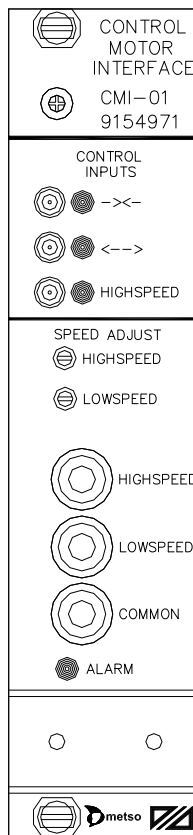




# CMI-01

VAL0122827 / SKC9154971



## CONTROL MOTOR INTERFACE

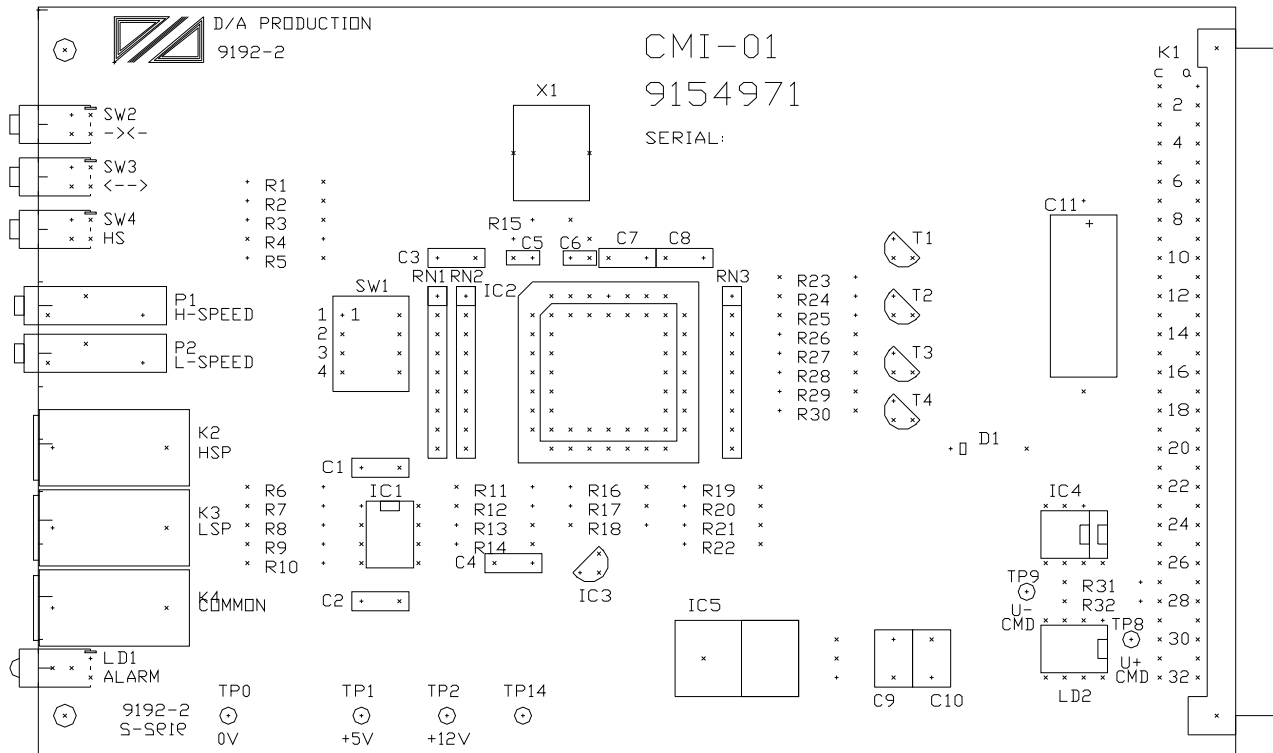
## MANUAL



CONTENTS

1. PLACEMENT OF COMPONENTS
2. DESCRIPTION
3. TECHNICAL DESCRIPTION
4. SETTINGS
5. ADJUSTMENTS

1. PLACEMENT OF COMPONENTS



## 2 DESCRIPTION

The CMI-01 is an interface unit for the CMS Control Motor System.

The unit is mounted into the card slots of the rack unit (CMR-01).

The CMI-01 Control Motor Interface is used in combination with the control motor driver, CMD-RM1. Together they will form an interface to control 5-phase or 2-phase stepping motors.

Control Motor function:

The unit is controlled by activations of the control input modules of the Control Motor Rack, CMR-01. The CMI-01 generates pulses in three different modes:

**SINGLE STEP MODE:** A single control input pulse, less than 500 ms, will generate a corresponding number of pulses that will move the refiner disc 0.01 mm.

**LOW-SPEED MODE:** When the control input pulse is longer than 500 ms, it will generate a frequency of pulses that will move the refiner disc with a speed of 0.05 mm/second.

**HIGH-SPEED MODE:** When the control input pulse is longer than 500 ms, and high speed input is active, it will generate a frequency of pulses that will move the refiner disc with a speed of 0.25 mm/second.

Due to variation of the thread pitch on the control rod, 4 different sets of pre-adjusted frequencies can be selected depending of the adjusting screw and type of refiner. (See settings in chapter 4, page 4).

Both the low-speed and the high-speed frequencies can also be adjusted by multi-turn potentiometers in the front of the unit.

When zero torque input signal (DI+CMT) is active, the unit will generate an output signal to the CMD-RM1 or CMD-RM2 unit, and that will enable the holding torque of the motor.

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## 3. TECHNICAL DESCRIPTION

Article no:	CMI-01 / VAL0122827 / SKC9154971
Power supply:	+10 Vdc, $\pm 20\%$ , 0.5 A, max
Internal supply:	+5 Vdc, not isolated from the power supply
Board dimension:	L=160 mm, W=100 mm, T=30 mm (6TE)
Panel adjustments:	HIGH SPEED, LOWSPEED: 15-turn potentiometers
Panel adjustment limits:	50 to 150 % of nominal setting
Panel input indicators:	-><- , >--<, HIGH SPEED: Yellow led's indicating activated inputs ALARM, Red led indicating when the alarm output is deactivated
Alarm input:	From the relay output on CMD-RM1 / CMD-RM2 unit
Control inputs:	Opto isolated digital input from the control input module Input resistance: 2 k $\Omega$ . Voltage level: 5 Vdc
	DI+CMTO Plates together
	DI+CMAP Plates apart
	DI+CMHS High speed
Optional Control inputs:	Opto isolated digital input from the motherboard of the CMR-01
	DI+CMT Holding torque. The holding torque is applied to the motor when not running, if this input is connected to the U+CM output
	DI+CM3 Not implemented
Alarm output:	Transistor output for the relay on the motherboard of the CMR-01 Max current, 0.1 A
	DO+CMAL Control motor alarm. It is normally activated, but is deactivated when the alarm input is deactivated and approx. 5 s during power-up of the unit.
Optional outputs:	Opto isolated P-channel output. PNP transistor connected to the positive voltage of the CMD unit. The negative voltage is CM-GND (K4/12 of CMR-01). Max current, 0.1 A.
	DO+CM4 Not implemented

### 4. SETTINGS

Adjustment screw, pitch of thread, mm GAP/360 degrees

Gap change in mm	1.0	1.41	2.0	0.5
SW1/1	on	off	on	off
SW1/2	on	on	off	off

Default setting: /1 = on /2 = off /3= on /4= on

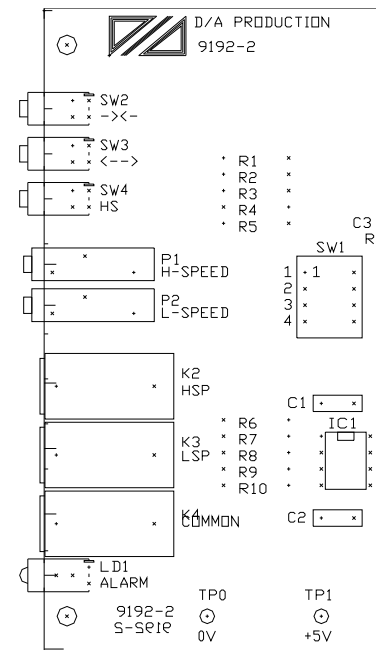
Pulses to step motor driver card

SW1/3 on = CMD-RM2 (2-phase stepping motor) version 1.1 or later  
 off = CMD-RM1 (5-phase stepping motor)

Direction for the CMD-RM2 card

SW1/4 on = Normal direction (version 1.1 or later)  
 off = Reverse direction (version 1.1 or later)

Refiner type: Type of	CF-82	RGP-60	RGP-A	Old RLP and RGP
Adjusting screw	M-XX			
Pitch of thread (mm)	1.0	1.41	2.0	0.50



### 5. ADJUSTMENTS

#### 5.1 HIGH SPEED

Connect a high impedance digital voltmeter to the connector "HIGHSPEED" (+) and "COMMON" (-).

Read the voltmeter value and adjust the high-speed potentiometer.

Values can be adjusted between 0.5 and 1.5V. If 1.0V is chosen, the speed of the axial movement will be 0.25 mm/s. If the stepping motor is working while adjusting, the change will be affected first upon the next activation. 0.5 V on the DVM corresponds to 0.125 mm/s, 1.0 V to 0.25 mm/s and 1.5 V to 0.375 mm/s.

#### 5.2 LOW SPEED

Connect a high impedance digital voltmeter to the connector "LOWSPEED" (+) and "COMMON" (-).

Read the voltmeter value and adjust the low-speed potentiometer.

Values can be adjusted between 50 and 150%. If 100% is chosen, the speed of the axial movement will be 0.05 mm/s. If the stepping motor is working while adjusting, the change will be affected first upon the next activation. 0.5 V on the DVM corresponds to 0.025 mm/s, 1.0 V to 0.05 mm/s and 1.5 V to 0.075 mm/s.

