Fast Ethernet Switch ES3528MV2

***Firmware Version 1.2.0.3***

**INTRODUCTION:**

The ES3528MV2 is a cost effective managed L2/L4 Fast Ethernet Standalone Switch. ES3528MV2 contains 24 Ethernet/Fast Ethernet ports (1-24) and 4 Combo-Giga ports\* (25-28).

The base hardware is a 1U height, 19” rack mountable metal enclosure. The switch can be managed either by in-band management via the network station remotely or out-of-band management via the console port (RS232) locally. An imbedded Web agent also provides management capability to any computer on the network via common HTTP browsers such as Netscape Navigator (Version 6.2 or above) or Microsoft’s Internet Explorer (Version 5.0 or above).

Local Console Management (LCM) allows the user to monitor and configure the ES3528MV2 from a VT-type terminal. LCM can be used to configure features such as SNMP community names and access rights, Port Enable/Disable, firmware downloads, and Device IP address as well as most other parameters. LCM can also provide statistical and diagnostic information about the entire device or an individual port.

Management of the switch is password protected; the same password is used for LCM and for the Web browser interface. Prior to accessing the Management Module via a network connection, a valid IP address, subnet mask, and in some cases a default gateway must be configured using an out-of-band connection or the BootP/DHCP protocol. The management option provides SNMP, RMON (4 groups: 1,2,3,9), and Web management for system control and statistical monitoring.

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| **It is recommended that one thoroughly review this release notes prior to the installation or upgrade of this product.** |

**Firmware Specification:**

Note :

TBD

|  |  |  |
| --- | --- | --- |
| **Firmware** | **Version** | **File Name** |
| Loader | 1.0.0.0 | ES3528mv2\_ld\_V1.0.0.0.bix |
| Software | 1.2.0.3 | ES3528MV2\_\_ph2\_V1.2.0.3.bix |

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| --- | --- | --- | --- |
| **Status** | **Version No.** | **Type** | **Release Date** |
| **Phase 2**  |  |   |  |
|  **Patch** |  **1.2.0.3** |  Patch | **12/10/2012** |
|  **Patch** |  **1.2.0.2** |  Patch | **11/19/2012** |
|  **Patch** |  **1.2.0.1** |  Patch | **10/09/2012** |
|  **Formal release** |  **2.0.0.0**  |  QA | **10/03/2012** |
| **Phase 1** |  |  |  |
|  **Patch** |  **1.0.0.1** |  Patch | **06/22/2012** |
|  **MP** | **1.0.0.0** |  QA | **01/18/2012** |

**HARDware compatibility:**

ALL

**BootPROM compatibility:**

ALL

**SUPPORTED FUNCTIONALITY:**

Phase 2 new functions : MLD snooping, DHCPv6 (option37), IPv6 Source Guard, NDSNP.

| **Category** | **Feature** | **Support** | **Priority** |
| --- | --- | --- | --- |
| **Monitor Environment** | Power Status | Yes | RTS |
| Layer 2 Features |  |
| Link Aggregation | 802.3ad with LACP | Yes1) Total 12 Trunks (including Cisco EtherChannel Like trunks 2) 2~8 port/trunk FE 3) 2 port/trunk GE | RTS |
| Cisco EtherChannel Linked | Yes1) Total 12 Trunks (including Cisco EtherChannel Like trunks 2) 2~8 port/trunk FE 3) 2 port/trunk GE | RTS |
| Unicast / Multicast traffic Balance over Trunking port | Yes1)Unicast : MAC SA/DA |  |
| VLAN | IEEE 802.1Q – Tag-based | Yes | RTS |
| IEEE 802.1Q – Port-based | Yes (4K VLANs) | RTS |
| IEEE 802.1Q – Mac-based | Yes  | RTS |
| IEEE 802.1Q – IP-based | Yes |  |
| GVRP/GARP | Yes | RTS |
| 802.1v – Protocol | Yes |  |
| voice VLAN | Yes  |  |
| Traffic Segmentation (Private VLAN Isolated) | YES  |  |
| Private Vlan (Community) | YES  |  |
| VLAN trunking | YES  |  |
| IPv6 VLANs (one type which protocol vlan SUPPORTED) | Yes |  |
| **4K (4092) VLANs** | **YES**  |  |
| Spanning Tree | IEEE 802.1D STP | Yes | RTS |
| IEEE 802.1s MSTP | Yes (32 instances) | RTS |
| IEEE 802.1w RSTP | Yes |  |
| Spanning Tree Fast Fording | Yes |  |
| Loop back detection | YES  |  |
| Auto edge port | YES  |  |
| BPDU filter/guard | YES  |  |
| Root guard | YES  |  |
| BroadCast Storm Control |  | YES ( bit/sec )1) per port rate control2) range: 64K bits/sec - 100M bits/sec3) resolution: 64K bits/sec4) No broadcast, B+M, B+M+DLF |  |
| IGMP Snooping | IGMP Snooping v1/v2 support | Yes (256 groups) |  |
| IGMP v1/v2 querier support | Yes |  |
| IGMP Immediate Leave | Yes |  |
| IGMP Filtering and throttling | Yes |  |
| IGMP snooping Leave Proxy | Yes |  |
| IGMP v1/v2/v3 Proxy | Yes |  |
| IGMP v3 snooping | Yes |  |
| MVR |  | Yes  |  |
| Jumbo Frame | 10K (only supported in Giga) | Yes |  |
| QinQ |  | Yes |  |
| **Selective QinQ** |  | **Yes** |  |
| **EAPS** |  | **No** |  |
| **Auto MDI/MDIX** | **Auto** |  |  |
| **Types of GBIC and SFP support** | **LX,SX,LH,FX,CWDM-SFP** |  |  |
| **G.8032 (ERPS)** | **Yes** |  |  |
| **Non-STP loopback detection** | **Yes** |  |  |
| **UDLD** | **Yes** |  |  |
| **Digital Diagnostic Monitoring** | **Yes** |  |  |
| QoS Features |  |
| Number of priority queue |  | Yes (8 queues/port) | RTS |
| Scheduling for priority queue | WRR Priority scheduling | Yes (Shaped Deficit WRR) |  |
| Strict Priority scheduling | YESOnce Strict Priority is selected, WRR can not wor |  |
| Hybrid(WRR + Strict) Priority scheduling | Yes |  |
| COS | 802.1p based COS | Yes (per system) |  |
| IP TOS Precedence based COS | No |  |
| IP DSCP based COS | DSCP only (per system) |  |
| TCP/UDP Port based COS | No |  |
| Rate Limiting | Ingress | YES1) Per Port-based2) FE:- 64K bits/sec ~ 100Mbits/sec- Resolution 64K bits/sec3) GE:- 64K bits/sec ~ 1000Mbits/sec- Resolution 64K bits/sec |  |
| Egress | YES1) Per Port-based2) FE:- 64K bits/sec ~ 100Mbits/sec- Resolution 64K bits/sec3) GE:- 64K bits/sec ~ 1000Mbits/sec- Resolution 64K bits/sec |  |
| DiffServ | 1 rate 3 colors | Yes |  |
| 2 rate 3 colors | Yes |  |
| Ingress and egress  | Yes |  |
| Security Features |  |
| Static/Dynami Pcort Security (MAC-based) |  | YES1) Per system: Total 1024 MAC2) Auto-learned support | RTS |
| 802.1x | Port-Based Authentication | YES1) Support Single host mode2) Single host mode: - Per port 1 MAC |  |
| Poer-Based | Yes |  |
| MAC-based Authentication | YES (Phase 3) |  |
| **Supplicant Support** | **Yes** 1) support Win XP2) support Win 2000 w/ SP43) support Win 95/98 w/ AEGIS |  |
| **Supplicator** | **Yes** |  |
| VLAN assignment | Yes |  |
| Guest VLAN | Yes |  |
| QoS assignment (w/o ACL profile) | YES  |  |
| EAPOL frames pass-through | YES  |  |
| QoS assignment w/ ACL profile | YES  |  |
| ACL | Number of rules | 512 (both standard and extended mode are supported)Plase 2 will extend to 1K. |  |
| L2/L3/L4 | YES1) L2 SA/DA MAC, VLAN based2) L3 IP SA/DA, subnet based3) L4 TCP/UDP port4) IPv6  |  |
| **Time-Based** | **Yes** |  |
| **Mirror** | **Yes** |  |
| **Ingress** | **Yes** |  |
| **Egress** | **Yes** |  |
| **Statistics** | **Yes (Only permit ACE could be showed, deny ACE can’t be showed because of chipset limitation)** |  |
| RADIUS authentication |  | YES1) Encryption: MD52) Multiple RADIUS Server: 5 servers |  |
| RADIUS authorization and accounting |  | Yes |  |
| TACACS+ authentication |  | YES1) Encryption: MD52) Single Server |  |
| TACACS+ authorization and accounting |  | Yes |  |
| TACACS+ 3.0 |  | No |  |
| MAC Based authentication |  | YES |  |
| HTTPS and SSL (Secured Web) |  | YES |  |
| SSH V1/V2.0 (Secured Telnet session) |  | YES |  |
| User name password authentication | Local authentication | YES |  |
| Remote authentication via RADIUS/TACACS+ | YES |  |
| Management Interface Access Filtering | SNMP | Yes |  |
| WEB | Yes |  |
| Telnet | Yes |  |
| Instruction lock (link detection) |  | YES  |  |
| MAC filter |  | YES  |  |
| Management Features |  |
| Cisco Like CLI |  | Yes | RTS |
| Terminal Setting |  | Yes |  |
| CLI Filtering |  | No |  |
| Multiple Management IP Interface |  | Yes |  |
| Web Based Management |  | Yes | RTS |
| Telnet Clinet |  | Yes  | RTS |
| Telnet server |  | Yes |  |
| Software Download | TFTP | Yes (opcode/loader,) | RTS |
| Xmodem | Yes | RTS |
| Diag support TFTP download | No |  |
| FTP | YES  |  |
| HTTP | YES  |  |
| Auto Upgrade | TFTP | YES  |  |
| Auto Upgrade | FTP | YES |  |
| Dual Image |  | Yes | RTS |
| Configuration Download | TFTP | Yes (multiple copies) | RTS |
| MIB I/II | RFC1213 | Yes |  |
| SNMP | V1 | Yes1) 5 SNMP community string2) 5 trap receivers | RTS |
| V2c | Yes1) 5 SNMP community string2) 5 trap receivers | RTS |
| V3 | Yes | RTS |
| RMON | RMON1(1,2,3,9 group) | Yes | RTS |
|  | RMON2 | Yes |  |
| BOOTP | Client | Yes | RTS |
| Relay | No | RTS |
| DHCP | Client | Yes | RTS |
| Relay | No (Phase 2)  | RTS |
| Snooping | Yes | RTS |
| Snooping option 82  | Yes | RTS |
| Server | No | RTS |
| dynamic provision (option 66,67) | YES  |  |
| **Option 82** | **YES**  |  |
|  | **Relay option 82** | **Yes** |  |
| IP Source Guard |  | Yes | RTS |
| Remote Port Mirror (RSPAN) |  | Yes |  |
| Port Mirroring |  | Yes (1Dst to manySrc mirroring) | RTS |
| Event/Error Log | Local Flash | Yes1) 512 entries2) 256Kbyte Flash | RTS |
| Remote server via System Log (RFC 3164) | Yes1) Cisco-like2) Support up to 5 servers | RTS |
| SMTP | Yes | RTS |
| DNS | Client | No | RTS |
| Proxy | No | RTS |
| OAM | IEEE 802.3ah | Yes |  |
|  | IEEE 802.1ag | Yes |  |
|  | Activate/Deactivate EFM OAM per port | Yes |  |
|  | Y.1731 | Yes |  |
| Remote Ping |  | Yes | RTS |
| SNTPV4(RFC2030) |  | Yes | RTS |
| NTP |  | Yes |  |
| IP Clustering |  | Yes (36 members) | RTS |
| LLDP(802.1ab) | Link Layer Discovery Protocol  | Yes |  |
|  | LLDP-MED (VoIP related) | Yes |  |
|  | IEEE 802.3at | No |  |
| UPnP |  | Yes |  |
| Mac Flush |  | Yes |  |
| sFlow |  | YES  |  |
| Dynamic ARP inspection (DAI) |  | YES  |  |
| Auto Traffic Control (ATC)  |  | Yes |  |
| PPPoE Intermediate Agent |  |  |  |
| VLAN mirror |  | YES  |  |
| MAC based mirror |  | YES  |  |
| ACL Mirror |  | YES  |  |
| Delay reload |  | YES  |  |
| CLI “show debug” |  | No |  |
| CLI “show tech” |  | YES  |  |
| CLI “show interfaces brief” |  | YES  |  |
| IPV6 Management (Telnet Service/ICMP V6) |  |  |  |
| Cable Diagnostics /TDR |  | YES  |  |
| Green Ethernet  |  | Yes (Combo ports only) |  |
| Port Utilization (kbits/sec, Pkts/sec, % Util in recent 300secs) |  | YES  |  |
| IPV6 Features |  |  |  |
| IPV6/IPV4 dual protocol stack |  |  |  |
| IPV6 Address Type | Unitcast |  |  |
|  | Multicast | This is only used internally ,not configurable |  |
| ICMPV6 |  | Yes |  |
| ICMPV6 Redirect (host) |  | Yes |  |
| IPV6 Path MTU Discovery |  | Yes |  |
|  | Router Discovery | YES  |  |
| IPV6 Neighor Discovery | Duplicated Address Detection | YES  |  |
|  | Static Cache Entry | No |  |
|  | Parameter Discovery | Yes |  |
|  | Prefix Discovery | YES  |  |
|  | Address Resolution | YES  |  |
|  | Unreachable Neighbor Detection | YES  |  |
|  | Redirect (Host) | YES  |  |
|  | Snooping | No |  |
| Statless Autoconfiguration |  | Yes |  |
| Manual Configuration |  | Yes |  |
| Generic Prefix |  | No |  |
| SMNP over IPV6 |  | Yes |  |
| HTTP over IPV6 |  | Yes |  |
| SSH over IPV6 |  | Yes |  |
| IPV6 Telnet Support |  | Yes |  |
| IPV6 DNS Resolver |  | Yes |  |
| IPV6 RADIUS Support |  | No |  |
| IPV6 TACACS+ Support |  | No |  |
| IPV6 Syslog Support |  | Yes |  |
| IPV6 SNTP Support |  | Yes |  |
| IPV6 SMTP Support |  | No |  |
| IPV6 TFTP Support |  | Yes |  |
| Remote IPV6 Ping |  | Yes |  |
| IPV6 sFlow |  | Yes |  |
|  | Client  | Yes |  |
|  | Server  | NO |  |
|  | Relay  | NO |  |
| DHCP6 | Snooping | Yes |  |
| MVR6 |  | Yes |  |
| IP6 Souce Gurad |  | Yes |  |
| RA Guard |  | Yes |  |
| MLD Snooping |  | Yes |  |
| IPV6 Features |  | Yes |  |
|  IPV6 QoS |  |  |  |
| IPV6 DSCP remapping Cos |  | Yes |  |
|  Security Feature  |  |  |  |
| IPV6 ACL |  | Yes |  |

**Installation and Configuration Notes:**

In general, the ES3528MV2 **Switch** will be shipped to you pre-configured with this version of firmware. If you would like to upgrade an existing ES3528MV2 **Switch,** please follow the TFTP download instructions that are included with your firmware image upgrade kit.

To download new firmware form a TFTP server, enter the IP address of the TFTP server, select “opcode” as the file type, then enter the source and destination file names. When the file has finished downloading, set the new file to start up the system, and then restart the switch. To start the new firmware, enter the “reload” command or reboot the system.

**CLI commands:**

Console#*copy tftp file*

TFTP server IP address: *192.168.1.23*

Choose file type:

1. config: 2. opcode: 4. diag: 5. loader: <1,2,4,5>: *2*

Source file name: *opcode.bix*

Destination file name: *opcode.bix*

\Write to flash programming.

Programming flash started.

Success.

Console#*config*

Console(config)#*boot system opcode:opcode.bix*

Console(config)#*exit*

Console#*reload*

**Firmware Changes and Enhancements:**

**Runtime V1.0.2.3 ; Loader 1.0.0.0**

|  |  |
| --- | --- |
| ES3528MV2-FLF-EC-00356 | [enhancement] add the DHCP snooping table binding table entry to 16 |
| ES3528MV2-FLF-EC-00355 | After config dhcp snooping for specific vlan, and then remove it, save config and reboot. CPU 100% |
| ES3528MV2-FLF-EC-00354 | mac-vlan setting can't be saved |
| ES3528MV2-FLF-EC-00353 | dhcpsnp trust port send untagged dhcp request/lease packet even if it's in trunk mode |
| ES3528MV2-FLF-EC-00351 | didn't configure arp inspection trust port, but ARP request from DHCP Snooping trust port still can be |
| ES3528MV2-FLF-EC-00350 | ES3528MV2 forwards all ARP packet sent from DHCP Snooping trusted port |
| ES3528MV2-FLF-EC-00332 | Diffserv:The Policy Map display on web is incorrect. |
| ES3528MV2-FLF-EC-00297 | Web: ACL TCAM Utilization doesn't have "%". It shall be added |

**Runtime V1.2.0.2 ; Loader 1.0.0.0**

|  |  |
| --- | --- |
| ES3528MV2-FLF-EC-00347 | [Enhancement] sflow upgrade from version 4 to version 5 |

**Runtime V1.2.0.1 ; Loader 1.0.0.0**

|  |  |
| --- | --- |
| ES3528MV2-FLF-EC-00340 | switch drops packet which with UDP source port 0 |

**Runtime V2.0.0.0 ; Loader 1.0.0.0**

**[Note : Phase II has added some enhancements]**

|  |  |
| --- | --- |
| ES3528MV2-FLF-EC-00271 | [Enhancement] Support NDSNP function |
| ES3528MV2-FLF-EC-00270 | [Enhancement] IPV6 Source Guard |
| ES3528MV2-FLF-EC-00268 | [Enhancement] Support G.8032v2 |
| ES3528MV2-FLF-EC-00264 | [enhancement] configure subnet mask friendly |
| ES3528MV2-FLF-EC-00263 | DHCPV6 -- option37 |
| ES3528MV2-FLF-EC-00262 | support DDM by SNMP |
| ES3528MV2-FLF-EC-00261 | enable MDLv2 Snooping, RFC4541 |
| ES3528MV2-FLF-EC-00244 | DHCP relay and snooping can't work at the same time |
| ES3528MV2-FLF-EC-00240 | MVR6: Muticast traffic of registered group which is input from receiver port should not be forwarded to source port |
| ES3528MV2-FLF-EC-00265 | receive dhcpv6 snooping causes error |
| ES3528MV2-FLF-EC-00344 | front port LED are not working |
|  |  |

**Runtime V1.0.0.1; Loader 1.0.0.0**

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| --- | --- |
| ES3528MV2-FLF-EC-00243 | When device enable dhcp relay and dhcp packets from trunking port, we will face exception message. |
| ES3528MV2-FLF-EC-00255 | have no way to set admin-key 4 for port-channel. |
| ES3528MV2-FLF-EC-00257 | If a port within a port channel, “show dot1x” will got failed information about this port. |
| ES3528MV2-FLF-EC-00259 | no any trunk information of spanning-tree in web interface. |
| ES3528MV2-FLF-EC-00260 | Switch stuck when I attempted to inject dhcpv6 packet to switch with dhcpv6 snooping. |
| ES3528MV2-FLF-EC-00266 | need to clear the command setting by snmp(alias) |
| ES3528MV2-FLF-EC-00267 | High CPU utilization after enabling switchport ingress-filtering function. |
| ES3528MV2-FLF-EC-00181 | SNMP: All LED cannot work as run SNMP-walk. |

**Runtime V2.0.0.0; Loader 1.0.0.0**

|  |  |
| --- | --- |
| ES3528MV2-FLF-EC-00255 | have no way to set admin-key 4 for port-channel |
| ES3528MV2-FLF-EC-00243 | When device enable dhcp relay and dhcp packets from trunking port, we will face exception message. |
| ES3528MV2-FLF-EC-00271 | [Enhancement] Support NDSNP function |
| ES3528MV2-FLF-EC-00270 | [Enhancement] IPV6 Source Guard |
| ES3528MV2-FLF-EC-00268 | [Enhancement] Support G.8032v2 |
| ES3528MV2-FLF-EC-00263 | DHCPV6 -- option37 |
| ES3528MV2-FLF-EC-00261 | enable MDLv2 Snooping, RFC4541 |

**modifications:**

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**Known Bugs and Issues:**

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Any other problems than those listed above should be reported to our Technical Support Staff.

**Known RESTRICITIONS AND Limitations:**

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**IEEE Standards Support:**

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| --- | --- |
| **Standard** | **Title** |
| IEEE 802.1D | Transparent Bridging Specifications (ISO/IEC 10038) |
| IEEE 802.1p | Traffic Class Expediting and Dynamic Multicast Filtering |
| IEEE 802.1Q | Virtual Bridged Local Area Networks |
| IEEE 802.1w | Rapid Spanning Tree |
| IEEE 802.2 | Local Area Networks, Logical Link Control (LLC) |
| IEEE 802.3 | CSMA/CD 9 (ISO/IEC 8802-3) |
| IEEE 802.3I | 10Base-T (ISO/IEC 8802-3, clause 14) |
| IEEE 802.3u | 100Base-TX (ISO/IEC 8802-3, clause 25) |
| IEEE 802.3x | Flow Control |
| IEEE 802.3z | 1000Base-SX, 1000Base-LX |
| IEEE 802.3ab | 1000Base-TX |
| IEEE 802.3ac | VLAN Tag |
| IEEE 802.3ad | Link Aggregation |
| IEEE 802.1X | Port-based Network Access Control |

**IETF Standards MIB Support:**

|  |  |  |
| --- | --- | --- |
| **RFC No.** | Title | **Groups Supported** |
| 1907 | SNMPv2-MIB (MIB II) | - system group ( 1-9)- snmp group (1-6, 8-22, 24-32) |
| 2011 | IP-MIB (MIB-II) | - ip group (1-20, 22-23)- icmp group (1-26) |
| 2012 | TCP-MIB (MIB-II) | - tcp group (1-15) (tcpConnTable only support read.) |
| 2013 | UDP-MIB (MIB-II) | - udp group (1-5) |
| IEEE802.1X MIB | IEEE8021-PAE-MIB | - dot1xPaeSystem (1-2)- dot1xPaeAuthenticator (1-3) (not support per-port timer setting) |
| 1493 | Bridge MIB | - dot1dBase group (1-4)- dot1dStp group (1-15)- dot1dTp group (1-4)- dot1dStatic group (1) |
| 2863 | Interfaces Evolution MIB (IF-MIB) | - interface group (1-2) (ifadminStatus not support set to 3(testing))- ifXTable group (1)- ifStackTable group (1) (support read-only) |
| 2819 | RMON MIB | - statistics group (1)- history group (1-2)- alarm group (1)- event group (1-2) |
| 2618 | RADIUS MIB | - radiusAuthClientMIB (1) |
| 2665 | Etherlike MIB | - dot3StatsTable group (1-19) |
| 2737 | Entity MIB | - entityPhysical group (1-16) (support read-only) |
| 2674 | P-bridge | - dot1dExtBase group (1-4)- dot1dPriority group (1,3)- dot1dGarp group (1) |
| 2674 | Q-bridge | - dot1qBase group (1-5)- dot1qTp group (1-2)- dot1qStatic group(1)- dot1qVlan (1-5) (9-10) |

**ES3528MV2 Private Enterprise MIB Support:**

|  |  |
| --- | --- |
| **Title** | Version |
|  |  |

**SNMP Trap Support:**

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| --- | --- |
| **RFC No.** | **Title** |
| RFC 1215 | ColdStart (v1)warmStart (v1)linkDown (v1)linkUp (v1)authenticationFailure (v1) |
| Rfc 1907 | coldStart (v2c)warmStart (v2c)authenticationFailure (v2c) |
| Rfc 2863 | linkDown (v2c)linkUp (v2c) |
| RFC 1493 | newRoot (v1)topologyChange (v1) |
| Rfc 1757 | risingAlarm (v1)fallingAlarm (v1) |
| RFC 2819 | risingAlarm (v2c)fallingAlarm (v2c) |

**Customer Support:**

By Phone:

By Email:

By Web:

By Fax: