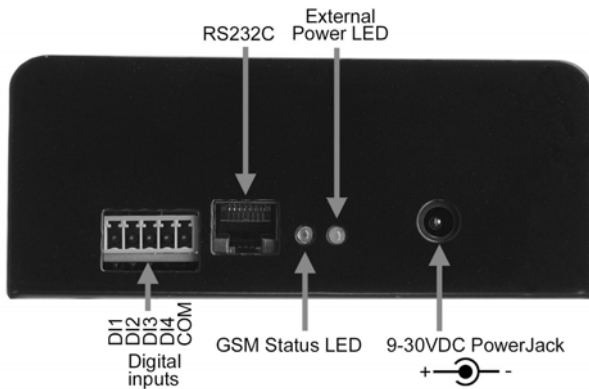


1. Introduction

BSC-50-D is a battery powered controller unit for alarm annunciation using SMS. SMS announcements include alarm induced messages and periodical messages (status messages) for verifying unit availability. The unit supports discrete recipient alarming for several users. SMS messaging includes:

1. Event driven SMS transmission in case of an alarm condition (Alarm messages).
2. Periodical SMS transmission for availability verification (Status messages).



2. Operation modes

Modes of operation include power network independent battery operation and external power adaptor supply operation. Program execution is suspended during power adaptor operation. This mode is available for unit configuration only.

3. Setup

3.1 Packing list

1. BSC-50-D Alarming unit
2. Lithium Thionyl Battery
3. User Guide

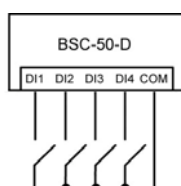
3.2 Hardware setup

3.2.1 SIM card & Battery installation



- Open the unit enclosure by unscrewing the self tapping screws on the enclosure sides.
- Insert the SIM card into the SIM card holder.
- Install the Lithium battery. Pay attention to the correct polarity! The right polarity is marked up on the battery holder. Inverse polarity can stress the low power, low voltage rectifying circuits in the unit and may lead to hardware failure.

3.2.2 Wiring the digital inputs



3.3 Configuration commands

3.3.1 Configuring a digital input for alarming

The DI configuration command structure is:

1100, n, s, a, d

1100: Command ID

n: DI number (1-4)

s: DI name (Text: 0-15 characters, may include space characters)

a: Transition selection (0: No alarm, 1: positive 2: negative)

d: Delay time in seconds (0-255)

3.3.2 Setting alarm message texts

You can set up to 128 custom text messages to be announced in an SMS alarm as a descriptive reason instead of the default causal text. The command for configuring a text message is:

0630, ID, s

0630: Command ID

ID: Message ID (1-128)

s: Message text (0-31 characters, may include space characters)

3.3.3 Selecting alarm messages for a DI event

Two alarm messages can be associated to a DI alarm event. One for M2M recipients (e.g. containing an ASCII command for a remote SCOM device) and a second for phone recipients:

110x, n, ID

110x: Command ID, 1102 for M2M, 1101 for Phone recipients

n: Input number (1-4)

ID: Message ID (1-128)

3.3.4 User setup

Up to 20 SMS users can be declared for a BSC-50-D unit. Only declared users can interact (send, receive SMS) with the unit. BSC-50 features three user privileges reflecting different user rights. The following flags can be configured for each user:

1. User administration flag. Status messages are sent only to users with administration rights.
2. Device configuration flag. Represents the right to configure the BSC-50 device.
3. Alarm SMS recipient flag. Marks a user as an SMS alarm recipient.

A new user can be created by the command:

0500, id, n, p, c1, c2, c3

0500: Command ID

id: User ID (1-20)

n: User name (0-15 characters)

p: Phone number (3-15 characters)

c1: User administration privilege (0 for 'No' 1 for 'Yes')

c2: Device configuration privilege (0 for 'No' 1 for 'Yes')

c3: Alarm SMS recipient (0 for 'No' 1 for 'Yes')

c4: M2M, User is a M2M device (0 for 'No' 1 for 'Yes')

Additional commands for configure, and deleting a user are available for user administration.

3.3.5 Defining event specific alarm recipients

A special command is available for defining the SMS recipients for each alarm event. M2M recipients will receive the associated M2M message, while phone recipients will receive the respective text message (See 3.2.3).

1103, n, id

1102: Command ID

n: DI number (1-4)

id: User ID (1-20)

3.3.6 Naming the unit

You can specify a unit name for identification purposes. The unit name will be used in the alarm and status SMS messages. The command to name the unit is:

0300, Name

0300: Command ID

Name: Device name (up to 15 characters)

3.3.7 Setting the Status message period

0650 , n

0650: Command ID

n: Period (0-99), [Days], Value '0' disables status messaging, Default: 7

3.3.8 Status message idle period

0651 , n

0650: Command ID

n: Period (0-180), [sec], Default: 120

Use this parameter to set an idle time period after the Status message transmission. The GSM Modem will remain connected to the GSM Provider network for this period, waiting for receipt of SMS containing configuration updates.

3.3.9 Setting the number of transmission retries

This setting represents the number of retries after a SMS transmission failure.

0640 , n

0640: Command ID

n: Send retries (0-99), Default: 3

3.3.10 Setting the delay between retries

0641 , n

0641: Command ID

n: Delay between retries (0-65535), [sec], Default: 10

3.3.11 Factory settings

0183 , 0183

0183: Command ID

0183: Extra command argument

3.4 Programming the unit

Power up the unit by connecting the DC power adaptor. Program execution is automatically suspended. Both LED will switch on. The GSM LED will start blinking, indicating connection to the GSM provider's network. There are three ways to program the unit:

1. Sending SMS containing the appropriate commands to the unit. The semicolon character ';' acts as command delimiter.
2. Connecting the unit to a PC and using a terminal program to pass the ASCII commands to the unit, according to the scheme: **atms="ASCII command"**. The terminal settings should be: Baud rate: 115200 bps, Data bits: 8, Parity: none, Stop bits: 1, Flow control: Hardware.
3. Connecting the unit to a PC and using the BSC-50 Manager utility.

Program execution on the BSC-50 starts automatically just after disconnecting the power adaptor.

4. Operation

4.1 Alarm Messaging

The following is a typical Alarm message:

Message contents	Item description
BSC-50	Unit Name
ALARM MESSAGE	Fixed Header
DI 1	Input Name
Earth Fault	Alarm message

4.2 Status Messaging

The following is a typical Status message:

Message contents	Item description
BSC-50	Unit Name
STATUS MESSAGE	Fixed Header
ON	Operation Status

SMS Status messages are sent only to users with the Administrator privilege.

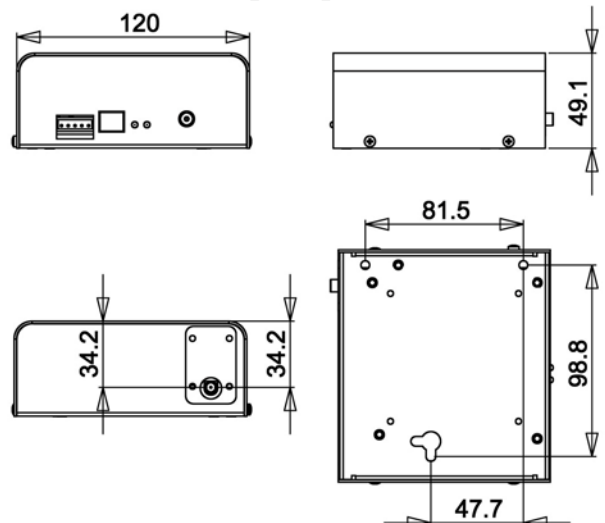
5. Technical characteristics

Power supply	Internal 13.0 Ah Lithium Thionyl battery External 9-30V power adaptor (setup only)
Temperature Operation Storage	-20 to 85 °C -45 to 85 °C
Current draw Standby operation Messaging	40uA Average 40 mA Peak 2A
Digital inputs	4, potential free contact inputs
Serial port	RS232C, 9600 to 115200 bps
Indications	2 LED, GSM network status, external power supply indication
GSM Modem	Quad band (850/900/1800/1900MHz)
Typical Battery life Stand by (No messages) 4000 Messages	25 years 12 years
Weight	0.6 kg

6. Firmware features

Digital input alarm state	Open or closed contact selection
Alarm delay	0-255 sec
Message text	1-30 characters
Status message period	Disabled or 1-99 days
Message retries	1-99
Retry intervall	1-255 sec
Programming	ASCII Command Set
Setup	SMS, Via the RS232C Port
Users	1-20, discrete recipient messaging

7. Dimensions [mm]



8. Command Summary

Cmd	Description	Syntax	Comments
0171	Reset Device	cmd	
0183	Set Factory Defaults	cmd,cmd	
0195	Clear Character Translation	cmd,cmd	
0300	Set Device Name	cmd,s	s: device name
0500	Create User	cmd,id,n,p,c1,c2,c3,c4	id: user id (1-max users), n: name, p: phone number, c1-c4: flags
0501	Delete User	cmd,id	id: user id (1-max users)
0502	Set User Configuration	cmd,id,c1,c2,c3,c4	id: user id (1-max users), c1-c4: user configuration
0600	Set Remaining SMS Alarm Limit	cmd,l	l: remaining SMS alarm limit
0601	Cancel Remaining SMS Alarm	cmd	
0605	Set Remaining SMS Counter	cmd,v	v: counter value
0610	Set Verbose Responses	cmd	
0611	Cancel Verbose Responses	cmd	
0620	Set Response SMS	cmd	
0621	Cancel Response SMS	cmd	
0630	Set Alarm Message Text	cmd,id,s	id: alarm message id (1-max alarm messages), s: text
0640	Set Send Retries	cmd,n	n: send retries
0641	Set Send Retries delay	cmd,d	d: send delay
0650	Set Status message Period	cmd,p	p: period (days)
0651	Set Status message idle period	Cmd,p	p: 0-180 sec
0660	Merge Concurrent Alarms	cmd	
0661	Unmerge Concurrent Alarms	cmd	
0670	Set Language	cmd,l	l: language (1:English, 2:Greek)
0690	Set Character Translation	cmd,a,g	a: ASCII character set code, g: GSM character set code
0783	Set GSM PIN	cmd,p	p: GSM PIN
1100	Set DI Configuration	cmd,n,s,a,d	n: DI, s: name, a: alarm mode, d:alarm delay
1101	Set DI Alarm Message (Phone)	cmd,n,id1	n: DI, id1: alarm message id
1102	Set DI Alarm Message (M2M)	cmd,n,id1	n: DI, id1: alarm message id
1103	Set DI Alarm Recipient	cmd,n,id	n: DI, id: user id (1-20)
1109	Clear DI Alarm Recipients	cmd,n	n: DI
1110	Clear DI Configuration	cmd,n	n: DI
1600	Set RTC Time	cmd,d,m,y,h,n,s	d: day, m: month, y: year, h: hour, n: minutes, s: seconds
2000	Get Device Status	cmd	
2008	Get Signal Quality	cmd	
2150	Get Last Error Report	cmd	
2160	Get Event Log Entries Number	cmd	
2161	Get Event Log Entry	cmd,n	n: event number (1-max events)
2300	Get Device Name	cmd	
2500	Get User Info	cmd	
2600	Get Remaining SMS Alarm Limit	cmd	
2601	Remaining SMS Alarm Status	cmd	
2605	Get Remaining SMS Counter	cmd	
2610	Get Verbose Responses	cmd	
2620	Get Acknowledge Status	cmd	
2630	Get Alarm Message Text	cmd,id	id: alarm message id (1-max alarm messages)
2640	Get Send Retries	cmd	
2641	Get Send Delay	cmd	
2650	Get Status message Period	cmd	
2651	Get Status message idle period	cmd	
2660	Get Alarm Merge Status	cmd	
2670	Get Language	cmd	
2690	Get Character Translation	cmd	
2691	Get ASCII codes	cmd,s	s: ASCII codes of the string characters are dumped to serial port
2710	Get Available Alarm Message ID	cmd	
3100	Read DI	cmd,n	n: DI
3110	Get DI Settings	cmd,n	n: DI
3600	Get RTC Time	cmd	
5100	Get Current DI State	cmd	