4.3.3 TT1434: Status and Control Reply (SRM)

4.3.3.1 Purpose of This Telegram Type

With this telegram, the SRM status will be sent to the MFS.

4.3.3.2 Sending Direction

SRM -> MFS

4.3.3.3 Sending Time

See topic specific sub chapters.

4.3.3.4 General

Note: The TT1434 have the same length for all defined topics. Not relevant parts need to be set to 0.

4.3.3.4.1 Structure – General Part (Version 1 + 2)

No. Byte	Field content		Type
0	Telegram sender ID	MSB	D
1		LSB	
2	Telegram receiver ID	MSB	D
3		LSB	
4	Telegram type	MSB	D
5		LSB	
6	Telegram sub type	MSB	D
7		LSB	
8	Version	MSB	D
9		LSB	
10	Topic	MSB	D
11		LSB	
12	Status request ID	MSW:MSB	D
13		MSW:LSB	
14		LSW:MSB	
15		LSW:LSB	
16	Structure is described in the following details chapters		
17			
18			
:			
99			

4.3.3.4.2 Description of the Fields – General Part

4.3.3.4.2.1 Overview

Field	Description	
Telegram sender ID	1121 …1124; 1221 …1224 2121 …2124; 2221 …2224 3121 …3124; 3221 …3224 4121 …4124; 4221 …4224 5121 …5124; 5221 …5224 6121 …6124; 6221 …6224	Controller Nxxxx: 4*2*6 = 48 Navette; (naming see 3.3.2.3.3ff)
	1081, 1082 … 1085, *1086* *2081,* 2082 … 2085, *2086* *3081,* 3082 … 3085, *3086* *4081,* 4082 … 4085, *4086* *5081,* 5082 … 5085, *5086* *6081,* 6082 … 6085, *6086*	Controller NLxxxx: 4 x 6 = 24 Navette Lifts (naming see 3.3.2.3.3ff)
Telegram receiver ID	201	MFS
Telegram type	1434	Status report SRM
Telegram sub type	see 4.3.3.4.2.2, "Telegram Sub Type"	
Version	see 4.3.3.4.2.3, "Version"	
Topic	see 4.3.3.4.2.4, "Field “Topic”"	
Status request ID	see 4.3.2.4.2.1, "Overview"	

4.3.3.4.2.2 Telegram Sub Type

The number shows the combination of the TT1434 parts (not used now)

Value	FiV	U	Description
0	≥0	y	Standard
1	≥1	n	Extended status reply for double hoist SRMs
2	≥1	n	Gripper Navette (extended X-coordinate field)

4.3.3.4.2.3 Version

The number shows the used version of this telegram type.

Value	U	Description
0	n	initial version (Jysk)
1	y	with "Status request ID"
2	y	Topic 1 for Gripper Navette (X-coordinate now 4 bytes wide)

4.3.3.4.2.4 Field “Topic”

Switch for scope selection. Other values are not defined and will be ignored by the MFS.

Value	FiV	U	Description
1	≥0	y	Status reply: LHD see 4.3.3.5, "Topic = 1 (Status Reply: LHD)"
3	*≥0*	*n*	*Status reply: TU* *see -*
4	≥1	n	Status reply: TU see -
11	≥2	y	Status reply: Orbiter 4.0 see -
others			not defined

4.3.3.5 Topic = 1 (Status Reply: LHD)

This topic needs to be implemented in all SRMs as a standard status reply.

4.3.3.5.1 Sending Time

The SRM will send the status telegram

a) spontaneously, in case of a modification[121] of the fields “System status 1” and “System status 2”

b) as a reaction to a status request.

4.3.3.5.2 Structure (Topic = 1, all SRM PLCs), Version 2; TST=0, 1 or 2 (Gripper Navette)

No. Byte	Field content			Type
16	System status 1			M
17	System status 2			M
18	System status 3			M
19	System status 4			M
20	Status LHD 1			M
21	Status LHD 2			M
22	Status LHD 3			M
23	Status LHD 4			M
24	Amount of TOs in buffer (including active MFS-TO)[122]		MSB	D
25			LSB	
26	SRM-No.		MSB	D
27			LSB	
28	Current coordinate (LHD 1)	Aisle	MSB	D
29			LSB	
30		X-coordinate	MSW:MSB	D
31			MSW:LSB	
32			LSW:MSB	D
33			LSW:LSB	
34		Y-coordinate	MSB	D
35			LSB	
36		S-coordinate	MSB	D
37			LSB	
38		D-coordinate	MSB	D
39			LSB	
40		gripper opening width	MSB	D
41			LSB	

[121] To minimize the telegram traffic, an agreement with the SOC can be made to send a status telegram only when certain fields change. In particular the coordinates of the S/R-machine should not be used as such a trigger (except when an associated visualization shows current position contemporarily).

In the bit explanations tables the row “SoC” indicates, if a flag change should trigger a TT1434.

[122] TO, which were not generated by the MFS, e.g. a home positioning trip initiated by the Visualization, will be not counted here!

No. Byte	Field content			Type
42	Current coordinate (LHD 2)	Aisle	MSB	D
43			LSB	
44		X-coordinate	MSW:MSB	D
45			MSW:LSB	
46			LSW:MSB	D
47			LSW:LSB	
48		Y-coordinate	MSB	D
49			LSB	
50		S-coordinate	MSB	D
51			LSB	
52		D-coordinate	MSB	D
53			LSB	
54		gripper opening width	MSB	D
55			LSB	
56	Current coordinate (LHD 3)	Aisle	MSB	D
57			LSB	
58		X-coordinate	MSW:MSB	D
59			MSW:LSB	
60			LSW:MSB	D
61			LSW:LSB	
62		Y-coordinate	MSB	D
63			LSB	
64		S-coordinate	MSB	D
65			LSB	
66		D-coordinate	MSB	D
67			LSB	
68		gripper opening width	MSB	D
69			LSB	
70	Current coordinate (LHD 4)	Aisle	MSB	D
71			LSB	
72		X-coordinate	MSW:MSB	D
73			MSW:LSB	
74			LSW:MSB	D
75			LSW:LSB	
76		Y-coordinate	MSB	D
77			LSB	
78		S-coordinate	MSB	D
79			LSB	
80		D-coordinate	MSB	D
81			LSB	
82		gripper opening width	MSB	D
83			LSB	
84	Active order	Request ID	MSW:MSB	D
85			MSW:LSB	
86			LSW:MSB	
87			LSW:LSB	
88	Buffered order	Request ID	MSW:MSB	D
89			MSW:LSB	
90			LSW:MSB	
91			LSW:LSB	

4.3.3.5.3 Description of the Fields (Topic = 1, all SRM PLCs)

4.3.3.5.3.1 Overview (Topic = 1, all SRM PLCs)

Field	Description	
System status	See 4.3.3.5.3.2	
Status LHD	See 4.3.3.5.3.3	
Request ID	1 ... 4,294,967,295	distinct telegram identifier from MFS
	0	Identification for orders generated by SOC (Visu or NTOP) (TU input, setting the place of TU with data)
Amount of TOs in buffer	0 ... 2	Amount of TOs in SRM order buffer(active including)[123]
SRM - No. Current coordinate	For sub field definition and number range see 4.3.1.6	
gripper opening width	See 4.3.1.6.6.3.4	

4.3.3.5.3.2 Fields "System status" (Topic = 1, all SRM PLCs)

4.3.3.5.3.2.1 Field "System status 1" (Topic = 1, all SRM PLCs)

The LTB status for the SRM will set from the MFS by TT1430, topic 2 with control code 10 (see 4.3.2.6.2.4).
For row abbreviation explanation, see chapter 4.3.1.6.4.

Bit	FiV	SoC [124]	NG1020V [103]	NG2020V [103]	Description
0	≥2	y	y	y	Device maintenance access[125]
1	=0	y	n	n	Fork-cycle during semi-operation has happened: Maybe stock image was changed[126]
	≥1	n	n	n	Fork-cycle during semi-operation has happened: Maybe stock image was changed[127]
2	≥0	y	y	y	Waiting for a follow-up order
3	≥2	y	y	(y)[128]	Waiting for a fork clearing order
4	≥1	y	n	n	Orbiter device deactivated (bypass movements TS -> TR only)
5	≥1	y	n	n	Request aisle access pending (Anforderung Gassenzutritt)
6	≥0	y	y	y	Long term blocking
7	≥0	y	n	y	Maintenance block[129]

[123] Only TOs with Telegram ID <> 0 will be counted!
TO's, which were not generated by the MFS, e.g. a home positioning trip initiated by the visualization, will not be counted.

[124] Send of change: The sending reason is the change of this flag.

[125] Alternative naming in Navette world: "aisle security not available"; ("Gassensicherheit nicht gegeben")
Bit will be set when „aisle security not available" (e.g. aisle door open, key switch not in auto mode, emergency stop).
Bit will be reset when "aisle security not available" is no more present (error was reset) and key switch is in automatic mode.

[126] This flag will be reset by MFS with TT1430, topic 2 and control code 5. See chapter 4.3.2.6.2.2.

[127] This flag will be reset by MFS with TT1430, topic 2 and control code 5. See chapter 4.3.2.6.2.2.

[128] Availability of fork clearing feature depending on used TU types: Possible only, if there is a single TU width used in the Navette area.

[129] Palette SRMs: Currently only relevant for IKEA projects: Flags will be set / reset in Visu; SRM PLC will just forward this flag.
Navette 1.0 + 2.0: Indication of a Navette in maintenance bay.

4.3.3.5.3.2.2 Field "System status 2" (Topic = 1, all SRM PLCs)

Bit	FiV	SoC	NG1020V1 03	NG2020V1 03	Description
0	≥0	y	y	y	Automatic is on
1	≥0	y	n	n	LHD 1 disabled
2	≥0	y	n	n	LHD 2 disabled
3	≥0	y	n	n	LHD 3 disabled
4	≥0	y	n	n	LHD 4 disabled
5	≥0	y	n	n	Fire alarm[130]
6	≥0	y	y	y	Error
7	≥0	y	y	y	Emergency stop

4.3.3.5.3.2.3 Field "System status 3" (Topic = 1, Version >=2; all SRM PLCs)

Bit	FiV	SoC	NG1020V1 03	NG2020V1 03	Description
0	≥2	y	y	n	Access to Navette lift requested[119, 131]
1	≥2	y	y	n	Access to Navette lift granted by MFS[119, 132]
2	≥2	y	n	y	Navette switched off and blocked by MFS request
3	≥2	y			
4	≥2	y			
5	≥2	y			
6	≥2	y			
7	≥2	y			

4.3.3.5.3.2.4 Field "System status 4" (Topic = 1, Version >=2; all SRM PLCs)

Bit	FiV	SoC	NG1020V1 03	NG2020V1 03	Description
0	≥2	y			
1	≥2	y			
2	≥2	y			
3	≥2	y			
4	≥2	y			
5	≥2	y			
6	≥2	y			
7	≥2	y			

[130] During fire alarm (external signal for the SRM PLC), SRM finish running TO, and moves underlayed to the fire alarm waiting location. No further TOs will be executed, until fire alarm situation ends.

[131] Bit should be set only, if lift is not in automatic mode

[132] No MFS action here; bit is used for logging only.

4.3.3.5.3.3 Fields "Status LHD" (Topic = 1, all SRM PLCs)

4.3.3.5.3.3.1 Field "Status LHD 1" (Topic = 1, all SRM PLCs)

Bit	FiV	SoC	NG1020V 103	NG2020V 103	Description
0	≥0	n	y	y	LHD 1, place 1: occupied
1	≥0	n	y	y	LHD 1, place 2: occupied
2	≥0	n	n	n	LHD 1, place 3: occupied
3	≥0	n	n	n	LHD 1, place 4: occupied
4	≥1	n	n	n	LHD 1: empty (if flags 0 – 3 not possible)
5	≥2	n	(y)	(y)	LHD 1: no gap between place 1 and 2 detected -> double deep TU on LHD
6	≥2	n	y	(y)[12 8]	LHD 1: Waiting for a fork clearing order
7	≥0	n	y	y	LHD 1: occupancy info valid (fork in middle position)

4.3.3.5.3.3.2 Field "Status LHD 2" (Topic = 1, all SRM PLCs)

Bit	FiV	SoC	NG1020V1 03	NG2020V1 03	Description
0	≥0	n	n	y	LHD 2, place 1: occupied
1	≥0	n	n	y	LHD 2, place 2: occupied
2	≥0	n	n	n	LHD 2, place 3: occupied
3	≥0	n	n	n	LHD 2, place 4: occupied
4	≥1	n	n	n	LHD 2: empty (if flags 0 – 3 not possible)
5	≥2	n	(y)	(y)	LHD 2: no gap between place 1 and 2 detected -> double deep TU on LHD
6	≥2	n	n	(y)[12 8]	LHD 2: Waiting for a fork clearing order
7	≥0	n	n	y	LHD 2: occupancy info valid (fork in middle position)

4.3.3.5.3.3.3 Field “Status LHD 3” (Topic = 1, all SRM PLCs)

Bit	FiV	SoC	NG1020V1 03	NG2020V1 03	Description
0	≥0	n	n	n	LHD 3, place 1: occupied
1	≥0	n	n	n	LHD 3, place 2: occupied
2	≥0	n	n	n	LHD 3, place 3: occupied
3	≥0	n	n	n	LHD 3, place 4: occupied
4	≥1	n	n	n	LHD 3: empty (if flags 0 – 3 not possible)
5	≥2	n	n	n	LHD 3: no gap between place 1 and 2 detected -> double deep TU on LHD
6	≥2	n	n	n	LHD 3: Waiting for a fork clearing order
7	≥0	n	n	n	LHD 3: occupancy info valid (fork in middle position)

4.3.3.5.3.3.4 Field “Status LHD 4” (Topic = 1, all SRM PLCs)

Bit	FiV	SoC	NG1020V1 03	NG2020V1 03	Description
0	≥0	n	n	n	LHD 4, place 1: occupied
1	≥0	n	n	n	LHD 4, place 2: occupied
2	≥0	n	n	n	LHD 4, place 3: occupied
3	≥0	n	n	n	LHD 4, place 4: occupied
4	≥1	n	n	n	LHD 4: empty (if flags 0 – 3 not possible)
5	≥2	n	n	n	LHD 4: no gap between place 1 and 2 detected -> double deep TU on LHD
6	≥2	n	n	n	LHD 4: Waiting for a fork clearing order
7	≥0	n	n	n	LHD 4: occupancy info valid (fork in middle position)

4.3.3.5.3.4 Remarks

Note:
The fork numbers are defined in chapter 2.3.1.10.1.

Remark:
There is no auto on request by the SRM anymore.