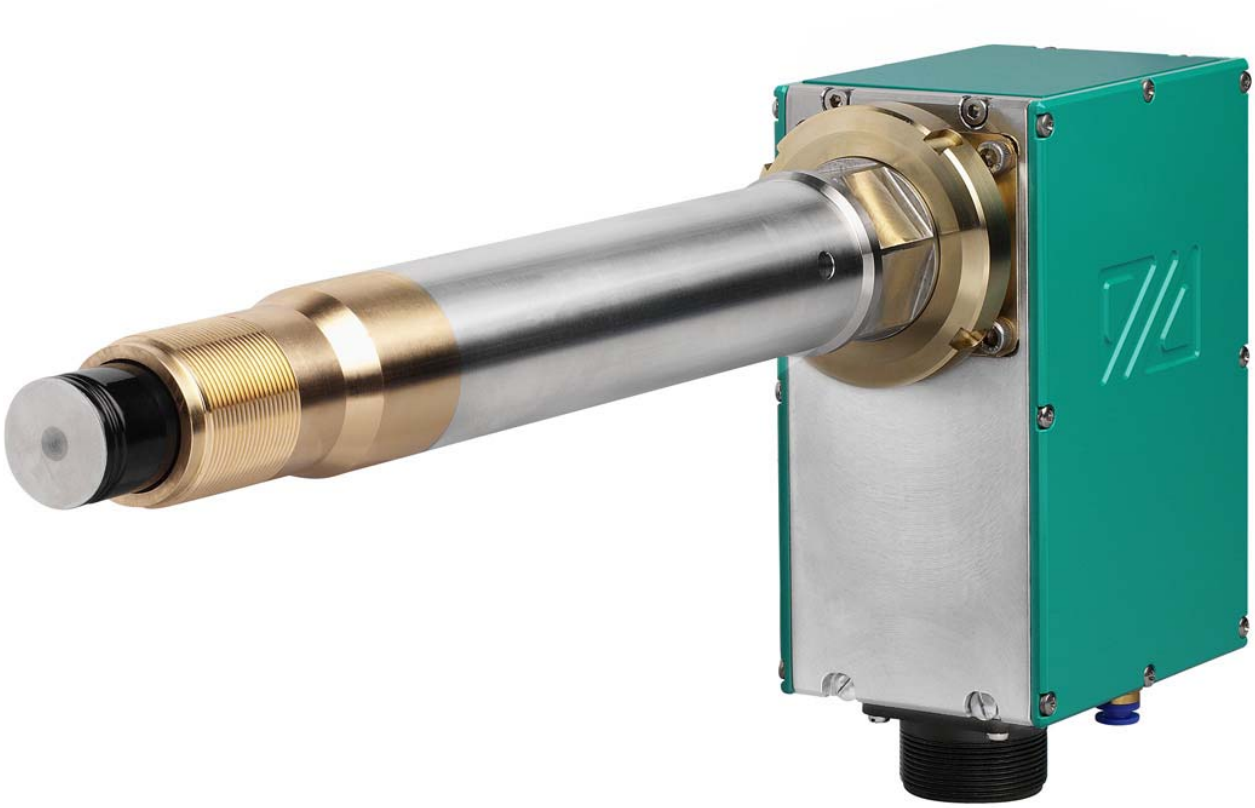
ADDENDUM TO RMS-SD WITH AGS SENSOR



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CONTENT

1 GENERAL

The RMS-SD1 system can be upgraded with the adjustable gap sensor AGS, to get improved accuracy and in-production calibration of the sensor.
This manual describes the changes in the system and it also lists the new units.

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

RMS-SD1 with the TDC sensor	RMS-SD1 with the AGS sensor
The sensors are named TDC-xxx.	The sensors are named AGS-xxx.
The DCU-RM2 board can have any revision number.	The DCU-RM2 board must have a revision number of 6.0 or higher “AgsReady”.
The DCA-RM1 board can have any revision number.	The DCA-RM1 boards must have a revision number of 6.0 or higher “AgsReady”.
The DTM-RM1 board is used.	The DTM-unit is replaced by the ACM-RM1 board.
The PDU-RM1 display unit is used.	The PDU unit is replaced by the PPC-84T, an 8.4” Panel-PC.
---	A CEC-DM1 unit, a CAN-Ethernet-Converter, is used and mounted on a DIN-rail close to the rack.
The KB-02 is used as a cable box for the sensor.	The KB-AGS1R is used as cable box.
The TVD-T1/T2 sensors are used.	The TVD-sensor are built in inside the AGS-sensor so the TVD-T1/T2 sensor are excessive.
The K-TVDS25 cable is used to the TVD sensors.	The K-TVDS25 cable is instead connected to the KB-AGS1R cable box.
The K-TDC25 cable is used between the rack and the KB-02 connection box.	The K-TDC25 cable is also used together with the AGS-sensor.
---	The cable K-AGP25 is added between the ACM-RM1 board and the KB-AGS1R box.
---	The cable K-CAN1P25 is added between the ACM-RM1 board and the KB-AGS1R box.
The K-PDU3 cable between the PDU unit and the rack is used.	A crossed ethernet cable, K-UTP5X3, is used between the CEC-DM1 unit and the Panel-PC.
---	A new cable, K-CANRMSSD, is used to connect the CAN-bus between the DCU, DCA and ACM units internally in the rack and to the CEC-DM1 converter.

1.2 New connections and devices

To minimize the changes to the rack unit, the new cables are connected direct to jackable connectors on the lower edge of the ACM-RM1 board.

The new CAN-bus is also connected on the lower edge and connects the CEC-DM1 to the DCU-RM1, DCA-RM1 and the ACM-RM1 boards.
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 CE Panel PC is connected to the CEC-DM1 and uses the standard Ethernet interface.

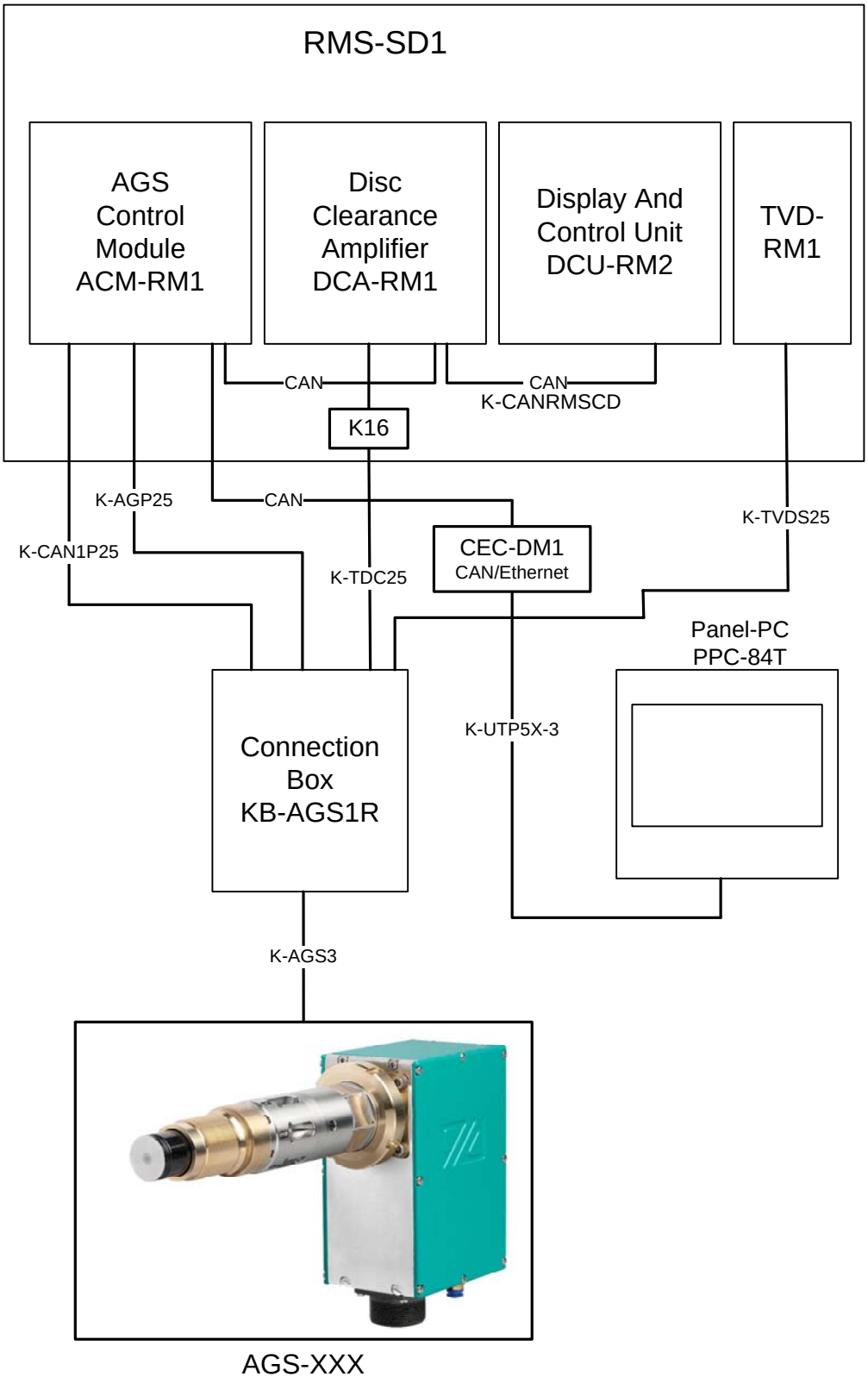
1.3 The CE Panel-PC

A GmsCE program is loaded into the CE Panel-PC and presents the measured levels like the PDU-RM1 display. 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-SD, 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 DCU-RM1.

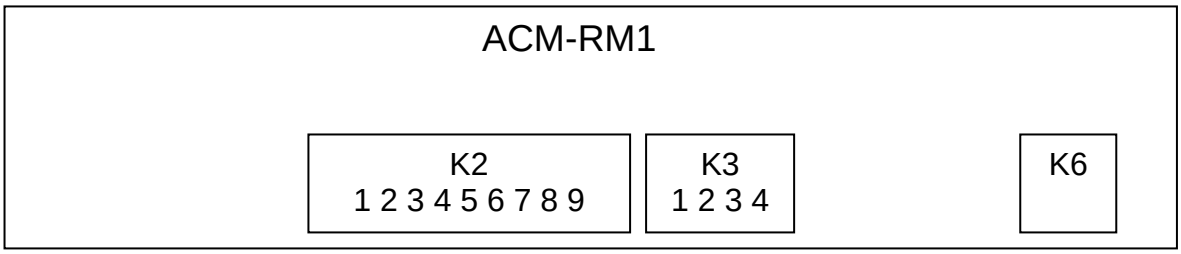
2 CONNECTION DIAGRAM

This show the new or revised connections relative the standard connections described in the RMS-SD1 manual.

2.1 System overview



2.2 Connections to the ACM-RM1



2.2.1 General

All new connections are connected to the lower side of the board.

2.2.2 K2 – CAN and 24V supply to the AGS-sensor

Cable K-AGP25 to cable box KB-AGS1R

K2/1	not used	
K2/2	not used	
K2/3	CANH	K-CAN1P25/white/blue
K2/4	CANL	K-CAN1P25/blue/white
K2/5	24V	K-AGP25/grey
K2/6	0V	K-AGP25/rose
K2/7	24V	K-AGP25/blue
K2/8	0V	K-AGP25/red
K2/9	Shield	shield

The K-AGP25/white and K-AGP25/brown are not used and must be isolated.
The K-AGP25/green and K-AGP25/yellow are used to synchronize the AGS measurement with the rotor.

SYNK +	(24V level)	K-AGP25/ green (option)
SYNK -		K-AGP25/ yellow (option)

2.2.3 K3 – CAN-interface

Use the cable K-CANRMSCD between the DCU, DCA and ACM units.

K3/1	CANH	white
K3/2	CANL	brown
K3/3	CANR	shorted to K3/2 and both end plugs of the cable
K3/4	GND	not used

2.2.4 K6 – Program update

This is a standard RJ12-connector but do not attempt to plug in a phone line or anything else into this socket. It is only used for program update and together with the DA-01A adapter.

2.3 Connections to the DCA-RM1

The DCA-RM1 is connected in the same way as for the standard RMS-CD1 system but we add the CAN connector at the bottom of the unit.
Note that the new type of board with revision 6.00 or higher must be used for the AGS sensor. The new board must have an “AGS Ready” label on the front.

2.4 Connections to the DCU-RM1

The DCU-RM1 is connected in the same way as for the standard RMS-SD1 system but we add the CAN connector at the bottom of the unit.

Note that the new type of board with revision 6.00 or higher must be used for the AGS sensor. The new board must have an “AGS Ready” label on the front.

2.5 Connections to the CEC-DM1

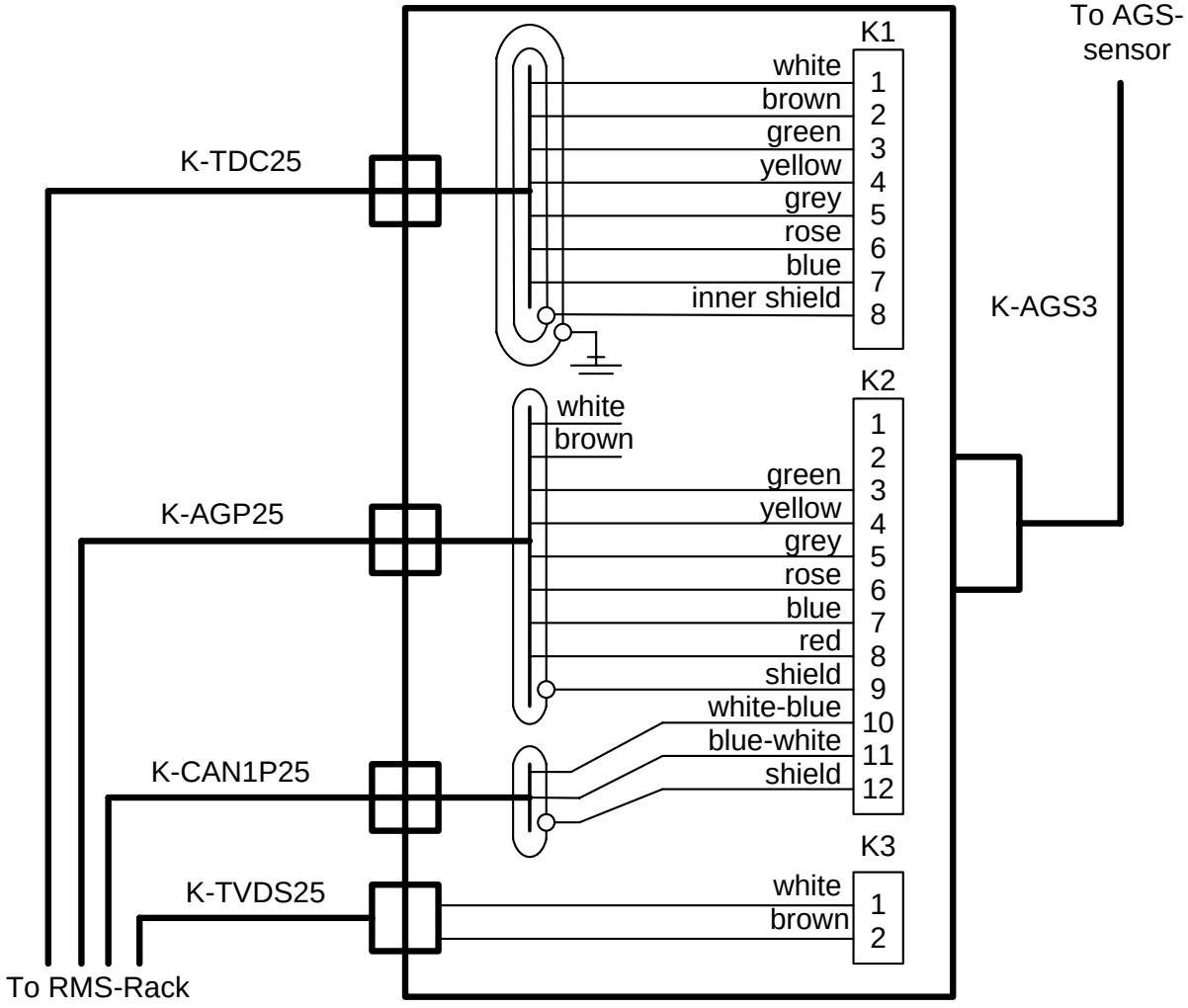
K1/1	+24V	Connect to the 24V supply
K1/2	+24V	not used
K1/3	0V	not used
K1/4	0V	Connect to the 24V supply

Use the cable K-CANRMSCD.

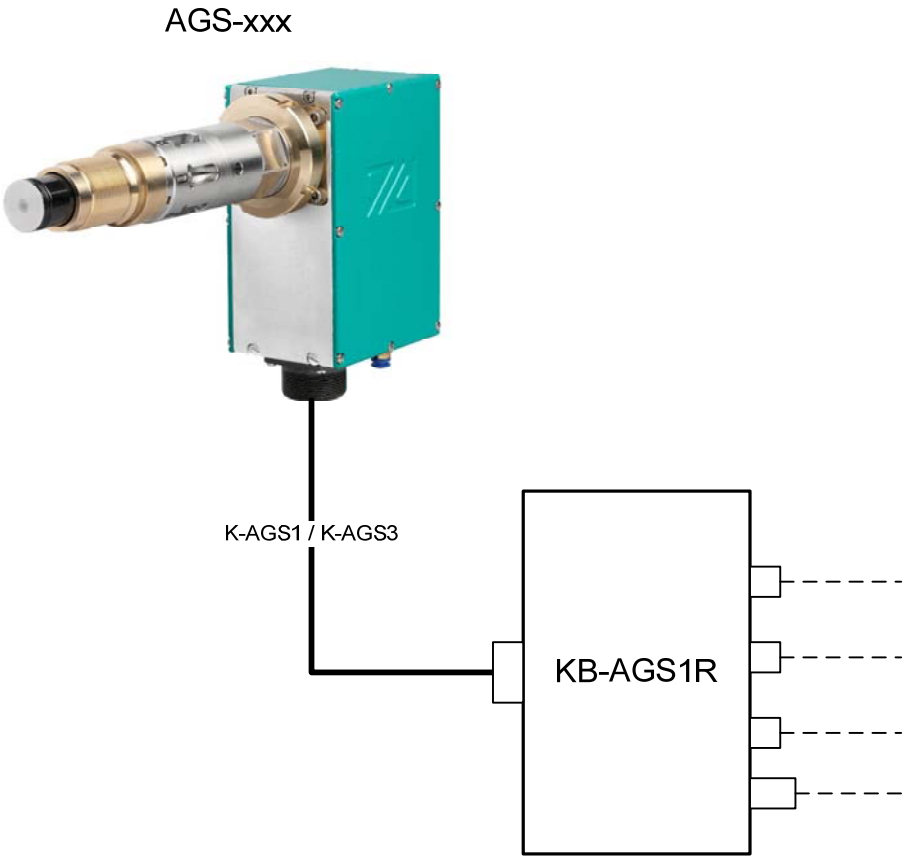
K2/1	CANH	white
K2/2	CANL	brown
K2/3	CANR	shorted to K3/2
K2/4	GND	not used

2.6 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:



2.7 Connections to the AGS-xxx sensor



2.8 Connections to the PLC

A new 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 screw connector K19/7 “DO+DCU7” 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.

3 THE CE 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 standard RMS parameters are changed in the DCU-RM1 unit as standard.
The functions of the Panel-PC are described in a separate manual.
The calibration of the AGS-sensor is described in another manual.

4 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. This signal is used to establish the touch point and used to zero-calibrate 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.

DCA-RM1, *Disc Clearance Amplifier*, a unit for measuring the plate gap.

DCU-RM1/2, *Display and Control Unit*. The DCU unit handles the other units in a RMS system and also includes logic for feed guard retraction supervision and the plate gap controller.

ACM-RM1, *AGS Control module*, a unit for measuring and controlling the AGS sensor. It also includes circuitry for the measuring the disc temperature by the PT-100 element inside the tip of 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.

5 CONTACT

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