Nokia 6090 hardware information

NOKIA
CONNECTING PEOPLE

Change History:

2.0	14-Feb-01	Specifications	Initial version
2.01	06-Jun-01	Specifications	Title change from "technical" to "hardware" Accuracy improvement in ch. 6.2., pin 2 & 3

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1 Introduction

This document describes the Nokia 6090 integrated-modem vehicle fixed-mounted GSM phone. It is aimed for companies who need technical information before choosing a device to be integrated in their vehicles/solution. This document focuses on information related to the Nokia 6090 product. Information related to features supported by its software, e.g. AT commands, can be found in a separate document.

Other technical information is confidential but may be passed upon application per e-mail to:
6090.ProductSupport@Nokia.com
Technical questions related to the Nokia 6090 can be sent to above-mentioned address.

The Nokia 6090 provides internal data functionality. It means that no external device like data card is necessary to connect a terminal like a PC to the phone.
The means to connect the Nokia 6090 to the external device can be as simple as a standard modem cable that is available in computer stores.

2 System Overview

The NOKIA 6090 is a fixed carphone that consists in 3 main units. The GSM transceiver is the main part of the phone; it consists of an 8W GSM-transceiver, the power supply, the handsfree circuit, a SIM-Card reader for a big SIM card, a data interface via D-Sub 9 connector (fully implemented EIA/TIA 8 signals RS232), and has an interface to car specific signals. The handset consists of a large display, a 16 key keyboard with NAVI™ key, an ear speaker, a microphone and an SIM-Reader for a small SIM card. The cradle holds the handset and contains a magnet for Hook On/Off detection in the handset. For modem applications it is also possible to operate the GSM-transceiver without neither the cradle nor the handset. The product without handset is called Nokia 6090 application kit (You can mention the Nokia product code 063497 to your dealer).
The following picture shows a system overview of the Nokia 6090.

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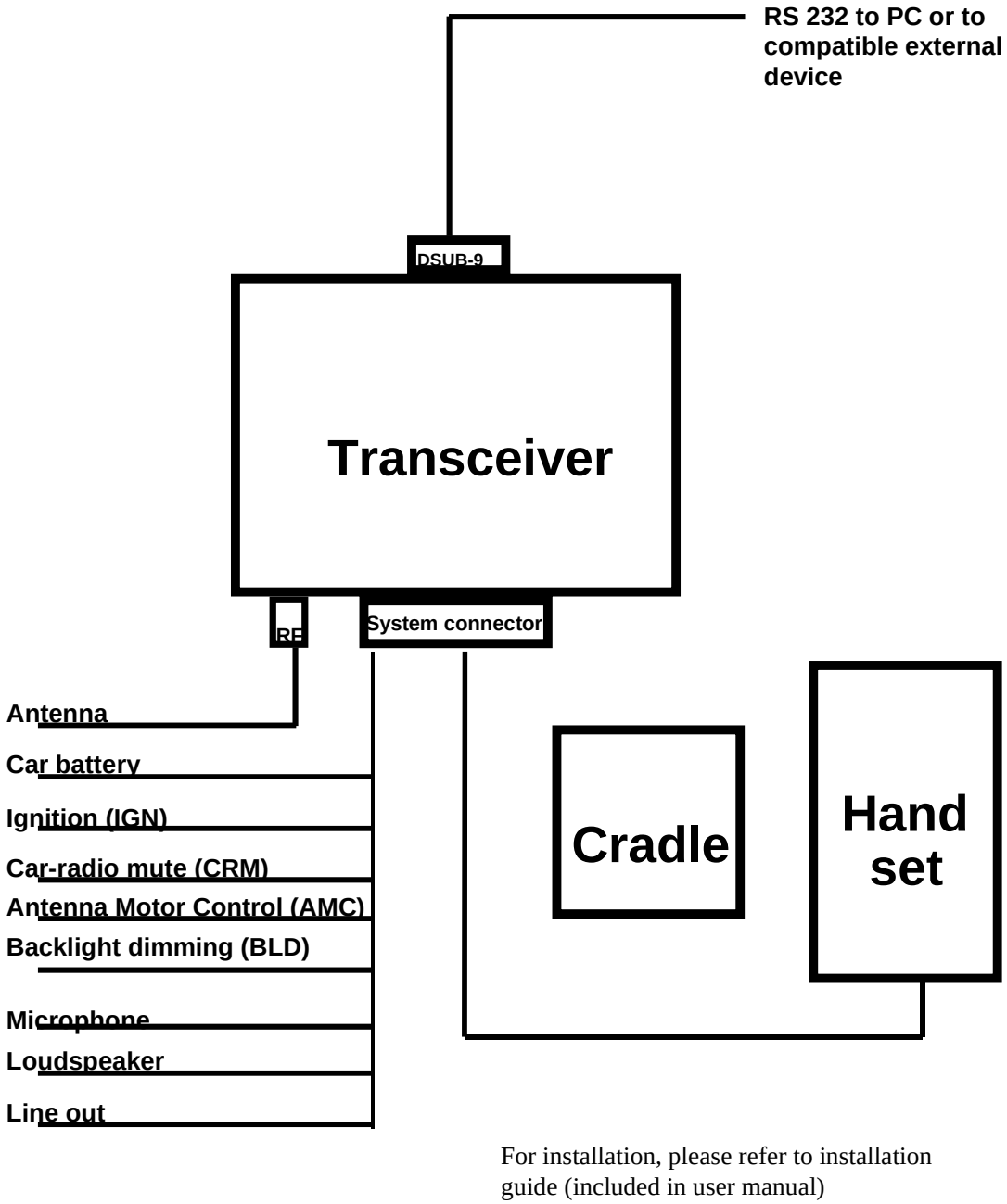

Figure 1: System overview of Nokia 6090

The transceiver is the main part of the Product; it contains the GSM radio part. Its has 3 connectors:

1 System connector (powersupply, car signals, audio signals, handset interface)
2 RF connector (to GSM antenna, note a mini UHF adapter may be needed)
3 Data Connector (to a compatible PC or any other compatible device)

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3 Transceiver features list and dimensions

- Class 2 (8W) phase GSM 900 transceiver
- Powersupply 12 V typical
- Support of ignition sense and back-light dimming signals
- Delivery of car-radio mute and antenna motor control signals
- High quality handsfree audio (designed for vehicle environment)
- Power amplifier for 4W handsfree loudspeaker
- Support of active handsfree microphone according to VDA standard
- Delivery of lineout signal to use the car-radios amplifiers and loudspeakers for handsfree
- SIM reader for large SIM-Card
- RS-232 interface for connections to compatible external device
- Connection to handset
- Car data interface for remote control and data applications

Height	25mm
Width	170mm
Depth	115mm
Volume	489ccm

Table 1: Overall transceiver dimensions

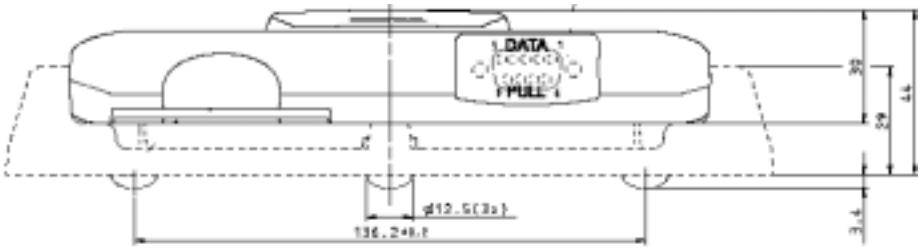

Figure 2: Dimensions of transceiver (front view)

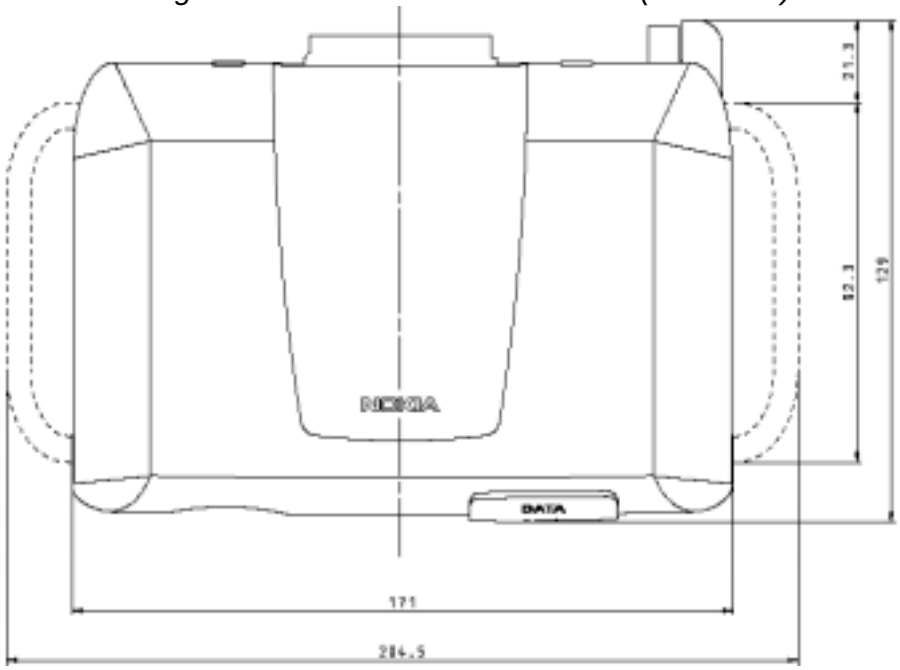

Figure 3: Dimensions of transceiver (top view)

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4 Basic Specifications

Parameter	Type
Cellular System	GSM 900 Phase II
Transceiver type	Class 2 Mobile (8 Watt)
System cable Interface	32 pole AMP connector
Data Interface	RS232 (full protocol)(DSUB 9)
Installation	Trunk, cabin or DIN slot
SIM card	Full size SIM in RU (ISO 7816) Mini SIM in HS (ISO 7816)
Operational temperature	-20 C to + 60 C (normal performance) -40 C to + 85 C (reduced performance) -40 C to + 85 C (storage)
Supply voltage (transmitting)	10.8 V to 16 V
Current consumption (power off)	< 1mA
Current consumption (idle mode)	150mA
Current consumption (transmit at max. PWR)	normal:1,5A maximal: 4A (peak)
Fuse	+12V Fuse 3A GND Fuse 3A IGNS Fuse 1A PCB Fuse for Fire protection
TX RF output power	8 Watt
Handsfree audio power	5 Watt at 4Ohm

Table 2: Basic specifications

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5 Transceiver drawings

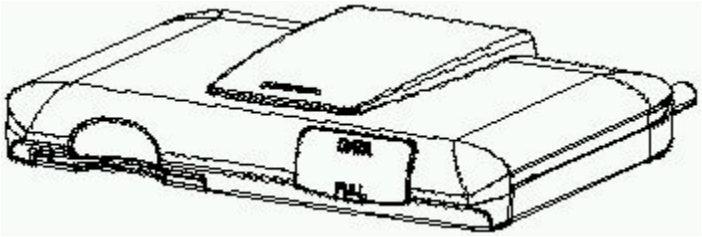

Figure 4: Nokia 6090 transceiver (with housing)

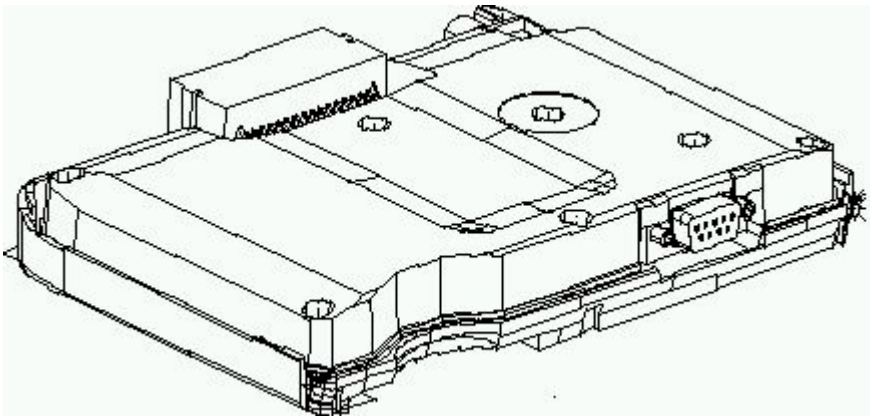

Figure 5: Nokia 6090 housing open

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6 Data connector description and pinning

6.1 Data connector description

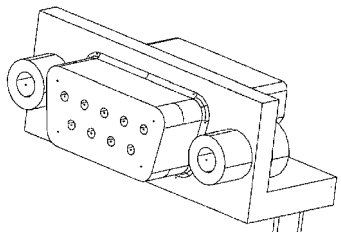

Figure 6: Nokia 6090 integrated data connector (front view)

Name of the connector counterpart (wire side): D-SUB 9
Possible names of the connector counterpart cable: standard modem cable, extension cable for modem/mouse/monitor, DB9-DB9 cable, female-male 9 pin serial cable.

6.2 Data connector pinning

The following table describes pin-out of the data connector:

Pin / Connector	Line Symbol	Minimum	Typical / Nominal	Maximum	Unit / Notes
1	RS-232 DCD Handshake: Data Carrier Detect (output)	+/- 3,3	+/-5,4	+/- 15	V/ inactive V /active
2	RS-232 RD Received Data (output)	+/- 3,3	+/-5,4	+/-15	V / binary state 1 V / binary state 0
3	RS-232 TD Transmitted data (input)	-	1,2 / 1,5	-	V/ binary state 1 V/ binary state 0
4	RS-232 DTR (input)	-	1,2 / 1,5	-	V / inactive V / active
5	GND (Power Supply)		0		V/ reference ground
6	RS-232 DSR (output)	+/- 3,3	+/-5,4	+/- 15	V / inactive V/ active
7	RS-232 RTS (input)	-	1,2 / 1,5	-	V / inactive V/ active
8	RS-232 CTS (output)	+/- 3,3	+/-5,4	+/- 15	V / inactive V/ active
9	RI (output)	+/- 3,3	+/-5,4	+/- 15	V / inactive V/ active

Table 3: Pinning of the data connector (RS-232 Interface)

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7 System connector description and pinning

7.1 System connector description

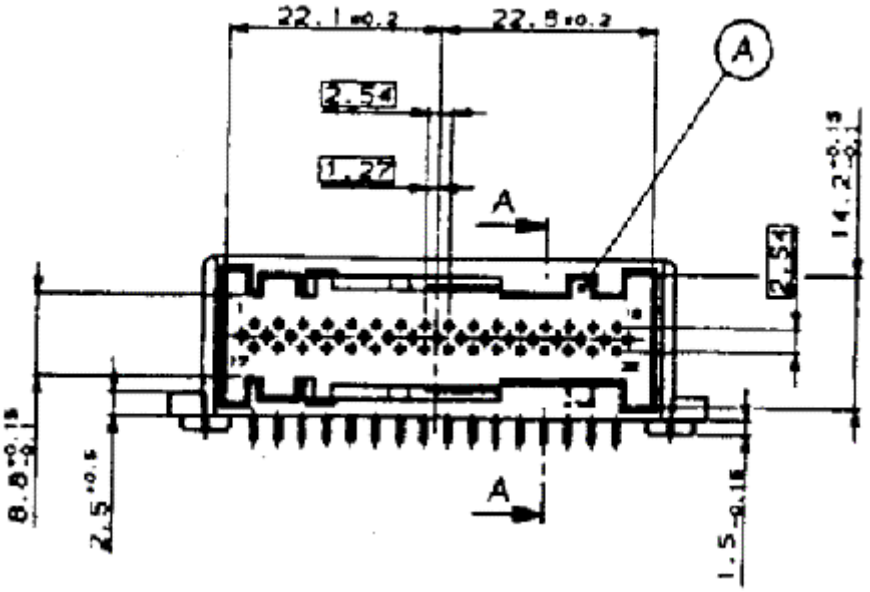

Figure 7: System connector (transceiver side)

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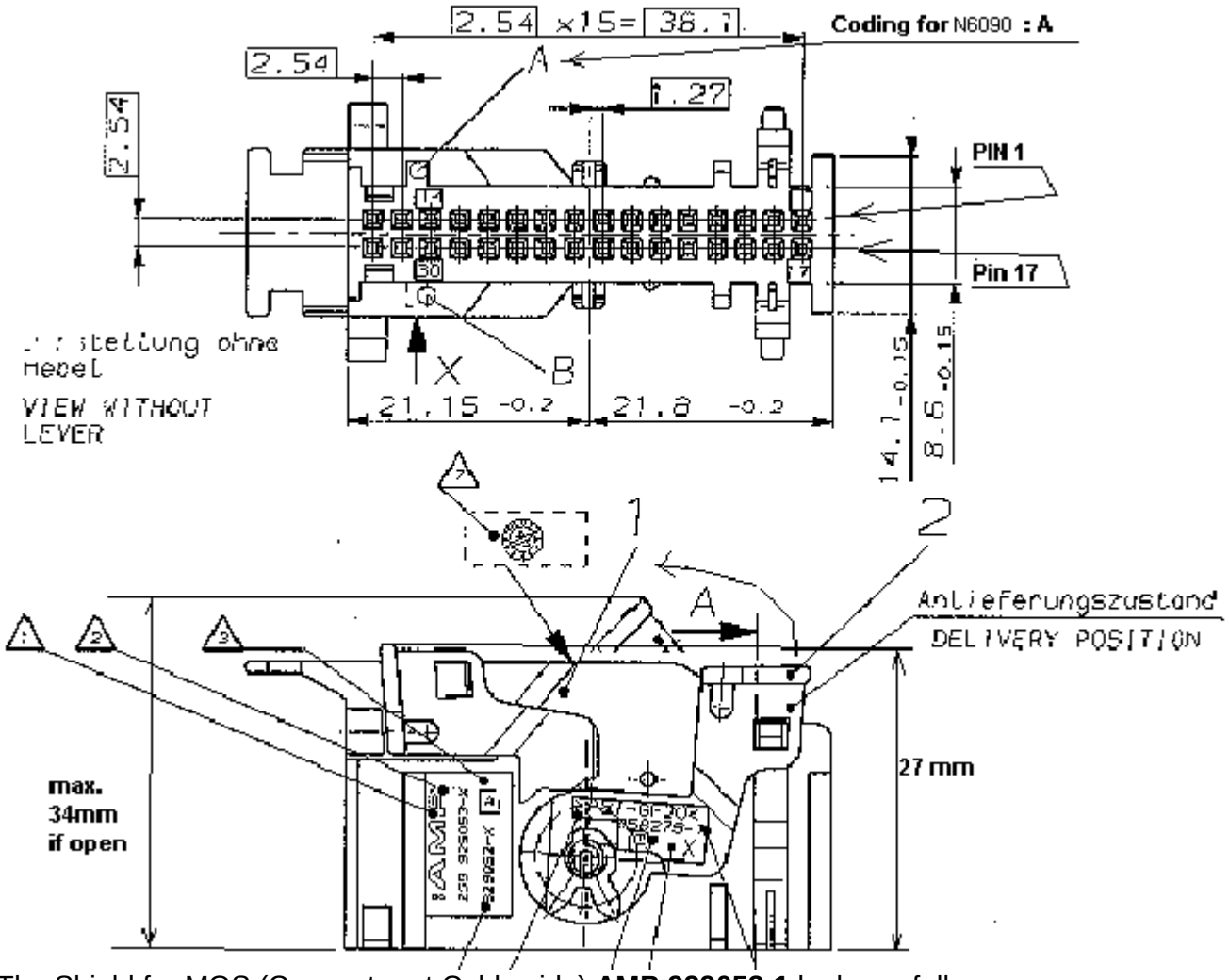
Name of the connector counterpart (wire side):



The Shield for MQS (Connector at Cable side) **AMP 929053-1** looks as follows:

Figure 8: System connector (system cable side)

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7.2 System connector pinning

The following table consists of the pin out of the system connector. The connections on the system connector are shown in the following table, I/O's are given in view from the radio unit (transceiver).

Pin No.	Name	Function	Direction	Type
1	CARBAT+	Battery Plus	Input	Power (10.8V.16V)
2	CARBAT-	Battery Minus	Input	Power (0V)
3	BLD	Back light dimming	Input	PWM 12V
4	AMC	Antenna-Motor Control	Output	Open collector (active high)
5,6		N.C.		
7		to Handset		
8		to Handset		
9		to Handset		
10		to Handset		
11	SHIELD Line out	Shield for Lineout	Output	Power/Analog
12		N.C.		
13	LineOutP	Line Output (pos.)	Output	Analog
14	LineOutN	Line Output (neg.)	Output	Analog
15, 16		N.C.		
17	CARBAT+	Battery Plus	Input	Power (10.8V.16V)
18	CARBAT-	Battery Minus	Input	Power (0V)
19	IGS	Ignition Sense	Input	Dig. 12V
20	CRM	Car-Radio Mute	Output	Open Collector (active low)
21, 22		N.C.		
23		to Handset		
24		to Handset		
25		to Handset		
26		to Handset		
27	HFMICGND	handsfree Microphone GND	Output	Power/Analog
28	HFMICP	handsfree Microphone +8V/In	I/O	Analog
29, 30		N.C.		
31	HFSPKN	handsfree loudspeaker (neg.)	Output	Analog
32	HFSPKP	handsfree loudspeaker (pos.)	Output	Analog

Figure 9: Pinning of the system connector

8 Additional information

Additional information is confidential but may be available upon application per e-mail to: 6090.productsupport@nokia.com
Please mention company, web site address, your full name, full postal address, the kind of application the development is for and other details you may find useful for us to know about.
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