

Configure Digital Output on RobustOS

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Chapter 1 Introduction

1.1 Overview

RobustOS (hereinafter referred to as “the ROS”) is a new operating system for Robustel's IoT gateway released in 2015. It is a modular and open software platform which could support third party development based on SDK/API. Meanwhile, it supports different routing and VPN protocols for different application scenarios. This newer platform provides a different web configuration interface than the existing platform.

R3000 provides two digital inputs (DI) and two digital outputs (DO), which meet the application requirements of supervisory control and monitoring system. The R3000 supports DO to trigger alarm via trigger DI firstly, and the R3000 will trigger SMS alarm notification.

This application note shows customer how to configure and test DO alarm for R3000 via SMS.

This application note applies to the ROS firmware of R2000 and R3000. However, the followings will take R3000 as an example

1.2 Parts Used

Hardware requirements:

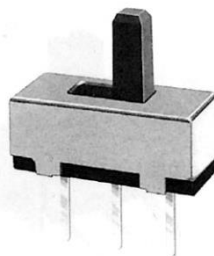
- Robustel Go Rugged R3000 router
- SIM card supporting SMS and voice call function
- Mobile phone supporting SMS and voice call function
- Two 10K resistors, two LEDs, two slide switches, one wire



10K resistor



LED



slide switch



copper wire

1.3 Assumptions

This application note has been written by technically competent engineer who is familiar with the Robustel products and the application requirements.

This application note is based on:

- Product model: Robustel GoRugged R3000, an industrial cellular VPN router
- Firmware version: R3000_ROS_V2.0.3
- Configuration: This application note assumes the Robustel products are set to their factory defaults. Most of configuration steps are only shown if they are different from the factory default settings.

^ System Information	
Device Model	R3000
System Uptime	0 days, 01:13:45
System Time	Mon Mar 6 16:28:48 2017
Firmware Version	2.0.3 (Rev 479)
Hardware Version	1.2
Kernel Version	4.1.0
Serial Number	

1.4 Rectifications

Requests for corrections or rectifications to this application note will be appreciated, and if there are any request for new application notes please email to: support@robustel.com.

1.5 Version

Updates between document versions are cumulative. Therefore, the latest document version contains all updates made to previous versions.

Release Date	Firmware Version	Change Description
2017-04-07	v.1.0.0	Initial Release

Chapter 2 Topology

Connect two 10K resistors, two LEDs, two slide switches and serial electric line to the terminal connector (refer to the connection diagram below and **section 1.2**).

Connect “12VDC” to power input (whose standard power input is 12VDC), and use a serial electric line to connect “GND” to “V-” (GND of 12VDC power).

Regarding the DO feature in the practical use, you may use other external power supply rather than the power supply of R3000, but remember to connect the ground of the external power supply to the pin marked “GND”.

Note: Please check the interface of R3000, you can find “V-” easily at one of the pin of power input connector.

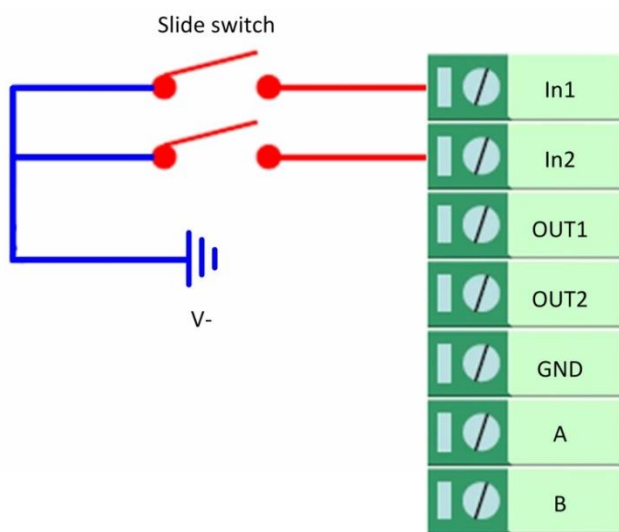


Figure 2.1 DI Connection

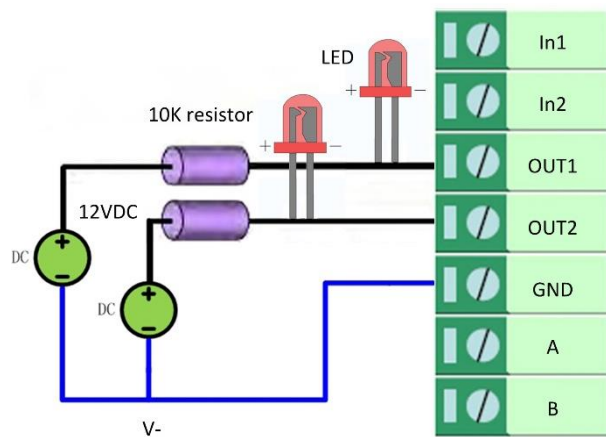


Figure 2.2 DO Connection

1. Connection diagram of DI
 - Slide the switch between pin In1\In2 and V-. For testing, all we need to do is to change the electric level of pin In1 and In2 (DI).
2. Connection diagram of DO
 - 12VDC power supply --> 10K resistor --> LED --> pin Out1\Out2.
 - Pin GND connect to V-.

Chapter 3 Configuration

3.1 Configure Link Manager

1. Follow these steps before configuring the router:
 - Attach the external antenna to the router's connector and twist tightly
 - Insert the SIM card into the router
 - Connect the power supply correctly
 - Log in the Web GUI of the router



You need to know the following factory settings before you have logged in the Web GUI.

Item	Description
Username	Admin
Password	Admin
Eth0	192.168.0.1/255.255.255.0, LAN mode
Eth1	192.168.0.1/255.255.255.0, LAN mode
DHCP Server	Enabled

2. Browse to **Interface > Link Manager**.
 - Click the drop down list of "Primary Link" and select "WWAN1".
 - Click "Submit".
 - Click "Save & Apply".

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Save & Apply | Reboot | Logout

Link Manager IP Tracker Status

General Settings

Primary Link WWAN1

Backup Link None

Emergency Reboot ON OFF

Link Settings

Index	Type	Description	Connection Type
1	WWAN1		DHCP
2	WWAN2		DHCP
3	WAN		Static

Submit Cancel

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Item	Description	Setting
Primary Link	Select “WWAN1”, “WWAN2” or “WAN” as the primary connecting interface.	WWAN1

3.2 Configure Cellular WAN

- Browse to **Interface > Link Manager > Link Settings**.
 - Click the edit button of “WWAN1”.
 - Enter the related parameters in the “WWAN Settings” window.
 - Enter the related parameters in the “Ping Detection Settings” window.
 - Click “Submit”.
 - Click “Save & Apply”.

The screenshot shows the RobustOS Link Manager interface. The top navigation bar includes 'Save & Apply', 'Reboot', and 'Logout'. The left sidebar has tabs for 'Status', 'Interface', 'Network', and 'VPN'. The 'Interface' tab is selected, showing a list of interfaces: LAN, Ethernet, Cellular, and WiFi. The 'Link Manager' tab is active, displaying 'General Settings' and 'Link Settings'.

General Settings:

- Primary Link: WWAN1
- Backup Link: None
- Emergency Reboot: OFF

Link Settings:

Index	Type	Description	Connection Type
1	WWAN1		DHCP
2	WWAN2		DHCP
3	WAN		Static

2. The window is displayed as below when enabling the “Automatic APN Selection” option.

The screenshot shows the RobustOS Link Manager interface with the 'Link Manager' tab selected. The 'General Settings' section is expanded, showing 'Index 1' and 'Type WWAN1'. The 'WWAN Settings' section is also expanded, showing various configuration options. The 'Automatic APN Selection' option is highlighted with a red box and is set to 'ON'.

General Settings:

- Index: 1
- Type: WWAN1
- Description:

WWAN Settings:

- Automatic APN Selection: ON
- Dialup Number: *99***1#
- Authentication Type: Auto
- Aggressive Reset: ON
- Switch SIM By Data Allowance: OFF
- Data Allowance: 0
- Billing Day: 1

Item	Description	Setting
Dialup Number	Set the dialup number for cellular dial-up connection, provided by local ISP.	*99***1#
Data Allowance	Set the monthly data traffic limitation.	0
Billing Day	Specify the monthly billing day, and the data traffic statistics will be recalculated from this day.	1

3. The window is displayed as below when disabling the “Automatic APN Selection” option.

The screenshot shows the 'Link Manager' window with the 'General Settings' and 'WWAN Settings' tabs. In the 'WWAN Settings' tab, the 'Automatic APN Selection' toggle is highlighted with a red box and set to 'OFF'. Other settings include:

- Index: 1
- Type: WWAN1
- APN: internet
- Username: admin
- Password: ****
- Dialup Number: *99***1#
- Authentication Type: Auto
- Aggressive Reset: ON
- Switch SIM By Data Allowance: OFF
- Data Allowance: 0

Buttons for 'Submit' and 'Close' are at the bottom right.

Item	Description	Setting
APN	Enter the Access Point Name for cellular dial-up connection, provided by local ISP.	internet
Username	Enter the username for cellular dial-up connection, provided by local ISP.	Null
Password	Enter the password for cellular dial-up connection, provided by local ISP.	Null

The screenshot shows the 'Ping Detection Settings' window. The 'Enable' toggle is set to 'ON'. Other settings include:

- Primary Server: 8.8.8.8
- Secondary Server: (empty)
- Interval: 10
- Retry Interval: 3
- Timeout: 1
- Max Ping Tries: 1

Help icons (?) are present next to the Interval, Retry Interval, Timeout, and Max Ping Tries fields.

Item	Description	Setting
Primary Server	Router will ping this primary address/domain name to check if the current connectivity is active.	8.8.8.8
Secondary Server	Router will ping this secondary address/domain name to check if the current connectivity is active.	Null
Interval	Set the ping interval.	10

Retry Interval	Set the ping retry interval.	3
Timeout	Set the ping timeout.	1
Max Ping Tries	Switch to another link or take emergency action if max continuous ping tries reached.	1

3.3 Configure DI Alarm

Browse to **Interface > DIDO > DI**.

- Click the edit button in the “DI Settings” window.

The screenshot shows the RobustOS web interface. The left sidebar has a menu with 'Interface' expanded, showing 'Link Manager', 'LAN', 'Ethernet', 'Cellular', 'WiFi', 'USB', 'DIDO' (highlighted with a red box), and 'Serial Port'. The main content area has tabs for 'DI', 'DO', and 'Status'. The 'DI' tab is selected. Below the tabs is a 'DI Settings' section with a table:

Index	Enable	Mode	Inversion
1	false	ON-OFF	false
2	false	ON-OFF	false

The 'Edit' icon (pencil) in the right column of the first row is highlighted with a red box. At the bottom right of the 'DI Settings' section are 'Submit' and 'Cancel' buttons. A yellow banner at the top of the main content area reads: 'It is strongly recommended to change the default password.'

- Click the toggle button as “ON” to enable the DI.
- Choose the mode as “ON-OFF”.
- Click “Submit”.

DI

^ General Settings

Index

1

Enable

ON OFF

Mode

ON-OFF v

Inversion

ON OFF

Submit

Close

Item	Description	Setting
Enable	Click the toggle button to enable/disable this DI.	ON
Mode	Select from "ON-OFF" or "Counter". - ON-OFF: DI interface support "ON" and "OFF" mode (high or low level electrical) trigger DI alarm. The mode default to "ON", and "OFF" mode is available only when enable inversion feature - ON—Under this mode, DI alarm status will be triggered to "ON" when DI interface open from GND or input a high level electrical (logic 1), on the contrary DI alarm status will be triggered to "OFF" when DI interface connect to GND or input a low level electrical (logic 0). - OFF—Under this mode, DI alarm status will be triggered to "ON" when DI interface connect to GND or input a low level electrical (logic 0), on the contrary DI alarm status will be triggered to "OFF" when DI interface open from GND or input a high level electrical (logic 1). - Counter: Event counter mode	ON-OFF
Inversion	Enable to set DI mode as OFF mode	OFF
Threshold Value	Set the threshold vale. It will trigger alarm when event counter reaches this figure. After triggering alarm, DI will keep counting but not trigger alarm again. Enter 0 to 65535 digits. (0=will not trigger alarm) Note: This option is only available when DI under the "Counter" mode.	NULL

3.4 Configure DO Alarm

1. Browse to **Interface > DIDO > DO**.
- Click the edit button in the “DO Settings” window.

The screenshot shows the RobustOS web interface. The top navigation bar includes the Robustel logo, a password change notification, and links for 'Save & Apply', 'Reboot', and 'Logout'. The left sidebar contains a menu with 'Status', 'Interface', 'Network', 'VPN', 'Services', and 'System'. Under 'Interface', there are sub-items: 'Link Manager', 'LAN', 'Ethernet', 'Cellular', 'WiFi', 'USB', 'DIDO' (highlighted with a red box), and 'Serial Port'. The main content area has three tabs: 'DI', 'DO' (highlighted with a red box), and 'Status'. The 'DO Settings' section is active, displaying a table with columns: Index, Enable, Alarm On Action, Alarm Off Action, Initial State, and Alarm Source. The table contains two rows: Index 1 (DI1 Alarm) and Index 2 (DI2 Alarm), both with 'Enable' set to 'false'. Each row has an edit icon (pencil) in the rightmost column, with the first one highlighted by a red box. At the bottom right of the table area are 'Submit' and 'Cancel' buttons. The footer text reads: 'Copyright © 2015 Robustel Technologies. All rights reserved.'

Index	Enable	Alarm On Action	Alarm Off Action	Initial State	Alarm Source
1	false	High	Low	Last	DI1 Alarm
2	false	High	Low	Last	DI2 Alarm

- Click the toggle button as “ON” to enable the DO.
- Choose “DI 1 Alarm” as Alarm source.
- Click “Submit”.

DO

^ General Settings

Index

Enable ☒ ON ☐ OFF

Alarm On Action

Alarm Off Action

Initial State

Delay ?

Hold Time ?

Alarm Source

Submit Close

Item	Description	Setting
Enable	Click the toggle button to enable/disable this DO.	ON
Alarm On Action	Digital Output initiates when there is an alarm. Selected from "High", "Low" or "Pulse". - High: a high electrical level output - Low: a low electrical level output - Pulse: Generates a square wave as specified in the pulse mode parameters when triggered	High
Alarm Off Action	Digital Output initiates when alarm removed. Selected from "High", "Low" or "Pulse". - High: a high electrical level output - Low: a low electrical level output - Pulse: Generates a square wave as specified in the pulse mode parameters when triggered	Low
Initial State	Specify the Digital Output status when powered on. Selected from "Last", "High" or "Low". - Last: DO's status will consist with the status of last power off - High: DO interface is in high electrical level - Low: DO interface is in low electrical level	Last
Delay	Set the delay time for DO alarm start-up. The first pulse will be generated after a "Delay". Enter from 0 to 30000ms. (0=generate pulse without delay)	0
Hold Time	Set the hold time of DO status (Alarm On Action/Alarm Off Action). When the action time reach this specified time, DO will stop the action. Enter from 0 to 255 seconds. (0=keep on until the next action)	0
Low-level Width	Set the low-level width. It is available when enabling Pulse as "Alarm On Action/Alarm Off Action". In Pulse Output mode, the	10

Configure Digital Output on RobustOS

	selected digital output channel will generate a square wave as specified in the pulse mode parameters. The low level widths are specified here. Enter from 1 to 30000 ms.	
High-level Width	Set the high-level width. It is available when enabling Pulse as "Alarm On Action/Alarm Off Action". In Pulse Output mode, the selected digital output channel will generate a square wave as specified in the pulse mode parameters. The high level widths are specified here. Enter from 1 to 30000 ms.	10
Alarm Source	Digital Output initiates according to different alarm source. Selected from "DI1 Alarm", "DI2 Alarm". DI1/DI2 Alarm: Digital Output triggers the related action when there is alarm from Digital Input.	DI1 Alarm

- Click "Save & Apply".

robustel Save & Apply Reboot Logout

⚠ It is strongly recommended to change the default password.

Status **DI** **DO** **Status**

Interface

- Link Manager
 - LAN
 - Ethernet
 - Cellular
 - WiFi
 - USB
- DIDO**
 - Serial Port

Network

VPN

Services

System

DO Settings

Index	Enable	Alarm On Action	Alarm Off Action	Initial State	Alarm Source
1	true	High	Low	Last	DI1 Alarm
2	false	High	Low	Last	DI2 Alarm

Submit **Cancel**

Configuration successfully submitted. Changes will be saved and effective after clicking the 'Save&Apply' button.

2. Check the status of DI and DO.

The screenshot displays the RobustOS web interface. At the top, there is a navigation bar with the Robustel logo, a notification banner stating "It is strongly recommended to change the default password.", and links for "Save & Apply", "Reboot", and "Logout".

On the left side, there is a sidebar menu with the following categories:

- Status** (highlighted in green)
- Interface**
 - Link Manager
 - LAN
 - Ethernet
 - Cellular
 - WiFi
 - USB
 - DIDO** (highlighted with a red box)
 - Serial Port
- Network**
- VPN**
- Services**
- System**

The main content area is titled "Status" and contains three tabs: "DI", "DO", and "Status" (highlighted with a red box). Below the tabs, there are three sections:

- DI Status**: A table with columns "Index", "Level", "Status", and "Count".

Index	Level	Status	Count
1	Low	Alarm off	0
2	High	Alarm off	0
- Action Of Clear**: Two buttons labeled "Clear" for "Counter Alarm Of DI 1" and "Counter Alarm Of DI 2".
- DO Status**: A table with columns "Index", "Level", "Low-level Width", and "High-level Width".

Index	Level	Low-level Width	High-level Width
1	Low		
2	Low		

At the bottom of the interface, a copyright notice reads: "Copyright © 2015 Robustel Technologies. All rights reserved."

3.5 Configure SMS

1. Browse **Service > Event-> Notification**.
- Click the add button in the “Event Notification Group Settings” window.



- Click the toggle button to enable the “Send SMS” option, and enter the phone number which can inform the status of DI alarm.

Notification

^ General Settings

Index

1

Description

Send SMS

ON

OFF

Phone Number

+8618819497513

Enter the phone number

Send Email

ON

OFF

Save to NVM

ON

OFF

?

^ Event Selection

System Startup

ON

OFF

System Reboot

ON

OFF

System Time Update

ON

OFF

Configuration Change

ON

OFF

Cellular Network Type Change

ON

OFF

Cellular Data Stats Clear

ON

OFF

Submit

Close

- Click the toggle buttons as below, and click “Submit”.

Notification

LAN Port Link Down

ON

OFF

USB Device Connect

ON

OFF

USB Device Remove

ON

OFF

DDNS Update Success

ON

OFF

DDNS Update Fail

ON

OFF

Received SMS

ON

OFF

SMS Command Execute

ON

OFF

DI 1 ON

ON

OFF

DI 1 OFF

ON

OFF

DI 1 Counter Overflow

ON

OFF

DI 2 ON

ON

OFF

DI 2 OFF

ON

OFF

DI 2 Counter Overflow

ON

OFF

Submit

Close

Chapter 4 Testing

The whole methods of DI test are listed as below:

If the slide switch 1 connecting to In1 turns on, it will trigger DI alarm. DO will connect to GND (which has connected to V-), and then LED will be lit up and send the message “DI 1 ON, Alarm on” to the preset phone number. If the slide switch 1 recovers to original status (Open status), it will trigger DI alarm. DO will disconnect to GND (which has disconnected to V-), and then LED will be put out and send the message “DI 1 OFF, Alarm off” to the preset phone number.

Note: For more connection details, refer to the application topology.

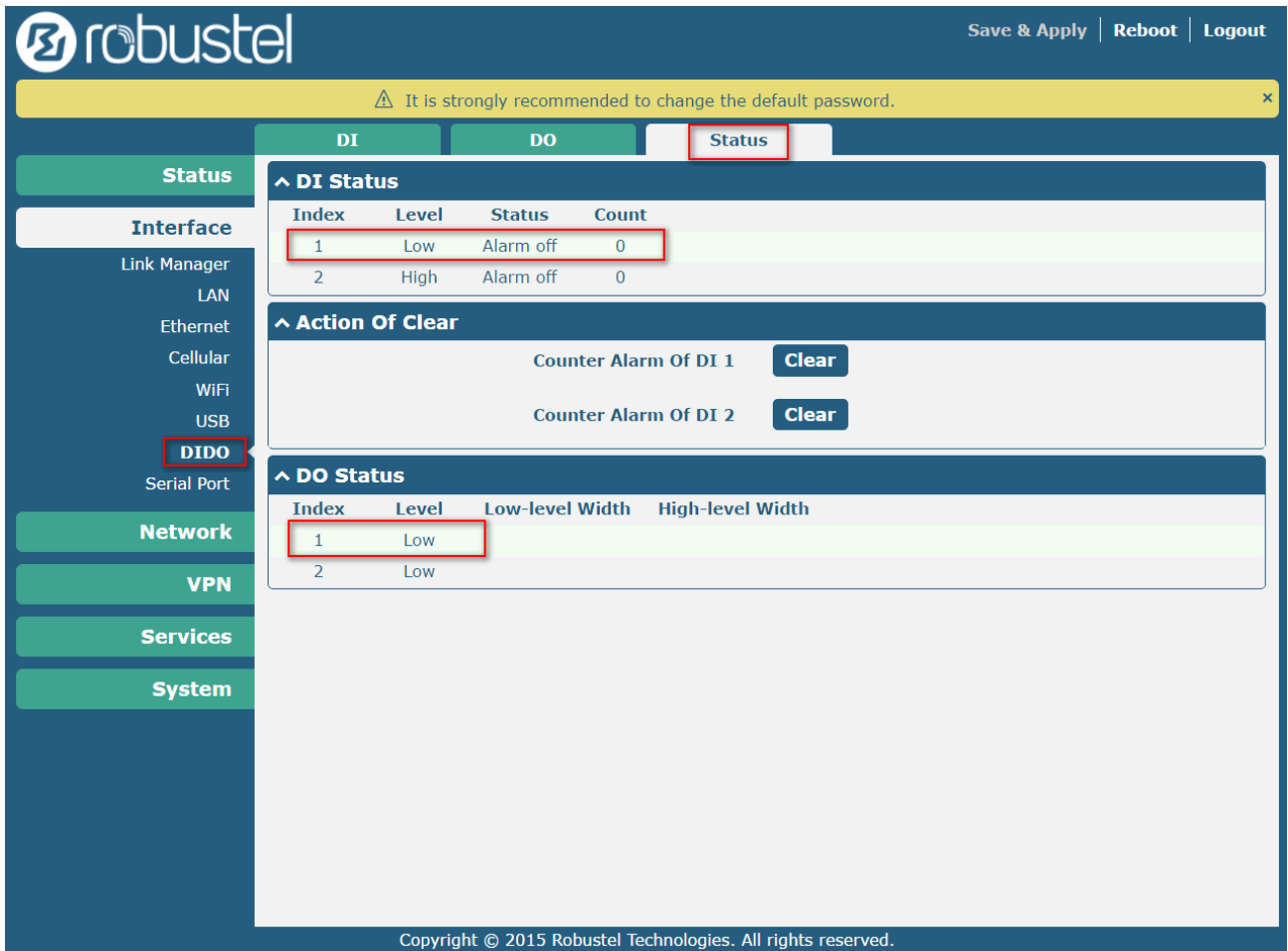
4.1 Network Status

1. Click “Status” bar.
2. Check whether the ROS has obtained the assigned static IP address.
3. Check whether the ROS has used SIM card to register to network, dial up to get IP address and access the Internet.

^ Internet Status	
Active Link	WWAN1
Uptime	0 days, 00:08:53
IP Address	10.159.210.139/255.255.255.248
Gateway	10.159.210.140
DNS	210.21.4.130 221.5.88.88

4.2 DO trigger Alarm

1. Browse to **Interface > DIDO > Status**, and make sure that the DI Alarm status is “Alarm off”.



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Save & Apply | Reboot | Logout

It is strongly recommended to change the default password.

DI DO **Status**

Status

Interface

- Link Manager
- LAN
- Ethernet
- Cellular
- WiFi
- USB
- DIDO**
- Serial Port

Network

VPN

Services

System

DI Status

Index	Level	Status	Count
1	Low	Alarm off	0
2	High	Alarm off	0

Action Of Clear

Counter Alarm Of DI 1 **Clear**

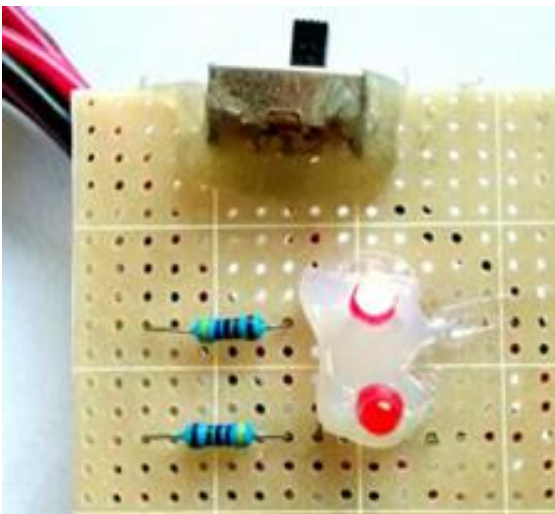
Counter Alarm Of DI 2 **Clear**

DO Status

Index	Level	Low-level Width	High-level Width
1	Low		
2	Low		

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2. If the slide switch 1 turns on, R3000 will trigger the Alarm and LED will be lit up, then send the message “DI 1 ON, Alarm on” to the specified phone number.



[Save & Apply](#)
[Reboot](#)
[Logout](#)

Status

Interface

Link Manager

LAN

Ethernet

Cellular

WiFi

USB

DIDO

Serial Port

Network

VPN

Services

System

DI

DO

Status

^ DI Status

Index	Level	Status	Count
1	High	Alarm on	0
2	High	Alarm off	0

^ Action Of Clear

Counter Alarm Of DI 1

Clear

Counter Alarm Of DI 2

Clear

^ DO Status

Index	Level	Low-level Width	High-level Width
1	High		
2	Low		

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- If the slide switch 1 recovers to original status, the DI Alarm status will change back to Alarm off and send the message "DI 1 OFF, Alarm off" to the specified phone number.

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 Save & Apply | Reboot | Logout

It is strongly recommended to change the default password.

Status

Interface

- Link Manager
 - LAN
 - Ethernet
 - Cellular
 - WiFi
 - USB
- DIDO**
 - Serial Port

Network

VPN

Services

System

DI | DO | Status

^ DI Status

Index	Level	Status	Count
1	Low	Alarm off	0
2	High	Alarm off	0

^ Action Of Clear

Counter Alarm Of DI 1 **Clear**

Counter Alarm Of DI 2 **Clear**

^ DO Status

Index	Level	Low-level Width	High-level Width
1	Low		
2	Low		

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4. Browse to **Service > Event > Query** and check the event details.

The screenshot displays the RobustOS web interface. The top navigation bar includes the Robustel logo, a yellow warning banner stating "It is strongly recommended to change the default password.", and links for "Save & Apply", "Reboot", and "Logout". The left sidebar contains a menu with categories: Status, Interface, Network, VPN, Services, and System. The "Services" category is expanded, showing sub-items: Syslog, Event, NTP, SMS, Email, SSH, GPS, Scalenics, Modbus Master, Web Server, and Advanced. The "Event" sub-item is selected. The main content area is titled "Event Details" and features tabs for "Event", "Notification", and "Query". The "Event" tab is active. Within this tab, there are controls for "Save Position" (set to "RAM") and "Filtering". A list of events is displayed, with the following entries highlighted by a red box:

- Jan 22 15:32:22, system startup
- Jan 22 15:32:24, WAN up
- Jan 22 15:33:26, WWAN (cellular) up, WWAN1, ip=10.159.210.139
- Mar 28 15:42:21, system time update
- Mar 28 15:45:59, configuration change, via web manager
- Mar 28 15:47:16, DI 1 ON, Alarm on
- Mar 28 15:47:57, DI 1 OFF, Alarm off

At the bottom right of the event list, there are "Clear" and "Refresh" buttons. The footer of the page reads "Copyright © 2015 Robustel Technologies. All rights reserved."

4.3 Event/Log

Event/Log shows the running process and the ROS status. Only the information that specifically relate to the configuration above will be explained below.

The screenshot shows the RobustOS web interface. The left sidebar contains navigation links: Status, Interface, Network, VPN, Services, System, Debug, Update, App Center, Tools, Profile, and User Management. The main content area is titled 'Syslog' and 'Syslog Details'. It features a 'Log Level' dropdown set to 'Debug' and a 'Filtering' input field. Below these is a scrollable list of syslog messages. At the bottom of the log list are buttons for 'Manual Refresh', 'Clear', and 'Refresh'. Below the log list is a section for 'Syslog Files'.

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Jan 22 15:32:21 router syslog.info syslogd started: BusyBox v1.22.1

Jan 22 15:32:21 router user.notice init[1]: version 2.9.1 (Rev 583), built at 15:32:18 Jan 22 2017

Jan 22 15:32:22 router user.notice eventd[714]: eventd started

Jan 22 15:32:22 router user.notice init[1]: dnsmasq started for interface lan0

Jan 22 15:32:22 router user.notice link_manager[726]: link manager started

Jan 22 15:32:23 router user.info link_manager[726]: there is no need to switch link (WWAN1:00 - WAN Static:00)

Jan 22 15:32:23 router user.debug link_manager[726]: rcv action connect from link_manager

Jan 22 15:32:23 router user.debug link_manager[726]: target link WWAN1, state Disconnected

Jan 22 15:32:23 router user.info link_manager[726]: WWAN1 start connect

Jan 22 15:32:23 router user.info link_manager[726]: WWAN1 is not ready, waiting for initialization

Jan 22 15:32:23 router user.debug link_manager[726]: rcv action connect from link_manager

Jan 22 15:32:23 router user.debug link_manager[726]: target link WAN Static, state Disconnected

Jan 22 15:32:23 router user.info link_manager[726]: WAN Static start connect

Jan 22 15:32:24 router user.debug link_manager[726]: rcv action connected from link_manager

Jan 22 15:32:24 router user.debug link_manager[726]: target link WAN Static, state Connecting

Jan 22 15:32:24 router user.info link_manager[726]: WAN Static connected

Jan 22 15:32:25 router user.notice init[1]: firewall started

Jan 22 15:32:26 router user.debug init[1]: set RTC time: 2017-01-22 15:32:26

```
Jan 22 15:32:26 router user.err init[1]: rtc write second error{No such device or address}^M
Jan 22 15:32:26 router user.notice modemd[839]: modem service started
Jan 22 15:32:27 router user.notice link_manager[726]: backup link (WAN Static) up
Jan 22 15:32:27 router user.info link_manager[726]: there is no need to switch link (WWAN1:00 - WAN Static:00)
Jan 22 15:32:27 router user.notice init[1]: telnet started
Jan 22 15:32:27 router user.debug ssh[848]: generate sshd configuration file successful.
Jan 22 15:32:28 router user.notice modemd[839]: modem had been on before modemd start, going to reset modem
Jan 22 15:32:28 router user.debug modemd[839]: try modem reset
Jan 22 15:32:28 router user.debug ssh[848]: sshd started
Jan 22 15:32:29 router user.debug mtd_check[625]: mtd(firmware-bak) check passed
Jan 22 15:32:29 router user.debug init[1]: handle services on backup link up
Jan 22 15:32:30 router user.notice init[1]: firewall stopped
Jan 22 15:32:32 router user.notice init[1]: firewall started
Jan 22 15:32:34 router user.debug modemd[839]: try shut down modem
Jan 22 15:32:43 router user.debug modemd[839]: try power off modem
Jan 22 15:32:44 router user.notice qmi[916]: QMI stopping...
Jan 22 15:32:44 router user.err qmi[916]: Failed to subscribe for LURejectCallback
Jan 22 15:32:44 router user.err qmi[916]: Failure Code : 59650
Jan 22 15:32:47 router user.notice qmi[916]: slqssdk stopped
Jan 22 15:32:47 router user.info modemd[839]: SIGTERM received
Jan 22 15:32:47 router user.debug modemd[839]: modemd exit
Jan 22 15:32:48 router user.notice modemd[1101]: modem service started
Jan 22 15:32:48 router user.warn modemd[1108]: modemd already running!
Jan 22 15:32:48 router user.info modemd[1101]: modem initialization start, using SIM1
Jan 22 15:33:05 router user.debug modemd[1101]: ATZ
Jan 22 15:33:05 router user.debug modemd[1101]: ATZ^M
Jan 22 15:33:05 router user.debug modemd[1101]: OK
Jan 22 15:33:05 router user.debug modemd[1101]: ATE0
Jan 22 15:33:06 router user.debug modemd[1101]: ATE0^M
Jan 22 15:33:06 router user.debug modemd[1101]: OK
Jan 22 15:33:06 router user.debug modemd[1101]: AT+GMM
Jan 22 15:33:06 router user.debug modemd[1101]: MC7304
Jan 22 15:33:06 router user.debug modemd[1101]: OK
Jan 22 15:33:06 router user.debug modemd[1101]: AT+GSN
Jan 22 15:33:06 router user.debug modemd[1101]: 356853050207937
Jan 22 15:33:06 router user.debug modemd[1101]: OK
Jan 22 15:33:06 router user.debug modemd[1101]: AT+CGMR
Jan 22 15:33:06 router user.debug modemd[1101]: SWI9X15C_05.05.58.00 r27038 carmd-fwbuild1 2015/03/04 21:30:23
Jan 22 15:33:06 router user.debug modemd[1101]: OK
Jan 22 15:33:06 router user.debug modemd[1101]: AT+CPIN?
Jan 22 15:33:07 router user.debug modemd[1101]: +CPIN: READY
Jan 22 15:33:07 router user.debug modemd[1101]: OK
Jan 22 15:33:07 router user.debug modemd[1101]: AT+CGREG=2;!BAND=0;!ENTERCND="A710"
Jan 22 15:33:07 router user.debug modemd[1101]: OK
Jan 22 15:33:07 router user.debug modemd[1101]: AT!SELRAT=0
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Jan 22 15:33:07 router user.debug modemd[1101]: OK
Jan 22 15:33:07 router user.debug modemd[1101]: AT!BAND=0
Jan 22 15:33:07 router user.debug modemd[1101]: OK
Jan 22 15:33:07 router user.debug modemd[1101]: AT+CIMI
Jan 22 15:33:08 router user.debug modemd[1101]: 460010432615366
Jan 22 15:33:08 router user.debug modemd[1101]: OK
Jan 22 15:33:08 router user.debug modemd[1101]: AT!ICCID?
Jan 22 15:33:08 router user.debug modemd[1101]: ICCID: 89860114851074491267
Jan 22 15:33:08 router user.debug modemd[1101]: OK
Jan 22 15:33:08 router user.debug modemd[1101]: AT+CNUM
Jan 22 15:33:08 router user.debug modemd[1101]: +CNUM: "user", "+8618620435278", 145
Jan 22 15:33:08 router user.debug modemd[1101]: OK
Jan 22 15:33:08 router user.debug modemd[1101]: AT+CLIP=1
Jan 22 15:33:08 router user.debug modemd[1101]: OK
Jan 22 15:33:08 router user.debug modemd[1101]: AT+CMGF=0
Jan 22 15:33:08 router user.debug modemd[1101]: OK
Jan 22 15:33:08 router user.debug modemd[1101]: AT+CNMI=2,1
Jan 22 15:33:09 router user.debug modemd[1101]: OK
Jan 22 15:33:09 router user.debug modemd[1101]: AT+CGREG?
Jan 22 15:33:09 router user.debug modemd[1101]: +CGREG: 2,1,"FFFE", "06074702", 7
Jan 22 15:33:09 router user.debug modemd[1101]: OK
Jan 22 15:33:09 router user.debug modemd[1101]: AT+COPS=3,2
Jan 22 15:33:09 router user.debug modemd[1101]: OK
Jan 22 15:33:09 router user.debug modemd[1101]: AT+COPS?
Jan 22 15:33:09 router user.debug modemd[1101]: +COPS: 0,2, "46001", 7
Jan 22 15:33:09 router user.debug modemd[1101]: OK
Jan 22 15:33:09 router user.debug modemd[1101]: AT+COPS=3,0
Jan 22 15:33:09 router user.debug modemd[1101]: OK
Jan 22 15:33:09 router user.debug modemd[1101]: AT+COPS?
Jan 22 15:33:10 router user.debug modemd[1101]: +COPS: 0,0, "", 7
Jan 22 15:33:10 router user.debug modemd[1101]: OK
Jan 22 15:33:11 router user.debug modemd[1101]: AT+COPS?
Jan 22 15:33:11 router user.debug modemd[1101]: +COPS: 0,0, "", 7
Jan 22 15:33:11 router user.debug modemd[1101]: OK
Jan 22 15:33:12 router user.debug modemd[1101]: AT+COPS?
Jan 22 15:33:12 router user.debug modemd[1101]: +COPS: 0,0, "", 7
Jan 22 15:33:12 router user.debug modemd[1101]: OK
Jan 22 15:33:13 router user.debug modemd[1101]: AT+COPS?
Jan 22 15:33:13 router user.debug modemd[1101]: +COPS: 0,0, "", 7
Jan 22 15:33:13 router user.debug modemd[1101]: OK
Jan 22 15:33:14 router user.debug modemd[1101]: AT+COPS?
Jan 22 15:33:14 router user.debug modemd[1101]: +COPS: 0,0, "", 7
Jan 22 15:33:14 router user.debug modemd[1101]: OK
Jan 22 15:33:16 router user.debug modemd[1101]: AT+COPS?
Jan 22 15:33:16 router user.debug modemd[1101]: +COPS: 0,0, "", 7
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Jan 22 15:33:16 router user.debug modemd[1101]: OK
Jan 22 15:33:17 router user.debug modemd[1101]: AT+COPS?
Jan 22 15:33:17 router user.debug modemd[1101]: +COPS: 0,0,"",7
Jan 22 15:33:17 router user.debug modemd[1101]: OK
Jan 22 15:33:18 router user.debug modemd[1101]: AT+COPS?
Jan 22 15:33:18 router user.debug modemd[1101]: +COPS: 0,0,"",7
Jan 22 15:33:18 router user.debug modemd[1101]: OK
Jan 22 15:33:19 router user.debug modemd[1101]: AT+COPS?
Jan 22 15:33:19 router user.debug modemd[1101]: +COPS: 0,0,"",7
Jan 22 15:33:19 router user.debug modemd[1101]: OK
Jan 22 15:33:20 router user.debug modemd[1101]: AT+COPS?
Jan 22 15:33:20 router user.debug modemd[1101]: +COPS: 0,0,"",7
Jan 22 15:33:20 router user.debug modemd[1101]: OK
Jan 22 15:33:21 router user.debug modemd[1101]: AT+CSQ
Jan 22 15:33:21 router user.debug modemd[1101]: +CSQ: 14,99
Jan 22 15:33:21 router user.debug modemd[1101]: OK
Jan 22 15:33:21 router user.notice modemd[1101]: modem initialization finish
Jan 22 15:33:21 router user.debug link_manager[726]: recv action ready from modemd
Jan 22 15:33:21 router user.debug link_manager[726]: target link WWAN1, state Disconnected
Jan 22 15:33:21 router user.debug link_manager[726]: recv action connect from link_manager
Jan 22 15:33:21 router user.debug link_manager[726]: target link WWAN1, state Disconnected
Jan 22 15:33:21 router user.info link_manager[726]: WWAN1 start connect
Jan 22 15:33:21 router user.debug modemd[1101]: auto apn matched, carrier=China Unicom, mcnc=46001, apn=3gnet, username=,
password=
Jan 22 15:33:22 router user.debug modemd[1101]: AT+CGDCONT=1,"IP","3gnet"
Jan 22 15:33:22 router user.debug modemd[1101]: OK
Jan 22 15:33:22 router user.debug modemd[1101]: +CGREG: 0
Jan 22 15:33:22 router user.debug modemd[1101]: AT$QCPDPP=1,0
Jan 22 15:33:22 router user.debug modemd[1101]: OK
Jan 22 15:33:22 router user.debug modemd[1101]: +CGREG: 2
Jan 22 15:33:22 router user.debug qmi[1211]: recv action connect from modemd
Jan 22 15:33:23 router user.debug modemd[1101]: +CGREG: 1,"FFFE","06074702",7
Jan 22 15:33:25 router user.debug qmi[1211]: wdsSMprint/177: action: START, sid: 0, v4sid: 0, v6sid: 0
Jan 22 15:33:25 router user.debug qmi[1211]: qaWdsSMprintSlots/162: V4 FSLOT: 0, V6 FSLOT: 0, V4V6 FSLOT: 0
Jan 22 15:33:25 router user.debug qmi[1211]: wdsSessionDataLog/142: PDP0: v4SH: 0, v6SH: 0
Jan 22 15:33:25 router user.debug qmi[1211]: wdsSessionDataLog/142: PDP1: v4SH: 0, v6SH: 0
Jan 22 15:33:25 router user.debug qmi[1211]: wdsSessionDataLog/142: PDP2: v4SH: 0, v6SH: 0
Jan 22 15:33:25 router user.debug qmi[1211]: wdsSMprint/193: -----
Jan 22 15:33:25 router user.debug qmi[1211]: iSLQSSstartStopDataSession/2712: WDS start interface verbose error: 0
Jan 22 15:33:25 router user.debug qmi[1211]: wdsSessionDataLog/142: PDP0: v4SH: 1137878448, v6SH: 0
Jan 22 15:33:25 router user.debug qmi[1211]: wdsSessionDataLog/152: Error Code: 0 (0x0)
Jan 22 15:33:25 router user.debug qmi[1211]: wdsSMprint/177: action: START, sid: 1137878448, v4sid: 1137878448, v6sid: 0
Jan 22 15:33:25 router user.debug qmi[1211]: qaWdsSMprintSlots/162: V4 FSLOT: 0, V6 FSLOT: 0, V4V6 FSLOT: 0
Jan 22 15:33:25 router user.debug qmi[1211]: wdsSessionDataLog/142: PDP0: v4SH: 1137878448, v6SH: 0
Jan 22 15:33:25 router user.debug qmi[1211]: wdsSessionDataLog/142: PDP1: v4SH: 0, v6SH: 0
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Configure Digital Output on RobustOS

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Jan 22 15:33:25 router user.debug qmi[1211]: wdsSessionDataLog/142: PDP2: v4SH: 0, v6SH: 0
Jan 22 15:33:25 router user.debug qmi[1211]: wdsSMprint/193: -----
Jan 22 15:33:25 router user.debug qmi[1211]: SLQSGetProfile get profileId = 1
Jan 22 15:33:25 router user.notice qmi[1211]: data session has connected (wwan)
Jan 22 15:33:25 router user.debug link_manager[726]: recv action associated from qmi
Jan 22 15:33:25 router user.debug link_manager[726]: target link WWAN1, state Connecting
Jan 22 15:33:25 router user.info link_manager[726]: WWAN1 associated
Jan 22 15:33:25 router user.debug qmi[1211]: Profile retrieving Failed for Profile Id : 1 Failure cause - 5 Error Code - 0
Jan 22 15:33:25 router user.notice link_manager[726]: start udhcpc for wwan
Jan 22 15:33:25 router user.info dhcpc_event[1281]: dhcpc event deconfig, interface=wwan
Jan 22 15:33:25 router user.info dhcpc_event[1282]: dhcpc event bound, interface=wwan
Jan 22 15:33:26 router user.notice dhcpc_event[1282]: dhcp client bound to 10.159.210.139/255.255.255.248 on wwan
Jan 22 15:33:26 router user.notice dhcpc_event[1282]: dhcp got router 10.159.210.140, dns 210.21.4.130 221.5.88.88
Jan 22 15:33:26 router user.debug link_manager[726]: recv action connected from udhcpc
Jan 22 15:33:26 router user.debug link_manager[726]: target link WWAN1, state Connecting
Jan 22 15:33:26 router user.info link_manager[726]: WWAN1 connected
Jan 22 15:33:26 router user.notice link_manager[726]: active link (WWAN1) up
Jan 22 15:33:26 router user.debug init[1]: handle services on link up
Jan 22 15:33:26 router user.info link_manager[726]: there is no need to switch link (WWAN1:00 - WAN Static:00)
Jan 22 15:33:26 router user.debug link_manager[726]: WWAN1 (wwan) start ping detect
Jan 22 15:33:26 router user.notice init[1]: dnsmasq stopped
Jan 22 15:33:26 router user.debug rping[1309]: start ping 8.8.8.8 (wwan)
Jan 22 15:33:26 router user.notice init[1]: dnsmasq started for interface lan0
Jan 22 15:33:26 router user.notice init[1]: firewall stopped
Jan 22 15:33:27 router user.notice init[1]: firewall started
Jan 22 15:33:27 router user.notice ntpc_mgmt[1355]: ntpc_mgmt started
Jan 22 15:33:27 router user.notice ntpc_mgmt[1355]: ntp client starts to update
Jan 22 15:33:29 router user.debug rping[1309]: PING 8.8.8.8 (8.8.8.8) from 10.159.210.139: 16 data bytes
Jan 22 15:33:29 router user.debug rping[1309]:
Jan 22 15:33:29 router user.debug rping[1309]: --- 8.8.8.8 ping statistics ---
Jan 22 15:33:29 router user.debug rping[1309]: 1 packets transmitted, 0 packets received, 100% packet loss
Jan 22 15:33:29 router user.notice rping[1309]: ping primary server fail (wwan), try secondary server
Jan 22 15:33:29 router user.debug rping[1309]: start ping 114.114.114.114 (wwan)
Jan 22 15:33:30 router user.debug rping[1309]: PING 114.114.114.114 (114.114.114.114) from 10.159.210.139: 16 data bytes
Jan 22 15:33:30 router user.debug rping[1309]: 24 bytes from 114.114.114.114: seq=0 ttl=61 time=120.459 ms
Jan 22 15:33:30 router user.debug rping[1309]:
Jan 22 15:33:30 router user.debug rping[1309]: --- 114.114.114.114 ping statistics ---
Jan 22 15:33:30 router user.debug rping[1309]: 1 packets transmitted, 1 packets received, 0% packet loss
Jan 22 15:33:30 router user.debug rping[1309]: round-trip min/avg/max = 120.459/120.459/120.459 ms
Jan 22 15:33:30 router user.info rping[1309]: ping detect success (wwan)
Jan 22 15:33:30 router user.debug link_manager[726]: recv action ping_success from rping
Jan 22 15:33:30 router user.debug link_manager[726]: target link WWAN1, state Connected
Jan 22 15:33:30 router user.info link_manager[726]: WWAN1 ping detect success
Mar 28 15:42:21 router user.notice ntpc_mgmt[1355]: NTP client synchronizes successfully.
Mar 28 15:42:21 router user.debug ntpc_mgmt[1355]: set RTC time: 2017-03-28 15:42:21
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Mar 28 15:42:21 router user.err ntpc_mgmt[1355]: rtc write second error(No such device or address)^M
Mar 28 15:45:04 router authpriv.info web_server: pam_unix(login:session): session opened for user admin by (uid=0)
Mar 28 15:45:04 router authpriv.info web_server: pam_unix(login:session): session closed for user admin
Mar 28 15:45:58 router user.debug init[1]: services to restart: event dido
Mar 28 15:45:58 router user.notice init[1]: eventd stopped
Mar 28 15:45:58 router user.notice eventd[1542]: eventd started
Mar 28 15:45:58 router user.notice dido[1545]: DIDO started
Mar 28 15:45:59 router user.info eventd[1542]: dido subscribes to event di1_on
Mar 28 15:45:59 router user.info eventd[1542]: dido subscribes to event di1_off
Mar 28 15:45:59 router user.info eventd[1542]: dido subscribes to event di1_counter_overflow
Mar 28 15:47:14 router user.debug link_manager[726]: WWAN1 (wwan) start ping detect
Mar 28 15:47:14 router user.debug rping[1607]: start ping 8.8.8.8 (wwan)
Mar 28 15:47:15 router user.debug rping[1607]: PING 8.8.8.8 (8.8.8.8) from 10.159.210.139: 16 data bytes
Mar 28 15:47:15 router user.debug rping[1607]: 24 bytes from 8.8.8.8: seq=0 ttl=38 time=492.552 ms
Mar 28 15:47:15 router user.debug rping[1607]:
Mar 28 15:47:15 router user.debug rping[1607]: --- 8.8.8.8 ping statistics ---
Mar 28 15:47:15 router user.debug rping[1607]: 1 packets transmitted, 1 packets received, 0% packet loss
Mar 28 15:47:15 router user.debug rping[1607]: round-trip min/avg/max = 492.552/492.552/492.552 ms
Mar 28 15:47:15 router user.info rping[1607]: ping detect success (wwan)
Mar 28 15:47:15 router user.debug link_manager[726]: rcv action ping_success from rping
Mar 28 15:47:15 router user.debug link_manager[726]: target link WWAN1, state Connected
Mar 28 15:47:15 router user.info link_manager[726]: WWAN1 ping detect success
Mar 28 15:47:16 router user.debug dido[1545]: Enter di_proc /dev/DI1 type = 1 code = 199 value = 0
Mar 28 15:47:16 router user.debug dido[1545]: event_report Alarm on
Mar 28 15:47:16 router user.debug eventd[1542]: distribute event di1_on to dido
Mar 28 15:47:16 router user.debug dido[1545]: rcv msg "cmd":"report";"date":"Mar 28 15:47:16";"event":"di1_on";"desc":"DI 1 ON";"data":"Alarm on" from eventd
Mar 28 15:47:16 router user.debug modemd[1101]: AT+CMGS=44
Mar 28 15:47:16 router user.debug modemd[1101]: 0011000ba18118497915f30000a822cdb01c24c38162351deda68bd95820621214033d9d2c50901d96b7416f37
Mar 28 15:47:17 router user.debug modemd[1101]: +CMGS: 151
Mar 28 15:47:17 router user.debug modemd[1101]: OK
Mar 28 15:47:57 router user.debug dido[1545]: Enter di_proc /dev/DI1 type = 1 code = 199 value = 1
Mar 28 15:47:57 router user.debug eventd[1542]: distribute event di1_off to dido
Mar 28 15:47:57 router user.debug dido[1545]: rcv msg "cmd":"report";"date":"Mar 28 15:47:57";"event":"di1_off";"desc":"DI 1 OFF";"data":"Alarm off" from eventd
Mar 28 15:47:57 router user.debug dido[1545]: index = 1 data = Alarm off delay_timer_run = 0 stop_timer_run = 0
Mar 28 15:47:58 router user.debug modemd[1101]: AT+CMGS=46
Mar 28 15:47:58 router user.debug modemd[1101]: 0011000ba18118497915f30000a824cdb01c24c38162351deda6abdd5820621214033d8d461628c80ecbdba0b7d90c
Mar 28 15:47:58 router user.debug modemd[1101]: +CMGS: 152
Mar 28 15:47:58 router user.debug modemd[1101]: OK
```