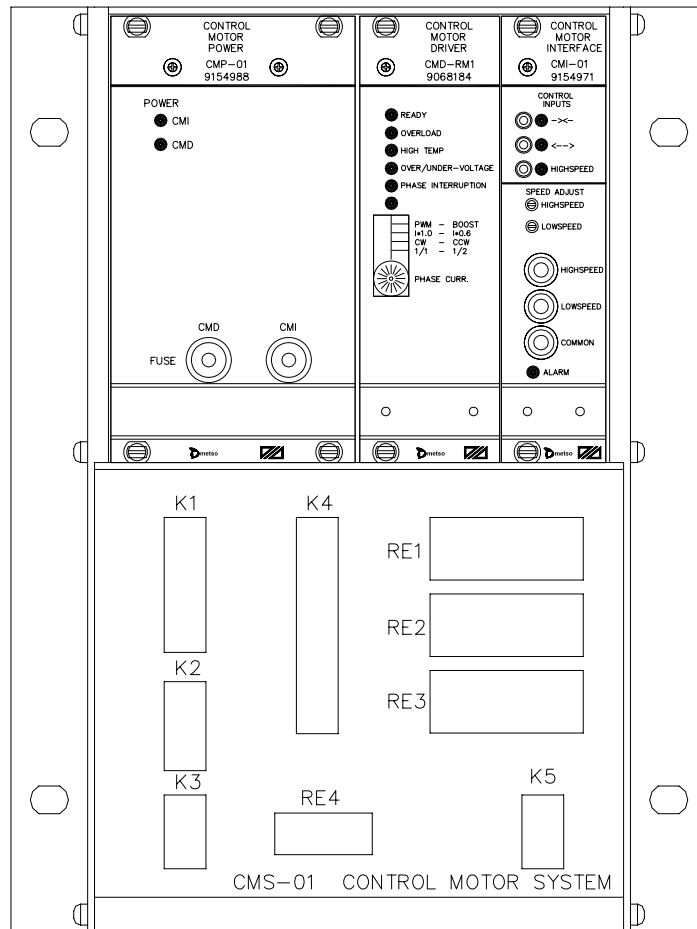




CMS-01/02/03/04/05

9-970 0829-01/02/03/04/05



CONTROL MOTOR SYSTEM

USERS MANUAL



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1. DESCRIPTION

The CMS-01 to 05 is series of complete systems for the powering and controlling of an electrical stepping motor. The unit is powered from 115 or 230 Vac, and each system includes a rack unit (CMR-01), a power supply card (CMP-01), a stepping motor driver card (CMD-RM1) and an stepping motor interface card (CMI-01).

The interface relays and the socket terminals are mounted on the rack unit. The power supply (CMP-01), the driver card (CMD-RM1) and the interface card (CMI-01) are all mounted into card slots. The input control line for "plates together", "plates apart" and "high-speed", each activates an input module, which must be adapted for 24Vdc, 24Vac, 115Vac or 230 Vac respectively. Each relay is mounted into standard sockets for easy replacement.

The torque input will enable a holding torque of the control motor when not running.

An output signal (a potential free toggling relay contact) is activated when the unit is active and without any alarm.

The nominal speed of the control motor is 0.25 mm/s for high-speed and 0.05 mm/s for low-speed. The speeds can be individually adjustable within 50 to 150 % on nominal speed, which is done by potentiometers in the front of the CMI unit. The set speeds can be read by a standard high-impedance digital voltmeter that is connected to two standard 4 mm jacks.

To adapt to different pitch of threads of the control rod, a set of preset values can be selected. This is further described in the users manual for the interface card (CMI-01).

An electrical fan is standard on the rack unit.

2 ARTICLE AND SPARE PART LIST

The parts in the CMS system can be ordered separately or as a complete unit.

The CMS-01 unit includes the following parts:

D/A Article no.	VAL/SKC article no.	Description
CMR-01	0122836 / 9154 995	Control Motor Rack
CMF-01	0136682 / 9169 708	Control Motor Fan
CMP-01	0122829 / 9154 988	Control Motor Power
CMD-RM1	0122825 / 9068 184	Control Motor Driver
CMI-01	0122827 / 9154 971	Control Motor Interface

The CMS-system can be configured for different control voltages. For each range of control voltage, the correct control input module must be selected. The control voltage must not be mixed up with the power supply voltage, which is 115 or 230 Vac.

Additional control input modules must ordered together with the CMS-01:

Voltage	D/A article no.	VAL/SKC article no.	Description
24 Vdc	CIM-24DC	0136676 / 9157 521	Control Input Module 5-32Vdc
24 Vac	CIM-24AC	0122824 / 9157 514	Control Input Module 24Vac
230 Vac	CIM-220AC	0122823 / 9157 545	Control Input Module 230Vac
115 Vac	CIM-110AC	0122822 / 7172 137	Control Input Module 115Vac

The CMS-02 thru -04 includes the CMS-01 together with the control input modules:

Voltage	D/A article no.	Metso no.	Description
-	CMS-01	9-970 0829-01	No input modules
24 Vdc	CMS-02	9-970 0829-02	3 * CIM-24DC
24 Vac	CMS-03	9-970 0829-03	3 * CIM-24AC
230Vac	CMS-04	9-970 0829-04	3 * CIM-220AC
115Vac	CMS-05	9-970 0829-05	3 * CIM-110AC

3. TECHNICAL SPECIFICATION

Article no:	CMS-01	9-970 0829-01	(No input modules)
	CMS-02	9-970 0829-02	(24Vdc input modules)
	CMS-03	9-970 0829-03	(24Vac input modules)
	CMS-04	9-970 0829-04	(230Vac input modules)
	CMS-05	9-970 0829-05	(115Vac input modules)
Power supply:	115 or 230 Vac, 15%, 48-62 Hz		
Current consumption:	1.6 A, (115Vac), 0.8 A (230Vac)		
Internal voltage CMD:	8 Vdc, 4.5 A		
Internal voltage CMI:	2 Vdc, 0.5 A		
Internal voltage Fan:	1 Vdc, 0.25 A		
Fuse Primary:	2A Slow		
Fuse Secondary 35V:	5A Fast, Automatic		
Fuse Secondary 10V:	1A Fast, Automatic		
Rack dimension:	Length= 200, height = 266, depth = 200 mm		
Panel adjustments:	CMD - Phase current		
	CMD - PWM/Boost current control		
	CMD - Current reduction		
	CMD - Direction of rotation		
	CMD - Step angle		
	CMI - High speed		
	CMI - Low speed		
Panel output indicators:	CMP - Power CMI, Power CMD, Fuse CMI, Fuse CMP		
	CMD - Readiness, Short circuit/overload, Excessive temp.		
	Under/Over-voltage, Phase interruption		
	CMI - <<-->>, ->><<-, High speed, Control motor alarm		
	3 mm led indicators		
Control input:	Together, Apart, High speed, Zero phase current		
	The input control relays is mounted into sockets and must be configured for separate control voltage		
Control input relays:	3 pcs, 5-pole input module, length=43, height=32, width=15 mm		
	Galvanic isolated, mounted into standard sockets		
Relay output:	Control motor alarm		
	Potential free relay contact, 2A/250 Vac		
	The relay is active when the power is connected and the unit is not in the alarm state		
Connectors:	Mains input: Screw socket terminals, angled 45°		
	All other inputs: Plug in screw socket terminals, angled 45°		

4 ADJUSTMENTS AND SETTINGS

4.1 CMI -01 UNIT

The nominal speed of the motor can be adjusted from 50 to 150 % of nominal speed. This is done by potentiometers in the front of the CMI-01 unit. See the users manual of the CMI-01 for further information.

4.2 CMD-RM1 UNIT

Several parameters for the control motor can be set. See the users manual of the CMD-RM1 for further information.

4.3 CMI-01 UNIT

The pitch of thread of the adjustment screw for the hydraulic valve must be set. See the users manual of the CMI-01 for further information.

5. CONNECTION DIAGRAM

5.1 POWER SUPPLY INPUT

K1

220	1	●	230VAC
110	2	●	115VAC
0V	3	●	NEUTRAL
CM-GND	4	●	CONNECTED TO CONTROL MOTOR CHASSIS
RACK	5	●	CONNECTED TO RACK CHASSIS

5.2 CONTROL INPUT

K2

DI+CMTO	1	●	Digital input, Plates Together	*	PLC
DI-COM	2	●	Digital input, Common		PLC
DI+CMAP	3	●	Digital input, Plates Apart	*	PLC
DI-COM	4	●	Digital input, Common		PLC
DI+CMHS	5	●	Digital input, High Speed	*	PLC
DI-COM	6	●	Digital input, Common		PLC

* A relay must be selected for this input line, to adapt to the operating control voltage. (24dc, 24Vac, 230Vac or 115 Vac.)

5.3 ALARM OUTPUT

K3

DO+ALNC	1	●	Normally open	(closed in alarm state)
DO+ALCOM	2	●	Common	
DO+ALNO	3	●	Normally closed	(open in alarm state)
	4	●	Not used	

5.4 CONTROL MOTOR DRIVE CURRENTS

K4

CM+W1A	1 ●	Positive, phase 1	Cable:	1 / yellow
CM-W1E	2 ●	Negative, phase 1		2 / white
CM+W2A	3 ●	Positive, phase 2		3 / blue
CM-W2E	4 ●	Negative, phase 2		4 / red
CM+W3A	5 ●	Positive, phase 3		5 / rose
CM-W3E	6 ●	Negative, phase 3		6 / green
CM+W4A	7 ●	Positive, phase 4		7 / grey
CM-W4E	8 ●	Negative, phase 4		8 / black
CM+W5A	9 ●	Positive, phase 5		9 / brown
CM-W5E	10 ●	Negative, phase 5		10 / amber
CM-GND	11 ●	Control motor chassis		
CM-GND	12 ●	Control motor chassis		

5.5 OPTIONAL CONTROL INPUT/OUTPUT

K5

U+CM	1 ●	+35Vdc from CMP-01 unit	
DI+CMT	2 ●	Digital input, Torque	connect to U+CM
DI+CM3	3 ●	Digital input, spare	not implemented
DO+CM4	4 ●	Digital output, spare	not implemented

5.6 COOLING FAN

K6

FAN	+	1 ●	+10Vdc from CMP-01 unit	Internal supply cooling fan only (max 0.25A)
12V	-	2 ●	0 Vdc	

6. CONNECTION DRAWING

