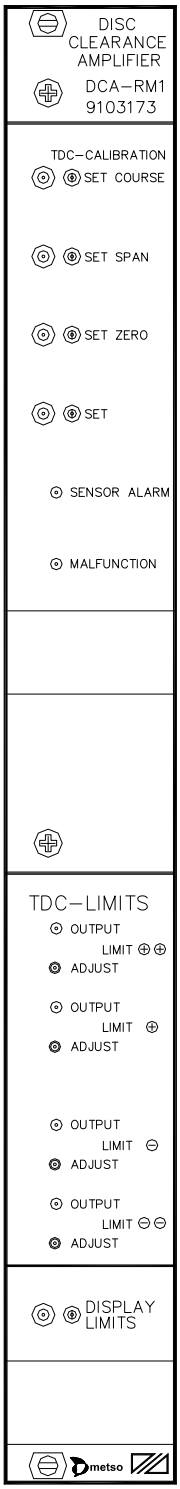
dametric

DCA – RM1



VAL0122833 / SKC9103173

DISC CLEARANCE AMPLIFIER FOR THE RMS-SYSTEM

MANUAL

Valmet

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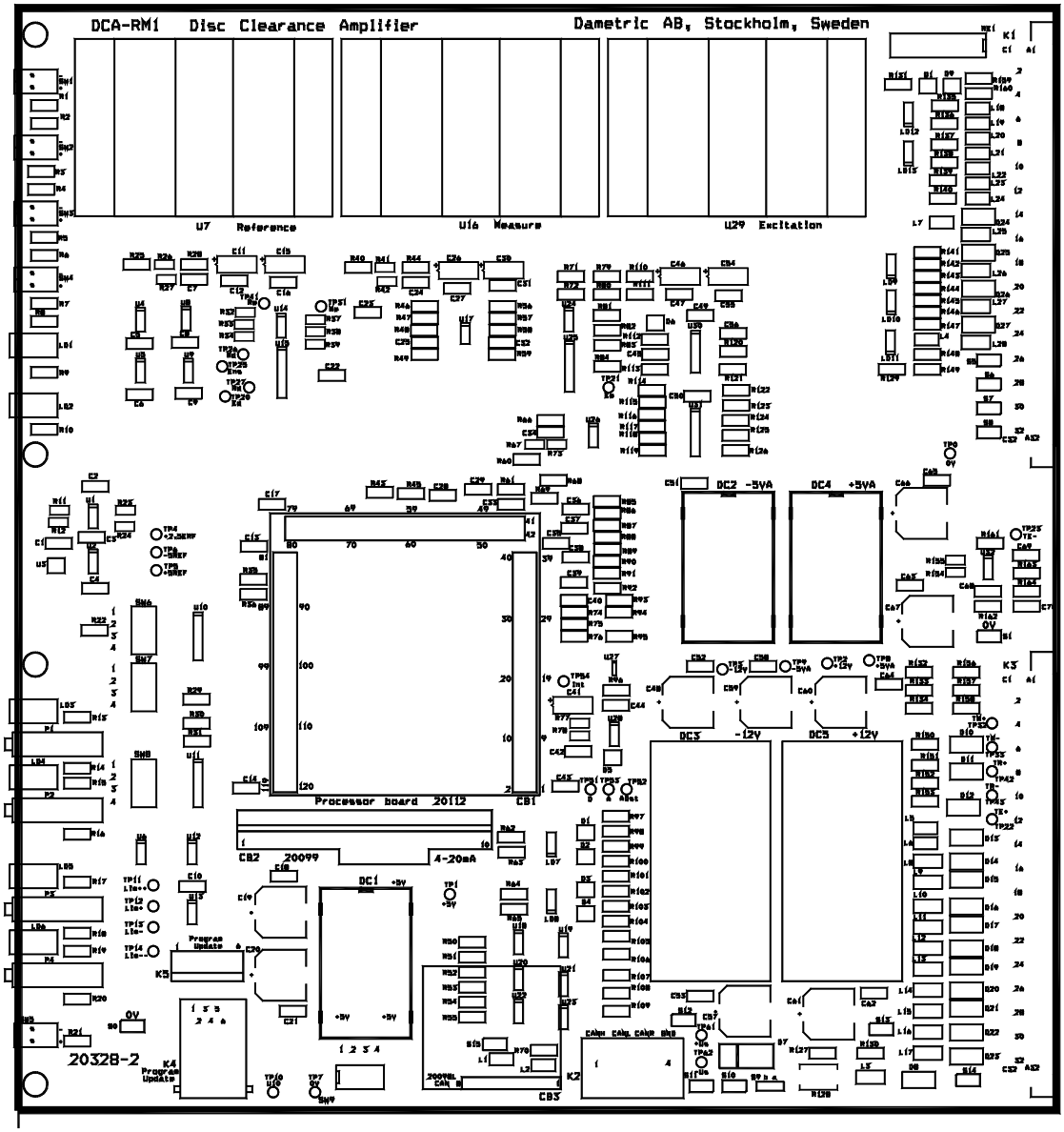
1. LOCATION OF COMPONENTS



2. DESCRIPTION OF OPERATION

The DCA-RM1 unit measures the true disc clearance between the segment-plates of the refiner. The unit feeds and measures the excitation currents to the TDC-sensor.
Calibration: The DCA-unit is calibrated by digital signals (instead of potentiometers) in the following order: The Course-setting is done with the discs wide apart (>> 8 mm), by an active set-coarse input and an active set-enable input. The DCA-unit is then calibrated to a normalised span, and the zero level is adjusted for a 3.00 mm reading for flat refiners and 2.50 mm for Conflo refiners in the discs apart position. The Zero is set at the touch point with the discs rotating, to 0.50 mm reading for flat refiners and 0.70 mm for Conflo refiners. This is done by an active set-zero input and an active set-enable input. The span setting is not changed.
The Span is set (with the discs backed 1 mm apart from the touch point) by an active set-span input and an active set-enable input. The reading will be 1.50 mm reading for flat refiners and 1.70 mm for Conflo refiners. The amplification is changed relative the 0.50/0.70 mm point.
The preset values, 3.00/0.50/1.50 or 2.50/0.70/1.70 is set by dip-switches.
The Set signals can be activated in three different ways:

- By push buttons in the front of the DCA-unit. A set enable from the PLC-unit must be active to prevent accidental activations.
- By digital inputs from the DCU-unit.
- By digital inputs from the PLC-unit.

The amplifier includes following functions:

- Internal Zero and Span level-adjustments to 1V (0%) and 5V (100%).
- Isolated, 4-20 mA, output current.
- A voltage output for the DCU-unit.
- 4 limit circuits , which compares the signal to four limit values. The limits are adjustable from 0 to 100% of signal amplitude. The limit-outputs is active when the signal is higher than the adjusted limit values. The front panel led's indicates a non active output. A non active output initiates a hysteresis on the rising slope of the signal. The outputs is opto-isolated from the unit, and drives a P-channel power transistor. The transistors is connected to the +rail of the system power supply.
- The transducer signals are checked and the limits outputs are forced to the alarm state if out of range. A 0 % signal is also forced to the analogue outputs and the sensor alarm output is set to the alarm state.
- A RMS-system interface which permits readouts of the measured level and the adjusted limit-values to the DCU-RM1 unit.

3. TECHNICAL SPECIFICATION

Article no:	DCA-RM1 / VAL0122833 / SKC9103173	
Power supply input:	+15 Vdc/0.05 A,	-15 Vdc/0.05 A
	+12 Vdc/1.25 A,	-12 Vdc/1.25 A,
	+5 Vdc/0.5 A,	-5 Vdc/0.5 A
	Digital common,	Analog common
	The power supply is placed on the DTM-RM1 board	
Current consumption:	See the DTM-RM1 unit.	
Board dimension:	Height=234 mm, Depth=220 mm, Width=30 mm (6 TE)	
Panel adjustments:	LIMIT + +, LIMIT +, LIMIT -, LIMIT - -: 15-turn potentiometers	
Panel output indicators:	LIMIT + +, LIMIT +: green led's	
Panel output indicators:	LIMIT -, LIMIT - -: red led's	
Panel switch indicators:	Set enable, set course, set span. set zero: red led's	
Panel switches:	DISPLAY LIMITS:	Push-button switch
	SET COURSE	Course calibration (3.00/2.50 mm)
	SET SPAN	Span calibration (1.50/1.70 mm)
	SET ZERO	Zero calibration (0.50/0.70 mm)
	SET ENABLE	Enable calibration
Transducer:	type:	TDC-sensor
	TM+TDC	Positive measuring current
	TM-TDC	Negative measuring current
	TR+TDC	Positive reference current
	TR-TDC	Negative reference current
	TE+TDC	Positive excitation current
	TE-TDC	Negative excitation current
	TP+TDC	Temperature excitation current
	TS-TDC	Shield

Internal zero level:	+1.0 V ± 0.5%	
Internal full-span level:	+5.0 V ± 0.5%	
Analog output 1:	Galvanically isolated current, 4-20 mA, ± 1%. 0 - 800 Ω load, 500V isolation voltage.	
AO+DCA	Analog output	Analog +
AO-DCA	Analog output	Analog -
Analog output 2:	Voltage output, 1-5 Vdc, to the DCU-RM1 unit.	
U+DCA	Analog output	Analog +
U-DCA	Analog output	Analog -
RMS-interface:	Yes	
External digital outputs:	Opto isolated P-channel fet transistor connected to the positive rail of the rms system voltage. Max. current, 0.1 A.	

DO+DCA1	Digital output	LIMIT ++	to PLC
DO+DCA2	Digital output	LIMIT +	to PLC
DO+DCA3	Digital output	LIMIT -	to PLC
DO+DCA4	Digital output	LIMIT --	to PLC

The limits are active when the DCA value is higher than the adjusted limit.
It is no hysteresis when changing from the active to the inactive state. It is 2 % hysteresis when changing from the inactive to the active state. The led in the front of the unit indicates an inactive output.

DO+DCAMA	Digital output	Malfunction	to PLC

This output is normally activated. The signal is forced to a low state when the internal power supply voltages falls outside of the specified range. This supplies is generated in the DTM-RM1 unit.

DO+DCASA	Digital output	Sensor alarm	to PLC

This output is normally activated, except during the first 4 seconds after the startup, and is deactivated when the sensor is dismounted or an abnormal signal is received from the sensor.

Internal digital outputs: Unbuffered output. Voltage level 5 V.

Synchronisation signal for the Pt-100 excitation current.

83 Hz	Digital output	to DTM	

Internal digital inputs: Opto isolated digital input from the DCU-unit. Input resistance: 1 kΩ. Voltage level: 5 Vdc.

DCA-setting signals from the DCU-unit.

ID+DCASE	Digital input	DCA set enable	from DCU
ID+DCASC	Digital input	DCA set course	from DCU
ID+DCASS	Digital input	DCA set span	from DCU
ID+DCASZ	Digital input	DCA set zero	from DCU

External digital inputs: Opto isolated digital input from the PLC-system. Input resistance: 2 kΩ, Voltage level: 24 Vdc.

DCA-setting signals from the PLC-unit.

DI+DCASE	Digital input	DCA set enable	from PLC
DI+DCASC	Digital input	DCA set course	from PLC
DI+DCASS	Digital input	DCA set span	from PLC
DI+DCASZ	Digital input	DCA set zero	from PLC

4. ADJUSTMENT

See the CALIBRATION MANUAL for the appropriate system, RMS-SD1 or RMS-CD1.

5. CALIBRATION

See the CALIBRATION MANUAL for the appropriate system, RMS-SD1 or RMS-CD1.

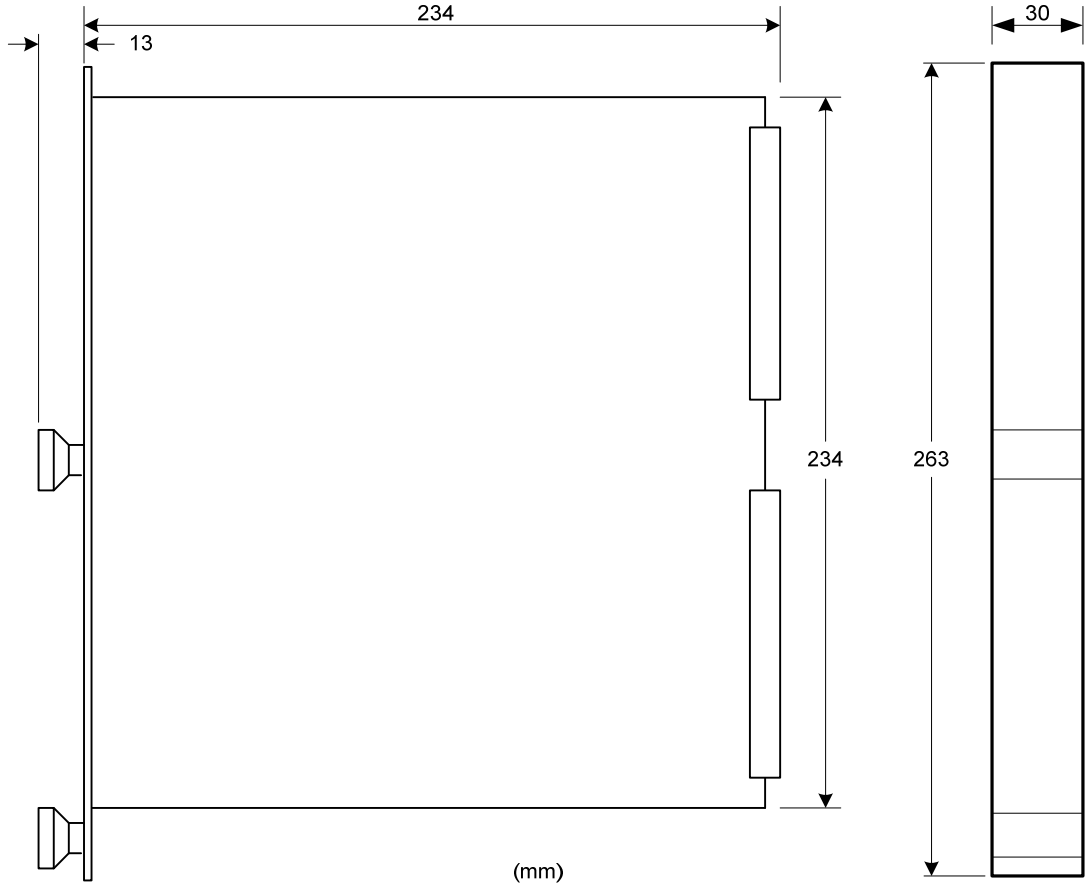
6. SETTINGS

	Dip-switch	Function
SW6	1=off + 2=off	1500 rpm main motor speed
	1=on + 2=off	1800 rpm main motor speed
	1=off + 2=on	500 rpm main motor speed
	1=on + 2=on	600 rpm main motor speed
SW6	3=off + 4=off	Normal measuring time
	3=on + 4=off	Decrease measuring time 1.3 %
	3=off + 4=on	Decrease measuring time 2.5 %
	3=on + 4=on	Decrease measuring time 3.8 %
SW7	1=off+ 2=off	Normal measuring time
	1=on + 2=off	Increase measuring time 2.5 %
	1=off + 2=on	Increase measuring time 5.5 %
	1=on + 2=on	Increase measuring time 7.5 %
SW7	3=off	RMS
SW7	3=on	RMS+AGS (from version 7.00)
SW7	4=off	Transducer check disabled
	4=on	Transducer check enabled
SW8	1=off	3.00/0.50/1.50 course/zero/span (Flat-refiner)
	1=on	2.50/0.70/1.70 course/zero/span (Conflo-refiner)
SW8	2=off	Front Set push-buttons disabled
SW8	2=on	Front Set push-buttons enabled
SW8	3=off	0 - 2.00 mm linear measuring range
SW8	3=on	0 - 3.00 mm linear measuring range (from ver. 3.5)
SW8	4=off	0.5 s response time
	4=on	1.0 s response time
SW9	1=off	Not used
SW9	2=off	Not used
SW9	3=off	Not used
SW9	4=off	Not used

Not used switches must be in the off-position

Default setting

7. OUTLINE DRAWING



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