

ISO/TS 26048-1:2025-07 (E)

Intelligent transport systems - Field device Simple Network Management Protocol (SNMP) data interface - Part 1: Global objects

Contents		Page
Foreword		vii
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	Symbols and abbreviated terms	5
5	Conventions and architecture	6
5.1	ISO maintenance portal	6
5.2	MIB files	6
5.2.1	MIB format	6
5.2.2	MIB access	7
5.2.3	MIB filenames	7
5.3	ASN.1	7
5.4	Conformance	7
5.5	SNMP terminology	7
5.6	Architecture	8
5.6.1	ITS services	8
5.6.2	Functional view of interface	8
5.6.3	Physical view	8
5.6.4	Communications view	8
5.7	Constraints	9
5.7.1	Table design constraint	9
5.7.2	Access constraints	10
5.8	Outline	10
5.9	Requirements pattern	10
6	User needs	12
6.1	Authenticate users	12
6.2	Control access to data	12
6.3	Monitor failed access to the field device	12
6.4	Manage the field device	12
6.5	Monitor field device components	12
6.5.1	Monitor ambient environment	12
6.5.2	Monitor field device enclosure	13
6.5.3	Manage enclosure climate control components	13
6.5.4	Monitor field device power	14
6.5.5	Manage auxiliary ports	14
6.6	Receive notification of triggers firing	14
6.7	Manage device-specific notifications	15
6.8	Log system events	15
6.9	Log user-defined data snapshots	15
6.10	Record a series of data snapshots	15
6.11	Issue trigger-based commands	15
6.12	Configure a complex device	16
6.13	Efficient exchange of data	16
6.14	Future user needs	16
6.14.1	Software update	16

6.14.2	Start-up configuration	16
6.14.3	Configuration set management	16
6.14.4	Sequence of constructs within dynamic objects	16
7	High-level design	17
7.1	Authenticate users design overview	17
7.2	Control access to data design overview	17
7.3	Monitor failed access to the field device	18
7.4	Manage the field device design overview	18
7.5	Monitor field device components	18
7.6	Receive notification of triggers firing design overview	18
7.6.1	General	18
7.6.2	Triggers	19
7.6.3	Action selection	19
7.6.4	Notification factory	20
7.6.5	Notification channel	20
7.7	Manage device-specific notifications design overview	20
7.8	Log system events design overview	20
7.9	Log user-defined data snapshots design overview	20
7.10	Record a series of data snapshots design overview	21
7.11	Issue trigger-based commands design overview	22
7.12	Configure a complex device design overview	23
7.13	Efficient exchange of data design overview	23
7.14	Triggers	23
7.14.1	General	23
7.14.2	Scheduled triggers design overview	23
7.14.3	Day plan triggers design overview	24
7.14.4	Condition-based triggers design overview	25
8	Requirements	26
8.1	Action feature	26
8.1.1	Action feature definition	26
8.1.2	Action feature data exchange requirements	27
8.1.3	Action feature functional requirements	28
8.1.4	Action feature performance requirement	28
8.2	Clock feature	28
8.2.1	UTC Clock	28
8.2.2	Local clock	30
8.2.3	Daylight saving time	30
8.3	Command feature	31
8.3.1	Command feature definition	31
8.3.2	Command feature data exchange requirements	31
8.3.3	Command feature capability requirements	32
8.3.4	Command feature functional requirements	32
8.4	Conditional trigger feature	33
8.4.1	Conditional trigger feature definition	33
8.4.2	Conditional trigger feature data exchange requirements	33
8.4.3	Conditional trigger feature functional requirements	34
8.4.4	Conditional trigger feature capability requirements	34
8.5	Controller feature	39
8.5.1	Controller feature definition	39
8.5.2	Controller feature data exchange requirements	39
8.5.3	Controller feature capability requirements	41
8.5.4	Controller performance requirements	42
8.6	Day plan feature	42
8.6.1	Day plan feature definition	42
8.6.2	Day plan feature data exchange requirements	42
8.6.3	Day plan feature functional requirements	44
8.7	Dynamic object feature	44
8.7.1	Dynamic object feature definition	44
8.7.2	Dynamic object feature data exchange requirements	44

8.7.3	Dynamic object feature capability requirements	45
8.7.4	Dynamic object feature functional requirement	46
8.7.5	Dynamic object feature performance requirement	46
8.8	Field device feature	46
8.8.1	Field device definition	46
8.8.2	General field device features	47
8.8.3	Ambient air temperature	48
8.8.4	Ambient light	48
8.8.5	Ambient relative humidity	49
8.8.6	Auxiliary bi-directional port	49
8.8.7	Auxiliary input port	49
8.8.8	Auxiliary output port	49
8.8.9	Field device air conditioner	49
8.8.10	Field device battery	50
8.8.11	Field device dehumidifier	50
8.8.12	Field device doors	51
8.8.13	Field device fans	51
8.8.14	Field device generator	51
8.8.15	Field device heaters	52
8.8.16	Field device humidity	52
8.8.17	Field device mains power	52
8.8.18	Field device power supply	53
8.8.19	Field device processor temperature	53
8.8.20	Field device solar power	53
8.8.21	Field device temperature	54
8.8.22	Field device thermostat	54
8.8.23	Field device wind power	54
8.9	File feature	55
8.9.1	File feature definition	55
8.9.2	File feature data exchange requirements	55
8.10	Logging feature	55
8.10.1	Logging feature definition	55
8.10.2	Logging feature data exchange requirements	55
8.10.3	Logging feature functional requirements	57
8.10.4	Logging feature capability requirements	57
8.11	Notification feature	57
8.11.1	Notification channel	57
8.11.2	Notification factory	65
8.11.3	Independent notification	67
8.11.4	Notification aggregator	68
8.12	Owner feature	70
8.12.1	Owner feature definition	70
8.12.2	Owner feature data exchange requirements	70
8.13	Recording feature	71
8.13.1	Recording feature definition	71
8.13.2	Recording feature data exchange requirements	71
8.13.3	Recording feature capability requirements	73
8.13.4	Recording feature functional requirement	73
8.14	Scheduled trigger feature	73
8.14.1	Scheduled trigger feature definition	73
8.14.2	Scheduled trigger feature data exchange requirements	73
8.14.3	Scheduled trigger feature functional requirements	74
8.14.4	Scheduled trigger feature capability requirements	74
8.15	Secure communications feature	74
8.15.1	Secure communications feature definition	74
8.15.2	Secure communications protocol requirements	75
8.15.3	Secure communications conformance requirements	75
8.16	SNMP target feature	75
8.16.1	SNMP target feature definition	75
8.16.2	SNMP target feature data exchange requirements	75
8.16.3	SNMP target feature capability requirements	76

8.17	Start-up feature	76
8.17.1	Start-up feature definition	76
8.17.2	Start-up feature data exchange requirements	77
8.18	Supplemental roadside sensors and actuators (SRSA) feature	77
8.18.1	SRSA feature definition	77
8.18.2	SRSA feature data exchange requirements	77
8.18.3	SRSA feature capability requirements	78
8.18.4	SRSA feature performance requirements	79
8.18.5	SRSA feature supplemental requirements	79
8.19	System log feature	79
8.19.1	System log feature definition	79
8.19.2	System log feature data exchange requirements	80
8.19.3	System log feature capability requirements	80
8.20	Transaction feature	80
8.20.1	Transaction feature definition	80
8.20.2	Transaction feature data exchange requirements	81
8.20.3	Transaction feature functional requirements	81
8.21	View-based access control model (VACM) feature	81
8.21.1	VACM feature definition	81
8.21.2	VACM feature data exchange requirements	81
9	Dialogues	82
9.1	General dialogue rules	82
9.1.1	Management station initiated	82
9.1.2	SNMP agent performance requirements	82
9.1.3	Generic and custom dialogues	82
9.2	Generic dialogues	83
9.2.1	Get elemental data	83
9.2.2	Set elemental data	83
9.2.3	Walk data	83
9.2.4	Get bulk data	83
9.2.5	Get tabular data	83
9.2.6	Set tabular data	83
9.2.7	Get data column	84
9.2.8	Get counters	84
9.2.9	Get data from dynamic table entry	84
9.2.10	Get row status of dynamic table entry	84
9.2.11	Configure entry of a dynamic table	85
9.2.12	Configure entry of a dynamic table with TestAndIncr	86
9.2.13	Toggle active status of a dynamic table entry	86
9.2.14	Delete entry from a dynamic table	87
9.2.15	Send a notification	87
9.2.16	Retrieve dynamic object data	87
9.2.17	Set dynamic object data	87
9.2.18	Retrieve a file	88
9.2.19	Generate a file	88
10	Security	88
10.1	Vulnerabilities	88
10.2	Authentication and access control	88
10.3	Encryption	89
10.4	Security recommendations	89
Annex A (informative) Conformance		90
Annex B (informative) Management information base (MIB) summary		93
Bibliography		95