



	AGS CONTROL MODULE
	ACM-RM1 VAL
	PC
	CAN
	POWER
	SUM ALARM
	DTM LIMITS
	OUTPUT LIMIT 1
	ADJUST
	OUTPUT LIMIT 2
	ADJUST
	OUTPUT LIMIT 3
	ADJUST
	DISPLAY LIMITS
	metso

# ACM – RM1

VAL0196330

## AGS CONTROL MODULE FOR THE RMS-SYSTEM

### MANUAL



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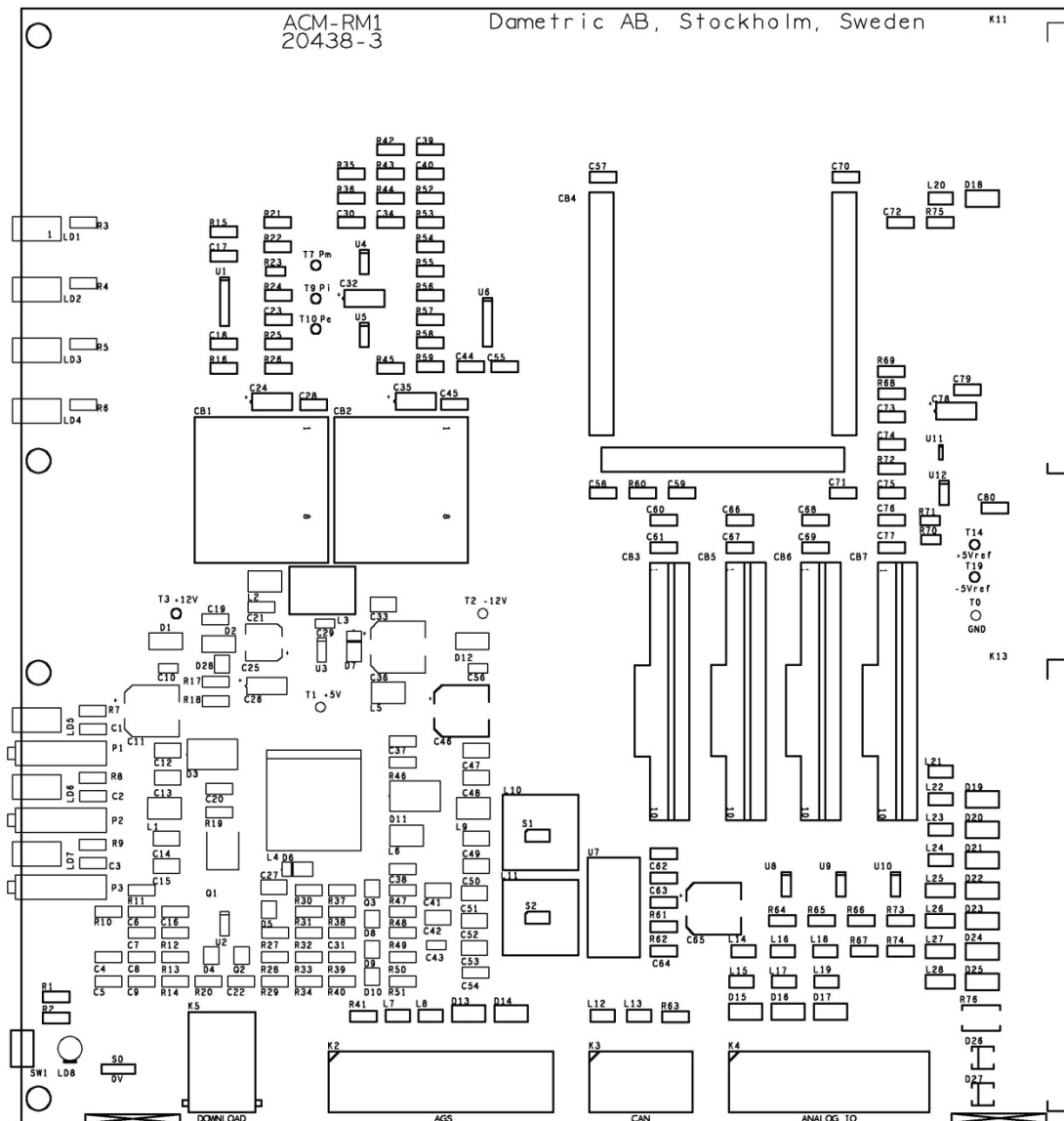
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1. LOCATION OF COMPONENTS



## 2. DESCRIPTION OF OPERATION

The ACM-RM1 unit is used in a RMS system (Refiner Monitor System) and acts as a link between the AGS (Adjustable Gap Sensor) and the CAN-interface.

It also includes the disc temperature measurement circuits and it replaces the DTM-RM1 board in RMS racks where the AGS sensor is used instead of the TDC sensor.

The unit includes following functions:

- Measurement of the temperature between the grinding discs through a temperature sensor inside the tip of the AGS sensor. The sensor element is of type PT-100, and it is excited with an alternating constant current synchronised with the excitation currents to the AGS-sensor.
- The temperature must be adjusted at zero (0 °C) and at full span (225 °C) and is done digitally.
- Four isolated 4-20mA current outputs. One output is for the disc temperature and three to indicate the gap impedance values.
- Voltage output for RMS enhanced display unit (DCU-RM1/DCU-RM2).
- Three limit circuits, which compare the signal to two limit values. The limits are adjustable from 0 to 100% of signal amplitude. For Limit 1 and Limit 2, the limit-outputs are active when the signal is lower than the adjusted limit values. For Limit 3, the limit-output is active when the signal is higher than the adjusted limit value. The active outputs is indicated at the front panel led's. A not active output initiates a hysteresis on the rising slope of the signal. The output is optic-isolated from the unit, and drives a P-channel power transistor. The transistor is connected to the + rail of the system power supply.
- A current input check circuit that compares the current to preadjusted limits. Any fault deactivates the limit-outputs and generates a -25 % signal amplitude on both the signal and the current output.
- CAN-RMS – Controller Area Network inside the RMS rack.  
The CAN bus is a balanced (differential) 2-wire interface and it is used to communicate between the DCU-RM1/2, the DCA-RM1 and the ACM-RM1 units.  
The bus is internal and is connected between the RMS cards inside the RMS rack.
- CAN-AGS – Controller Area Network for the AGS sensor.  
The CAN bus is a balanced (differential) 2-wire interface and it is used to communicate between the ACM-RM1 unit and the AGS sensor.  
The bus is external meaning it is connected to the AGS sensor in the field.

### 3. TECHNICAL SPECIFICATION

Article no:	ACM-RM1
Valmet article no.:	VAL0196330
Power supply input:	+24 Vdc, $\pm 10\%$ , max 2A
Board dimension:	Height=234 mm, Depth=220 mm, Thickness=30 mm (6 TE).
Panel adjustments:	DTM-LIMIT 1, -LIMIT 2, -LIMIT 3: 15-turn potentiometers for the DTM.
Panel output indicators:	DTM-LIMIT 1, -LIMIT 2, -LIMIT 3: Green led's indicating the status of the DTM limit switches. ON: A green led indicating power on. CAN: The yellow led indicates traffic on the CAN bus. SUM ALARM: A red led lights whenever the unit falters.
Panel switch:	DISPLAY LIMITS: Push-button switch to activate reading of DTM-limits on the DCU unit.
DTM measuring range:	0 - 225 °C
DTM digital outputs:	DTM-LIMIT 1, -LIMIT 2, -LIMIT 3. Opto isolated P-channel fet transistor connected to positive rail of the rms system voltage. Max current, 0.1 A. The limits are activated when the DTM value is lower 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 activated output.
DTM digital input:	Synchronisation signal from the DCA-RM1 unit for the PT-100 excitation current.
Analogue output:	Four galvanically isolated currents, 4-20 mA, $\pm 1\%$ accuracy, 0 - 800 $\Omega$ load, 500V isolation voltage.
Calibration:	All functions are digitally calibrated by the GMS software in the Panel-PC.
Parameters:	The parameters for all functions are controlled by the GMS software in the Panel-PC.

### 4. LED INDICATORS

The function of the led indicators in the front of the unit.

PC This led is always off

CAN

Blinks with low intensity very shortly:

OK, the led is indicating the data traffic on the CAN-bus

Lit up and goes off shortly once per second:

Faulty, no CAN-connection with the AGS sensor

POWER

On: Internal power OK

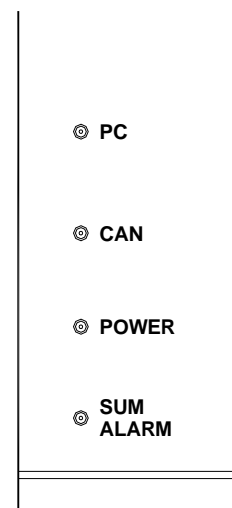
Off: No power

SUM ALARM

On: Sum alarm activated (faulty)

Off: No sum alarm (ok)

Blinking: Sum alarm from the AGS sensor.



## 5. ADJUSTMENT

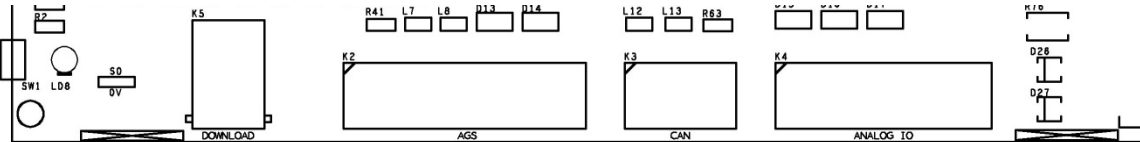
See the CALIBRATION MANUAL for the appropriate system, RMS-SD1 or RMS-CD1.

## 6. CALIBRATION

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

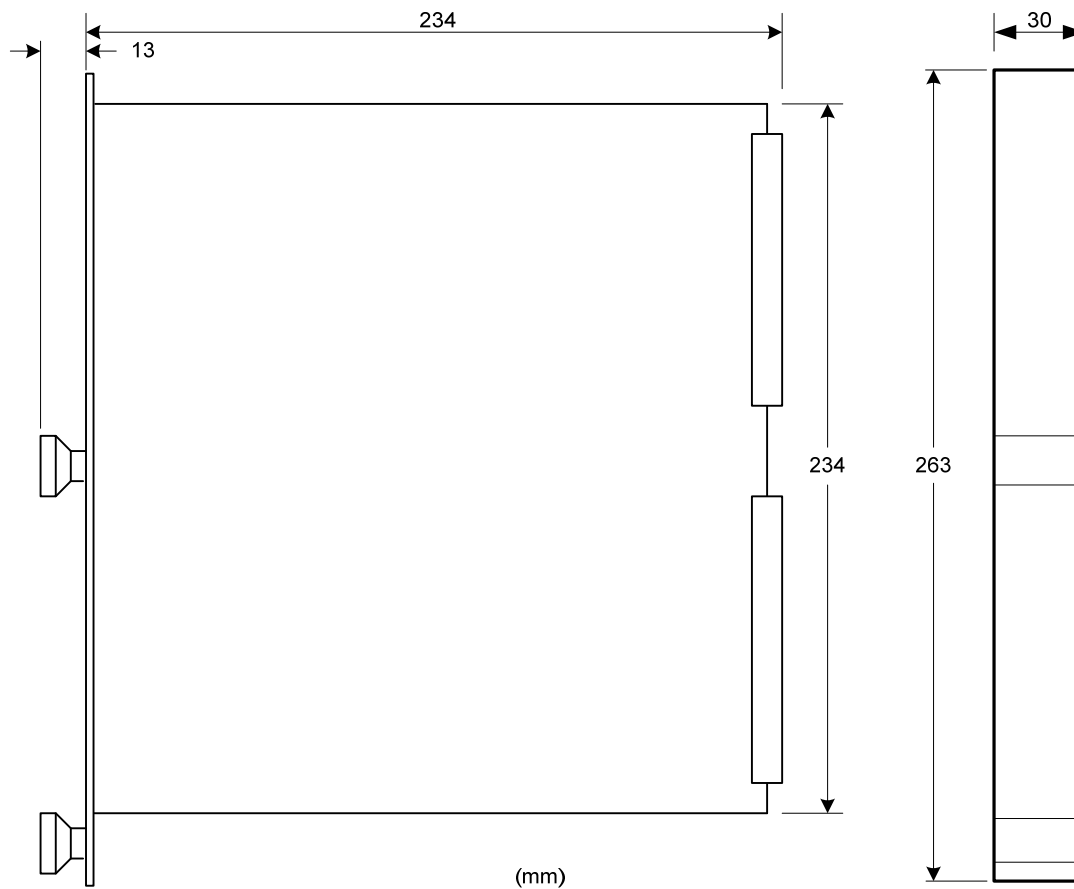
## 7. CONNECTION

The three screw sockets in the lower edge of the board are used as follows.



K2	AGS sensor connection		
K2/1	N.C.	K2/2	GND
K2/3	CAN2H	K2/4	CAN2L
K2/5	UA (+24V)	K2/6	UB (0V)
K2/7	UA (+24V)	K2/8	UB (0V)
K2/9	GND		
K3	Internal CAN		
K3/1	CAN1-H	K3/2	CAN1-L
K3/3	CAN1-R	K3/4	GND
K4	Gap impedance current outputs		
K4/1	Resistivity +	K4/2	Resistivity –
K4/3	Resistance +	K4/4	Resistance –
K4/5	Not used +	K4/6	Not used –
K4/7	GND	K4/8	GND

## 8. OUTLINE DRAWING



## 9. CONTACT

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