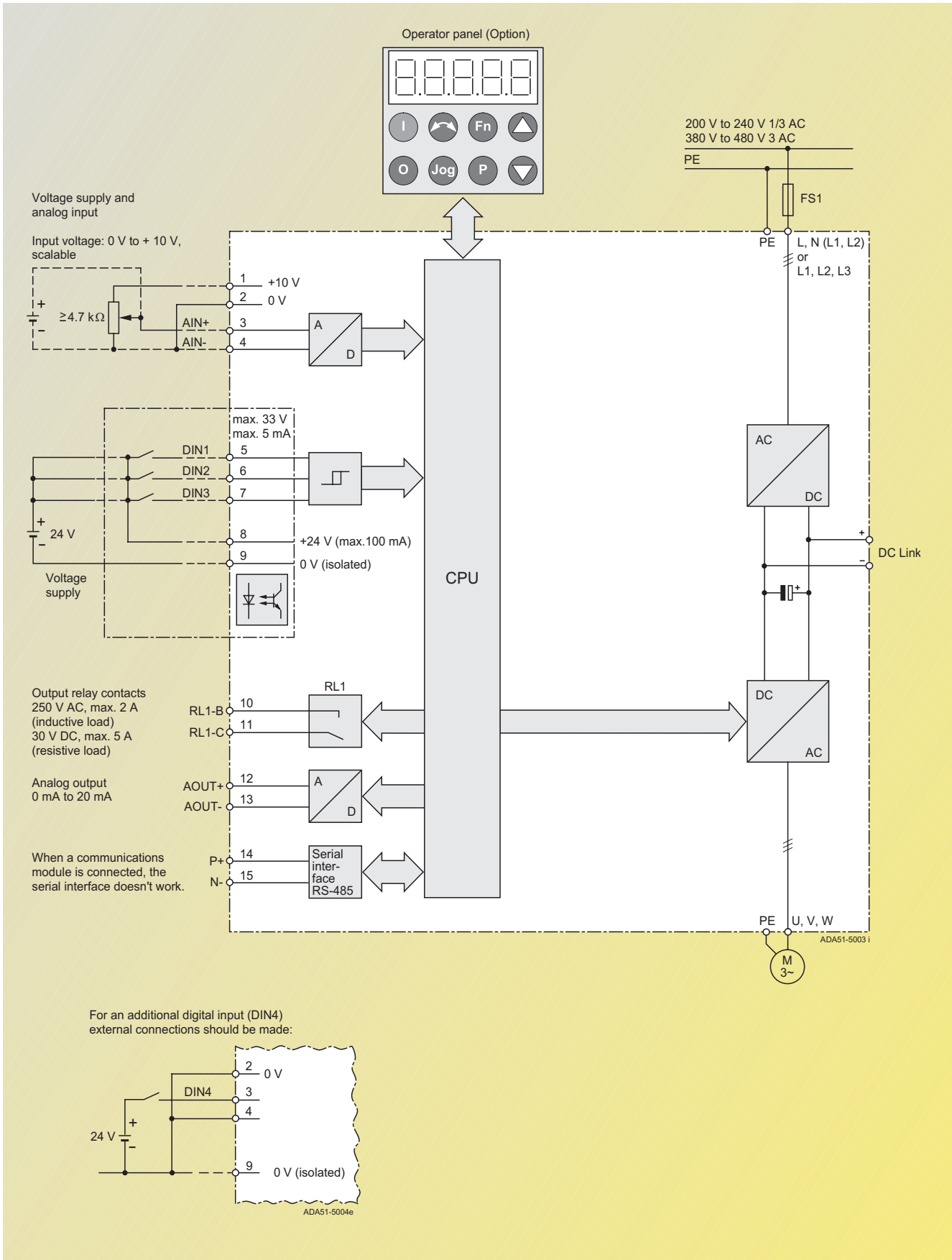
- Programmable acceleration/deceleration times from 0 s to 650 s
- Ramp smoothing
- Fast Current Limit (FCL) for trip-free operation
- Fast, repeatable digital input response time
- Fine adjustment using a high-resolution 10-bit analog input
- Compound braking for controlled rapid braking
- Four skip frequencies
- Removable “Y” capacitor for use on IT systems (with non-grounded mains supplies, the “Y” capacitor must be removed and an output choke installed).
- Overload current 1.5 x rated output current (i.e. 150 % overload capability) for 60 s, cycle time 300 s
- Overvoltage/undervoltage protection
- Inverter overtemperature protection
- Motor protection using PTC via digital input (possible with supplementary circuit)
- Earth fault protection
- Short-circuit protection
- $I^2t$  motor thermal protection
- Locked motor protection
- Stall prevention
- Parameter interlock

# MICROMASTER 420

## Circuit diagrams

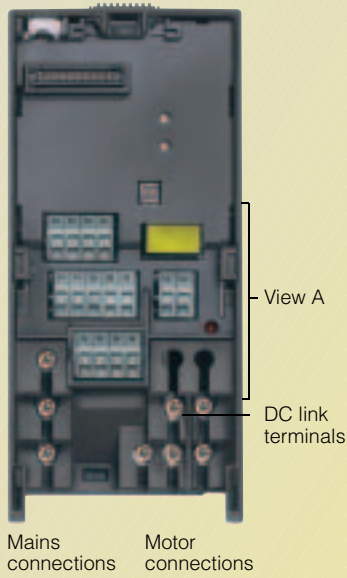
### General circuit diagram

2

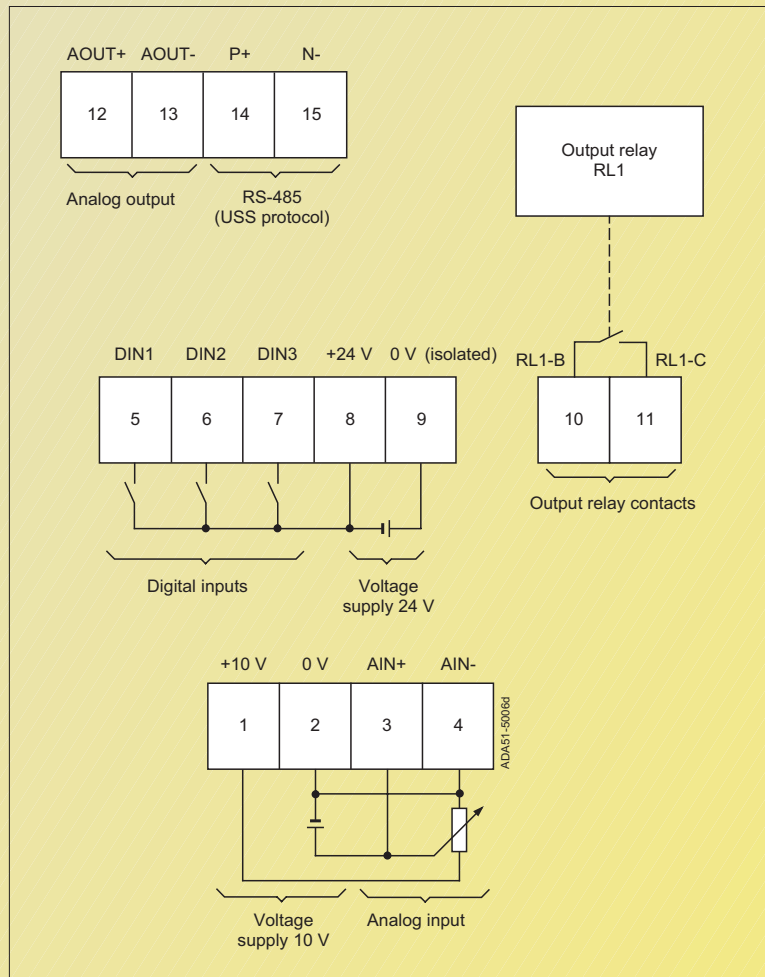


**Terminal connection diagram**

Example frame size A







View A



# MICROMASTER 420

## Technical data

### MICROMASTER 420 inverter

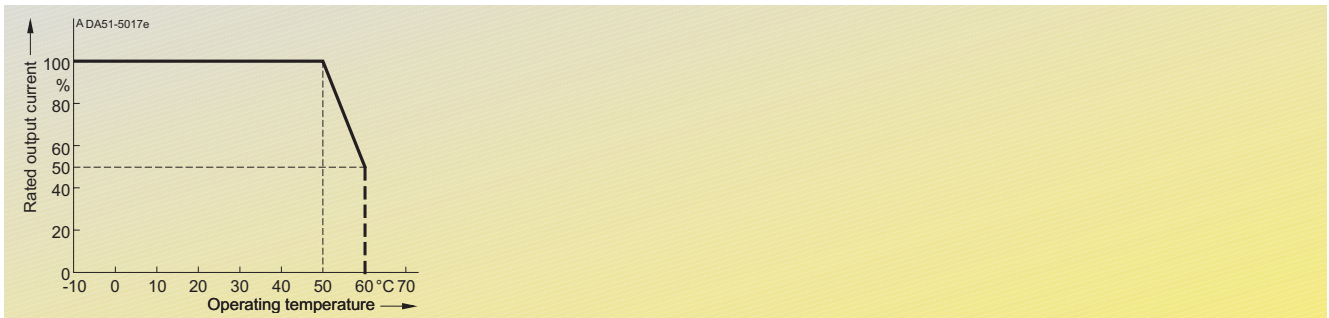
Mains voltage and power ranges	1 AC 200 V to 240 V $\pm$ 10 % 3 AC 200 V to 240 V $\pm$ 10 % 3 AC 380 V to 480 V $\pm$ 10 %	0.12 kW to 3 kW 0.12 kW to 5.5 kW 0.37 kW to 11 kW
Power frequency	47 Hz to 63 Hz	
Output frequency	0 Hz to 650 Hz	
Power factor	$\geq$ 0.95	
Inverter efficiency	96 % to 97 %	
Overload capability	Overload current 1.5 x rated output current (i.e. 150 % overload capability) for 60 s, cycle time 300 s	
Inrush current	Less than rated input current	
Control method	Linear V/f-characteristic; quadratic V/f characteristic; multipoint characteristic (programmable V/f characteristic); flux current control (FCC)	
Pulse frequency	16 kHz (standard with 1/3 AC 230 V) 4 kHz (standard with 3 AC 400 V) 2 kHz to 16 kHz (in 2 kHz steps)	
Fixed frequencies	7, programmable	
Skip frequency ranges	4, programmable	
Setpoint resolution	0.01 Hz digital 0.01 Hz serial 10 bit analog	
Digital inputs	3 fully programmable isolated digital inputs; switchable PNP/NPN	
Analog input	1, for setpoint or PI controller (0 V to 10 V, scaleable or for use as 4th digital input)	
Relay outputs	1, programmable, 30 V DC/5 A (resistive load); 250 V AC/2A (inductive load)	
Analog output	1, programmable (0 mA to 20 mA)	
Serial interfaces	RS-485, optional RS-232	
Motor cable lengths	without output choke without output choke	
	max. 50 m (shielded) max. 100 m (unshielded) (see variant dependent options)	
Electromagnetic compatibility	Inverter available with internal EMC filter Class A; available as options are EMC filters to EN 55 011, Class A or Class B	
Braking	DC braking, compound braking	
Degree of protection	IP20	
Operating temperature	-10 °C to +50 °C (+14 °F to +122 °F)	
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)	
Relative humidity	95 % (non-condensing)	
Site altitude	Up to 1000 m above sea level without derating	
Protection features for	<ul style="list-style-type: none"> <li>• Undervoltage</li> <li>• Overvoltage</li> <li>• Overload</li> <li>• Earth faults</li> <li>• Short circuit</li> <li>• Stall prevention</li> <li>• Locked motor protection</li> <li>• Motor overtemperature</li> <li>• Inverter overtemperature</li> <li>• Parameter interlock</li> </ul>	
Compliance with standards	   	
CE marking	Conformity with low-voltage directive 73/23/EEC	
Dimensions and weights (without options)	Frame size (FS)	H x W x D (mm) Weight, approx. (kg)
	A	173 x 73 x 149 1.0
	B	202 x 149 x 172 3.3
	C	245 x 185 x 195 5.0

### Derating data

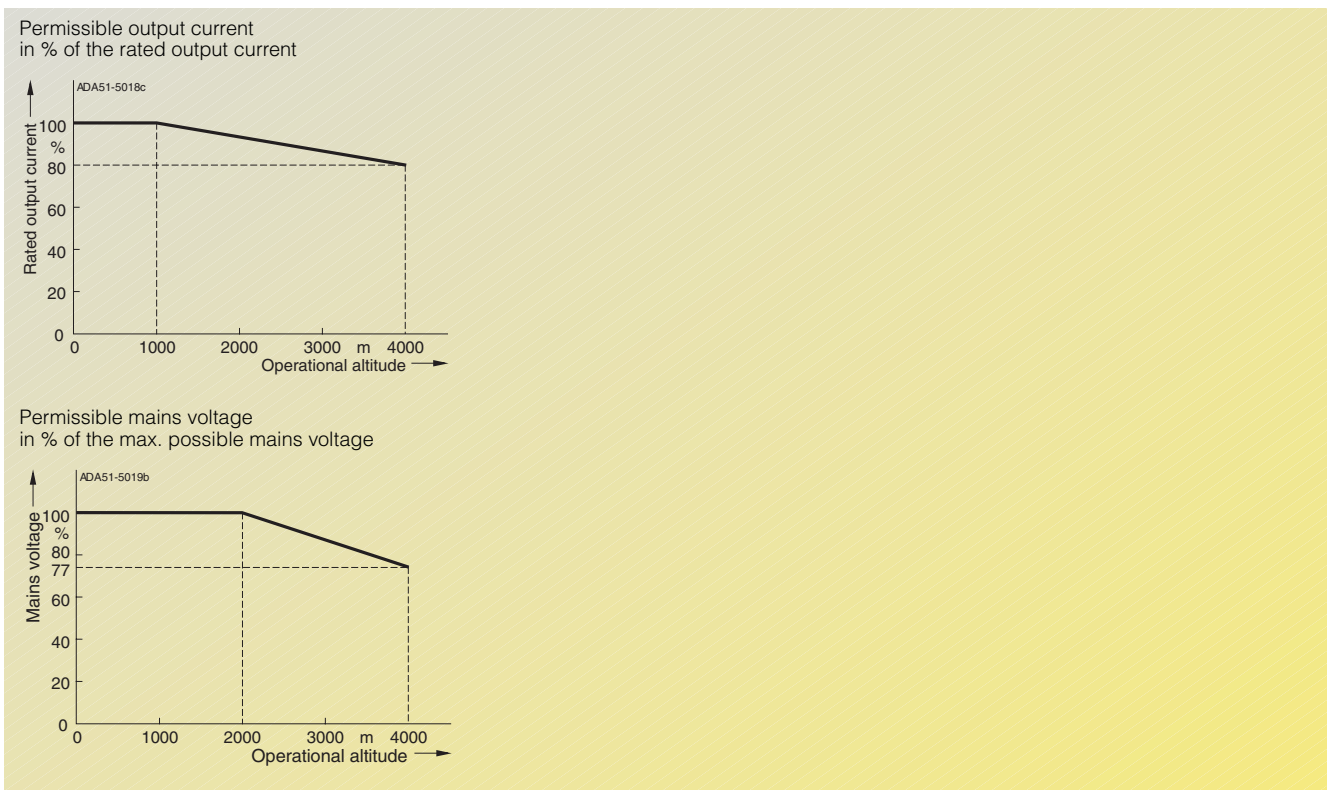
#### PWM frequency

Output (for 3 AC 400 V) kW	Rated output current in A for a pulse frequency of						
	4 kHz	6 kHz	8 kHz	10 kHz	12 kHz	14 kHz	16 kHz
0.37	1.2	1.2	1.2	1.2	1.2	1.2	1.1
0.55	1.6	1.6	1.6	1.6	1.6	1.6	1.1
0.75	2.1	2.1	2.1	2.1	1.6	1.6	1.1
1.1	3.0	3.0	2.7	2.7	1.6	1.6	1.1
1.5	4.0	4.0	2.7	2.7	1.6	1.6	1.1
2.2	5.9	5.9	5.1	5.1	3.6	3.6	2.6
3.0	7.7	7.7	5.1	5.1	3.6	3.6	2.6
4.0	10.2	10.2	6.7	6.7	4.8	4.8	3.6
5.5	13.2	13.2	13.2	13.2	9.6	9.6	7.5
7.5	18.4	18.4	13.2	13.2	9.6	9.6	7.5
11	26.0	26.0	17.9	17.9	13.5	13.5	10.4

#### Operating temperature



#### Installation height above sea level



# MICROMASTER 420

## Selection and ordering data

### MICROMASTER 420 inverter

Output		Rated input current <sup>1)</sup>	Rated output current	Frame size	Order No.	
kW	hp	A	A	(FS)	MICROMASTER 420 without filter <sup>3)</sup>	MICROMASTER 420 with internal filter Class A <sup>2)</sup>
<b>Mains operating voltage 1 AC 200 V to 240 V</b>						
0.12	0.16	2.3	0.9	A	6SE6420-2UC11-2AA1	6SE6420-2AB11-2AA1
0.25	0.33	4.3	1.7	A	6SE6420-2UC12-5AA1	6SE6420-2AB12-5AA1
0.37	0.50	5.9	2.3	A	6SE6420-2UC13-7AA1	6SE6420-2AB13-7AA1
0.55	0.75	7.7	3.0	A	6SE6420-2UC15-5AA1	6SE6420-2AB15-5AA1
0.75	1.0	10.1	3.9	A	6SE6420-2UC17-5AA1	6SE6420-2AB17-5AA1
1.1	1.5	15.0	5.5	B	6SE6420-2UC21-1BA1	6SE6420-2AB21-1BA1
1.5	2.0	18.6	7.4	B	6SE6420-2UC21-5BA1	6SE6420-2AB21-5BA1
2.2	3.0	26.8	10.4	B	6SE6420-2UC22-2BA1	6SE6420-2AB22-2BA1
3.0	4.0	35.9	13.6	C	6SE6420-2UC23-0CA1	6SE6420-2AB23-0CA1
<b>Mains operating voltage 3 AC 200 V to 240 V</b>						
0.12	0.16	1.1	0.9	A	6SE6420-2UC11-2AA1	–
0.25	0.33	2.2	1.7	A	6SE6420-2UC12-5AA1	–
0.37	0.50	3.0	2.3	A	6SE6420-2UC13-7AA1	–
0.55	0.75	3.9	3.0	A	6SE6420-2UC15-5AA1	–
0.75	1.0	5.2	3.9	A	6SE6420-2UC17-5AA1	–
1.1	1.5	7.6	5.5	B	6SE6420-2UC21-1BA1	–
1.5	2.0	10.2	7.4	B	6SE6420-2UC21-5BA1	–
2.2	3.0	14.1	10.4	B	6SE6420-2UC22-2BA1	–
3.0	4.0	18.4	13.6	C	6SE6420-2UC23-0CA1	6SE6420-2AC23-0CA1
4.0	5.0	23.3	17.5	C	6SE6420-2UC24-0CA1	6SE6420-2AC24-0CA1
5.5	7.5	28.0	22.0	C	6SE6420-2UC25-5CA1	6SE6420-2AC25-5CA1
<b>Mains operating voltage 3 AC 380 V to 480 V</b>						
0.37	0.50	1.5	1.2	A	6SE6420-2UD13-7AA1	–
0.55	0.75	1.9	1.6	A	6SE6420-2UD15-5AA1	–
0.75	1.0	2.4	2.1	A	6SE6420-2UD17-5AA1	–
1.1	1.5	3.7	3.0	A	6SE6420-2UD21-1AA1	–
1.5	2.0	4.8	4.0	A	6SE6420-2UD21-5AA1	–
2.2	3.0	6.5	5.9	B	6SE6420-2UD22-2BA1	6SE6420-2AD22-2BA1
3.0	4.0	8.6	7.7	B	6SE6420-2UD23-0BA1	6SE6420-2AD23-0BA1
4.0	5.0	11.6	10.2	B	6SE6420-2UD24-0BA1	6SE6420-2AD24-0BA1
5.5	7.5	15.6	13.2	C	6SE6420-2UD25-5CA1	6SE6420-2AD25-5CA1
7.5	10.0	22.0	19.0	C	6SE6420-2UD27-5CA1	6SE6420-2AD27-5CA1
11	15.0	32.3	26.0	C	6SE6420-2UD31-1CA1	6SE6420-2AD31-1CA1



See Appendix for note on ordering.

All MICROMASTER 420 inverters are supplied with a Status Display Panel (SDP). A BOP, AOP or other options have to be ordered separately (see Pages 2/11 to 2/15).

#### Motors for MICROMASTER 420

Catalog M 11 contains selection and ordering data for motors which are particularly suitable for operation with the MICROMASTER 420 inverters (see Appendix for overview).

This catalog is suitable for IEC motors. For motors according to US standards (NEMA) please refer to: <http://www.sea.siemens.com/> motors

1) Supplementary conditions: Input current at rated operating point, applicable at short-circuit voltage of the supply  $U_{sc} = 1\%$  with reference to the inverter rated power and rated mains voltage of 240 V or 400 V

without a line commutating choke. If a line commutating choke is used, the specified values at 200 V to 240 V are reduced to between 55% and 70% and 380 V – 480 V to between 70% and 80%.

2) Use of MICROMASTER inverters with internal filter is not permissible on non-grounded (IT) mains supplies.

3) Generally suited to heavy industrial applications. For details please refer to Appendix on page A/4.