



Traffic Signals UK Ltd



MICROSENSE TRAFFIC CONTROLLER

SENTINEL

HANDSET COMMAND MANUAL

Left intentionally blank

TABLE OF CONTENTS

1. INTRODUCTION.....	7
1.1 Abbreviations and Terms.....	7
1.2 Handset Terminal Requirements.....	7
1.3 Integrated Facilities Card (IFC).....	8
1.4 Command Line Format.....	8
1.4.1 Using '=' After [enter].....	9
1.4.2 Special Characters.....	9
1.4.3 Character Delete.....	10
1.5 Pedestrian facilities for Sentinel.....	10
1.6 Changes Accompanying Sentinel Software.....	10
1.6.1 Level 3 Access.....	11
2. HANDSET COMMAND DETAILS.....	12
2.1 List of Commands.....	12
2.2 Handset Commands.....	14
2.2.1 CLF Commands.....	15
2.2.1.1 CLC - CLF Plan Cycle Time.....	15
2.2.1.2 CLD - CLF Plan Delay Time.....	15
2.2.1.3 CLF - CLF Plan Status.....	16
2.2.1.4 CLI - CLF Plan Influences.....	17
2.2.1.5 CLO - CLF Plan Stream Offset Time.....	18
2.2.1.6 CLS - CLF Plan Synchronise.....	18
2.2.1.7 CLT - CLF Plan Test / CLF mode inhibit.....	19
2.2.2 Detector Input Commands.....	20
2.2.2.1 ADF - Accept Detector Faults.....	20
2.2.2.2 DAC - Detector Active State.....	21
2.2.2.3 DCL - Detector Call Delay Period.....	21
2.2.2.4 DCN - Detector Cancel Delay Period.....	22
2.2.2.5 DET - Detector Status / Override.....	23
2.2.2.6 DFA - DFM Active Fault Duration.....	24
2.2.2.7 DFI - DFM Inactive Fault Duration.....	24
2.2.2.8 DFM - Detector Fault Monitor Status.....	25
2.2.2.9 DSR - Detector Self Reset.....	26
2.2.2.10 EXT - Detector / Phase Extension Duration.....	27
2.2.2.11 RDF - Reset Detector Faults.....	28
2.2.2.12 SPD - Monitor Speed Assessors.....	29
2.2.2.13 SPT - Speed Assessor Test.....	30
2.2.3 Fault / Warning Commands.....	33
2.2.3.1 FLF - Fault Log Display.....	33
2.2.3.2 HFL - Historical Fault Log.....	34
2.2.3.3 HWL - Historical Warning Log.....	37
2.2.3.4 RFL - Reset Fault or Warning Log.....	39
2.2.3.5 WRN - Warning Log Display.....	40
2.2.4 Hurry Call Commands.....	41
2.2.4.1 HCD - Hurry Call Delay Duration.....	41
2.2.4.2 HCH - Hurry Call Hold Duration.....	41
2.2.4.3 HCP - Hurry Call Prevent Duration.....	42
2.2.4.4 HCS - Hurry Call Status.....	42
2.2.5 ILM Commands.....	43
2.2.5.1 LMC - ILM Instant Currents.....	43
2.2.5.2 LMD - ILM Lamp Monitoring Data.....	44
2.2.5.3 LMF - ILM Lamp Monitoring Faults.....	45
2.2.5.4 LMM - ILM Lamp Monitoring Currents.....	46
2.2.6 Input and Output Commands.....	47
2.2.6.1 IPD - Inputs Display.....	47
2.2.6.2 OPD - Outputs Display.....	48
2.2.6.3 OPI - Output Invert State.....	49
2.2.6.4 OPS - Output State.....	50
2.2.7 LRT Commands.....	51
2.2.7.1 LMI - LRT Mode Inhibit.....	51
2.2.7.2 LED - LRT Event Delay Duration.....	51

2.2.7.3	LPI - LRT Prepare Sequence Influences	52
2.2.7.4	LDI - LRT Demand Sequence Influences	53
2.2.7.5	LSI - LRT Stopline Influence Duration.....	54
2.2.7.6	LET - LRT Exit Event Timeout Duration.....	54
2.2.7.7	LFI - LRT Follow Inhibit Duration	55
2.2.7.8	LOW - LRT Overlap Window Duration	55
2.2.7.9	LOI - LRT Overlap Inhibit Duration.....	56
2.2.7.10	LFD - LRT Failed Detectors	56
2.2.7.11	LFE - LRT Failed Events.....	57
2.2.7.12	LSE - LRT Suspect Events	57
2.2.7.13	LPS - LRT Phase Status.....	58
2.2.8	MOVA Commands.....	59
2.2.8.1	AI - Assessment Record Inhibit.....	59
2.2.8.2	AT - Assessment Record Times	59
2.2.8.3	CA - Clear Assessment / Hourly Flow Log.....	60
2.2.8.4	CF - Clear MOVA Average Flows	60
2.2.8.5	DA - Display Assessment / Hourly Flow Log.....	61
2.2.8.6	DD - Display MOVA Detector States.....	61
2.2.8.7	DF - Display MOVA Average Flows	62
2.2.8.8	DS - Display MOVA Site Data	63
2.2.8.9	HI - Hourly Flow Record Inhibit	63
2.2.8.10	MI - MOVA Mode Inhibit.....	64
2.2.8.11	MOV - Display MOVA Command Menu	64
2.2.8.12	RS - Read Site Data	65
2.2.8.13	VM - View MOVA Messages.....	66
2.2.9	Part-time Mode Commands.....	67
2.2.9.1	PTH - Part-Time Hold Duration	67
2.2.9.2	PTI - Part-Time Inhibit	67
2.2.9.3	PTP - Part-time Prevent Duration.....	68
2.2.10	Phase Commands	69
2.2.10.1	ATP - Audible/Tactile signal Period	69
2.2.10.2	DPG - Delay Phase Green.....	70
2.2.10.3	IGN - Intergreen Duration	71
2.2.10.4	IGX - Intergreen Extension Duration.....	71
2.2.10.5	LNK - Pedestrian Crossing Linking	72
2.2.10.6	MAX - Maximum Green Duration.....	73
2.2.10.7	MIG - Maximum Intergreen Duration	74
2.2.10.8	MIN - Minimum Green Duration	75
2.2.10.9	PBT - Pedestrian Blackout Duration	76
2.2.10.10	PDD - Pedestrian Demand Delay	76
2.2.10.11	PHD - Phase Demand Simulation	77
2.2.10.12	PHE - Phase Extension Simulation	77
2.2.10.13	PHS - Phase Status	78
2.2.10.14	PMD - Vehicle Phase Pedestrian Mode	79
2.2.10.15	PSQ - Pedestrian Sequence.....	80
2.2.10.16	PWN - Phase Window Duration.....	85
2.2.10.17	RDE - Registered Pedestrian Demand Extension.....	85
2.2.10.18	VMF - Varimax Flow Rate.....	86
2.2.10.19	VMP - Varimax Additional Period.....	86
2.2.10.20	VMT - Varimax Threshold Flow Rate.....	87
2.2.11	Red Extension Commands.....	87
2.2.11.1	RMX - All Red Maximum Duration	87
2.2.11.2	RXD - Red Extension Duration	88
2.2.12	Special Conditioning Commands	89
2.2.12.1	SCB - Special Conditioning Handset Bits	89
2.2.12.2	SCC - Special Conditioning Counters.....	89
2.2.12.3	SCT - Special Conditioning Timer Duration.....	90
2.2.12.4	SCV - Special Conditioning Statement Value.....	90
2.2.13	Timetable Commands.....	91
2.2.13.1	BST - British Summertime Changes	91
2.2.13.2	CAL - Calendar	91
2.2.13.3	CRF - Clock Reference	92

2.2.13.4	DAY - Day of Week	92
2.2.13.5	SNC - Synchronise Time Clock.....	93
2.2.13.6	TEL - Timetable Event List Data	94
2.2.13.7	TOD - Time of Day	96
2.2.13.8	TSS - Timing Sets Selected	96
2.2.13.9	TTI - Timetable Inspection.....	97
2.2.13.10	TCE - Timetable Calendar Events.....	99
2.2.13.11	WEK - Week Number	100
2.2.14	Miscellaneous Commands	101
2.2.14.1	FIX - Fixed Time Stage Duration.....	101
2.2.14.2	IGS - Starting Intergreen Duration.....	101
2.2.14.3	LMP - Phase Lamp Test.....	102
2.2.14.4	MND - Manual Mode Disable	103
2.2.14.5	MOD - Mode Status.....	104
2.2.14.6	PWD - Password Entry.....	105
2.2.14.7	RCP - Restore Configuration Parameters.....	106
2.2.14.8	RSN - Read Serial Number.....	107
2.2.14.9	SIG - Signals On / Off.....	107
2.2.14.10	SSS - Select Stage Stream	108
2.2.14.11	UTO - UTC Control Bit Timeout	109

1. INTRODUCTION

This document defines the handset commands available for use with the Microsense Sentinel Traffic Controller. It is not intended to give any details of controller facilities, for this information refer to the Sentinel Facilities Manual, (doc no. 40-9777-023).

The Sentinel has a wide range of handset commands that can be used for the following:-

- Viewing/Modifying configuration data, (timings, etc)
- Monitoring controller status
- Fault finding

There are two different methods that can be used to identify which type of software is fitted. The first method is to check the part number of the main processor software PROM, (IC20 on the CPU board) which can be found on the PROM label, (see below). The second method is to check the ROM serial number of the main processor software using the RSN command.

1.1 Abbreviations and Terms

CLF	-	Cableless Linking Facility
CPU	-	Central Processing Unit
DEDU	-	Data Extract and Download Utility
DFM	-	Detector Fault Monitoring
FT	-	Fixed Time
FVP	-	Fixed Vehicle Period
IFC	-	Integrated Facilities Card
ICM	-	Independent Conflict Monitor
LSC	-	Lamp Switch Card
MOVA	-	Microprocessor Optimised Vehicle Actuation
OC	-	Open Circuit
OMTU	-	Outstation Monitor and Transmission Unit
PROM	-	Programmable Read Only Memory
PTM	-	Pre-Timed Maximum
RAM	-	Random Access Memory
ROM	-	Read Only Memory
RTC	-	Real Time Clock
SC	-	Short Circuit
Sentinel	-	Microsense Sentinel Traffic Controller
TRL	-	Transport Research Laboratory
UTC	-	Urban Traffic Control
VA	-	Vehicle Actuated

1.2 Handset Terminal Requirements

Any terminal device with the following transmission characteristics may be connected to the Sentinel in order to access the handset commands:-

Connector	-	25 way female 'D' type, (DCE)
Transmission details	-	1200 Baud, 7 data bits, (+ even parity), 1 start bit, 1 stop bit, full duplex
RS 232 circuits (all at V24 levels)	-	TX data, RX data DTR, DSR CTS, RTS
Supply	-	+ 5 volts on pins 9 and 10, (at 250 mA max)
Minimum character set	-	A to Z 0 to 9 . + - = ? or ! or *

/ or : or ;

The original handset command set was designed for use with a display length of 14 characters, (e.g. Oyster Terminal). However, later additions to the command set have longer display lengths, so a portable PC with a larger screen is a better terminal device.

1.3 Integrated Facilities Card (IFC)

When an IFC is fitted, communication with the Sentinel will normally be via the Engineers Handset port on that equipment. The IFC will connect to the Sentinel at a higher Baud rate, using a proprietary protocol, which allows serial UTC control and data monitoring activities to continue without disturbing the handset connection.

1.4 Command Line Format

All command lines are made up of simple three character command mnemonics, optionally followed by delimiting characters and item parameters, (e.g. phase id, detector name, etc). A command line can take one of four different formats as follows:-

i) View first, and maybe only, item of data:-

command:- **XYZ [enter]**
response:- **XYZ:[data]**

e.g. command:- **TOD [enter]** (view the time of day)
response:- **TOD:11:34:13**

e.g. command:- **MIN [enter]** (view first minimum green)
response:- **MIN:A:7.0**

ii) View data on a specific item, where a number of similar items exist:-

command:- **XYZ/[item parameter] [enter]**
response:- **XYZ:[item parameter]:[data]**

e.g. command:- **MIN/D [enter]** (view min green for phase D)
response:- **MIN:D:7.0**

e.g. command:- **IGN/A/B [enter]** (view intergreen for phase A to B)
response:- **IGN:A:B:6.0**

iii) Modify an item of data, where it is the only item of a specific type:-

command:- **XYZ=[new data]**
response:- **XYZ:[new data]**

e.g. command:- **TOD=07/30/00 [enter]** (modify time of day)
response:- **TOD:07:30:00**

e.g. command:- **IGS=7 [enter]** (modify starting intergreen)
response:- **IGS:7.0**

iv) Modify an item of data, where it is one of a number of the same type:-

command:- **XYZ/[item parameter]=[new data]**
response:- **XYZ:[item parameter]:[new data]**

e.g. command:- **MIN/F=6.4 [enter]** (modify minimum green for phase F)
response:- **MIN:F:6.4**

e.g. command:- **IGN/C/G=5 [enter]** (modify intergreen for phase C to G)

response:- **IGN:C:G:5.0**

1.4.1 Using '=' After [enter]

When a command has been terminated by [enter], the command can be recalled for modification, if applicable, by pressing the '=' key.

e.g. command:- **IGS [enter]** (view the starting intergreen)
response:- **IGS:5**

followed by '=' causes the display to become:-

IGS= (with the cursor after the '=', awaiting data entry)

e.g. command:- **MIN/E [enter]** (view the minimum green period for phase E)
response:- **MIN:E:3**

followed by '=' causes the display to become:-

MIN/E= (with the cursor after the '=', awaiting data entry)

1.4.2 Special Characters

Following are details of the special characters that are required to obtain optimum use of the Sentinel's extensive range of handset commands:-

- = Can be used for setting data in the command line or changing the value currently being displayed, (if applicable).
- + and - Can be used for stepping forwards or backwards through commands that display data for more than one item. Both characters will wrap round from the first/last item of data.
- ? ! or * Can be used for stepping forwards through different response screens for some status commands, (i.e. where there is too much data to display on one line, several 'screens' of data may exist). These characters will wrap round from the last screen of data. Note that without these special characters the fault/warning logs cannot be fully examined, nor can some of the status commands. Where relevant, the screen number is output as a suffix to the command mnemonic.
- / ; or - Can be used as delimiters between different item parameters. These characters may also be used in place of an = when entering a complete command line to modify an item of data, but not following an [enter].
- > and < Can be used for stepping forwards or backwards through commands that display stage stream related data. The > key steps on to next stage stream and the < key steps back to previous stage stream). Both characters will wrap round from the first/last stage stream. Note that for stage stream related commands a stream prompt will be displayed at the beginning of the command line, (e.g. **1>** = stream 1). The **SSS** command may also be used to select a stage stream.

1.4.3 Character Delete

Using the 'backspace' key causes the last character of the command line to be deleted.

e.g. command:- **EXT/XYZ [backspace]**
 response:- **EXT/XY** (with the cursor positioned after the 'Y')

The 'backspace' can be used any number of times.

1.5 Pedestrian facilities for Sentinel

As for version 12 of the MTC, Sentinel software supports Toucan, Puffin and Pelican pedestrian facilities to Highways Agency TR 2210A (previously TR0141C) specification. These pedestrian facilities are only available in conjunction with "TR0141C", "TR 2210A" or Sentinel configuration. The following handset commands were added to support the pedestrian facilities :- LNK, PDD, PMD, PSQ & RDE. The following handset commands were changed for "TR0141C" and Sentinel configurations to support the pedestrian facilities :- EXT, HWL, MAX, PHS, TEL & WRN.

The pedestrian blackout duration command (PBT) is now only available with configurations, which are not configured to TR 2210A. For TR 2210A configurations the pedestrian blackout duration is part of the pedestrian sequence command (PSQ).

PWD command was added for the requirement that someone must be on site to change any configured value that could affect safety. (see 1.6.1 Level 3 Access.)

UTO command was added so that UTC Control Bit Timeout durations can be adjusted.

LMD command was changed so that a lamp monitor channel can be switched OFF.

DAC & DFM commands were changed to support the distinction between active and inactive failure of detector fault monitoring.

When amending old configurations, where timing ranges have become more restricted with revisions to HA controller specifications, the latest range set restrictions should be adhered to.

1.6 Changes Accompanying Sentinel Software

Although Sentinel derives most of its functionality from the Microsense Traffic Controller (MTC), the following commands have been added.

To support the use of audible and tactile facilities.

ATP This command sets the maximum period for which an audible or tactile signal is active for a pedestrian phase, the configuration used must be a Sentinel one for this facility to be available.

The TCE command has been added for Timetable Calendar Events.

Other commands that have changed for the Sentinel development are as follows.

RSN, HFL, FLF, HWL, WRN, LMC, LMF, OPD, OPI, SCT, LMP, TEL, TTI, PWD and RCP.

Refer to the relevant sections for details of the revised usage.

The CRF command has been added to allow selection of alternative clock reference sources, particularly to allow synchronisation of a group of controllers that work together in a CLF plan. (crystal rendezvous)

DSR – Detector Self Reset: this facility allows detectors that have failed DFM to resume normal operation after a qualifying sequence of activity.

CLF – Plan status is now given as a single line.

SCC – Special conditioning counters, introduced with integral speed monitoring facilities.

SPD – Command to monitor integral speed assessors.

SPT – Drives the generation of speed assessor test pulses.

1.6.1 Level 3 Access

To gain access to level 3 data a password must be entered using the PWD handset command. (The password will be MSNS unless otherwise specified.)

The following commands require level 3 access to update the information stored:-

CLT	-	CLF Plan Test
DPG	-	Delay Phase Green
EXT *	-	Detector / Phase Extension Duration
FLF	-	Fault Log Display
IGN	-	Intergreen Duration
IGS	-	Starting Intergreen Duration
LMD	-	ILM Lamp Monitoring Data
LMF	-	ILM Lamp Monitoring Faults
LMP	-	Phase Lamp Test
MAX *	-	Maximum Green Duration
MIG	-	Maximum Intergreen Duration
MIN	-	Minimum Green Duration
PBT	-	Pedestrian Blackout Period
PMD	-	Pedestrian Mode
PSQ	-	Pedestrian Sequence
RCP	-	Restore Configuration Parameters
RFL	-	Reset Fault or Warning Log
RS	-	Download MOVA site data
SIG	-	Signals On/Off
WRN *	-	Warnings Log

* These commands are level 3 access only in some modes of operation.

2. HANDSET COMMAND DETAILS

2.1 List of Commands

Following is a list of the handset commands available for use with the Sentinel software, in alphabetical order:-

ADF	Accept Detector Faults	21
AI	Assessment Record Inhibit	60
AT	Assessment Record Times	60
ATP	Audible/Tactile signal Period	70
BST	British Summertime Changes	92
CA	Clear Assessment / Hourly Flow Log	61
CAL	Calendar	92
CF	Clear MOVA Average Flows	61
CLC	CLF Plan Cycle Time	16
CLD	CLF Plan Delay Time	16
CLF	CLF Plan Status	17
CLI	CLF Plan Influences	18
CLO	CLF Plan Stream Offset Time	19
CLS	CLF Plan Synchronise	19
CLT	CLF Plan Test / CLF mode inhibit	20
CRF	Clock Reference	93
DA	Display Assessment / Hourly Flow Log	62
DAC	Detector Active State	22
DAY	Day of Week	93
DCL	Detector Call Delay Period	22
DCN	Detector Cancel Delay Period	23
DD	Display MOVA Detector States	62
DET	Detector Status / Override	24
DF	Display MOVA Average Flows	63
DFA	DFM Active Fault Duration	25
DFI	DFM Inactive Fault Duration	25
DFM	Detector Fault Monitor Status	26
DPG	Delay Phase Green	71
DS	Display MOVA Site Data	64
DSR	Detector Self Reset	27
EXT	Detector / Phase Extension Duration	28
FIX	Fixed Time Stage Duration	102
FLF	Fault Log Display	34
HCD	Hurry Call Delay Duration	42
HCH	Hurry Call Hold Duration	42
HCP	Hurry Call Prevent Duration	43
HCS	Hurry Call Status	43
HFL	Historical Fault Log	35
HI	Hourly Flow Record Inhibit	64
HWL	Historical Warning Log	38
IGN	Intergreen Duration	72
IGS	Starting Intergreen Duration	102
IGX	Intergreen Extension Duration	72
IPD	Inputs Display	48
LDI	LRT Demand Sequence Influences	54
LED	LRT Event Delay Duration	52
LET	LRT Exit Event Timeout Duration	55
LFD	LRT Failed Detectors	57
LFE	LRT Failed Events	58
LFI	LRT Follow Inhibit Duration	56
LMC	ILM Instant Currents	44
LMD	ILM Lamp Monitoring Data	45
LMF	ILM Lamp Monitoring Faults	46
LMI	LRT Mode Inhibit	52

LMM	ILM Lamp Monitoring Currents.....	47
LMP	Phase Lamp Test	103
LNK	Pedestrian Crossing Linking	73
LOI	LRT Overlap Inhibit Duration.....	57
LOW	LRT Overlap Window Duration	56
LPI	LRT Prepare Sequence Influences.....	53
LPS	LRT Phase Status	59
LSE	LRT Suspect Events.....	58
LSI	LRT Stopline Influence Duration	55
MAX	Maximum Green Duration	74
MI	MOVA Mode Inhibit	65
MIG	Maximum Intergreen Duration.....	75
MIN	Minimum Green Duration	76
MND	Manual Mode Disable.....	104
MOD	Mode Status	105
MOV	Display MOVA Command Menu	65
OPD	Outputs Display	49
OPI	Output Invert State	50
OPS	Output State	51
PBT	Pedestrian Blackout Duration.....	77
PDD	Pedestrian Demand Delay	77
PHD	Phase Demand Simulation.....	78
PHE	Phase Extension Simulation.....	78
PHS	Phase Status	79
PMD	Vehicle Phase Pedestrian Mode.....	80
PSQ	Pedestrian Sequence	81
PTH	Part-Time Hold Duration.....	68
PTI	Part-Time Inhibit	68
PTP	Part-time Prevent Duration.....	69
PWD	Password Entry	106
PWN	Phase Window Duration.....	86
RCP	Restore Configuration Parameters.....	107
RDE	Registered Pedestrian Demand Extension	86
RDF	Reset Detector Faults.....	29
RFL	Reset Fault or Warning Log	40
RMX	All Red Maximum Duration.....	88
RS	Read Site Data	66
RSN	Read Serial Number	108
RXD	Red Extension Duration	89
SCB	Special Conditioning Handset Bits	90
SCC	Special Conditioning Counters.....	90
SCT	Special Conditioning Timer Duration.....	91
SCV	Special Conditioning Statement Value.....	91
SIG	Signals On / Off	108
SNC	Synchronise Time Clock.....	94
SPD	Monitor Speed Assessors	30
SPT	Speed Assessor Test	32
SSS	Select Stage Stream	109
TCE	Timetable Calendar Events	100
TEL	Timetable Event List Data	95
TOD	Time of Day	97
TSS	Timing Sets Selected	97
TTI	Timetable Inspection	98
UTO	UTC Control Bit Timeout	110
VM	View MOVA Messages.....	67
VMF	Varimax Flow Rate	87
VMP	Varimax Additional Period.....	87
VMT	Varimax Threshold Flow Rate	88
WEK	Week Number.....	101
WRN	Warning Log Display	41

2.2 Handset Commands

The following sections contain tables detailing the handset commands available for the Sentinel software. A table exists for each command defining the command mnemonic, input parameters, output parameters, allowed range of values, (if applicable) and the associated error messages. Each table is followed by some comments, giving more details about the command and examples of use, (if necessary).

The handset commands are split into the following common groups:-

- CLF
- Detector inputs
- Faults/Warnings
- Hurry Calls
- Inputs and Outputs
- MOVA
- Phases
- Part-time mode
- Red extensions
- Special conditioning
- Timetable
- Miscellaneous

When looking at the handset command tables the following points should be noted:-

- 1) When displaying or modifying phase data the valid phase ids are **A** to **Z** and **A2** to **F2** for real phases and **DA** to **DZ** for dummy phases. (Dummy phase names may be redefined at configuration.)
- 2) When displaying or modifying detector data the name **SS** refers to the solar switch input.
- 3) All durations will be in seconds unless specifically stated otherwise, (i.e. **H** is used to denote hours and **M** is used to denote minutes).
- 4) When displaying or modifying MOVA data a full screen display is required (i.e. 25 lines x 80 columns)
- 5) AMBER has been used for YELLOW for aspect colours.

WARNING: IF A CONTROLLER HAS MOVA CONFIGURED IT IS NOT ADVISABLE TO MAKE ANY MAJOR CHANGES TO ANY DATA THAT AFFECTS MOVA (e.g. MINIMUM GREENS, INTERGREENS, etc) WITHOUT CHANGING THE ACTUAL MOVA SITE DATA.

2.2.1 CLF Commands

CLF commands use the following common definitions:-

- <plan> - CLF plan, any number between 1 and 16.
 <group> - CLF plan group, any number between 1 and 32.

2.2.1.1 CLC - CLF Plan Cycle Time

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
CLC	<plan>	-	-	-	<duration>	-	0.0	200.0 ‡
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
CLC:Excess params		Too many parameters entered.						
CLC:Invalid plan		Invalid plan number entered.						
CLC:Invalid time		Invalid duration entered.						

‡ Upper range limit reduced from 3000.0 with "TR0141C" (now TR 2210A) and Sentinel configurations.

Comments

This command is used to display or modify a CLF plan cycle time.

2.2.1.2 CLD - CLF Plan Delay Time

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
CLD	<plan>	-	-	-	<duration>	-	0.0	200.0 ‡
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
CLD:Excess params		Too many parameters entered.						
CLD:Invalid plan		Invalid plan number entered.						
CLD:Invalid time		Invalid duration entered.						

‡ Upper range limit reduced from 300.0 with "TR0141C" (now TR 2210A) and Sentinel configurations.

Comments

This command is used to display or modify a CLF plan delay time.

2.2.1.3 CLF - CLF Plan Status

COMMAND MNEMONIC	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM	FOURTH OUTPUT PARAM	FIFTH OUTPUT PARAM	SIXTH OUTPUT PARAM
CLF	<plan>	<plan state>	<group>	<time remaining>	<influence>	<current stage>	<next stage>

Previously...

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM
CLF	0	-	<plan>	<active>	-
"	1	-	<group>	<time remaining>	-
"	2	-	<influence>	<current stage>	-

VALID SPECIAL CHARACTERS: ? > <	
ERROR MESSAGES	CAUSED BY
CLF:Excess params	Too many parameters entered.
CLF:No plan	There is no CLF plan running.
CLF:No group	There are no CLF groups in the current stage stream.

Comments

The command display has been changed to give a single line format, more convenient for testing plans. The command used to display CLF plan status information on three display screens, it is updated every second and is a read only command.

<plan state> indicates <plan> combined with <active>

<active> shows a single character, where **A** means CLF mode is active and **H** means there is a higher priority mode running.

<influence> shows 2 characters. Refer to CLI command for influence definitions.

<current stage> can be any number between 0 and 15.
(previously displayed, * during an interstage period.)

<next stage> can be any number between 0 and 15.

In the new format <current stage> and <next stage> are the same during a stage green period, with <next stage> changing to the succeeding stage when an intergreen starts, as for the MOD command.

2.2.1.4 CLI - CLF Plan Influences

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
CLI	<plan>	<start_time>	-	-	<infl/stg>	-	0.0	200.0 ‡
VALID SPECIAL CHARACTERS: + - = > <								
ERROR MESSAGES		CAUSED BY						
CLI:Excess params		Too many parameters entered.						
CLI:Invalid plan		Invalid plan number entered.						
CLI:Bad influence		Invalid combination of influence and stage entered.						
CLI:Bad G1 time		Non-zero start time entered for first group in plan.						
CLI:Plan full		Trying to add a group when all have been used already.						
CLI:Invalid time		Invalid start time entered.						
CLI:Not In plan		Trying to delete a group that does not exist.						
CLI:No group		Trying to delete a group in an empty plan, or indicates that there are no groups specified in this plan for the current stage stream.						

‡ Upper range limit reduced from 3000.0 with "TR0141C" (now TR 2210A) and Sentinel configurations.

Comments

This command is used to display or modify CLF plan group influences.

<start_time> for each group is specified in seconds from 0.0 to 200.0

<infl/stg> is the required influence and stage number, if required, (e.g. IM1, HS, etc).

Influence may be one of the following:-

- IM** - immediate move to stage()
- DM** - demand dependant move to stage()
- HS** - hold current stage
- PX** - prevent moves except to stage()
- AI** - add immediate move to stage() to existing influences
- AD** - add demand dependant move to stage() to existing influences
- IS** - isolate to VA, (no maxes)

- D** - delete currently displayed group from plan

Stage can be any number between 0 and 15, and is not required for **HS** or **IS**.

Note: Only that part of the plan for the current stage stream is available, use < > to access other stage streams.

2.2.1.5 CLO - CLF Plan Stream Offset Time

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
CLO	<plan>	-	-	-	<duration>	-	0.0	200.0 ‡
VALID SPECIAL CHARACTERS: + - = > <								
ERROR MESSAGES		CAUSED BY						
CLO:Excess params		Too many parameters entered.						
CLO:Invalid plan		Invalid plan number entered.						
CLO:Invalid time		Invalid duration entered.						

‡Upper range limit reduced from 500.0 with "TR0141C" (now TR 2210A) and Sentinel configurations.

Comments

This command is used to display or modify CLF plan stream offset times on the currently selected stage stream.

2.2.1.6 CLS - CLF Plan Synchronise

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
CLS	-	-	-	-	COMPLETE	-	-	-
VALID SPECIAL CHARACTERS: None								
ERROR MESSAGES		CAUSED BY						
CLS:Excess params		Too many parameters entered						

Comments

This command is used to synchronise the currently running timetabled CLF plan. This should be used if the current plan has just had its group structure or timings altered.

Note that if the handset is disconnected and the plan currently running has had been altered, but has not been synchronised with this command then it will be done automatically.

2.2.1.7 CLT - CLF Plan Test / CLF mode inhibit

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
					LOWER	UPPER
CLT	<plan> or N or I	-	<plan> or N or I	-	1	16
VALID SPECIAL CHARACTERS: =						
ERROR MESSAGES		CAUSED BY				
CLT:Excess params		Too many parameters entered.				
CLT:Level 3 access		Level 3 password has not been entered.				
CLT:Invalid plan		Invalid plan number entered.				
CLT:No group		Trying to test an empty plan.				

Note this command can only be used to change the values once level 3 access has been granted.

Comments

This command is used to display or modify the CLF plan under test (or to temporarily inhibit CLF mode). This plan will be run in preference to that currently being requested by the timetable, as long as no higher priority mode is active. When the plan starts its offset will be applied.

<plan> specifies the plan under test.

To cancel the plan under test, (or to release inhibition) set CLT to **N** for none.

To inhibit CLF mode (for checking operation of lower priority modes), set CLT to **I** for inhibit.

Note that a CLF plan introduced in this way cannot be stopped by the timetable, but will be stopped if the handset is disconnected. These restrictions also apply to inhibition of CLF mode using the **I** parameter.

2.2.2 Detector Input Commands

Detector input commands use the following common definitions:-

- <det_name> - name of the required detector, (up to 6 characters) defined at configuration time, (e.g. XYZ).
- <t_set> - detector timing set, any number between 1 and 4.

2.2.2.1 ADF - Accept Detector Faults

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
ADF	-	-	-	-	ACCEPTED	-	-	-
VALID SPECIAL CHARACTERS: None								
ERROR MESSAGES		CAUSED BY						
ADF:Excess params		Too many parameters entered.						
ADF:No faults		There are no faulty detectors to accept.						

Comments

This command is used to accept current detector faults and extinguish the DFM lamp. DFM fault actions remain in force, except for detectors operating with DSR for which acceptance will remove them from the list of failed detectors (provided they are currently in the 'recovered' state). (See also RDF and DSR commands)

2.2.2.2 DAC - Detector Active State

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
DAC	<det_name>	-	-	-	<rly_logic>	<dfm_force>	-	-
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
DAC:Excess params		Too many parameters entered.						
DAC:Invalid det		Invalid or unconfigured detector name entered.						
DAC:Bad rly logic		Invalid relay logic entered.						
DAC:<det_name>:N/A		Dummy detector has been selected.						
DAC:Bad dfm force		Invalid dfm force state entered, or FA/FN entered for solar switch,(SS)						

Comments

This command is used to display or modify the active state, (relay logic) and DFM force state for a specified detector input.

<rly_logic> - relay logic can be either **OC** or **SC**, (open circuit or short circuit).

<dfm_force> - DFM force state on failure. A pair of failure actions is given, the first for failures while active and the second for failures while inactive. Each can be A, I or N (force active, force inactive, no force state).

(e.g. DAC:DET001:OC:AN -- Maintain active state for active failure and allow recovery for inactive failure of detector DET001.)

2.2.2.3 DCL - Detector Call Delay Period

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
DCL	<det_name>	<t_set>	-	-	<duration>	-	0.0	60.0 ‡
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
DCL:Excess params		Too many parameters entered.						
DCL:Invalid det		Invalid or unconfigured detector name entered.						
DCL:Invalid t/s		Invalid timing set entered.						
DCL:Invalid time		Invalid duration entered.						

‡ Upper range limit reduced from 300.0 with "TR0141C" (now TR 2210A) and Sentinel configurations.

Comments

This command is used to display or modify a call delay duration for a specified detector input. Note that the solar switch, (**SS**) cannot be set below 10 seconds).

2.2.2.4 DCN - Detector Cancel Delay Period

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
DCN	<det_name>	<t_set>	-	-	<duration>	-	0.0	60.0 ‡
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
DCN:Excess params		Too many parameters entered.						
DCN:Invalid det		Invalid or unconfigured detector name entered.						
DCN:Invalid t/s		Invalid timing set entered.						
DCN:Invalid time		Invalid duration entered.						

‡ Upper range limit reduced from 300.0 with "TR0141C" (now TR 2210A) and Sentinel configurations.

Comments

This command is used to display or modify a cancel delay duration for a specified detector input. Note that the solar switch, (**SS**) cannot be set below 10 seconds).

2.2.2.5 DET - Detector Status / Override

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
DET	<det_name>	-	-	-	<det_status> OR <override>	-	-	-
"	"	-	-	-	"	-	-	-
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
DET:Excess params		Too many parameters entered.						
DET:Invalid det		Invalid or unconfigured detector name entered.						
DET:Invalid o/r		Invalid override state entered.						
DET:Cannot set		Trying to override solar switch, (SS) to active - not allowed.						

Comments

This command is used to display or override the current state of a specified detector input. The display for this command is updated as changes occur, with a maximum update rate of 2Hz.

<det_status> is display only and consists of 4 characters with the following meanings:-

- 1st character - actual detector state, (**A** or **I**)
- 2nd character - detector state after dfm, (**A** or **I**)
- 3rd character - handset override state, (**A**, **I** or **N**)
- 4th character - final overridden state, (**A** or **I**)

where **A** = active, **I** = inactive and **N** = none

<override> can be set to **A**, **I** or **N** as described above. Note that a detector may be overridden by DFM, the timetable or special conditioning, so that the final overridden state may not agree with the actual detector state or the handset override state.

Example of how to override a detector:-

DET/XYZ=A - override detector XYZ to active

Note: Handset influences have higher priority than special conditioning ones for detector status.

2.2.2.6 DFA - DFM Active Fault Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
DFA	<det_name>	<t_set>	-	-	<duration>	-	0H OR 0M	255H 15300M
VALID SPECIAL CHARACTERS: + - = ?								
ERROR MESSAGES		CAUSED BY						
DFA:Excess params		Too many parameters entered.						
DFA:Invalid det		Invalid or unconfigured detector name entered.						
DFA:Invalid t/s		Invalid timing set entered.						
DFA:<det_name>:N/A		Dummy detector has been selected.						
DFA:Invalid time		Invalid duration entered.						
DFA:Invalid units		Invalid duration unit entered.						

Comments

This command is used to display or modify a DFM active fault duration for a specified detector input. '?' may be used to change to the DFI command for the same input parameters. When a timing is changed, it applies from the **next** occurrence of this state.

2.2.2.7 DFI - DFM Inactive Fault Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
DFI	<det_name>	<t_set>	-	-	<duration>	-	0H OR 0M	255H 15300M
VALID SPECIAL CHARACTERS: + - = ?								
ERROR MESSAGES		CAUSED BY						
DFI:Excess params		Too many parameters entered.						
DFI:Invalid det		Invalid or unconfigured detector name entered.						
DFI:Invalid t/s		Invalid timing set entered.						
DFI:<det_name>:N/A		Dummy detector has been selected.						
DFI:Invalid time		Invalid duration entered.						
DFI:Invalid units		Invalid duration unit entered.						

Comments

This command is used to display or modify a DFM inactive fault duration for a specified detector input. '?' may be used to change to the DFA command for the same input parameters. When a timing is changed, it applies from the **next** occurrence of this state.

2.2.2.8 DFM - Detector Fault Monitor Status

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
						LOWER	UPPER
DFM	<det_name>	[ON or OFF]	-	<det_status>	-	-	-
VALID SPECIAL CHARACTERS: + - =							
ERROR MESSAGES		CAUSED BY					
DFM:Excess params		Too many parameters entered.					
DFM:Invalid det		Invalid or unconfigured detector name entered.					
DFM:Bad inhibit		Invalid inhibit entered, (i.e. not ON or OFF).					
DFM:No faults		No faulty detectors exist.					

Comments

This command can be used to display the current state of detector fault monitoring for a specified detector input, or set DFM ON or OFF. The display for this command is updated every second.

<dfm_status> is display only and consists of 4 characters with the following meanings:-

- 1st character - current state of detector, (**A** or **I**)
A = active, **I** = inactive
- 2nd character - state when fault occurred, (**A**, **I** or **N**)
A = active, **I** = inactive, **N** = not failed
- 3rd character - state forced by failure, (**A**, **I**, **N** or **X**)
A = active, **I** = inactive, **N** = none, **X** = not failed
- 4th character - Status: display depends on whether the detector has failed or not.

No DFM	I	DFM Inhibited, recovery / acceptance not relevant.
Failed Detectors	A	DFM failure accepted.
	F	Failure, not recovered nor accepted.
	R	Recovered (under DSR) but not accepted
Working Detectors (with DFM)	S	Self Reset Facility active.
	X	Self Reset Facility not selected.

Example of how to stop DFM on a specified detector:-

DFM/XYZ=OFF - DO NOT perform DFM on detector XYZ

This will cancel any outstanding DFM fault on the detector.

2.2.2.9 DSR - Detector Self Reset

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS
DSR	<det_name> " "	<count> <param id> OFF	<gap> <param value> -	c<count> " OFF	g<gap> " -	See below
VALID SPECIAL CHARACTERS: + - =						
ERROR MESSAGES		CAUSED BY				
DFM:Excess params		Too many parameters entered.				
DFM:Invalid det		Invalid or unconfigured detector name entered.				
DFM:Invalid count (<range>)		The count parameter was out of range {valid range is stated in message}				
DFM:Invalid gap		The gap duration was out of range				

Comments

This command can be used to display the current setting for the detector self reset facility for a specified detector input, or to change the settings.

The self reset facility allows a failed detector to resume normal operation after <count> periods of the inactive state have been seen. Each occurrence of the inactive state must be of at least <gap> seconds. If the detector fails DFM during the recovery process, the process is restarted.

<count> is the number of periods of inactivity required before the detector is allowed to resume normal operation.

<gap> is the qualifying duration for an inactive period.

<param id> is 'C' for count or 'G' for gap.

<param value> is the appropriate parameter, either <count> or <gap> as indicated by <param id>

There are two ways of specifying changes, in the first both <count> and <gap> are specified on the command line. (If only one parameter is supplied it is taken to be a count value.)

The alternative change method allows either parameter to be changed independantly, in this variant <param id> is used to indicate which parameter is to be changed.

The detector self reset facility can be disabled by using the OFF parameter.

RANGE LIMITS depend on the type of detector

Detector usage	Count		Gap (seconds)	
Emergency vehicle	1	1	10	125
Priority vehicle	5	50	0.5	60
Other	5	50	0.5	125

Example of how to stop DSR on a specified detector:-

DSR/XYZ=OFF - DO NOT perform DSR on detector XYZ

2.2.2.10 EXT - Detector / Phase Extension Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
						LOWER	UPPER
EXT	<det_name>	<phase>	-	<duration>	-	See below	See below
VALID SPECIAL CHARACTERS: + - =							
ERROR MESSAGES		CAUSED BY					
EXT:Excess params		Too many parameters entered.					
EXT:Invalid det		Invalid or unconfigured detector name entered.					
EXT:Invalid phs		Invalid or unconfigured phase entered.					
EXT:No extns		No extensions configured.					
EXT:Level 3 access		Level 3 password has not been entered.					
EXT:Invalid time		Invalid duration entered.					
EXT:No record		No extension exist for the specified detector.					

Note this command can only be used to change the values for all-red / pedestrian blackout extensions and vehicle green extensions, once level 3 access has been granted.

Comments

This command is used to display or modify the green extension duration, pedestrian push button / confirm detector extension duration and all-red / pedestrian blackout extension duration for a specified detector input/phase. Note that a detector can extend more than one phase.

This command has three modes of operation all mutually exclusive:-

- 1) Displaying and modifying the green extension duration of vehicle phases by vehicle detectors. Range limits of 0.2 to 5.0 seconds with "TR0141C" (now TR 2210A) and Sentinel configurations, which is a change from the original range of 0.0 to 100.0 seconds.
- 2) Displaying and modifying the pedestrian push button / confirm detector extension duration. This extension is for pedestrian push button and kerb-side detectors and their related pedestrian phase. Range limits of 1.0 to 5.0 seconds. {Note this mode of operation is new with "TR0141C" (now TR 2210A) and Sentinel configurations}.
- 3) Displaying and modifying the all-red / pedestrian blackout extension duration. This is the extension for on-crossing detectors and their related pedestrian phases. Range limits of 0.4 to 5.0 seconds. {Note this mode of operation is new with "TR0141C" (now TR 2210A) and Sentinel configurations}.

2.2.2.11 RDF - Reset Detector Faults

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
RDF	-	-	-	-	RESET	-	-	-
VALID SPECIAL CHARACTERS: None								
ERROR MESSAGES		CAUSED BY						
RDF:Excess params		Too many parameters entered.						
RDF:No faults		There are no fault detectors to reset.						

Comments

This command is used to reset detectors that have previously failed DFM, but are now functioning again. If no faulty detectors remain the DFM lamp will be extinguished.

This command also clears the CDM indication for faults that are not current.

(See ADF command.)

2.2.2.12 SPD – Monitor Speed Assessors

COMMAND MNEMONIC	SCREEN NUMBER	FIRST INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM	FORTH OUTPUT PARAM
SPD	0	<assessor>	<activation>	<speed>	<gap>	[<actions>]
SPD	1	<assessor>	<speed>	<length>	<previous gap>	-
SPD	2	<assessor>	<highest speed>	<average speed>	< average gap>	<sizes>
VALID SPECIAL CHARACTERS: + - ?						
ERROR MESSAGES		CAUSED BY				
SPD:Excess params		Too many parameters entered.				
SPD: No speed assessors		No speed assessors have been configured.				
SPD:Invalid command context		Setting of parameters can only be done from screen 2.				
SPD: Invalid assessor		Invalid or unconfigured assessor number entered.				
SPD: Invalid sample size		Invalid size of sample for assessing averages.				
SPD: Invalid zone length		Invalid detection zone length entered.				

Comments

This command is used to monitor integral speed assessors. The command provides three screens of data.

<assessor> The speed assessor pair to monitor [0..15]

<speed> Measured speed for the last speed event seen (Km / hour).

First Screen: (0)

<activation> This field consists of a pair of characters which indicate progress of a vehicle over the assessor loops. The field will show "!!" if a bad event has occurred (eg. loops being activated in the wrong order). Otherwise a '.' indicates an empty loop and '>' shows an occupied loop. For a normal transition, the two characters will show as '>' in sequence, (eg. ".." ">." ">>" ">." ".."), while such an event is in progress the display is updated every 1/10 sec. This allows crude verification of the timings.

<gap> The accumulating time since the last speed event was seen (seconds). This field is limited to a maximum of 25.5 sec.

<actions> The actions in terms of speed extensions, caused by this assessor.
D – a speed assessment delay is timing.
X – applying a speed extension.

Second Screen: (1)

<length> Vehicle length corresponding to the last speed event seen. This measurement uses the <zone size> reported on screen (2) to compensate for the loops having actual dimensions.

<previous gap> This is the time interval between the last two speed events seen, as with <gap> it is limited to 25.5 sec.

Third Screen: (2)

<highest speed> Highest measured speed seen since the assessor was last reset (Km / hour).

<average speed> Running average speed over <sample> vehicles (Km / hour).

<average gap> This is a running average over <sample> gap periods, this may be distorted if gaps are reaching their limit value.

<sizes> Consists of two fields <sample> and <zone size>

<sample> This is the number of events taken to produce “averages”.
Note that the averages are rolling averages, so they take time to respond to changing conditions (eg. stops and starts).

<zone size> Length of each detector on the road in metres. It is assumed that the two detection zones are the same size.

While the third screen is active, these parameters may be edited (using the '=' command).

=N/<sample> Allows the sample size to be changed [2..20]

=Z/<zone size> Changes the compensation applied when calculating vehicle lengths [0.0 .. 4.0]m. (default 1.0m). The value of this field is used by special conditioning when assessing vehicle length.

Also...

=R Is used to reset the assessor's <highest speed> setting back to zero.

Conversion factors:- 1 mph = 1.61 km/h: 1 km/h = 0.62 mph

Or if you don't have a calculator handy:-

MPH	=	KM/H	KM/H	=	MPH
5	=	8.0	10	=	6.2
10	=	16.1	15	=	9.3
15	=	24.1	20	=	12.4
20	=	32.2	25	=	15.5
25	=	40.2	30	=	18.6
30	=	48.3	35	=	21.7
35	=	56.3	40	=	24.8
40	=	64.4	45	=	27.9
45	=	72.4	50	=	31.1
50	=	80.5	55	=	34.2
55	=	88.5	60	=	37.3
60	=	96.5	65	=	40.4
65	=	104.6	70	=	43.5
70	=	112.6	75	=	46.6
75	=	120.7	80	=	49.7
80	=	128.7	85	=	52.8
85	=	136.8	90	=	55.9
90	=	144.8	95	=	59.0
95	=	152.9	100	=	62.1
100	=	160.9	105	=	65.2
			110	=	68.3
			115	=	71.4
			120	=	74.5
			125	=	77.6
			130	=	80.7
			135	=	83.8
			140	=	86.9
			145	=	90.0
			150	=	93.2
			155	=	96.3
			160	=	99.4

2.2.2.13 SPT – Speed Assessor Test

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM	FORTH OUTPUT PARAM	FIFTH OUTPUT PARAM
SPT	<assessor>	<edit>	<delay>	<pulse width>	<speed>	<length>	[<actions>]
VALID SPECIAL CHARACTERS: + -							
ERROR MESSAGES		CAUSED BY					
SPT: Excess params		Too many parameters entered.					
SPT: No speed assessors		No speed assessors have been configured.					
SPT: Level 3 access		Level 3 password has not been entered. (PWD command)					
SPT: Invalid assessor		Invalid or unconfigured assessor number entered.					
SPT: UNEXPECTED SPEED EVENT		An unprovoked speed event was observed on the monitored assessor.					
SPT: NO SPEED EVENT SEEN		A speed test was not seen by the controller.					
SPT: No Test Command Output		An output connection is required for sending commands to the signal generator card					
SPT: Bad pulse length		Specified pulse duration was out of range.					
SPT: Bad separation		Specified pulse separation was out of range.					
SPT: Invalid command parameter		An invalid <edit code> was entered.					

Note this command can only be used to generate tests or enter *test mode* once level 3 access has been granted.

Comments

This command is used to test integral speed assessors. A speed test signal generator card is required to support the command. When a command is issued, the test card will put the assessor into *test mode* by disconnecting the relevant input pair from their associated detectors. The controller will generate the necessary phase and all-red extensions appropriate to *test mode* until the assessor is released. (TR2210A 7.5.4.4)

- <assessor> The speed assessor pair to monitor [0..15 OR "TST"] (default: TST)
Note: the previously monitored assessor is released whenever the assessor is changed, it is also released if another command is actioned or the handset is disconnected.
When TST is used, no assessor is disconnected and *test mode* is not entered, however test commands are issued to the test signal generator card, this allows for testing the card without affecting traffic.
- <edit> This field allows the <pulse separation> or <pulse width> to be changed, or allows the last test to be repeated. Each of the <edit> parameters is introduced with an <edit code> (P, S or T).
- P<milliseconds> Is used to change the duration of each of the two pulses generated for a test, this option does not provoke a test event. (rounding occurs, to nearest number divisible by 4) [8 .. 252]
- S<milliseconds> Is used to change the delay between the upstream and downstream pulses on the two assessor inputs. This command provokes generation of a test event. (rounding occurs, to even numbers) [80 .. 334]
- T Repeats the test with the same pulse characteristics.
- <speed> Measured speed from the last speed event simulated (Km / hour).
- <length> Vehicle length corresponding to the last speed test event seen.
Note: there is no compensation for the size of loops, which are assumed to be of zero length.
- <actions> The actions in terms of speed extensions, caused by this assessor.
D – a speed assessment delay is timing.
X – applying a speed extension.

Note:

To end *test mode*, either use the SPT command with no parameters (or with /TST) or issue any other command. *Test mode* will automatically end after 10 minutes of inactivity.

2.2.3 Fault / Warning Commands

2.2.3.1 FLF - Fault Log Display

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
FLF	<flt_type>	-	-	-	<flt_status>	-	-	-
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
FLF:Excess params		Too many parameters entered.						
FLF:Bad code		Invalid fault type entered.						
FLF:Level 3 access		Level 3 password has not been entered.						
FLF:No faults		No fault log entries exist.						

Comments

This command is used to view fault log entries and is updated every second. If the command is used without a parameter then the first fault will be displayed.

Note that this log only contains items which cause the controller to shutdown one or more streams. Faults marked with a * can switch off individual streams.

<flt_type> can be any one of the following 3 character codes:-

CFG	-	Invalid configuration data Or Configuration data changed (RCP required)
CRM	-	Configuration checksum fault
GCF	-	Green conflict fault
GCM	-	Green conflict monitor
GNC	-	Green non-compliance fault
GSC	-	Green sense discrepancy fault
MSF	-	Main processor status fault
PRM	-	Program PROM checksum fault
RAM	-	RAM checksum fault
RBF	-	RAM bit test fault
REL	-	Sigs relay control fault
RLF*	-	2nd red lamp fault
SCF*	-	Special conditioning generated fault
SIB	-	Serial Interface Bus fault
SSG*	-	Audible/tactile signal fault

<flt_status> is display only and can be either **CLEAR** or **FAULT**.

Note that **FLF=CLR** can be entered to clear all entries from the log and attempt to restart the controller, (level 3 access is required).

2.2.3.2 HFL - Historical Fault Log

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM	FORTH OUTPUT PARAM
HFL		<flt_type>				
"	0		<entry_no>	<flt_type>	<code>	-
"	1		<date>	-	-	-
"	2		<time>	<bright/dim>	-	-
"	3		<flt_details>	-	-	-
"	.					
"	n		<stream>	<mode>	<current_stg>	<next_stg>
	.					
	.					
VALID SPECIAL CHARACTERS: + - ? =						
ERROR MESSAGES		CAUSED BY				
HFL:Excess params		Too many parameters entered.				
HFL:Bad code		Invalid fault type entered.				
HFL:No faults		There are no faults stored in the log.				
HFL:Entry lost		The currently displayed fault entry has been overwritten.				
HFL:Not found		The fault type entered cannot be found.				

Comments

This command is used to view the historical fault log data.

<flt_type> is as for the FLF command with the addition of **FLC** which indicates fault log cleared. When entered searches for the next oldest fault of the specified type, (e.g. HFL/GCF will find the next oldest GCF entry, from the last entry viewed). Note that **CLR** can be entered to mask all entries in this log, (this does not clear the fault log). The parameter **RVL** will unmask (reveal) any previously hidden entries.

<entry_no> indicates entry number in log, (1-256) where 1 is the latest entry.

<code> Note that <code> only applies for fault types **GCF** and **GCM** see details section below.

<date> shows date fault occurred in DD:MMM:YYYY format.

<time> shows time fault occurred in HH:MM:SS format for a 24 hour clock.

<bright/dim> shows state of lamps when fault occurred, where **B** means bright and **D** means dim.

<flt_details> shows further information for some of the fault types. When this data is stored it may take up between 1 and 64 screens. <flt_details> are as follows:-

CRM, FLC, PRM, RAM, RBF - No further information.

CFG - shows **FORMAT** to indicate that config data is wrong format for software,
INDEX ERROR if an error was found in the configuration data index,
RCP if the configuration data has changed, (RCP command needs to be used) or...

<facility_type> to indicate that an optional facility has been configured that is not provided by the software fitted. Facility types are shown one per screen and can be any of the following:-

VMAX	-	varimax
PTIME	-	part-time
RLM	-	red lamp monitoring
STREAMS	-	parallel stage streaming
MOVA	-	MOVA
LRT	-	LRT
PP4TERM5	-	appearance type 4 or termination type 5 not allowed options
FACILnn	-	unknown facility, where nn is a 2 digit facility number

GCF -

<code> shows 1 or 2 characters, where **M** means fault found by main processor, **I** means fault found by Independent Conflict Monitor processor and **MI** means fault found by both processors.

<32_bit_phase_pattern> taking up to 4 screens in groups of 8, depending on number of phases configured. First phase is always the least significant bit. In this pattern **0** means phase not green, **G** means phase green with no conflict and **X** means conflicting phase.

GCM -

<code> NRML indicates that the failed test was for a defined conflict, NULL indicates that the test showed a conflict when none was presented.

<32_bit_phase_pattern> taking up to 4 screens in groups of 8, depending on number of phases configured. First phase is always the least significant bit. In this pattern **0** means no fault and **X** means failed green sense.

GNC - <32_bit_phase_pattern> taking up to 4 screens in groups of 8, depending on number of phases configured. First phase is always the least significant bit. In this pattern **0** means phase not green and no fault, **G** means phase green and no fault, **F** means phase green off when it should be on and **N** means phase green on when it should be off.

GSC - <32_bit_phase_pattern> taking up to 4 screens in groups of 8, depending on number of phases configured. First phase is always the least significant bit. In this pattern **0** means no fault and **X** means discrepancy between green senses.

MSF - <error_code> Error code indicates type of status fault.
ICM DOWNLOAD FAILED for Independent Conflict Monitor download failure.
Other codes can occur but represent internal software status faults.

REL - There are two alternative displays; relay faults observed in operation and relay faults found by testing, the format of the data displayed is different for the two cases.

Operational relay faults

<relay_1_state>:<relay_B_state>:<relay_D_state>:<Mains A>:<Mains B>:<Mains C> on one screen,

each <relay_x_state> consists of three characters:-

1st character: required state (1 = relay open, 0 = relay closed)

2nd character: sensed state at mains positive peak (1 = relay open, 0 = relay closed)

3rd character: sensed state at mains negative peak (1 = relay open, 0 = relay closed)

<Mains A> & <Mains B> fields also consists of three characters

1st character: expected state (1 = power off, 0 = power on)

2nd character: sensed state at mains positive peak (1 = power off, 0 = power on)

3rd character: sensed state at mains negative peak (1 = power off, 0 = power on)

<Mains C> field consists of two characters

1st character: sensed state at mains positive peak (1 = power off, 0 = power on)

2nd character: sensed state at mains negative peak (1 = power off, 0 = power on)

Relay test failures

<relay_1_state>:<relay_B_state>:<relay_D_state>:<test_type> on one screen,

each <relay_x_state> consists of two characters:-

1st character: required state (1 = relay open, 0 = relay closed)

2nd character: sensed state at mains positive peak (1 = relay open, 0 = relay closed)

<test_type> can be CPU if the test was of the processor's control of the relays or ICM if the test was of the Independent Conflict Monitor's ability to control the relays.

RLF - <8_bit_stream_pattern> on one screen. First stream is always the least significant bit. In this pattern **0** means no fault and **X** means 2nd red lamp fault on this stream.

SCF - <spcond_fault_no> on one screen, giving special conditioning fault number that generated the fault.

SIB - <data_type> one screen, gives the data type that was seen as inconsistent, it can be:-

LSC_SENSE, INPUT, ILM or UNKNOWN.

<32_bit_phase_pattern> taking up to 4 screens in groups of 8, depending on number of phases configured. First phase is always the least significant bit. In this pattern **0** means phase not green, **G** means phase green. This is the state of the lamps at the time of the fault (for information only).

SSG - <error code>:<phase>

Where <error code> can be AUD or TAC, indicating that an audible or tactile confirm signal is persistently active.

And <phase> is the pedestrian phase affected

A screen for each configured stage stream is also stored showing the stream status when the fault occurred, where:-

<stream>	-	stage stream number, (1-8)
<mode>	-	current mode, (codes as for the MOD command)
<current_stage>	-	stage number, (0-15)
<next_stage>	-	stage number, (0-15)

NOTE : **THE ABOVE FAULT DETAILS ARE IMPORTANT TO MICROSENSE IN DETERMINING THE CAUSE OF A FAULT.**

2.2.3.3 HWL - Historical Warning Log

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM	FORTH OUTPUT PARAM
HWL		<wrn_type>				
"	0		<entry_no>	<wrn_type>	-	-
"	1		<date>	-	-	-
"	2		<time>	-	-	-
"	3		<wrn_details>	-	-	-
	.					
	.					
VALID SPECIAL CHARACTERS: + - ? =						
ERROR MESSAGES		CAUSED BY				
HWL:Excess params		Too many parameters entered.				
HWL:Bad code		Invalid warning type entered.				
HWL:No warnings		There are no warnings stored in the log.				
HWL:Entry lost		The currently displayed warning entry has been overwritten.				
HWL:Not found		The warning type entered cannot be found.				

Comments

This command is used to view the historical warning log data.

<wrn_type> is as for the WRN command with the addition of **WLC** which indicates warning log cleared and **DFC** which indicates detector faults cleared, (i.e. RDF). When entered searches for the next oldest warning of the specified type, (e.g. HWL/DFM will find the next oldest DFM entry, from the last entry viewed). Note that **CLR** can be entered to mask all entries in this log, (this does not clear the log). The parameter **RVL** will unmask (reveal) any previously hidden entries.

<entry_no> indicates entry number in log, (1-256) where 1 is the latest entry.

<date> shows date warning occurred in DD:MMM:YYYY format.

<time> shows time warning occurred in HH:MM:SS format for a 24 hour clock.

<wrn_details> shows further information for some of the warning types. When this data is stored it may take up between 1 and 4 screens. <wrn_details> are as follows:-

DFC, DOG, WLC, RTC, BAT - No further information.

BRN - <no_of_brownouts> shows number of brownouts in burst.

CDM - <det_name> shows cyclic DFM faults.

DCD - <component>:<config item> or CLEAR
Component - is the section of data which was being downloaded (e.g. MOVA data).

Config item - is the item of data being loaded when the fault occurred.
CLEAR is reported when the Component is subsequently successfully downloaded. (MOVA is inhibited from changing data sets while this error is active)

- DFM** - <det_name>:<state_at_failure> where state at failure can be **A** for active or **I** for inactive.
- LSE** - <phase>:<event_type>:<failure_status> where event type is **Prepare**, **Demand**, **Stoplevel** or **Exit**; and failure status is either **FAIL** or **CLEAR**.
- LFE** - <phase>:<event_type>:<failure_status> as for LSE.
- LFD** - <det_id>:<failure_status> where failure status is either **FAIL** or **CLEAR**.
- LMF** - <channel>:<aspect>:OLD:<previous number of failures>
 <channel>:<aspect>:NEW:<current number of failures>
 <channel>:<old reference current>:<new reference current>
 or <channel>:<aspect>:CF:<fault status>
 or ILM Reset
- Where: channel - is the associated lamp monitoring channel.
 aspect - is the lamp affected, R = red, A = amber, G = green.
 fault status - indicates whether the conflict has occurred (**FAIL**) or cleared (**CLR**)
 ILM Reset - indicates that a lamp monitoring reset has been performed from the handset.
- LMT** - <channel>:OLD:<previous aspect pattern>
 <channel>:NEW:<current aspect pattern>
- Where: channel - is the associated lamp monitoring channel.
 aspect - is the lamp affected, R = red, A = amber, G = green.
- LMV** - MAINS UNSTABLE
 or MAINS CLEARED
- MATHS**- <stream>:<code>
 Stream is the stream on which the fault occurred (1 or 2)
 Code is either **FP** for floating point error (only used by MOVA) or **DV0** for a trapped divide by zero error, in which case it is followed by a location code that identifies the location in the MOVA kernel where the fault was trapped. Maths faults cause the MOVA subsystem to be re-initialised.
- MOV** - <error_type> and <current stage>:<new stage> on two separate screens.
 (<current stage> is a Sentinel stage but <new stage> has to be a MOVA stage because there may be no equivalent Sentinel stage)
 Error type can be any of the following:-
- IN CONTROL** - MOVA has assumed control.
UNKWN STG - MOVA has selected a stage which is not configured.
PROHIBIT - MOVA has selected a prohibited stage move.
STG STUCK - MOVA has selected the same stage for longer than the specified limit.
CLEARED - MOVA warning cancelled (with WRN/MOV=0).
- MSW** - <error_code> and <address> on separate screens. Error code indicates type of software warning, address indicates location of warning in hexadecimal segment:offset format.
- RD1** - <32_bit_phase_pattern> taking up to 4 screens in groups of 8, depending on number of phases configured. First phase is always the least significant bit. In this pattern **0** means no fault and **X** means 1st red lamp fault.

- RD2** - <32_bit_phase_pattern> taking up to 4 screens in groups of 8, depending on number of phases configured. First phase is always the least significant bit. In this pattern **0** means no fault and **X** means 2nd red lamp fault.
- RES** - <nmi date and time> or “Manual Reset”
<nmi date and time> is the date and time at which the power failure occurred, displayed on two lines as for <date> and <time>. This allows the duration of power failures to be derived.
- SPD** - <assessor>:<type>
Where <type> can be one of:-
CONNECTION - 50 bad speed events in sequence, suspect connection
SPEED TEST ACTIVE - no speed events on phase (while in test mode)
NO SPEED EVENTS - no speed events seen on assessor during phase green
SPEED TOO HIGH - speed measured is unrealistic (>300 Km /hr)
RECOVERED - good speed event seen after previous fault sequence
UNEXPECTED EVENT - unexpected speed event was seen in test mode
- SSG** - <error_code>:<phase> on one screen.
Error code indicates type of supplementary signal warning:-
AUD: audible tone confirmed when it should be off.
TAC: tactile signal confirmed when it should be off.
ATI: audible tone not confirmed.
TSI: tactile signal not confirmed.
phase indicates the pedestrian phase affected.

NOTE : THE ABOVE WARNING DETAILS ARE IMPORTANT TO MICROSENSE IN DETERMINING THE CAUSE OF A WARNING.

2.2.3.4 RFL - Reset Fault or Warning Log

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
RFL	-	-	-	-	1 or 2	-	-	-
VALID SPECIAL CHARACTERS: =								
ERROR MESSAGES		CAUSED BY						
RFL:Excess params		Too many parameters entered.						
RFL:Lack of params		Incomplete command entered, (i.e. 1 or 2 missed off)						
RFL:No faults		There are no fault log entries to be reset.						
RFL:No warnings		There are no warning log entries to be reset.						
RFL:Level 3 access		Level 3 password has not been entered.						
RFL:Invalid opt		Invalid option entered.						

Note this command can only be used to reset the logs once level 3 access has been granted.

Comments

This command is used to reset the fault and warning logs. **RFL=1** is entered to reset the warning log and **RFL=2** is entered to reset the fault log. When actioned the handset will respond with either **RFL:1:COMPLETE** or **RFL:2:COMPLETE**.

2.2.3.5 WRN - Warning Log Display

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
WRN	<wrn_type>	0	-	-	<wrn_count>	-	-	-
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
WRN:Excess params		Too many parameters entered.						
WRN:Bad code		Invalid warning type entered.						
WRN:No warnings		No warning log entries exist.						

Comments

This command is used to view warning log entries and is updated every second. If the command is used without a parameter then the first warning with a non-zero count will be displayed.

Note that this log only contains items which do NOT cause the controller to shutdown. Major errors that do cause shutdown are held in the fault log, (see FLF command).

<wrn_type> can be any one of the following codes:-

BAT	-	Battery test failure
BRN	-	Mains brownout
CDM	-	Cyclic DFM faults
DCD	-	Data Component Download
DFM	-	Detector fault monitor
DOG	-	Watchdog
LFD	-	Failed LRT detector warning
LFE	-	Failed LRT event warning
LMF	-	Lamp monitoring faults
LMT	-	Lamp monitoring toroid faults
LMV	-	Lamp monitoring mains voltage unstable fault
LSE	-	Suspect LRT event warning
MATHS	-	Divide by zero or Floating point error (MOVA)
MOV	-	MOVA error warning
MSW	-	Main processor software warning
RD1	-	1st red lamp failure
RD2	-	2nd red lamp failure
RES	-	Reset after power fail
RTC	-	RTC time and date invalid at power-up
SSG	-	Supplementary signal (Audible/tactile) warning
SPD	-	Speed assessor warning

<wrn_count> is (mostly) display only and can be any number between 1 and 65,535.

Notes:

WRN=CLR can be entered to attempt to clear all entries from the log. (some may return)

MATHS is separated from **MOV** because **MATHS** causes the MOVA subsystem to be re-initialised, i.e. **MATHS** is a more severe error.

WRN/MOV=0 can be used to clear down MOVA warnings that are preventing MOVA taking control,

this command requires level 3 access.

DCD/MOVA warning will inhibit MOVA from changing data sets, so the data should be corrected and re-loaded to cancel the warning.

2.2.4 Hurry Call Commands

Hurry Call commands use the following common definition:-

<hc_no> - Hurry Call, any number between 1 and 4.

? may be used to cycle round the HCD / HCH / HCP commands for the same <hc_no>

2.2.4.1 HCD - Hurry Call Delay Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
HCD	<hc_no>	-	-	-	<duration>	-	0.0	99.0
VALID SPECIAL CHARACTERS: + - = > < ?								
ERROR MESSAGES		CAUSED BY						
HCD:Excess params		Too many parameters entered.						
HCD:Invalid HC		Invalid hurry call number entered.						
HCD:Invalid time		Invalid duration entered.						
HCD:None configd		No hurry calls configured on the current stage stream.						
HCD:Not in stream		Hurry call number entered is not configured for current stage stream.						

‡ Upper range limit reduced from 300.0 with “TR 2210A” and Sentinel configurations.

Comments

This command is used to display or modify the delay duration for a specified hurry call on the currently selected stage stream.

2.2.4.2 HCH - Hurry Call Hold Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
HCH	<hc_no>	-	-	-	<duration>	-	0.0	99.0
VALID SPECIAL CHARACTERS: + - = > < ?								
ERROR MESSAGES		CAUSED BY						
HCH:Excess params		Too many parameters entered.						
HCH:Invalid HC		Invalid hurry call number entered.						
HCH:Invalid time		Invalid duration entered.						
HCH:None configd		No hurry calls configured on the current stage stream.						
HCH:Not in stream		Hurry call number entered is not configured for current stage stream.						

‡ Upper range limit reduced from 300.0 with “TR 2210A” and Sentinel configurations.

Comments

This command is used to display or modify the hold duration for a specified hurry call on the currently selected stage stream.

2.2.4.3 HCP - Hurry Call Prevent Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
HCP	<hc_no>	-	-	-	<duration>	-	0.0	199.0
VALID SPECIAL CHARACTERS: + - = > < ?								
ERROR MESSAGES		CAUSED BY						
HCP:Excess params		Too many parameters entered.						
HCP:Invalid HC		Invalid hurry call number entered.						
HCP:Invalid time		Invalid duration entered.						
HCP:None configd		No hurry calls configured on the current stage stream.						
HCP:Not in stream		Hurry call number entered is not configured for current stage stream.						

‡ Upper range limit reduced from 500.0 with “TR 2210A” and Sentinel configurations.

Comments

This command is used to display or modify the prevent duration for a specified hurry call on the currently selected stage stream.

2.2.4.4 HCS - Hurry Call Status

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM
HCS	-	<hc_no>	<status>	<time_remaining>	-
VALID SPECIAL CHARACTERS: + - > <					
ERROR MESSAGES		CAUSED BY			
HCS:Excess params		Too many parameters entered.			
HCS:Invalid HC		Invalid hurry call number entered.			
HCS:None configd		No hurry calls configured on the current stage stream.			
HCS:Not in stream		Hurry call number entered is not configured for current stage stream.			

Comments

This command is used to display status information for a specified hurry call on the currently selected stage stream and is updated every second. This is a read only command.

<status> shows a single character, where **D** means in delay period, **A** means adopting hurry call stage, **H** means in hold period, **P** means in prevent period, **I** means hurry call inhibited by a higher priority mode and **X** means no demand for hurry call.

<time_remaining> is displayed in seconds, but when not applicable shows *.

2.2.5 ILM Commands

ILM commands use the following common definitions:-

<channel> is the lamp monitoring channel to be displayed,

<aspect> is the lamp aspect associated with the selected channel,
R = Red, A = Amber, G = Green.

2.2.5.1 LMC - ILM Instant Currents

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM
LMC		<channel>			
"	0		<aspects>	<current>	[U]
"	1		<voltage>	[U]	-
VALID SPECIAL CHARACTERS: + - ? ! *					
ERROR MESSAGES		CAUSED BY			
LMC:Excess params		Too many parameters entered.			
LMC:Invalid chan		Invalid channel name entered.			
LMC:Not confgd		ILM is not configured, or no aspects defined.			

Comments

This command is used to display instant lamp currents and mains voltage as read from the ADC, the command mnemonic and screen number are not displayed. Instability of a channel current, or of the mains voltage, is indicated by adding a 'U' to the end of the display.

Note that the instant currents will change with dimming states.

2.2.5.2 LMD - ILM Lamp Monitoring Data

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
						LOWER	UPPER
LMD	<channel>	-	-	<average current> or OFF	-	30mA	440mA
VALID SPECIAL CHARACTERS: + - =							
ERROR MESSAGES		CAUSED BY					
LMD:Excess params		Too many parameters entered.					
LMD:Invalid chan		Invalid channel name entered.					
LMD:Level 3 access		Level 3 password has not been entered.					
LMD:Invalid crnt		Invalid average current entered.					
LMD:Not confdg		ILM is not configured, or no aspects defined.					

Note this command can only be used to change the values once level 3 access has been granted.

Comments

This command is used to display or modify average current per bulb for the specified channel.

The parameter OFF may be used to specify a monitor channel that is not required. The channel should be disconnected either by removing the toroid connector at the ILM board, or by not passing any wires through the toroid.

Warning: care should be taken to ensure correct operation when modifying this value, consideration should be given to compensated current value and linearity of current etc.

2.2.5.3 LMF - ILM Lamp Monitoring Faults

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM
LMF	<channel>	<aspects>	-	<number failed> or CONFLICT or UNSTABLE or MAINS UNSTABLE
"	CLR	-	-	Reset Done
VALID SPECIAL CHARACTERS: + - =				
ERROR MESSAGES		CAUSED BY		
LMF:Excess params		Too many parameters entered.		
LMF:Invalid chan		Invalid or unconfigured channel name.		
LMF:Level 3 access		Level 3 password has not been entered.		
LMF:Invalid aspct		Invalid aspect entered.		
LMF:Not configd		ILM is not configured.		

Note this command can only be used to reset the ILM once level 3 access has been granted.

Comments

This command is used to display the number of lamp failures or the conflict state of a given channel/aspect. It may also be used to reset the lamp monitor and invoke learning of reference currents; Learning of reference currents is normally only required on commissioning.

<number failed> is the number of failures

CONFLICT indicates lamp conflict on selected channel/aspect. (i.e. additional current due to extra bulb.)

UNSTABLE indicates that the channel/aspect's associated toroid is unstable.

UNSTABLE MAINS indicates that the mains voltage reading is unstable. Note that this is measured by the CPU/Power module, not the ILM card.

Reset done ILM reset accepted, new aspect currents are learnt as those aspects are seen.

2.2.5.4 LMM - ILM Lamp Monitoring Currents

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM
LMM	<channel>	<aspects>	-	<current value> or UNSTABLE or MAINS UNSTABLE
VALID SPECIAL CHARACTERS: + -				
ERROR MESSAGES		CAUSED BY		
LMM:Excess params		Too many parameters entered.		
LMM:Invalid chan		Invalid or unconfigured channel name.		
LMM:Invalid aspt		Invalid aspect entered.		
LMM:Not confgd		ILM is not configured.		

Comments

This command is used to display the lamp monitoring current for a given channel/aspect.

<current value> is the compensated current value, or NVAL if the aspect has yet to run since the lamp monitor was reset.

UNSTABLE indicates that the channel/aspect's associated toroid is unstable.

UNSTABLE MAINS indicates that the mains voltage is unstable.

Note compensated currents do not change with dimming states.

2.2.6 Input and Output Commands

2.2.6.1 IPD - Inputs Display

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
					LOWER	UPPER
IPD “	0 . .	[<input no>]	<ip_bit_pattern>	-	[0]	[95]
	11	-	<ip_bit_pattern>	-		
VALID SPECIAL CHARACTERS: + - ?						
ERROR MESSAGES		CAUSED BY				
IPD:Excess params		Too many parameters entered.				
IPD: Invalid input		The input number entered is out of range.				
IPD:Not fitted		Current block of inputs are not fitted in the controller.				

Comments

This command is used to display input states and is updated when the data changes, with a minimum display interval of 100 ms. This is a read only command.

The optional parameter <input no> allows selection of the block of inputs that contains the input entered.

<ip_bit_pattern> shows 8 input states where 0 indicates input is inactive and 1 indicates input is active with the lowest numbered input being on the right hand side.

The relationship between screen numbers and input numbers is as follows:-

Screen 0 = inputs 0 to 7	Screen 6 = inputs 48 to 55
Screen 1 = inputs 8 to 15	Screen 7 = inputs 56 to 63
Screen 2 = inputs 16 to 23	Screen 8 = inputs 64 to 71
Screen 3 = inputs 24 to 31	Screen 9 = inputs 72 to 79
Screen 4 = inputs 32 to 39	Screen 10 = inputs 80 to 87
Screen 5 = inputs 40 to 47	Screen 11 = inputs 88 to 95

The + and - keys may be used to step forwards and backwards through the input display screens. (wrapping occurs from / to the screen containing the highest used input)

NB. The active state of a detector can be configured.
The active state of utc bits are configured as a group. [Level 4 access]

2.2.6.2 OPD - Outputs Display

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
					LOWER	UPPER
OPD	0	[<output no>]	<op_bit_pattern>	-	[0]	[63]
"	7	-	<op_bit_pattern>	-		
VALID SPECIAL CHARACTERS: + - ?						
ERROR MESSAGES		CAUSED BY				
OPD:Excess params		Too many parameters entered.				
OPD:Invalid output		The output number entered is out of range.				
OPD:Not fitted		Current block of outputs are not fitted in the controller.				

Comments

This command is used to display output states and is updated every 200 ms. This is a read only command. The optional parameter <output no> allows selection of the block of outputs that contains the output entered.

<op_bit_pattern> shows 8 output states where 0 indicates output is inactive and 1 indicates output is active with the lowest numbered output being on the right hand side.

The relationship between screen numbers and output numbers is as follows:-

Screen 0 = outputs 0 to 7	Screen 4 = outputs 32 to 39
Screen 1 = outputs 8 to 15	Screen 5 = outputs 40 to 47
Screen 2 = outputs 16 to 23	Screen 6 = outputs 48 to 55
Screen 3 = outputs 24 to 31	Screen 7 = outputs 56 to 63

The + and - keys may be used to step forwards and backwards through the output display screens. (wrapping occurs from / to the screen containing the highest used output)

2.2.6.3 OPI - Output Invert State

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
						LOWER	UPPER
OPI	<output_no>	<invert state>	-	ON or OFF	-	-	-
VALID SPECIAL CHARACTERS: + - =							
ERROR MESSAGES		CAUSED BY					
OPI:Excess params		Too many parameters entered.					
OPI:Invalid op		Invalid output number entered.					
OPI:Invalid state		Invalid invert state entered.					

Comments

This command is used to display or modify the invert state for the specified output number.

<output_no> can be any number between 0 and 63.

<invert state> can be **ON** or **OFF**.

Note that invert states do not apply to serial outputs.

2.2.6.4 OPS - Output State

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
OPS	<output_no>	-	-	-	<op_status> OR <override>	-	-	-
"	"	-	-	-		-	-	-
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
OPS:Excess params		Too many parameters entered.						
OPS:Invalid op		Invalid output number entered.						
OPS:Invalid state		Invalid override state entered.						

Comments

This command is used to display or override the current state of a specified output. The display for this command is updated every second.

<output_no> can be any number between 0 and 63.

<op_status> is display only and consists of 3 characters with the following meanings:-

- 1st character - normal output state, (**A** or **I**)
- 2nd character - handset override state, (**A**, **I** or **N**)
- 3rd character - actual output state, (**A** or **I**)

where **A** = active, **I** = inactive and **N** = none

<override> can be set to **A**, **I** or **N** as described above. Note that an output may also be overridden by special conditioning, so the actual output state may not agree with the normal output state or the handset override state.

Example of how to override an output:-

OPS/0=A - override output number 0 to active

2.2.7 LRT Commands

2.2.7.1 LMI - LRT Mode Inhibit

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
LMI	-	-	-	-	ON or OFF	-	-	-
VALID SPECIAL CHARACTERS: > < =								
ERROR MESSAGES		CAUSED BY						
LMI:Excess params		Too many parameters entered.						
LMI:Invalid state		Invalid inhibit state entered.						
LMI:Not configd		LRT is not configured on the current stage stream.						

Comments

This command is used to inhibit LRT mode. When the inhibit state is ON then LRT mode will be inhibited for the currently selected stage stream.

2.2.7.2 LED - LRT Event Delay Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
LED	<lrt_phs>	<ts_set>	<event>	-	<duration>	-	0.0	300.0
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
LED:Excess params		Too many parameters entered.						
LED:Invalid phs		Invalid or unconfigured phase entered.						
LED:Not lrt phs		Specified phase is not an LRT phase.						
LED:Invalid t/s		Invalid or unconfigured timing set entered.						
LED:Invalid event		Invalid or unconfigured event entered.						
LED:Invalid time		Invalid duration entered.						
LED:Not configd		LRT is not configured.						

Comments

This command is used to display or modify event delay durations for the specified phase and event.

<ts_set> Is the LRT timing set [1..4]

<event> Is a single letter code for the event:- **P**repare, **D**emand, **S**topline or **E**xit.

2.2.7.3 LPI - LRT Prepare Sequence Influences

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
LPI	<lrt_phs>	<ts_set>	<step>	-	<infl>	<duration>	0.0	300.0
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
LPI:Excess params		Too many parameters entered.						
LPI:Invalid phs		Invalid or unconfigured phase entered.						
LPI:Not lrt phs		Specified phase is not an LRT phase.						
LPI:Invalid t/s		Invalid or unconfigured timing set entered.						
LPI:Invalid step		Step number entered out of range or invalid. [1..6]						
LPI:Invalid infl		Invalid influence or stage entered.						
LPI:Invalid time		Invalid duration entered.						
LPI:Not configd		LRT is not configured.						

Comments

This command is used to display or modify prepare sequence influences and durations for the specified phase and event.

<ts_set> Is the LRT timing set [1..4]

<step> Is the influence step, six steps are available.

<infl> Is a code for the required influence:-

PR	= phase request influence,
IMn	= immediate move to stage n,
DMn	= demand dependant move to stage n,
Aln	= add immediate move to stage n,
ADn	= add demand dependant move to stage n,
HS	= hold current stage,
PXn+m..	= prevent moves except to stages specified,
PD	= phase demand,
NL	= null influence.

2.2.7.4 LDI - LRT Demand Sequence Influences

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
LDI	<lrt_phs>	<ts_set>	<step>	-	<infl>	<duration>	0.0	300.0
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
LDI:Excess params		Too many parameters entered.						
LDI:Invalid phs		Invalid or unconfigured phase entered.						
LDI:Not lrt phs		Specified phase is not an LRT phase.						
LDI:Invalid t/s		Invalid or unconfigured timing set entered.						
LDI:Invalid step		Step number entered out of range or invalid. [1..6]						
LDI:Invalid infl		Invalid influence or stage entered.						
LDI:Invalid time		Invalid duration entered.						
LDI:Not configd		LRT is not configured.						

Comments

This command is used to display or modify demand sequence influences and durations for the specified phase and event.

<ts_set> Is the LRT timing set [1..4]

<step> Is the influence step, six steps are available.

<infl> Is a code for the required influence:-

PR	= phase request influence,
IMn	= immediate move to stage n,
DMn	= demand dependant move to stage n,
Aln	= add immediate move to stage n,
ADn	= add demand dependant move to stage n,
HS	= hold current stage,
PXn+m..	= prevent moves except to stages specified,
PD	= phase demand,
NL	= null influence.

2.2.7.5 LSI - LRT Stopline Influence Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
LSI	<lrt_phs>	<ts_set>	-	-	<duration>	-	0.0	300.0
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
LSI:Excess params		Too many parameters entered.						
LSI:Invalid phs		Invalid or unconfigured phase entered.						
LSI:Not lrt phs		Specified phase is not an LRT phase.						
LSI:Invalid t/s		Invalid or unconfigured timing set entered.						
LSI:Invalid time		Invalid duration entered.						
LSI:Not configd		LRT is not configured.						

Comments

This command is used to display or modify stopline event influence durations for the specified phase.

<ts_set> Is the LRT timing set [1..4]

2.2.7.6 LET - LRT Exit Event Timeout Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
LET	<lrt_phs>	-	-	-	<duration>	-	0.0	300.0
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
LET:Excess params		Too many parameters entered.						
LET:Invalid phs		Invalid or unconfigured phase entered.						
LET:Not lrt phs		Specified phase is not an LRT phase.						
LET:Invalid time		Invalid duration entered.						
LET:Not configd		LRT is not configured.						

Comments

This command is used to display or modify exit event timeout durations for the specified phase.

2.2.7.7 LFI - LRT Follow Inhibit Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
LFI	<lrt_phs>	<ts_set>	-	-	<duration>	-	0.0	300.0
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
LFI:Excess params		Too many parameters entered.						
LFI:Invalid phs		Invalid or unconfigured phase entered.						
LFI:Not lrt phs		Specified phase is not an LRT phase.						
LFI:Invalid t/s		Invalid or unconfigured timing set entered.						
LFI:Invalid time		Invalid duration entered.						
LFI:Not confgd		LRT is not configured.						

Comments

This command is used to display or modify LRT follow inhibit durations for the specified phase.

<ts_set> Is the LRT timing set [1..4]

2.2.7.8 LOW - LRT Overlap Window Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
LOW	<lrt_phs>	<ts_set>	-	-	<duration>	-	0.0	300.0
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
LOW:Excess params		Too many parameters entered.						
LOW:Invalid phs		Invalid or unconfigured phase entered.						
LOW:Not lrt phs		Specified phase is not an LRT phase.						
LOW:Invalid t/s		Invalid or unconfigured timing set entered.						
LOW:Invalid time		Invalid duration entered.						
LOW:Not confgd		LRT is not configured.						

Comments

This command is used to display or modify LRT overlap window durations for the specified phase.

<ts_set> Is the LRT timing set [1..4]

2.2.7.9 LOI - LRT Overlap Inhibit Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
LOI	<lrt_phs>	<ts_set>	-	-	<duration>	-	0.0	300.0
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
LOI:Excess params		Too many parameters entered.						
LOI:Invalid phs		Invalid or unconfigured phase entered.						
LOI:Not lrt phs		Specified phase is not an LRT phase.						
LOI:Invalid t/s		Invalid or unconfigured timing set entered.						
LOI:Invalid time		Invalid duration entered.						
LOI:Not configd		LRT is not configured.						

Comments

This command is used to display or modify LRT overlap inhibit durations for the specified phase.

<ts_set> Is the LRT timing set [1..4]

2.2.7.10 LFD - LRT Failed Detectors

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
LFD	<lrt_det>	-	-	-	<det_status>	-	-	-
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
LFD:Excess params		Too many parameters entered.						
LFD:Invalid det		Invalid or unconfigured detector entered.						
LFD:Not lrt det		Specified detector is not an LRT detector.						
LFD:Not configd		LRT is not configured.						

Comments

This command is used to display detector status for the specified LRT detector.

If the command is used without a parameter, the first failed LRT detector is found, if none is found LFD:NO FAULTS is displayed.

<det_status> Indicates the status of the detector:-

- PULSE - Failure pattern seen on detector input.
- WDOG - Watchdog fault on input.
- DFM - Detector has failed DFM.
- OK - Detector not failed.

2.2.7.11 LFE - LRT Failed Events

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
LFE	<lrt_phs>	-	-	-	<failed_events>	-	-	-
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
LFE:Excess params		Too many parameters entered.						
LFE:Invalid phs		Invalid or unconfigured phase entered.						
LFE:Not lrt phs		Specified phase is not an LRT phase.						
LFE:Not configd		LRT is not configured.						

Comments

This command is used to display failed events for the specified LRT phase. If the command is used without a parameter, the first LRT phase having a failed event is found, if none is found LFE:NO FAULTS is displayed.

<failed_events> Is a set of letter codes for the failed events:- **P**repare, **D**emand, **S**topline or **E**xit. or **N**O FAULTS.

2.2.7.12 LSE - LRT Suspect Events

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS		
						LOWER	UPPER	
LSE	<lrt_phs>	<event>	-	<suspect_counts>	-	-	-	
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
LSE:Excess params		Too many parameters entered.						
LSE:Invalid phs		Invalid or unconfigured phase entered.						
LSE:Not lrt phs		Specified phase is not an LRT phase.						
LSE:Event error		Invalid or unconfigured event entered.						
LSE:Not configd		LRT is not configured.						

Comments

This command is used to display suspect event counts for the specified LRT phase. If the command is used without a parameter, the first LRT phase having a failed event is found, if none is found LSE:NO FAULTS is displayed.

<event> Is a single letter code for the event:- **P**repare, **D**emand, **S**topline or **E**xit.

<suspect_count> Is a count of the number of successive occasions on which this event was seen as being suspect. If no parameters are entered, the first suspect event is located, or **N**O FAULTS is indicated.

2.2.7.13 LPS - LRT Phase Status

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM	FORTH OUTPUT PARAM
LPS	0	<phase>	<requested>	<inhibited>	<extending>	-
"	1	"	P	<infl_step>	<status>	<time_remaining>
"	2	"	D	<infl_step>	<status>	<time_remaining>
"	3	"	S	<infl_step>	<status>	<time_remaining>
"	4	"	E	<infl_step>	<status>	<time_remaining>
VALID SPECIAL CHARACTERS: + - ?						
ERROR MESSAGES		CAUSED BY				
LPS:Excess params		Too many parameters entered.				
LPS:Invalid phs		Invalid or unconfigured phase entered.				
LPS:Not lrt phs		Specified phase is not an LRT phase.				
LPS:Not confgd		LRT is not configured.				

Comments

This command is used to display status information for the specified LRT phase and is updated every second.

<requested> is a single character, shown as **R** if there is a phase request for the LRT phase, or **D** for a phase demand, or **N** otherwise.

<inhibited> shows a single character, **I** if the phase is inhibited, **F** if the phase is inhibited by an event failure or **N** otherwise.

<extending> shows a single character, **X** if the phase is running and there is an extension demand, or **N** otherwise.

<time_remaining> is displayed in seconds.

<infl_step> is the step [1..6] in a Prepare or Demand sequence, otherwise '-'.

<status> shows a code:-

where	NA	= event not available,
	DY	= in event delay period,
	IG	= event is being ignored, (tram further into sequence)
	PR	= phase request influence,
	IMn	= immediate move to stage n,
	DMn	= demand dependant move to stage n,
	Aln	= add immediate move to stage n,
	ADn	= add demand dependant move to stage n,
	HS	= hold current stage,
	PXn+m..	= prevent moves except to stages specified,
	PD	= phase demand,
and	NL	= null influence.

2.2.8 MOVA Commands

Note: there is no CE (clear error log) command, this effect is achieved using WRN/MOV=0 (level 3 access)

2.2.8.1 AI - Assessment Record Inhibit

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
AI	-	-	-	-	ON or OFF	-	-	-
VALID SPECIAL CHARACTERS: > < =								
ERROR MESSAGES		CAUSED BY						
AI:Excess params		Too many parameters entered.						
AI:Invalid state		Invalid inhibit state entered.						
AI:Not configd		MOVA is not configured on the current stage stream.						

Comments

This command is used to inhibit MOVA assessment records. When the inhibit state is ON then assessment records will not be stored in the assessment/hourly flow log for the currently selected stage stream.

2.2.8.2 AT - Assessment Record Times

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
AT	-	-	-	-	<hours> or D	<minutes>	-	-
VALID SPECIAL CHARACTERS: + - = > <								
ERROR MESSAGES		CAUSED BY						
AT:Excess params		Too many parameters entered.						
AT:Invalid time		Invalid time entered.						
AT:Not configd		MOVA is not configured on the current stage stream.						
AT:Empty		There are no assessment times defined.						
AT:Full		Maximum number of assessment times already defined.						

Comments

This command is used to display or modify the times of day at which MOVA assessment records are written into the assessment/hourly flow log for the currently selected stage stream. Up to 24 different times may be entered.

<hours> and <minutes> are used to define the time at which the assessment record is to be logged, in 24 hour clock format. Note that =D will delete the currently displayed time entry.

2.2.8.3 CA - Clear Assessment / Hourly Flow Log

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
CA	-	-	-	-	See below	-	-	-
VALID SPECIAL CHARACTERS: > <								
ERROR MESSAGES		CAUSED BY						
CA:Excess params		Too many parameters entered.						
CA:Not configd		MOVA is not configured on the current stage stream.						

Comments

This command is used to clear the MOVA assessment/hourly flow log for the currently selected stage stream. When the log has been successfully cleared the display will respond with:-

CA:Assessment/hourly flow log cleared

2.2.8.4 CF - Clear MOVA Average Flows

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
CF	-	-	-	-	<op_msg>	-	-	-
VALID SPECIAL CHARACTERS: > <								
ERROR MESSAGES		CAUSED BY						
CF:Excess params		Too many parameters entered.						
CF:Not configd		MOVA is not configured on the current stage stream.						
CF:Abandoned		Sequence abandoned by user.						

Comments

This command is used to clear the average flows calculated by MOVA for the currently selected stage stream. Note that a confirmation sequence must be performed before the flows are cleared (see below).

<op_msg> will be **CF:Clear MOVA flows ?** when CF is first entered, if 'Y' is then entered display will change to **CF:Confirm ?**. If another 'Y' is entered then the flows will be cleared and the display will show **CF:MOVA flows cleared**. Pressing the 'N' key in response to either question will abandon the sequence.

2.2.8.5 DA - Display Assessment / Hourly Flow Log

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
DA	-	-	-	-	See below	-	-	-
VALID SPECIAL CHARACTERS: > <								
ERROR MESSAGES		CAUSED BY						
DA:Excess params		Too many parameters entered.						
DA:Not confgd		MOVA is not configured on the current stage stream.						
DA:Log empty		There are no entries in the MOVA assessment/flow log.						

Comments

This command is used to display all of the MOVA assessment and hourly flow records stored in the log for the currently selected stage stream. For the display format refer to TRL's MOVA Equipment User Guide (AG12).

2.2.8.6 DD - Display MOVA Detector States

COMMAND MNEMONIC	SCREEN NUMBER	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
DD	0	-	-	-	See below	-	-	-
"	1	-	-	-	See below	-	-	-
VALID SPECIAL CHARACTERS: > < + -								
ERROR MESSAGES		CAUSED BY						
DD:Excess params		Too many parameters entered.						
DD:Not confgd		MOVA is not configured on the current stage stream.						

Comments

This command gives a real-time display of the MOVA detector states for the currently selected stage stream and is updated twice a second. MOVA detector states will be displayed as follows:-

```

MOVA DETECTOR STATES - stream 1
(0 = inactive, 1 = active)
[suspect](Q = inactive, S = active)

Det no: 1... 5... 9... 13... 17... 21... 25... 29... 33... 37... 41... 45...
State: xxxx xxxx

```

Where x = 0 or 1 indicating detector state, for detectors that are not 'suspect' or 'failed'.
Or x = Q for failed detectors that are currently inactive.
Or x = S for failed detectors that are currently active.

The second screen is only displayed if more than 48 MOVA detectors are defined, it gives states for detectors from 17 to 64.

Note:

To allow for pedestrian demand cancellation, the values for pedestrian pushbuttons are in fact the processed demand state, not the actual state of the PB.

2.2.8.7 DF - Display MOVA Average Flows

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM
DF	0	<day_of_week>	See below	-	-
"	1	"	See below	-	-
"	2	"	See below	-	-
VALID SPECIAL CHARACTERS: + - ? > <					
ERROR MESSAGES		CAUSED BY			
DF:Excess params		Too many parameters entered.			
DF:Not configd		MOVA is not configured on the current stage stream.			
DF:Invalid day		Invalid day of the week.			

Comments

This command is used to display average flows calculated by MOVA on the specified day of the week for the currently selected stage stream. This command does not refresh the flows once they have been displayed. The flows are displayed in tabular format on 3 screens, each one showing the flow calculated for each MOVA lane for each half hour period of the day.

<day_of_week> can be MON, TUE, WED, THU, FRI, SAT or SUN and once displayed may be changed using the + and - keys.

Note that the screen takes several seconds to display completely, however another screen may be requested by pressing + - ? etc before the current screen has been completely displayed.

2.2.8.8 DS - Display MOVA Site Data

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM
DS	0	<timing_set>	See below	-	-
"	X	"	See below	-	-
VALID SPECIAL CHARACTERS: + - ? > <					
ERROR MESSAGES		CAUSED BY			
DS:Excess params		Too many parameters entered.			
DS:Not configd		MOVA is not configured on the current stage stream.			
DS:Invalid t/s		Invalid timing set number entered.			

Comments

This command is used to display the MOVA site configuration data for the currently selected stage stream. This is a read only command and the data shown is not refreshed. The number of formatted screens required to display the data depends on the size of the configuration, multiple screens being required for some data sets.

<timing_set> can be any number between 1 and 4 and once displayed may be changed using the + and - keys.

Note that for the default connection setup, the screen takes several seconds to display completely, however another screen may be requested by pressing + - ? etc before the current screen has been completely displayed.

2.2.8.9 HI - Hourly Flow Record Inhibit

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
HI	-	-	-	-	ON or OFF	-	-	-
VALID SPECIAL CHARACTERS: > < =								
ERROR MESSAGES		CAUSED BY						
HI:Excess params		Too many parameters entered.						
HI:Invalid state		Invalid inhibit state entered.						
HI:Not configd		MOVA is not configured on the current stage stream.						

Comments

This command is used to inhibit MOVA hourly flow records. When the inhibit state is ON then hourly flow records will not be stored in the assessment/hourly flow log for the currently selected stage stream.

2.2.8.10 MI - MOVA Mode Inhibit

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
MI	-	-	-	-	ON or OFF	-	-	-
VALID SPECIAL CHARACTERS: > < =								
ERROR MESSAGES		CAUSED BY						
MI:Excess params		Too many parameters entered.						
MI:Invalid state		Invalid inhibit state entered.						
MI:Not configd		MOVA is not configured on the current stage stream.						

Comments

This command is used to inhibit MOVA mode. When the inhibit state is ON then MOVA mode will be inhibited for the currently selected stage stream.

2.2.8.11 MOV - Display MOVA Command Menu

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
MOV	-	-	-	-	-	-	-	-
VALID SPECIAL CHARACTERS: > <								
ERROR MESSAGES		CAUSED BY						
HI:Excess params		Too many parameters entered.						
HI:Not configd		MOVA is not configured on the current stage stream.						

Comments

This command is used to display a menu of the handset commands relating to MOVA.

2.2.8.12 RS - Read Site Data

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
RS	-	-	-	-	-	-	-	-
VALID SPECIAL CHARACTERS: None								
MESSAGES				CAUSED BY				
RS:Confirm Download (Y/N)				Entering the RS command.				
RS:Download aborted				If (Y)es is not pressed to the Confirm Download message.				
RS:Connect data source NOW				If (Y)es is pressed to the Confirm Download message.				
RS:Download successful				Once the file transfer is complete.				
RS:No data received.				Displayed one minute after the Connect data source NOW message if data transfer has not begun.				
RS:Transmission timeout.				If there is a break in the transmission data of more than one minute.				
RS:Download failed.				Usually displayed if there has been corruption of the data during transfer.				
RS:Data fault:<data code>				If the size of the data downloaded for particular data item does not match the size expected.				
RS:MOVA not configured				MOVA is not configured on this controller.				

Note this command can only be used to download MOVA data once level 3 access has been granted.

Comments

This command is used to update the MOVA information by importing a text file of data. TRL's MOVASETUP program is used to enter data for new MOVA configurations. The MOVACONV program is used to generate the transfer file from print file (.PR) output of the MOVASETUP program. (For more information see the Sentinel MOVA Data Download Utility User Manual [40-9777-031].)

Once the RS command has been entered and 'Y' entered to confirm the transfer request, the Sentinel will expect the data to be sent over the handset port. There is a one minute interval to allow this connection to be established.

Note:

If a partial download occurs, an entry is made in the warnings log (DCD warning) and MOVA is inhibited from changing its data set. The warning log entry and data set loading inhibit are removed by a successful download.

For successful downloads, if the data set currently in use is affected by the download, it will be reloaded with the downloaded data.

2.2.8.13 VM - View MOVA Messages

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
VM	-	-	-	-	See below	-	-	-
VALID SPECIAL CHARACTERS: > <								
ERROR MESSAGES		CAUSED BY						
VM:Excess params		Too many parameters entered.						
VM:Not configd		MOVA is not configured on the current stage stream.						
VM:Waiting for msg		There are currently no MOVA messages.						

Comments

This command is used to display the messages generated by the MOVA kernel indicating stage change decisions for the currently selected stage stream. Once this command has been entered any subsequent messages generated by the MOVA kernel will be displayed on the handset. These messages will continue to be displayed until another command is entered or the handset is unplugged. For the display format refer to TRL's MOVA Equipment User Guide (AG12).

Note:

To obtain a tabulated display of mova message data, the MOVAC program can be used, this is a 'PC' utility program. The format of MOVA messages has changed from MOVA M2.9C (MTC Controller V11) so the correct version of MOVAC is needed to communicate / display the output from MOVA M4.2.

2.2.9 Part-time Mode Commands

2.2.9.1 PTH - Part-Time Hold Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
						LOWER	UPPER
PTH	-	-	-	<duration>	<time remaining>	0M OR 0H	720M 12H
VALID SPECIAL CHARACTERS: > < =							
ERROR MESSAGES		CAUSED BY					
PTH:Excess params		Too many parameters entered.					
PTH:Invalid time		Invalid duration entered.					
PTH:Invalid units		Invalid duration unit entered.					

Comments

This command is used to display or modify the part-time hold duration for the currently selected stage stream.

<time remaining> Gives the time remaining on the timer when running, otherwise “—” to indicate “not running”. The display is given to one decimal place, in hours, minutes or seconds. The update rate being appropriate to the units.

2.2.9.2 PTI - Part-Time Inhibit

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
PTI	-	-	-	-	<inhibit>	-	-	-
VALID SPECIAL CHARACTERS: > < =								
ERROR MESSAGES		CAUSED BY						
PTI:Excess params		Too many parameters entered.						
PTI:Invalid state		Invalid state entered.						

Comments

This command is used to display or modify the part-time inhibit state for the currently selected stage stream.

<inhibit> can be either **ON** or **OFF**.

2.2.9.3 PTP - Part-time Prevent Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
						LOWER	UPPER
PTP	-	-	-	<duration>	<time remaining>	0M OR 0H	720M 12H
VALID SPECIAL CHARACTERS: > < =							
ERROR MESSAGES		CAUSED BY					
PTP:Excess params		Too many parameters entered.					
PTP:Invalid time		Invalid duration entered.					
PTP:Invalid units		Invalid duration unit entered.					

Comments

This command is used to display or modify the part-time prevent duration for the currently selected stage stream.

<time remaining> Gives the time remaining on the timer when running, otherwise “—” to indicate “not running”. The display is given to one decimal place, in hours, minutes or seconds. The update rate being appropriate to the units.

2.2.10 Phase Commands

Phase commands use the following common definitions:-

- <phase> - phase id, can be **A** to **Z** and **A2** to **F2** for real phases. For dummy phases the default ids are **DA** to **DZ**, however these can be redefined when specifying the configuration.
- <t_set> - phase timing set, any number between 1 and 8.

2.2.10.1 ATP - Audible/Tactile signal Period

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
ATP	<phase>	-	-	-	<duration>	-	4.0	9.0 or 99.0 *
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
ATP:Excess params		Too many parameters entered.						
ATP:No ped phs		There are no pedestrian phases configured.						
ATP:Not ped phs		The selected phase is not a pedestrian.						
ATP:Invalid phs		Invalid or unconfigured phase entered.						
ATP:Not valid for config		The current configuration does not support this facility.						
ATP:Invalid time		Invalid duration entered.						

Comments

This command is used to display or modify the period for which pedestrian audible/tactile signals are active for the specified phase, the period specified being an upper limit. This command is only applicable for pedestrian phases and is only valid for Sentinel configurations.

* Upper range limit:

Stand alone pedestrian facilities	9.0s
Junction facilities	99.0s

Note:

Audible signals may be inhibited by using the Special Conditioning influence AUDINHIBIT, when set this will inhibit all audible-interlock signals. (The effect is cancelled using S.C. influence AUDALLOW)

This S.C. influence is normally set via a timetable event flag but can be influenced via the handset if suitable S.C. 'bits' are included in the conditioning.

2.2.10.2 DPG - Delay Phase Green

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
DPG	<from_stg>	<to_stg>	<phase>	-	<duration>	-	0.0	60.0 ‡
VALID SPECIAL CHARACTERS: + - = > <								
ERROR MESSAGES		CAUSED BY						
DPG:Excess params		Too many parameters entered.						
DPG:None configd		No delays configured for the currently selected stream.						
DPG:Invalid stage		Invalid or unconfigured stage number entered.						
DPG:Invalid phs		Invalid or unconfigured phase entered.						
DPG:Stg/ph err		Invalid stage/phase combination entered, (stages must be different and phase must appear in one, but not both of the stages).						
DPG:Level 3 access		Level 3 password has not been entered.						
DPG:Invalid time		Invalid duration entered.						
DPG:Stream full		No more phase delays can be entered for current stage stream.						

‡ Upper range limit reduced from 300.0 with "TR0141C" (now TR 2210A) and Sentinel configurations.

Note this command can only be used to change the values once level 3 access has been granted.

Comments

This command is used to display, modify, add or delete phase delays on the currently selected stage stream. Note that phase delays are stored in from stage, to stage, phase order for each stage stream.

<from_stg> and <to_stg> - from/to stage can be any number from 0 to 15.

Note that a duration of 0 will delete the phase delay.

Following is an example of how to add a phase delay:-

e.g. DPG/1/3/D=2 - on a move from stage 1 to stage 3 delay phase D by 2 seconds

2.2.10.3 IGN - Intergreen Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
IGN	<from_phs>	<to_phs>	-	-	<duration> or N/C	-	0.0*	30.0 ‡
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
IGN:Excess params		Too many parameters entered.						
IGN:Invalid phs		Invalid or unconfigured phase entered.						
IGN:Level 3 access		Level 3 password has not been entered.						
IGN:Invalid time		Invalid duration entered.						

‡ Upper range limit reduced from 200.0 with "TR0141C" (now TR 2210A) and Sentinel configurations.

Comments

This command is used to display or modify the (minimum) intergreen duration for the specified phase to phase transition.

The lower range limit* for the <duration> is subject to a configured minimum intergreen limit value, set at configuration time. N/C is displayed to indicate no conflict.

2.2.10.4 IGX - Intergreen Extension Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
IGX	<det_name>	<from_phs>	<to_phs>	-	<duration>	-	0.0	300.0
VALID SPECIAL CHARACTERS: + - = > <								
ERROR MESSAGES		CAUSED BY						
IGX:Excess params		Too many parameters entered.						
IGX:No extns		No intergreen extensions configured matching parameters entered.						
IGX:Invalid det		Invalid or unconfigured detector name entered.						
IGX:Invalid phase		Invalid or unconfigured phase name entered.						
IGX:Invalid time		Invalid duration entered.						

Comments

This command is used to display or modify intergreen extension durations.

Note that intergreen extensions are stored in detector, from phase, to phase order and only the duration can be modified.

<det_name> - name of the required detector, (up to 6 characters) defined at configuration time.

<from_phs> and <to_phs> - from/to phase can be any phase pair configured as having an intergreen extension.

2.2.10.5 LNK - Pedestrian Crossing Linking

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
LNK	<phase>	D	-	-	<duration>	-	0.0	99.0
"	"	W	-	-	"	-	0.0	30.0
"	"	O	-	-	"	-	20.0	300.0
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
LNK:Excess params		Too many parameters entered.						
LNK:No ped phs		There are no pedestrian phases configured.						
LNK:No PV valid Ped phs		There are no pedestrian phases that have pedestrian inhibits configured.						
LNK:Not ped phs		The selected phase is not a pedestrian.						
LNK:Invalid phs		Invalid or unconfigured phase entered.						
LNK:Invalid PV		Invalid or unconfigured PV type entered.						
LNK:Invalid time		Invalid duration entered.						

Comments

This command is used to display or modify a pedestrian phase inhibit.

Window duration is the Pedestrian Inhibit Release.

Delay duration is the Pedestrian Inhibit Delay.

Override duration is the timeout on the active state of an inhibit (local link).

Each pedestrian phase can be inhibited by UTC PV signals and/or local link signals. UTC PV signals being of higher priority.

For UTC PV, only the window duration is applicable, the pedestrian phase is released from the inhibit immediately the PV signal is removed and stays released for the window period.

Local inhibits may be derived from phase and stage start and end conditions or from an input signal. For local inhibits the release window can be delayed from the trigger condition using the Delay period. For local link signals the inhibits will be released after the override period, if a change of state has not been triggered.

The same window duration is used for local and PV inhibit sources when both have been configured.

NOTE:

The UTC PV override time is controlled by the UTO command.

2.2.10.6 MAX - Maximum Green Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
MAX	<phase>	<mode>	<t_set>	-	<duration>	-	See below ‡	See below ‡
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
MAX:Excess params		Too many parameters entered.						
MAX:A ped phs		A pedestrian phase has been entered.						
MAX:Invalid phs		Invalid or unconfigured phase entered.						
MAX:Invalid mode		Invalid or unconfigured mode entered.						
MAX:Invalid t/s		Invalid timing set entered.						
MAX:Level 3 access		Level 3 password has not been entered.						
MAX:Invalid time		Invalid duration entered.						
MAX:<phase>:N/A		Display for a type 3 termination phase, which has no max.						

‡ The range limit was changed from 0.0 to 300.0 with "TR0141C" (now TR 2210A) and Sentinel configurations.

Note this command can only be used to change the values of a FVP maximum green duration once level 3 access has been granted.

Comments

This command is used to display or modify a maximum green duration for a specified vehicle phase in a particular mode per timing set.

<t_set> - Is the phase timing set [1..8].

<mode> - Is the mode the vehicle phase is operating in VA, PTM or FVP. Each vehicle phase can be configured to have one or more modes of operation. Note this parameter is new with "TR0141C" (now TR 2210A) and Sentinel configurations.

The ranges limits used depend on whether the phase is associated to any pedestrian phases and the mode of operation :-

- 1) 0.0 to 99.0 seconds for a vehicle phase not associated to a pedestrian phase. (Must be VA mode.)
- 2) 10.0 to 60.0 seconds for a vehicle phase associated to a pedestrian phase in VA or PTM mode.
- 3) 20.0 to 60.0 seconds for a vehicle phase associated to pedestrian phase in FVP mode.

2.2.10.7 MIG - Maximum Intergreen Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
MIG	<from_stg>	<to_stg>	-	-	<duration> or N/C	-	0.0*	30.0 ‡
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
MIG:Excess params		Too many parameters entered.						
MIG:Invalid phs		Invalid or unconfigured phase entered.						
MIG:Level 3 access		Level 3 password has not been entered.						
MIG:Invalid time		Invalid duration entered.						

‡ Upper range limit reduced from 200.0 with “TR0141C” (now TR 2210A) and Sentinel and Sentinel configurations.

Note this command can only be used to change the values once level 3 access has been granted.

Comments

This command is used to display or modify the maximum intergreen duration for the specified phase to phase transition.

The lower range limit* for the <duration> is subject to a configured minimum intergreen limit value, set at configuration time. **N/C** is displayed to indicate no conflict.

2.2.10.8 MIN - Minimum Green Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
MIN	<phase>	-	-	-	<duration>	-	See below ‡	See below ‡
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
MIN:Excess params		Too many parameters entered.						
MIN:Invalid phs		Invalid or unconfigured phase entered.						
MIN:Level 3 access		Level 3 password has not been entered.						
MIN:Invalid time		Invalid duration entered.						
MIN:<phase>: SSG_DRIVE_PHASE		This phase drive is used to power audible or tactile signals.						

‡ The range limit was 0.0 to 300.0 before “TR0141C” (now TR 2210A) and Sentinel configurations.

Note this command can only be used to change the values once level 3 access has been granted.

Comments

This command is used to display or modify the minimum green duration for the specified phase.

The lower range limit* for the <duration> is subject to a configured minimum green limit value, set at configuration time.

The range limit set used depends on usage, as described below:-

- 1) Vehicle phase 0.0 to 30.0 seconds.
- 2) Vehicle phase associated to a pedestrian phase, at a junction 3.0 to 15.0 seconds.
- 3) Vehicle phase at stand-alone crossing 6.0 to 15.0 seconds.
- 4) Pedestrian phase at a junction 4.0 to 99.0 seconds.
- 5) Pedestrian phase at a pedestrian crossing 4.0 to 9.0 seconds.

2.2.10.9 PBT - Pedestrian Blackout Duration

[Not supported for "TR0141C" (now TR 2210A) and Sentinel configurations. Pedestrian blackout duration is controlled by PSQ command for such configurations.]

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
PBT	<phase>	-	-	-	<duration>	-	0.0*	300.0
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
PBT:Excess params		Too many parameters entered.						
PBT:Invalid phs		Invalid or unconfigured phase entered.						
PBT:Level 3 access		Level 3 password has not been entered.						
PBT:Invalid time		Invalid duration entered.						
PBT:No ped phs		There are no pedestrian phases configured.						
PBT:Not ped phs		The selected phase is not a pedestrian.						

Note this command can only be used to change the values once level 3 access has been granted.

Comments

This command is used to display or modify the pedestrian blackout duration for the specified phase and is only applicable for pedestrian phases.

(*) Note that PBT durations cannot be set below the configured 'Pedestrian Blackout Limit Values'.

2.2.10.10 PDD - Pedestrian Demand Delay

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
PDD	<phase>	Q	-	-	<duration>	-	0.0	2.0
"	"	N	-	-	"	-	1.0	3.0
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
PDD:Excess params		Too many parameters entered.						
PDD:No ped phs		There are no pedestrian phases configured.						
PDD:Not ped phs		The selected phase is not a pedestrian.						
PDD:Invalid phs		Invalid or unconfigured phase entered.						
PDD:Invalid delay type		Invalid delay type entered. (i.e. Not Q or N.)						
PDD:Invalid time		Invalid duration entered.						

Comments

This command is used to display or modify the pedestrian demand delays for the specified phase **Quiescent** delay (i.e. for a demand received when both pedestrian and vehicle phases are at red.) and **Normal** delay. This command is only applicable for pedestrian phases.

2.2.10.11 PHD - Phase Demand Simulation

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
PHD	<phase>	-	-	-	<state>	-	-	-
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
PHD:Excess params		Too many parameters entered.						
PHD:Invalid phs		Invalid or unconfigured phase entered.						
PHD:Invalid state		Invalid state entered.						

Comments

This command is used to display or modify a phase demand simulated state.

<state> may be **A** for active or **N** for none.

2.2.10.12 PHE - Phase Extension Simulation

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
PHE	<phase>	-	-	-	<state>	-	-	-
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
PHE:Excess params		Too many parameters entered.						
PHE:Invalid phs		Invalid or unconfigured phase entered.						
PHE:Invalid state		Invalid state entered.						

Comments

This command is used to display or modify a phase extension simulated state.

<state> may be **A** for active or **N** for none.

2.2.10.13 PHS - Phase Status

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM
PHS	0	<phase>	<min_remaining> OR “	<max_remaining>	<phase mode>
“	“	“	“	<phase mode>	-
“	1	“	<dem/ext_status>	<ign_ext_status>	<lamp_status>
VALID SPECIAL CHARACTERS: + - ?					
ERROR MESSAGES		CAUSED BY			
PHS:Excess params		Too many parameters entered.			
PHS:Invalid phs		Invalid or unconfigured phase entered.			

Comments

This command is used to display status information for the specified phase and is updated every second.

<min_remaining> and <max_remaining> are both displayed in seconds. (Note maximum time remaining is only displayed for VA and PTM modes [“TR0141C” (now TR 2210A) and Sentinel configurations].).

<phase mode> shows a two or three character abbreviation denoting the current state of the phase. (**PEL** - pelican phase, **PUF** - puffin phase, **PED** - pedestrian phase, **TOU** - toucan phase, **VA** - vehicle actuated vehicle phase, **PTM** - pre-timed maximum vehicle phase or **FVP** - fixed vehicle period vehicle phase). Note < phase mode> applies for “TR0141C” (now TR 2210A) and Sentinel configurations.

<dem/ext_status> shows a single character, where **D** means phase demanded, **X** means phase extending and * means no demands/extensions.

<ign ext status> shows as **I** if there is an intergreen extension timing to the phase on display, or **P** for a pedestrian intergreen timer to the phase, or * otherwise. Note both I & P are possible together.

<lamp_status> shows a single character, where **R** means red, **G** means green, **S** means starting, **L** means leaving and **B** means blackout, (i.e. sigs off).

2.2.10.14 PMD - Vehicle Phase Pedestrian Mode

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM	RANGE LIMITS	
						LOWER	UPPER
PMD	<phase>	<phase mode>	<base mode>	<tt mode>	<hs mode>	-	-
VALID SPECIAL CHARACTERS: + - =							
ERROR MESSAGES		CAUSED BY					
PMD:Excess params		Too many parameters entered.					
PMD:No non-ped phs		No phases are configured to a vehicle phase.					
PMD:A ped phs		A pedestrian phase entered.					
PMD:Invalid phs		Invalid or unconfigured phase entered.					
PMD:Level 3 access		Level 3 password has not been entered.					
PMD:VA mode invalid		VA mode has not been configured for this phase.					
PMD:FVP mode invalid		FVP mode has not been configured for this phase.					
PMD:PTM mode invalid		PTM mode has not been configured for this phase.					
PMD:Not valid for Config.		The configuration does not support this data.					
PMD:Invalid mode		Invalid mode entered.					

Note this command can only be used to change the values once level 3 access has been granted.

Comments

This command is used to display or modify a vehicle phase's pedestrian mode. Values set using this command will override any timetabled influences (TPM Event Type), which in turn overrides the base mode defined in the configuration. Use **N** to revert to configured setting/timetabled influences.

<phase mode> may be **VA** for vehicle actuated, **PTM** for pre-timed max, **FVP** for fixed vehicle period or **N** for none specified.

All three current mode settings are displayed so that the effect of imposing or removing a handset influence can be easily assessed. The configuration may prevent changes to these settings.

NOTE:

Any change to the <phase mode> is not implemented while the phase is running, the change happens when the phase is stopped.

2.2.10.15 PSQ - Pedestrian Sequence

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
PSQ	<phase>	<step>	-	-	<duration>	-	See below	See below
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
PSQ:Excess params		Too many parameters entered.						
PSQ:No ped phs		There are no pedestrian phases configured.						
PSQ:Not ped phs		The selected phase is not a pedestrian.						
PSQ:Invalid phs		Invalid or unconfigured phase entered.						
PSQ:Invalid Step, not high speed		SPD step entered for a pedestrian phase that does not cross a vehicle phase with speed measurement facilities.						
PSQ:Invalid Step, high speed		GAP or FRC step entered for a pedestrian phase that crosses a vehicle phase with speed measurement facilities.						
PSQ:Invalid Step in Fixed Ped Seq		MAX or XTR step entered for a pedestrian phase that has a fixed sequence.						
PSQ:Field has fixed value		Trying to change the SPD step duration as it is a fixed value.						
PSQ:Invalid Step		Invalid step type entered.						
PSQ:Level 3 access		Level 3 password has not been entered.						
PSQ:Invalid time		Invalid duration entered.						

Note this command can only be used to change the values once level 3 access has been granted.

Comments

This command is used to display or modify the pedestrian sequence steps for a specified pedestrian phase.

<step> - has the possible values **SPD**, **GAP**, **FRC**, **MIN**, **MAX**, **CLR** and **XTR**.
(See sections on sequence types below.)

Note: The pedestrian green period (invitation to cross) is controlled by the **MIN** command. The use of MIN as a <step> parameter above is **not** equivalent.

Where a timing period has a mandatory fixed duration, it is not referenced here.

Definitions for the steps and their appropriate ranges follow under the headings:-

Puffin Sequence (Near-Side Signal)	[TR 2210A 6.4 & 6.8]
Intersection Pedestrian Sequence (Far-Side Signal)	[TR 2210A 6.7]
Toucan Sequence (Near-Side Signal)	[TR 2210A 6.6 & 6.10]
Toucan Sequence (Far-Side Signal)	[TR 2210A 6.5 & 6.9]
Fixed Sequence (Near-Side Signal)	[TR 2210A 6.8 & 6.10]
Fixed Sequence (Far-Side Signal)	[TR 2210A 6.7 & 6.9]
Pelican sequence	[TR 2210A 6.3]

Puffin Sequence (Near-Side Signal) [TR 2210A 6.4 & 6.8]

Period **3** [Vehicle and pedestrian red] is set either by the **GAP** step, **FRC** step or **SPD** step period. The **SPD** step is of a fixed duration set by the Highways Agency and is only used when the pedestrian phase crosses a vehicle phase with speed measurement facilities. Otherwise **GAP** step is used if it is a gap condition change or **FRC** step if it is a forced change condition.

Period **4** [Vehicle red and pedestrian green] is set by the phase Minimum Green (see **MIN Command**).

Period **5** [Vehicle and pedestrian red] is set by the **MIN** step period. The minimum all-red time.

Period **6** [Vehicle and pedestrian red] has a maximum time set by the **MAX** step period.

Period **7** [Vehicle and pedestrian red] is set by the **XTR** step period and this only runs if period 6 reaches its maximum time. {A forced change.}

Period **8** [Vehicle and pedestrian red] is set by the **CLR** step period and this only runs if period 7 does not. {A gap change.}

	Minimum (Seconds)	Maximum (Seconds)
GAP	1.0	3.0
FRC	1.0	3.0
MIN	1.0	5.0
MAX	0.0	30.0
CLR	0.0	3.0
XTR	0.0	3.0

Intersection Pedestrian Sequence (Far-Side Signal) [TR 2210A 6.7]

{Note the same as a far-sided Puffin.}

Period **iii** [Vehicle and pedestrian red] is set either by the **GAP** step, **FRC** step or **SPD** step period. The **SPD** step is of a fixed duration set by the Highways Agency and is only used when the pedestrian phase crosses a vehicle phase with speed measurement facilities. Otherwise **GAP** step is used if it is a gap condition change or **FRC** step if it is a forced change condition.

Period **iv** [Vehicle red and pedestrian green] is set by the phase Minimum Green (see **MIN Command**).

Period **v** [Vehicle red and pedestrian blackout] is set by the **MIN** step period.

Period **vi** [Vehicle red and pedestrian blackout] has a maximum time set by the **MAX** step period.

Period **vii** [Vehicle red and pedestrian blackout] is set by the **XTR** step period and this only runs if period **vi** reaches its maximum time.

Period **viii** [Vehicle and pedestrian red] is set by the **CLR** step period.

	Minimum (Seconds)	Maximum (Seconds)
GAP	1.0	3.0
FRC	1.0	3.0
MIN	3.0	15.0
MAX	0.0	30.0
CLR	1.0	3.0
XTR	1.0	3.0

Toucan Sequence (Near-Side Signal) [TR 2210A 6.6 & 6.10]

Period **III** [Vehicle and pedestrian red] is set either by the **GAP** step, **FRC** step or **SPD** step period. The **SPD** step is of a fixed duration set by the Highways Agency and is only used when the pedestrian phase crosses a vehicle phase with speed measurement facilities. Otherwise **GAP** step is used if it is a gap condition change or **FRC** step if it is a forced change condition.

Period **IV** [Vehicle red and pedestrian green] is set by the phase Minimum Green (see **MIN Command**).

Period **V** [Vehicle and pedestrian red] is set by the **MIN** step period. The minimum all-red time.

Period **VI** [Vehicle and pedestrian red] has a maximum time set by the **MAX** step period.

Period **VII** [Vehicle and pedestrian red] is set by the **XTR** step period and this only runs if period VI reaches its maximum time. {A forced change.}

Period **VIII** [Vehicle and pedestrian red] is set by the **CLR** step period and this only runs if period VII does not. {A gap change.}

	Minimum (Seconds)	Maximum (Seconds)
GAP	1.0	3.0
FRC	1.0	3.0
MIN	1.0	5.0
MAX	0.0	30.0
CLR	0.0	3.0
XTR	0.0	3.0

Toucan Sequence (Far-Side Signal) [TR 2210A 6.5 & 6.9]

Period **iii** [Vehicle and pedestrian red] is set either by the **GAP** step, **FRC** step or **SPD** step period. The **SPD** step is of a fixed duration set by the Highways Agency and is only used when the pedestrian phase crosses a vehicle phase with speed measurement facilities. Otherwise **GAP** step is used if it is a gap condition change or **FRC** step if it is a forced change condition.

Period **iv** [Vehicle red and pedestrian green] is set by the phase Minimum Green (see **MIN Command**).

Period **v** [Vehicle red and pedestrian blackout] is set by the **MIN** step period.

Period **vi** [Vehicle red and pedestrian blackout] has a maximum time set by the **MAX** step period.

Period **vii** [Vehicle red and pedestrian blackout] is set by the **XTR** step period and this only runs if period vi reaches its maximum time.

Period **viii** [Vehicle and pedestrian red] is set by the **CLR** step period.

	Minimum (Seconds)	Maximum (Seconds)
GAP	1.0	3.0
FRC	1.0	3.0
MIN	1.0	5.0
MAX	0.0	30.0
CLR	1.0	3.0
XTR	1.0	3.0

Fixed Sequence (Near-Side Signal) [TR 2210A 6.8 & 6.10]

- Period **3, III** [Vehicle and pedestrian red] is set either by the **GAP** step, **FRC** step or **SPD** step period. The **SPD** step is of a fixed duration set by the Highways Agency and is only used when the pedestrian phase crosses a vehicle phase with speed measurement facilities. Otherwise **GAP** step is used if it is a gap condition change or **FRC** step if it is a forced change condition.
- Period **4, IV** [Vehicle red and pedestrian green] set by phase Minimum Green (see **MIN Command**).
- Period **5, V** [Vehicle and pedestrian red] is set by the **MIN** step period.
- Period **6, VI** is not applicable.
- Period **7, VII** is not applicable.
- Period **8, VIII** [Vehicle and pedestrian red] is set by the **CLR** step period.

	Minimum (Seconds)	Maximum (Seconds)
GAP	1.0	3.0
FRC	1.0	3.0
MIN	1.0 *	45.0 *
MAX	N/A	N/A
CLR	1.0	3.0
XTR	N/A	N/A

Fixed Sequence (Far-Side Signal) [TR 2210A 6.7 & 6.9]

- Period **iii** [Vehicle and pedestrian red] is set either by the **GAP** step, **FRC** step or **SPD** step period. The **SPD** step is of a fixed duration set by the Highways Agency and is only used when the pedestrian phase crosses a vehicle phase with speed measurement facilities. Otherwise **GAP** step is used if it is a gap condition change or **FRC** step if it is a forced change condition.
- Period **iv** [Vehicle red and pedestrian green] is set by the phase Minimum Green (see **MIN Command**).
- Period **v** [Vehicle red and pedestrian blackout] is set by the **MIN** period.
- Period **vi** is not applicable.
- Period **vii** is not applicable.
- Period **viii** [Vehicle and pedestrian red] is set by the **CLR** period.

	Minimum (Seconds)	Maximum (Seconds)
GAP	1.0	3.0
FRC	1.0	3.0
MIN	1.0 *	45.0 *
MAX	N/A	N/A
CLR	1.0	3.0
XTR	N/A	N/A

* These value give an overall range, refer to TR2210A to determine the actual range appropriate to the site.

Pelican sequence [TR 2210A 6.3]

Period **C** [Vehicle and pedestrian red] is set either by the **GAP** step, **FRC** step or **SPD** step period. The **SPD** step is of a fixed duration set by the Highways Agency and is only used when the pedestrian phase crosses a vehicle phase with speed measurement facilities. Otherwise **GAP** step is used if it is a gap condition change or **FRC** step if it is a forced change condition.

Period **D** [Vehicle red and pedestrian green] is set by the phase Minimum Green (see **MIN Command**).

Period **E** [Vehicle red and pedestrian flashing green] is set by the **MIN** step period.

Period **F** [Vehicle flashing amber and pedestrian flashing green] has a maximum time set by the **MAX** step period.

Period **G** [Vehicle flashing amber and pedestrian red] is set either by the **CLR** step or **XTR** step period. **XTR** step period is only used if waking from the quiescent state with a vehicle demand. (i.e. Period C straight to Period G).

Step	Lower Range Limit	Upper Range Limit
GAP	1.0	3.0
FRC	1.0	3.0
MIN	0.0	2.0
MAX	6.0	18.0
CLR	1.0	2.0
XTR	3.0	5.0

2.2.10.16 PWN - Phase Window Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
PWN	<phase>	-	-	-	<duration>	-	0.0	300.0
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
PWN:Excess params		Too many parameters entered.						
PWN:Invalid phs		Invalid or unconfigured phase entered.						
PWN:Invalid time		Invalid duration entered.						
PWN:No T3 phs		There are no type 3 appearance phases configured.						
PWN:Not T3 phs		The selected phase is not a type 3 appearance phase.						

Comments

This command is used to display or modify the window duration for the specified phase and is only applicable for type 3 appearance phases.

2.2.10.17 RDE - Registered Pedestrian Demand Extension

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
RDE	<phase>	-	-	-	<duration>	-	1.0	5.0
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
RDE:Excess params		Too many parameters entered.						
RDE:No ped phs		There are no pedestrian phases configured.						
RDE:Not ped phs		The selected phase is not a pedestrian.						
RDE:Invalid phs		Invalid or unconfigured phase entered.						
RDE:Invalid time		Invalid duration entered.						

Comments

This command is used to display or modify the registered pedestrian demand extension duration for the specified phase and is only applicable for pedestrian phases. The registered pedestrian demand extension duration is used to extend the demand generated by a push button.

2.2.10.18 VMF - Varimax Flow Rate

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM
VMF	-	<phase>	<flow_rate>	-	-
VALID SPECIAL CHARACTERS: + -					
ERROR MESSAGES		CAUSED BY			
VMF:Excess params		Too many parameters entered.			
VMF:Invalid phs		Invalid or unconfigured phase entered.			
VMF:<phase>:N/A		Display for a type 3 termination phase, which has no max.			

Comments

This command is used to display the flow rate calculated for varimax on the specified phase and is updated every second.

<flow_rate> is displayed in vehicles per hour.

2.2.10.19 VMP - Varimax Additional Period

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
VMP	<phase>	<t_set>	-	-	<duration>	-	0.0	100.0
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
VMP:Excess params		Too many parameters entered.						
VMP:Invalid phs		Invalid or unconfigured phase entered.						
VMP:Invalid t/s		Invalid timing set entered.						
VMP:Invalid time		Invalid duration entered.						
VMP:<phase>:N/A		Display for a type 3 termination phase, which has no max.						

Comments

This command is used to display or modify a varimax additional period for a specified phase.

2.2.10.20 VMT - Varimax Threshold Flow Rate

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
VMT	<phase>	<t_set>	-	-	<flow_rate>	-	900 ‡	3000
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
VMT:Excess params		Too many parameters entered.						
VMT:Invalid phs		Invalid or unconfigured phase entered.						
VMT:Invalid t/s		Invalid timing set entered.						
VMT:Invalid time		Invalid duration entered.						
VMT:<phase>:N/A		Display for a type 3 termination phase, which has no max.						

‡ Lower range limit increased from 450 with “TR0141C” (now TR 2210A) and Sentinel configurations.

Comments

This command is used to display or modify a varimax threshold flow rate for a specified phase.

<flow_rate> is in vehicles per hour, (vph).

2.2.11 Red Extension Commands

2.2.11.1 RMX - All Red Maximum Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
RMX	-	-	-	-	<duration>	-	0.0	99.0 ‡
VALID SPECIAL CHARACTERS: > < =								
ERROR MESSAGES		CAUSED BY						
RMX:Excess params		Too many parameters entered.						
RMX:Invalid time		Invalid duration entered.						

‡ Upper range limit decreased from 300.0 with “TR0141C” (now TR 2210A) and Sentinel configurations.

Comments

This command is used to display or modify the all red maximum duration for the currently selected stage stream.

2.2.11.2 RXD - Red Extension Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
RXD	<det_name>	<from_stg>	<to_stg>	-	<duration>	-	0.0	25.0 ‡
VALID SPECIAL CHARACTERS: + - = > <								
ERROR MESSAGES		CAUSED BY						
RXD:Excess params		Too many parameters entered.						
RXD:None configd		No red extensions configured in currently selected stage stream.						
RXD:Not configd		No red extension configured matching parameters entered.						
RXD:Invalid det		Invalid or unconfigured detector name entered.						
RXD:Invalid stage		Invalid or unconfigured stage number entered.						
RXD:Invalid time		Invalid duration entered.						

‡ Upper range limit decreased from 100.0 with “TR0141C” (now TR 2210A) and Sentinel configurations.

Comments

This command is used to display or modify red extension durations on the currently selected stage stream. Note that red extensions are stored in detector, from stage, to stage order for each stage stream and only the duration can be modified.

<det_name> - name of the required detector, (up to 6 characters) defined at configuration time.

<from_stg> and <to_stg> - from/to stage can be any number from 0 to 15.

2.2.12 Special Conditioning Commands

2.2.12.1 SCB - Special Conditioning Handset Bits

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
SCB	<bit_no>	-	-	-	<state>	-	0	1
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
SCB:Excess params		Too many parameters entered.						
SCB:Bit out of rng		Specified bit number is greater than 256.						
SCB:Invalid state		Invalid bit state entered.						

Comments

This command is used to provide a means for special conditioning statements to be influenced by the user via the handset interface.

<bit_no> can be between 1 and 255.

2.2.12.2 SCC - Special Conditioning Counters

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
SCC	<counter>	-	-	-	<value>	-	0	65535
VALID SPECIAL CHARACTERS: + -								
ERROR MESSAGES		CAUSED BY						
SCB:Excess params		Too many parameters entered.						
SCB:Invalid counter		Specified counter number is greater than the number of SC counters defined.						
SCB No sc counters		No special conditioning counters have been defined in the configuration.						

Comments

This command is used to view special conditioning counter values, these cannot be influenced from this handset command.

< counter> can be between 1 and 64 but is also checked against the highest number counter defined.

2.2.12.3 SCT - Special Conditioning Timer Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
						LOWER	UPPER
SCT	<timer_no>	-	-	<duration>	<time remaining>	0.0s	6000.0s
VALID SPECIAL CHARACTERS: + - =							
ERROR MESSAGES		CAUSED BY					
SCT:Excess params		Too many parameters entered.					
SCT:Not confgd		No special conditioning bits configured.					
SCT:FIXED DURATION		Duration has been fixed in the original configuration. ("TR0141C" and Sentinel configurations.)					
SCT:Invalid timer		Invalid or unconfigured timer number entered.					
SCT:Invalid time		Invalid duration entered.					

Comments

This command is used to display or modify the duration for a specified special conditioning timer. Not all timers can be changed by this command, some are marked as fixed in the configuration.

<timer_no> can be between 1 and 256

<duration> is the duration of the timer (seconds)

<time remaining> is the time left to run on the timer, or N/A if not running.

2.2.12.4 SCV - Special Conditioning Statement Value

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM
SCV	-	<stmnt_no>	T or F	-	-
VALID SPECIAL CHARACTERS: + -					
ERROR MESSAGES		CAUSED BY			
SCV:Excess params		Too many parameters entered.			
SCV:No spcond		No special conditioning configured.			
SCV:Invalid stmnt		Invalid or unconfigured statement number entered.			

Comments

This command is used to display the value of a specified special conditioning statement and is updated every second. Note that **T** indicates statement true and **F** indicates statement false.

<stmnt_no> - special conditioning statement number can be between 1 and 256.

2.2.13 Timetable Commands

2.2.13.1 BST - British Summertime Changes

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
BST	-	-	-	-	<start_wk>	<end_wk>	0	52
VALID SPECIAL CHARACTERS: =								
ERROR MESSAGES		CAUSED BY						
BST:Excess params		Too many parameters entered.						
BST:End wk reqd		Start week only entered, both are required.						
BST:Invalid wks		Either week number out of range, start week after end week, or start week and end week the same, but not 0.						

Comments

This command is used to display or modify the changeover weeks for British summertime. Note that changeover occurs at 2am on Sunday morning and weeks start on a Monday with week 1 being the first week of the year containing at least 4 days of January. To disable BST set start week and end week to 0.

2.2.13.2 CAL - Calendar

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
CAL	-	-	-	-	<date>	-	-	-
VALID SPECIAL CHARACTERS: =								
ERROR MESSAGES		CAUSED BY						
CAL:Excess params		Too many parameters entered.						
CAL:Lack of params		Incomplete date entered, (i.e. month or year missing).						
CAL:Invalid date		Invalid date entered.						

Comments

This command is used to display or modify the current date in DD/MMM/YY format. The calendar display is updated every second.

Month, (MMM) may be entered as a number between 1 and 12 or as the first 3 letters of the month name, (e.g. JAN, FEB, etc).

2.2.13.3 CRF – Clock Reference

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
						LOWER	UPPER
CRF	<ref source>	[<time of day>]	-	<ref source>	[<time of day>]	-	-
VALID SPECIAL CHARACTERS: =							
ERROR MESSAGES		CAUSED BY					
CRF:Excess params		Too many parameters entered.					
CRF: Bad timing source		The mnemonic entered was not one of {MNS or XTL or RGB}					
CRF:RGB not supported		The software version (or configuration) does not support this reference source.					
CRF:Invalid hrs (mins, secs) arg		One of the fields in <time of day> was not valid.					
CRF:hh:Mins?		While seconds may be dropped from the time of day, minutes are necessary.					

Comments

This command is used to display or modify the current clock timing reference source. It also allows the clock to be run for a while under crystal control before reverting to using mains reference (crystal rendezvous).

<ref source> specifies the clock timing reference source, the possible sources are:-

- MNS** Mains timing: the mains timing may slip considerably during the day but is the same over a wide area, making it ideal for synchronising CLF plans.
(Mains cycles for a whole day are maintained to keep clocks from accumulating errors.)
- XTL** Crystal clock: while more accurate than mains reference on the short scale, there is a danger of long term drift accumulating.
- RGB** Rugby clock: (where configured) this source is a radio link to an atomic clock, as such it is the most accurate of the sources available. It should be noted that if used to synchronise a CLF plan, all the controllers in the plan must have this timing reference source.

<time of day> when specified, this parameter gives the time of day in HH:MM:SS (or HH:MM) format at which the reference source will revert to being mains (crystal rendezvous facility).

2.2.13.4 DAY - Day of Week

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM
DAY	-	-	<day_of_week>	-	-
VALID SPECIAL CHARACTERS: None					
ERROR MESSAGES		CAUSED BY			
DAY:Excess params		Too many parameters entered.			

Comments

This command is used to display the current day of the week and is updated every second. This is a read only command.

<day_of_week> can be **MON, TUE, WED, THU, FRI, SAT, SUN**.

2.2.13.5 SNC - Synchronise Time Clock

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
SNC	DAY	-	-	-	<day_type>	-	-	-
"	REF	-	-	-	<time_of_day>	-	-	-
"	REP	-	-	-	<repeat_rate>	-	-	-
"	WIN	-	-	-	<window_time>	-	-	-
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
SNC:Excess params		Too many parameters entered.						
SNC:Lack of params		Incomplete command entered.						
SNC:Param error		Invalid input parameter entered.						
SNC:Day error		Invalid day type entered.						
SNC:Ref time err		Invalid reference time entered.						
SNC:Repeat err		Invalid repeat rate entered.						
SNC:Window err		Invalid window time entered.						

Comments

This command is used to display or modify time clock synchronisation data.

<day_type> may be any of the following:-

MON, TUE, WED, THU, FRI, SAT, SUN, ANY, or WEK

<time_of_day> is in HH/MM/SS format for a 24 hour clock.

<repeat_rate> can be in hours (1H - 24H) or in minutes (1M - 1440M) and must divide wholly in 24 hours.

<window_time> can be in hours (1H - 24H), minutes (1M - 1440M) or seconds (2S - 86400S) and must be less than or equal to the repeat rate.

2.2.13.6 TEL - Timetable Event List Data

COMMAND MNEMONIC	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM
TEL	<list_no>	TCF	<plan> or D or OFF
"	"	TDO<det_name>	A, I, N or D
"	"	TDT	<det_set_no> or D
"	"	TEF<flag_no>	ON, OFF or D
"	"	TIS<stream_no>.<stage_no>	ON or OFF
"	"	TLT	<lrt_set_no> or D
"	"	TMT<mov_a_stream_no>	<mov_a_set_no> or D
"	"	TPT<stream_no>	ON, OFF or D
"	"	TSF<sign_no>	ON, OFF or D
"	"	TTS	<phase_set_no> or D
"	"	TPM<phs_name>	V, P, F or N
VALID SPECIAL CHARACTERS: + - =			
ERROR MESSAGES		CAUSED BY	
TEL:Excess params		Too many parameters entered.	
TEL:Invalid list		Invalid event list number entered.	
TEL:<list>:Event error		Invalid event entered.	
TEL:<list>:No event		The event type entered does not exist in specified event list.	
TEL:<list>:List full		Trying to add an event to a list that is full, eight events are allowed per list.	
TEL:<list>:Empty		The specified event list does not contain any events.	

Comments

This command is used to display, modify, add or delete timetable event list data. The use of event lists allows several actions (up to 8) to occur on the same timetable entry (see TTI command). (Adding an event to a list is no different from creating the first event on a list.)

<list_no> - event list can be any number between 1 and 64.

Event type codes have the following meanings:-

- TCF** - Timetable CLF
- TDO** - Timetable detector override
- TDT** - Timetable detector timing set
- TEF** - Timetable event flag
- TIS** - Timetable inhibit stage
- TLT** - Timetable LRT timing set
- TMT** - Timetable MOVA data set
- TPT** - Timetable part-time
- TSF** - Timetable switched sign
- TTS** - Timetable phase timing set
- TPM** - Timetable phase mode change.

<plan> - CLF plan can be any number between 1 and 16 or OFF.

<det_set_no> - detector timing set can be any number between 1 and 4.

<det_name> - name of the required detector, (up to 6 characters) defined at configuration time.

- <flag_no> - timetable event flag can be any number between 1 and 32.
- <mov_a_stream> - mov_a stage stream can be 1 or 2 (1 only for non Sentinel Configurations)
- <stream_no> - stage stream can be any number between 1 and 8.
- <sign_no> - switched sign can be any number between 1 and 16.
- <stage_no> - stage can be any number between 0 and 15.
- <phase_set_no> - phase timing set can be any number between 1 and 8.
- <mov_a_set_no> - MOVA data set can be any number between 1 and 4.
- <lrt_set_no> - LRT timing set can be any number between 1 and 4.
- <phs_name> - name of the required phase, (up to 2 characters) defined at configuration time.

D means delete event, **A** means active, **I** means inactive, **N** means none, **V** means vehicle actuated, **P** means pre-timed maximum and **F** means fixed vehicle period.

Following is an example of how to add an event for each of the above types:-

e.g. timetable CLF:-

TEL/1/TCF=3 - event list 1 to introduce CLF plan 3

e.g. timetable selection of detector timing set:-

TEL/4/TDT=4 - event list 4 to select detector timing set 4

e.g. timetable detector override:-

TEL/10/TDOWXYZ=A - event list 10 to override detector XYZ to active

e.g. timetable event flag:-

TEL/25/TEF32=OFF - event list 25 sets event flag 32 off

e.g. timetable part-time:-

TEL/40/TPT6=ON - event list 40 requests part-time mode on stage stream 6

e.g. timetable switched sign:-

TEL/50/TSF16 = OFF - event list 50 requests switched sign 16 to be off

e.g. timetable selection of phase timing set:-

TEL/64/TTS=8 - event list 64 selects phase timing set 8

e.g. timetable selection of MOVA timing set:-

TEL/64/TMT1=3 - event list 64 selects MOVA stream 1 data set 3

e.g. timetable selection of phase mode:-

TEL/63/TPMG=V - event list 63 selects phase mode VA for phase G

e.g. timetable selection of LRT timing set:-

TEL/62/TLT=2 - event list 62 selects LRT timing set 2

2.2.13.7 TOD - Time of Day

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
TOD	-	-	-	-	<time_of_day>	-	-	-
VALID SPECIAL CHARACTERS: =								
ERROR MESSAGES		CAUSED BY						
TOD:Excess params		Too many parameters entered.						
TOD:Lack of params		Incomplete time entered, (i.e. minutes missing).						
TOD:Invalid time		Invalid time entered.						

Comments

This command is used to display or modify the current time in HH/MM/SS format for a 24 hour clock. The time of day display is updated every second. Note that the seconds may be omitted when setting the time, (0 will be assumed).

2.2.13.8 TSS - Timing Sets Selected

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM	FOURTH OUTPUT PARAM
TSS	-	-	<phase_set_no>	<det_set_no>	<mov_a_set_no>	<lrt_set_no>
VALID SPECIAL CHARACTERS: None						
ERROR MESSAGES		CAUSED BY				
TSS:Excess params		Too many parameters entered.				

Comments

This command is used to display the currently selected timing sets and is updated every second.

- <phase_set_no> - phase timing set can be any number between 1 and 8.
- <det_set_no> - detector timing set can be any number between 1 and 4.
- <mov_a_set_no> - MOVA data set can be any number between 1 and 4, or **N** if not a mova stream.
- <lrt_set_no> - LRT timing set can be any number between 1 and 4.

2.2.13.9 TTI - Timetable Inspection

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
						LOWER	UPPER
TTI	<time_of_day>	<day_type>	-	<list_no> or D	-	-	-
TTI	<group priority edit command>	-	-	<priority level set>	-	-	-
VALID SPECIAL CHARACTERS: + - = ?							
ERROR MESSAGES		CAUSED BY					
TTI:Excess params		Too many parameters entered.					
TTI:Lack of params		Incomplete data entered, (i.e. part of time of day missing).					
TTI:Empty		There are no timetable entries configured.					
TTI:Not found		There is no timetable entry matching the input parameters given.					
TTI:Invalid time		Invalid time entered.					
TTI:Invalid day		Invalid day type entered.					
TTI:No record		Trying to delete an entry that does not exist.					
TTI:Table full		Trying to add an entry when the table is full.					
TTI:Event error		Invalid event list number entered.					
TTI:Calendar group error		An invalid edit parameter was used from screen 1. (valid usage:- =1D or =5A etc.)					
TTI:Invalid edit code		Only D and A (for delete and add) may be specified following a calendar group number.					

Comments

This command is used to display, modify, add or delete an entry in the timetable. Note that timetable entries are stored in time of day order.

<time_of_day> is in HH/MM/SS format for a 24 hour clock.

<day_type> can be any of the following:-

MON	-	Monday
TUE	-	Tuesday
WED	-	Wednesday
THU	-	Thursday
FRI	-	Friday
SAT	-	Saturday
SUN	-	Sunday
WKD	-	Weekdays, (MON-FRI)
WND	-	Weekends, (SAT-SUN)
WEK	-	Every day of the week
XMO	-	Every day except Monday
XTU	-	Every day except Tuesday
XWE	-	Every day except Wednesday
XTH	-	Every day except Thursday
XFR	-	Every day except Friday
XSA	-	Every day except Saturday
XSU	-	Every day except Sunday

<day_type> can also be a list of day numbers where 1 = Monday, (e.g. 15 = Monday and Friday).

<list_no> - event list can be any number between 1 and 64. Note that entering **D** instead of an event list number means delete the currently displayed timetable entry.

Following are a few examples of how to add a timetable entry:-

e.g. TTI/07/30/00/WEK=1 - at 07:30:00 every day action event list 1

e.g. TTI/15/45/50/135=12 - at 15:45:50 on Monday, Wednesday and Friday action event list 12

Note: When a timetable entry is added, it is associated with the default Calendar Event Group, (Level 1)

2.2.13.9.1 Association of Timetable entries with Calendar Event Groups (Levels)

See TCE command for details of setting up Calendar time slots at different priority levels.

? Is used to inspect the set of priority levels that a timetable entry is linked to, the command can only be issued when the timetable entry in question is being viewed.

e.g. ? - might give the following response.

TTI1:1 Indicating that the entry is only valid for the default Calendar Event Group.

While this view is active, the set of Calendar Event Groups can be changed.

<group priority edit command> consists of a pair of characters:- <priority level><edit code>

where <priority level> Is the Calendar Group affected (1..8)

<edit code> Can be **A** for add or **D** for delete.

To add the entry to Level 3 use...

=3A

the response being TTI1:1,3

2.2.13.10 TCE - Timetable Calendar Events

COMMAND MNEMONIC	SCREEN NUMBER	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM
TCE	0	<priority level>	S E A	<time of year>	-	-
TCE	0	<priority level>	D	-	-	-
TCE	1	-	-	-	<priority level>	<time of year>
VALID SPECIAL CHARACTERS: + - = ?						
ERROR MESSAGES		CAUSED BY				
TCE:Excess params		Too many parameters entered.				
TCE:Invalid level		Invalid priority level entered (valid range [1..8])				
TCE:Invalid date		The time of year field is incorrect.				
TCE:No slots defined		There is no calendar slot matching the input parameters given.				
TCE:Invalid Action Code		The action code should be a single letter (A S E D)				
TCE:No data supplied		When creating a new slot, no date information was supplied.				
TCE:Level full		No more slots are available at this priority level.				
TCE:No Room for Slot		The slot will not fit before the next one.				
TCE:Overlapping slots		The new slot would overlap an adjacent one.				
TCE:start beyond end		The new start is now later than the end of the slot, adjust the end first.				
TCE:end before start		The new end is now earlier than the start of the slot, adjust the start first.				
TCE:Overlaps previous slot		The start time specified overlaps the previous slot at this level.				
TCE:Overlaps next slot		The end time specified overlaps the following slot at this level.				
TCE:zero duration		This edit would result in both ends of the slot having the same <time of year>.				
TCE:Browse for slot		A calendar event slot must be located before it can be deleted. (delete is an 'edit' command)				
TCE:Slot not known		Slot not known, similar to above but a date was not given. (locate a slot then use =)				
TCE:No action code		An invalid edit code was used in the second parameter.				
TCE:No entries for level		Except for the Add action code, there has to be a slot defined for the command to be valid.				
TCE:default level		Level 1 cannot be changed.				

Comments

This command is used to display, modify, add or delete a Calendar Group slot in the timetable.
(Re. Sentinel Facilities Manual 40-9777-023 Iss 02 section 20.2.1)

Notes:

- Calendar Group slots are stored in time of year order within each of the eight Calendar Event Groups.
- A slot cannot span a year end.
- February 29 is not a valid date for the start or end of a slot.

<priority level> can be in the range (1 ... 8), where 1 is the default priority level and cannot be edited.

<time of year> is in MMM/DD/HH/ format.

MMM gives the month, either as the first three letters of the month or as a number (1..12)
DD gives the day of the month as a number (1..31)
HH gives the hour of the day, in 24 hour format (0..23)

where <time of year> is used, month must be entered but day and hour will default to 1 and 0 respectively.

The second parameter is an <action code>

When used as a new command it can be:-

- A** to add a new slot at the specified <priority level> and <time of year>, the slot added defaults to 24hrs duration. (1hr if space is tight)
- S** to locate the <time of year> at which a slot starts, if no slot exists for this <time of year> then the next slot start after this <time of year> is reported.
- E** to locate the <time of year> at which a slot ends, if no slot exists for this <time of year> then the next slot end after this <time of year> is reported.

When used as an Edit command (i.e. using = from a previously located slot) the <action code> will default to being **S** or **E** as given in the previous display.

e.g. If the display shows TCE0:2:S:04:10:00 and = is used, the response is TCE/02/S=
to change the start time for the slot, enter a <time of year> parameter and type the <enter> key.
(Screen number is not displayed for edit responses)

- D** to delete a slot.
If you want to delete the slot, instead of changing its duration, then use the <edit> key (backspace) to remove the action code shown and replace it with **D**, no further parameters should be entered. A delete command can be used from either the start or end of a slot.

+ - These commands can be used to scan the levels for defined slots.

Observing the overall effect of the defined levels in date order.

- ?** The ? command is used to change to and from a different view of the data.
When first used it returns the Calendar Priority Group (<priority level>) currently in use and the <time of year> when a change of priority next occurs.

+ - In this mode, these commands can be used to scan through the year to show the levels that apply and the <time of year> of changes.
The <time of year> displayed is always the time that the <priority level> ends.

2.2.13.11 WEK - Week Number

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM	FOURTH OUTPUT PARAM
WEK	-	-	<week_number>	-	-	-
VALID SPECIAL CHARACTERS: None						
ERROR MESSAGES		CAUSED BY				
WEK:Excess params		Too many parameters entered.				

Comments

This command is used to display the current week number and is updated every second. This is a read only command.

<week_number> can be any number between 1 and 53.

2.2.14 Miscellaneous Commands

2.2.14.1 FIX - Fixed Time Stage Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
FIX	<stage>	-	-	-	<duration>	-	0.0	300.0
VALID SPECIAL CHARACTERS: + - = > <								
ERROR MESSAGES		CAUSED BY						
FIX:Excess params		Too many parameters entered.						
FIX:Invalid stage		Invalid or unconfigured stage number entered.						
FIX:Invalid time		Invalid duration entered.						
FIX:VA to MAX		Fixed time mode is configured as VA to MAX on current stage stream.						

Comments

This command is used to display or modify fixed time stage durations on the currently selected stage stream.

<stage> can be any number between 0 and 15.

2.2.14.2 IGS - Starting Intergreen Duration

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
IGS	-	-	-	-	<duration>	-	0.0	30.0 ‡
VALID SPECIAL CHARACTERS: > < =								
ERROR MESSAGES		CAUSED BY						
IGS:Excess params		Too many parameters entered.						
IGS:Level 3 access		Level 3 password has not been entered.						
IGS:Invalid time		Invalid duration entered.						

‡ Upper range limit reduced from 200.0 with "TR0141C" (now TR 2210A) and Sentinel configurations.

Note this command can only be used to change the values once level 3 access has been granted.

Comments

This command is used to display or modify the starting intergreen duration for the currently selected stage stream.

2.2.14.3 LMP - Phase Lamp Test

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM	FORTH OUTPUT PARAM
LMP	<lsc_no>	<drive_no>	[<colour>]	(<phase> <colour>	<channel name>	<channel current>	[<status>]
or LMP	<phase>	[<colour>]	-	(<phase> <colour>	<channel name>	<channel current>	[<status>]
VALID SPECIAL CHARACTERS: + - R A G							
ERROR MESSAGES		CAUSED BY					
LMP:Excess params		Too many parameters entered.					
LMP:Signals on		Command entered when signals on - not allowed.					
LMP:Lamps Isolated		No mains power available to drive lamps.					
LMP:Invalid LSC		Invalid or unconfigured LSC number entered.					
LMP:Invalid drive		Invalid drive number entered.					
LMP:Invalid phase		Phase name entered is not configured.					
LMP:Level 3 access		Level 3 password has not been entered.					
LMP:Invalid colr		Invalid colour entered.					

This command can only be used once level 3 access has been granted.

Comments

This command is used to drive individual phase lamp outputs for testing purposes. If the controller is shut down due to an error condition, that fault must be cleared before this command can turn signal lamps ON. Where ILM monitoring of the signals is configured, the monitoring channel and the current seen are displayed.

There are two ways of specifying the drive to test (**A**: or **B**: below).

A: By specifying the lsc number and drive number

<lsc_no> - lamp switch card can be any number between 1 and 8. This number is the logical lamp-switch card number, usually there will be two lsc numbers for each physical LSC fitted.
<drive_no> - drive on specified lamp switch card, can be any number between 1 and 4.

B: By specifying the phase id.

<phase> - phase id of the phase to drive (A ... F2), only configured phases can be used.

<colour> - may be set to **R** to drive red output, **A** to drive amber output or **G** to drive green output. Displays **N** if no colour is being driven.

The output display will give both sets of information:

e.g. LMP:6:1:(U)G:No Channel:0:N

Lsc/drive input or the +/- commands can be used to test unconfigured drives, provided that the Lsc is partially used.

<channel name> ILM channel monitoring this aspect OR "No Channel"

<channel current> Measured current (mA).

[<status>] Can be N | U | X or may be omitted when a significant current is present.
 N – channel current not significant
 U – this channel is marked as unstable
 X – multiple channels are monitoring this aspect

Note: Once a colour has been set on, it can be turned off again by pressing any key other than:-
 (R, A, G, +, -) which will set a different aspect on, (R, A, G) will switch ON the aspect of that colour,
 (+, -) will cycle round the aspects on each phase then move on to the next (or previous) phase.

WARNING: DO NOT USE THIS COMMAND IN SITUATIONS WHERE ROAD USERS COULD BE MISLED BY THE SIGNALS DISPLAYED.

2.2.14.4 MND - Manual Mode Disable

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
MND	-	-	-	-	<state>	-	-	-
VALID SPECIAL CHARACTERS: =								
ERROR MESSAGES		CAUSED BY						
MND:Excess params		Too many parameters entered.						
MND:Invalid state		Invalid state entered.						
MND:Not configd		Manual disable facility is not configured.						

Comments

This command is used to display or modify the manual mode disable state.
 <state> may be **E** to enable, **D** to disable or **T** to temporarily enable, (until manual panel door is closed).

2.2.14.5 MOD - Mode Status

COMMAND MNEMONIC	SCREEN NUMBER	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM	FOURTH OUTPUT PARAM	FIFTH OUTPUT PARAM
MOD	-	<mode>	<current_stg>	<next_stg>	<red_extn>	["mimic"]
VALID SPECIAL CHARACTERS: > <						
ERROR MESSAGES		CAUSED BY				
MOD:Excess params		Too many parameters entered.				

Comments

This command is used to display mode status information for the currently selected stage stream and is updated every second.

<mode> can be any one of the following:-

SHD	-	Shutdown
MSD	-	Manual shutdown
STU	-	Start-up
PT	-	Part-time
HC1	-	Hurry call 1
HC2	-	Hurry call 2
HC3	-	Hurry call 3
HC4	-	Hurry call 4
MAN	-	Manual
UTC	-	Urban traffic control
MFT	-	Manually selected fixed time
MOV	-	MOVA mode
LRT	-	LRT mode
CLF	-	Cableless linking facility
FT	-	Fixed time } from normal
VA	-	Vehicle activated } switch position

<current_stage> and <next_stage> - a stage number between 0 and 15.

<red_extn> shows a single character, where **X** means extending red and **N** means not extending red.

If the controller is running on mimics, the display is appended with :mimic
This occurs when Signals are OFF from the manual panel, or if the Lamps Power Isolator is active.

2.2.14.6 PWD - Password Entry

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	RANGE LIMITS	
						LOWER	UPPER
PWD	<password>	-	-	-	<config source>	-	-
VALID SPECIAL CHARACTERS: None							
MESSAGES				CAUSED BY			
PWD:PROM:***>				Three characters have been typed in. {One * per character entered}			
PWD:PROM:INCORRECT PASSWORD				Invalid password entered.			
PWD:PROM:SAVE BUTTON ACTIVE				cpu 'SAVE' button is already active (pressed).			
PWD:RCP is available				No configuration data currently loaded. RCP is required.			
PWD:PROM:Press SAVE button				Valid password entered and SAVE button is inactive, press it to confirm password.			
PWD:PROM>Password not confirmed				SAVE button not pressed within 10 seconds of the password being entered.			
PWD:PROM:LEVEL 3 OPENED				Level 3 access granted.			
PWD:DONGLE				The download security device is fitted.			

Comments

This command is used to enter the level 3 password.

<password> is set in the configuration and can be up to 8 characters long. The password check is case sensitive.

<config source> Can be PROM or FLASH, depending on where the configuration is stored.

Note normal editing (backspace) is not available for password entry.

2.2.14.7 RCP - Restore Configuration Parameters

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM
RCP	[<config source>]	-	-	<op_msg>	-
VALID SPECIAL CHARACTERS: + - =					
ERROR MESSAGES		CAUSED BY			
RCP:Invalid parameter		The parameter supplied is not appropriate, e.g. =CONFIRM used when no source indicated.			
RCP:FLASH:Excess params		Too many parameters entered.			
RCP:Level 3 access		Level 3 password has not been entered.			
RCP:Signals on		RCP cannot be performed with the signals on.			
RCP: <config source> :Unsaved MOVA data		Alerts user to the fact that a MOVA data download has occurred.			
RCP:abandoned		Restore operation abandoned, to preserve unsaved MOVA data.			
RCP:<config source>:NO CFG LOADED		The source selected does not contain valid configuration data.			
RCP:0:NO CFG SRC: Configuration source (1/2)?		No current configuration source defined. If 2 (flash)is chosen, a configuration should have been downloaded to the flash area (DEDU facility).			

Note this command can normally only be used to change the values once level 3 access has been granted. When no configuration has been loaded, RCP is available without level 3 access because no other actions are meaningful (and the password is part of the configuration data).

Comments

This command is used to restore the modifiable configuration data from the configuration source to the CPU RAM. Note that config data cannot be restored while the signals are switched on.

<config source> Can be 1 or 2, signifying PROM or FLASH as the location where configuration data is stored. When no config source parameter is entered, the current source type will be displayed.

An asterisk * following the config source number indicates that this is the current configuration.

When the controller is first commissioned or following a battery failure, a config source must be selected.

To confirm selection of a config source the edit sequence =CONFIRM<enter> is used, this results in the previously displayed response being repeated but with the config source number followed by a '?'.

When either * or ? follows the config source number, the configuration data from that source can be reloaded by using the edit sequence =RELOAD<enter>. Restoration will then take place¹.

When restoration commences the message **RCP:<config source>:PLEASE WAIT** will be displayed and when it is complete the message **PLEASE RESET** will be displayed. The CPU RESET button must then be pressed to continue.

NOTE : THE RCP COMMAND SHOULD ALWAYS BE USED WHEN A CONTROLLER IS FIRST SWITCHED ON, OR WHEN THE CONFIGURATION DATA IS CHANGED.

¹ If a MOVA download has occurred, the user is alerted to it. If this happens, typing =CONTINUE<enter> will allow the restoration to continue, to abandon the reload operation, type =QUIT<enter>.

2.2.14.8 RSN - Read Serial Number

COMMAND MNEMONIC	SCREEN NUMBER	INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	THIRD OUTPUT PARAM	FOURTH OUTPUT PARAM
RSN	-	C	<config source>	<cfg serial_no>	-	-
	-	M	<serial_no>	-	-	-
	-	-	<version_no>	-	-	-
VALID SPECIAL CHARACTERS: + - ?						
ERROR MESSAGES		CAUSED BY				
RSN:Excess params		Too many parameters entered.				
RSNC:NO CFG SRC		The configuration source has not been specified.				
RSN:Invalid opt		Invalid option entered.				

Comments

This command is used to display the serial number for the specified source type, where **C** means configuration source and **M** means main processor software code.

Notes:

RSN on its own will display the configuration serial number.

In the response, the command mnemonic is echoed as **RSNC** or **RSNM**

<config source> can be either, PROM or FLASH, depending on where the configuration is stored.

With RSNM, ? toggles between displaying the software serial number and displaying version data.

2.2.14.9 SIG - Signals On / Off

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
SIG	-	-	-	-	ON or OFF	-	-	-
VALID SPECIAL CHARACTERS: = > <								
ERROR MESSAGES		CAUSED BY						
SIG:Excess params		Too many parameters entered.						
SIG:Level 3 access		Level 3 password has not been entered.						
SIG:Invalid state		Invalid state entered.						

Note this command can only be used to change the values once level 3 access has been granted.

Comments

This command is used to turn the signals on or off for the currently selected stage stream.

2.2.14.10 SSS - Select Stage Stream

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FOURTH INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
							LOWER	UPPER
SSS	-	-	-	-	<stream_no>	-	-	-
VALID SPECIAL CHARACTERS: + - =								
ERROR MESSAGES		CAUSED BY						
SSS:Excess params		Too many parameters entered.						
SSS:1 stream only		Only 1 stream configured - command invalid.						
SSS:Not confgd		Stream number entered is not configured.						
SSS:Invalid strm		Invalid duration entered.						

Comments

This command is used to display or modify the currently selected stage stream.

<stream_no> can be any number between 1 and 8.

2.2.14.11 UTO - UTC Control Bit Timeout

COMMAND MNEMONIC	FIRST INPUT PARAM	SECOND INPUT PARAM	THIRD INPUT PARAM	FIRST OUTPUT PARAM	SECOND OUTPUT PARAM	RANGE LIMITS	
						LOWER	UPPER
UTO	FBIT	-	-	<duration>	-	120	300
"	DBIT*	-	-	OFF or <duration>	-	20	3600
"	DXBIT*	-	-	OFF or <duration>	-	20	3600
"	SFBIT*	-	-	OFF or <duration>	-	20	3600
"	FMBIT*	-	-	OFF or <duration>	-	20	3600
"	LOBIT*	-	-	OFF or <duration>	-	20	3600
"	GOBIT*	-	-	OFF or <duration>	-	20	3600
"	LLBIT*	-	-	OFF or <duration>	-	20	3600
"	LTRIBIT*	-	-	OFF or <duration>	-	20	3600
"	PVBIT*	-	-	<duration>	-	60	3600
VALID SPECIAL CHARACTERS: + - =							
ERROR MESSAGES		CAUSED BY					
UTO:Excess params		Too many parameters entered.					
UTO:Invalid UTC Bit Type		Invalid UTC control bit type entered.					
UTO:Invalid time		Invalid duration entered.					

* Only available with "TR0141C" (now TR 2210A) and Sentinel configurations.

Comments

This command is used to display or modify the current UTC control bit timeouts.

The timeout facilities can be turned OFF unless that bit type has been configured so that it must have a timeout, like F and PV bits that must always have a timeout.

<duration> - the number of seconds for the timeout.