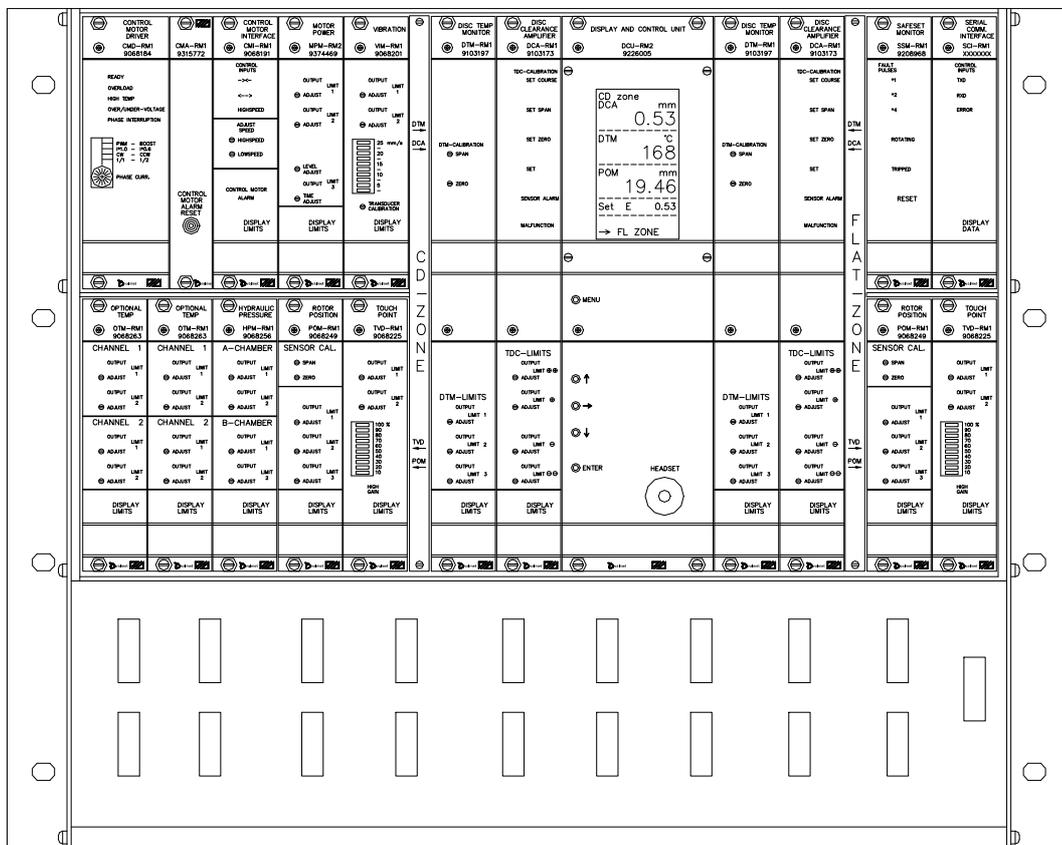


dametric 

PROGRAMMING RMS-CD1



PROGRAMMERS MANUAL FOR THE RMS-CD1 SYSTEM

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1 REVISION

This manual is updated for DCU-RM2 and software revision 7.11.

2 DISPLAY READ-OUT

2.1 NORMAL READ-OUT

```

    DCA
0.53  0.67
    POM
21.34
      10.46
Reg.Setp.X
1.03  1.22
-----
FeedGuard:
Activated
-----
Text 1
    
```

MENU Select MENU
 ↑ No function
 → No function
 ↓ No function
 ENT No function

X: E = External set point, I = Internal set point

Text 1: information text line:

"NOT READY" will light when the DCU-RM2 unit is not ready. This indicates an internal alarm but is also activated during the first 8 seconds after power-up.

"REG.ACTIV" indicates that the internal regulator is activated.

2.2 WITH RMS-UNIT LIMITS

```

    DCA
0.53  0.67
    POM
21.34
      10.46

HPM     ton
ChA    22.5
Lim1   30.0
Lim2   25.0

ChB    40.5
Lim1   45.0
Lim2   42.5
On+Alarm
    
```

MENU Return to NORMAL READ-OUT
 ↑ No function
 → Disables the display auto-turn-off
 ↓ No function
 ENT No function

The "DISPLAY LIMITS" on the HPM-unit is activated in this example. The display is turned off automatically after approx. 2 minutes) but if the * sign is on the auto-turn-off is not in use.

If the unit is not enabled in the UNITS menu, "DISABLED" is indicated.

3 MAIN MENU

MENU 1
MAIN MENU

UNITS
RANGE
DCA CAL.
CD Reg.
FLAT REG.
GAP GUARD
FG SETTING
FG RESULTS
CD HOLDER
DISPLAY

MENU	Return to MAIN MENU
↑	Move cursor up
→	No function
↓	Move cursor down
ENT	Enter selected menu
UNITS	Enable/disable units in the system
RANGE	Set ranges
DCA Cal.	Set the parameters for the DCA calibration routine
CD REG.	Set the parameters for the conical zone regulator
FLAT REG.	Set the parameters for the flat zone regulator
GAP GUARD	Set the parameters for the GapGuard
FG SETTING	Set the parameters for the feed guard retraction function
FG RESULTS	Read the feed guard retraction results
CD HOLDER	Set the CD holder type.
DISPLAY	Select type of display.

The menus cannot be entered when the Feed Guard or the touch point is activated.

If no button is pushed within five minutes, the program automatically returns to NORMAL READ-OUT.

If "DISPLAY LIMITS" is pushed on any unit, the program escapes from the menus and shows the limits for the chosen unit.

4 UNITS

MENU 2
UNITS
ALL OFF
ALL ON
DTM _c on
DTM _f on
ER-1 off
-
OTM2 off
POM _c on
POM _f on
TVD _c on
TVD _f on
VIM on

MENU	Return to MAIN MENU
↑	Move cursor up / scroll up
→	Toggle on/off at cursor
↓	Move cursor down / scroll down
ENT	Return to previous menu
	Used to enable/disable units and each unit can be set to one of three states:
Off	Turned off and no value is indicated.
On	Turned on and the values is used.
On+A	Turned on and the alarm is included in the sum alarm.
	The CMD, CMI and DCA unit are not included since they have their own alarm outputs.
	The "ALL OFF"/"ALL OFF" functions will set all units off or on.
	The TVD unit must be set "on" to be able to use the touch point function.
	The MPM unit must be set "on" to be able to use the "++Limit" display mode.
	The delay for the sum alarm output is 3 sec, except for the MPM unit that has a 15 sec delay

5 RANGE SETTINGS

```

MENU 3
RANGE
SETTINGS
-----
MAIN POWER
POMc STR.
POMf STR.
HPM A-ch.
HPM B-ch.
DCAc RANGE
DCAf RANGE
Reg Hi-res
-----

15.0 MW

```

```

MENU    Return to MAIN MENU
↑       Move cursor up
→       No function
↓       Move cursor down
ENT     Enter selected function

```

Use the "↑" and "↓" buttons to select a function and then press ENTER. The bottom line will then be displayed in reversed video, indicating that the value can be changed.

Now change the value with the "↑" and "↓" buttons, and press ENTER again to set the value.

When exit this routine, an additional question will be asked if to save the changed settings.

MAIN POWER. Set the full scale of the main motor power (=100 %). The up and down buttons will count continuously if held in. Max: 50.0 MW, Min: 0.5MW, Default: 10.0 MW. The step value is dependent of the current setting: <2 MW: 0.01, 2-4 MW: 0.02, 4-10 MW: 0.05, 10-20 MW: 0.1, 20-40MW: 0.2, 40-50MW: 0.5

POMc STR. Set the rotor position monitor stroke distance. Only 50 mm is used. Max: 200, min: 20, default: 50, step: 10mm.

POMf STR. Set the stator position monitor stroke distance. Only 50 mm is used. Max: 200, min: 20, default: 50, step: 10mm.

HPM A-ch. Set the HPM A-chamber-force full-scale indication. Max: 160.0, min: 10.0, default: 50.0, step: 0.1/1.0 ton.

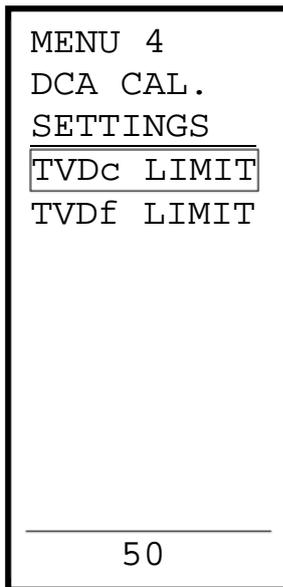
HPM B-ch. Set the HPM B-chamber-force full-scale indication. Max: 160.0, min: 10.0, default: 50.0, step: 0.1/1.0 ton.

DCAc Range. Set the measuring range for the DCA unit, conical zone (2.00 or 3.00 mm). Max: 3.00, Min: 2.00, default: 2.00.

DCAf Range. Set the measuring range for the DCA unit, flat zone (2.00 or 3.00 mm). Max: 3.00, Min: 2.00, default: 2.00.

Reg. Hi-res. Select the resolution of the gap controller. Set to "0" for standard resolution or to a higher value enable higher resolution. A gap control action will be forced if a set-point change is larger than the set parameter. The action is done even if the measured plate gap is within the dead-band. The value can be from 0.002 to 0.030 in steps of 0.002 mm.

6 DCA CALIBRATION SETTINGS



MENU	Return to MAIN MENU
↑	Move cursor up
→	No function
↓	Move cursor down
ENT	Enter selected function

Use the "↑" and "↓" buttons to select a function and then press ENTER. The bottom line will then be displayed in reversed video, indicating that the value can be changed.

Now change the value with the "↑" and "↓" buttons, and press ENTER again to set the value.

When exit this routine, an additional question will be asked if to save the changed settings.

TVDc. Limit for the preset of the relative POMc (-0.10 mm) during TDC calibration.

This parameter sets the trig point for the TVD-signal in the conical zone. When the limit is passed, the displayed POM-value at the PDU-unit is preset to -0.10 mm. This function is used only in the calibration mode, when the touch-point is established.

Max: 100 %, min: 0 %, default: 50 %, step: 5 %.

TVDf. Limit for the preset of the relative POMf (-0.10 mm) during TDC calibration.

This parameter sets the trig point for the TVD-signal in the flat zone. When the limit is passed, the displayed POM-value at the PDU-unit is preset to -0.10 mm. This function is used only in the calibration mode, when the touch-point is established.

Max: 100 %, min: 0 %, default: 50 %, step: 5 %.

7 CONICAL ZONE REGULATOR SETTINGS

MENU 5	
CD ZONE	
REGULATOR	
DEADBAND	
INTERVAL	
GAIN	
FILTER	
OVER ALARM	
SPEED LIM.	
UNDER ALRM	
DEFAULT	

±0.05	

MENU	Return to MAIN MENU
↑	Move cursor up
→	No function
↓	Move cursor down
ENT	Enter selected function

Use the "↑" and "↓" buttons to select a function and then press ENTER. The bottom line will then be displayed in reversed video, indicating that the value can be changed.

Now change the value with the "↑" and "↓" buttons, and press ENTER again to set the value.

When exit this routine, an additional question will be asked if to save the changed settings.

Modifications cannot be done while the regulator is active.

DEADBAND. The DEADBAND sets the allowed difference between the set point value and the TDC-value without a regulation action. Max: ±0.25, min: ±0.01, default: ±0.05, step: ±0.01 mm.

INTERVAL. The INTERVAL sets the time between regulation actions. The interval value defines the maximum value of the filter factor. This parameter also affects the flat-zone filter factor.

Max: 20 s, min: 2 s, default: 10 s, step: 1 s.

GAIN. The GAIN sets the duration of the output regulation action. It is normally set to 100 % but can be set to higher value to over-compensate or to lower values to under-compensate.

Max: 120, min: 40, default: 100, step: 5 %.

FILTER. Sets the filtering factor of the DCA-signal.

DCA-values are read with an interval of one second. The filter factor sets the number of readings to use when calculating the mean value. 1 means therefore no filter. The numbers within brackets are the maximum setting of the filter factor, and are limited by the interval setting to maintain stability. (Interval value divided with 2, rounded to the nearest highest integer. Ex. interval = 11 =>> max filter factor = 6). Max: 10, min: 1, default: 5, step: 1 s

OVER ALARM. Over alarm is the maximum allowed regulation distance together by the regulator, and is in percent of the set limit value or by the adjusted absolute distance in mm (0.00 disables the function). The function is reset when the regulator is started, and will monitor the sum of the regulation distance together and apart. If the distance together exceeds the distance apart with the preset over alarm distance, the regulator is prevented from moving plates together and an alarm is generated. A set point change larger than ± 0.03mm, will also reset the function. The register is also decreased by a clock signal, which is calculated by the speed limit setting. When properly set, this function will then generate alarm for eventual TDC-sensor malfunction, but not when the regulator compensates for changes due to the heating of the refiner.

Max: 95%/1.00mm, min: 5%/0.00mm, default: 50 %, step: 5%/0.05mm.

SPEED LIMIT. This parameter sets the maximum speed allowed for the regulator.

Max = 1.00 mm/min, min: 0.02 mm/min, default: 0.1 mm/min, step: 0.02 mm/min.

UNDER ALRM. This sets the permitted regulation intervals in succession not reaching the dead band, without any alarm generated. A counter is increased one step for each interval period, when the DCA-value is not within the dead band. An alarm output is activated if the counter exceeds the setting. Any interval period with the DCA-value within or passing the dead band, resets the counter. A set point change bigger than ± 0.03mm, resets the register.

Max: 20, min: 5, default: 10, step: 1.

DEFAULT. Sets the default values.

8 FLAT ZONE REGULATOR SETTINGS



MENU	Return to MAIN MENU
↑	Move cursor up
→	No function
↓	Move cursor down
ENT	Enter selected function

Use "↑" and "↓" buttons to select a function and then press ENTER.

The bottom line will then be displayed in reversed video, indicating that the value can be changed.

Now change the value with "↑" and "↓" buttons, and press ENTER again to set the value.

When exit this routine, an additional question will be asked if to save the changed settings.

Modifications cannot be done while the regulator is active.

DEADBAND. The DEADBAND sets the allowed difference between the set point value and the TDC-value, without a regulation action. Max: ± 0.25 , min: ± 0.01 , default: ± 0.05 , step: ± 0.01 mm.

GAIN. The GAIN sets the duration of the output regulation action. It is normally set to 100 % but can be set to higher value to over-compensate or to lower values to under-compensate.

Max: 120, min: 40, default: 100, step: 5 %.

FILTER. Sets the filtering factor of the DCA-signal. DCA-values are read with an interval of one second. The filter factor sets the number of readings to use when calculating the mean value. 1 means therefore no filter. The numbers within brackets are the maximum setting of the filter factor, and are limited by the interval setting to maintain stability. (Interval value divided with 2, rounded to the nearest highest integer. Ex. interval = 11 =>> max filter factor = 6). This parameter is set by the CD-zone interval parameter. Max: 10, min: 1, default: 5, step: 1 s

FF TOGETH. The feed forward function will move the stator plates when the rotor is moved together and the flat zone regulator is active. When a 100 % factor is set, the stator will follow the rotor. Max: 100, min: 10, default: 100, step: 10 %.

FF APART. The feed forward function will move the stator plates when the rotor is moved apart and the flat zone regulator is active. When a 100 % factor is set, the stator will follow the rotor.

Max: 100, min: 10, default: 100, step: 10 %.

GEAR PLAY. The parameter sets the turnover play of the gearbox for the stator movement.

Max: 0.30, min: 0, default: 0, step: 0.01 mm.

OVER ALARM. The over alarm for the flat zone works the same way as for the conical zone.

Max: 95%/1.00mm, min: 5%/0.00mm, default: 50 %, step: 5%/0.05mm.

SPEED LIMIT. This parameter sets the maximum speed allowed for the regulator.

Max = 1.00 mm/min, min: 0.02 mm/min, default: 0.1 mm/min, step: 0.02 mm/min.

UNDER ALARM. The over alarm for the flat zone works the same way as for the conical zone.

Max: 20, min: 5, default: 10, step: 1.

DEFAULT. Sets the default values.

9 GAP GUARD SETTINGS

MENU 11
GAP GUARD
<u>TIME</u>
DEVIATE CD
DEVIATE FL
GAIN CD
GAIN FLAT
<u>DEFAULT</u>
2 (4)

MENU	Return to MAIN MENU
↑	Move cursor up
→	No function
↓	Move cursor down
ENT	Enter selected function

Use the "↑" and "↓" buttons to select a function and then press ENTER. The bottom line will then be displayed in reversed video, indicating that the value can be changed.

Now change the value with the "↑" and "↓" buttons, and press ENTER again to set the value.

When exit this routine, an additional question will be asked if to save the changed settings.

GapGuard - faster than a regulation and less dramatic than the FeedGuard.

The purpose of the GapGuard is to prevent the CD- or flat-zone to reach the minus-minus-limit, and thereby avoiding a FeedGuard. The GapGuard works with the CD- or flat-zone regulator and the TDC-value, and the output is to move the rotor quickly apart to increase the plate gap. The GapGuard continuously measures the CD- or flat-zone gap and compares it with the set point limit. If the difference is larger than an adjustable value, the DCU will start the GapGuard function. That means that the stepping motor, which controls the rotor position, will move the plates apart at high speed. The distance it will run is proportional to the actual difference between the plate gap and the set point limit. After a GapGuard is started, the DCU will continue to regulate as usual with the first regulation a full regulation interval after GapGuard has finished.

TIME. The time setting determines the minimum time between two consecutive GapGuards in seconds. It is needed because of the filter time at the TDC-readings. Time is adjustable in the range 1-4 s when the regulator interval is 10s. If the interval is reduced, the maximum allowable setting will also be reduced. Max: 10, min: 1, default: 2, step: 1 s.

DEVIATE CD. With DEVIATE you set how much the plate gap of the flat zone can be smaller than the set point limit. E.g. if the set point is 0.8 mm and DEVIATE is set to 0.20 mm, GapGuard will be started if the flat zone plate gap is below 0.60 mm. You can also choose to set the DEVIATE to be a percentage of the set point limit. The range of the DEVIATE setting is from 0 to 1.00 mm or 1% to 99% of the set point limit. If you exceed 99% setting or 1.00 mm setting, the unit will automatically switch to the other method. The GapGuard is disabled if the distance is set to 0.00 mm. Max: 99%/1.00mm, min: 1%/0.00mm, default: 25%, step: 1%/0.01mm.

DEVIATE FL. Has the same function as "DEV. CD".

GAIN CD. The distance that the rotor will move when GapGuard is triggered is proportional to the difference between the actual plate gap reading and the set point limit. This difference is then multiplied with the gain setting to enable under- or over-compensation

Max: 250, min: 50, default: 100, step: 1 %.

GAIN FLAT. Has the same function as "GAIN CD".

10 FEED GUARD RETRACTION SETTINGS

```

MENU 7
FEED GUARD
RETRACTION
SETTINGS
PIST.LENG.
SAFE DIST.
TIMEOUT

-----
3.00

```

MENU Return to MAIN MENU
 ↑ Move cursor up
 → No function
 ↓ Move cursor down
 ENT Enter selected function

Use the "↑" and "↓" buttons to select a function and then press ENTER. The bottom line will then be displayed in reversed video, indicating that the value can be changed.

Now change the value with the "↑" and "↓" buttons, and press ENTER again to set the value.

When exit this routine, an additional question will be asked if to save the changed settings.

PIST.LENG. Sets the rotor movement caused by a release of the feed guard piston value. Max: 5.00, min: 0.00, default: 3.00, step: 0.10 mm.

SAFE DIST. Sets the safe distance for the rotor. The total feed guard movement for the rotor is the safe distance added with the piston length. It is normally set to the same value as the "PIST.LENG" parameter. Max: 5.00, min: 0.20, default: 3.00, step: 0.10 mm.

TIMEOUT. The timeout sets the total time before the FeedGuard retraction must be completed. If the time has elapsed, without occurrence of the feed guard contact, a timeout alarm is generated. Max: 60, min: 5, default: 10, step: 1 s.

11 FEED GUARD RETRACTION RESULTS

```

MENU 8
FEED GUARD
RETRACTION
RESULTS
-----
Pist.leng.
  3.00 mm
Safe dist.
  3.00 mm
Orig. POM
 23.45 mm
Meas. POM
 28.30 mm
Diff. dist
  5.85 mm

```

MENU Return to MAIN MENU
 ↑ No function
 → No function
 ↓ No function
 ENT Return to MAIN MENU

Pist.leng. is the piston length setting.

Safe dist. is the set safe distance setting.

Orig. POM is the original rotor position value before the Feed Guard Reset signal was activated.

Meas. POM is the rotor position value after a completed Feed Guard Retraction.

Diff.dist is the calculated difference between the "Orig. POM" and the "Meas. POM"

This menu displays the results of the last feed guard retraction.

12 CD SEGMENT HOLDER TYPE SETTINGS

```

MENU 9
CD SEGMENT
HOLDER
TYPE
SETTINGS
-----

Ratio 0.25

```

MENU Return to MAIN MENU
 ↑ Select 0.40
 → Set default
 ↓ Select 0.25
 ENT Return to previous menu

This parameter sets the ratio between the gap change and a rotor position change and is due to the angle of the CD zone.
 Select 0.25 for a 14 ° angle or 0.40 ratio for the 22 ° angle.

13 DISPLAY

```

MENU 12
DISPLAY
-----
PDU-RM2
-----

RMS PDU-
Display

Temp. 35.5
SwRev 7.11
HwRev 8.00
SerNo 100

```

MENU Return to MAIN MENU
 ↑ Select next
 → Activate
 ↓ Select previous
 ENTER Save setting

The function is used to select the display unit to the RMS system.
 Push enter to edit the display type.

Use the UP- and DOWN-buttons to select a unit in the list below.
 Push ENTER to save the setting and return to the previous menu.

- PDU-RM2 RMS PDU-display
- Op.Panel Operators Panel
- OP+PPC+AGS Op.Panel + Panel-PC + AGS-sensor
- PPC+AGS Panel-PC + AGS-sensor
- PPC+SP/CD Panel-PC + Service display + RMS-CD1

14 CONTACT

Sales, development, production and service:

Dametric AB

Jägerhorns Väg 19, 141 75 Kungens Kurva, Sweden

Phone: +46-8 556 477 00

e-mail: service@dametric.se

Telefax: +46-8 556 477 29

Web site: www.dametric.se

dametric 

Valmet 