



DCA – RM2

VAL0122834 / SKC9226050

 DISC CLEARANCE AMPLIFIER  DCA-RM2 9226050
TDC-CALIBRATION <input type="checkbox"/>  SET COURSE <input type="checkbox"/>  SET SPAN <input type="checkbox"/>  SET ZERO <input type="checkbox"/>  SET SENSOR ALARM <input type="checkbox"/> MAGNETIZED SEGMENT <input type="checkbox"/> SENSOR <input type="checkbox"/> CABLE
<input type="checkbox"/> ROTATING UNIT <input type="checkbox"/> STATIONARY UNIT <input type="checkbox"/> RACK UNIT MALFUNCTION 
TDC-LIMITS <input type="checkbox"/> OUTPUT LIMIT ++ <input type="checkbox"/> ADJUST <input type="checkbox"/> OUTPUT LIMIT + <input type="checkbox"/> ADJUST <input type="checkbox"/> OUTPUT LIMIT - <input type="checkbox"/> ADJUST <input type="checkbox"/> OUTPUT LIMIT -L <input type="checkbox"/> ADJUST <input type="checkbox"/> OUTPUT LIMIT -- <input type="checkbox"/> ADJUST
<input type="checkbox"/>  DISPLAY LIMITS


DISC CLEARANCE AMPLIFIER FOR THE RMS-DD SYSTEM

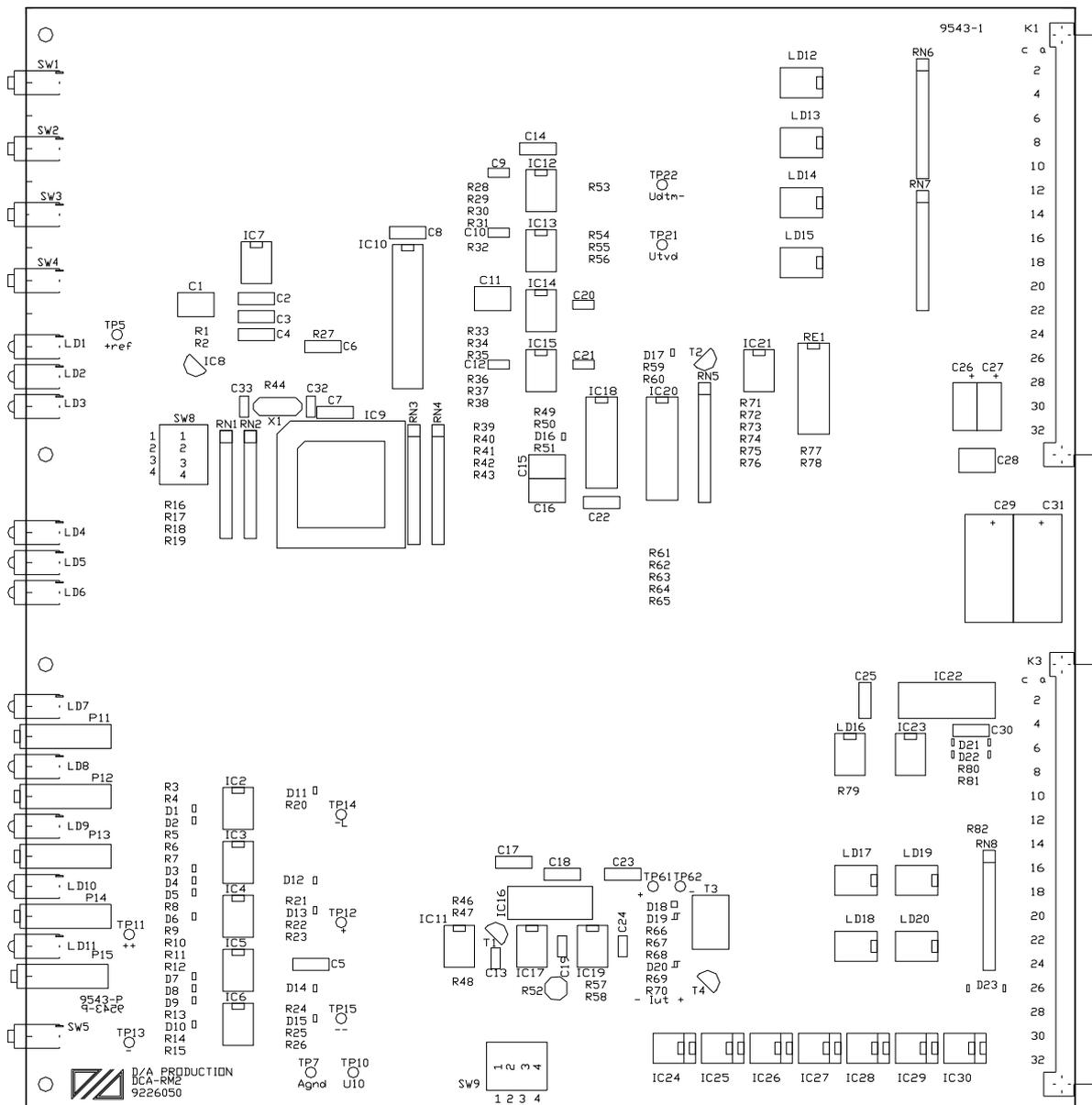
USERS MANUAL



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1. LOCATION OF COMPONENTS



2. DESCRIPTION OF OPERATION

The DCA-RM2 unit is used in the RMS-DD system, and receives the serial data signal that is generated in the rotating unit. The serial data which includes the TDC-distance, sensor temperature, touch point signal and several other data signals for easy system checkout, is read by a microprocessor. The sensor temperature data signal is converted to a voltage signal and is fed to the DTM unit. The touch point data signal is converted to a voltage signal and is fed to the TVD unit. The TDC data signal is used internally and is proportional to the true disc clearance between the segment-plates of the refiner. The input signal is calibrated, zero and span, and linearized to give an accurate output signal.

Calibration: The DCA-unit is calibrated by digital signals (instead of potentiometers) and can be done with a "zeropoint" of 0.50 mm or 0.70 mm. 0.50 mm is used for RGP-65DD while 0.70 mm is used for RGP-68DD.

The Course-setting is done with the discs wide apart ($\gg 8$ mm), by an active set-coarse input and an active set-enable input. The DCA-unit is then calibrated to a span, and the zero is set to give a 3.00/2.50 mm reading.

The Zero is set at the touch point with the discs rotating, to 0.50/0.70 mm reading. 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 1.50/1.70 mm, and the amplification is changed relative the 0.50/0.70 mm point.

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) or by digital inputs from the DCU-unit or by digital inputs from the PLC-unit. The amplifier includes following functions:

Isolated, 4-20 mA, output current.

A voltage output for the DCU-unit.

5 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.

A RMS-system interface which permits readouts of the measured level and the adjusted limit-values to the DCU-RM1 unit.

Led indicators: The malfunction leds in the front, will work as follows:

Malfunction Rotating unit. The led will lit if there is no signal from the rotating unit to the stationary unit, or if the signal is okay, but the rotating unit is reporting an internal error.

Malfunction Stationary unit. The led will lit if there is no signal from the stationary unit to the rack unit, or if the signal is okay, but the stationary unit is reporting an internal error.

Malfunction Rack unit. The led will lit if the unit detects an internal error such as power supplies or the microprocessor not working properly.

The TDC-sensor alarm leds in the front, will work as follows:

Segment. The led will lit if the rotating unit measures an abnormal value in one of the correction loops of the TDC-measurement. This signal is an indication of permanent magnetised segments.

Cable. The led will lit if the rotating unit measures an incorrect signal from the TDC-sensor, and the unit recognises the signal as an open circuit or an inter-connection between the parts to the sensor.

Sensor alarm sensor. The led will lit if the rotating unit measures an incorrect signal from the TDC-sensor, and the unit recognises the signal as an internal sensor failure. This will occur, if the sensor is overheated.

3. TECHNICAL SPECIFICATION

Article no:	DCA-RM2 / VAL0122834 / SKC9226050
Power supply input:	+15 Vdc / 0.1 A, -15 Vdc / 0.1 A, +12 Vdc / 0.1 A, -12 Vdc / 0.1 A +5 Vdc / 0.1 A, -5 Vdc / 0.0 A, Digitaljord, Analogjord The power supply is placed on the DTM-RM1 unit
Board dimension:	Height=234 mm, Depth=220 mm, Width=30 mm (6 TE)
Panel adjustments:	LIMIT ++, LIMIT +, LIMIT -, LIMIT -L, LIMIT --: 15-turn potentiometers
Panel output indicators:	LIMIT ++, LIMIT +: green led's LIMIT -, LIMIT -L, LIMIT --: red led's SENSOR ALARM: REMANENCE, SENSOR, CABLE: red led's MALFUNCTION: ROT. UNIT, STAT. UNIT, RACK UNIT: 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 mm) SET SPAN, Span calibration, (1.50 mm) SET ZERO, Zero calibration, (0.50 mm) SET ENABLE Enable calibration
Internal zero level:	+1.0 V \pm 0.5%
Internal full-span level:	+5.0 V \pm 0.5%
Analog output 1:	Galvanically isolated current, 4-20 mA, \pm 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-unit 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 DO+DCA5, Digital output LIM I-L, 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 dismantled 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 k Ω . 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 k Ω . 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 CAL-DD calibration instruction.

5. CALIBRATION

See the CAL-DD calibration instruction.

6. SETTINGS

Dip-switch	Function		
SW8	1=off	2=off	200 % sensitivity of TVD High gain
	1=off	2=on	100 % sensitivity of TVD High gain
	1=on	2=off	50 % sensitivity of TVD High gain
	1=on	2=on	Not used
SW8	3=off	4=off	200 % sensitivity of TVD Low gain
	3=off	4=on	100 % sensitivity of TVD Low gain
	3=on	4=off	50 % sensitivity of TVD Low gain
	3=on	4=on	Not used
SW9	1=off		Front buttons for calibration disabled
	1=on		Front buttons for calibration enabled
SW9	2=off		Used for test purposes
SW9	3=off		3.00/0.50/1.50 Course/Zero/Span
SW9	3=on		2.50/0.70/1.70 Course/Zero/Span
SW9	4=off		Calibration of the DTM-unit disabled
	4=on		Calibration of the DTM-unit enabled (See the calibration manual)

Default setting.

The switches is only used for internal calibration and should normally be in the off position.

7. OUTLINE DRAWING

