Reading a System Status List or Partial List with SFC 51 "RDSYSST"

Description

With system function SFC 51 "RDSYSST" (read system status), you read a system status list or a partial system status list.

You start the reading by assigning the value 1 to the input parameter REQ when SFC 51 is called. If the system status could be read immediately, the SFC returns the value 0 at the BUSY output parameter. If BUSY has the value 1, the read function is not yet completed.

Note

If you call SFC 51 "RDSYSST" in the diagnostic interrupt OB with the SSL-ID W#16#00B1 or W#16#00B2 or W#16#00B3 and access the module that initiated the diagnostic interrupt, the system status is read immediately.

With SFC51 "RDSYSST" only complete data records are transferred.

System Resources

If you start several asynchronous read functions (the jobs with SSL_ID W#16#00B4 and W#16#4C91 and W#16#4092 and W#16#4292 and W#16#4692 and possibly W#16#00B1 and W#16#00B3) one after the other at brief intervals, the operating system ensures that all the read jobs are executed and that they do not interfere with each other. If the limits of the system resources are reached, this is indicated in RET_VAL. You can remedy this temporary error situation by repeating the job.

The maximum number of "simultaneously" active SFC 51 jobs depends on the CPU. You will find this information in **/70/** and **/101/**.

Note

For S7-400 CPUs, a maximum of 432 bytes can be transferred to the target area by the SFC 51-

Parameter	Declaration	Data Type	Memory Area	Description
REQ	INPUT	BOOL	I, Q, M, D, L, constant	REQ=1: Starts processing
SSL_ID	INPUT	WORD	I, Q, M, D, L, constant	SSL-ID of the system status list or partial list to be read.
INDEX	INPUT	WORD	I, Q, M, D, L, constant	Type or number of an object in a partial list.
RET_VAL	OUTPUT	INT	I, Q, M, D, L	If an error occurs while executing the SFC, the RET_VAL parameter contains an error code.
BUSY	OUTPUT	BOOL	I, Q, M, D, L	TRUE: Reading not yet completed.
SSL_HEADER	OUTPUT	STRUCT	D, L	See below.
DR	OUTPUT	ANY	I, Q, M, L, D	Destination area of the SSL list read or the SSL partial list read: If you have only read out the header information of an SSL list, you must not evaluate DR but only SSL_HEADER. Otherwise, the product of LENTHDR and N_DR indicates how many bytes were entered in DR.

SSL_HEADER

The SSL_HEADER parameter is a structure defined as follows:

```
SSL_HEADER: STRUCT
 LENTHDR: WORD
 N_DR:  WORD
END_STRUCT
```

LENTHDR is the length of a data record of the SSL list or the SSL partial list.

- If you have only read out the header information of an SSL list, N_DR contains the number of data records belonging to it.
- Otherwise, N_DR contains the number of data records transferred to the destination area.

Error Information

Error Code (W#16#...)	Description
0000	No error.
0081	Result field too short. (Nevertheless as many data records as possible are supplied. The SSL header indicates this number.)
7000	First call with REQ=0: No data transfer active; BUSY has the value 0.
7001	First call with REQ=1: Data transfer started; BUSY has the value 1.
7002	Interim call (REQ irrelevant): Data transfer already active; BUSY has the value 1.
8081	Result field too short (not enough space for one data record).
8082	SSL_ID is wrong or is unknown in the CPU or SFC.
8083	INDEX wrong or not permitted.
8085	Due to a problem in the system, information is not currently available (for example, due to a lack of resources).
8086	The data record cannot be read due to a system error (bus, modules, operating system).
8087	Data record cannot be read because the module does not exist or does not acknowledge.
8088	Data record cannot be read because the actual module identifier is different from the expected module identifier.
8089	Data record cannot be read because the module is not capable of diagnostics or the data record is not supported.
80A2	DP protocol error (layer 2 error) (temporary error)
80A3	DP protocol error with user interface/user (temporary error)
80A4	Communication problem on communication bus (error occurs between the CPU and the external DP interface module)
80C5	Distributed I/Os not available (temporary error).
80C6	Data record transfer stopped due to priority class abort (restart or background)
80D2	Data record cannot be read because the module is not capable of diagnostics.
8xyy	General error information, see Evaluating Errors with the Output Parameter RET_VAL

SSL_IDs

Note

For the partial lists that can be read out with SFC 51 "RDSYSST" refer to

- **/72/** for the S7-300
- The following table for the S7-400.

SSL_ID (W#16#...)	Partial List	INDEX (W#16#...)
	Module ID	
0111	One identification data record	
	Identification of the module	0001

	Identification of the system expansion card	0004
	Identification of the basic hardware	0006
	Identification of the basic firmware	0007
	CPU characteristics	
0012	All characteristics	Irrelevant
0112	Characteristics of one group	
	MC7 processing unit	0000
	Time system	0100
	System behavior	0200
	MC7 language description	0300
	Availability of SFC 87 and SFC 88	0400
0F12	Only SSL partial list header information	Irrelevant
	User memory areas	
0113	One data record for the memory area specified	
	Work memory	0001
	System areas	
0014	Data records of all system areas	Irrelevant
0F14	Only SSL partial list header information	Irrelevant
	Block types	
0015	Data records of all block types	Irrelevant
	Identification of one component	
001C	Identification of all components	Irrelevant
011C	Identification of one component	
	Name of the automation system	0001
	Name of the module	0002
	System ID of the module	0003
	Copyright entry	0004
	Serial number of the module	0005
	Module type name	0007
	Serial number of the memory card	0008
	Manufacturer and profile of a CPU module	0009
	Location designation of a module	000B
	Serial number of sync module 1	000C
	Serial number of sync module 2	000D
	Serial number of the system expansion card	000E
021C	Identification of all components in a CPU of an H system	Rack no.
031C	Identification of one component in all redundant CPUs of an H system	Index
0F1C	Only SSL partial list header information	Irrelevant
	Interrupt status	
0222	Data record for indicated interrupt	OB number
	Assignment of process image partitions and CPUs	
0025	Assigning all process image partitions to OBs	Irrelevant
0125	Assignment of a process image partition to the corresponding OB	Process image partition number.
0225	Assignment of an OB to the corresponding process image partitions	OB number.

0F25	Only info on SSL partial list headers	Irrelevant
	Communication status data	
0132	Status data for one communication unit	
	Diagnostics	0005
	Time system	0008
0232	Status data for one communication unit	
	CPU protection level and operator control settings	0004
	H CPU group information	
0071	Information about the current state of the H system	Irrelevant
0F71	Only SSL partial list header information	Irrelevant
	Status of the module LEDs (cannot be read out from all CPUs, see **/102/**).	
0174	Status of an LED	LED ID
	Switched DP slaves in the H system	
0C75	Communication status between the H system and a switched DP slave	Diagnostics address of the DP slave interface
	DP Master system information	
0090	Information DP Master systems known to the CPU	0000
0190	Information about a DP Master system	DP master system ID
0F90	Only SSL partial list header information	0000
	Module status information (a maximum of 27 data records is supplied)	
0091	Status information of all modules / submodules inserted	Irrelevant
0191	Module status information of all non-deactivated modules / racks with incorrect type ID	Irrelevant
0291	Module status information of all faulty and non-deactivated modules	Irrelevant
0391	Module status information of all unobtainable modules	Irrelevant
0591	Module status information of all submodules of the host module	Irrelevant
0991	Module status information of a DP master system	DP master system ID
0C91	Module status information of a module in a central configuration or connected to an integrated DP communications processor or on a PROFINET interface module (integrated or external)	Logical base address
4C91	Module status information of a module connected to an external DP communications processor	Logical base address
0D91	Module status information of all modules in the rack / DP station specified (DP or PROFINET)	Rack or DP master system ID and station number or station number and the last two positions of the PNIO subsystem ID
0E91	Module status information of all assigned modules	Irrelevant
0F91	Only SSL partial list header information	irrelevant
	Rack/station status information	
0092	Expected status of the rack in the central configuration / of the stations of a DP master system	0 / DP master system ID

4092	Expected status of the stations of a DP master system connected to an external DP interface	DP master system ID
0192	Activation status of the stations in a DP master system that is connected via an integrated DP interface	DP master system ID
0292	Current status of the rack in the central configuration / of the stations of a DP master system	0 / DP master system ID
4292	Current status of the stations in a DP master system that is connected via an external DP interface module.	DP master system ID
0392	Status of the backup batteries in a rack/module rack of a CPU after at least one battery has failed	0
0492	Status of the overall battery backup status of all racks/module racks of a CPU	0
0592	Status of the 24-V power supply to all racks/module racks of a CPU	0
0692	Diagnostic status of the expansion racks in a central configuration / of the stations of a DP master system connected via an integrated DP interface module	0 / DP master system ID
4692	Diagnostic status of the stations of a DP master system connected via an external DP interface module	DP master system ID
	Rack /station status information	
0094	Expected status of the rack in the central rack / stations of an IO controller system	0 / PNIO subsystem ID
0194	Activation status of an IO controller system that is configured and deactivated	PNIO subsystem ID
0294	Actual status of the rack in the central rack / stations of an IO controller system	0 / PNIO subsystem ID
0694	Diagnostic status of the expansion units in the central rack / stations of an IO controller system	0 / PNIO subsystem ID
0794	Maintenance status of the central rack / stations of an IO controller system	0 / PNIO subsystem ID
0F94	Only header information	-
	Extended DP master system / PROFINET IO system information	
0195	Extended information about a DP master system	DP master system ID
0F95	Only SSL partial list header information	0000
	Module status information PROFINET IO and PROFIBUS DP	
0696	Module status information of all submodules of a specified module (only with PROFINET IO on an integrated interface module)	Address with I/O ID
0C96	Module status information of a module / a submodule centrally or on an integrated PROFIBUS DP interface module or an a PROFINET interface module (integrated or external)	Start address with I/O ID
	Tool changer information (PROFINET IO)	
009C	Information on all tool changers and their tools in a PROFINET IO system	PROFINET IO system ID
019C	Information on all tool changers in a PROFINET IO system	PROFINET IO system ID
029C	Information on one tool changer and its tools	Logical address of the tool changer
039C	Information on a tool and its IO devices	Logical address of one of the IO devices of the tool

0F9C	Only SSL partial list header information	irrelevant
	Diagnostic buffer (a maximum of 21 data records is supplied)	
00A0	All entries that can be supplied in the currently active operating mode	Irrelevant
01A0	The most recent entries, the number is specified in the index	Quantity
0FA0	Only SSL partial list header information	Irrelevant
	Diagnostic data on modules	
00B1	The first four diagnostic bytes of one module (data record 0)	Logical base address
00B2	All diagnostic data of one module (≤ 220 bytes, data record 1) (no DP module)	Rack, slot
00B3	All diagnostic data of one module (≤ 220 bytes, data record 1)	Logical base address
00B4	Diagnostic data of a DP slave	Configured diagnostic address

See also:

Task

Example for module diagnostics with the SFC 51