Thank you for purchasing “SmartCell 212 /112” product.

Quasar Communication Systems Ltd. and its distributors assume no responsibility for any damage or loss resulting from the use of its products or this user manual. Quasar Communication Systems Ltd and its distributors assume no responsibility for any loss or claims by third parties, which may arise through the use of its products.

Registration and Type Approval

Smartcell 212 /112 carries CE Certification, Australia AS/NZS3548

Corporate contacts

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September 2003

1. Introduction

1.1 Overview

The SmartCell 212 and 112 gateway enables direct connection of an organization's internal telephony system to commercial cellular networks via an already existing Private Branch Exchange (PBX) system.
The SmartCell 212 has a standard ISDN BRI "S0" interface on the Line side and connects with 2 channels to any GSM cellular network to create a cellular gateway. The SmartCell 112 is a single channel gateway. SmartCell 212/112 operates at 900MHz/1800MHz. The 212-1900 and 112-1900 models operate at 900MHz/1900MHz.

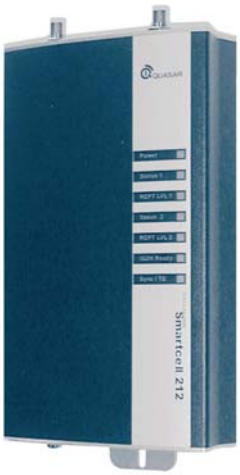
1.2 Packing List

for 212

Item	Description	Qty
1	SmartCell 212 unit	1
2	Power Supply	1
3	ISDN S Interface Cable (straight)	1
4	SYNC IN Cable (straight)	1
5	Antenna	2
6	Bag with Screws and Dowel Pins	1
7	Bracket	2
8	Installation Guide	1

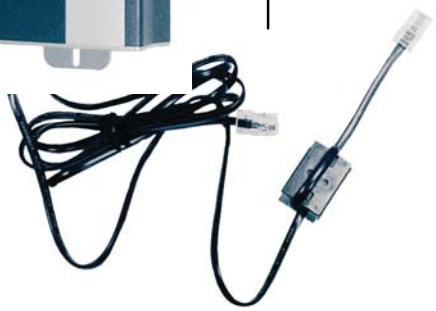
for 112

Same list apart of one antenna and one bracket provided.



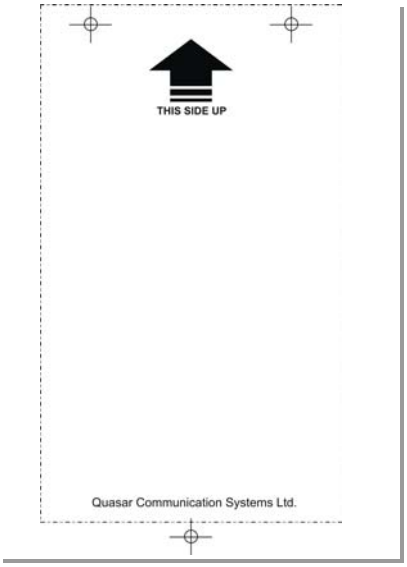
SmartCell 212/112 unit

Cables
Power Cable
ISDN Interface Cable
SYNC IN Cable



Antenna

2 Bags with Screws
& Dowel pins



Drill Template

2. Safety Precautions

Main voltages are present at specific points in this equipment. Some of the parts can also have high operating temperatures. Non-observance of these conditions and safety instructions can result in personal injury or in property damage.
The Smartcell 212 system complies with the standard IGC 950. All connected equipment must comply with the applicable safety standards:
EN 55022
IEC 1801-2/91
IEC 801-3
IEC 801-4
To avoid injury and prevent equipment damage, observe the following safety precautions:
Do not ship equipment unless it is properly packed in its original wrapping and shipping containers.
Do not connect the 212 or 112 to any power supply other than the one provided with it.
Equipment service and maintenance should be done only by qualified personnel.

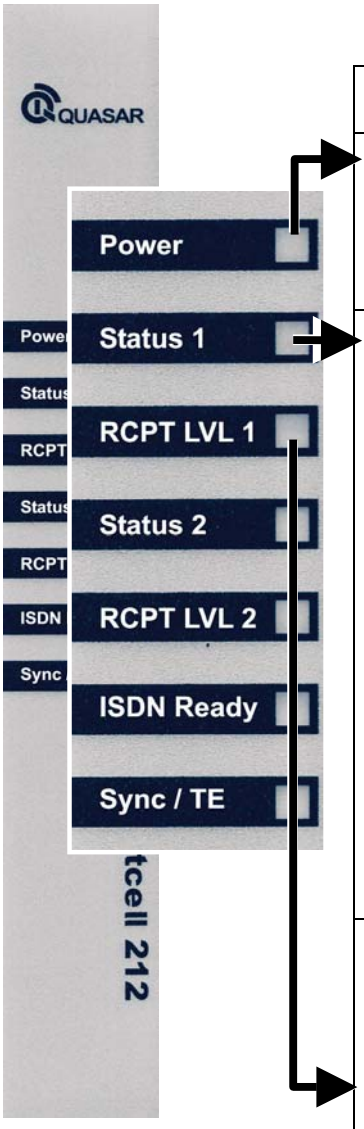
3. Product Description

3.1 Technical Specifications*

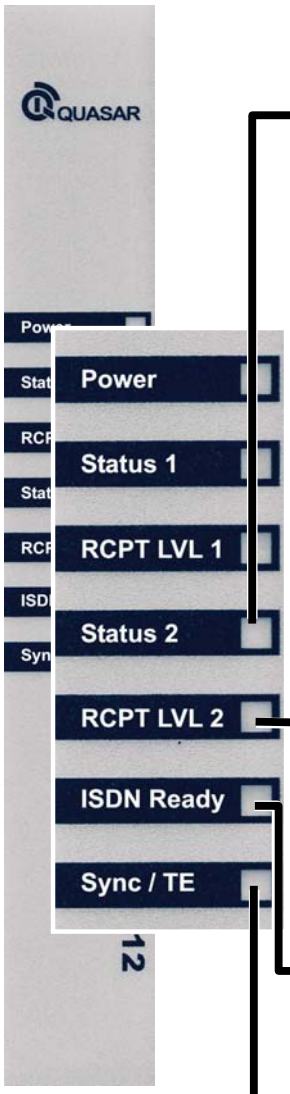
Power supply	
Supply voltage (secondary)	12V DC
Supply current	2 A max.
Operating temperature	0 ºC to 40 ºC
Standards	Full CE
ISDN specifications	
Line interface	BRI – S/T point reference (indoor only),
Type	NT or partial TE.
Protocol	Euro ISDN.
Connector type	RJ-45
Data Port Specifications	
Interface port/Connector type	RS232
Protocol	AT command compatible
Dial tone	400 Hz ± 1%
GSM channel specifications	
Cellular interface	Wavecom GSM module
Networks supported	Dual band EGSM 900/1800 MHz for 212 or 900/1900 for 212-1900
Standards	Full type approval according to GSM phase 2+ specifications.
Antenna	
Antenna gain	Antenna gain – 2.5 0dB
Antenna connector	FME or SMA

*Specifications are subject to changes without notice

3.2 LED Indications



Led	Description	Operation
Power	Indicates the status of the power connection.	**On**–the SmartCell 112/212 is powered on. **Off**–the SmartCell 112/212 is powered off.
Status 1	Indicates the SmartCell 212 operational status of channel 1	**Off**–the channel is idle and no calls are being handled. **On**–the channel is handling a call. **Slow blinking**–the SmartCell 112/212 is initialising following power up or is being programmed. **Fast blinking**–an error has occurred in the PIN code entry and the outgoing call cannot be completed. The PIN code must be disabled or the default PIN code 1234 must be entered.
RCPT.LVL 1 (Reception Level Channel 1)	Indicates the reception level of the GSM channel 1	**Green** -High reception. **Orange** -Medium reception. **Red**-Low reception **Off** -Very low reception or no reception at all.



Led	Description	Operation
STATUS 2	Indicates the SmartCell 212 operational status of channel 2.	**Off**–the channel is idle and no calls are being handled. **On**–the channel is handling a call. **Slow blinking**–the SmartCell 112/212 is initialising following power up or is being programmed. **Fast blinking**–an error has occurred in the PIN code entry and the outgoing call cannot be completed. The PIN code must be disabled or the default PIN code 1234 must be entered.
RCPT.LVL 2 (Reception Level Channel 2)	Indicates the reception level of the GSM channel 2	**Green** -High reception. **Orange** -Medium reception. **Red**-Low reception. **Off** -Very low reception or no reception at all.
ISDN Ready	ISDN NT interface indicate the ISDN NT port physical layer status.	**Off**–No ISDN NT Layer 1 connection. **On**–ISDN NT layer 1 connection established.
Sync/ TE	ISDN TE interface indicates the TE physical layer status or the Sync IN status.	**Off**–No ISDN TE Layer 1 connection or no Sync IN. **On**–ISDN TE layer 1 connection established or Sync IN is active.

4. SmartCell 212/112 Installation

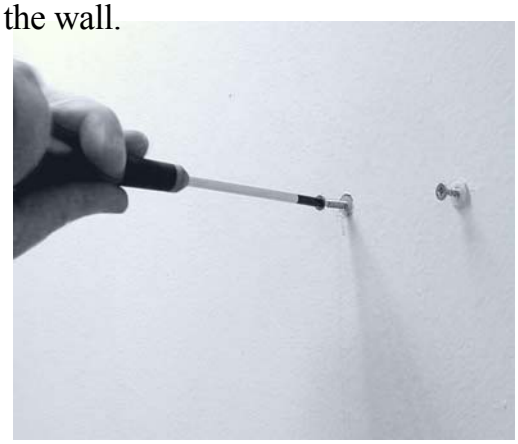
4.1 Installation Instructions

4.1.1 Locate template on the wall and mark screw location

4.1.2 Bore 3 holes.

4.1.3 Insert 3 dowel pins.

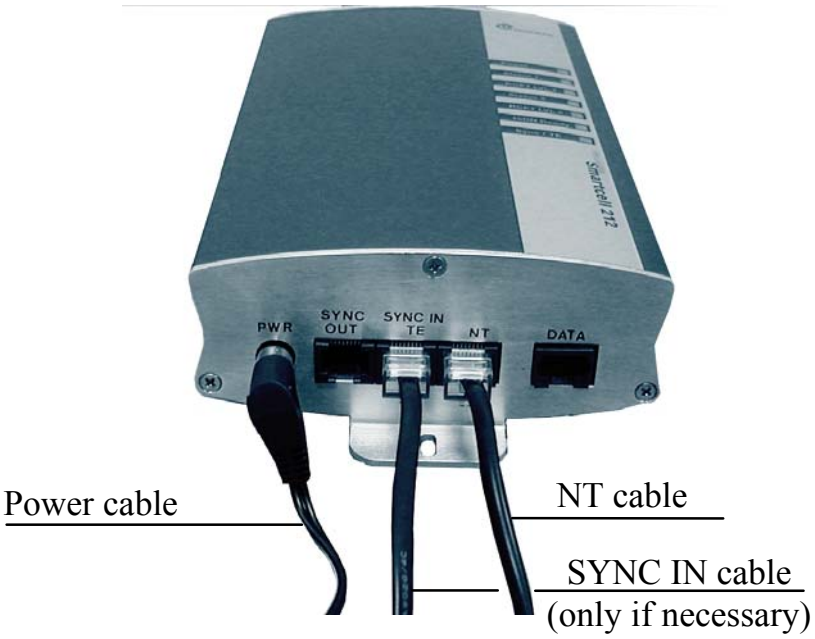
4.1.4 Tighten the two upper screws. Leave a gap of 3mm minimum between the screw head and the wall.



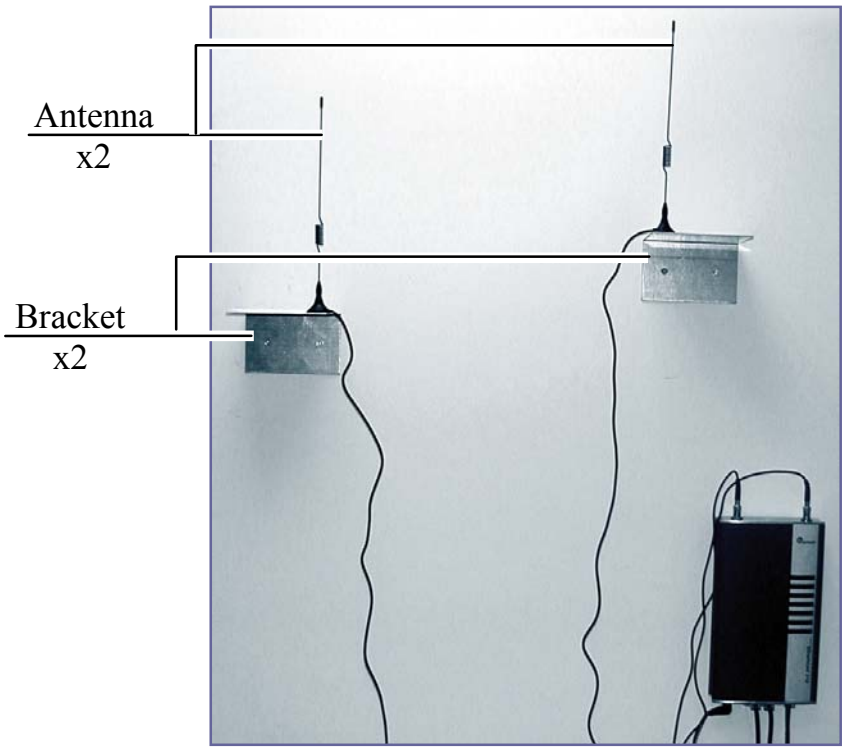
4.1.5 Mount the SmartCell 212/112 on the 2 screws.

4.1.6 Tighten the lower screw.

4.1.7 Connect cables.



4.1.8 Connect antennas.



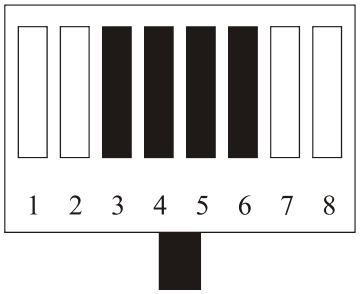
4.2 Configuration of the PABX

The PABX connected to a SmartCell device must be properly configured in order to operate. The table below describes the configurations. For more detailed information regarding the programming of the PABX, please contact your PABX supplier.

PBX ISDN Interface Definitions
(for normal connection)

	Description	**Comments**
1	Define the ISDN interface (TE point reference, point to point with TEI=0.)	Required
2	On LCR (Least Cost Routing) enabled systems, set the CLI programmed to identify cellular prefixes.	Optional SmartCell 212/112 becomes transparent to internal callers.
3	Use only the original ISDN cable (straight)	Required to insure proper operation.

4.3 RJ-45 Connector Pin Layout



	NT Side	**TE Side**
PIN #	**Function**	
1	NC (not connected)	NC (not connected)
2	NC (not connected)	NC (not connected)
3	RX (A)	TX (A)
4	TX (A)	RX (A)
5	TX (B)	RX (B)
6	RX (B)	TX (B)
7	NC (not connected)	NC (not connected)
8	NC (not connected)	NC (not connected)

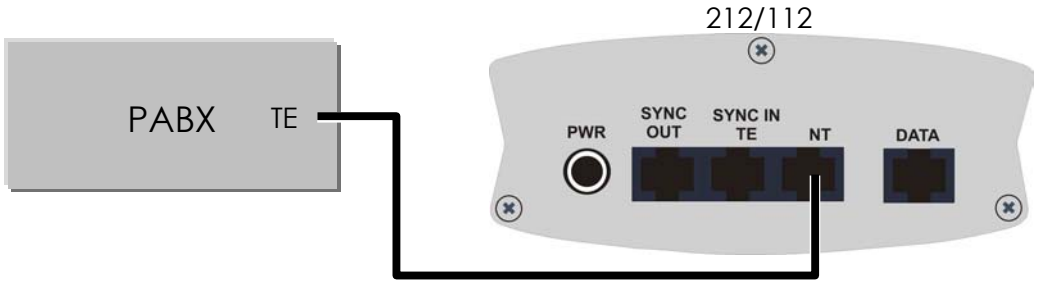
In order to avoid damage, do not use the reserved pins.

4.4 Cable Connections

4.4.1 Normal Connection

In normal connection, the 212/112 is used as the NT side and the PABX as the TE side. The Sync (timing) is delivered from the 212/112 to the PABX over the ISDN cable. The Sync IN/TE port of the 212/112 is not used.

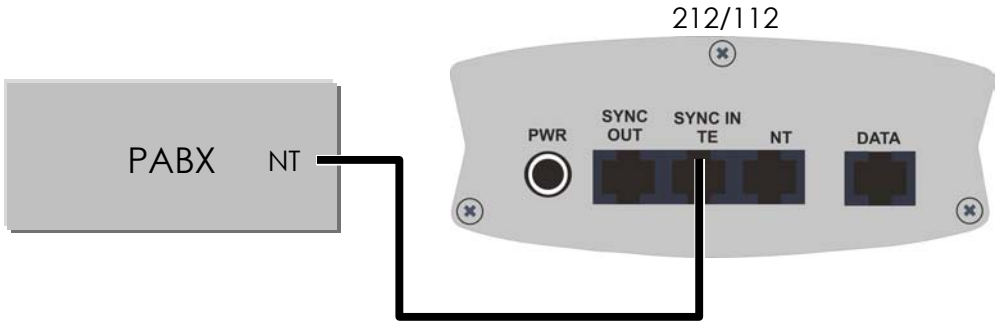
Note: If the PABX will not accept the 212/112 as a sync source, use the configuration described in paragraph 4.4.3.



Note: ISDN Ready LED will be ON.

4.4.2 Partial TE mode

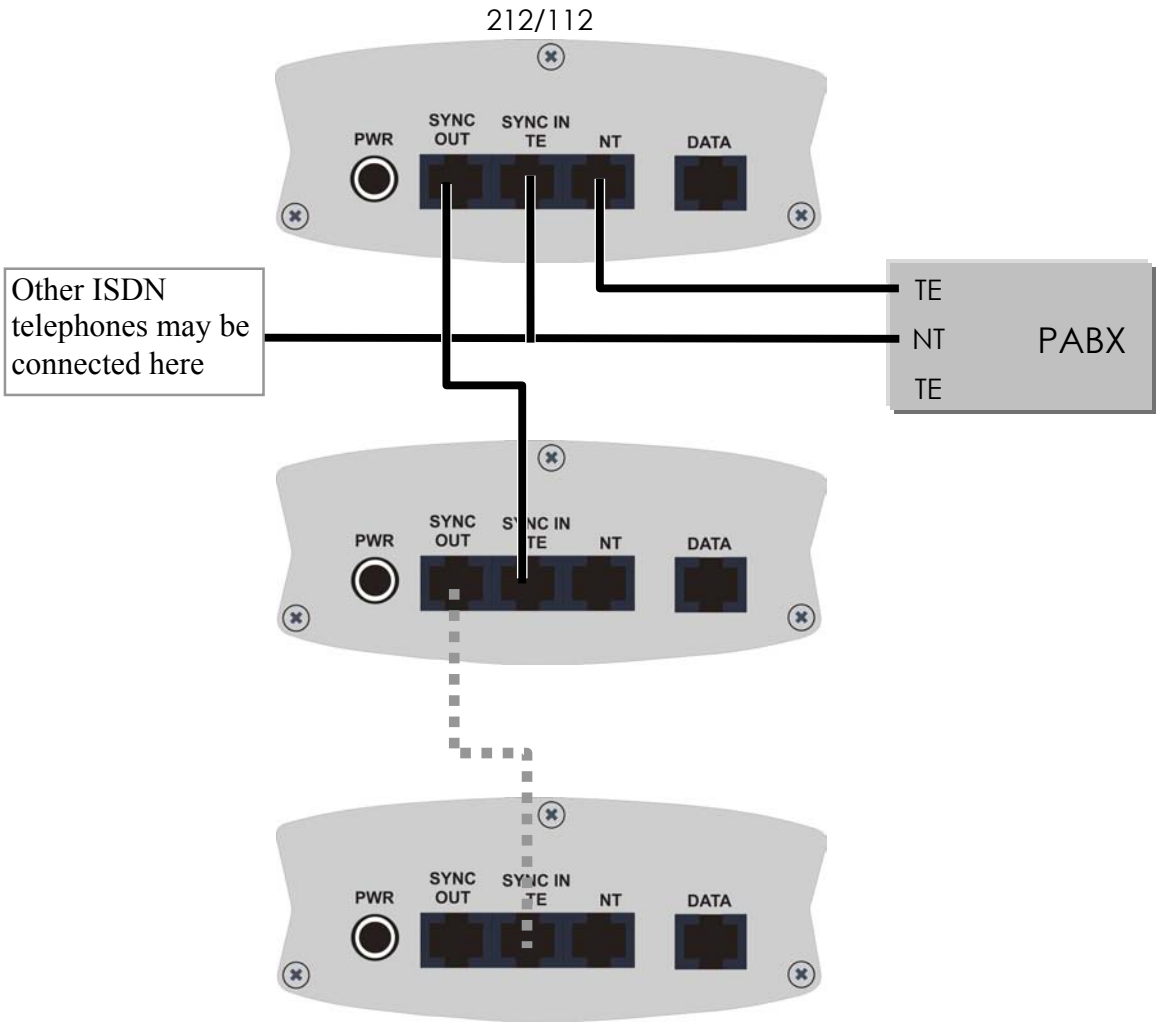
In this mode, the 212/112 is used as the TE side and the PABX is used as the NT side of the ISDN connection. The Sync (timing) is delivered from the PABX to the 212/112 over the same ISDN cable. To enable this mode, use the QMS S/W to set the 212/112 to partial TE mode (Layer 1 = TE, Layer 2 = TE, Layer 3 = NT).



Note: Sync IN/TE LED will be ON.

4.4.3 External Sync mode

In this mode, the PABX is used as the TE side and the 212/112 is used as the NT side of the ISDN connection. However, the Sync (timing) is delivered from the PABX to the 212/112 over a second cable (a straight RJ-45 cable, provided with 212/112). This cable connects to any NT port of the PABX, without interrupting the traffic. If more than one 212/112 need to be connected to the PABX - a chain connection can be used such that the first 212/112 provides timing to the second, the second 212/112 to the third and so on.



4.5 Getting Started

4.5.1 After making all connections and installing the SIM cards, make sure the POWER LED is lit. If it is not, make sure that the power supply is properly connected to the unit and to the AC mains.

4.5.2 During the first few seconds after powering the unit, the STATUS LED will start blinking, indicating unit initialisation. Once the SIM cards have been registered and are operational, the STATUS LEDs will stop blinking.

4.5.3 Verify that the RCPT. LVL LED is green, indicating high reception level. To improve the reception level:

- Move the antenna to a better location.
- Place the antenna on a metal plate larger than 20X20cm.

Reception Level Indication

RCPT. LVL LED	**Reception Level**	**Reception Level**
Green	High reception	-75dBm to – 51dBm
Orange	Medium reception	-87dBm to –77dBm
Red	Low reception	-101dBm to –89dBm
Off	Very low reception or no reception at all	less than –103dBm