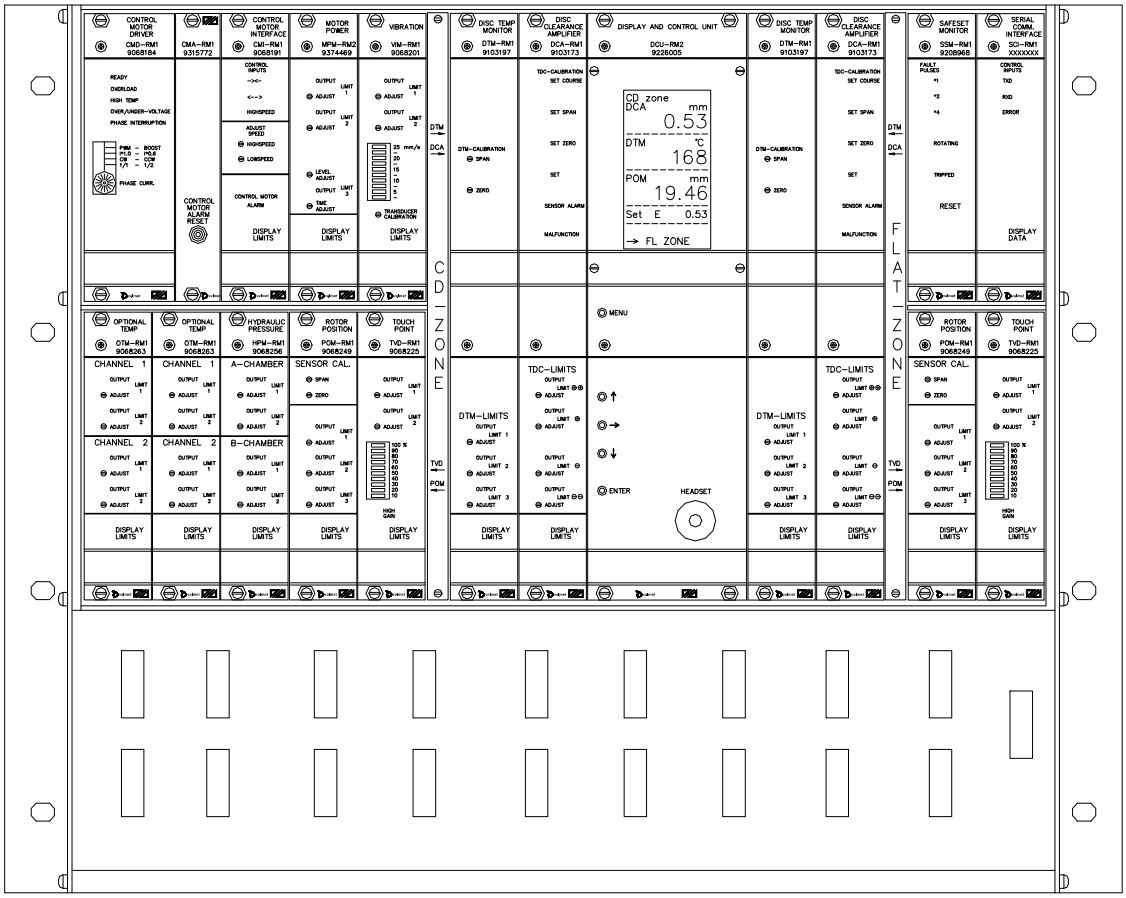
dametric

RMS–CD1

VAL0123038 / SKC9226029



REFINER MONITOR SYSTEM – CD

MANUAL

Valmet

Content

1. CONTACT

Sales, development, production and service:

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e-mail: service@dametric.se Web site: www.dametric.se

2. TECHNICAL SPECIFICATION

System voltage:	+24 VDC, +/-10%, max 2.5 A
Operating temperature:	0 - 55 ºC
Storage temperature:	-40 to +70 ºC
Air humidity:	F according to DIN 40 040 (15% to 95% not condensing)
Protection:	IP00 (no protection against dust or water)
Mounting:	Mounting with 4 pcs of M6 screws to vertical mounting plate in a protecting cabinet
Digital outputs:	Voltage, 24Vdc
Type:	Active high (PNP) output from +24 V system voltage
Isolation:	500V, galvanic isolated from the respective unit
Load:	Max 50mA
Digital inputs:	Voltage, 24Vdc
Type:	Active high with resistor to 0V system voltage
Isolation:	500 V, galvanic isolated from the respective unit
Impedance:	5 kΩ
Trip voltage:	12 ± 5 V
Analog outputs:	Current, 4-20 mA
Isolation:	500V, galvanic isolated
Load:	Max 800 Ω
Analog inputs:	Current, 4-20 mA
Isolation:	± 200 V relative respective units
Impedance:	Max 200 Ω
Connecting cables:	Detachable screw connectors, max 2.5mm2 cable area Cable shields is connected direct to the ground bar
Grounding:	The rack is grounded through the ground cable
CE-approval:	According to EN 50081-2:1993, EN 50082-2:1995, 89/336/EEC Test report: Enator TR976011

3. LIST OF UNITS

Function	*Dametric-article no.*	*VAL -article no.*	*SKC- article no.*
Rack	RMS-CD1	VAL0123038	SKC9226029
Display and Control Unit	DCU-RM2	VAL0122830	SKC9226067
Disc Clearance Amplifier	DCA-RM1	VAL0122833	SKC 9103173
Disc Temp Monitor	DTM-RM1 (TDC)	VAL0122841	SKC 9103197
or	ACM-RM1 (TDC/AGS)	VAL0196330	
Control Motor Driver	CMD-RM2	VAL0173903	SKC 9101601
Control Motor Interface	CMI-RM1	VAL0122828	SKC 9068191
Vibration Monitor	VIM-RM1	VAL0123136	SKC 9068201
Motor Power Monitor	MPM-RM2	VAL0122979	SKC 9374469
Touchpoint Vibration Detector	TVD-RM1	VAL0100516	SKC 9068225
Position Monitor	POM-RM1	VAL0123032	SKC 9068249
Hydraulic Pressure Monitor	HPM-RM1	VAL0122850	SKC 9068256
Optional Temp Monitor	OTM-RM1	VAL0122982	SKC 9068263
Safeset Monitor	SSM-RM1	VAL0123053	SKC 9208968
Cover Fronts	TP-36		

4. UNITS DESCRIPTION

RMS-CD1 **Rack RMS-CD**

Power supply: 24 Vdc, max 4A (depending on included units), from an external power unit
Internal connectors: 32-pole and 64-pole pcb-connectors type DIN-C, for the internal units
External connectors: 4, 6, 8 and 12-pole screw connectors for external signals

DCU-RM2 **Display and Control Unit CD**

Function: Display for internal units, Disc clearance Controller
Input: See separate manual
Output: See separate manual

DCA-RM1 **Disc Clearance Amplifier**

Function: Measures the True Disc Clearance. 2 units in the rack, conical and flat-zone.
Digital inputs: DCA-calibration
Input: TDC-sensor
Digital outputs: Limit + +, Limit +, Limit - , Limit - -, Malfunction Alarm, Sensor Alarm
Analog output: 4-20 mA
Cable: K-TDC25, 7-lead cable +double shield, 0.75 mm^2, 25m
and KB-02, Connection Box
and K-GTS, 7-pole connector, 7-lead cable +shield, 0.75 mm^2, 25m

DTM-RM1 **Disc Temperature Monitor (TDC)**
ACM-RM1 **Disc Temperature Monitor (AGS)**

Function: Measures the disc temperature. 2 units in the rack, conical and flat-zone
Input: TDC-sensor
Digital output: Limit 1, Limit 2, Limit 3
Analog output: 4-20 mA

CMD-RM2 **Control Motor Driver**

Function:	Current driver for stepping motor controlling the rotor position
Power supply:	24-32 Vdc, 4.5A
Input:	Control signals from the CMI-RM1 unit
Output:	Drive currents for 2-phase electric stepping motor
Cable:	4*1.5 mm^2, 25 m

CMI-RM1 **Control Motor Interface**

Function:	Converts control signals from the PLC-system to clock- and direction signals to the CMD-RM1/CMD-RM2 unit
Digital inputs:	Plates Together, Plates Apart, High speed and Holding torque
Digital Outputs:	Control motor alarm

VIM-RM1 **Vibration Monitor**

Function:	Measure the refiner vibration through an accelerometer transducer
Transducer:	Accelerometer 1 to 6000 Hz
Digital outputs:	Limit 1, Limit 2
Analog output 1:	4-20 mA
Display:	Led ramp in the front of the unit, 0-25 mm/s, 10 LED's
Cable:	K-VIMS25, 2-pole connector, 4-lead

MPM-RM2 **Motor Power Monitor**

Function:	Monitor the current signal indicating the main motor load.
Digital Outputs:	Limit 1, Limit 2, Limit 3 (only on MPM-RM2)
Analog input:	4-20 mA
Analog output:	4-20 mA

TVD-RM1 **Touchpoint Vibration Detector**

Function:	Measure the touch point vibration through an accelerometer transducer. 2 units in the rack, conical and flat-zone
Digital input:	Low gain
Digital outputs:	Limit 1, Limit 2
Transducer:	TVD-T1, TVD-T2 or TVD-T2S
Analog output 1:	4-20 mA
Analog output 2:	Audio signal to headset.
Analog output 3:	Spare.
Display:	Led ramp in the front of the unit, 0-100%, 10 leds.
Cable:	K-TVDS25, 4-pole connector, 4-lead cable +shield, 0.25 mm^2, 25m

POM-RM1 **Position Monitor**

Function:	Measures the rotor or stator position through an lvdt-transducer. 2 units in the rack, conical and flat-zone
Digital outputs:	Limit 1, Limit 2, Limit 3
Transducer:	POT-50
Analog output:	4-20 mA
Cable:	K-POT25, 7-pole connector, 7-lead cable +shield, 0.25 mm^2, 25m

HPM-RM1	**Hydraulic Pressure Monitor**
Function:	Measures the A- and B-chamber force through pressure transducers
Transducers:	2-wire Pressure transducer 4-20 mA
Digital outputs:	A-Limit 1, A-Limit 2, B-Limit 1, B-Limit 2
Analog outputs:	A: 4-20 mA, B: 4-20 mA

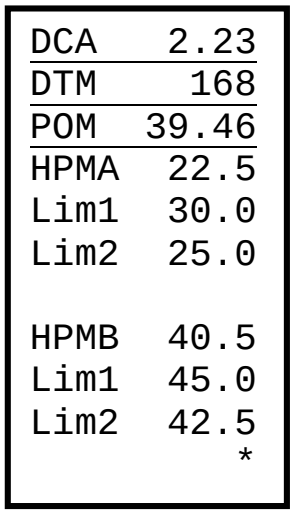
OTM-RM1	**Optional Temp Monitor**
Function:	Measures the temperature through PT100 sensors, 2 channels The rack can include up to 2 units.
Transducers:	2 each 3-wire PT100 sensors
Digital outputs:	CH1: Limit 1, Limit 2, CH2: Limit 1, Limit 2
Analog outputs:	CH1: 4-20 mA, CH2:4-20 mA

SSM-RM1	**Safeset Monitor**
Function:	Supervision of the Safeset clutch
Transducers:	2 inductive transducers, IG-30
Digital outputs:	Rotating, Tripped
Digital inputs:	Reset
Cable:	K-AT10, 6-pole connector, 4-lead cable +shield, 0.25 mm^2, 25m
and	KB-01 Connection Box

5. PRINCIPAL OF ADJUSTMENT

See the calibration manual (CAL-CD) for a detailed description.

- The adjustment of the alarm limits is done on the each unit.
- The read-out of alarm limits and levels is displayed on the Display and Control Unit, DCU-RM2.
- The DCU-unit detects the type of unit that is activated, and monitors the appropriate channels and limits.
- The unit is selected by the push-button ”DISPLAY LIMITS” on the desired unit.



MENU	Return to NORMAL READOUT (The displayen returns automatically to normal readout after app. 2 minuter)
↑	Not used
→	Disables the auto turn off function
↓	Not used
ENT	Not used

Automatic turn-off function

The display is automatically turned off approx. 2 minutes after the last activated ”DISPLAY LIMITS”.

To cancel this function, push "→" button on the DCU-unit.

Next activation of any of the ”DISPLAY LIMITS”, reactivates the turn-off function.

6. CONNECTION DIAGRAM

K1 RMS SYSTEM POWER

Us+	1	+24 Vdc
Us+	2	+24 Vdc
Us-	3	0 V
Us-	4	0 V

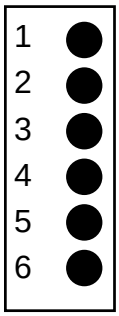
K2 CONTROL MOTOR POWER

CM+U	1	+24-32 Vdc	
CM+U	2	+24-32 Vdc	
CM-GND	3	0 V	(control motor chassis)
CM-GND	4	0 V	(control motor chassis)

K3 CONTROL MOTOR DRIVER, Drive currents to the control motor

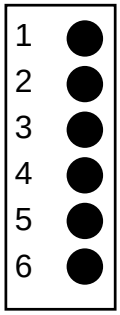
CM+W1A	1	Positive, phase 1	Cable:	1
CM-W1E	2	Negative, phase 1		2
CM+W2A	3	Positive, phase 2		3
CM-W2E	4	Negative, phase 2		4
CM+W3A	5			
CM-W3E	6	This connection is for a 2-phase stepping motor and a CMD-RM2.		
CM+W4A	7			
CM-W4E	8			
CM+W5A	9			
CM-W5E	10			
CM-GND	11			
CM-GND	12	The cable shield is connected to the ground bar below the rack		

K4 CONTROL MOTOR INTERFACE, Digital inputs and outputs



DI+CMTO	1	Digital input, Plates together	PLC
DI+CMAP	2	Digital input, Plates apart	PLC
DI+CMHS	3	Digital input, High Speed	PLC
DI+CMHT	4	Digital input, Holding torque	PLC
DO+CMAL	5	Digital output, Alarm	PLC
DO+CM	6	Digital output, Spare	PLC

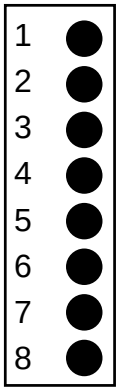
K5 OPTIONAL TEMP MONITOR 1, Transducer signals



T+OTM11	1	Transducer Channel 11, positive
T-OTM11	2	Transducer Channel 11, compensation
TS-OTM11	3	Transducer Channel 11, negative
T+OTM12	4	Transducer Channel 12, positive
T-OTM12	5	Transducer Channel 12, compensation
TS-OTM12	6	Transducer Channel 12, negative

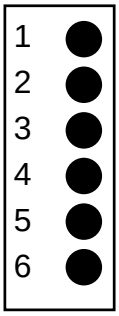
The cable shield is connected to the ground bar below the rack

K6 OPTIONAL TEMP MONITOR 1, Analog outputs, Digital outputs.



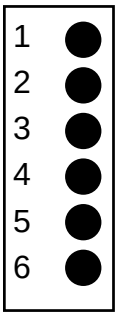
AO+OTM11	1	Analog output, 11, 4-20 mA	Instrum. system
AO-OTM11	2	Analog output, 11, 4-20 mA	Instrum. system
AO+OTM12	3	Analog output, 12, 4-20 mA	Instrum. system
AO-OTM12	4	Analog output, 12, 4-20 mA	Instrum. system
DO+OTM11	5	Digital output, Channel 11, Limit 1	PLC
DO+OTM12	6	Digital output, Channel 11, Limit 2	PLC
DO+OTM13	7	Digital output, Channel 12, Limit 1	PLC
DO+OTM14	8	Digital output, Channel 12, Limit 2	PLC

K7 MOTOR POWER MONITOR, Analog inputs and outputs, digital outputs



AI+MPM	1	Analog input, 4-20 mA	Instrum. system
AI-MPM	2	Analog input, 4-20 mA	Instrum. system
AO+MPM	3	Analog output, 4-20 mA	Instrum. system
AO-MPM	4	Analog output, 4-20 mA	Instrum. system
DO+MPM1	5	Digital output, Limit 1	PLC
DO+MPM2	6	Digital output, Limit 2	PLC

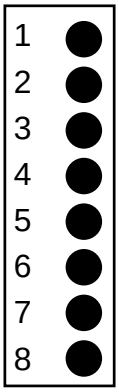
K8 OPTIONAL TEMP MONITOR 2, Transducer signals



T+OTM21	1	Transducer Channel 21, positive
T-OTM21	2	Transducer Channel 21, compensation
TS-OTM21	3	Transducer Channel 21, negative
T+OTM22	4	Transducer Channel 22, positive
T-OTM22	5	Transducer Channel 22, compensation
TS-OTM22	6	Transducer Channel 22, negative

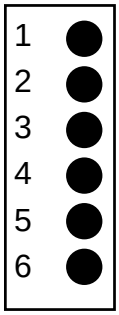
The cable shield is connected to the ground bar below the rack

K9 OPTIONAL TEMP MONITOR 2, Analog outputs, digital outputs



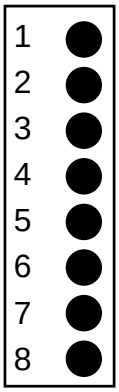
AO+OTM21	1	Analog output, 21, 4-20 mA	Instrum. system
AO-OTM21	2	Analog output, 21, 4-20 mA	Instrum. system
AO+OTM22	3	Analog output, 22, 4-20 mA	Instrum. system
AO-OTM22	4	Analog output, 22, 4-20 mA	Instrum. system
DO+OTM21	5	Digital output, Channel 21, Limit 1	PLC
DO+OTM22	6	Digital output, Channel 21, Limit 2	PLC
DO+OTM23	7	Digital output, Channel 22, Limit 1	PLC
DO+OTM24	8	Digital output, Channel 22, Limit 2	PLC

K10 HYDRAULIC OIL PRESSURE, Transducer signals



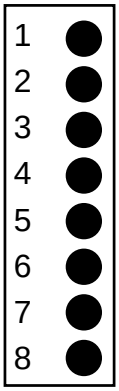
T+HPMA	1	Transducer A-chamber, positive
T-HPMA	2	Transducer A- chamber, negative
TS-HPMA	3	The cable shield is connected to the ground bar below the rack
T+HPMB	4	Transducer B- chamber, positive
T-HPMB	5	Transducer B- chamber, negative
TS-HPMB	6	The cable shield is connected to the ground bar below the rack

K11 HYDRAULIC OIL PRESSURE, Analog outputs, digital outputs



AO+HPA	1	Analog output, A, 4-20 mA	Instrum. system
AO-HPA	2	Analog output, A, 4-20 mA	Instrum. system
AO+HPB	3	Analog output, B, 4-20 mA	Instrum. system
AO-HPB	4	Analog output, B, 4-20 mA	Instrum. system
DO+HPA1	5	Digital output, A, Limit 1	PLC
DO+HPA2	6	Digital output, A, Limit 2	PLC
DO+HPB1	7	Digital output, B, Limit 1	PLC
DO+HPB2	8	Digital output, B, Limit 2	PLC

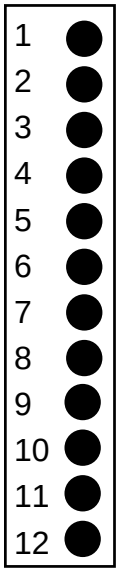
K12 VIBRATION, Transducer signals, analog outputs,digital outputs



T+VIM	1	Transducer, positive	* : white + brown
T-VIM	2	Transducer, negative	* : green + yellow
TS-VIM	3	The cable shield is connected to the ground bar below the rack	
DO+MPM3	4	Digital output, Limit 3 MPM	PLC
AO+VIM	5	Analog output, 4-20 mA	Instrum. system
AO-VIM	6	Analog output, 4-20 mA	Instrum. system
DO+VIM1	7	Digital output, Limit 1	PLC
DO+VIM2	8	Digital output, Limit 2	PLC

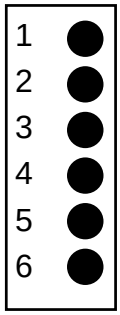
* K-VIM25, K-VIM25A or K-VIMS25

K13 POSITION MONITOR, CD-ZONE, Transducer, analog out, dig. outputs



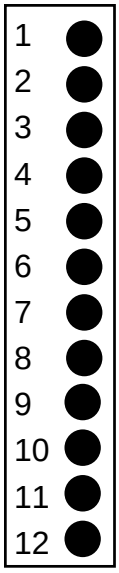
TI-POT1c	1	Transducer, input negative	K-POT25:	white
TI+POT1c	2	Transducer, input positive	K-POT25:	brown
TE-POT1c	3	Transducer, excitation negative	K-POT25:	green
TE+POT1c	4	Transducer, excitation positive	K-POT25:	yell.
TR+POT1c	5	Transducer, reference positive	K-POT25:	grey
TM+POT1c	6	Transducer, measure positive	K-POT25:	amber
TS-POT1c	7	The cable shield is connected to the ground bar below the rack		
AO+POM1c	8	Analog output, 4-20 mA		Instrum. system
AO-POM1c	9	Analog output, 4-20 mA		Instrum. system
DO+POM1c	10	Digital output, Limit 1		PLC
DO+POM2c	11	Digital output, Limit 2		PLC
DO+POM3c	12	Digital output, Limit 3		PLC

K14 DISC TEMP MONITOR, CD-ZONE, Analog outputs, digital outputs



AO+DTMc	1	Analog output, 4-20 mA	Instrum. system
AO-DTMc	2	Analog output, 4-20 mA	Instrum. system
DO+DTM1c	3	Digital output, Limit 1	PLC
DO+DTM2c	4	Digital output, Limit 2	PLC
DO+DTM3c	5	Digital output, Limit 3	PLC
	6		

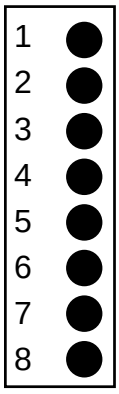
K15 TVD – CD ZONE, Transducer, analog out, dig. outputs and inputs.



T+TVDc	1	Transducer, positive	* :	white + brown
T-TVDc	2	Transducer, negative	* :	green + yellow
TS-TVDc	3	The cable shield is connected to the ground bar below the rack		
AO+TVDHc	4	Analog output, headset		Headset conn.
AO-TVDHc	5	Analog output, headset		Headset conn.
AO+TVDAc	6	Analog output, spare		Not used
AO-TVDAc	7	Analog output, spare		Not used
AO+TVDc	8	Analog output, 4-20 mA		Instrum. system
AO-TVDc	9	Analog output, 4-20 mA		Instrum. system
DO+TVD1c	10	Digital output, Limit 1		PLC
DO+TVD2c	11	Digital output, Limit 2		PLC
DI+LOGAc	12	Digital input, Low gain		PLC

* K-TVDT25 or K-TVDS25

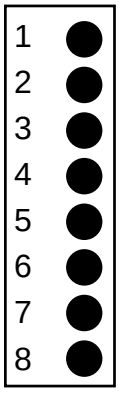
K16 DISC CLEARANCE AMPLIFIER, CD-ZONE, Transducer signals



TM+TDCc	1	Transducer, measure positive	* : white
TM-TDCc	2	Transducer, measure negative	* : brown
TR+TDCc	3	Transducer, reference positive	* : green
TR-TDCc	4	Transducer, reference negative	* : yell.
TE+TDCc	5	Transducer, excitation positive	* : grey
TE-TDCc	6	Transducer, excitation negative	* : amber
TP+TDCc	7	Transducer, pt-100 excitation	* : blue
TS-TDCc	8	The cable shield is connected to the ground bar below the rack	

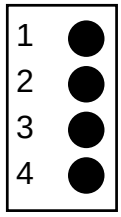
* : K-TDC25

K17 DISC CLEARANCE AMPLIFIER, CD-ZONE, Analog out, digital outputs



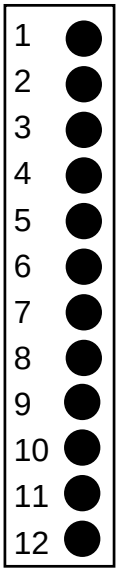
AO+DCAc	1	Analog output, 4-20 mA	Instrum. system
AO-DCAc	2	Analog output, 4-20 mA	Instrum. system
DO+DCA1c	3	Digital output, Limit 1 (+ +)	PLC
DO+DCA2c	4	Digital output, Limit 2 (+)	PLC
DO+DCA3c	5	Digital output, Limit 3 (-)	PLC
DO+DCA4c	6	Digital output, Limit 4 (- -)	PLC
DO+DCAMAc	7	Digital output, Malfunction Alarm	PLC
DO+DCASAc	8	Digital output, Sensor Alarm	PLC

K18 DISC CLEARANCE AMPLIFIER, Digital inputs



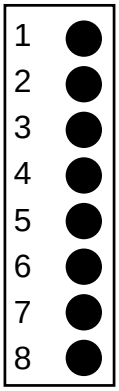
DI+DCASC	1	Digital input, DCA Set course (CD+flat zone)	PLC
DI+DCASS	2	Digital input, DCA Set span (CD+flat zone)	PLC
DI+DCASZ	3	Digital input, DCA Set zero (CD+flat zone)	PLC
DI+DCASEc	4	Digital input, DCA Set Enable, CD zone	PLC

K19 DISPLAY AND CONTROL UNIT, Digital inputs and outputs



DI+DCROc	1	Digital input, Reg. CD-zone, On	PLC
DI+DCRIc	2	Digital input, Reg. CD-zone, Increment	PLC
DI+DCRDc	3	Digital input, Reg. CD-zone, Decrement	PLC
DI+DCRSc	4	Digital input, Reg. CD-zone, Set from DCA	PLC
DI+DCRRc	5	Digital input, Reg. CD-zone, Remote set-p.	PLC
DI+DCROf	6	Digital input, Reg. flat-zone, On	PLC
DI+DCRIf	7	Digital input, Reg. flat-zone, Increment	PLC
DI+DCRDf	8	Digital input, Reg. flat-zone, Decrement	PLC
DI+DCRSf	9	Digital input, Reg. flat-zone, Set from DCA	PLC
DI+DCRRf	10	Digital input, Reg. flat-zone, Remote set-p.	PLC
DO+DCRAc	11	Digital output, Reg. alarm, CD-zone	PLC
DO+DCRAf	12	Digital output, Reg. alarm, flat-zone	PLC

K20 DISPLAY AND CONTROL UNIT, Digital outputs



DO+TPCO	1	Digital output, AGS-CD calibration in progress	PLC
DO+TPAL	2	Digital output, AGS-FZ calibration in progress	PLC
DO+FGCO	3	Digital output Feed Guard Completed	PLC
DO+FGAL	4	Digital output Feed Guard Alarm	PLC
DO+FZTO	5	Digital output Flat-zone together	PLC
DO+FZAP	6	Digital output Flat-zone apart	PLC
DO+DCURD	7	Digital output DCU Ready	PLC
DO+DCUSA	8	Digital output DCU Sum Alarm	PLC

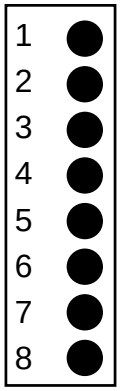
K21 DISPLAY AND CONTROL UNIT, Digital inputs and outputs

AI+DCRSc	1	Analog input +, Set-point value, con-zone	Instrum. system
AI-DCRSc	2	Analog input -, Set-point value, con-zone	Instrum. system
AI+DCRSf	3	Analog input +, Set-point value, flat-zone	Instrum. system
AI-DCRSf	4	Analog input -, Set-point value, flat-zone	Instrum. system
DI+DCU1	5	Digital input, Not used	PLC
DI+DCU2	6	Digital input, Low A-chamber pressure	PLC
DI+DCU3	7	Digital input, Not used	PLC
D+SYNC	8	Digital input, Rotor sync	PLC
DI+TPAU	9	Digital input, Not used	PLC
DI+TPMA	10	Digital input, Touch-point manual	PLC
DI+TPSEL	11	Digital input, Touch-point select	PLC
DI+FGRE	12	Digital input, Feed Guard Reset	PLC

K22 DISPLAY AND CONTROL UNIT, Digital outputs, PDU-interface

DO+DCU4	1	Digital output, AGS-CD calibrated		PLC
DO+DCU5	2	Digital output, AGS-FZ calibrated		PLC
DO+DCU6	3	Digital output, AGS Sum alarm		PLC
ID+PDU1	4	Serial output, PDU-display	K-PDU3:	white
ID+PDU2	5	Serial input, PDU-display	K-PDU3:	brown
ID-PDU	6	Serial common, PDU-display	K-PDU3:	green+ shield
US+PDU	7	Power supply, PDU-display	K-PDU3:	yellow
US-PDU	8	Power supply, PDU-display	K-PDU3:	grey

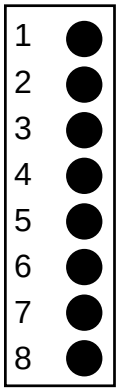
K23 DISC CLEARANCE AMPLIFIER, FLAT ZONE, Transducer signals



TM+TDCf	1	Transducer, measure positive	* : white
TM-TDCf	2	Transducer, measure negative	* : brown
TR+TDCf	3	Transducer, reference positive	* : green
TR-TDCf	4	Transducer, reference negative	* : yell.
TE+TDCf	5	Transducer, excitation positive	* : grey
TE-TDCf	6	Transducer, excitation negative	* : amber
TP+TDCf	7	Transducer, pt-100 excitation	* : blue
TS-TDCf	8	The cable shield is connected to the ground bar below the rack	

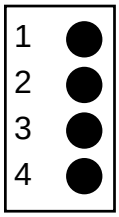
* : K-TDC25

K24 DISC CLEARANCE AMPLIFIER, FLAT ZONE, Analog and digital outputs



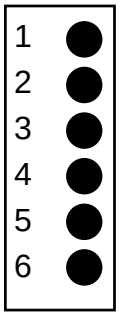
AO+DCAf	1	Analog output, 4-20 mA	Instrum. system
AO-DCAf	2	Analog output, 4-20 mA	Instrum. system
DO+DCA1f	3	Digital output, Limit 1 (+ +)	PLC
DO+DCA2f	4	Digital output, Limit 2 (+)	PLC
DO+DCA3f	5	Digital output, Limit 3 (-)	PLC
DO+DCA4f	6	Digital output, Limit 4 (- -)	PLC
DO+DCAMf	7	Digital output, Malfunction Alarm	PLC
DO+DCASf	8	Digital output, Sensor Alarm	PLC

K25 DISC CLEARANCE AMPLIFIER Digital inputs



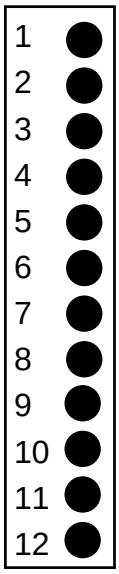
	1	No connection	
	2	No connection	
	3	No connection	
DI+DCAEf	4	Digital input, DCA Set Enable flat zone	PLC

K26 DISC TEMP MONITOR, FLAT ZONE, Analog outputs, digital outputs



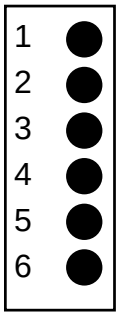
AO+DTMf	1	Analog output, 4-20 mA	Instrum. system
AO-DTMf	2	Analog output, 4-20 mA	Instrum. system
DO+DTM1f	3	Digital output, Limit 1	PLC
DO+DTM2f	4	Digital output, Limit 2	PLC
DO+DTM3f	5	Digital output, Limit 3	PLC
	6	No connection	

K27 POSITION MONITOR, FLAT ZONE, Transducer, analog out, dig. outputs



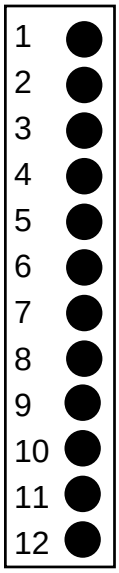
TI-POTf	1	Transducer, input negative	K-POT25:	white
TI+POTf	2	Transducer, input positive	K-POT25:	brown
TE-POTf	3	Transducer, excitation negative	K-POT25:	green
TE+POTf	4	Transducer, excitation positive	K-POT25:	yell.
TR+POTf	5	Transducer, reference positive	K-POT25:	grey
TM+POTf	6	Transducer, measure positive	K-POT25:	amber
TS-POTf	7	The cable shield is connected to the ground bar below the rack		
AO+POMf	8	Analog output, 4-20 mA		Instrum. system
AO-POMf	9	Analog output, 4-20 mA		Instrum. system
DO+POM1f	10	Digital output, Limit 1		PLC
DO+POM2f	11	Digital output, Limit 2		PLC
DO+POM3f	12	Digital output, Limit 3		PLC

K28 SERIAL COMM. INTERFACE, Digital inputs and outputs



SCI-1	1	Digital output TXD 1	Intrum. system
SCI-2	2	Digital output TXD 2	Intrum. system
SCI-3	3	Digital input RXD 1	Intrum. system
SCI-4	4	Digital input RXD 2	Intrum. system
SCI-5	5	Digital common COM	Intrum. system
SCI-6	6	Digital common COM	Intrum. system

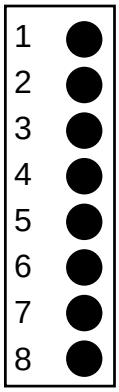
K29 TVD - FLAT ZONE, Transducer, analog out, digital inputs and outputs



T+TVDf	1	Transducer, positive	* : white + brown
T-TVDf	2	Transducer, negative	* : green + yellow
TS-TVDf	3	The cable shield is connected to the ground bar below the rack	
AO+TVDHf	4	Analog output, headset	Headset conn.
AO-TVDHf	5	Analog output, headset	Headset conn.
AO+TVDAf	6	Analog output, spare	Not used
AO-TVDAf	7	Analog output, spare	Not used
AO+TVDf	8	Analog output, 4-20 mA	Instrum. system
AO-TVDf	9	Analog output, 4-20 mA	Instrum. system
DO+TVD1f	10	Digital output, Limit 1	PLC
DO+TVD2f	11	Digital output, Limit 2	PLC
DI+LOGAf	12	Digital input, Low gain	PLC

* K-TVDS25

K30 SAFESET MONITOR, Transducer, digital inputs and outputs



T+SSM	1	Transducer +	K-AT10: White
TM+SSM	2	Transducer M, Motor side	K-AT10: Brown
TR+SSM	3	Transducer R, Refiner side	K-AT10: Green
T-SSM	4	Transducer -	K-AT10: Yellow
DO+SSSZ	5	Digital output Safeset seized	PLC
DO+SSRO	6	Digital output Safeset rotating	PLC
DO+SSTR	7	Digital output Safeset tripped	PLC
DI+SSRE	8	Digital input Reset Safeset	PLC

The cable shield is connected to the ground bar below the rack

7. OUTLINE DRAWING