RSMP Signal Exchange List for Traffic Light Controllers

Release 1.1

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Contens

Chapter 1

Definitions

The following definitions is provided as information for use in RSMP and may be simplified from their original meanings.

RSMP Nordic takes no responsibility for the correctness of the definitions.

The corresponding ASCII character used for signal group status (S0001) is written first in parentheses.

Red rest (`B`) The signal group has no green demand.

Red rest without start order (`A`) The signal group isn't allowed to demand green (green demand held back) without a start order.

Red rest with privilege measurement (`C`) The signal group has no green demand but can turn green when other signal groups in the same phase are turning green (signal group status `G/O`) or are green (signal groups status `1/2/3/4/5`). A green demand which arrives late when other signal groups are green according to the above, results in a change to green.

Red with reservation (`D`) The signal group is red due to other priority.

Red with request (`F`) The signal group waits for signal group status `1/2/3/4/5` of conflicting signal groups to end.

Red with start in own stage (`G`) The signal group waits for signal group status `6/7/8/9/N/O/P` of conflicting signal groups to end.

Minimum green (`1`) The shortest time which can be shown green for each respective signal group, this time can´t be shortened.

Max. minimum green (`2`) The signal group status *Minimum green* should be able to be extended with a traffic controlled variable part up to a maximum "Max. minimum-green". If one or multiple detector logics are programmed to extend signal group status "Max. minimum-green", then the detector logics will extend the minimum green time if they are active when the signal group is red. Signal group status "Max. minimum-green" should optionally be able to be shortened or not at prioritization.

Maximum green (extension) (`3`) The signal group should be able to extend its showing of green through extension, e.g. from detector logics. When the signal group has green demand and status minimum green has ended, the signal group should continue its display of green in status maximum green. Maximum green should be measured in parallel with minimum green up to a maximum "maximum green". Signal group status "maximum green" should optionally be able to be shortened or not at prioritization.

Green rest (`4`) A signal group continues its display of green due to one or multiple signal group/s in the same traffic pattern has more demand for green (signal group status `1/2/3`), The signal group has no conflict. It waits to be changed, by the rest mode.

Green passive (5) A signal group continues its display of green due to other signal groups in the same traffic pattern has more demand for green (signal group status 1/2/3). The signal group has conflict. It waits to change, by conflicting signal group(s).

Fixed past-end-green (6) When the signal group is ordered to change to red it should be able to continue to be green with a configurable fixed time.

Extra green according to intergreen times (7) Signal groups remains green if possible, according to the conflicting signal groups

Variable past-end-green (8) When the signal group is ordered to change to red it should be able to continue to be green during a traffic controlled variable time (O function in LHOVRA). Signal group status “Past end green” should optionally be shortened or not at prioritization.

Variable yellow or yellow green (O) Signal group status ”fixed yellow” can be extended with a traffic controlled variable part “Variable yellow”, the signal group status is usually extended by detector logics. (V function in LHOVRA).

Variable red (P) The fixed red time/intergreen time should be able to be extended with a traffic controlled variable part. It is usually measured in parallel with the fixed time whereby it must be longer to have any effect. (R function)

Chapter 2

Signal Exchange List

2.1 Object Types

2.1.1 Grouped objects

ObjectType	Description
Traffic Light Controller	

Table 1: Grouped objects

2.1.2 Single objects

ObjectType	Description
Signal group	
Detector logic	

Table 2: Single objects

2.2 Aggregated status

ObjectType	functionalPosition	functionalState	Description
Traffic Light Controller			functionalPosition and functionalState not used (set to null)

Table 3: Aggregated status

State-Bit	Description	Comment
1	Local mode	Traffic Light Controller is in local mode. NTS has no control.
2	No Communications	
3	High Priority Fault	Traffic Light Controller is in fail safe mode; e.g. yellow flash or dark mode
4	Medium Priority Fault	Traffic Light Controller has a medium priority fault, but not in fail safe mode. E.g. several lamp faults or detector fault
5	Low Priority Fault	Traffic Light Controller has a low priority fault. E.g. Detector fault
6	Connected / Normal - In Use	
7	Connected / Normal - Idle	Traffic Light Controller dark according to configuration. NOTE! When dark according to configuration the controller is considered to be in use
8	Not Connected	

Table 4: State bits

2.3 Alarms

ObjectType	alarmCodeId	Description	Priority	Category
Traffic Light Controller	*A0001*	Serious hardware error	2	D
Traffic Light Controller	*A0002*	Less serious hardware error	3	D
Traffic Light Controller	*A0003*	Serious configuration error	2	D
Traffic Light Controller	*A0004*	Less serious configuration error	3	D
Traffic Light Controller	*A0005*	Synchronisation error (coordination)	3	D
Traffic Light Controller	*A0006*	Safety error	2	D
Traffic Light Controller	*A0007*	Communication error	3	D
Signal group	*A0008*	Dead lock error	2	D
Traffic Light Controller	*A0009*	Other error	3	D
Traffic Light Controller	*A0010*	Door open	3	D
Signal group	*A0101*	Pushbutton error	3	D
Signal group	*A0201*	Serious lamp error	2	D
Signal group	*A0202*	Less serious lamp error	3	D
Detector logic	*A0301*	Detector error (hardware)	3	D
Detector logic	*A0302*	Detector error (logic error)	3	D
Detector logic	*A0303*	Serious detector error (hardware)	2	D
Detector logic	*A0304*	Serious detector error (logic error)	2	D

Table 5: Alarms

2.3.1 A0001

Serious hardware error

Is a “major fault” defined according to 3.8 i EN12675 which causes the controller to switch to a “failure mode” according to 3.6 in EN12675.

2.3.2 A0002

Less serious hardware error

Is a “minor fault” defined according to 3.11 in EN12675.

2.3.3 A0003

Serious configuration error

Is a “major fault” defined according to 3.8 in EN12675 which causes the controller to switch to a “failure mode” according to 3.6 in EN12675.

2.3.4 A0004

Less serious configuration error

Is a “minor fault” defined according to 3.11 in EN12675.

2.3.5 A0005

Synchronisation error (coordination)

Is a “minor fault” defined according to 3.11 in EN12675.

2.3.6 A0006

Safety error

Is a “major fault” defined according to 3.8 in EN12675 which causes the controller to switch to a “failure mode” according to 3.6 in EN12675.

2.3.7 A0007

Communication error

Used for communication errors with the central system. Includes NTP connection loss if the TLC is configured to use NTP.

Is a “minor fault” defined according to 3.11 in EN12675.

Name	Type	Value	Comment
protocol	string	-rsmp -ntp	Type of communication error, e.g. NTP or RSMP

Table 6: A0007

2.3.8 A0008

Dead lock error

Used for dead lock errors.

For instance; a signal group has requested green but is unable to switch due to a conflicting signal group for an extended period of time. At some point the request times out and the controller goes failure mode. The cause for this error is due to configuration errors or external sources.

Is a “major fault” defined according to 3.8 in EN12675 which causes the controller to switch to a “failure mode” according to 3.6 in EN12675.

Name	Type	Value	Comment
timeplan	integer	[1-255]	Current time plan

Table 7: A0008

2.3.9 A0009

Other error

Used for other errors not covered by any other alarm type

Is a “minor fault” defined according to 3.11 in EN12675.

2.3.10 A0010

Door open

Used for open door (room or cabinet).

2.3.11 A0101

Pushbutton error

Used for push buttons

2.3.12 A0201

Serious lamp error

Used for lamp errors

Is a “major fault” defined according to 3.8 in EN12675 which causes the controller to switch to a “failure mode” according to 3.6 in EN12675.

Name	Type	Value	Comment
color	string	-red -yellow -green	Color of lamp

Table 8: A0201

2.3.13 A0202

Less serious lamp error

Used for lamp errors

Is a “minor fault” defined according to 3.11 in EN12675.

Name	Type	Value	Comment
color	string	-red -yellow -green	Color of lamp

Table 9: A0202

2.3.14 A0301

Detector error (hardware)

Is a “minor fault” defined according to 3.11 in EN12675.

Name	Type	Value	Comment
detector	string	[designation]	Designation of the detector (hardware)
type	string	-loop -input	Type of detector loop: Inductive detector loop input: External input
errormode	string	-on -off	Detector forced on/off while detector error
manual	boolean	-True -False	Manually controlled detector logic (True/False)

Table 10: A0301

2.3.15 A0302

Detector error (logic error)

For instance; detector continuously on or off during an extended time.

Is a “minor fault” defined according to 3.11 in EN12675.

Name	Type	Value	Comment
detector	string	[designation]	Designation of the detector (hardware)
type	string	-loop -input	Type of detector. loop: Inductive detector loop input: External input
errormode	string	-on -off	Detector forced on/off while detector error
manual	boolean	-True -False	Manually controlled detector logic (True/False)
logicerror	string	-always_off -always_on -intermittent	Type of logic error always_off: no detection during predefined max time always_on: detection constantly on during predefined max time intermittent: intermittent logic fault (flutter)

Table 11: A0302

2.3.16 A0303

Serious detector error (hardware)

Is a "major fault" defined according to 3.8 i EN12675 which causes the controller to switch to a "failure mode" according to 3.6 in EN12675.

Name	Type	Value	Comment
detector	string	[designation]	Designation of the detector (hardware)
type	string	-loop -input	Type of detector loop: Inductive detector loop input: External input
errormode	string	-on -off	Detector forced on/off while detector error
manual	boolean	-True -False	Manually controlled detector logic (True/False)

Table 12: A0303

2.3.17 A0304

Serious detector error (logic error)

For instance; detector continuously on or off during an extended time.

Is a "major fault" defined according to 3.8 i EN12675 which causes the controller to switch to a "failure mode" according to 3.6 in EN12675.

Name	Type	Value	Comment
detector	string	[designation]	Designation of the detector (hardware)
type	string	-loop -input	Type of detector. loop: Inductive detector loop input: External input
errormode	string	-on -off	Detector forced on/off while detector error
manual	boolean	-True -False	Manually controlled detector logic (True/False)
logicerror	string	-always_off -always_on -intermittent	Type of logic error always_off: no detection during predefined max time always_on: detection constantly on during predefined max time intermittent: intermittent logic fault (flutter)

Table 13: A0304

2.4 Status

ObjectType	statusCodeId	Description
Traffic Light Controller	*S0001*	Signal group status
Traffic Light Controller	*S0002*	Detector logic status
Traffic Light Controller	*S0003*	Input status
Traffic Light Controller	*S0004*	Output status
Traffic Light Controller	*S0005*	Traffic Light Controller starting
Traffic Light Controller	*S0006*	Emergency stage
Traffic Light Controller	*S0007*	Controller switched on
Traffic Light Controller	*S0008*	Manual control
Traffic Light Controller	*S0009*	Fixed time control
Traffic Light Controller	*S0010*	Isolated control
Traffic Light Controller	*S0011*	Yellow flash
Traffic Light Controller	*S0012*	All red
Traffic Light Controller	*S0013*	Police key
Traffic Light Controller	*S0014*	Current time plan
Traffic Light Controller	*S0015*	Current traffic situation
Traffic Light Controller	*S0016*	Number of detector logics
Traffic Light Controller	*S0017*	Number of signal groups
Traffic Light Controller	*S0018*	Number of time plans
Traffic Light Controller	*S0019*	Number of traffic situations
Traffic Light Controller	*S0020*	Control mode
Traffic Light Controller	*S0021*	Manually set detector logic
Traffic Light Controller	*S0022*	List of time plans
Traffic Light Controller	*S0023*	Dynamic bands
Traffic Light Controller	*S0024*	Offset time
Signal group	*S0025*	Time-of-Green / Time-of-Red

Table 14: Status

(continues on next page)

ObjectType	statusCodeId	Description
Traffic Light Controller	*S0026*	Week time table
Traffic Light Controller	*S0027*	Time tables
Traffic Light Controller	*S0028*	Cycle time
Traffic Light Controller	*S0029*	Forced input status
Traffic Light Controller	*S0030*	Forced output status
Traffic Light Controller	*S0031*	Trigger level sensitivity for loop detector
Traffic Light Controller	*S0032*	Coordinated control
Traffic Light Controller	*S0033*	Signal Priority Status
Traffic Light Controller	*S0034*	Timeout for dynamic bands
Traffic Light Controller	*S0091*	Operator logged in/out OP-panel
Traffic Light Controller	*S0092*	Operator logged in/out web-interface
Traffic Light Controller	*S0095*	Version of Traffic Light Controller
Traffic Light Controller	*S0096*	Current date and time
Traffic Light Controller	*S0097*	Checksum of traffic parameters
Traffic Light Controller	*S0098*	Configuration of traffic parameters
Detector logic	*S0201*	Traffic Counting: Number of vehicles
Detector logic	*S0202*	Traffic Counting: Vehicle speed
Detector logic	*S0203*	Traffic Counting: Occupancy
Detector logic	*S0204*	Traffic Counting: Number of vehicles of given classification
Traffic Light Controller	*S0205*	Traffic Counting: Number of vehicles
Traffic Light Controller	*S0206*	Traffic Counting: Vehicle speed
Traffic Light Controller	*S0207*	Traffic Counting: Occupancy
Traffic Light Controller	*S0208*	Traffic Counting: Number of vehicles of given classification

Table 15: Status

2.4.1 S0001

Signal group status

Provides the status of each signal group, including basic information such as green, yellow and red. But also detailed technical information.

Can be used to draw a live signal group diagram as well provide diagnostic information about the performance of the controller.

Name	Type	Value	Comment
signalgroupstatus	string	[text]	Signal group status as text field. Each character represent the state of the signal group in consecutive order. Signal group status is described in detail in the corresponding section - = Signal group is undefined/does not exist
cyclecounter	integer	[0-999]	Cycle counter Used for handling of coordination between TLC's. Is counted from 0 until it reaches the cycle time (See S0028). $c = (b + o) \mod t$ where c = cycle counter, b = base cycle counter, o = offset, t = cycle time, mod = modulo See the coordination section for more information.
basecyclecounter	integer	[0-999]	Base cycle counter Used for handling of coordination between TLC's. Synchronized between all TLC's in an active coordination. See the coordination section for more information.
stage	integer	[0-999]	Current stage (isolated)

Table 16: S0001

2.4.2 S0002

Detector logic status

Provides the status of all detector logics of the controller.

Can be used to draw a live signal group diagram as well provide diagnostic information about the performance of the controller. Can also be used for bus priority, external control systems, and much more.

Name	Type	Value	Comment
detectorlogicstatus	string	[text]	Detector logic status as text field. Each character represent the state of the detector logic in consecutive order. 0 = Detector logic is not active 1 = Detector logic is active - = Detector logic is undefined/does not exist

Table 17: S0002

2.4.3 S0003

Input status

Input (1-255) of the controllers general purpose I/O.

Input is used where the traffic light controller must react to external control. It could be external detectors, bus priority, and much more.

Name	Type	Value	Comment
inputstatus	string	[text]	Input status as text field Each character represent the state of the input in consecutive order. 0 = Input is not active 1 = Input is active - = Input is undefined/does not exist
extendedinputstatus	string	[text]	`Deprecated` Extended input status as text field Each character represent the state of the extended input status in consecutive order. 0 = Input is not active 1 = Input is active - = Input is undefined/does not exist

Table 18: S0003

2.4.4 S0004

Output status

Output (1-255) of the controllers general purpose I/O.

Can be used for all types of output where the traffic light controller needs to control other equipment. Can be used for bus priority, coordination between traffic controllers, external control systems, and much more.

Name	Type	Value	Comment
outputstatus	string	[text]	Output status as text field Each character represent the state of the output status in consecutive order. 0 = Output is not active 1 = Output is active - = Output is undefined/does not exist
extendedoutputstatus	string	[text]	`Deprecated` Output status as text field Each character represent the state of the exteded output status in consecutive order. 0 = Output is not active 1 = Output is active - = Output is undefined/does not exist

Table 19: S0004

2.4.5 S0005

Traffic Light Controller starting

The traffic signal is starting, e.g. it is in startup mode and has not begun working normally yet.

During startup mode the traffic controller shows dark, red, yellow flash or using the predetermined start cycle (minimum times).

Name	Type	Value	Comment
status	boolean	-False	False: Controller is not in start up mode
		-True	True: Controller is currently in start up mode

Table 20: S0005

2.4.6 S0006

Emergency stage

The status is active during emergency prioritization.

Used in situations where full priority is given in the emergency vehicle program.

Name	Type	Value	Comment
status	boolean	-False	False: Emergency stage inactive
		-True	True: Emergency stage active
emergencystage	integer	[1-255]	Number of emergency stage

Table 21: S0006

2.4.7 S0007

Controller switched on

The controller is active and is not in dark mode.

Used to determine if the controller is operating, e.g. it shows red, green or yellow to the vehicles.

During maintenance work the controller might be using dark mode (no output to the signal heads).

Please note that all values in this status uses comma-separated lists - one value for each intersection, e.g. “0” and “True” (one intersection) or “1,2” and “True,False” (two intersections).

Name	Type	Value	Comment
intersection	integer	[0-255]	Comma separated list of intersections which the status relates to, e.g. “1,2”. Use “0” for all intersections of the TLC
status	boolean	-False -True	False: Traffic Light Controller in dark mode True: Traffic Light Controller not in dark mode
source	string	- operator_panel - calendar_clock -control_block -forced -startup -other	Source of the status change operator_panel: Operator panel calendar_clock: Calendar/clock control_block: Control block forced: Forced due to external command e.g. supervisor startup: Set after startup mode other: Other reason

Table 22: S0007

2.4.8 S0008

Manual control

Traffic control deactivated in controller

Signal timings is controlled manually by service personnel using the operating panel of the controller.

Please note that all values in this status uses comma-separated lists - one value for each intersection, e.g. “0” and “True” (one intersection) or “1,2” and “True,False” (two intersections).

Name	Type	Value	Comment
intersection	integer	[0-255]	Comma separated list of intersections which the status relates to, e.g. “1,2”. Use “0” for all intersections of the TLC
status	boolean	-False -True	False: Manual control inactive True: Manual control active
source	string	- operator_panel - calendar_clock -control_block -forced -startup -other	Source of the status change operator_panel: Operator panel calendar_clock: Calendar/clock control_block: Control block forced: Forced due to external command e.g. supervisor startup: Set after startup mode other: Other reason

Table 23: S0008

2.4.9 S0009

Fixed time control

Traffic actuated control deactivated and a pre-timed control is used.

Usually only used in case normal detectors can't be used, e.g. during maintenance work.

Please note that all values in this status uses comma-separated lists - one value for each intersection, e.g. "0" and "True" (one intersection) or "1,2" and "True,False" (two intersections).

Name	Type	Value	Comment
intersection	integer	[0-255]	Comma separated list of intersections which the status relates to, e.g. "1,2". Use "0" for all intersections of the TLC
status	boolean	-False -True	False: Fixed time control inactive True: Fixed time control active
source	string	- operator_panel - calendar_clock -control_block -forced -startup -other	Source of the status change operator_panel: Operator panel calendar_clock: Calendar/clock control_block: Control block forced: Forced due to external command e.g. supervisor startup: Set after startup mode other: Other reason

Table 24: S0009

2.4.10 S0010

Isolated control

Isolated control mode indicates that the controller operates independently of any other traffic light controller. This control mode may be active or not depending on the current traffic program (time plan).

Please note that all values in this status uses comma-separated lists - one value for each intersection, e.g. "0" and "True" (one intersection) or "1,2" and "True,False" (two intersections).

Name	Type	Value	Comment
intersection	integer	[0-255]	Comma separated list of intersections which the status relates to, e.g. “1,2”. Use “0” for all intersections of the TLC
status	boolean	-False -True	False: Isolated control disabled True: Isolated control enabled (Vehicle actuated control or Fixed time control)
source	string	- operator_panel - calendar_clock -control_block -forced -startup -other	Source of the status change operator_panel: Operator panel calendar_clock: Calendar/clock control_block: Control block forced: Forced due to external command e.g. supervisor startup: Set after startup mode other: Other reason

Table 25: S0010

2.4.11 S0011

Yellow flash

The controller shows yellow flash.

Yellow flash may be used during a serious fault (depending on configuration) or maintenance work. However, some countries may use yellow flash as an normal operating mode, and not necessarily during fault. This status can also be manually set using M0001.

Please note that all values in this status uses comma-separated lists - one value for each intersection, e.g. “1,2” and “True,False”

Name	Type	Value	Comment
intersection	integer	[0-255]	Comma separated list of intersections which the status relates to, e.g. “1,2”. Use “0” for all intersections of the TLC
status	boolean	-False -True	False: Yellow flash disabled True: Yellow flash enabled
source	string	- operator_panel - calendar_clock -control_block -forced -startup -other	Source of the status change operator_panel: Operator panel calendar_clock: Calendar/clock control_block: Control block forced: Forced due to external command e.g. supervisor startup: Set after startup mode other: Other reason

Table 26: S0011

2.4.12 S0012

All red

The controller show all red

All red can be manually set using the controllers operating panel during maintenance work.

Please note that all values in this status uses comma-separated lists - one value for each intersection, e.g. “1,2” and “True,False”

Name	Type	Value	Comment
intersection	integer	[0-255]	Comma separated list of intersections which the status relates to, e.g. “1,2”. Use “0” for all intersections of the TLC
status	boolean	-False -True	False: All red disabled True: All red enabled
source	string	- operator_panel - calendar_clock -control_block -forced -startup -other	Source of the status change operator_panel: Operator panel calendar_clock: Calendar/clock control_block: Control block forced: Forced due to external command e.g. supervisor startup: Set after startup mode other: Other reason

Table 27: S0012

2.4.13 S0013

Police key

The controller is forced to dark mode or yellow flash.

The “police key” is a external control switch present in some controllers that manually switches the controller to either dark mode or yellow flash.

Please note that all values in this status uses comma-separated lists - one value for each intersection, e.g. “1,2” and “0,1”

Name	Type	Value	Comment
intersection	integer	[0-255]	Comma separated list of intersections which the status relates to, e.g. “1,2”. Use “0” for all intersections of the TLC
status	integer	-0 -1 -2 -3	0: disabled 1: dark mode 2: yellow flash 3: all red

Table 28: S0013

2.4.14 S0014

Current time plan

The current time plan (signal program) used in the controller. There may be 1-255 predefined time plans.

The time plan (signal program) may change signal timings, cycle time, control strategy and much more. Typical usage is is scenario based control where change of program is used to change priority etc.

Name	Type	Value	Comment
status	integer	[1-255]	Current time plan
source	string	-	Source of the status change
		operator_panel	operator_panel: Operator panel
		-	calendar_clock: Calendar/clock
		calendar_clock	control_block: Control block
		-control_block	forced: Forced due to external command e.g. supervi-
		-forced	sor
		-startup	startup: Set after startup mode
		-other	other: Other reason

Table 29: S0014

2.4.15 S0015

Current traffic situation

The current traffic situation used in the controller.

Used for area-based control where a command can be sent to a master traffic light controller about which predefined traffic situation to use (1-255).

Traffic situation is a concept used to divide multiple TLC's into areas and sub-areas. The traffic situation gives the possibility to change the TLC sub-area dynamically depending on the time of day and the traffic flow. Depending on the traffic situation each TLC selects the time plan dynamically.

Name	Type	Value	Comment
status	integer	[1-255]	Current traffic situation
source	string	-	Source of the status change
		operator_panel	operator_panel: Operator panel
		-	calendar_clock: Calendar/clock
		calendar_clock	control_block: Control block
		-control_block	forced: Forced due to external command e.g. supervi-
		-forced	sor
		-startup	startup: Set after startup mode
		-other	other: Other reason

Table 30: S0015

2.4.16 S0016

Number of detector logics

Can be used by the management system to check the number of detector logics configured in the controller.

Name	Type	Value	Comment
number	integer	[1-65025]	Number of detector logics

Table 31: S0016

2.4.17 S0017

Number of signal groups

Can be used for the management system to check the number of signal groups configured in the controller.

Name	Type	Value	Comment
number	integer	[1-65025]	Number of signal groups

Table 32: S0017

2.4.18 S0018

Number of time plans

Can be used for the management system to check the number of time plans configured in the controller.

Name	Type	Value	Comment
number	integer	[1-65025]	Number of time plans (depreciated)

Table 33: S0018

2.4.19 S0019

Number of traffic situations

Can be used for the management system to check the number of traffic situations configured in the controller.

Name	Type	Value	Comment
number	integer	[1-65025]	Number of traffic situations

Table 34: S0019

2.4.20 S0020

Control mode

Can be used for the management system to check the current control mode (startup, normal, standby, failure, test).

Please note that all values in this status uses comma-separated lists - one value for each intersection, e.g. “1,2” and “startup,control”

Name	Type	Value	Comment
intersection	integer	[0-255]	Comma separated list of intersections which the status relates to, e.g. “1,2”. Use “0” for all intersections of the TLC
controlmode	string	-startup -control -standby -failure -test	startup: Startup mode control: Normal control standby: Standby mode failure: Failure mode test: Test mode

Table 35: S0020

2.4.21 S0021

Manually set detector logic

Provides status of detector logic (1-255) regarding if they are either forced to true or false.

Can be used to connect RSMP compatible detection equipment to the traffic light controller. Can also be used for prioritization.

Name	Type	Value	Comment
detectorlogics	string	[text]	Manually set detector logics (1/0) as text field

Table 36: S0021

2.4.22 S0022

List of time plans

Provides a list of the configured time plans which is possible to use. This status was added due to status S0018 only provides the total number of time plans and not which were possible to use with M0002.

Can be used for the management system to check the number of time plans configured in the controller.

Name	Type	Value	Comment
status	string	[text]	Comma separated list of configured time plans. E.g. “1,2,3,5”

Table 37: S0022

2.4.23 S0023

Dynamic bands

Provides a list of all defined dynamic bands. Dynamic bands moves start of signal groups in the cycle and changes the signal timings.

A typical usage of dynamic bands is scenario based control where changing of signal timings is used for optimal traffic flow.

Name	Type	Value	Comment
status	string	[text]	Dynamic bands. Each dynamic band are written as pp-dd-ee where: pp=Time plan dd=Dynamic band number (from 1-10) ee=Extension in seconds in this band Each dynamic band is separated with a comma. E.g. pp-dd-ee,pp-dd-ee

Table 38: S0023

2.4.24 S0024

Offset time

Offset time is used to define an offset between intersections in coordinated control. It is based on the expected travel time between intersections.

Can be used by the management system to check to fine tune the coordination for optimal traffic flow.

Name	Type	Value	Comment
status	string	[text]	Offset table Each offset time is written as pp-tt where: pp=time plan tt=offset time in seconds Each offset time is separated with a comma E.g. pp-tt,pp-tt

Table 39: S0024

2.4.25 S0025

Time-of-Green / Time-of-Red

Provides predicted signal timings of green and red for each signal group. Max, min and likely time to green and red.

Name	Type	Value	Comment
minToGEstimate	string	[time stamp]	Time stamp for the minimum time for the signal group to go to green. If the signal group is green, it is the minimum time for the next green. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
maxToGEstimate	string	[time stamp]	Time stamp for the maximum time for the signal group to go to green. If the signal group is green, it is the maximum time for the next green. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
likelyToGEstimate	string	[time stamp]	Time stamp for the most likely time for the signal group to go to green. If the signal group is green, it is the most likely time for the next green. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
ToGConfidence	integer	[0-100]	Confidence of the likelyToGEstimate. 0-100%
minToREstimate	string	[time stamp]	Time stamp for the minimum time for the signal group to go to red. If the signal group is red, it is the minimum time for the next red. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
maxToREstimate	string	[time stamp]	Time stamp for the maximum time for the signal group to go to red. If the signal group is red, it is the maximum time for the next red. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
likelyToREstimate	string	[time stamp]	Time stamp for the most likely time for the signal group to go to red. If the signal group is red, it is the most likely time for the next red. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
ToRConfidence	integer	[0-100]	Confidence of the likelyToREstimate. 0-100%

Table 40: S0025

2.4.26 S0026

Week time table

Week time table for signal programs (time plan) to use for each day during a week.

The week time table determine which predefined signal timings (time plan) to use during the week for optimal traffic flow.

Name	Type	Value	Comment
status	string	[text]	Week time table. Defines time table to use for each week day Each day is written as d-t where: d=day of week t=time table nr Day of week legend: 0=Monday 1=Tuesday 2=Wednesday 3=Thursday 4=Friday 5=Saturday 6=Sunday Each segment is separated with a comma E.g. d-t,d-t

Table 41: S0026

2.4.27 S0027

Time tables

Time of day for when to switch signal program (time plan).

The signal timings (time plan) to use during time of day for optimal traffic flow.

Name	Type	Value	Comment
status	string	[text]	Time Table. Defines time tables. Each time definition is written as t-o-h-m where: t=time table nr (1-12) o=function h=hour - switching time m=minute - switching minute Function legend: 0=no plan is selected by time table 1=set plan 1 ... 16= set plan 16 hour and minute is using local time (not UTC) Each time definition is separated with a comma E.g. t-o-h-m,t-o-h-m

Table 42: S0027

2.4.28 S0028

Cycle time

Cycle time (or cycle length) is the sum of all phases in a time plan (traffic program). This time is fixed when using fixed time control or coordination (except "local coordination"). When the cycle counter reaches this length it is reset back to zero.

Changing the cycle time can be used as part of scenario based control.

Name	Type	Value	Comment
status	string	[text]	Cycle time table Each cycle time is written as pp-tt where: pp=time plan tt=cycle time in seconds Each cycle time is separated with a comma E.g. pp-tt,pp-tt

Table 43: S0028

2.4.29 S0029

Forced input status

Provide status of input (1-255) regarding if they are forced or not. Can be used for all types of input where the traffic light controller must react to external control.

Can be used for bus priority, coordination between traffic controllers, external control systems, and much more.

Name	Type	Value	Comment
status	string	[text]	Forced input status as text field

Table 44: S0029

2.4.30 S0030

Forced output status

Provide status of output (1-255) regarding if they are forced or not. Can be used for all types of output where the traffic light controller needs to control other equipment.

Can be used for bus priority, coordination between traffic controllers, external control systems, and much more.

Name	Type	Value	Comment
status	string	[text]	Forced output status as text field

Table 45: S0030

2.4.31 S0031

Trigger level sensitivity for loop detector

The trigger level sensitivity determines at what level the loop detector should trigger. If it set too low then then traffic will not be detected as intended. If it is set too high the detector might give false positives.

Can be used to make sure that the detectors detect traffic as intended.

Name	Type	Value	Comment
status	string	[text]	Loop detector trigger level sensitivity is written as dd-ss where: dd=loop detector number ss=sensitivity value Each loop detector is separated with a comma. E.g.dd-ss,dd-ss.

Table 46: S0031

2.4.32 S0032

Coordinated control

This status is used when coordination between traffic light controllers is active. Coordination is described in detail in the corresponding section

Please note that all values in this status uses comma-separated lists - one value for each intersection, e.g. “1,2” and “centralized,off”

Name	Type	Value	Comment
intersection	integer	[0-255]	Comma separated list of intersections which the status relates to, e.g. “1,2”. Use “0” for all intersections of the TLC
status	string	-local -centralized -off	local: Local coordination centralized: Coordination with synchronized clock off: Coordination not active
source	string	- operator_panel - calendar_clock -control_block -forced -startup -other	Source of the status change operator_panel: Operator panel calendar_clock: Calendar/clock control_block: Control block forced: Forced due to external command e.g. supervisor startup: Set after startup mode other: Other reason

Table 47: S0032

2.4.33 S0033

Signal Priority Status

This status can be used to get updates about priority requests. For example, you can use it to know when priority requests are activated or cancelled.

A list of priorities is returned, referred to by their request ids. The same request id can appear only once.

All priorities are included in the list (not only the ones that have changed state since the last update). This is done regardless of whether the status is send in respond to a status request, or due to a status subscription, and also regardless of whether a status subscription uses an update interval, or send-on-change, or both.

If you subscribe using an update interval, you’re not guaranteed to get all intermediate states. To guarantee that, send-on-change must be used when subscribing.

To understand how this status relates to ETSI/J2735, please see the wiki.

All priorities are send on every status update, regardless of whether an interval, or sendOnChange (or both) is used.

When a priority reaches an end states (completed, timeout, rejected, cooldown or stale), it must be sent once on the next status update, then removed from the list.

A request always starts in the ‘received’ state. The following table shows the possible state transitions:

State	Possible next states
received	queued, activated, rejected, cooldown
queued	activated, timeout
activated	completed, stale
completed	
timeout	
rejected	
cooldown	
stale	

Table 48: S0033 request transitions

The priorities are passed as an array:

Name	Type	Value	Comment
status	array	[list]	List of priorities. See the table below for details.

Table 49: S0033 priority array

Each priority is passed as a hash with the following attributes:

Name	Type	Value	Comment
r	string	[id]	ID of the priority request
t	string	[timestamp]	Timestamp, indicating when the priority last changed state. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
s	string	-received -queued -activated -completed -timeout -rejected -cooldown -stale	received: A new priority request was received but has not yet been processed queued: The priority request has been queued for later activation activated: The priority was activated completed: The priority was cancelled as expected timeout: The priority has been queued for too long rejected: The priority request cannot be granted cooldown: A similar priority request means the priority request cannot be activated now stale: The priority has been active too long without cancellation, and was therefore removed
e	integer	[0-255]	(Optional) Estimated green extension provided by the priority, in seconds Only used when state is 'completed'.
d	integer	[0-255]	(Optional) Estimated red reduction provided by the priority, in seconds Only used when state is 'completed'.

Table 50: S0033

2.4.34 S0034

Timeout for dynamic bands

Time until a designated time plan is entered due to lost connection with the supervisor. Disabled if set to '0'.

Used in conjunction with dynamic bands, M0014

Name	Type	Value	Comment
status	integer	[0-65535]	Timeout, in minutes

Table 51: S0034

2.4.35 S0091

Operator logged in/out OP-panel

Provides information if maintenance personnel is currently working on site.

Name	Type	Value	Comment
user	integer	-0	0: Nobody logged in
		-1	1: Operator logged in at level 1 (read only)
		-2	2: Operator logged in at level 2 (read/write)

Table 52: S0091

2.4.36 S0092

Operator logged in/out web-interface

Provides information about whether maintenance personnel is currently working with the controller.

Name	Type	Value	Comment
user	integer	-0	0: Nobody logged in
		-1	1: Operator logged in at level 1 (read only)
		-2	2: Operator logged in at level 2 (read/write)

Table 53: S0092

2.4.37 S0095

Version of Traffic Light Controller

Provides diagnostic version information.

Name	Type	Value	Comment
status	string	[text]	Manufacturer, product name and version of traffic light controller

Table 54: S0095

2.4.38 S0096

Current date and time

Provides diagnostic information about the current date and time set in the controller.

Name	Type	Value	Comment
year	integer	[0-9999]	Year. Note: UTC is used
month	integer	[1-12]	Month. Note: UTC is used
day	integer	[1-31]	Day of month. Note: UTC is used
hour	integer	[0-23]	Hour of day. Note: UTC is used
minute	integer	[0-59]	Minute. Note: UTC is used
second	integer	[0-59]	Second. Note: UTC is used

Table 55: S0096

2.4.39 S0097

Checksum of traffic parameters

Can be used to check if any traffic parameter has been changed.

For instance, depending on controller, maintenance personnel can modify traffic parameters on site to optimize traffic flow. This status provides the ability to monitor if any traffic parameter has been changed. The traffic parameters may be downloaded with S0098.

Name	Type	Value	Comment
checksum	string	[text]	Checksum of the traffic parameters Uses SHA-2 as hashing algorithm Includes - all signal programs, including program versions - signal group settings - time plans - safety matrix - intergreen times - detector settings It should NOT include: - network settings - log files - software - other device settings that are not part of the signal program Note: The checksum should be calculated using the same data as used in S0098 Downloaded data with S0098, hashed with SHA-2, should match this value.
timestamp	string	[time stamp]	Time stamp of the checksum. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z

Table 56: S0097

2.4.40 S0098

Configuration of traffic parameters

Can be used to download all traffic parameters from the controller.

For instance, depending on controller, maintenance personnel can modify traffic parameters on site to optimize traffic flow. This status provides the ability to downloaded them.

Name	Type	Value	Comment
config	base64	[binary]	Traffic parameters Includes - all signal programs, including program versions - signal group settings - time plans - safety matrix - intergreen times - detector setting It should NOT include: - network settings - log files - software - other device settings that are not part of the signal program Note: - There is no way to upload this binary file to the TLC using RSMP - The format of the binary file is not specified and is not expected to be compatible between suppliers
timestamp	string	[time stamp]	Time stamp of the config. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
version	string	[text]	Version information of the configuration. Contains basic information such as controller id, changes to config and other information. The format is not specified in detail

Table 57: S0098

2.4.41 S0201

Traffic Counting: Number of vehicles

Used for Traffic counting.

Name	Type	Value	Comment
starttime	string	[time stamp]	Time stamp for start of measuring. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
vehicles	integer	[0-65535]	Number of vehicles on a given detector logic (since last update)

Table 58: S0201

2.4.42 S0202

Traffic Counting: Vehicle speed

Used for Traffic counting.

Name	Type	Value	Comment
starttime	string	[time stamp]	Time stamp for start of measuring. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
speed	integer	[0-65535]	Average speed in km/h

Table 59: S0202

2.4.43 S0203

Traffic Counting: Occupancy

Used for Traffic counting.

Name	Type	Value	Comment
starttime	string	[time stamp]	Time stamp for start of measuring. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
occupancy	integer	[0-100]	Occupancy in percent (0-100%)

Table 60: S0203

2.4.44 S0204

Traffic Counting: Number of vehicles of given classification

Used for Traffic counting.

Name	Type	Value	Comment
starttime	string	[time stamp]	Time stamp for start of measuring. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
P	integer	[0-65535]	Number of cars
PS	integer	[0-65535]	Number of cars with trailers
L	integer	[0-65535]	Number of trucks
LS	integer	[0-65535]	Number of trucks with trailers
B	integer	[0-65535]	Number of busses
SP	integer	[0-65535]	Number of trams
MC	integer	[0-65535]	Number of motor cycles
C	integer	[0-65535]	Number of bicycles
F	integer	[0-65535]	Number of pedestrians

Table 61: S0204

2.4.45 S0205

Traffic Counting: Number of vehicles

This status was introduced to improve performance in case traffic counting is done on all all detectors.

Name	Type	Value	Comment
start	string	[time stamp]	Time stamp for start of measuring. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
vehicles	string	[0-65535,...]	Number of vehicles - Value expressed as an integer with a range of 0-65535. - Contains data from all detector logics. Each detector logic is separated with a comma. - The value is set to "-1" if no data could be measured (e.g. detector fault)

Table 62: S0205

2.4.46 S0206

Traffic Counting: Vehicle speed

This status was introduced to improve performance in case traffic counting is done on all all detectors.

Name	Type	Value	Comment
start	string	[time stamp]	Time stamp for start of measuring. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
speed	string	[0-65535,...]	Average speed in km/h (integer) - Value expressed as an integer with a range of 0-65535. - Contains data from all detector logics. Each detector logic is separated with a comma. - The value is set to "-1" if no data could be measured (e.g. detector fault)

Table 63: S0206

2.4.47 S0207

Traffic Counting: Occupancy

This status was introduced to improve performance in case traffic counting is done on all all detectors.

Name	Type	Value	Comment
start	string	[time stamp]	Time stamp for start of measuring. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
occupancy	string	[0-100,...]	Occupancy in percent (%) (0-100) - Value expressed as an integer with a range of 0-100. - Contains data from all detector logics. Each detector logic is separated with a comma. - The value is set to "-1" if no data could be measured (e.g. detector fault)

Table 64: S0207

2.4.48 S0208

Traffic Counting: Number of vehicles of given classification

This status was introduced to improve performance in case traffic counting is done on all all detectors.

Name	Type	Value	Comment
start	string	[time stamp]	Time stamp for start of measuring. Format according to W3C XML dateTime with a resolution of 3 decimal places. All time stamps in UTC. E.g. 2009-10-02T14:34:34.341Z
P	string	[0-65535,...]	Number of cars - Value expressed as an integer with a range of 0-65535. - Contains data from all detector logics. Each detector logic is separated with a comma. - The value is set to "-1" if no data could be measured (e.g. detector fault)
PS	string	[0-65535,...]	Number of cars with trailers - Value expressed as an integer with a range of 0-65535. - Contains data from all detector logics. Each detector logic is separated with a comma. - The value is set to "-1" if no data could be measured (e.g. detector fault)
L	string	[0-65535,...]	Number of trucks - Value expressed as an integer with a range of 0-65535. - Contains data from all detector logics. Each detector logic is separated with a comma. - The value is set to "-1" if no data could be measured (e.g. detector fault)
LS	string	[0-65535,...]	Number of trucks with trailers - Value expressed as an integer with a range of 0-65535. - Contains data from all detector logics. Each detector logic is separated with a comma. - The value is set to "-1" if no data could be measured (e.g. detector fault)
B	string	[0-65535,...]	Number of busses - Value expressed as an integer with a range of 0-65535. - Contains data from all detector logics. Each detector logic is separated with a comma. - The value is set to "-1" if no data could be measured (e.g. detector fault)
SP	string	[0-65535,...]	Number of trams - Value expressed as an integer with a range of 0-65535. - Contains data from all detector logics. Each detector logic is separated with a comma. - The value is set to "-1" if no data could be measured (e.g. detector fault)
MC	string	[0-65535,...]	Number of motor cycles - Value expressed as an integer with a range of 0-65535. - Contains data from all detector logics. Each detector logic is separated with a comma. - The value is set to "-1" if no data could be measured (e.g. detector fault)
C	string	[0-65535,...]	Number of bicycles - Value expressed as an integer with a range of 0-65535. - Contains data from all detector logics. Each detector logic is separated with a comma. - The value is set to "-1" if no data could be measured (e.g. detector fault)
F	string	[0-65535,...]	Number of pedestrians - Value expressed as an integer with a range of 0-65535. - Contains data from all detector logics. Each detector logic is separated with a comma. - The value is set to "-1" if no data could be measured (e.g. detector fault)

2.5 Commands

ObjectType	commandCodeId	Command	Description
Traffic Light Controller	*M0001*	setValue	Sets functional position
Traffic Light Controller	*M0002*	setPlan	Sets current time plan
Traffic Light Controller	*M0003*	setTrafficSituation	Sets traffic situation the controller uses.
Traffic Light Controller	*M0004*	setRestart	Restarts Traffic Light Controller
Traffic Light Controller	*M0005*	setEmergency	Activate emergency route
Traffic Light Controller	*M0006*	setInput	Activate input
Traffic Light Controller	*M0007*	setFixedTime	Activate fixed time control
Detector logic	*M0008*	setForceDetectorLogic	Sets manual activation of detector logic
Signal group	*M0010*	setStart	`Reserved`
Signal group	*M0011*	setStop	`Reserved`
Traffic Light Controller	*M0012*	setStart	`Reserved`
Traffic Light Controller	*M0013*	setInput	Activate a series of inputs
Traffic Light Controller	*M0014*	setCommands	Set dynamic bands
Traffic Light Controller	*M0015*	setOffset	Set Offset time
Traffic Light Controller	*M0016*	setWeekTable	Set week time table
Traffic Light Controller	*M0017*	setTimeTable	Set time tables
Traffic Light Controller	*M0018*	setCycleTime	Set Cycle time
Traffic Light Controller	*M0019*	setInput	Force input
Traffic Light Controller	*M0020*	setOutput	Force output
Traffic Light Controller	*M0021*	setLevel	Set trigger level sensitivity for loop detector
Traffic Light Controller	*M0022*	requestPriority	Request Signal Priority
Traffic Light Controller	*M0023*	setTimeout	Set timeout for dynamic bands
Traffic Light Controller	*M0103*	setSecurityCode	Set security code
Traffic Light Controller	*M0104*	setDate	Set clock

Table 66: Commands

2.5.1 M0001

Sets functional position

Sets the controller to yellow flash, dark mode or normal control.

Requires security code 2.

Name	Type	Value	Comment
status	string	-NormalControl -YellowFlash -Dark	NormalControl: Normal Control YellowFlash: Enables yellow flash Dark: Enables dark mode
securityCode	string	[text]	Security code 2
timeout	integer	[0-1440]	Time in minutes until controller automatically reverts to previous functional position. 0=no automatic return
intersection	integer	[0-255]	Intersection number

Table 67: M0001

2.5.2 M0002

Sets current time plan

Change of traffic program of the traffic light controller.

Typical usages is scenario based control where change of program is used to change signal timings etc.

This command changes the signal timings for optimal traffic flow.

Requires security code 2.

Name	Type	Value	Comment
status	boolean	-False -True	False: Controller uses time plan according to programming True: Controller uses time plan according to command
securityCode	string	[text]	Security code 2
timeplan	integer	[1-255]	designation of time plan

Table 68: M0002

2.5.3 M0003

Sets traffic situation the controller uses.

Used for area-based control where a command can be sent to a master traffic light controller about which predefined traffic situation to use (1-255).

Traffic situation is a concept used to divide multiple TLC's into areas and sub-areas. The traffic situation gives the possibility to change the TLC sub-area dynamically depending on the time of day and the traffic flow. Depending on the traffic situation each TLC selects the time plan dynamically.

Requires security code 2.

Name	Type	Value	Comment
status	boolean	-False -True	False: Controller uses traffic situation according to own programming True: Controller uses traffic situation according to command
securityCode	string	[text]	Security code 2
traficsituation	integer	[1-255]	designation of traficsituation

Table 69: M0003

2.5.4 M0004

Restarts Traffic Light Controller

Used in the event of serious faults in the device where a restart is considered to be able to remedy a problem.

Requires security code 2.

Name	Type	Value	Comment
status	boolean	-False -True	True: Restart controller
securityCode	string	[text]	Security code 2

Table 70: M0004

2.5.5 M0005

Activate emergency route

The function is made for emergency prioritization. Works in the same way as the M0006 and M0008 where the traffic light controller responds to an input.

Should be used in situations where full priority is given in the emergency vehicle program.

Requires security code 2.

Name	Type	Value	Comment
status	boolean	-False -True	False: Deactivate emergency route True: Activate emergency route
securityCode	string	[text]	Security code 2
emergencyroute	integer	[1-255]	Number of emergency route

Table 71: M0005

2.5.6 M0006

Activate input

Set given input (1-255) of the controllers general purpose I/O to either true or false.

The function can provide an input to the traffic light controller on which a predefined action can be taken.

Can be used for all types of input where the traffic light controller must react to external control.

Typical usages are bus priority, coordination between traffic controllers, external control systems, and much more.

Requires security code 2.

Name	Type	Value	Comment
status	boolean	-False -True	False: Deactivate input True: Activate input
securityCode	string	[text]	Security code 2
input	integer	[1-255]	Number of Input

Table 72: M0006

2.5.7 M0007

Activate fixed time control

Deactivates the traffic actuated control using detectors and activates pre-timed control.

Can be used in case normal detectors can't be used, e.g. during maintenance work.

Requires security code 2.

Name	Type	Value	Comment
status	boolean	-False -True	False: Deactivate fixed time control True: Activate fixed time control
securityCode	string	[text]	Security code 2

Table 73: M0007

2.5.8 M0008

Sets manual activation of detector logic

Set given detector logic (1-255) to either true or false.

Can e.g. be used to connect RSMP compatible detection equipment to the traffic light controller. Can also be used for prioritization.

Requires security code 2.

Name	Type	Value	Comment
status	boolean	-False -True	False: Deactivate manual control of detector logic True: Activate manual control of detector logic
securityCode	string	[text]	Security code 2
mode	boolean	-False -True	False: Deactivate detector logic True: Activate detector logic

Table 74: M0008

2.5.9 M0010

`Reserved`

Name	Type	Value	Comment
status	boolean	-False -True	`Reserved`
securityCode	string	[text]	Security code 2

Table 75: M0010

2.5.10 M0011

`Reserved`

Name	Type	Value	Comment
status	boolean	-False -True	`Reserved`
securityCode	string	[text]	Security code 2

Table 76: M0011

2.5.11 M0012

`Reserved`

Name	Type	Value	Comment
status	string	[text]	`Reserved`
securityCode	string	[text]	Security code 2

Table 77: M0012

2.5.12 M0013

Activate a series of inputs

Set given inputs (1-255) of the controllers general purpose I/O to either true or false. This command was introduced due to coordination requirements needing to set many inputs to true/false at the same time and M0006 being to slow to send a message for each input individually. With this command many inputs can be set to true/false at the same time using a single command message. It can be used for all types of input where the traffic light controller must react to external control. Typical usages are bus priority, coordination between traffic controllers, external control systems, and much more.

Requires security code 2.

The parameter 'status' sets/unsets a block of 16 inputs at a time. It can be repeated to set several blocks of 16 inputs. Values are separated with comma. Blocks are separated with semicolon. Format: [Offset];[Bits to set];[Bits to unset];...

- 'Offset' defines where the 16 inputs starts from
- 'Bits to set' defines which bit(s) to set. '0' if unsed
- 'Bits to unset' defines which bit(s) to unset. '0' if unused

Example 1: "3,4134,65" sets input 4,5,8,15 and unsets 3,9 - Input starts from no. 5 - "4134" is 1 0000 0010 0110 in binary, but since input starts from 3, it is shifted 3 bits, e.g. 1000 0001 0011 0000 which are bits 4,5,8,15 - "65" is 100 0001 in binary, but since input starts from 3, it is shifted 3 bits, e.g. 10 0000 1000 which are bits 3,9

Example 2: "12,1,4" sets input 12 and unsets 14 - Input starts from no. 12 - "1" is 1 in binary, but since input starts at 12 it is shifted 12 bits, e.g. 1 0000 0000 0000, which is bit 12 - "4" is 100 in binary, but since input starts at 12 it is shifted 12 bits, e.g. 100 0000 0000 0000, which is bit 14

And both these examples could be sent in the same message as: "3,4143,65;12,1,4"

Such a message would set input 4,5,8,12,15 and unset input 3,9,14

Example 3: "0,1,2" sets input 0 and unsets 1 - Input starts from 0 - "1" is 1 in binary, which is bit 0 - "2" is 10 in binary, which is bit 1

Name	Type	Value	Comment
status	string	[text]	Sets/Unsets a block of 16 inputs at a time. Can be repeated to set several blocks of 16 inputs. Values are separated with comma. Blocks are separated with semicolon. Format: [Offset];[Bits to set];[Bits to unset];...
securityCode	string	[text]	Security code 2

Table 78: M0013

2.5.13 M0014

Set dynamic bands

Can be used to change between predefined signal timings. Moves the start of signal groups in the cycle.

This command can be used to change the split of green time during the cycle. A typical usage is scenario based control where changing of signal timings is used for optimal traffic flow.

Requires security code 2.

Name	Type	Value	Comment
plan	integer	[0-255]	Plan to be changed
status	string	[text]	Dynamic bands. Each dynamic band are written as dd-ee where: dd=Dynamic band number (from 1-10) ee=Extension in seconds in this band Each dynamic band is separated with a comma. E.g. dd-ee,dd-ee
securityCode	string	[text]	Security code 2

Table 79: M0014

2.5.14 M0015

Set Offset time

Offset time is used to define an offset between intersections in coordinated control. It is based on the expected travel time between intersections.

This command can be used to fine tune the coordination for optimal traffic flow.

Requires security code 2.

Name	Type	Value	Comment
status	integer	[0-255]	Set offset time in seconds
plan	integer	[0-255]	Time plan nr
securityCode	string	[text]	Security code 2

Table 80: M0015

2.5.15 M0016

Set week time table

Set which time table for signal programs to use for each day during a week.

This command changes the signal timings during the week for optimal traffic flow.

Requires security code 2.

Name	Type	Value	Comment
status	string	[text]	Week time table. Defines time table to use for each week day Each segment is written as d-t where: d=day of week t=time table nr Day of week legend: 0=Monday 1=Tuesday 2=Wednesday 3=Thursday 4=Friday 5=Saturday 6=Sunday Each segment is separated with a comma E.g. d-t,d-t
securityCode	string	[text]	Security code 2

Table 81: M0016

2.5.16 M0017

Set time tables

Set time of day for when to automatically switch signal program (time plan).

This command changes the signal timings according to time of day for optimal traffic flow.

Requires security code 2.

Name	Type	Value	Comment
status	string	[text]	Time Table. Defines time tables. Each time definition is written as t-o-h-m where: t=time table nr (1-12) o=function h=hour - switching time m=minute - switching minute Function legend: 0=no plan is selected by time table 1=set plan 1 ... 16= set plan 16 hour and minute is using local time (not UTC) Each time definition is separated with a comma. E.g. t-o-h-m,t-o-h-m
securityCode	string	[text]	Security code 2

Table 82: M0017

2.5.17 M0018

Set Cycle time

Cycle time (or cycle length) is the sum of all phases in a time plan (traffic program). This time is fixed when using fixed time control or coordination (except "local coordination"). When the cycle counter reaches this length it is reset back to zero.

This command provides the ability to change the cycle time when using coordinated or fixed time control. It changes the timings for optimal traffic flow. Can be used with scenario based control.

Requires security code 2.

Name	Type	Value	Comment
status	integer	[1-255]	Set cycle time in seconds
plan	integer	[0-255]	Time plan nr
securityCode	string	[text]	Security code 2

Table 83: M0018

2.5.18 M0019

Force input

Force a given input (1-255) of the controllers general purpose I/O to either True or False. Can be used for all types of input where the traffic light controller must react to external control.

Can be used for bus priority, coordination between traffic controllers, external control systems, and much more.

Requires security code 2.

Name	Type	Value	Comment
status	boolean	-False	False: Release input
		-True	True: Force input
securityCode	string	[text]	Security code 2
input	integer	[1-255]	Number of Input
inputValue	boolean	-False	False: input forced to False
		-True	True: input forced to True

Table 84: M0019

2.5.19 M0020

Force output

Force a given output (1-255) of the controllers general purpose I/O to either True of False. Can be used for all types of output where the traffic light controller needs to control other equipment.

Can be used for bus priority, coordination between traffic controllers, external control systems, and much more.

Requires security code 2.

Name	Type	Value	Comment
status	boolean	-False	False: Force output
		-True	True: Release output
securityCode	string	[text]	Security code 2
output	integer	[1-255]	Number of Output
outputValue	boolean	-False	False: output forced to False
		-True	True: output forced to True

Table 85: M0020

2.5.20 M0021

Set trigger level sensitivity for loop detector

The trigger level sensitivity determines at what level a loop detector should trigger. If it set too low then then traffic will not be detected as intended. If it is set too high the detector might give false positives.

This command provides the ability to fine tune loop detectors to make sure they detect traffic as intended.

Requires security code 2.

Name	Type	Value	Comment
status	string	[text]	Loop detector trigger level sensitivity is written as dd-ss where: dd=loop detector number ss=sensitivity value
securityCode	string	[text]	Security code 2

Table 86: M0021

2.5.21 M0022

Request Signal Priority

Useful for bus priority or other type of priorities like emergency vehicles or groups of cyclists.

The benefit of using this message over activating inputs or detector logics is that you can specify a priority level, vehicle type and estimated time of arrival. You can also update or cancel the request, and use the corresponding status message to track the status of the request, including how much priority was actually given.

To understand how this command relates to ETSI/J2735, please see the wiki.

Activating signal priority is expected to provide more green time for a particular movement through the intersection, but the exact mechanism must typically be configured in the controller.

The movement to prioritize can be referenced in a number of ways, depending on what is configured in the controller, and in the system that sends priority requests. Either:

- Reference a signal group by setting 'signalGroupId'. This method is simple, but will not allow you to have different priority mechanism for the same signal group, unless they can be distinguished by the vehicle type. For example, if you need to trigger different priorities depending on whether a bus goes straight or makes a turn for the same signal group, you need to use of the other referencing methods.
- Reference an input by setting 'inputId'. This can be useful if you previously used inputs to activate priority. The input will not be activated, only the priority.
- Reference a connection by setting 'connectionId'. A connection is a movement from a specific ingoing lane to a specific outgoing lane.
- Reference an intersection approach by setting 'approachId'.
- Reference an ingoing lane by setting 'laneInId', and optionally also reference an outgoing lane by setting 'laneOutId'.

Referencing attributes that are not used must be left out, rather than set to null or empty strings. This includes:

- signalGroupId
- inputId
- connectionId
- approachId
- laneInId
- laneOutId

Referencing attributes are only used when initiating a request. When updating or cancelling the request, the request is identified by its requestId, and no referencing attributes are allowed.

You initiate a priority request with type set to ‘new’. You must provide a request id that uniquely identifies the request on the controller. It can be a randomly generated UUID (universally unique identifier), or it can be constructed by combining e.g. a vehicle id and some other identifier. When updating or cancelling a request, you must pass the same request id again.

Providing ETA (estimated time of arrival) when initiating a request is optional, but can help the controller plan ahead in cases where you’re able to send the request before the vehicle arrives at the intersection. You’re allowed to initiate the request without an ETA and provide it in a later request update. But providing the ETA when initiating the request is recommended, since it will give the controller more time to plan ahead.

Like ETA, providing a vehicle type is optional, but can help the controller decide how to best handle the request.

The priority level provides a way to indicate the relative importance of the request compared to other requests. For example, emergency vehicles or delayed buses could be given a higher priority level.

If the ETA changes before the priority is cancelled, or you want to change the priority level, you can send another request message with type set to ‘update’. The vehicle type cannot be changed.

When you send a priority request, it will be processed to decide if it’s possible to activate the requested priority.

If the request is accepted, the priority can either be activated immediately, or if another priority is currently active, it can be queued for later activation.

If the priority cannot be accepted the request is rejected. Cooldown is a specific type of rejection, which means that s similar request has just completed, and some time needs to pass before a similar request can be activated.

When a request is queued, it is expected to become activated later, but in case too long passes without activation, the controller is expected to time out the request.

Once a priority is activated, you’re excepted to cancel it as soon as there’s no need for it anymore, typically when the vehicle has passed the intersection. You cancel a request by sending a request passing the existing request id setting the type to ‘cancel’.

If a request is never cancelled, the controller is expected to remove the priority at some point, but until then the priority might block requests in other direction which is why you should always cancel a priority when it’s not needed anymore.

Name	Type	Value	Comment
requestId	string	[id]	A string that uniquely identifies the request on the controller
signalGroupId	string	[id]	(Optional) ID of a signal group component.
inputId	integer	[0-255]	(Optional) ID of an input, using the same numbering scheme as M0006
connectionId	integer	[0-255]	(Optional) ID of a connection, connecting an ingoing and an outgoing lane
approachId	integer	[0-16]	(Optional) ID of an intersection approach
laneInId	integer	[0-255]	(Optional) ID of an ingoing lane
laneOutId	integer	[0-255]	(Optional) ID of an outgoing lane
priorityId	integer	[0-255]	(Optional) ID of a priority
type	string	-new -update -cancel	new: New priority request update: Update to existing priority request cancel: Cancel an existing priority
level	integer	[0-14]	0: Lowest, 14: Highest
eta	integer	[0-255]	(Optional) Estimated time of arrival to the intersection, in seconds
vehicleType	string	-pedestrian -bicycle -motorcycle -car -bus -lightTruck -heavyTruck -tram -emergency -safetyCar -specialTransport -other	(Optional) Vehicle type pedestrian: Pedestrians bicycle: Bicycles motorcycle: Motorcycles car: Passenger vehicle bus: Bus used for public transport lightTruck: Light truck heavyTruck: Heavy truck tram: Trams used for Public transport emergency: Police, fire or ambulance safetyCar: For e.g. escort vehicles specialTransport: For e.g. heavy load other: Other type of vehicle

Table 87: M0022

2.5.22 M0023

Set timeout for dynamic bands

Switch to a designated time plan if this timeout is reached due to lost connection with the supervisor. Disable by setting timeout to '0'.

Used in conjunction with dynamic bands, M0014

Requires security code 2.

Name	Type	Value	Comment
status	integer	[0-65535]	Timeout, in minutes
securityCode	string	[text]	Security code 2

Table 88: M0023

2.5.23 M0103

Set security code

Change the security code to use when sending commands

Security codes are used as an extra layer of security in many commands. They need to match between the supervision system and the traffic light controller in order for the commands to be executed.

Name	Type	Value	Comment
status	string	-Level1 -Level2	Level1: Change security code 1 Level2: Change security code 2
oldSecurityCode	string	[text]	Previous security code
newSecurityCode	string	[text]	New security code

Table 89: M0103

2.5.24 M0104

Set clock

Can be used to manually set the clock of the traffic light controller if automatic time synchronization (NTP or watchdog sync) is not available. For instance, during maintenance work.

Requires security code 1.

Name	Type	Value	Comment
securityCode	string	[text]	Security code 1
year	integer	[0-9999]	Changes internal clock. Note: UTC is used Year
month	integer	[1-12]	Changes internal clock. Note: UTC is used Month
day	integer	[1-31]	Changes internal clock. Note: UTC is used Day in month
hour	integer	[0-23]	Changes internal clock. Note: UTC is used Hour
minute	integer	[0-59]	Changes internal clock. Note: UTC is used Minute
second	integer	[0-59]	Changes internal clock. Note: UTC is used Second

Table 90: M0104

Chapter 3

Signal Group status

Signal groups status (S0001) is defined as a text string where each character represents the current status for each signal group. Each character has the following definition:

ASCII	Definition	Output	Green request
a	Disabled	Dark	
b	Manual control to dark	Dark	
c	Manual control to flashing yellow	Yellow flash	
d	Manual control to flashing red	Red flash	
e	Start-up interval 1	Dark or yellow flash	
f	Start-up interval 2	Vehicles: yellow, Pedestrians: red	
g	Start-up interval 3	Red	
h	Manual control to red	Red	
A	*Red rest without start order*	Red	N
B	*Red rest*	Red	N
C	*Red rest with privilege measurement*	Red	N
D	*Red with reservation*	Red	Y/N
E	Red with request and without start order	Red	Y
F	*Red with request*	Red	Y
G	*Red with start in own stage*	Red	Y
0	Red-yellow	Red/Yellow	Y
1	*Minimum green*	Green	Y
2	*Max. minimum green*	Green	Y/N
3	*Maximum green (extension)*	Green	Y
4	*Green rest*	Green	N
5	*Green passive*	Green	N
6	*Fixed past-end-green*	Green	Y/N
7	*Extra green according to intergreen times*	Green	Y/N
8	*Variable past-end-green*	Green	Y
9	Flashing green	Green	Y/N
N	Fixed yellow or yellow-green	Yellow	Y/N
O	*Variable yellow or yellow green*	Yellow	Y
P	*Variable red*	Red	Y

Table 1: Signal group status

Chapter 4

Traffic data

Traffic data (S0201-S0208) needs additional requirements in order to work correctly.

- The supervision system uses **StatusSubscribe** and **StatusUpdate** to continuously receive traffic data from the TLC using subscriptions.
- **starttime** is the time stamp of start of measuring. E.g. if a subscription update is sent at 15:05 using a subscription update rate of 300 (5 minutes), **starttime** would be set to 15.00 and **vehicles** (S0201) would contain the number of vehicles between 15:00 and 15:05.
- Traffic counting must be made at even time intervals. For instance; if **updateRate=300** (every 5 minutes) is set at the status subscription, the traffic counter must start at 15:00:00, 15:05:00, 15:10:00 and so on.
- No initial status update should be sent directly after receiving status subscription. Status updates should only be sent at even time intervals and not contain partial counting, e.g. 15:01-15:03 if updateRate=300
- The traffic counter must not reset its traffic counter after receiving a new subscription request. The traffic counter may only reset its traffic counter at even time intervals.
- Buffering of traffic data during connection interruptions should be possible to enable/disable in the equipment. If buffering is enabled it means that active subscriptions of traffic data (S0201-S0208) should remain active and not be canceled at connection interruption or at reestablishment.
- The traffic data must be buffered according to the time interval as determined by the status subscription if buffering is enabled.

Chapter 5

Coordination between traffic light controllers

5.1 General concepts

Coordination between Traffic Light Controllers (TLC) implies that several intersections are controlled together in a coordinated control mode at local or central level. Regardless of operational mode, prerequisites are - among other things, that TLC:s must use the same time plan and must be in synchronous operation.

Local coordination can be applied in minor systems (up to 4 intersections). Control will in these systems be made with a common and variable cycle depending on the traffic.

Central coordination can be applied in major systems (up to some 20 intersections or more). In central coordination a special master (M), a combination of master/controller (M/C) or a system of cableless linking is used. Within the system control bits should be sent according to time plans designed in advance with selected and fixed cycle times for different traffic levels. In the individual intersection a certain smaller degree of traffic adaption should be allowed, however, only within the framework of the fixed and given cycle time.

The two coordination levels should be possible to combine. During peak hours should e.g. the entire traffic signal area be coordinated at central level while a split in locally coordinated sub areas should be possible during normal off-peak hours.

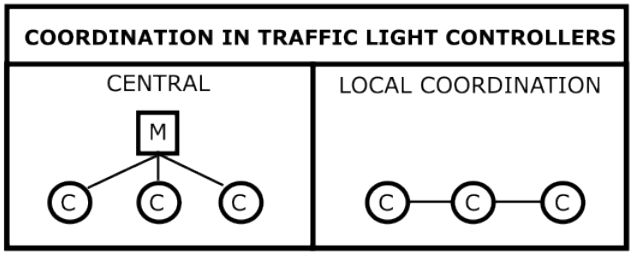

Fig. 1: Types of coordination

Since there are variants of coordination which are not strictly centralized but still uses the same principles of communication, the term *coordination with synchronized cycle counter* is used rather than *central coordination* here on after.

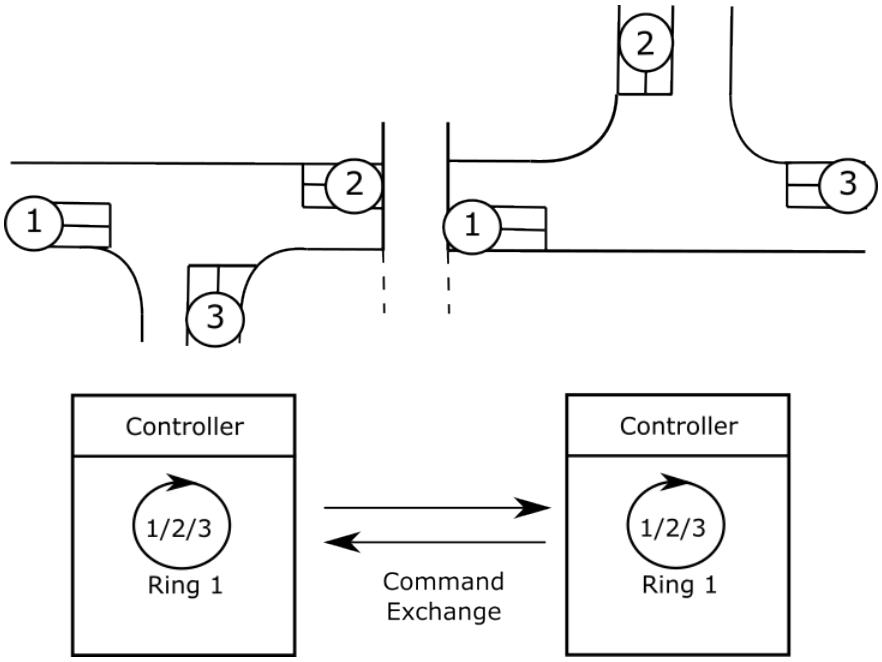

Fig. 2: Coordination

5.2 Coordination type “Local coordination”

Local coordination is achieved by supplementing the TLC:s control bits of the signal groups with special control bits from signal group(s) in another intersection.

This can be achieved with the following status modes:

- “Front edge of green wave”, which is normally sent when conflicting signal group in downstream traffic lights turns yellow
- “Rear edge of green wave”, which is normally sent when demand for green ends or yellow is sent to downstream TLC.

Front edge of green wave normally prevents signal groups in other TLC:s to start and rear edge of green wave normally extends signal groups in green, normally when demand for green ends, or yellow.

Commands should be able to be sent from an optional change in signal group status and should additionally be able to be supplemented with a timer which initiates counts from these changes.

Variation in programming to achieve desired functionality according to specifications may vary without having any impact on coordination communication.

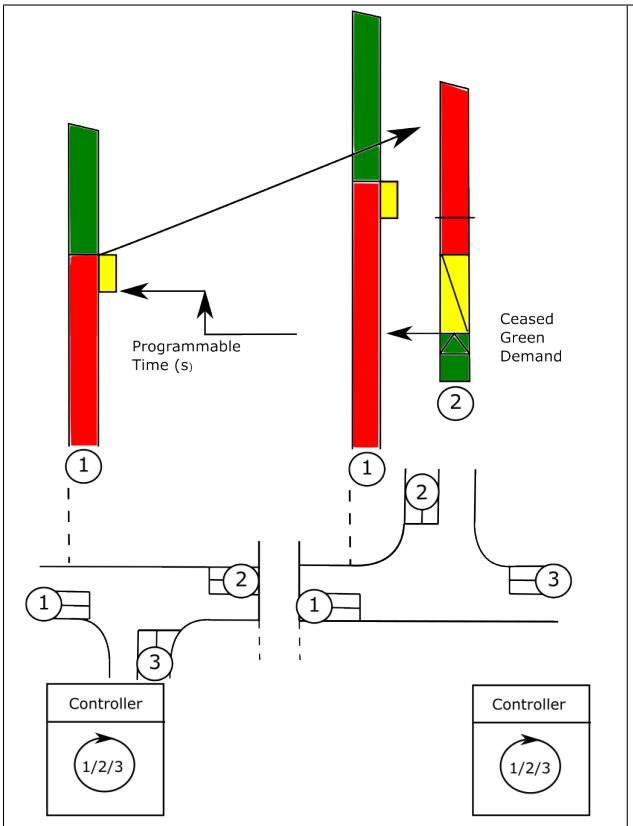

Fig. 3: Control of front edge

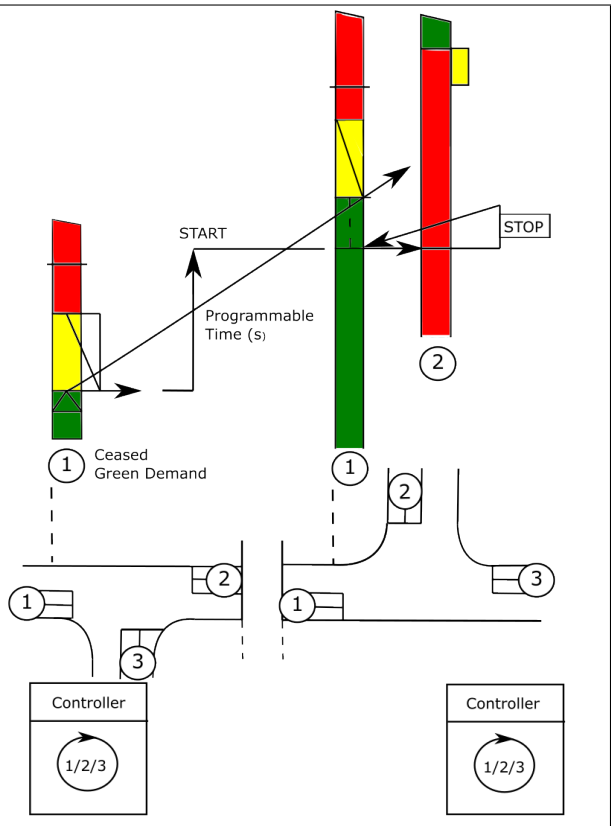

Fig. 4: Control of rear edge

5.3 Coordination with synchronized cycle counter

Coordination with synchronized cycle counter should typically be possible to operate in multiple time plans with optional signal group sequence split and/or cycle time.

The cycle time of the time plans should be possible to select in increments of one second up to at least 180 seconds.

Signal group(s) should typically be able to have green 2 times per cycle.

Change between time plans should typically be possible at optional points in the cycle, at different points in different time plans. Change must not follow so that fixed times such as red/yellow, minimum green, pedestrian green and green/yellow will be reduced or excluded. Coordination should be achieved by exchanging the normal start bits against special control bits which should be possible to send per one second steps.

If control bits to the local TLC is missing for 120 seconds, the TLC should automatically revert to a predetermined back up or safety mode. If/when the control bits returns, the TLC should automatically return to coordination.

The control bits, arranged and time distributed within the framework of the cycle of the time plan, should give the coordinated installation a certain signal group sequence, split and offset between TLC'S.

The control bits should be possible to use internally in a TLC or be possible to send externally to another TLC which consequently also should be able to receive externally incoming control bits. Together with new

control bits, the internal logic of the TLC should in other aspects proceed normally, among other things, for communication between the signal groups.

5.4 Coordination with control bits

Coordination with internal control bits

With internal control bits, only information about time plan/traffic situation, initialization and clock sync needs to be sent and received.

Coordination with external control bits

In addition to the control bits in the previous paragraph, start bits and stop bits must be sent and received.

TLC:s should also be able to receive external start/stop bits. If the active time plan is controlled by the other TLC, it must also be able to receive subscription/request of e. g traffic data, detector logic and signal groups status etc.

5.5 General RSMP requirements

Communication must be established directly between TLC:s. This demands the following general requirements:

- The TLC needs to support communication between sites according to section 4.3 Transport of data in the RSMP specification
- In every TLC, it must be possible to connect to other TLC:s and to receive connections from other TLC:s (client-server).
- The TLC must have a list with every connected and communicating TLC with editable communication parameters for each individual unit.
- The mentioned list above includes IP-addresses and signal exchange lists for every connected TLC.
- The TLC must be configurable with signal exchange lists for every TLC that communication is intended with. The signal exchange lists contain important information such as **siteId** and **component-id** which are needed to establish communication. Relevant parts of signal exchange lists must therefore be easily editable, in particular **siteId**, **component-id**, etc.
- The TLC must be able to communicate with the supervision system at the same as communicating between TLC:s.

5.6 Functional requirements of the TLC

To establish coordination, it is required that both TLC:s use suitable time plan/traffic situation and synchronize their cycle timers.

- It must be possible to configure TLC:s as leader/follower
- One leader TLC should be able to communicate with up to 20 follower TLC:s.

The following input/output is needed

Command types	Description
M0002	Time plan
M0006/M0013 (Input)	Coordination can continue (local coordination) (true/false)
M0006/M0013 (Input)	Synchronization pulse (coordination with synchronized cycle counter) (true/false)
M0006/M0013 (Input)	START/STOP bit (true/false)

Table 1: Input needed

Status types	Description
S0004 (Output)	Coordination is possible (true/false)
S0004 (Output)	Synchronization step (local coordination) (true/false)
S0004 (Output)	START/STOP bit (true/false)

Table 2: Output needed

Please note:

- securityCode is ignored at TLC-TLC-communication. Fields for securityCode still must be sent at communication exchange – but contents can be empty.
- M0010 (Start/Stop) also exists in SXL but is not used in coordination.

5.7 Notes about JSon

Every field must be present in every message at communication exchange according to the signal exchange list. This applies even if the fields are empty. In the example below "securityCode" is included in a command despite that "securityCode" is ignored at TLC-TLC communication. The field is empty for this reason.

```
{
     "mType": "rSMsg",
     "type": "CommandRequest",
     "mId": "E68A0010-C336-41ac-BD58-5C80A72C7092",
     "ntsOId": "",
     "xNId": "",
     "cId": "KK+AG9998=001TC000",
     "arg": [{
              "cCI": "M0002",
              "n": "status",
              "cO": "setPlan",
              "v": "True"
     },{
              "cCI": "M0002",
              "n": "securityCode",
              "cO": "setPlan",
              "v": ""
     },{
              "cCI": "M0002",
              "n": "timeplan",
              "cO": "setPlan",
              "v": "5"
```

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```
    }]
}
```

5.8 Communication establishment

Follower TLC's acts server and waits for a leader TLC to connect. Should communication fail, it is the responsibility of the leader TLC to connect again.

When the leader TLC has connected, messages between the TLC's are sent according the initialization sequence.

Communication is continuously established even if coordination is not active.

The handshake sequence is defined in the RSMP specification, section Communication establishment between sites.

5.9 Initialization sequence for local coordination

1. Leader verifies that coordination is possible through subscription on output (S0004) *coordination is possible* in all followers. If coordination isn't possible, coordination is terminated.
2. Leader switches to coordinated time plan in its own TLC.
3. Leader sends command to all followers to switch to coordinated time plan.
4. Leader waits at own synchronisation step until synchronisation step is active in all followers. Leader must subscribe to S0004 *Synchronisation step* in all followers to verify this.
5. Leader activates input (S0013) *coordination can continue* in all followers about continued coordination.
6. Coordination active. Leader continuously checks that coordination still is possible in all followers (see step 1) through subscription on output (S0004) *coordination is possible*. Coordination is terminated if it turns false in any follower.
7. Leader sends START/STOP order using M0006 or M0013 to followers during each cycle.
8. Leader receives START/STOP order using output (M0004) from followers during each cycle.

5.10 Initialization sequence for coordination with synchronized cycle counter

1. Leader verifies that coordination is possible through subscription on output (S0004) *coordination is possible* in all followers. There needs to be a per site configuration possibility for each follower whether coordination should proceed regardless if a single follower can't activate coordination.
2. Leader switches to coordinated time plan in its own TLC.
3. Leader sends command to all followers to switch to coordinated time plan. Followers switch time plan when their cycle counters reaches zero.
4. Leader sends synchronization pulse when its base cycle counter reaches zero. Synchronization pulse means that the cycle counter should be set to zero. Followers adds any configured offset time on their own.

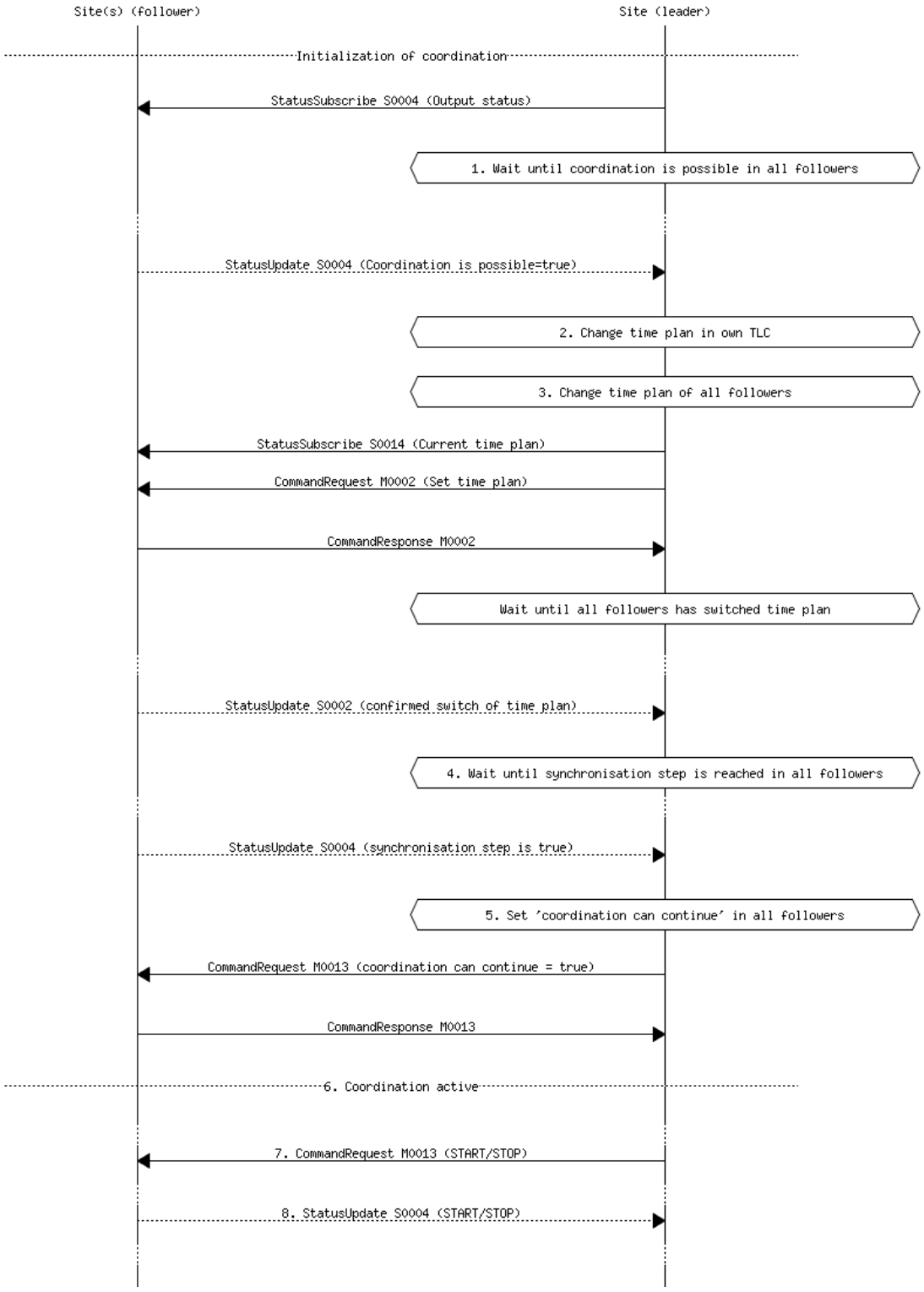

Fig. 5: Sequence for local coordination

5. Coordination active. Leader continuously checks that coordination still is possible in all followers (see step 1) through subscription on output (S0004) *coordination is possible*. Coordination is terminated if output (S0004) *coordination is possible* turns false is any follower TLC.
6. If external control bits are used: Leader sends START/STOP order to followers during each cycle
7. If external control bits are used: Leader receives START/STOP order using output (M0004) from followers during each cycle.

5.11 Termination sequence

1. If using local coordination, the leader TLC deactivates input (S0013) *coordination can continue* in all followers.
2. The leader TLC sends a command to followers to change time plan according to own programming, this command can also come from a supervision system.

5.12 Message priority

At simultaneous communication TLC-TLC and TLC-supervision system – then TLC-supervision system has higher priority.

5.13 Error handling

If a command or status request refers to a signal group or detector logic which does not exist, then only MessageNotAck will be sent as answer. No response on command (CommandResponse / StatusUpdate / StatusResponse) needs to be sent because no command is executed.

A command should be acknowledged when received using CommandResponse, but for certain commands this is no guarantee that the command really is executed. To confirm command execution, Leader TLC needs to subscribe to corresponding statuses and check whether expected statues changes according to command.

MessageNotAck terminates coordination, but communication continues to be active.

If an error occurs which causes MessageNotAck to be sent, then alarm A0005 must continuously be activated in the TLC.

- Alarm is activated at first received MessageNotAck. The TLC should not try to send the same command multiple times as an effect of MessageNotAck with the intention of later succeeding with the command.
- Alarm is activated in both of the TLC:s sending MessageNotAck as well as the TLC the message.
- Alarm A0005 is sent to the supervision system.
- The next message which leads to MessageAck deactivates alarm A0005

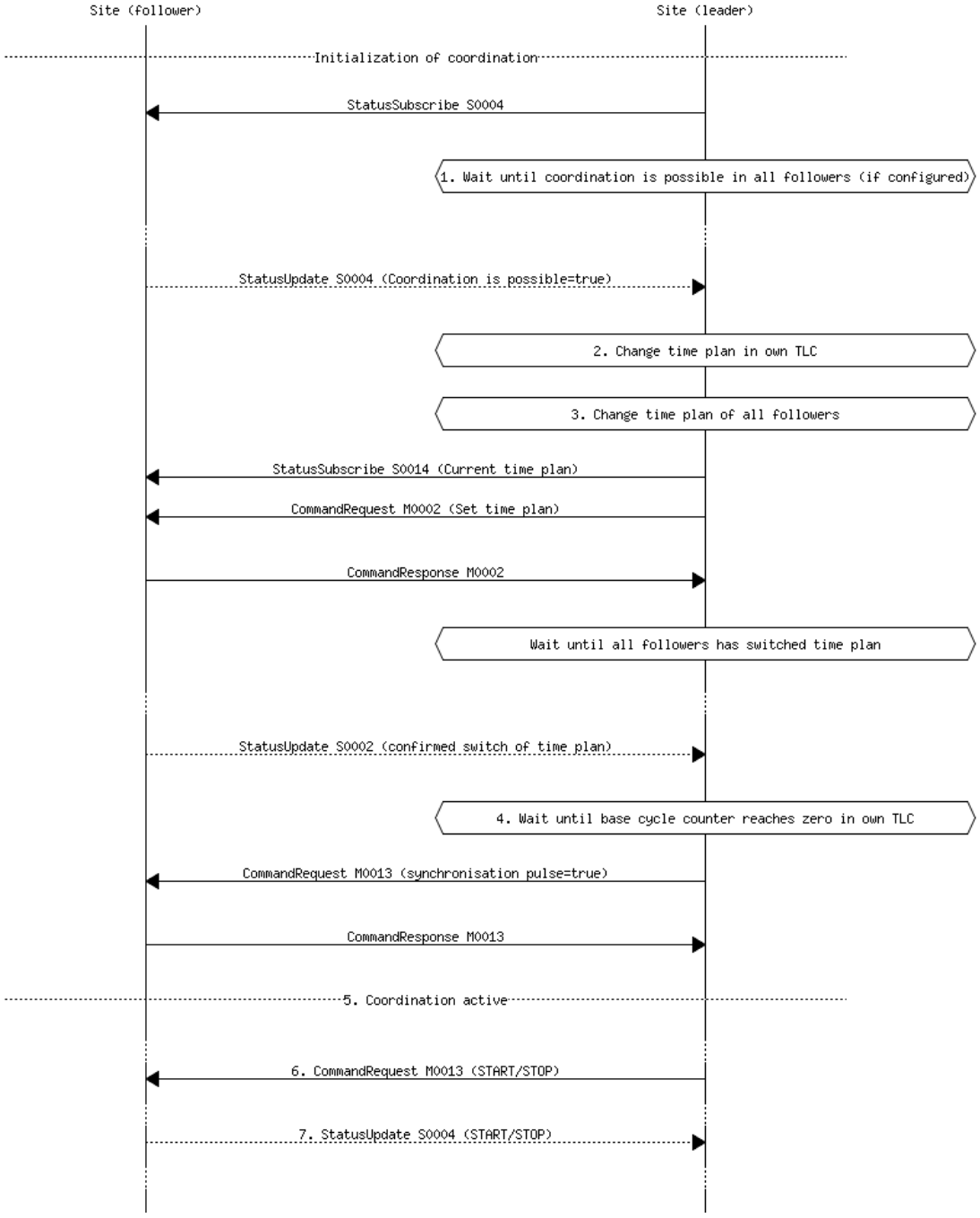

Fig. 6: Sequence for coordination with synchronized cycle timer

5.14 Error codes for MessageNotAck

In order to standardize contents in MessageNotAck ("reason"), use this common error code list

Error code (Content of "Reason")	Description
0001	SXL mismatch. Command does not exist
0002	SXL mismatch. Status does not exist
0003	SXL mismatch. Wrong number of arguments
0004	SXL mismatch. Argument out of range
0005	SXL mismatch. Argument improperly formatted
0006	I/O out of range or not found
0007	I/O cannot be modified
0008	Plan does not exist
0009	Plan cannot be changed due to higher priority command
0010	CPU error
0011	Invalid message

Table 3: Error codes

Chapter 6

Multiple supervisors

If RSMP version 3.2 or later is used then the TLC needs to support multiple supervisors according to section 4.3.1 Multiple supervisors in the RSMP specification.

The TLC needs to support at least three (3) RSMP connections to different supervision systems simultaneously and handle concurrent communication with all of them.

For example, a traffic light controller might connect to both a traffic management system and a bus priority system. Or it might connect to both a traffic management system and a secondary monitoring system.

Chapter 7

Security codes

The SXL for TLC's are using security codes as part of most commands.

7.1 Incorrect security codes

If an incorrect security code is used then the TLC replies with `MessageNotAck` where `rea` is set to `Incorrect security code`.

Chapter 8

JSon Examples

This document contains examples for all message types.

Alarms

- *A0001 Serious hardware error*
- *A0002 Less serious hardware error*
- *A0003 Serious configuration error*
- *A0004 Less serious configuration error*
- *A0005 Synchronisation error (coordination)*
- *A0006 Safety error*
- *A0007 Communication error*
- *A0008 Dead lock error*
- *A0009 Other error*
- *A0010 Door open*
- *A0101 Pushbutton error*
- *A0201 Serious lamp error*
- *A0202 Less serious lamp error*
- *A0301 Detector error (hardware)*
- *A0302 Detector error (logic error)*
- *A0303 Serious detector error (hardware)*
- *A0304 Serious detector error (logic error)*

Statuses

- *S0001 Signal group status*
- *S0002 Detector logic status*
- *S0003 Input status*
- *S0004 Output status*
- *S0005 Traffic Light Controller starting*

- *S0006 Emergency stage*
- *S0007 Controller switched on*
- *S0008 Manual control*
- *S0009 Fixed time control*
- *S0010 Isolated control*
- *S0011 Yellow flash*
- *S0012 All red*
- *S0013 Police key*
- *S0014 Current time plan*
- *S0015 Current traffic situation*
- *S0016 Number of detector logics*
- *S0017 Number of signal groups*
- *S0018 Number of time plans*
- *S0019 Number of traffic situations*
- *S0020 Control mode*
- *S0021 Manually set detector logic*
- *S0022 List of time plans*
- *S0023 Command table*
- *S0024 Offset time*
- *S0025 Time-to-green*
- *S0026 Week time table*
- *S0027 Time tables*
- *S0028 Cycle time*
- *S0029 Forced input status*
- *S0030 Forced output status*
- *S0031 Trigger level sensitivity for loop detector*
- *S0032 Coordinated control*
- *S0033 Signal Priority Status*
- *S0034 Timeout for dynamic bands*
- *S0091 Operator logged in/out OP-panel*
- *S0092 Operator logged web-interface*
- *S0095 Version of Traffic Light Controller*
- *S0096 Current date and time*
- *S0097 Checksum of traffic parameters*
- *S0098 Configuration of traffic parameters*
- *S0201 Traffic Counting: Number of vehicles*

- *S0202 Traffic Counting: Vehicle speed*
- *S0203 Traffic Counting: Occupancy*
- *S0204 Traffic Counting: Number of vehicles of given classification*
- *S0205 Traffic Counting: Number of vehicles*
- *S0206 Traffic Counting: Vehicle speed*
- *S0207 Traffic Counting: Occupancy*
- *S0208 Traffic Counting: Number of vehicles of given classification*

Commands

- *M0001 Sets functional position*
- *M0002 Sets current time plan*
- *M0003 Sets traffic situation the controller uses*
- *M0004 Restarts Traffic Light Controller*
- *M0005 Activate emergency route*
- *M0006 Activate input*
- *M0007 Activate fixed time control*
- *M0008 Sets manual activation of detector logic*
- *M0010 Start of signal group*
- *M0011 Stop of signal group*
- *M0012 Request start or stop of a series of signal groups*
- *M0013 Activate a series of inputs*
- *M0014 Set command table*
- *M0015 Set offset time*
- *M0016 Set week time table*
- *M0017 Set time tables*
- *M0018 Set cycle time*
- *M0019 Force input*
- *M0020 Force output*
- *M0021 Set trigger level sensitivity for loop detector*
- *M0022 Request Signal Priority*
- *M0023 Set timeout for dynamic bands*
- *M0103 Set security code*
- *M0104 Set clock*

8.1 Alarms

8.1.1 A0001 Serious hardware error


```
{
     "mType":"rSMsg",
     "type":"Alarm",
     "mId":"f9b27ba1-c342-4018-baf9-b7629d8df0af",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "aCId":"A0001",
     "xACId":"ERROR GROUP #4 MISSING",
     "xNACId":"",
     "aSp":"Issue",
     "ack":"notAcknowledged",
     "aS":"Active",
     "sS":"notSuspended",
     "aTs":"2019-09-26T12:43:49.889Z",
     "cat":"D",
     "pri":"2",
     "rvs":[]
}
```


8.1.2 A0002 Less serious hardware error


```
{
     "mType":"rSMsg",
     "type":"Alarm",
     "mId":"ee6c1417-a376-4401-8bc0-120faaef5962",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "aCId":"A0002",
     "xACId":"ERROR IO #1 MISSING",
     "xNACId":"",
     "aSp":"Issue",
     "ack":"notAcknowledged",
     "aS":"Active",
     "sS":"notSuspended",
     "aTs":"2019-09-26T12:47:16.683Z",
     "cat":"D",
     "pri":"3",
     "rvs":[]
}
```

8.1.3 A0003 Serious configuration error


```
{
     "mType":"rSMsg",
     "type":"Alarm",
     "mId":"843d9fd4-29a6-40c5-b325-d3ba430cc679",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "aCId":"A0003",
     "xACId":"ERROR IO #1 ERROR",
     "xNACId":"",
     "aSp":"Issue",
     "ack":"notAcknowledged",
     "aS":"Active",
     "sS":"notSuspended",
     "aTs":"2019-09-26T12:48:00.285Z",
     "cat":"D",
     "pri":"2",
     "rvs":[]}
```


8.1.4 A0004 Less serious configuration error


```
{
     "mType":"rSMsg",
     "type":"Alarm",
     "mId":"13889d3e-a1ca-400b-8212-276d15bcfa5b",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "aCId":"A0004",
     "xACId":"ERROR INSTRUCTION #5",
     "xNACId":"",
     "aSp":"Issue",
     "ack":"notAcknowledged",
     "aS":"Active",
     "sS":"notSuspended",
     "aTs":"2019-09-26T12:48:38.277Z",
     "cat":"D",
     "pri":"3",
     "rvs":[]
}
```


8.1.5 A0005 Synchronisation error (coordination)


```
{
     "mType":"rSMsg",
     "type":"Alarm",
     "mId":"9d29620a-0432-4eeb-826c-b9e4b08892a3",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "aCId":"A0005",
```


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```
    "xACId":"ERROR: SYNC ERROR 4",
    "xNACId":"",
    "aSp":"Issue",
    "ack":"notAcknowledged",
    "aS":"Active",
    "sS":"notSuspended",
    "aTs":"2019-09-26T12:49:05.721Z",
    "cat":"D",
    "pri":"3",
    "rvs":[]
}
```


8.1.6 A0006 Safety error


```
{
    "mType":"rSMsg",
    "type":"Alarm",
    "mId":"625dc28c-4f91-4218-81c4-3094c438688d",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "aCId":"A0006",
    "xACId":"ERROR MAINS #4",
    "xNACId":"",
    "aSp":"Issue",
    "ack":"notAcknowledged",
    "aS":"Active",
    "sS":"notSuspended",
    "aTs":"2019-09-26T12:49:47.590Z",
    "cat":"D",
    "pri":"2",
    "rvs":[]
}
```


8.1.7 A0007 Communication error


```
{
    "mType":"rSMsg",
    "type":"Alarm",
    "mId":"82f80c09-5320-4465-a45d-a8931bfc223d",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "aCId":"A0007",
    "xACId":"ERROR NTP ERROR #9",
    "xNACId":"",
    "aSp":"Issue",
    "ack":"notAcknowledged",
    "aS":"Active",
    "sS":"notSuspended",
    "aTs":"2019-09-26T12:50:12.402Z",
    "cat":"D",
```


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```
    "pri":"3",
    "rvs":[{
            "n":"protocol",
            "v":"ntp"
    }]
}
```


8.1.8 A0008 Dead lock error


```
{
    "mType":"rSMsg",
    "type":"Alarm",
    "mId":"148c4a38-d0ca-4a5e-81d4-951bcfc14df8",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001SG001",
    "aCId":"A0008",
    "xACId":"ERROR DELAY #10",
    "xNACId":"",
    "aSp":"Issue",
    "ack":"notAcknowledged",
    "aS":"Active",
    "sS":"notSuspended",
    "aTs":"2019-09-26T12:51:08.171Z",
    "cat":"D",
    "pri":"2",
    "rvs":[{
            "n":"timeplan",
            "v":"9"
    }]
}
```


8.1.9 A0009 Other error


```
{
    "mType":"rSMsg",
    "type":"Alarm",
    "mId":"46d837c5-846b-43bb-adf9-e97e1c22bf08",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "aCId":"A0009",
    "xACId":"ERROR NO PLANS",
    "xNACId":"",
    "aSp":"Issue",
    "ack":"notAcknowledged",
    "aS":"Active",
    "sS":"notSuspended",
    "aTs":"2019-09-26T12:50:37.701Z",
    "cat":"D",
    "pri":"3",
    "rvs":[]
}
```

8.1.10 A0010 Door open


```
{
     "mType":"rSMsg",
     "type":"Alarm",
     "mId":"48630a74-e8c1-4179-9e89-47d01ee27800",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001DO001",
     "aCId":"A0010",
     "xACId":"ERROR DOOR #5 OPEN",
     "xNACId":"",
     "aSp":"Issue",
     "ack":"notAcknowledged",
     "aS":"Active",
     "sS":"notSuspended",
     "aTs":"2019-09-30T13:20:58.183Z",
     "cat":"D",
     "pri":"3",
     "rvs":[]
}
```


8.1.11 A0101 Pushbutton error


```
{
     "mType":"rSMsg",
     "type":"Alarm",
     "mId":"3dca0e6e-beab-47af-8860-bcc2699b6d06",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001SG001",
     "aCId":"A0101",
     "xACId":"ERROR PUSH BUTTON #3",
     "xNACId":"",
     "aSp":"Issue",
     "ack":"notAcknowledged",
     "aS":"Active",
     "sS":"notSuspended",
     "aTs":"2019-09-26T12:53:03.836Z",
     "cat":"D",
     "pri":"3",
     "rvs":[]
}
```


8.1.12 A0201 Serious lamp error


```
{
     "mType":"rSMsg",
     "type":"Alarm",
     "mId":"34a3f91b-e5b7-42ae-aee3-c9ce8577358a",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001SG001",
```


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```
    "aCId":"A0201",
    "xACId":"ERROR LAMP OFF RED #1",
    "xNACId":"",
    "aSp":"Issue",
    "ack":"notAcknowledged",
    "aS":"Active",
    "sS":"notSuspended",
    "aTs":"2019-09-26T12:54:03.598Z",
    "cat":"D",
    "pri":"2",
    "rvs":[{
            "n":"color",
            "v":"red"
    }]
}
```


8.1.13 A0202 Less serious lamp error


```
{
    "mType":"rSMsg",
    "type":"Alarm",
    "mId":"6b4bfd63-4aee-4a58-b58a-7c1c0d6a7b7f",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001SG001",
    "aCId":"A0202",
    "xACId":"ERROR LAMP E4 RED #1",
    "xNACId":"",
    "aSp":"Issue",
    "ack":"notAcknowledged",
    "aS":"Active",
    "sS":"notSuspended",
    "aTs":"2019-09-26T12:54:54.066Z",
    "cat":"D",
    "pri":"3",
    "rvs":[{
            "n":"color",
            "v":"red"
    }]
}
```


8.1.14 A0301 Detector error (hardware)


```
{
    "mType":"rSMsg",
    "type":"Alarm",
    "mId":"ebeae300-c074-4658-a000-243265c3398f",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001DL001",
    "aCId":"A0301",
    "xACId":"ERROR LOOP OPEN #1",
```


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```
    "xNACId":"",
    "aSp":"Issue",
    "ack":"notAcknowledged",
    "aS":"Active",
    "sS":"notSuspended",
    "aTs":"2019-09-26T12:56:09.935Z",
    "cat":"D",
    "pri":"3",
    "rvs":[{
            "n":"detector",
            "v":"1"
    },{
            "n":"type",
            "v":"loop"
    },{
            "n":"errormode",
            "v":"on"
    },{
            "n":"manual",
            "v":"True"
    }]
}
```


8.1.15 A0302 Detector error (logic error)


```
{
    "mType":"rSMsg",
    "type":"Alarm",
    "mId":"b8ec9178-fe18-4386-9570-225a8e690b50",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001DL001",
    "aCId":"A0302",
    "xACId":"ERROR DETECTOR LOGIC OPEN #1",
    "xNACId":"",
    "aSp":"Issue",
    "ack":"notAcknowledged",
    "aS":"Active",
    "sS":"notSuspended",
    "aTs":"2019-09-26T12:56:40.387Z",
    "cat":"D",
    "pri":"3",
    "rvs":[{
            "n":"detector",
            "v":"1"
    },{
            "n":"type",
            "v":"loop"
    },{
            "n":"errormode",
            "v":"on"
    },{
            "n":"manual",
            "v":"True"
```


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```
    },{
            "n":"logicerror",
            "v":"always_off"
    }]
}
```


8.1.16 A0303 Serious detector error (hardware)


```
{
    "mType":"rSMsg",
    "type":"Alarm",
    "mId":"efb6a4c5-f2ea-4947-9deb-667756926203",
    "ntsOId":"KK+AG9998=001TC000",
    "xNId":"",
    "cId":"KK+AG9998=001DL001",
    "aCId":"A0303",
    "xACId":"ERROR DETECTOR LOGIC OPEN #1",
    "xNACId":"",
    "aSp":"Issue",
    "ack":"notAcknowledged",
    "aS":"Active",
    "sS":"notSuspended",
    "aTs":"2021-12-13T09:35:25.602Z",
    "cat":"D",
    "pri":"2",
    "rvs":[{
            "n":"detector",
            "v":"1"
    },{
            "n":"type",
            "v":"loop"
    },{
            "n":"errormode",
            "v":"on"
    },{
            "n":"manual",
            "v":"True"
    }]
}
```


8.1.17 A0304 Serious detector error (logic error)


```
{
    "mType":"rSMsg",
    "type":"Alarm",
    "mId":"efb6a4c5-f2ea-4947-9deb-667756926203",
    "ntsOId":"KK+AG9998=001TC000",
    "xNId":"",
    "cId":"KK+AG9998=001DL001",
    "aCId":"A0304",
    "xACId":"ERROR DETECTOR LOGIC OPEN #1",
    "xNACId":"",
```


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```
    "aSp":"Issue",
    "ack":"notAcknowledged",
    "aS":"Active",
    "sS":"notSuspended",
    "aTs":"2021-12-13T09:35:25.602Z",
    "cat":"D",
    "pri":"2",
    "rvs":[{
            "n":"detector",
            "v":"1"
    },{
            "n":"type",
            "v":"loop"
    },{
            "n":"errormode",
            "v":"on"
    },{
            "n":"manual",
            "v":"True"
    },{
            "n":"logicerror",
            "v":"always_off"
    }]
}
```


8.2 Statuses

8.2.1 S0001 Signal group status

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"2f9cb731-be46-4abe-88cb-c0f06e24b903",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0001",
             "n":"signalgroupstatus"
     },{
             "sCI":"S0001",
             "n":"cyclecounter"
     },{
             "sCI":"S0001",
             "n":"basecyclecounter"
     },{
             "sCI":"S0001",
             "n":"stage"
     }]
}
```


Status Response

```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"e8c14802-e4a0-47b7-b360-c0e611718387",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2019-09-26T13:00:51.642Z",
     "sS":[{
             "sCI":"S0001",
             "n":"signalgroupstatus",
             "s":"FF3FFF0",
             "q":"recent"
     },{
             "sCI":"S0001",
             "n":"cyclecounter",
             "s":"76",
             "q":"recent"
     },{
             "sCI":"S0001",
             "n":"basecyclecounter",
             "s":"0",
             "q":"recent"
     },{
             "sCI":"S0001",
             "n":"stage",
             "s":"2",
             "q":"recent"
     }]
}
```


8.2.2 S0002 Detector logic status

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"09204009-3853-49c9-a204-6955a7d752e3",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0002",
             "n":"detectorlogicstatus"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"871383a4-3078-4767-a9ce-bdc916e893f9",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
```


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```
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-26T13:02:59.156Z",
    "sS":[{
            "sCI":"S0002",
            "n":"detectorlogicstatus",
            "s":"11010101",
            "q":"recent"
    }]
}
```


8.2.3 S0003 Input status

Status Request


```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"397de512-0df0-4c9f-8094-0da5ab0c95dc",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0003",
            "n":"inputstatus"
    },{
            "sCI":"S0003",
            "n":"extendedinputstatus"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"830c5261-b5d1-41f9-abf9-a7653d9af8f2",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-26T13:04:14.310Z",
    "sS":[{
            "sCI":"S0003",
            "n":"inputstatus",
            "s":"00000000000000000010000000000000000000010",
            "q":"recent"
    },{
            "sCI":"S0003",
            "n":"extendedinputstatus",
            "s":"0",
            "q":"recent"
    }]
}
```

8.2.4 S0004 Output status

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"cbcf6e98-ad60-413e-9f4c-a1351c44dd8e",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0004",
             "n":"outputstatus"
     },{
             "sCI":"S0004",
             "n":"extendedoutputstatus"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"3d7bc8ea-d658-47cb-b7a3-07b6d6842934",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2019-09-26T13:05:52.387Z",
     "sS":[{
             "sCI":"S0004",
             "n":"outputstatus",
             "s":"00000000000000000010000000000000000000010",
             "q":"recent"
     },{
             "sCI":"S0004",
             "n":"extendedoutputstatus",
             "s":"0",
             "q":"recent"
     }]
}
```


8.2.5 S0005 Traffic Light Controller starting

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"4abdf9b7-f915-41e9-bb8e-cb908fdd1f8d",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0005",
```


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```
            "n":"status"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"cfab4504-7d02-4c2e-92e9-b7d1a67fadc7",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-26T13:06:48.807Z",
    "sS":[{
            "sCI":"S0005",
            "n":"status",
            "s":"False",
            "q":"recent"
    }]
}
```


8.2.6 S0006 Emergency stage

Status Request


```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"1cf1a709-41fe-4072-94ea-75976229bf61",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0006",
            "n":"status"
    },{
            "sCI":"S0006",
            "n":"emergencystage"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"8f1cc2aa-06fa-45e6-9448-3d6207e12ece",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-26T13:08:27.792Z",
    "sS":[{
            "sCI":"S0006",
            "n":"status",
```


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```
            "s":"True",
            "q":"recent"
    },{
            "sCI":"S0006",
            "n":"emergencystage",
            "s":"0",
            "q":"recent"
    }]
}
```


8.2.7 S0007 Controller switched on

Status Request


```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"71ba2859-05cd-4ae3-91b6-72e0ec80b9ff",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0007",
            "n":"intersection"
    },{
            "sCI":"S0007",
            "n":"status"
    },{
            "sCI":"S0007",
            "n":"source"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"0eda8f5e-3bb9-452e-9890-4f7d0f343cab",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-26T13:09:30.860Z",
    "sS":[{
            "sCI":"S0007",
            "n":"intersection",
            "s":"1",
            "q":"recent"
    },{
            "sCI":"S0007",
            "n":"status",
            "s":"True",
            "q":"recent"
    },{
            "sCI":"S0007",
```


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```
            "n":"source",
            "s":"forced",
            "q":"recent"
    }]
}
```

8.2.8 S0008 Manual control

Status Request

```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"81194636-cd7c-49fe-a00f-1c7a54de071c",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0008",
            "n":"intersection"
    },{
            "sCI":"S0008",
            "n":"status"
    },{
            "sCI":"S0008",
            "n":"source"
    }]
}
```

Status Response

```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"aa74fdc8-4e3e-40c0-a05d-9034b67e27c6",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-26T13:11:16.262Z",
    "sS":[{
            "sCI":"S0008",
            "n":"intersection",
            "s":"1",
            "q":"recent"
    },{
            "sCI":"S0008",
            "n":"status",
            "s":"True",
            "q":"recent"
    },{
            "sCI":"S0008",
            "n":"source",
            "s":"forced",
            "q":"recent"
```

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```
    }]
}
```

8.2.9 S0009 Fixed time control

Status Request

```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"1f5172e1-bacb-433f-bc7c-6810e16b5cea",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0009",
            "n":"intersection"
    },{
            "sCI":"S0009",
            "n":"status"
    },{
            "sCI":"S0009",
            "n":"source"
    }]
}
```

Status Response

```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"3cf01c8f-2faa-4db1-9fb7-9c3323a9c66c",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-26T13:12:26.610Z",
    "sS":[{
            "sCI":"S0009",
            "n":"intersection",
            "s":"1",
            "q":"recent"
    },{
            "sCI":"S0009",
            "n":"status",
            "s":"True",
            "q":"recent"
    },{
            "sCI":"S0009",
            "n":"source",
            "s":"forced",
            "q":"recent"
    }]
}
```

8.2.10 S0010 Isolated control

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"5d1be301-0746-4ac0-9e57-6533eef4e58a",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0010",
             "n":"intersection"
     },{
             "sCI":"S0010",
             "n":"status"
     },{
             "sCI":"S0010",
             "n":"source"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"01cc4a27-2d6b-403b-9b99-c8eaa00fa8e9",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2019-09-26T13:13:49.966Z",
     "sS":[{
             "sCI":"S0010",
             "n":"intersection",
             "s":"1",
             "q":"recent"
     },{
             "sCI":"S0010",
             "n":"status",
             "s":"True",
             "q":"recent"
     },{
             "sCI":"S0010",
             "n":"source",
             "s":"forced",
             "q":"recent"
     }]
}
```

8.2.11 S0011 Yellow flash

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"7f4e61c8-8908-4bca-b079-8a063cb4cdaf",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0011",
             "n":"intersection"
     },{
             "sCI":"S0011",
             "n":"status"
     },{
             "sCI":"S0011",
             "n":"source"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"477b4aef-84dc-441d-89c3-7635e548326b",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2019-09-26T13:15:48.662Z",
     "sS":[{
             "sCI":"S0011",
             "n":"intersection",
             "s":"0",
             "q":"recent"
     },{
             "sCI":"S0011",
             "n":"status",
             "s":"True",
             "q":"recent"
     },{
             "sCI":"S0011",
             "n":"source",
             "s":"forced",
             "q":"recent"
     }]
}
```

8.2.12 S0012 All red

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"0ae9b9cd-d556-48d1-9c18-3a82a711d4fd",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0012",
             "n":"intersection"
     },{
             "sCI":"S0012",
             "n":"status"
     },{
             "sCI":"S0012",
             "n":"source"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"5a203ef7-7608-47ac-b41e-cc1e55438334",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2019-09-26T13:16:49.285Z",
     "sS":[{
             "sCI":"S0012",
             "n":"intersection",
             "s":"0",
             "q":"recent"
     },{
             "sCI":"S0012",
             "n":"status",
             "s":"True",
             "q":"recent"
     },{
             "sCI":"S0012",
             "n":"source",
             "s":"forced",
             "q":"recent"
     }]
}
```

8.2.13 S0013 Police key

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"1872aee6-98ca-43ad-a009-a4122f490235",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0013",
             "n":"intersection"
     },{
             "sCI":"S0013",
             "n":"status"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"b014e57b-d00e-4ac1-9b91-57b85153c887",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2019-09-26T13:18:04.612Z",
     "sS":[{
             "sCI":"S0013",
             "n":"intersection",
             "s":"0",
             "q":"recent"
     },{
             "sCI":"S0013",
             "n":"status",
             "s":"1",
             "q":"recent"
     }]
}
```


8.2.14 S0014 Current time plan

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"0b9880ab-9b41-4033-bda3-0cddae610b8e",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0014",
```


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```
            "n":"status"
    },{
            "sCI":"S0014",
            "n":"source"
    }]
}
```

Status Response

```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"ff9d1115-4463-40be-b3cd-77383489e594",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-26T13:19:26.671Z",
    "sS":[{
            "sCI":"S0014",
            "n":"status",
            "s":"9",
            "q":"recent"
    },{
            "sCI":"S0014",
            "n":"source",
            "s":"forced",
            "q":"recent"
    }]
}
```

8.2.15 S0015 Current traffic situation

Status Request

```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"aa2198da-54c6-4628-932b-6ae85fcce7c5",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0015",
            "n":"status"
    },{
            "sCI":"S0015",
            "n":"source"
    }]
}
```

Status Response

```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
```

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```
    "mId":"823f2eb2-176b-4bcf-9b86-0c70297eb777",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-26T13:21:45.239Z",
    "sS":[{
            "sCI":"S0015",
            "n":"status",
            "s":"2",
            "q":"recent"
    },{
            "sCI":"S0015",
            "n":"status",
            "s":"forced",
            "q":"recent"
    }]
}
```


8.2.16 S0016 Number of detector logics

Status Request


```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"1f19c581-be88-4c2d-bde0-52e00f96ea9b",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0016",
            "n":"number"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"0d9ffb6b-d053-469f-b8da-cb871ec3c3ef",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-26T13:22:41.503Z",
    "sS":[{
            "sCI":"S0016",
            "n":"number",
            "s":"20",
            "q":"recent"
    }]
}
```

8.2.17 S0017 Number of signal groups

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"cb23e177-c16d-4de0-b843-355170176d3d",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0017",
             "n":"number"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"109c9f19-bb4b-4801-a7ea-4eca8f93534b",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2019-09-26T13:23:46.634Z",
     "sS":[{
             "sCI":"S0017",
             "n":"number",
             "s":"16",
             "q":"recent"
     }]
}
```


8.2.18 S0018 Number of time plans

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"005f9630-7800-4daa-82a8-ba1c74b7c293",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0018",
             "n":"number"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
```


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```
    "type":"StatusResponse",
    "mId":"f4029f3c-0f48-4af5-b1b9-a957b42ab165",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-26T13:24:55.915Z",
    "sS":[{
            "sCI":"S0018",
            "n":"number",
            "s":"10",
            "q":"recent"
    }]
}
```


8.2.19 S0019 Number of traffic situations

Status Request


```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"9ef925e5-a98a-4571-890c-eba174d89958",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0019",
            "n":"number"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"0d453770-bf97-4f23-a1e7-4413c1c8306c",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-26T13:26:12.886Z",
    "sS":[{
            "sCI":"S0019",
            "n":"number",
            "s":"4",
            "q":"recent"
    }]
}
```

8.2.20 S0020 Control mode

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"4e63d17b-106c-421d-ad88-783d4c753b0f",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0020",
             "n":"intersection"
     },{
             "sCI":"S0020",
             "n":"controlmode"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"063906d5-ecfd-44df-8b39-136d1b8d8214",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2019-09-26T13:27:42.844Z",
     "sS":[{
             "sCI":"S0020",
             "n":"intersection",
             "s":"0",
             "q":"recent"
     },{
             "sCI":"S0020",
             "n":"controlmode",
             "s":"startup",
             "q":"recent"
     }]
}
```


8.2.21 S0021 Manually set detector logic

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"fb092f10-ec2d-4ee1-83b7-c3e640f2ebb2",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0021",
```


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```
            "n":"detectorlogics"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"e5688e53-c51e-408a-8075-c3c018a67f56",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-26T13:31:32.114Z",
    "sS":[{
            "sCI":"S0021",
            "n":"detectorlogics",
            "s":"000000000000000000000000",
            "q":"recent"
    }]
}
```


8.2.22 S0022 List of time plans

Status Request


```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"48d93d8c-40ee-448b-adfd-4f8609a5cee3",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0022",
            "n":"status"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"2404e9cc-88df-4994-ad3c-ca7bb8cf8d59",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2016-05-11T19:37:06.678Z",
    "sS":[{
            "sCI":"S0022",
            "n":"status",
            "s":"1,2,3,5",
            "q":"recent"
```


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```
    }]
}
```

8.2.23 S0023 Command table

Status Request

```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"481da9fe-b1af-4043-9868-61d26d325d71",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0023",
            "n":"status"
    }]
}
```

Status Response

```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"64d47cbc-b018-4647-82e9-eb806058ef3e",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2016-05-11T12:38:59.953Z",
    "sS":[{
            "sCI":"S0023",
            "n":"status",
            "s":"01-1-30,01-2-10:",
            "q":"recent"
    }]
}
```

8.2.24 S0024 Offset time

Status Request

```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"696c1eb9-e9bf-411c-8cef-9edd9c48338f",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0024",
            "n":"status"
    }]
}
```

Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"097edc53-cd4c-4fb8-9ed7-59c77869704b",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2016-05-11T13:00:56.432Z",
     "sS":[{
             "sCI":"S0024",
             "n":"status",
             "s":"01-20,02-10",
             "q":"recent"
     }]
}
```


8.2.25 S0025 Time-to-green

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"4bd1b76d-4be2-4b07-9a3f-48768c960951",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001SG002",
     "sS":[{
             "sCI":"S0025",
             "n":"minToGEstimate"
     },{
             "sCI":"S0025",
             "n":"maxToGEstimate"
     },{
             "sCI":"S0025",
             "n":"likelyToGEstimate"
     },{
             "sCI":"S0025",
             "n":"ToGConfidence"
     },{
             "sCI":"S0025",
             "n":"minToREstimate"
     },{
             "sCI":"S0025",
             "n":"maxToREstimate"
     },{
             "sCI":"S0025",
             "n":"likelyToREstimate"
     },{
             "sCI":"S0025",
             "n":"ToRConfidence"
     }]
}
```


Status Response

```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"18e1f203-c2aa-4fb8-b7fe-5babf93f46f8",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001SG002",
     "sTs":"2016-05-11T19:58:02.487Z",
     "sS":[{
             "sCI":"S0025",
             "n":"minToGEstimate",
             "s":"2016-05-11T21:55:10.231Z",
             "q":"recent"
     },{
             "sCI":"S0025",
             "n":"maxToGEstimate",
             "s":"2016-05-11T21:56:08.231Z",
             "q":"recent"
     },{
             "sCI":"S0025",
             "n":"likelyToGEstimate",
             "s":"2016-05-11T21:55:13.231Z",
             "q":"recent"
     },{
             "sCI":"S0025",
             "n":"ToGConfidence",
             "s":"87",
             "q":"recent"
     },{
             "sCI":"S0025",
             "n":"minToREstimate",
             "s":"2016-05-11T21:57:45.231Z",
             "q":"recent"
     },{
             "sCI":"S0025",
             "n":"maxToREstimate",
             "s":"2016-05-11T21:57:55.231Z",
             "q":"recent"
     },{
             "sCI":"S0025",
             "n":"likelyToREstimate",
             "s":"2016-05-11T21:57:45.231Z",
             "q":"recent"
     },{
             "sCI":"S0025",
             "n":"ToRConfidence",
             "s":"75",
             "q":"recent"
     }]
}
```

8.2.26 S0026 Week time table

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"2af769ea-d715-44aa-af72-cfb666795a46",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0026",
             "n":"status"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"2ef406ed-17d1-4e50-b952-ebfb8dca18dc",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2016-05-11T13:31:41.476Z",
     "sS":[{
             "sCI":"S0026",
             "n":"status",
             "s":"0-2,1-3,2-1,3-1,4-1,5-4,6-4",
             "q":"recent"
     }]
}
```


8.2.27 S0027 Time tables

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"a82f7796-3cf6-4319-835b-ec8bf21bae69",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0027",
             "n":"status"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
```


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```
    "type":"StatusResponse",
    "mId":"1ed16ca5-2ea7-4e06-9226-d1b482b16db4",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2016-05-11T13:46:57.781Z",
    "sS":[{
            "sCI":"S0027",
            "n":"status",
            "s":"1-0-22-30,2-3-06-30,3-14-13-00,4-5-14-00",
            "q":"recent"
    }]
}
```


8.2.28 S0028 Cycle time

Status Request


```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"a82f7796-3cf6-4319-835b-ec8bf21bae69",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0028",
            "n":"status"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"1ed16ca5-2ea7-4e06-9226-d1b482b16db4",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2016-05-11T13:46:57.781Z",
    "sS":[{
            "sCI":"S0028",
            "n":"status",
            "s":"01-80,02-80,03-75",
            "q":"recent"
    }]
}
```

8.2.29 S0029 Forced input status

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"a82f7796-3cf6-4319-835b-ec8bf21bae69",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0029",
             "n":"status"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"1ed16ca5-2ea7-4e06-9226-d1b482b16db4",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2016-05-11T13:46:57.781Z",
     "sS":[{
             "sCI":"S0029",
             "n":"status",
             "s":"000000100010000010",
             "q":"recent"
     }]
}
```


8.2.30 S0030 Forced output status

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"032be599-861e-40f1-a896-7cb539a0b863",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0030",
             "n":"status"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
```


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```
    "type":"StatusResponse",
    "mId":"d1d7a68f-b0eb-4add-b91a-87dddbfde665",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-30T12:14:47.021Z",
    "sS":[{
            "sCI":"S0030",
            "n":"status",
            "s":"0",
            "q":"recent"
    }]
}
```


8.2.31 S0031 Trigger level sensitivity for loop detector

Status Request


```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"70264134-0ecb-4c47-8da0-946c202f9a0e",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0031",
            "n":"status"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"418f0597-1578-4045-89eb-849b22263c5c",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-30T12:17:48.793Z",
    "sS":[{
            "sCI":"S0031",
            "n":"status",
            "s":"0",
            "q":"recent"
    }]
}
```

8.2.32 S0032 Coordinated control

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"c764a831-e3c9-4b01-a938-2171fb3d9bbd",
     "ntsOId":"KK+AG9998=001TC000",
     "xNId":"",
     "cId":"KK+AG9998=001TC000",
     "sS":[{
             "sCI":"S0032",
             "n":"intersection"
     },{
             "sCI":"S0032",
             "n":"status"
     },{
             "sCI":"S0032",
             "n":"source"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"56fcfe6b-a07e-4a87-bf9f-4ecd76a805a7",
     "ntsOId":"KK+AG9998=001TC000",
     "xNId":"",
     "cId":"KK+AG9998=001TC000",
     "sTs":"2021-12-13T11:11:07.317Z",
     "sS":[{
             "sCI":"S0032",
             "n":"intersection",
             "s":"0",
             "q":"recent"
     },{
             "sCI":"S0032",
             "n":"status",
             "s":"local",
             "q":"recent"
     },{
             "sCI":"S0032",
             "n":"source",
             "s":"calendar_clock",
             "q":"recent"
     }]
 }
```

8.2.33 S0033 Signal Priority Status

Status Request


```
{
    "mType": "rSMsg",
    "type": "StatusRequest",
    "mId": "f1a13213-b90a-4abc-8953-2b8142923c55",
    "ntsOId":"KK+AG9998=001TC000",
    "xNId":"",
    "cId":"KK+AG9998=001TC000",
    "sS": [{
            "sCI": "S0033",
            "n": "list"
    }]
}
```


Status Response


```
{
    "mType": "rSMsg",
    "type": "StatusResponse",
    "mId": "f1a13213-b90a-4abc-8953-2b8142923c55",
    "ntsOId":"KK+AG9998=001TC000",
    "xNId":"",
    "cId":"KK+AG9998=001TC000",
    "sTs":"2021-12-13T11:11:07.317Z",
    "sS": [{
            "sCI": "S0033",
            "n": "list",
            "q": "recent",
            "s": [{
                    "r": "f90c",
                    "t": "2021-11-09T15:06:38.796Z",
                    "s": "received"
            },{
                    "r": "uhnv",
                    "t": "2021-11-09T15:04:12.348Z",
                    "s": "completed",
                    "e": "5",
                    "d": "10"
            },{
                    "r": "oh0i",
                    "t": "2021-11-09T15:06:38.796Z",
                    "s": "activated"
            },{
                    "r": "f90c",
                    "t": "2021-11-09T15:06:39.796Z",
                    "s": "completed"
            },{
                    "r": "3ia2",
                    "t": "2021-11-09T15:06:48.796Z",
                    "s": "queued",
            },{
                    "r": "5hc0",
                    "t": "2021-11-09T15:06:48.796Z",
                    "s": "timeout"
            }]
```


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```
    }]
}
```

8.2.34 S0034 Timeout for dynamic bands

Status Request

```
{
    "mType": "rSMsg",
    "type": "StatusRequest",
    "mId": "f1a13213-b90a-4abc-8953-2b8142923c55",
    "ntsOId":"KK+AG9998=001TC000",
    "xNId":"",
    "cId":"KK+AG9998=001TC000",
    "sS": [{
            "sCI": "S0034",
            "n": "status"
    }]
}
```

Status Response

```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"c4064647-65c8-4ebd-aa41-e52576329d8e",
    "ntsOId":"KK+AG9998=001TC000",
    "xNId":"",
    "cId":"KK+AG9998=001TC000",
    "sTs":"2021-12-13T11:55:13.399Z",
    "sS":[{
            "sCI":"S0034",
            "n":"status",
            "s":"30",
            "q":"recent"
    }]
}
```

8.2.35 S0091 Operator logged in/out OP-panel

Status Request

```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"9b6591b4-5633-401f-b882-e393393e97fe",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0091",
             "n":"user"
     }]
}
```

Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"a58b40b3-ba7f-4f09-8be5-bbf4598caafe",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2019-09-26T13:34:31.402Z",
     "sS":[{
             "sCI":"S0091",
             "n":"user",
             "s":"2",
             "q":"recent"
     }]
}
```


8.2.36 S0092 Operator logged web-interface

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"7e14e715-d7eb-4aed-a899-fa21fb0d3f4e",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0092",
             "n":"user"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"f1fbc4ac-921c-43be-ad0c-36c54e666ef3",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2019-09-26T13:35:06.573Z",
     "sS":[{
             "sCI":"S0092",
             "n":"user",
             "s":"2",
             "q":"recent"
     }]
}
```

8.2.37 S0095 Version of Traffic Light Controller

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"aef9678f-60b9-47a0-8470-70af4632a01d",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0095",
             "n":"status"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"9ba06a0a-28d5-4236-86e5-d83a212ced09",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2019-09-26T13:37:23.031Z",
     "sS":[{
             "sCI":"S0095",
             "n":"status",
             "s":"TLC product 13, version 5",
             "q":"recent"
     }]
}
```


8.2.38 S0096 Current date and time

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"66a6f25e-930a-40c7-9957-04075716e2e8",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0096",
             "n":"year"
     },{
             "sCI":"S0096",
             "n":"month"
     },{
             "sCI":"S0096",
             "n":"day"
     },{
```


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```
            "sCI":"S0096",
            "n":"hour"
    },{
            "sCI":"S0096",
            "n":"minute"
    },{
            "sCI":"S0096",
            "n":"second"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"b9c8a436-f8ae-4d45-9af4-264032c0a0a1",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-26T13:40:30.826Z",
    "sS":[{
            "sCI":"S0096",
            "n":"year",
            "s":"2017",
            "q":"recent"
    },{
            "sCI":"S0096",
            "n":"month",
            "s":"5",
            "q":"recent"
    },{
            "sCI":"S0096",
            "n":"day",
            "s":"12",
            "q":"recent"
    },{
            "sCI":"S0096",
            "n":"hour",
            "s":"10",
            "q":"recent"
    },{
            "sCI":"S0096",
            "n":"minute",
            "s":"16",
            "q":"recent"
    },{
            "sCI":"S0096",
            "n":"second",
            "s":"31",
            "q":"recent"
    }]
}
```

8.2.39 S0097 Checksum of traffic parameters

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"b4e70a7e-12ca-4619-98af-419ecf2a74da",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0097",
             "n":"timestamp"
     },{
             "sCI":"S0097",
             "n":"checksum"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"f18f2032-39e8-4397-bc82-d5355c76caf4",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2019-09-30T12:21:30.640Z",
     "sS":[{
             "sCI":"S0097",
             "n":"timestamp",
             "s":"2019-09-29T10:00:00.510Z",
             "q":"recent"
     },{
             "sCI":"S0097",
             "n":"checksum",
             "s":"63b417a713575c7838e4a915b92c617e7b5957bf",
             "q":"recent"
     }]
}
```


8.2.40 S0098 Configuration of traffic parameters

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"b4e70a7e-12ca-4619-98af-419ecf2a74da",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0098",
```


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```
            "n":"config"
    },{
            "sCI":"S0098",
            "n":"timestamp"
    },{
            "sCI":"S0098",
            "n":"version"
    }]
}
```

Status Response

```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"f18f2032-39e8-4397-bc82-d5355c76caf4",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-30T12:21:30.640Z",
    "sS":[{
            "sCI":"S0098",
            "n":"config",
            "s":"63b417a713575c7838e4a915b92c617e7b5957bf",
            "q":"recent"
    },{
            "sCI":"S0098",
            "n":"timestamp",
            "s":"2019-09-29T10:00:00.510Z",
            "q":"recent"
    },{
            "sCI":"S0098",
            "n":"version",
            "s":"Controller 1234. Version 5. Added SG3",
            "q":"recent"
    }]
}
```

8.2.41 S0201 Traffic Counting: Number of vehicles

Status Request

```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"af196dee-bc6b-449e-96bd-8794acea95b2",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001DL001",
    "sS":[{
            "sCI":"S0201",
            "n":"starttime"
    },{
            "sCI":"S0201",
            "n":"vehicles"
```

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```
    }]
}
```

Status Response

```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"84c4b90f-142e-416c-8656-17d720be0791",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001DL001",
    "sTs":"2019-09-30T12:24:10.904Z",
    "sS":[{
            "sCI":"S0201",
            "n":"starttime",
            "s":"2019-03-12T12:00:00.000Z",
            "q":"recent"
    },{
            "sCI":"S0201",
            "n":"vehicles",
            "s":"20",
            "q":"recent"
    }]
}
```

8.2.42 S0202 Traffic Counting: Vehicle speed

Status Request

```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"b41fca74-11ee-4486-bda2-9a0b1e3f53b2",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001DL001",
    "sS":[{
            "sCI":"S0202",
            "n":"starttime"
    },{
            "sCI":"S0202",
            "n":"speed"
    }]
}
```

Status Response

```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"36d04216-d85e-41bf-9012-84698d286a37",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001DL001",
```

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```
    "sTs":"2019-09-30T12:28:21.855Z",
    "sS":[{
            "sCI":"S0202",
            "n":"starttime",
            "s":"2019-03-12T12:00:00.000Z",
            "q":"recent"
    },{
            "sCI":"S0202",
            "n":"speed",
            "s":"54",
            "q":"recent"
    }]
}
```


8.2.43 S0203 Traffic Counting: Occupancy

Status Request


```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"311c3959-1f4f-4d74-9513-6319348fb6d2",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001DL001",
    "sS":[{
            "sCI":"S0203",
            "n":"starttime"
    },{
            "sCI":"S0203",
            "n":"occupancy"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"bf47496c-c9c7-404a-bb0d-8fa36b28bf42",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001DL001",
    "sTs":"2019-09-30T12:30:55.630Z",
    "sS":[{
            "sCI":"S0203",
            "n":"starttime",
            "s":"2019-03-12T12:00:00.000Z",
            "q":"recent"
    },{
            "sCI":"S0203",
            "n":"occupancy",
            "s":"23",
            "q":"recent"
```


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```
    }]
}
```

8.2.44 S0204 Traffic Counting: Number of vehicles of given classification

Status Request

```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"e497a551-60ba-42b5-911c-f107d0cbc84d",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001DL001",
    "sS":[{
            "sCI":"S0204",
            "n":"starttime"
    },{
            "sCI":"S0204",
            "n":"P"
    },{
            "sCI":"S0204",
            "n":"PS"
    },{
            "sCI":"S0204",
            "n":"L"
    },{
            "sCI":"S0204",
            "n":"LS"
    },{
            "sCI":"S0204",
            "n":"B"
    },{
            "sCI":"S0204",
            "n":"SP"
    },{
            "sCI":"S0204",
            "n":"MC"
    },{
            "sCI":"S0204",
            "n":"C"
    },{
            "sCI":"S0204",
            "n":"F"
    }]
}
```

Status Response

```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"ad4d10dc-7a0b-4417-9714-931bfb71bc5d",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
```

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```
    "cId":"KK+AG0503=001DL001",
    "sTs":"2019-09-30T12:48:44.730Z",
    "sS":[{
            "sCI":"S0204",
            "n":"starttime",
            "s":"2019-03-12T12:00:00.000Z",
            "q":"recent"
    },{
            "sCI":"S0204",
            "n":"P",
            "s":"2",
            "q":"recent"
    },{
            "sCI":"S0204",
            "n":"PS",
            "s":"43",
            "q":"recent"
    },{
            "sCI":"S0204",
            "n":"L",
            "s":"9",
            "q":"recent"
    },{
            "sCI":"S0204",
            "n":"LS",
            "s":"3",
            "q":"recent"
    },{
            "sCI":"S0204",
            "n":"B",
            "s":"2",
            "q":"recent"
    },{
            "sCI":"S0204",
            "n":"SP",
            "s":"3",
            "q":"recent"
    },{
            "sCI":"S0204",
            "n":"MC",
            "s":"4",
            "q":"recent"
    },{
            "sCI":"S0204",
            "n":"C",
            "s":"6",
            "q":"recent"
    },{
            "sCI":"S0204",
            "n":"F",
            "s":"2",
            "q":"recent"
    }]
}
```

8.2.45 S0205 Traffic Counting: Number of vehicles

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"df92c79d-05a5-4397-9cce-dbfefa25b5ef",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0205",
             "n":"start"
     },{
             "sCI":"S0205",
             "n":"vehicles"
     }]
}
```


Status Response


```
{
     "mType":"rSMsg",
     "type":"StatusResponse",
     "mId":"dd704047-6996-4ada-b953-78b9e13ce8ae",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sTs":"2019-09-29T17:57:55.993Z",
     "sS":[{
             "sCI":"S0205",
             "n":"start",
             "s":"2019-03-12T12:00:00.000Z",
             "q":"recent"
     },{
             "sCI":"S0205",
             "n":"vehicles",
             "s":"32,31,24,41,41,32",
             "q":"recent"
     }]
}
```


8.2.46 S0206 Traffic Counting: Vehicle speed

Status Request


```
{
     "mType":"rSMsg",
     "type":"StatusRequest",
     "mId":"79769973-3bc9-4ec3-b1a4-55c252197f6f",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "sS":[{
             "sCI":"S0206",
```


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```
            "n":"start"
    },{
            "sCI":"S0206",
            "n":"speed"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"c2d3b89f-c684-483d-a548-dc85099229f2",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-29T18:01:08.571Z",
    "sS":[{
            "sCI":"S0206",
            "n":"start",
            "s":"2019-03-12T12:00:00.000Z",
            "q":"recent"
    },{
            "sCI":"S0206",
            "n":"speed",
            "s":"32,31,24,41,41,32",
            "q":"recent"
    }]
}
```


8.2.47 S0207 Traffic Counting: Occupancy

Status Request


```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"e4707ad3-4d3b-4ce6-b9b1-48277da47c6f",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0207",
            "n":"start"
    },{
            "sCI":"S0207",
            "n":"occupancy"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
```


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```
    "mId":"8d10ad23-407f-4ddd-8d2a-4d69af883e72",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-29T18:05:06.776Z",
    "sS":[{
            "sCI":"S0207",
            "n":"start",
            "s":"2019-03-12T12:00:00.000Z",
            "q":"recent"
    },{
            "sCI":"S0207",
            "n":"occupancy",
            "s":"32,31,24,41,41,32",
            "q":"recent"
    }]
}
```


8.2.48 S0208 Traffic Counting: Number of vehicles of given classification

Status Request


```
{
    "mType":"rSMsg",
    "type":"StatusRequest",
    "mId":"78219ac2-80ff-46df-a9e8-4051909311bf",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sS":[{
            "sCI":"S0208",
            "n":"start"
    },{
            "sCI":"S0208",
            "n":"P"
    },{
            "sCI":"S0208",
            "n":"PS"
    },{
            "sCI":"S0208",
            "n":"L"
    },{
            "sCI":"S0208",
            "n":"LS"
    },{
            "sCI":"S0208",
            "n":"B"
    },{
            "sCI":"S0208",
            "n":"SP"
    },{
            "sCI":"S0208",
            "n":"MC"
    },{
            "sCI":"S0208",
```


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```
            "n":"C"
    },{
            "sCI":"S0208",
            "n":"F"
    }]
}
```


Status Response


```
{
    "mType":"rSMsg",
    "type":"StatusResponse",
    "mId":"4c7a1249-a189-460f-a44d-5547fa706c08",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "sTs":"2019-09-29T18:08:34.230Z",
    "sS":[{
            "sCI":"S0208",
            "n":"start",
            "s":"2019-03-12T12:00:00.000Z",
            "q":"recent"
    },{
            "sCI":"S0208",
            "n":"P",
            "s":"2,3,2,1,1,2",
            "q":"recent"
    },{
            "sCI":"S0208",
            "n":"PS",
            "s":"9,3,5,1,1,2",
            "q":"recent"
    },{
            "sCI":"S0208",
            "n":"L",
            "s":"3,5,2,1,1,2",
            "q":"recent"
    },{
            "sCI":"S0208",
            "n":"LS",
            "s":"2,3,2,1,1,2",
            "q":"recent"
    },{
            "sCI":"S0208",
            "n":"B",
            "s":"8,3,2,1,1,2",
            "q":"recent"
    },{
            "sCI":"S0208",
            "n":"SP",
            "s":"1,1,2,1,1,2",
            "q":"recent"
    },{
            "sCI":"S0208",
            "n":"MC",
            "s":"4,3,3,1,1,2",
```


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```
            "q":"recent"
    },{
            "sCI":"S0208",
            "n":"C",
            "s":"8,3,2,1,1,2",
            "q":"recent"
    },{
            "sCI":"S0208",
            "n":"F",
            "s":"5,3,2,1,1,2",
            "q":"recent"
    }]
}
```


8.3 Commands

8.3.1 M0001 Sets functional position

Command Request


```
{
    "mType":"rSMsg",
    "type":"CommandRequest",
    "mId":"c7fb8423-8232-43e1-b632-68c299ce4360",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "arg":[{
            "cCI":"M0001",
            "n":"status",
            "cO":"setValue",
            "v":"NormalControl"
    },{
            "cCI":"M0001",
            "n":"securityCode",
            "cO":"setValue",
            "v":"0000"
    },{
            "cCI":"M0001",
            "n":"timeout",
            "cO":"setValue",
            "v":"0"
    },{
            "cCI":"M0001",
            "n":"intersection",
            "cO":"setValue",
            "v":"0"
    }]
}
```


Command Response

```
{
     "mType":"rSMsg",
     "type":"CommandResponse",
     "mId":"8dc16a94-d200-439a-a0f9-75020fd96530",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "cTS":"2019-09-30T07:03:33.360Z",
     "rvs":[{
             "cCI":"M0001",
             "n":"status",
             "v":"NormalControl",
             "age":"recent"
     },{
             "cCI":"M0001",
             "n":"securityCode",
             "v":"0000",
             "age":"recent"
     },{
             "cCI":"M0001",
             "n":"timeout",
             "v":"0",
             "age":"recent"
     },{
             "cCI":"M0001",
             "n":"intersection",
             "v":"0",
             "age":"recent"
     }]
}
```


8.3.2 M0002 Sets current time plan

Command Request


```
{
     "mType":"rSMsg",
     "type":"CommandRequest",
     "mId":"5066622c-cd03-44c2-9e21-dd02d8998585",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "arg":[{
             "cCI":"M0002",
             "n":"status",
             "cO":"setPlan",
             "v":"True"
     },{
             "cCI":"M0002",
             "n":"securityCode",
             "cO":"setPlan",
             "v":"0000"
     },{
             "cCI":"M0002",
             "n":"timeplan",
             "cO":"setPlan",
```


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```
            "v":"1"
    }]
}
```


Command Response


```
{
    "mType":"rSMsg",
    "type":"CommandResponse",
    "mId":"84038dc5-fefd-4984-aec2-41aba312b43b",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "cTS":"2019-09-30T07:35:08.934Z",
    "rvs":[{
            "cCI":"M0002",
            "n":"status",
            "v":"False",
            "age":"True"
    },{
            "cCI":"M0002",
            "n":"securityCode",
            "v":"0000",
            "age":"recent"
    },{
            "cCI":"M0002",
            "n":"timeplan",
            "v":"1",
            "age":"recent"
    }]
}
```


8.3.3 M0003 Sets traffic situation the controller uses

Command Request


```
{
    "mType":"rSMsg",
    "type":"CommandRequest",
    "mId":"63f4f782-e7d5-446c-b583-489b1a26bca5",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "arg":[{
            "cCI":"M0003",
            "n":"status",
            "cO":"setTrafficSituation",
            "v":"True"
    },{
            "cCI":"M0003",
            "n":"securityCode",
            "cO":"setTrafficSituation",
            "v":"0000"
    },{
            "cCI":"M0003",
```


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```
            "n":"trafficsituation",
            "cO":"setTrafficSituation",
            "v":"1"
    }]
}
```


Command Response


```
{
    "mType":"rSMsg",
    "type":"CommandResponse",
    "mId":"c5640a4c-93c3-4928-9e9b-f6bb9060d126",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "cTS":"2019-09-30T07:39:14.978Z",
    "rvs":[{
            "cCI":"M0003",
            "n":"status",
            "v":"True",
            "age":"recent"
    },{
            "cCI":"M0003",
            "n":"securityCode",
            "v":"0000",
            "age":"recent"
    },{
            "cCI":"M0003",
            "n":"trafficsituation",
            "v":"1",
            "age":"recent"
    }]
}
```


8.3.4 M0004 Restarts Traffic Light Controller

Command Request


```
{
    "mType":"rSMsg",
    "type":"CommandRequest",
    "mId":"d6734246-c087-4b27-9fe6-e1e0b9e78f41",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "arg":[{
            "cCI":"M0004",
            "n":"status",
            "cO":"setRestart",
            "v":"True"
    },{
            "cCI":"M0004",
            "n":"securityCode",
            "cO":"setRestart",
            "v":"0000"
```


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```
    }]
}
```

Command Response


```
{
    "mType":"rSMsg",
    "type":"CommandResponse",
    "mId":"ddc41905-5c8b-4aad-91ec-71d2ae8b4e2b",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "cTS":"2019-09-30T07:46:44.187Z",
    "rvs":[{
            "cCI":"M0004",
            "n":"status",
            "v":"True",
            "age":"recent"
    },{
            "cCI":"M0004",
            "n":"securityCode",
            "v":"0000",
            "age":"recent"
    }]
}
```


8.3.5 M0005 Activate emergency route

Command Request


```
{
    "mType":"rSMsg",
    "type":"CommandRequest",
    "mId":"b5517db0-ec6f-4bef-ad18-05673cbeecde",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "arg":[{
            "cCI":"M0005",
            "n":"status",
            "cO":"setEmergency",
            "v":"False"
    },{
            "cCI":"M0005",
            "n":"securityCode",
            "cO":"setEmergency",
            "v":"0000"
    },{
            "cCI":"M0005",
            "n":"emergencyroute",
            "cO":"setEmergency",
            "v":"1"
    }]
}
```


Command Response

```
{
     "mType":"rSMsg",
     "type":"CommandResponse",
     "mId":"0ea1da9d-675a-4059-8bb6-015152399b72",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "cTS":"2019-09-30T07:52:11.612Z",
     "rvs":[{
             "cCI":"M0005",
             "n":"status",
             "v":"False",
             "age":"recent"
     },{
             "cCI":"M0005",
             "n":"securityCode",
             "v":"0000",
             "age":"recent"
     },{
             "cCI":"M0005",
             "n":"emergencyroute",
             "v":"1",
             "age":"recent"
     }]
}
```


8.3.6 M0006 Activate input

Command Request


```
{
     "mType":"rSMsg",
     "type":"CommandRequest",
     "mId":"3e0a4825-d064-457c-a2b8-608c0d0f2284",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "arg":[{
             "cCI":"M0006",
             "n":"status",
             "cO":"setInput",
             "v":"True"
     },{
             "cCI":"M0006",
             "n":"securityCode",
             "cO":"setInput",
             "v":"0000"
     },{
             "cCI":"M0006",
             "n":"input",
             "cO":"setInput",
             "v":"1"
     }]
}
```


Command Response

```
{
     "mType":"rSMsg",
     "type":"CommandResponse",
     "mId":"f34dc677-3d05-418c-9496-db73deb248e3",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "cTS":"2019-09-30T08:12:02.519Z",
     "rvs":[{
             "cCI":"M0006",
             "n":"status",
             "v":"True",
             "age":"recent"
     },{
             "cCI":"M0006",
             "n":"securityCode",
             "v":"0000",
             "age":"recent"
     },{
             "cCI":"M0006",
             "n":"input",
             "v":"1",
             "age":"recent"
     }]
}
```


8.3.7 M0007 Activate fixed time control

Command Request


```
{
     "mType":"rSMsg",
     "type":"CommandRequest",
     "mId":"f11d1a8b-595a-457a-a3c7-2826c5cfdc64",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "arg":[{
             "cCI":"M0007",
             "n":"status",
             "cO":"setFixedTime",
             "v":"True"
     },{
             "cCI":"M0007",
             "n":"securityCode",
             "cO":"setFixedTime",
             "v":"0000"
     }]
}
```


Command Response


```
{
     "mType":"rSMsg",
     "type":"CommandResponse",
     "mId":"ba308115-06ae-4813-ba19-fb95ffc36907",
```


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```
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "cTS":"2019-09-30T08:15:54.862Z",
    "rvs":[{
            "cCI":"M0007",
            "n":"status",
            "v":"True",
            "age":"recent"
    },{
            "cCI":"M0007",
            "n":"securityCode",
            "v":"0000",
            "age":"recent"
    }]
}
```


8.3.8 M0008 Sets manual activation of detector logic

Command Request


```
{
    "mType":"rSMsg",
    "type":"CommandRequest",
    "mId":"756914f6-51c1-4407-8dbd-328b2f9dbc2b",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001DL001",
    "arg":[{
            "cCI":"M0008",
            "n":"status",
            "cO":"setForceDetectorLogic",
            "v":"True"
    },{
            "cCI":"M0008",
            "n":"securityCode",
            "cO":"setForceDetectorLogic",
            "v":"0000"
    },{
            "cCI":"M0008",
            "n":"mode",
            "cO":"setForceDetectorLogic",
            "v":"True"
    }]
}
```


Command Response


```
{
    "mType":"rSMsg",
    "type":"CommandResponse",
    "mId":"9cd20b07-267a-4746-8882-d61de2a7318c",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001DL001",
```


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```
    "cTS":"2019-09-30T08:18:57.492Z",
    "rvs":[{
            "cCI":"M0008",
            "n":"status",
            "v":"True",
            "age":"recent"
    },{
            "cCI":"M0008",
            "n":"securityCode",
            "v":"0000",
            "age":"recent"
    },{
            "cCI":"M0008",
            "n":"mode",
            "v":"True",
            "age":"recent"
    }]
}
```


8.3.9 M0010 Start of signal group

Command Request


```
{
    "mType":"rSMsg",
    "type":"CommandRequest",
    "mId":"6da0f9d7-9ee7-4055-9368-1c737da785d2",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001SG001",
    "arg":[{
            "cCI":"M0010",
            "n":"status",
            "cO":"setStart",
            "v":"True"
    },{
            "cCI":"M0010",
            "n":"securityCode",
            "cO":"setStart",
            "v":"0000"
    }]
}
```


Command Response


```
{
    "mType":"rSMsg",
    "type":"CommandResponse",
    "mId":"fbc4cc9e-9175-4608-8c75-c12603ad3aa4",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001SG001",
    "cTS":"2019-09-30T08:23:57.132Z",
    "rvs":[{
            "cCI":"M0010",
```


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```
            "n":"status",
            "v":"True",
            "age":"recent"
    },{
            "cCI":"M0010",
            "n":"securityCode",
            "v":"0000",
            "age":"recent"
    }]
}
```


8.3.10 M0011 Stop of signal group

Command Request


```
{
    "mType":"rSMsg",
    "type":"CommandRequest",
    "mId":"ec458c36-6af8-4908-be29-0bd5391dd27d",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001SG001",
    "arg":[{
            "cCI":"M0011",
            "n":"status",
            "cO":"setStop",
            "v":"True"
    },{
            "cCI":"M0011",
            "n":"securityCode",
            "cO":"setStop",
            "v":"0000"
    }]
}
```


Command Response


```
{
    "mType":"rSMsg",
    "type":"CommandResponse",
    "mId":"4965db4d-03bb-4a2c-93d7-f89c563f65f2",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001SG001",
    "cTS":"2019-09-30T11:18:38.657Z",
    "rvs":[{
            "cCI":"M0011",
            "n":"status",
            "v":"True",
            "age":"recent"
    },{
            "cCI":"M0011",
            "n":"securityCode",
            "v":"0000",
            "age":"recent"
```


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```
    }]
}
```

8.3.11 M0012 Request start or stop of a series of signal groups

Command Request

```
{
    "mType":"rSMsg",
    "type":"CommandRequest",
    "mId":"128e056d-67ba-4506-98be-6bca01e3b5c8",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "arg":[{
            "cCI":"M0012",
            "n":"status",
            "cO":"setStart",
            "v":"5,4134,65;5,11"
    },{
            "cCI":"M0012",
            "n":"securityCode",
            "cO":"setStart",
            "v":"0000"
    }]
}
```

Command Response

```
{
    "mType":"rSMsg",
    "type":"CommandResponse",
    "mId":"472523c4-d4a0-4064-a576-2d46b9550005",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "cTS":"2019-09-30T11:26:34.006Z",
    "rvs":[{
            "cCI":"M0012",
            "n":"status",
            "v":"5,4134,65;5,11",
            "age":"recent"
    },{
            "cCI":"M0012",
            "n":"securityCode",
            "v":"0000",
            "age":"recent"
    }]
}
```

8.3.12 M0013 Activate a series of inputs

Command Request


```
{
     "mType":"rSMsg",
     "type":"CommandRequest",
     "mId":"486d9574-7816-41db-9cb9-561b54d23b1e",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "arg":[{
             "cCI":"M0013",
             "n":"status",
             "cO":"setInput",
             "v":"5,4134,65"
     },{
             "cCI":"M0013",
             "n":"securityCode",
             "cO":"setInput",
             "v":"0000"
     }]
}
```


Command Response


```
{
     "mType":"rSMsg",
     "type":"CommandResponse",
     "mId":"7fe7e4bf-5116-406b-a757-7b83d38727ac",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "cTS":"2019-09-30T11:30:52.851Z",
     "rvs":[{
             "cCI":"M0013",
             "n":"status",
             "v":"5,4134,65",
             "age":"recent"
     },{
             "cCI":"M0013",
             "n":"securityCode",
             "v":"0000",
             "age":"recent"
     }]
}
```

8.3.13 M0014 Set command table

Command Request


```
{
     "mType":"rSMsg",
     "type":"CommandRequest",
     "mId":"2840c768-1005-4b2b-a59e-a123b063c430",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "arg":[{
             "cCI":"M0014",
             "n":"plan",
             "cO":"setCommands",
             "v":"1"
     },{
             "cCI":"M0014",
             "n":"status",
             "cO":"setCommands",
             "v":"01-01,02-02"
     },{
             "cCI":"M0014",
             "n":"securityCode",
             "cO":"setCommands",
             "v":"2312"
     }]
}
```


Command Response


```
{
     "mType":"rSMsg",
     "type":"CommandResponse",
     "mId":"2e8e7ef7-488c-43d9-beac-b7a9cea66cc6",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "cTS":"2016-05-12T12:04:25.199Z",
     "rvs":[{
             "cCI":"M0014",
             "n":"plan",
             "v":"1",
             "age":"recent"
     },{
             "cCI":"M0014",
             "n":"status",
             "v":"01-01,02-02",
             "age":"recent"
     },{
             "cCI":"M0014",
             "n":"securityCode",
             "v":"2312",
             "age":"recent"
     }]
}
```

8.3.14 M0015 Set Offset time

Command Request


```
{
     "mType":"rSMsg",
     "type":"CommandRequest",
     "mId":"a00cbdc3-65a9-42e4-9658-0af2eb92db60",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "arg":[{
             "cCI":"M0015",
             "n":"status",
             "cO":"setOffset",
             "v":"30"
     },{
             "cCI":"M0015",
             "n":"plan",
             "cO":"setOffset",
             "v":"1"
     },{
             "cCI":"M0015",
             "n":"securityCode",
             "cO":"setOffset",
             "v":"2314"
     }]
}
```


Command Response


```
{
     "mType":"rSMsg",
     "type":"CommandResponse",
     "mId":"77291dd5-468c-42b4-96aa-f1553cf57466",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "cTS":"2016-05-12T12:05:57.558Z",
     "rvs":[{
             "cCI":"M0015",
             "n":"status",
             "v":"30",
             "age":"recent"
     },{
             "cCI":"M0015",
             "n":"plan",
             "v":"1",
             "age":"recent"
     },{
             "cCI":"M0015",
             "n":"securityCode",
             "v":"2314",
             "age":"recent"
     }]
}
```

8.3.15 M0016 Set week time table

Command Request


```
{
     "mType":"rSMsg",
     "type":"CommandRequest",
     "mId":"7fe05b51-1436-4bf4-a1e8-54c946395e95",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "arg":[{
             "cCI":"M0016",
             "n":"status",
             "cO":"setWeekTable",
             "v":"0-2,1-3,2-1,3-1,4-1,5-4,6-4"
     },{
             "cCI":"M0016",
             "n":"securityCode",
             "cO":"setWeekTable",
             "v":"2314"
     }]
}
```


Command Response


```
{
     "mType":"rSMsg",
     "type":"CommandResponse",
     "mId":"3c635519-c745-44e5-ab1d-8da0d0cabb84",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "cTS":"2016-05-12T12:09:47.574Z",
     "rvs":[{
             "cCI":"M0016",
             "n":"status",
             "v":"0-2,1-3,2-1,3-1,4-1,5-4,6-4",
             "age":"recent"
     },{
             "cCI":"M0016",
             "n":"securityCode",
             "v":"2314",
             "age":"recent"
     }]
}
```

8.3.16 M0017 Set time tables

Command Request


```
{
     "mType":"rSMsg",
     "type":"CommandRequest",
     "mId":"0e05974d-223b-47a0-9992-fbe00dd352bd",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "arg":[{
             "cCI":"M0017",
             "n":"status",
             "cO":"setTimeTable",
             "v":"1-1-6-30,1-0-9-0,1-1-15-30,1-0-18-0,2-1-7-0,2-0-9-0"
     },{
             "cCI":"M0017",
             "n":"securityCode",
             "cO":"setTimeTable",
             "v":"2321"
     }]
}
```


Command Response


```
{
     "mType":"rSMsg",
     "type":"CommandResponse",
     "mId":"25b1947b-284a-4fff-b723-448f7c1b80b4",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "cTS":"2016-05-12T12:11:14.105Z",
     "rvs":[{
             "cCI":"M0017",
             "n":"status",
             "v":"1-1-6-30,1-0-9-0,1-1-15-30,1-0-18-0,2-1-7-0,2-0-9-0",
             "age":"recent"
     },{
             "cCI":"M0017",
             "n":"securityCode",
             "v":"2321",
             "age":"recent"
     }]
}
```

8.3.17 M0018 Set cycle time

Command Request


```
{
     "mType":"rSMsg",
     "type":"CommandRequest",
     "mId":"0e05974d-223b-47a0-9992-fbe00dd352bd",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "arg":[{
             "cCI":"M0018",
             "n":"status",
             "cO":"setCycleTime",
             "v":"2"
     },{
             "cCI":"M0018",
             "n":"plan",
             "cO":"setCycleTime",
             "v":"80"
     },{
             "cCI":"M0018",
             "n":"securityCode",
             "cO":"setCycleTime",
             "v":"2321"
     }]
}
```


Command Response


```
{
     "mType":"rSMsg",
     "type":"CommandResponse",
     "mId":"25b1947b-284a-4fff-b723-448f7c1b80b4",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "cTS":"2016-05-12T12:11:14.105Z",
     "rvs":[{
             "cCI":"M0018",
             "n":"status",
             "v":"2",
             "age":"recent"
     },{
             "cCI":"M0018",
             "n":"plan",
             "v":"80",
             "age":"recent"
     },{
             "cCI":"M0018",
             "n":"securityCode",
             "v":"2321",
             "age":"recent"
     }]
}
```

8.3.18 M0019 Force input

Command Request


```
{
     "mType":"rSMsg",
     "type":"CommandRequest",
     "mId":"0e05974d-223b-47a0-9992-fbe00dd352bd",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "arg":[{
             "cCI":"M0019",
             "n":"status",
             "cO":"setInput",
             "v":"True"
     },{
             "cCI":"M0019",
             "n":"securityCode",
             "cO":"setInput",
             "v":"2321"
     },{
             "cCI":"M0019",
             "n":"input",
             "cO":"setInput",
             "v":"2"
     },{
             "cCI":"M0019",
             "n":"inputValue",
             "cO":"setInput",
             "v":"True"
     }]
}
```


Command Response


```
{
     "mType":"rSMsg",
     "type":"CommandResponse",
     "mId":"25b1947b-284a-4fff-b723-448f7c1b80b4",
     "ntsOId":"KK+AG0503=001TC000",
     "xNId":"",
     "cId":"KK+AG0503=001TC000",
     "cTS":"2016-05-12T12:11:14.105Z",
     "rvs":[{
             "cCI":"M0019",
             "n":"status",
             "v":"True",
             "age":"recent"
     },{
             "cCI":"M0019",
             "n":"securityCode",
             "v":"2321",
             "age":"recent"
     },{
             "cCI":"M0019",
             "n":"input",
             "v":"2",
```


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```
            "age":"recent"
    },{
            "cCI":"M0019",
            "n":"inputValue",
            "v":"2321",
            "age":"True"
    }]
}
```


8.3.19 M0020 Force output

Command Request


```
{
    "mType":"rSMsg",
    "type":"CommandRequest",
    "mId":"1caf4fed-6182-431e-a88e-fa537ac00c8e",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "arg":[{
            "cCI":"M0020",
            "n":"status",
            "cO":"setOutput",
            "v":"True"
    },{
            "cCI":"M0020",
            "n":"securityCode",
            "cO":"setOutput",
            "v":"0000"
    },{
            "cCI":"M0020",
            "n":"output",
            "cO":"setOutput",
            "v":"1"
    },{
            "cCI":"M0020",
            "n":"outputValue",
            "cO":"setOutput",
            "v":"True"
    }]
}
```


Command Response


```
{
    "mType":"rSMsg",
    "type":"CommandResponse",
    "mId":"7e008cd8-e51f-487c-bd66-87993059eb8c",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "cTS":"2019-09-30T13:23:54.049Z",
    "rvs":[{
            "cCI":"M0020",
```


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```
            "n":"status",
            "v":"True",
            "age":"recent"
    },{
            "cCI":"M0020",
            "n":"securityCode",
            "v":"0000",
            "age":"recent"
    },{
            "cCI":"M0020",
            "n":"output",
            "v":"1",
            "age":"recent"
    },{
            "cCI":"M0020",
            "n":"outputValue",
            "v":"True",
            "age":"recent"
    }]
}
```


8.3.20 M0021 Set trigger level sensitivity for loop detector

Command Request


```
{
    "mType":"rSMsg",
    "type":"CommandRequest",
    "mId":"a6697f11-4f62-4349-8325-857beb150d8a",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "arg":[{
            "cCI":"M0021",
            "n":"status",
            "cO":"setLevel",
            "v":"01=54"
    },{
            "cCI":"M0021",
            "n":"securityCode",
            "cO":"setLevel",
            "v":"0000"
    }]
}
```


Command Response


```
{
    "mType":"rSMsg",
    "type":"CommandResponse",
    "mId":"332bfbc4-67b2-4047-a718-a3d10f129214",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "cTS":"2019-09-30T13:32:18.840Z",
```


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```
    "rvs":[{
            "cCI":"M0021",
            "n":"status",
            "v":"01=54",
            "age":"recent"
    },{
            "cCI":"M0021",
            "n":"securityCode",
            "v":"0000",
            "age":"recent"
    }]
}
```


8.3.21 M0022 Request Signal Priority

Command Request


```
{
    "mType":"rSMsg",
    "type":"CommandRequest",
    "mId":"e4e9668a-b562-4fbe-9c1e-d4a30733ddea",
    "ntsOId":"KK+AG9998=001TC000",
    "xNId":"",
    "cId":"KK+AG9998=001TC000",
    "arg":[{
            "cCI":"M0022",
            "n":"requestId",
            "cO":"requestPriority",
            "v":"f90c"
    },{
            "cCI":"M0022",
            "n":"connectionId",
            "cO":"requestPriority",
            "v":"5"
    },{
            "cCI":"M0022",
            "n":"type",
            "cO":"requestPriority",
            "v":"new"
    },{
            "cCI":"M0022",
            "n":"level",
            "cO":"requestPriority",
            "v":"14"
    },{
            "cCI":"M0022",
            "n":"eta",
            "cO":"requestPriority",
            "v":"20"
    },{
            "cCI":"M0022",
            "n":"vehicleType",
            "cO":"requestPriority",
            "v":"bus"
    }]
```


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```
}
```

Command Response


```
{
     "mType":"rSMsg",
     "type":"CommandResponse",
     "mId":"092418fe-e79a-44f7-91b2-13413bab7910",
     "ntsOId":"KK+AG9998=001TC000",
     "xNId":"",
     "cId":"KK+AG9998=001TC000",
     "cTS":"2021-12-13T11:44:45.461Z",
     "rvs":[{
             "cCI":"M0022",
             "n":"requestId",
             "v":"f90c",
             "age":"recent"
     },{
             "cCI":"M0022",
             "n":"connectionId",
             "v":"5",
             "age":"recent"
     },{
             "cCI":"M0022",
             "n":"type",
             "v":"new",
             "age":"recent"
     },{
             "cCI":"M0022",
             "n":"level",
             "v":"14",
             "age":"recent"
     },{
             "cCI":"M0022",
             "n":"eta",
             "v":"20",
             "age":"recent"
     },{
             "cCI":"M0022",
             "n":"vehicleType",
             "v":"bus",
             "age":"recent"
     }]
}
```


8.3.22 M0023 Set timeout for dynamic bands

Command Request


```
{
     "mType":"rSMsg",
     "type":"CommandRequest",
     "mId":"0052a94b-3678-483e-9ee8-4e4f52771051",
     "ntsOId":"KK+AG9998=001TC000",
     "xNId":"",
```


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```
    "cId":"KK+AG9998=001TC000",
    "arg":[{
            "cCI":"M0023",
            "n":"securityCode",
            "cO":"setTimeout",
            "v":"0000"
    },{
            "cCI":"M0023",
            "n":"status",
            "cO":"setTimeout",
            "v":"30"
    }]
}
```


Command Response


```
{
    "mType":"rSMsg",
    "type":"CommandResponse",
    "mId":"20615c0c-d9d0-412e-836a-749c85cb5d13",
    "ntsOId":"KK+AG9998=001TC000",
    "xNId":"",
    "cId":"KK+AG9998=001TC000",
    "cTS":"2021-12-13T11:57:21.586Z",
    "rvs":[{
            "cCI":"M0023",
            "n":"securityCode",
            "v":"0000",
            "age":"recent"
    },{
            "cCI":"M0023",
            "n":"status",
            "v":"30",
            "age":"recent"
    }]
}
```


8.3.23 M0103 Set security code

Command Request


```
{
    "mType":"rSMsg",
    "type":"CommandRequest",
    "mId":"1b1d9227-d566-4ff2-8bbb-c3f18f9ac846",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "arg":[{
            "cCI":"M0103",
            "n":"status",
            "cO":"setSecurityCode",
            "v":"Level1"
    },{
            "cCI":"M0103",
```


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```
            "n":"oldSecurityCode",
            "cO":"setSecurityCode",
            "v":"0000"
    },{
            "cCI":"M0103",
            "n":"newSecurityCode",
            "cO":"setSecurityCode",
            "v":"5678"
    }]
}
```


Command Response


```
{
    "mType":"rSMsg",
    "type":"CommandResponse",
    "mId":"605c1029-a948-45e7-a98a-11e83cbcc41a",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "cTS":"2019-09-30T13:34:54.635Z",
    "rvs":[{
            "cCI":"M0103",
            "n":"status",
            "v":"Level1",
            "age":"recent"
    },{
            "cCI":"M0103",
            "n":"oldSecurityCode",
            "v":"0000",
            "age":"recent"
    },{
            "cCI":"M0103",
            "n":"newSecurityCode",
            "v":"0000",
            "age":"recent"
    }]
}
```


8.3.24 M0104 Set clock

Command Request


```
{
    "mType":"rSMsg",
    "type":"CommandRequest",
    "mId":"c9584b41-e2ad-4eb4-bca4-c3847af4e78d",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "arg":[{
            "cCI":"M0104",
            "n":"securityCode",
            "cO":"setDate",
            "v":"0000"
```


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```
    },{
            "cCI":"M0104",
            "n":"year",
            "cO":"setDate",
            "v":"2019"
    },{
            "cCI":"M0104",
            "n":"month",
            "cO":"setDate",
            "v":"09"
    },{
            "cCI":"M0104",
            "n":"day",
            "cO":"setDate",
            "v":"30"
    },{
            "cCI":"M0104",
            "n":"hour",
            "cO":"setDate",
            "v":"11"
    },{
            "cCI":"M0104",
            "n":"minute",
            "cO":"setDate",
            "v":"30"
    },{
            "cCI":"M0104",
            "n":"second",
            "cO":"setDate",
            "v":"34"
    }]
}
```


Command Response


```
{
    "mType":"rSMsg",
    "type":"CommandResponse",
    "mId":"a37bd105-4f01-4e16-aaa9-7922c6732337",
    "ntsOId":"KK+AG0503=001TC000",
    "xNId":"",
    "cId":"KK+AG0503=001TC000",
    "cTS":"2019-09-30T13:40:56.551Z",
    "rvs":[{
            "cCI":"M0104",
            "n":"securityCode",
            "v":"0000",
            "age":"recent"
    },{
            "cCI":"M0104",
            "n":"year",
            "v":"2019",
            "age":"recent"
    },{
            "cCI":"M0104",
            "n":"month",
```


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```
            "v":"09",
            "age":"recent"
    },{
            "cCI":"M0104",
            "n":"day",
            "v":"30",
            "age":"recent"
    },{
            "cCI":"M0104",
            "n":"hour",
            "v":"11",
            "age":"recent"
    },{
            "cCI":"M0104",
            "n":"minute",
            "v":"30",
            "age":"recent"
    },{
            "cCI":"M0104",
            "n":"second",
            "v":"34",
            "age":"recent"
    }]
}
```