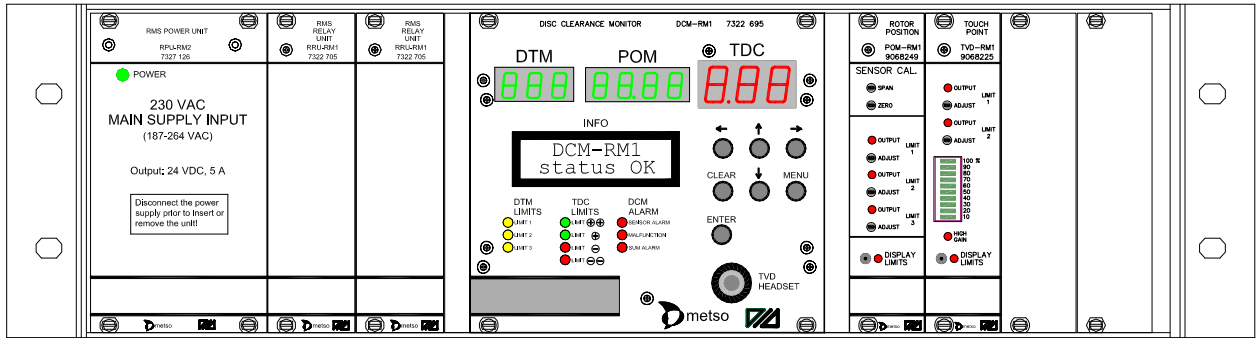


dametric 

RMS-RS1

FeedGuard Supervision



Description



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1 General

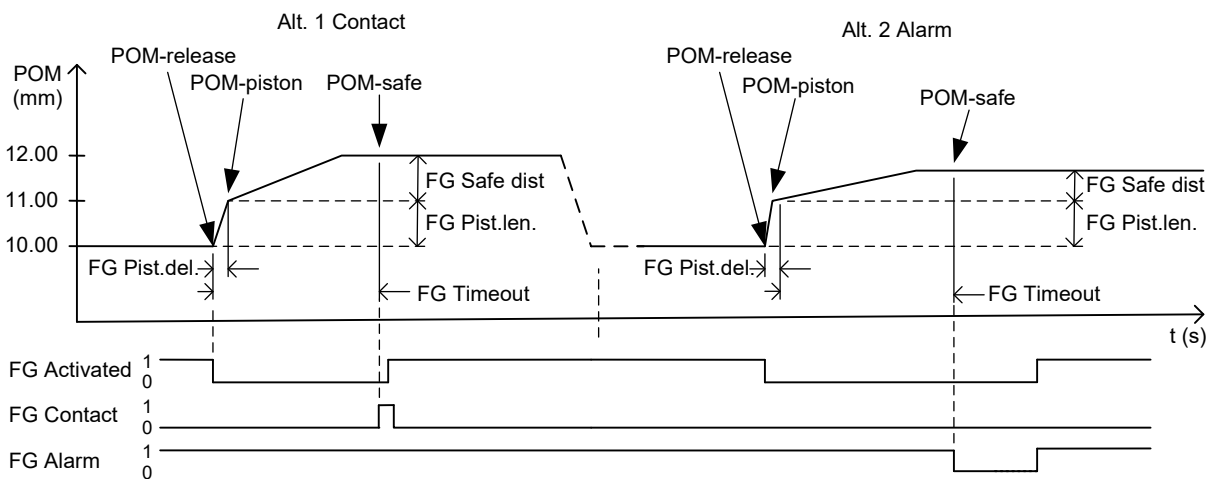
This document describes how the supervision of the FeedGuard is handled in a RMS-RS1 system. This function is introduced in 2014 to replace the old FG-02 which is no longer sold. A module, DXM-DM1 Digital Extension Module, is added which gives extra digital in- and outputs (24VDC). The unit is powered with 24VDC from the RMS-RS1 rack and is controlled by the CAN-bus from the DCM-RM1 unit.

The DXM unit communicates on the digital I/O side with the PLC/DCS. The I/O signals of 24VDC must be isolated and adapted to the PLC/DCS logic levels by relays.

The DXM receives a digital input for the "FG Active" signal and two generates two digital outputs, "FG Contact" and "FG Alarm".

This functionality demands that the DCM-RM1 has a software revision of 1.73 or higher. For DXM-DM1 it is 1.05 or higher.

2 Function



- **During runtime**
DCM-RM1 continuously saves the actual rotor position, POM.
Output "FG Contact" is low, output "FG Alarm" is high.
- **FeedGuard occurs**
When the input "FG Activated" trips, the POM value 1 second earlier is saved as the "POM-release" value. After a short delay, about 0.5s (controlled by parameter "FG Pist.del.") the actual POM value is saved as the "POM-piston" value.
The timer "FG Timecount" starts to count seconds.
The PLC'n backs off the rotor by the CMS system.
- **The rotor is backed off**
The POM-value is measured continuously and checked if larger than the sum of the saved "POM-piston" value and the "FG Safe dist" parameter value. If this occurs before the timeout (the "FG-timeout" parameter), a check is done immediately. If not, we wait until the timeout has passed.
- **FG check**
The POM-value is saved as the "POM-safe" value. And now we check if the rotor has been backed off enough.
If "POM-piston" - "POM-release" > 80% of "FG Pist. Length"
and "POM-safe" - "POM-piston" > 80% of "FG Safe dist." -> we will accept the back off by setting the digital output "FG Contact" high.
If the criteria is not fulfilled, we will instead set the digital output "FG Alarm" low.
In both cases the PLC/DCS will stop the stepping motor from moving the rotor apart.
- **Reset**
The PLC/DCS detects "FG Contact" set high and can then set the "FG Active" signal high again.
If signal "FG Alarm" is set low, another reset sequence must then be done to reset the feed guard.
When RMS-RS1 detects "FG Active" activation, it will force "FG Contact" low and possibly force "FG Alarm" high.

3 Parameters

The following parameters are added in the Menu selection in the DCM-RM1 unit.

<i>Units</i>	<i>Min</i>	<i>Standard</i>	<i>Max</i>	<i>Step</i>	<i>Grade</i>
DXM	OFF	OFF	ON_CAN	-	-
<i>Parameter</i>					
CAN node no.	0	0	2	1	-
	0 means the CAN is disconnected. For communication with the DXM unit, the parameter must be set to 1.				
RMS System	TDC	TDC	AGS-CD	-	-
	Select TDC or AGS-SD alt. AGS-CD if an AGS-sensor is used.				
FG Timeout	1	10	60	1	s
	Sets the maximum time. The rotor is moved at 0.25mm/s so this parameter must be set according to the "FG Safe dist." parameter. Set to 10 for 1.0 mm and 30 for 3.0 mm distance.				
FG Pist. Len.	0.00	1.00	9.00	0.10	mm
	Parameter for the distance of the valve.				
FG Safe dist	0.00	1.00	9.00	0.10	mm
	Parameter for the safe distance. Normally the same as the valve distance.				
FG Pist. del.	0.1	0.5	3.0	0.1	s
	The delay until the POM value is saved after the FG-valve has released. The delay is dependent of how fast the hydraulics will back off the rotor.				

Set the parameters to these example values to enable the FeedGuard supervision:

DXM	ON_CAN	CAN node no.	1
RMS System	TDC	FG Timeout	10.
FG Pist. Len.	1.00	FG Safe Dist	1.00
FG Pist.del.	0.5		

The menu functions in the DCM-unit will indicate the status of the FeedGuard.

See *RMS-RS1 PRO EN.pdf*, section "6. Menu group DTM Cal".

4 Units

DCM-RM1, VAL0130924. Upgraded unit with built in FG-function. Version 1.70 or later.

DXM-DM1, VAL0335731. Version 1.04 or later.

K-CAN1P3, VAL0341959.

5 Installation

5.1 Mounting

The DXM-DM1 is mounted on a DIN-rail on the base plate of the cabinet.

Size of the unit: height=110 mm, width=23 mm, depth=115 mm.

5.2 Connection RMS-RS1 – DXM-DM1

The DXM-DM1 is connected to the sockets on the backside of the RMS-RS1 rack.

This connection includes 24VDC supply and the CAN-bus communication.

<i>RMS-RS1</i>	<i>DXM-DM1</i>	<i>Signal</i>	<i>Cable</i>
K9/5	K1/1	+24 VDC	Use single wire, > 0.50mm ² area.
K9/6	K1/2	0 VDC	Use single wire, > 0.50mm ² area.
K7/1	K2/1	CANH	Use K-CAN1P3 (VAL0341959)
K7/2	K2/2	CANL	(included in K-CAN1P3)
	K2/3	CANR	(connect to till K2/2)
K7/4	K2/4	0V	(included in K-CAN1P3)

5.3 Connection PLC/DCS - DXM-DM1

<i>PLC/DCS</i>	<i>Direction</i>	<i>DXM-DM1</i>	<i>Remark</i>
TDC Calibr.	←	K3/1	Activ after the TDC has been zero- and span-calibrated. Deactivated after the coarse calibration.
FG Contact	←	K3/2	Is activated after a successful FeedGuard supervision
FG Alarm	←	K3/3	Is deactivated if the supervision is not approved
FG Active	→	K4/1	Activated (24VDC) when the FeedGuard valve is active.

Note! Add isolation relays between the RMS internal 24V supply and the refiner PLC control voltage.

5.4 Connection RMS-RS1 – PLC/DCS

The digital out- and inputs on the DXM-DM1 unit is galvanically connected to the 0VDC supply of the RMS-RS1 rack.

It is strongly recommended to use relays to isolate the RMS-RS1 supply from the PLC/DCS supply. Use this connection points for the relays: RMS-RS1/K9/5 =+24VDC, RMS-RS1/K9/6 = 0VDC.

6 Upgrade

To upgrade an existing RMS-RS1 system:

A complete new kit must be purchased, DCM-RM1, DXM-DM1 and K-CAN1P3.

The “old” DCM-RM1 unit will be repurchased by Dametric to half of the price of the new unit.

Note also that spare parts must be “upgraded”.

7 CONTACT

Sales, development, production and service:



Dametric AB

Jägerhorns Väg 19, 141 75 Kungens Kurva, Sweden

Phone: +46-8 556 477 00

Telefax: +46-8 556 477 29

e-mail: service@dametric.se

Web site: www.dametric.se

