

# RYC1001\_Application\_note



## SIMCxM SIM7500 4G Cellular module



## RYC1001 Example Account

<URL>	iot.reyax.com
<Username>	e22e0f401d
<Password>	password
<Network_ID>	6
<Device_ID>	euqco7P4Sjh0zF1berWlw1NbiAmsOctsnXbF

## Demo terminal software : Docklight

Please visit website to obtain the software.

<https://docklight.de>

# SIM7500 Operating procedures

## Network Init

```

AT+CPIN? // Enter PIN
AT+CPIN?
+CPIN: READY
OK
AT+CSQ // Query signal quality
AT+CSQ
+CSQ: 25,99 // +CSQ: <rsqi>,<ber>
OK
// Specify the parameter value of the PDP context corresponding to cid
AT+CGSOCKCONT=1,"IP","internet.iot"
AT+CGSOCKCONT=1,"IP","internet.iot"
OK
// GPRS network registration status
AT+CGREG?
AT+CGREG?
+CGREG: 0,1 // +CGREG: <n>,<stat>
OK
AT+CGPADDR // Show PDP address
AT+CGPADDR
+CGPADDR: 1,10.85.136.124 // +CGPADDR: <cid>,<PDP_addr>
+CGPADDR: 4,0.0.0.0
OK

```

## MQTT Init

```

// start MQTT service, activate PDP context
AT+CMQTTSTART
AT+CMQTTSTART // +CMQTTSTART: <err>
+CMQTTSTART: 0
OK
// Acquire one client which will connect to a MQTT server not SSL/TLS
AT+CMQTTACCQ=0,"e22e0f401d0001" // AT+CMQTTACCQ=<client_index>, <clientID>
AT+CMQTTACCQ=0,"e22e0f401d0001"
OK
// Connect to a MQTT server
AT+CMQTTCONNECT=<client_index>,<server_addr>,<keepalive_time>,<clean_session>[,<user_name>[,<pass_word>]]

```

```

AT+CMQTTCONNECT=0,"tcp://iot.reyax.com:1883",80,1,"e22e0f401d","password"
AT+CMQTTCONNECT=0,"tcp://iot.reyax.com:1883",80,1,"e22e0f401d","password"

OK

+CMQTTCONNECT: 0,0

// Subscribe a message to server
AT+CMQTTSUB=0,20,1 // AT+CMQTTSUB=<client_index>,<reqLength>,<qos>

AT+CMQTTSUB=0,20,1

>
api/notification/6/# //Network_ID=6

api/notification/6/#
OK

// Subscribe a message
+CMQTTSUB: 0,0

AT+CMQTTSUB=0,15,1

AT+CMQTTSUB=0,15,1 // AT+CMQTTSUB=<client_index>,<reqLength>,<qos>

>
api/command/6/#

api/command/6/#
OK

// Subscribe a message
+CMQTTSUB: 0,0

AT+CMQTTSUB=0,22,1 // AT+CMQTTSUB=<client_index>,<reqLength>,<qos>

AT+CMQTTSUB=0,22,1

>
api/command_update/6/#

api/command_update/6/#
OK

// Subscribe a message
+CMQTTSUB: 0,0

AT+CMQTTSUB=0,39,1 // AT+CMQTTSUB=<client_index>,<reqLength>,<qos>

AT+CMQTTSUB=0,39,1

>
api/response/command/get@e22e0f401d0001

api/response/command/get@e22e0f401d0001
OK

// Subscribe a message
+CMQTTSUB: 0,0

AT+CMQTTSUB=0,44,1 // AT+CMQTTSUB=<client_index>,<reqLength>,<qos>

AT+CMQTTSUB=0,44,1

>
api/response/notification/get@e22e0f401d0001

api/response/notification/get@e22e0f401d0001
OK

```

```
// Subscribe a message
+CMQTTSUB: 0,0
```

## Command publish

```
// Input the topic of publish message
AT+CMQTTTOPIC=0,11 // AT+CMQTTTOPIC=<client_index>,<req_length>

AT+CMQTTTOPIC=0,11

//input message
>
api/request

api/request
OK

// Input the publish message
AT+CMQTTPAYLOAD=0,211 // AT+CMQTTPAYLOAD=<client_index>,<req_length>

AT+CMQTTPAYLOAD=0,211

>
{"action": "command/insert","deviceId":"euqco7P4Sjh0zF1berWlwlNbiAmsOctsnXbF","command": {"command":
"Control Temperature","parameters":{"Control":"Temperature"},"status":"to do","result":{"temperature":
"27"}}}

{"action": "command/insert","deviceId":"euqco7P4Sjh0zF1berWlwlNbiAmsOctsnXbF","command": {"command":
"Control Temperature","parameters":{"Control":"Temperature"},"status":"to do","result":{"temperature":
"27"}}}
OK

// Publish a message to server
AT+CMQTTTPUB=0,1,60 // AT+CMQTTTPUB=<client_index>,<qos>,<pub_timeout>

AT+CMQTTTPUB=0,1,60

OK

+CMQTTTPUB: 0,0
```

## Command subscribe

```
// Receive publish message from MQTT server

+CMQTTTRXSTART: 0,72,393 // +CMQTTTRXSTART: <client_index>,<topic_total_len>,<payload_total_len>
+CMQTTTRXTOPIC: 0,72 // +CMQTTTRXTOPIC: <client_index>,<sub_topic_len>
api/command/6/4/euqco7P4Sjh0zF1berWlwlNbiAmsOctsnXbF/Control Temperature
+CMQTTTRXPAYLOAD: 0,393 // +CMQTTTRXPAYLOAD: <client_index>,<sub_payload_len>
{"action":"command/insert","command":{"id":1787536306,"command":"Control Temperature","timestamp":"2020-
10-27T09:21:49.475","lastUpdated":"2020-10-
27T09:21:49.475","userId":6,"deviceId":"euqco7P4Sjh0zF1berWlwlNbiAmsOctsnXbF","networkId":6,"deviceTypeId
":4,"parameters":{"Control":"Temperature"},"lifetime":null,"status":"to
do","result":{"temperature":"27"},"subscriptionId":1603790306960486}
+CMQTTTRXEND: 0 // +CMQTTTRXEND: <client_index>
```

## Command\_update publish

```
// Set the topic for the PUBLISH message
AT+CMQTTTOPIC=0,11 // AT+CMQTTTOPIC=<client_index>,<req_length>

AT+CMQTTTOPIC=0,11

>
api/request

api/request
OK

// Input the publish message
AT+CMQTTPAYLOAD=0,161 // AT+CMQTTPAYLOAD=<client_index>,<req_length>

AT+CMQTTPAYLOAD=0,161

>
{"action":"command/update","deviceId":"euqco7P4Sjh0zF1berWlwlNbiAmsOctsnXbF","commandId":1787536306,"command":{"status":"done!","result":{"temperature": "28"}}}

{"action":"command/update","deviceId":"euqco7P4Sjh0zF1berWlwlNbiAmsOctsnXbF","commandId":1787536306,"command":{"status":"done!","result":{"temperature": "28"}}}
OK

// Publish a message to server
AT+CMQTTTPUB=0,1,60 // AT+CMQTTTPUB=<client_index>,<qos>,<pub_timeout>

AT+CMQTTTPUB=0,1,60

OK

+CMQTTTPUB: 0,0
```

## Command\_update subscribe

```
+CMQTTTRXSTART: 0,79,393 // +CMQTTTRXSTART: <client_index>,<topic_total_len>,<payload_total_len>
+CMQTTTRXTOPIC: 0,79 // +CMQTTTRXTOPIC: <client_index>,<sub_topic_len>
api/command_update/6/4/euqco7P4Sjh0zF1berWlwlNbiAmsOctsnXbF/Control Temperature
+CMQTTTRXPAYLOAD: 0,393 // +CMQTTTRXPAYLOAD: <client_index>,<sub_payload_len>
{"action":"command/update","command":{"id":1787536306,"command":"Control Temperature","timestamp":"2020-10-27T09:21:49.475","lastUpdated":"2020-10-27T09:23:41.059","userId":6,"deviceId":"euqco7P4Sjh0zF1berWlwlNbiAmsOctsnXbF","networkId":6,"deviceTypeId":4,"parameters":{"Control":"Temperature"},"lifetime":null,"status":"done!","result":{"temperature":"28"}}, "subscriptionId":1603790329762490}
+CMQTTTRXEND: 0 // +CMQTTTRXEND: <client_index>
```

## Command query publish

```
// Set the topic for the PUBLISH message
AT+CMQTTTOPIC=0,11 // AT+CMQTTTOPIC=<client_index>,<req_length>

AT+CMQTTTOPIC=0,11

>
api/request

api/request
OK

// Input the publish message
AT+CMQTTPAYLOAD=0,97 // AT+CMQTTPAYLOAD=<client_index>,<req_length>

AT+CMQTTPAYLOAD=0,97

>
{"action":"command/get","deviceId":"euqco7P4Sjh0zF1berWlwlNbiAmsOctsnXbF","commandId":1787536306}

{"action":"command/get","deviceId":"euqco7P4Sjh0zF1berWlwlNbiAmsOctsnXbF","commandId":1787536306}
OK

// Publish a message to server
AT+CMQTTTPUB=0,1,60 // AT+CMQTTTPUB=<client_index>,<qos>,<pub_timeout>

AT+CMQTTTPUB=0,1,60

OK

+CMQTTTPUB: 0,0
```

## Command query subscribe

```
+CMQTTTRXSTART: 0,39,392 // +CMQTTTRXSTART: <client_index>,<topic_total_len>,<payload_total_len>
+CMQTTTRXTOPIC: 0,39 // +CMQTTTRXTOPIC: <client_index>,<sub_topic_len>
api/response/command/get@e22e0f401d0001
+CMQTTTRXPAYLOAD: 0,392 // +CMQTTTRXPAYLOAD: <client_index>,<sub_payload_len>
{"action":"command/get","requestId":null,"status":"success","command":{"id":1787536306,"command":"Control
Temperature","timestamp":"2020-10-27T09:21:49.475","lastUpdated":"2020-10-
27T09:23:41.059","userId":6,"deviceId":"euqco7P4Sjh0zF1berWlwlNbiAmsOctsnXbF","networkId":6,"deviceTypeId
":4,"parameters":{"Control":"Temperature"},"lifetime":null,"status":"done!","result":{"temperature":"28"}
}}
+CMQTTTRXEND: 0 // +CMQTTTRXEND: <client_index>
```

## Notification publish

```
// Set the topic for the PUBLISH message
AT+CMQTTTOPIC=0,11 // AT+CMQTTTOPIC=<client_index>,<req_length>

AT+CMQTTTOPIC=0,11

>
api/request

api/request
OK
```

```
// Input the publish message
AT+CMQTPAYLOAD=0,157 // AT+CMQTPAYLOAD=<client_index>,<req_length>

AT+CMQTPAYLOAD=0,157

>
{"action":"notification/insert","deviceId":"euqco7P4Sjh0zFlberWlwlNbiAmsOctsnXbF","notification":{"notification": "temp","parameters":{"temperature": "25"}}}

{"action":"notification/insert","deviceId":"euqco7P4Sjh0zFlberWlwlNbiAmsOctsnXbF","notification":{"notification": "temp","parameters":{"temperature": "25"}}}
OK

// Publish a message to server
AT+CMQTTPUB=0,1,60 // AT+CMQTTPUB=<client_index>,<qos>,<pub_timeout>

AT+CMQTTPUB=0,1,60

OK

+CMQTTPUB: 0,0
```

## Notification subscribe

```
+CMQTTRXSTART: 0,62,274 // +CMQTTRXSTART: <client_index>,<topic_total_len>,<payload_total_len>
+CMQTTRXTOPIC: 0,62 // +CMQTTRXTOPIC: <client_index>,<sub_topic_len>
api/notification/6/4/euqco7P4Sjh0zFlberWlwlNbiAmsOctsnXbF/temp
+CMQTTRXPAYLOAD: 0,274 // +CMQTTRXPAYLOAD: <client_index>,<sub_payload_len>
{"action":"notification/insert","notification":{"id":1789764272,"notification":"temp","deviceId":"euqco7P4Sjh0zFlberWlwlNbiAmsOctsnXbF","networkId":6,"deviceId":4,"timestamp":"2020-10-27T09:27:15.522","parameters":{"temperature":"25"},"subscriptionId":1603790288370484}}
+CMQTTRXEND: 0 // +CMQTTRXEND: <client_index>
```

## Notification query subscribe

```
// Set the topic for the PUBLISH message
AT+CMQTTTOPIC=0,11 // AT+CMQTTTOPIC=<client_index>,<req_length>

AT+CMQTTTOPIC=0,11

>
api/request

api/request
OK

// Input the publish message
AT+CMQTPAYLOAD=0,108 // AT+CMQTPAYLOAD=<client_index>,<req_length>

AT+CMQTPAYLOAD=0,108

>
{"action":"notification/get","deviceId":"euqco7P4Sjh0zFlberWlwlNbiAmsOctsnXbF","notificationId":1789764272}

{"action":"notification/get","deviceId":"euqco7P4Sjh0zFlberWlwlNbiAmsOctsnXbF","notificationId":1789764272}
OK

// Publish a message to server
AT+CMQTTPUB=0,1,60 // AT+CMQTTPUB=<client_index>,<qos>,<pub_timeout>
```



AT+CMQTPUB=0,1,60

OK

+CMQTPUB: 0,0

## Notification query subscribe

```
+CMQTRXSTART: 0,44,273 // +CMQTRXSTART: <client_index>,<topic_total_len>,<payload_total_len>
+CMQTRXTOPIC: 0,44 // +CMQTRXTOPIC: <client_index>,<sub_topic_len>
api/response/notification/get@e22e0f401d0001
+CMQTRXPAYLOAD: 0,273 // +CMQTRXPAYLOAD: <client_index>,<sub_payload_len>
{"action":"notification/get","requestId":null,"status":"success","notification":{"id":1789764272,"notification":"temp","deviceId":"eugco7P4Sjh0zFlberWlwlNbiAmsOoctsnXbF","networkId":6,"deviceId":4,"timestamp":"2020-10-27T09:27:15.522","parameters":{"temperature":"25"}}}
+CMQTRXEND: 0 // +CMQTRXEND: <client_index>
```

## UNSUBTOPIC

```
// Unsubscribe one topic from the server
AT+CMQTTUNSUB=0,20,0 // AT+CMQTTUNSUB=<client_index>,<reqLength>,<dup>
```

AT+CMQTTUNSUB=0,20,0

>  
pi/notification/6/#

pi/notification/6/#

OK

+CMQTTUNSUB: 0,0

```
// Unsubscribe one topic from the server
AT+CMQTTUNSUB=0,15,0 // AT+CMQTTUNSUB=<client_index>,<reqLength>,<dup>
```

AT+CMQTTUNSUB=0,15,0

>  
api/command/6/#

api/command/6/#  
OK

+CMQTTUNSUB: 0,0

```
// Unsubscribe one topic from the server
AT+CMQTTUNSUB=0,22,0 // AT+CMQTTUNSUB=<client_index>,<reqLength>,<dup>
```

AT+CMQTTUNSUB=0,22,0

>  
api/command\_update/6/#

api/command\_update/6/#  
OK

+CMQTTUNSUB: 0,0

```
// Unsubscribe one topic from the server
AT+CMQTTUNSUB=0,39,0 // AT+CMQTTUNSUB=<client_index>,<reqLength>,<dup>
```

AT+CMQTTUNSUB=0,39,0

```
>
api/response/command/get@e22e0f401d0001

api/response/command/get@e22e0f401d0001
OK

+CMQTTUNSUB: 0,0

// Unsubscribe one topic from the server
AT+CMQTTUNSUB=0,44,0 // AT+CMQTTUNSUB=<client_index>,<reqLength>,<dup>

AT+CMQTTUNSUB=0,44,0

>
api/response/notification/get@e22e0f401d0001

api/response/notification/get@e22e0f401d0001
OK

+CMQTTUNSUB: 0,0
```

## CLOSE

```
// Disconnect from server
AT+CMQTTDISC=0,120 // AT+CMQTTDISC=<client_index>,<timeout>

AT+CMQTTDISC=0,120

+CMQTTDISC: 0,0

OK

// Release the client
AT+CMQTTREL=0 // AT+CMQTTREL=<client_index>

AT+CMQTTREL=0

OK

// stop MQTT Service
AT+CMQTTSTOP

AT+CMQTTSTOP

+CMQTTSTOP: 0

OK

+CMQTTNET
```



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