

User Manual I.SITE III

Version 1.1



Document History

Version history:

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1 Abbreviations

AC	Alternating Current
CPU	Central Processing Unit
DFSK	Digital Frequency Shift Keying
EC	European Community
EMS	Electromagnetic Safety
EMC	Electromagnetic Compatibility
ETSI	European Telecommunications Standards Institute
GIS	Graphical Information System
HD	Hard Disk
HF	High Frequency
HW	Hardware
Hz	Hertz (SI unit for frequency)
LAN	Local Area Network
LED	Light Emitting Diode
POCSAG	Post Office Code Standardization Advisory Group
RAM	Random Access Memory
R&TTE	Radio and Telecommunications Terminal Equipment
SW	Software
UHF	Ultra High Frequency
USB	Universal Serial Bus
VAC	Voltage Alternating Current
VDC	Voltage Direct Current
VGA	Video Graphics Array
VHF	Very High Frequency

2 Introduction

2.1 Purpose

This manual describes how to install and operate the I.SITE III POCSAG paging transmitter.

2.2 General Description

POCSAG transmitter with LAN connection:

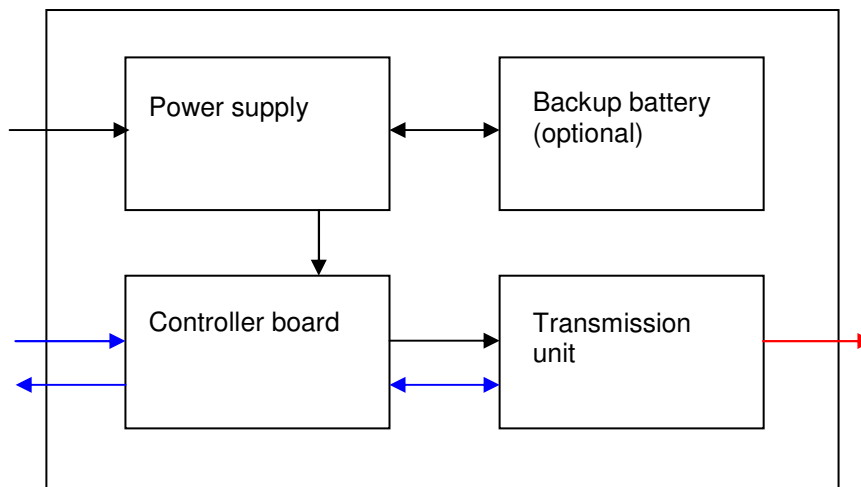
The I.SITE III is a POCSAG transmitter for digital alarm systems. The transmitter is encased in a rugged IP65-compliant housing, making it suitable for outdoor use. It is controlled via Ethernet LAN, enabling the transmitter to be located remotely. POCSAG messages are created internally and sent via the scalable transmission unit at 1...25W.

2.3 Functional Description

2.3.1 Design

The I.SITE III consists of the following four functional blocks:

- Power supply - AC/DC converter with battery charging port and deep discharge protection
- Transmission unit
- Controller board
- Backup battery (optional)



Device control is provided via Ethernet LAN (RJ45). POCSAG messages are created internally and sent via the transmission unit (max. 25 W). Three local digital potential-free inputs and one service contact are available optionally. These can directly trigger POCSAG messages and/or additional status messages to the alarm server. Multiple I.SITE III devices can operate in parallel via LAN as long as the radio coverage areas do not overlap. POCSAG messages are sent asynchronously. For simulcast communication, use the I.SITE II together with I.SEARCH.

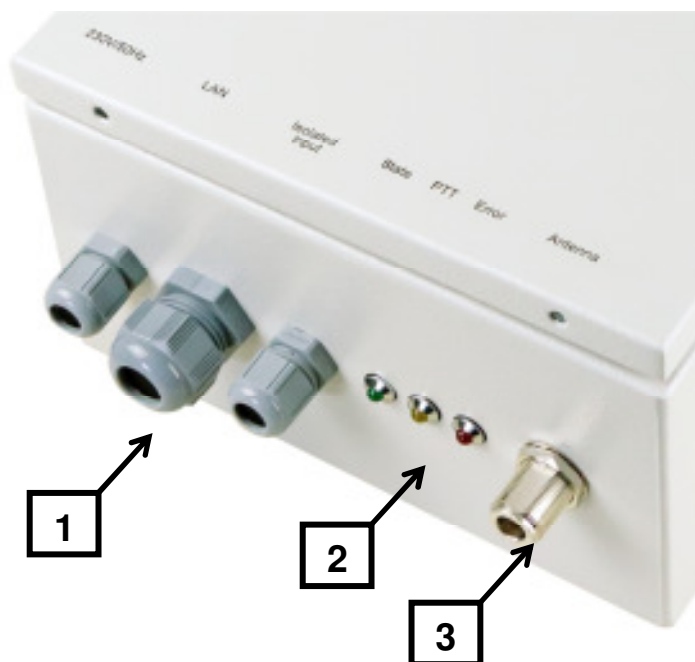
2.3.2 Optional Features

Up to three add-on optional features are available for the I.SITE III base transmitter:

- Backup battery
- Service contact (door)
- 3x input contacts

If you require one or more of these optional features, make sure to specify these when ordering the I.SITE III. These features can only be added when you purchase the base device. There are a number of Swissphone settings to prevent unauthorized use of these features. For further information, please refer to the "Item Numbers" chapter below.

2.3.3 External Connections and Displays



- 1 Cable feed-throughs for**
- Power cable (230V/50Hz)
 - Ethernet (LAN)
 - Input contacts (optional)

2 LED display

- Status (green / heartbeat pulse 1Hz)
- PTT (yellow / on when PTT signal present)
- Error (red / on when TX error occurs / AC Fail & ACCU Low / Test Mode)

3 Antenna connection

N-type (female) 50Ω

2.3.4 Possible Product Combinations

1. I.SEARCH with I.SITE III

The transmitter runs in I.SEARCH Slave mode (connection via Slave protocol for Master-Slave operation).

With the I.SEARCH Slave protocol, you can:

- Transmit POCSAG-encoded messages and receive transmitter fault status messages at the same time.
- Query the transmitter status or data.
- Establish a direct connection to the Tait transmission unit.

With the Email SMTP protocol, you can receive messages about changes to the input status. For this, the customer needs to configure the Digi Connect (Ethernet module with email server) accordingly.

2. I.SITE III in stand-alone operation

The transmitter runs in ASCII mode (connection via ASCII Simple protocol).

With the ASCII Simple protocol, you can:

- Transmit text messages and receive transmitter fault status messages at the same time.
- Query the transmitter status or data.
- Establish a direct connection to the Tait transmission unit.

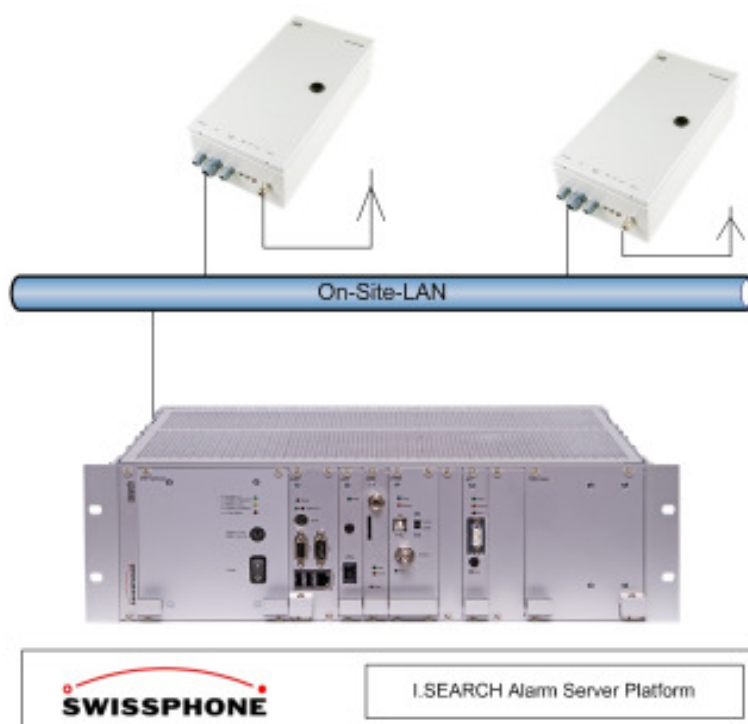
With the ASCII Simple protocol, you can receive input status events. For this, the target application needs to keep the LAN connection open so that the input status events can be received.

With the Email SMTP protocol, you can receive messages about changes to the input status. For this, the customer needs to configure the Digi Connect (Ethernet module with email server) accordingly.

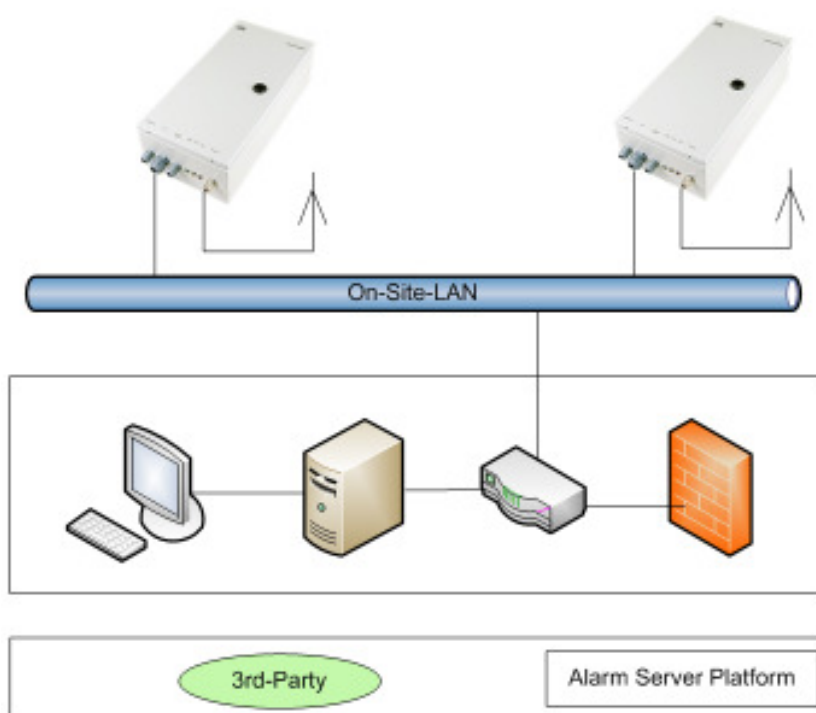
The described proprietary Swissphone Telecom AG protocols for integrating the I.SITE III into your solutions are available to third-party suppliers on request.

2.4 Usage Examples

I.SEARCH with I.SITE III (Slave protocol):



I.SITE III in stand-alone mode (ASCII Simple protocol):



3 System Description

3.1 Housing and Electronics

The I.SITE III is shipped in a rugged metal housing. All electrical connections are provided as water-proof cable feed-throughs.

All of the electronics are integrated into a rugged, IP65-protected wall housing. This housing is suitable for indoor and outdoor installation alike.

3.2 Protective Measures

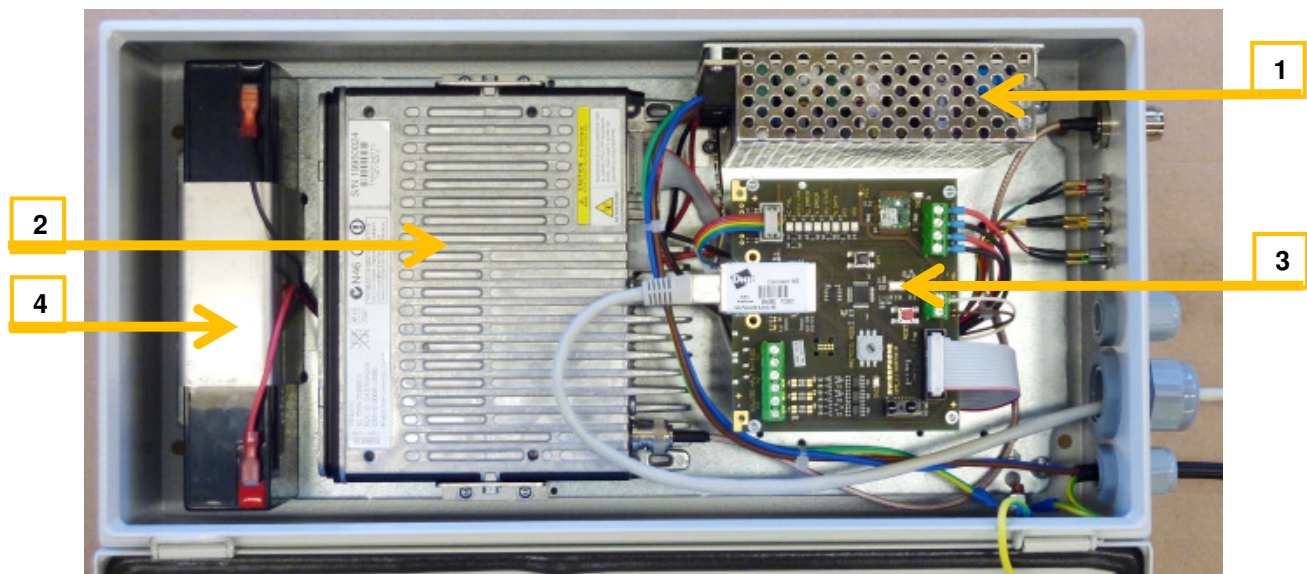
You must connect the device to your mains grid's protective earth (neutral point located directly after input in housing).

3.3 Antenna System

The antenna to be deployed requires an impedance of 50Ω at a suitable user frequency. Use an N-type connector to connect the antenna to the housing.

Swissphone recommends the use of Kathrein antenna products.

3.4 I.SITE III Hardware Components



- 1 Power supply - AC/DC converter with battery charging port and deep discharge protection
- 2 Transmission unit (TX for max. 25W)
- 3 Controller board (control unit with connections for LAN and input contacts)
- 4 Backup battery (12V/2.3Ah) optionally available

3.4.1 Power Supply

The power supply provides an output voltage of +13.8VDC. The input voltage must be between 90VAC and 240VAC at 50-60Hz.

3.4.2 Transmission Unit

The Tait TM8105 transmission module is approved for ETSI 300113, which makes it suitable for local radio broadcasting. The transmitter is designed for digital data transmission. The modulation method employed for this is DFSK (Direct Frequency Shift Keying). The following four transmission units are available.

Frequency	Frequency	Transmission strength	Channel spacing	Standard
VHF 4m	66-88MHz	1 to 25W	12.5/20/25kHz	ETSI 300113
VHF 2m	136-174MHz	1 to 25W	12.5/20/25kHz	ETSI 300113
UHF	400-470 MHz	1 to 25W	12.5/20/25kHz	ETSI 300113
QJHF	450-530 MHz	1 to 25W	12.5/20/25kHz	ETSI 300113

General:

In order to avoid damaging the transmitter, ensure the following:

- The prescribed power rating of 90-240VAC, 50-60Hz must never be exceeded.
- The high frequency output must be connected at 50Ω.
- Proper earthing and protection against lightning surges must be provided.

If an antenna is being used, we recommend to mount it several meters removed from the transmitter to avoid feedback.

Note:

You can configure the output strength of the transmission module to suit your requirements.

Excess Temperature Protection:

When the operating mode is 'Continuous Transmission' and the environmental temperature is above 55°C, the transmitter automatically reduces its output strength to a safe operating level.

3.4.3 Controller Board

The controller board handles communication via the Ethernet LAN interface, acting as a server for external clients and accepting transmission requests. These requests trigger POCSAG transmission via the transmission unit. Additionally, status and fault signals coming from the transmission unit and the power supply are compiled and displayed on the controller board, as well as being reported back via the Ethernet LAN interface.

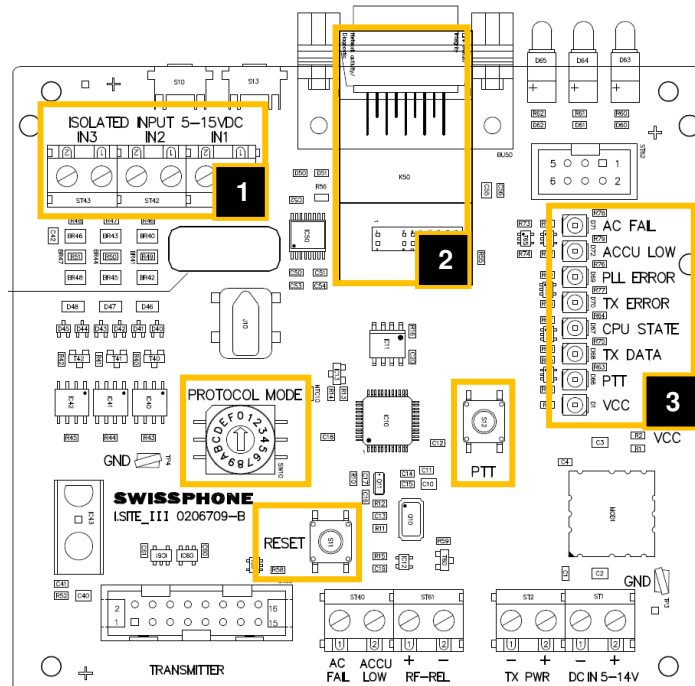
The board is powered using a 3.3.VDC voltage regulator.

In order to provide more informative transmitter monitoring, every transmission is accompanied by a range of status messages:

Status Information	
SI01-3 (optional)	Input I1 edge-triggered, potential-free 5-15V, debounced (open/closed)
SI04 (optional)	Service contact (door contact, open/closed)
SI05	Operating temperature in degrees Celsius, decimal two-digit
SI06	Fault status (when fault messages present)

Fault Status Messages	
FS01	Unstable transmission frequency (PLL Unlocked)
FS02	Fault in transmission unit TX (High FWD/Low REV Power or TX Excess Temperature)
FS03	No operating voltage present (AC Power Fail)
FS04 (optional)	Operating voltage of backup battery below threshold value (ACCU Low)
FS05	Incorrect transmitter keying (TX Not Allowed)

3.4.4 Displays, Connections, and Operating Controls



1) Input contacts (IN1-IN3):

There are three potential-free input contacts at 5-15V, 5mA. Use these to connect items such as active emergency buttons, sensors, or door/window contacts where the status change is to be reported upon triggering (open/closed or open&closed).

If you wish to connect a passive contact (switch/button), configure the solder bridge jumpers as follows:

Contact	BR40	BR41	BR42	BR43	BR44	BR45	BR46	BR47	BR48
IN1	CLOSE D	OPEN	CLOSE D	X	X	X	X	X	X
IN2	X	X	X	CLOSE D	OPEN	CLOSE D	X	X	X
IN3	X	X	X	X	X	X	CLOSE D	OPEN	CLOSE D

2) Ethernet LAN Connection

This is the communications interface. Connect an RJ45 Ethernet LAN cable to this port.

3) Display Elements on Controller Board

AC FAIL	Mains power failure
ACCU LOW	Battery voltage has dropped below 12V
PLL ERROR	PLL error in transmission unit
TX ERROR	Excess temperature in transmission unit / faulty antenna connection
CPU STATE	Controller state (heartbeat pulse)
TX DATA	Data transmission is live (weak glow when idle)
PTT	Transmitter keying is active
VCC	Controller board is receiving power

Reset button (red): Use the Reset button to restart the I.SITE III unit from scratch. All your settings will be retained.

PTT button (black): Use the PTT button to test the transmission quality (transmitter keying).

Protocol Mode rotary dial: Use this dial to select one of the available operating modes. Detailed descriptions of these are provided in the following chapter.

3.4.5 Backup Battery

When there is a power failure, the optional 12V backup battery (2.3Ah) provides power to the transmission module and the controller board.

3.5 Operating Modes

The I.SITE III provides a number of different operating modes. These are selected via the 16-step hex rotary dial on the controller board. Following a reset, the position of the operating mode dial is detected and the transmitter is set to the corresponding mode. The available operating modes are described below. All other modes are categorized as programming and test modes. To configure the modes, you need to use the configuration software.

3.5.1 I.SEARCH Slave Mode

0x2: The transmitter is set to the I.SEARCH Slave protocol.

After start-up or reset, the default operating mode is briefly indicated via the LEDs.

Behavior / display:

I.SEARCH Slave Mode:

The green LED emits three short flashes.

3.5.2 SAGEM Mode

0xD: The transmitter is set to the SAGEM protocol (type: RM 540-E). Use this for sending text messages. This mode is only available with the I.SITE SDIS version.

After start-up or reset, the default operating mode is briefly indicated via the LEDs.

Behavior / operating mode display during start-up:

SAGEM Mode:

The green LED emits two short flashes, followed by one flash of the red LED.

3.5.3 ASCII Mode

0xE: The transmitter is set to the ASCII Simple protocol. With this, you can instantly send ASCII-encoded messages.

After start-up or reset, the default operating mode is briefly indicated via the LEDs.

Behavior / operating mode display during start-up:

ASCII Mode:

The green LED emits three short flashes, followed by one flash of the red LED.

3.5.4 Programming and Test Mode

0xF: In this mode, the Programming and Test protocol is used.

After start-up or reset, the default operating mode is briefly indicated via the LEDs.

Behavior / operating mode display during start-up:

Programming/Test Mode:

The green and red LEDs emit alternating flashes

at an increasing speed until the red LED lights up continuously.

This mode is displayed as a fault.

With the I.SITE III, programming can only be performed via Ethernet using the following IP address and port.

IP address: 192.168.1.3

Port: 6611

4 Communications Interface

Setup: I.SEARCH with I.SITE III (I.SEARCH interface):
Communications interface for 'Master-Slave' operation via Slave protocol.

Setup: I.SITE III stand-alone operation (ASCII interface):
Communications interface for 'Stand-Alone' operation via ASCII Simple protocol for external systems.

4.1 I.SEARCH Interface

Set the I.SITE III's operating mode dial to '2'. In this mode, the I.SITE III can only accept requests from an I.SEARCH via LAN.

During start-up, the green LED emits three short flashes. Whenever a message is being transmitted, the yellow LED lights up.

4.2 ASCII Interface

Set the I.SITE III's operating mode dial to 'E'. In this mode, the I.SITE III can only accept requests from external systems.

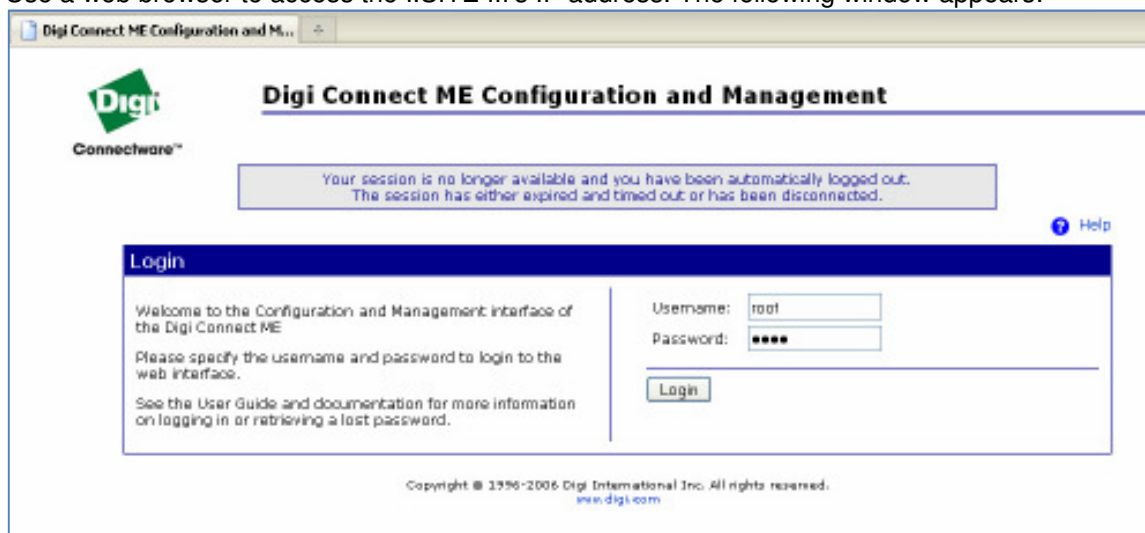
During start-up, the green LED emits three short flashes. Whenever a message is being transmitted, the yellow LED lights up.

4.3 Setting up Digi Connect

4.3.1 Changing the IP Address

This is the I.SITE III's default IP address: 192.168.1.3

Use a web browser to access the I.SITE III's IP address. The following window appears:

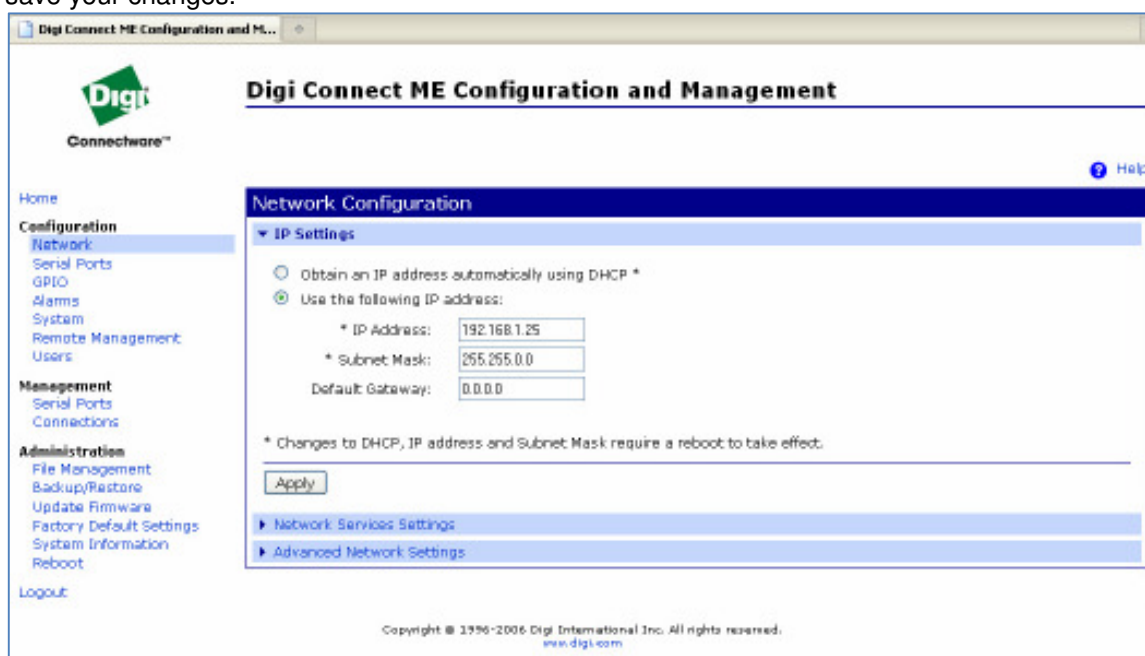


Enter the following access data:

Username: root

Password: dbps

Select 'Configuration' > 'Network' to change the IP address or to set it to DHCP. Click 'Apply' to save your changes.



In the 'Network Services Settings' field ('Configuration' > 'Network'), you can block and open individual ports. As a general recommendation, only leave those ports open that are actually being used. Click 'Apply' to save your changes.

This is the TCP/IP port number for the I.SITE III: 6611

5 Technical Data

Transmission unit (TX)	
Frequency bands VHF4m / VHF2m / UHF	66-88MHz / 136-174MHz / 400-470MHz / 450-530MHz
Transmitting power	Adjustable ex works for: 1 to 25 W
Channel separation	12.5/20/25kHz
POCSAG Transmission rate	512, 1200, 2400 baud
Antenna port	N-Type (female) 50Ω/port for external antenna
Duty cycle	33% at 25W (@ 131 °F)
Interface	
LAN	1x RJ45 (100 Mbps)
Call log	Proprietary call logs (available on request)
Control	PC software or through third-party providers
Fault status reports	
FS01	Unstable transmitting frequency (PLL Unlocked)
FS02	Fault in transmission unit TX (High FWD/low REV power or TX excess temperature)
FS03	No operating voltage present (AC Power Fail)
FS04 (optional)	Operating voltage of backup battery below threshold value (ACCU Low)
FS05	Incorrect transmitter keying (TX Not Allowed)
General	
Backup battery (optional)	12 V / 2,3 Ah charging port + battery low display + deep discharge protection
Input contacts (optional)	Three contact inputs (E1, E2, E3 (open/close)) for triggering messages (edge triggered, potential-free 5 - 15 V, debounced to 100 ms)
Service contact (optional)	One door contact (open/close) for triggering messages during servicing
Operating temperature range	-4 °F to +131 °F // -20 °C to +55 °C
Input voltage (AC)	90-264VAC
Power consumption (max. 230 V)	5 W (stand-by), 75 W (sending at max. 25 W)
Protection class	IP65
Dimensions (H x W x D)	15.8 x 8.3 x 4.7 inches // 400 x 210 x 120 mm
Weight	264.75 oz. // 7.5 kg (without optional backup battery)
Conformity	
Data transmission	ETS 300 279, ETSI 300 113
Electromagnetic compatibility	EN 301489-05, EN55022
Security	EN 60950

5.1 Item Numbers

The following base transmitters and optional features are available for ordering:

Item numbers Transmitter	
VHF4m	0722263
VHF2m	0722262
UHF 400-470MHz	0722261
UHF 450-530MHz	0722264

Item numbers options	
Backup battery	0722128
Input contacts	0722129
Service contact	0722130

6 Safety Notices

6.1 General

The I.SITE III device should only be opened by authorized and qualified technicians. The manufacturer is not liable in any way for damage or injuries stemming from non-compliance with these safety notices or from improper use of the device.

6.2 Important Notes on Device Operation

This device is permitted for operation in Switzerland, Liechtenstein, and all member states of the European Union.

Before operating this device, you need to obtain a suitable radio license from the applicable public authority. The permitted frequency ranges and channel spacing vary from country to country and must be observed.

6.3 General Safety Measures

- All devices must be serviced exclusively by suitably qualified service technicians.
- Only connect devices to the inputs and outputs of the I.SITE III that comply with the corresponding safety guideline (EN 60950-1:2001).
- Always operate the device in a power grid with 90V-260VAC, 50-60Hz.
- Only operate the device in building locations where it is protected from lightning and shielded from direct sunlight.
- Due to the danger of electrical shock, only open the I.SITE III housing if you have been trained and certified by Swissphone to do so.
- Ensure that no humidity, liquid, or steam can enter the device. (In closed-door environments, the device complies with protection class IP65.)
- Do not keep any liquids in close proximity to the device. Do not use liquid cleaning agents. These may damage the device or cause electrical shocks.
- Do not install the device in close proximity to heat sources.
- Only use original parts or parts recommended by your dealer, as you may otherwise cause personal injury or damage to the device. Ignoring this warning voids the device warranty. Any alteration or repair of the device must be undertaken by a suitably qualified technician.

6.4 Precautionary Measures for Handling the Battery

The battery (backup battery) is an optional feature and can be ordered as an add-on for the base housing of the I.SITE III.

6.4.1 Battery Handling

- Never expose the battery to open flames.
- Ensure that there is no short circuit between the battery contacts.
- Never open up the battery.
- If the battery is damaged and dilute sulphuric acid spills onto your skin or clothes, immediately rinse with water. If any dilute sulphuric acid touches your eyes, immediately rinse them thoroughly and seek medical help.
- We recommend replacing the battery every 3-4 years.
- After all the battery power has been consumed, restore mains operation as soon as possible to recharge the battery.

6.4.2 Battery Storage

- Do not store the battery in the vicinity of open flames.
- If the battery is out of use for an extended period of time, store it in a cool location (above 0 °C).
- Recharge the battery at least once every six months.
- Do not place partially discharged batteries in storage.

Note: If you place the I.SITE III in storage for an extended period of time, there is no need to disconnect the battery from the I.SITE III as the power supply will shut down the battery correctly.

6.5 Earthing and Lightning Surge Protection

Warning!

Proper earthing and adequate protection against lightning surges are vital in order to prevent device damage.

Earthing and lightning surge protection are interconnected. The following categories apply here:

- **Electrical earthing:**
This describes an earthing system that conducts any surge current from the device's housing or other parts to the equipotential bonding of the building.
- **HF earthing:**
This describes an earthing system where HF power is diverted to earth. HF earthing systems include shielding that contains or lessens the leakage of HF radiation.
- **Lightning protection:**
Proper lightning protection is crucial for ensuring the safe and reliable operation of a communications system. This is closely linked to the building's equipotential bonding.

The User Manual at hand does not contain in-depth recommendations and guidelines for the earthing and lightning protection measures required for communications systems. Such information can be obtained separately from a large number of expert sources. If you have any doubts regarding the specific requirements, make sure to inform yourself accordingly.

6.6 Maintenance Schedule

The I.SITE III is based on the latest technological advances and features a software-based controller. Therefore, it requires only very minor regular maintenance.

When maintenance is carried out, this should include the following tasks:

- Wipe down the device with a soft cloth.
- Check all functions.
- Check the battery condition.
- Check all electrical connections.

Note: We recommend replacing the battery at least once every 3-4 years.

7 EU Declaration of Conformity

The I.SITE III complies with all basic requirements of the European 1999/5/EC R&TTE guideline.

EU/UE KONFORMITÄTSERKLÄRUNG DECLARATION OF CONFORMITY DECLARATION DE CONFORMITÉ

Wir
We
Nous

SWISSPHONE Telecom AG

(Name des Anbieters) (supplier's name) (nom du fournisseur)

Fälmisstrasse 21, CH-8833 Samstagern

(Anschrift) (address) (adresse)

**erklären in alleiniger Verantwortung, dass das Produkt
declare under our sole responsibility that the product
déclarons sous notre seule responsabilité que le produit**

i-site III VHF 2m

(Bezeichnung, Typ oder Modell, Los-, Chargen- oder Seriennummer, möglichst Herkunft und Stückzahl)
(name, type or model, lot, batch or serial number, possibly sources and numbers of items)
(nom, type ou modèle, nom de lot, d'échantillon ou de série, éventuellement sources et nombres d'exemplaires)

**auf das sich diese Erklärung bezieht, mit der / den folgenden Norm(en) oder normativen
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EN 61000-6-4:2007+A1:2011
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**Gemäss den Bestimmungen der Richtlinie(n)
following the provisions of directive(s)
conformément aux dispositions de(s) directive(s)
(falls zutreffend) (if applicable) (le cas échéant)**

1999/5/EG R&TTE

Samstagern, 19. Nov. 2013

Thomas Minder
Techn. Leiter Prüfstelle



(Ort und Datum der Ausstellung)
(Place and date of issue)
(Lieu et date)

(Name und Unterschrift oder gleichwertige Kennzeichnung des Befugten)
(name and signature or equivalent marking of authorized person)
(nom et signature du signataire autorisé)

8 Notes for Customers from the U.S. and Canada

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC WARNING:

Changes or modifications made to this equipment not expressly approved by Swissphone may void the FCC authorization to operate this equipment.

FCC Radio Frequency Interference Statement:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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