

Title:	Error Codes			ID:
				0008
Date in:	Response:	Model:	Author:	
2006-11-15	2006-11-15	-	CMA	

PSE (Process Status – Error) Register (DM200)

DM200	Contains process progress information and error code information		
Data Memory	DM200	Content	Process status information and error code
Protocol	Legacy	Related	1601, 1900, 1800, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1915, DM0, DM5, DM25, DM29, DM10, DM15
FW Version	all	Instrument	All
Default	System depending	Type	Process Configuration Register
Read/Write	R	Range	0.. \$FFFF

Data Memory DM200 contains status information on handling processes as well as error code in the event of an error. DM200 is intended to be read only. DM200 is used in conjunction with standard access ST 1904 .. 1909 or BC-Reading 1711, 1910.

Action	Command String	Response	Comment
Read DM200	RD DM200	sssss	Returns content of PSE Register (DM200)

DM200 contains combined information. The combination of status information with error codes provides quick information about where an error occurred and what nature this error is. For interpretation DM200 may be split in 2 bytes. The upper byte contains handling process status information, the lower byte the error code – if an error has occurred. If there is no error, the lower byte is '0'.

15		12	11		8	7		0
Plate Process Type		Process Step			Error Message			

The higher byte may again be split into two nibbles where the higher nibble contains information on the handling process being processed. The lower nibble contains information on the progress of the handling process execution. The interpretation of this information may vary between FW versions and system families and therefore is not published.

Bit	Information	Comment
0	Error Code LSB	Error codes are listed in table below *Error Codes"
1		
2		
3		
4		
5		
6		
7	Error Code MSB	
8	Process Step LSB	Internal process data, contact tech. support
9		
10		
11	Process Step MSB	
12	Process Type LSB	1: Import (1904) 3: Put (1906) 5: Place (1909) 4: BCR Md (1910)
13		2: Export (1905) 6: Get (1907) 7: Pick (1908)
14		
15	Process Type MSB	

It is important that DM200 is read each time a handling error has occurred. The error code may be used to output an error message to the user.

Code	Description	Comment
00	0 No Error	No error code detected
01	1 General handling timeout	Handling action could not be performed in time
02	2	
03	3 Motion error	Motion timeout occurred, motion time exceeded 70s
04	4	
05	5	
06	6	
07	7 Gate close timeout	Gate could not reach upper position or Gate did not reach upper position in time
08	8 Gate open timeout	Gate could not reach lower position or Gate did not reach lower position in time
09	9	
0A	10 Stacker Error	Undefined Stacker number
0B	11	
0C	12 Level Error	Undefined stacker level has been requested
0D	13 Plate Trace error	Plate is not loaded or unloaded during handling process as expected
0E	14 Initialization error	System could not be initialized, Motion timeout (100s) occurred
0F	15 Turn out error	Turn motion unable to turn to transfer station
10	16 Turn in error	Turn motion hit obstacle
11	17	
12	18	
13	19 Shovel timeout	Unable to extend shovel, shovel hit plate

The typical procedure to handle an error may contain the following steps

- Implement timeouts to detect occurrence of possible errors
- Regularly poll error flag 1814 (RD 1814)
- If 1814 is set to '1' read content of DM200 (RD DM200)
- Store or display information of DM200
- Try soft reset of process (ST 1800)
- Depending on the nature of error initiate recovery action by redefining process

During a plate import process (1904) a plate is tired to placed in an occupied stacker location, this will cause an error 0013h. In this case the Error Flag (1814) is set from '0' to '1'. The exact cause of the error and additional information on where during the process the error occurred can be found in the Process Status – Error Register (DM200).

Example	Plate crash at stacker error recovery scenario	
Command Sequence	Response	Comment
RD 1915	1	If request of System Ready status returns 1 the system is ready to accept a command
WR DMO 1	OK	Import a plate to stacker location 1,1
WR DM5 1	OK	
ST 1904	OK	
<i>Wai t10ms</i>		Allow the system some milliseconds to internally update the System Ready Flag before first System Ready status request
RD 1915	0	Read System Ready returns 0, system is buy executing the plate load operation
RD 1915	0	No error occurred
RD 1814	0	
RD 1915	0	Ready remains '0'
..		
RD 1915	0	Error detected
RD 1814	1	Error message converted to Hex format 1513 contains error 13. Shovel could not be extended
RD DM200	05395	
ST 1800	OK	Do soft reset
<i>Wai t10ms</i>		System back in idle ready to accept next command.
RD 1915	1	
ST 1906	OK	Place plate back to transfer station
..		Operation started
RD 1915	0	

There are many scenarios on how to recover from an error including the possibility of resetting and re-initializing the system. The scenarios should include recovery form plate crashes at stacker locations and transfer station and plate losses form stacker or transfer station accesses. The recovery from error is very much application specific and has to be matched with the external system in which the instrument is integrated.