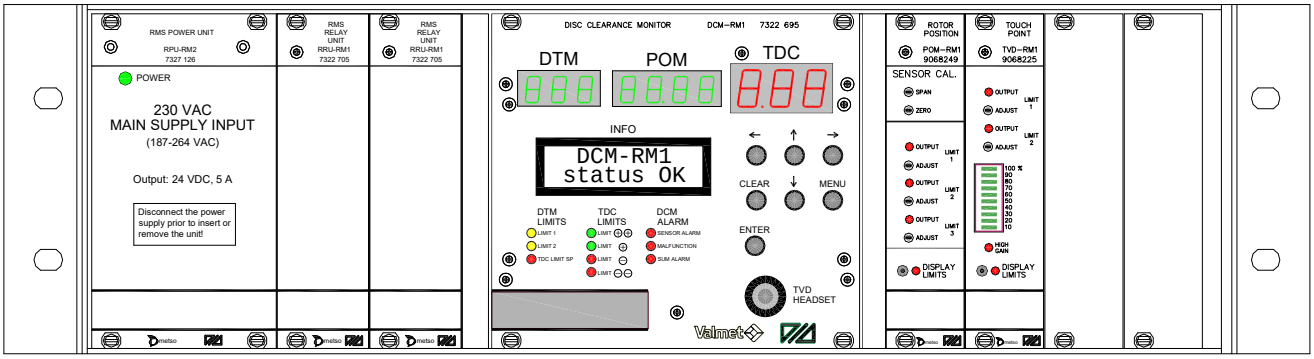
dametric

ADDENDUM TO RMS-RS1 / CD WITH THE AGS SENSOR



Valmet

CONTENT

1 Document revision

Feb. 19, 2019/BL Created.

2 General

The RMS-RS1 CD system can be upgraded with the adjustable gap sensors AGS, to get improved calibration accuracy and the possibility to do in-production calibrations of the sensor.
This manual describes the changes in the system and it also lists the new units.

2.1 Differences between the TDC-system and the AGS-system

RMS-RS1 CD with the TDC sensors	RMS-RS1 CD with the AGS sensors
The sensors are named TDC-xxx.	The sensors are named AGS-xxx.
The DCM-RM1 boards can have any revision number.	The two DCM-RM1 boards must have a software revision number of 1.77 or higher, “AgsReady”.
---	Two ACM-DM1 units are added, one for each side. They are mounted to a DIN-raíl.
---	A Panel-PC, PPC-84T4 is added.
---	A CEC-DM1 unit, a CAN-Ethernet-Converter, is used and mounted on a DIN-rail close to the rack
---	A 24V AC/DC power supply is added to power the ACM, Panel-PC and the AGS sensor
The KB-02 are used as a cable boxes for the sensors.	Two KB-AGS1R are used as cable boxes.
The TVD-T1/T2 sensors are used.	The TVD-sensor is built in inside the AGS-sensor so the TVD-T1/T2 sensors are excessive.
The K-TVDS25 cables are used to the TVD sensors.	The K-TVDS25 cables are used but now connected to the KB-AGS1R cable boxes.
The K-TDC25 cables is used between the racks and the KB-02 connection boxes.	The K-TDC25 cables are also used together with the AGS-sensors.
---	Two cables, K-AGP25, are added between the ACM-RM1 boards and the KB-AGS1R boxes.
---	Two cables, K-CAN1P25, are added between the ACM-RM1 boards and the KB-AGS1R boxes.
The K-GTS cables are used between the connection box and the TDC sensor	The K-AGS3 cables are used between the connection boxes and the AGS sensors.
---	A crossed ethernet cable, K-UTP5X3, is used between the CEC-DM1 unit and the Panel-PC.
---	A new cable, K-CANRMS-RSSD, is used to connect the CAN-bus between the DCM-RM1, the ACM-DM1 and to the CEC-DM1 converter.
	An AOM-DM1 unit is added- The AOM, Analog Output Module, is used to generate analog currents, 4-20 mA, to reflect the resistance measured from the AGS tip to the rotor. One AOM unit serves both sides.
---	A GIR system is used for remote access from Dametric.

2.2 New connections and devices

The PPC-84T5 is an 8.4" Panel-PC with a touch screen. It is used for calibration of the AGS sensor, to modify parameters, to view an alarm log or to check the signal trend. The unit is mounted in the front of the panel and should be mounted in a convenient height above the floor.

CEC-DM1 is a new device which translates data from the CAN-bus to UDP, an IP-based protocol used in the Panel-PC. The CEC-DM1 is mounted on a standard DIN-rail.

The ACM-RM1 units are used as an interface toward the AGS sensors. The units also include digital inputs and outputs (24VDC), and analogue inputs and outputs (4-20mA). The units are mounted on a DIN-rail.

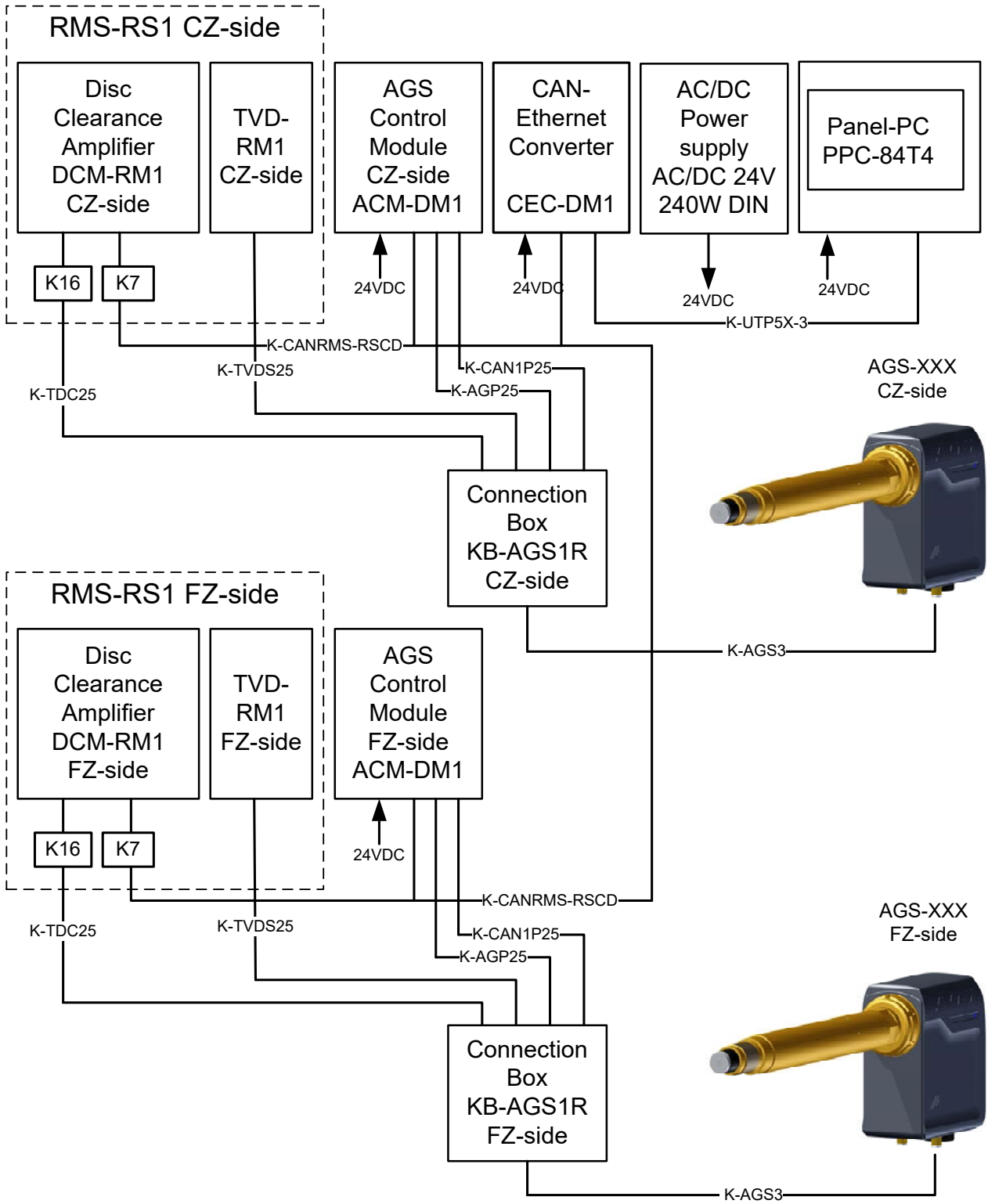
A 24VDC power supply is needed to provide power to the ACM, CEC, PPC and to the AGS sensors. A standard commercial AC/DC supply with 100W output power (4A) is sufficient, mounted preferably on the DIN-rail.

2.3 The Panel-PC

A GmsWin program is loaded into the Panel-PC and presents the status and values for the RMS system. The unit is also used to calibrate the AGS-sensor, for service of the units and to change the parameters for the new functionality.
A separate manual, AGS-RMS-RS1-CD, describes the menus and how to use the Panel-PC.
The settings of the limits for the RMS units are however done the same way as before, by adjusting the potentiometers on the units and then check the result on the DCM-RM1 units.

3 Connections

3.1 System overview



3.2 Connections to the ACM-DM1 units

CZ-Side	FZ-side
K1 – 24V and internal CAN K1/1 +24VDC, Positive power supply input K1/2 0V, Negative power supply input K1/3 CANH, K-CANRMS-RSSD: white-blue K1/4 CANL, K-CANRMS-RSSD: blue-white K1/5 CANR, Connect to K1/4 for 120Ω termination K1/6 0V Ground	**K1 – 24V and internal CAN** K1/1 +24VDC, Positive power supply input K1/2 0V, Negative power supply input K1/3 CANH, K-CANRMS-RSSD: white-blue K1/4 CANL, K-CANRMS-RSSD: blue-white K1/5 CANR, Connect to K1/4 for 120Ω termination K1/6 0V Ground
K2 – External CAN to AGS conn. box K2/1 CANH, K-CAN1P25: white-blue K2/1 CANL, K-CAN1P25: blue-white K2/3-6 N.C. (not used)	**K2 – External CAN to AGS conn. box** K2/1 CANH, K-CAN1P25: white-blue K2/1 CANL, K-CAN1P25: blue-white K2/3-6 N.C. (not used)
K3 – Analogue input K3/1-2 N.C.not used K3/3 AnIn+, Positive signal input 4-20mA K3/4 AnIn-, Negative signal input 4-20mA	**K3 – Analogue input** K3/1-4 N.C. not used
K4 - Digital inputs and outputs K4/1 +24VD, Supply output for digital inputs K4/2 Digital input 1, Node 0 = Node 1 (leave open) K4/3 Digital input 2, FeedGuard 1 = Activated, 0 = Not activated K4/4 Digital input 3, Touch position 1 = Activated (idle cal.), 0 = Not activated (prod. cal.) K4/5 Digital output, AGS Sum alarm 1 = No alarm, 0 = Sum alarm K4/6 Digital output, AGS Calibration on 1 = Calibration in progress, 0 = No calibration K4/7 Digital output, AGS Calibrated 1 = Calibrated (ready for production), 0 = Not calibrated K4/8 0V reference for digital inputs and outputs	**K4 - Digital inputs and outputs** K4/1 +24VD, Supply output for digital inputs K4/2 Digital input 1, Node 1 = Node 2 (connect to K4/1) K4/3 Digital input 2, not used K4/4 Digital input 3, Touch position 1 = Activated (idle cal.), 0 = Not activated (prod. cal.) K4/5 Digital output, AGS Sum alarm 1 = No alarm, 0 = Sum alarm K4/6 Digital output, AGS Calibration on 1 = Calibration in progress, 0 = No calibration K4/7 Digital output, AGS Calibrated 1 = Calibrated (ready for production), 0 = Not calibrated K4/8 0V reference for digital inputs and outputs

3.3 Connections to the CEC-DM1 unit

K1 – 24V

K1/1	+24VDC	Positive power supply input
K1/2	+24V	Not used
K1/3	0V	Not used
K1/4	0V	Negative power supply input

K2 –CAN

K2/1	CANH	K-CANRMS-RSCD: white-blue
K2/2	CANL	K-CANRMS-RSCD: blue-white
K2/3	CANR	Connect to K2/3 for 120Ω termination
K2/4	0V	Not used

3.4 Connections to the RMS-RS1 racks

The only connection to the RMS-RS1 rack units is the internal CAN-bus. The cable K-CANRMS-RSCD connects the CAN between the ACM, CEC units and the DCM-RM1 units in the RMS racks. Connect the cable to the K7 connector on the RMS-RS1 rack (see circuit diagram).

3.5 Digital inputs

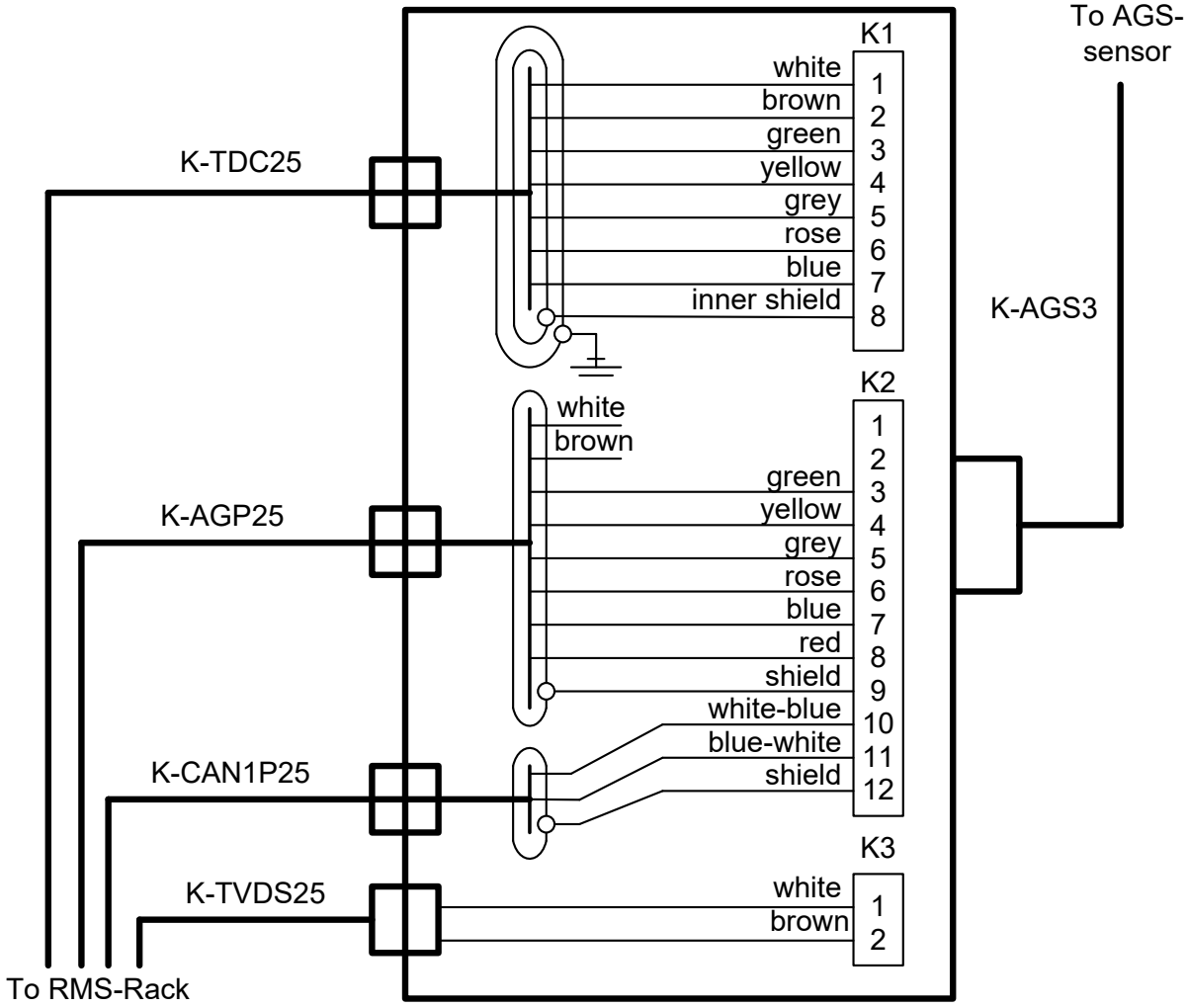
One to three digital inputs can be used in the system. Use DIN-bar mounted PLC relays for isolation and connect the relays outputs to the ACM unit.

3.6 Digital outputs

One to three digital outputs can be used in the system. Use DIN-bar mounted PLC relays for isolation and connect the relay coil inputs to the ACM unit (see circuit diagram).

3.7 Connections to the KB-AGS1R

The connection box is mounted on the refiner stand and joints the cables from the electronic panel to the detachable cable to the AGS sensor. The cables are connected as follows:



3.8 Connections to the AGS-xxx sensors

The armed K-AGS3 cables are connected between each AGS sensor and its corresponding connection box. The cables has connectors in each end which makes them easy to replace.

3.9 Connections to the PLC

An output has been added to enable the PLC logic to determine if the AGS sensor is calibrated or not. The output is found on the PLC relay K01 “Dout1” and is a logic high (24Vdc) as long as the AGS-sensor is calibrated.
The output drops if the measuring tip of the sensor is changed, if the AGS-sensor is changed or if the corresponding DCA-card in the rack has been switched.
The calibration procedure will set the output high if the sensor is first coarse calibrated and then calibrated in the refiner while running in idling mode.

4 The Panel-PC

The Panel-PC handles the interface between the operator and the system. It serves as a display of the measured parameters in the refiner and is also used when calibrating the AGS-sensor or when changing any of the AGS-specific parameters of the system.
The functions of the Panel-PC are described in a separate manual.
The calibration of the AGS-sensors are described in another manual.

5 AGS part list

Dametric part.no.	*Valmet part.no.*	*Description*
AGS-HM-H4	VAL0320980	AGS Head
AGS-XP-S…	VAL…	AGS Tip (depending of refiner type)
AGS-SP-…	VAL…	AGS Holder (depending of refiner type)
PPC-84T4	VAL0337127	Panel-PC
PPC-SP4	VAL0342350	PPC mounting plate (2 pcs)
CEC-DM1	VAL0219209	Can-Ethernet-Conv
KB-AGS1R	VAL0196736	Connection box
K-AGS3	VAL0196735	AGS-KB Cable
K-TDC25	VAL0122970	TDC Cable
K-AGP25	VAL0196888	AGS Cable
K-CAN1P25	VAL0219213	CAN Cable
AGS-SP-CS1	VAL0322341	AGS Air Cooling System
AGS-SH1	VAL0296266	AGS Service holder

6 Abbreviations

This table can be useful to understand some of mentioned names and abbreviations.

CE ™. Operative system from Microsoft.

RMS, *Refiner Monitoring System*, equipment used for measuring and controlling the refiner.

AGS, *Adjustable Gap Sensor*, a plate gap sensor based on the TDC-principle where the measuring tip can be axially adjusted.

TDC, *True Disc Clearance*, the distance from the sensor tip to the rotor plates.

APO, *Ags Position*, the position of the sensor tip relative to the flush position. Range ± 2.50 mm.

TVD, *Touchpoint Vibration Detector*, the vibration amplitude signal generated when the sensor tip touches the rotor while rotating.

TED, *Touchpoint Electric Detector*, the signal generated when the sensor tip touches the rotor by measuring the resistance between the AGS tip and the rotor.
The TVD and TED signals are both used to establish the touch point for zero-calibration the sensor.

Plate Gap, *the true plate gap*, defined as the TDC + APO. If the tip is moved toward the rotor, the TDC value will decrease, the APO will increase but the plate gap will remain constant. The benefit of this is to perform a calibration during calibration and thereby avoiding production loss.

DCM-RM1, *Disc Clearance Monitor*, a unit for measuring the plate gap mounted in the RMS-RS1 rack.

ACM-DM1, *AGS Control module*, an interface for the AGS sensor.

CEC-DM1, *Can-Ethernet-Converter*, a unit to translate data from the CAN-bus to UDP, an IP-based protocol used in the Panel-PC. The CEC-DM1 is mounted on a standard DIN-rail.

CAN, *Control Area Network*, a standard field bus.

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8 CONNECTION DIAGRAM

To be drawn!