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## MULTIPLEXED BSI OPERATING PRINCIPLE FOR THE XSARA PICASSO AND XSARA

CITROËN UK LTD  
221 BATH ROAD  
SLOUGH SL1 4BA

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DEALER PERSONNEL  
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## **DOCUMENT SUMMARY**

# **MULTIPLEXED BSI OPERATING PRINCIPLE for the XSARA PICASSO AND XSARA**

The aim of this document is to explain certain functions of the BSI (Built-in Systems Interface).

After presenting multiplexing, the following subjects will be dealt with:

Electrical functions of the XSARA and XSARA PICASSO.

- Signalling.
- Interior lighting.
- Driver's information.
- Visibility.
- Locking and unlocking.
- Automatic climate control.
- Immobilisation.
- Radio system.

### **MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1**

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### MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

## **MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1**

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**PART 1**

**MULTIPLEXING / BSI**

**XSARA AND XSARA PICASSO**

**MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1**

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## **MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1**

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# MULTIPLEXING

## I - BRIEF DEFINITION

Multiplexing is different from previous electrical technology in that it involves transmitting several items of digital information between various devices on a single transmission channel, in the form of 2 wires.

## II - PURPOSE OF MULTIPLEXING

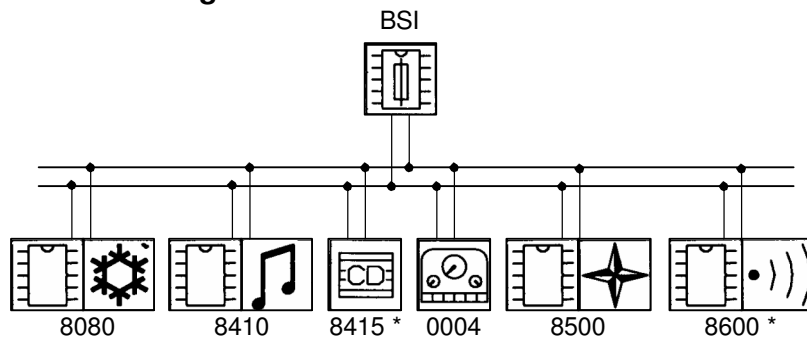
Multiplexing is used to:

- simplify electrical harnesses,
- increase functions (for the same number of wires).

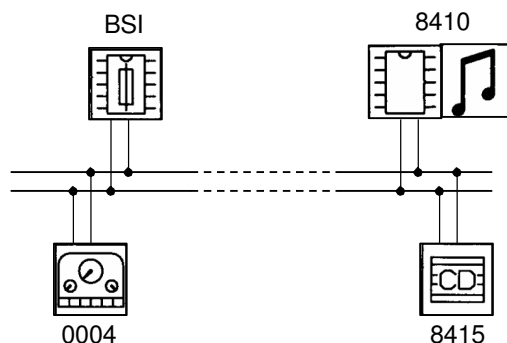
## MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

### III - DESIGN OF THE XSARA PICASSO AND XSARA MULTIPLEXED NETWORK

#### XSARA PICASSO design



#### XSARA design



**Key:** The dotted lines represent a connection used only by the diagnostic function.

|      |                                      |      |            |
|------|--------------------------------------|------|------------|
| *    | Available as an accessory            | 8410 | Radio      |
| BSI  | Built-in Systems Interface           | 8415 | CD changer |
| 0004 | Control panel / Multifunction screen | 8500 | Navigation |
| 8080 | Automatic climate control            | 8600 | Alarm      |

For the XSARA Picasso, a MultiFunction Screen is incorporated into the control panel:

- MultiFunction Screen type B,
- MultiFunction Screen type C (for navigation option).

There is no MultiFunction Screen on the XSARA.

A communications protocol defines the rules and format of the exchanges between the various ECUs. The communications protocol used on the XSARA and XSARA PICASSO is the VAN.

#### MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

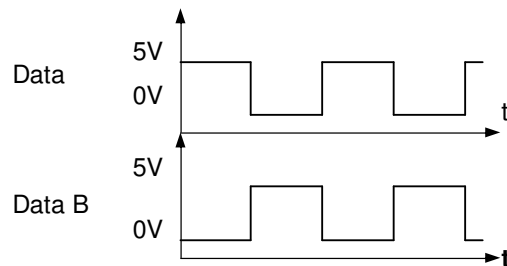


#### IV - THE VAN PROTOCOL

The network consists of 2 wires, called:

- Data,
- Data B (Data bar).

The Data B wire is so called because the voltage at its terminals is always opposite to the voltage on Data.



Two current levels are used to encode two distinct logical states.

This process is used to:

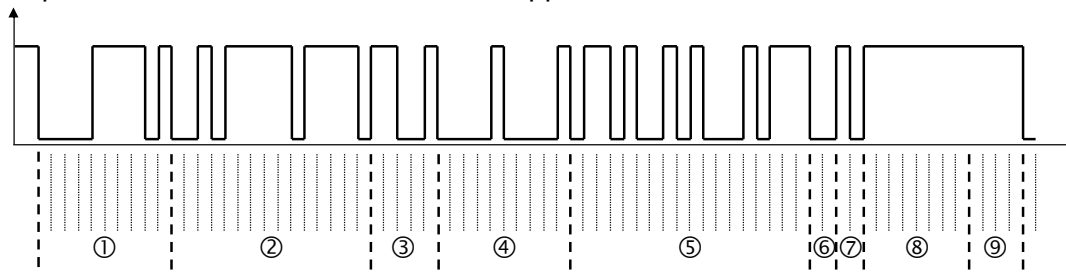
- limit the radiation given off,
- provide good resistance to interference.

There is an advantage in using these two wires and electronic circuits for emitting and receiving signals. It allows operation in downgraded mode if one of the wires is broken or short circuited to +12V or to earth.

If a wire breaks, the electronics compares the current level of the signal compared to a reference. The electronics signals the data line faults.

#### MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

**Format of the communications message (frame):** Only the rate of the Data line is represented as the Data B line is the opposite.



A message in a multiplexed device is unambiguous. It is therefore not possible for an error to occur regarding the recipient nor the nature of the command to be performed.

### A frame consists of 9 fields:

- ① a start of message identifier used to locate the start of the message.
- ② an arbitration identification field used to specify the recipient or recipients of the message.
- ③ this field specifies whether an acknowledgement request from the receiver is required, depending on whether it involves a request for or distribution of information.
- ④ a field containing the data of the message.
- ⑤ a validity control field for the message in order to check the integrity of the data upon arrival.
- ⑥ a field marking the end of the actual data to indicate that the message is finished.
- ⑦ an acknowledgement field which allows the receiver to confirm that the message has been correctly received.
- ⑧ an end of frame field.
- ⑨ a frame separator which allows the next frame to use the same sequence of 9 fields.

The electrical signals conveyed by the two wires are square and follow an information encoding sequence. Only the ECUs of the system can interpret them.

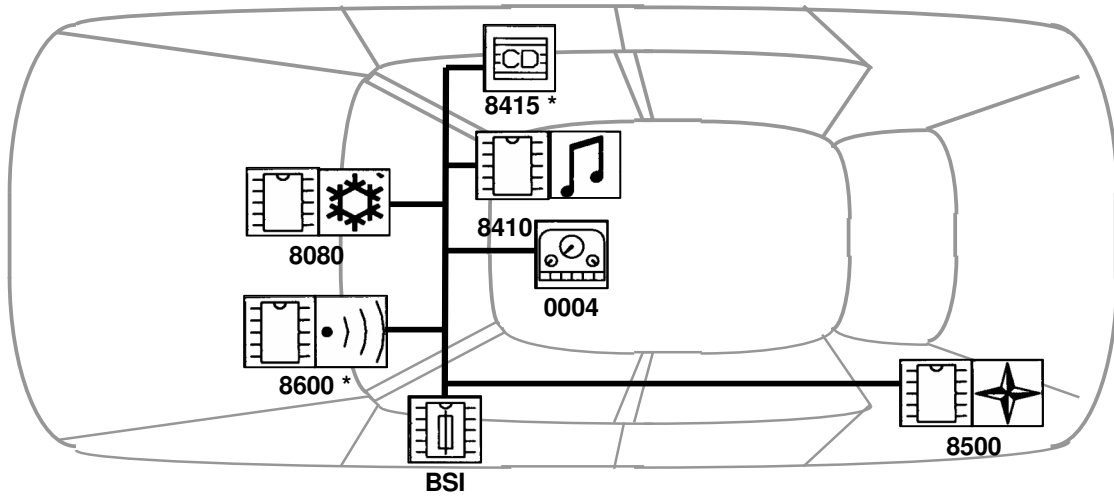
**IMPORTANT:** It is forbidden to connect a measuring device (multimeter, etc) to the VAN network.

Data and Data B wires can be repaired using Raychem connectors.

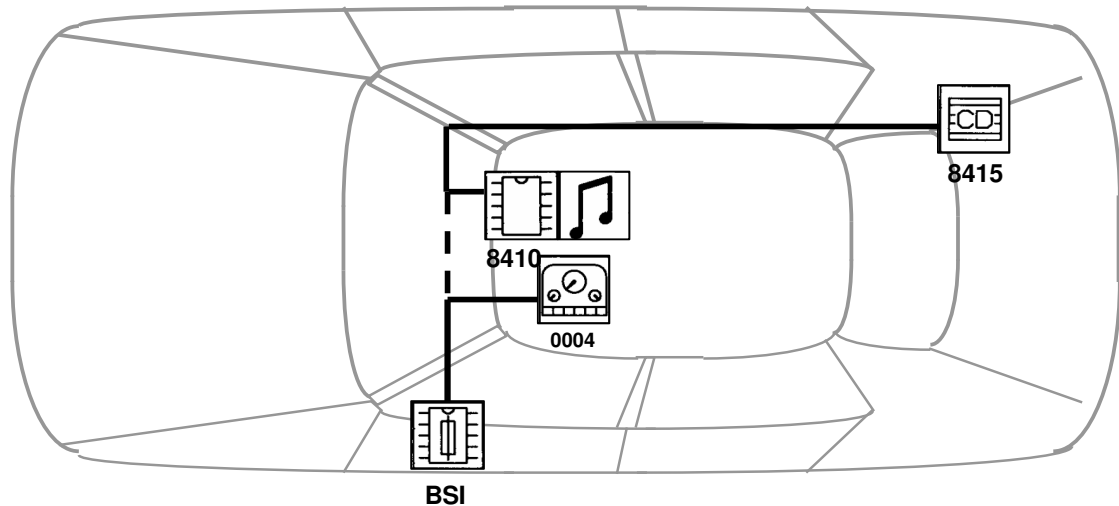
## MULTIPLEXED BSI - XSARA PICASSO AND XSARA – PART 1

## V - LOCATION OF MULTIPLEXED ECUS

### XSARA PICASSO



### XSARA



|      |                                      |      |            |
|------|--------------------------------------|------|------------|
| *    | Available as an accessory            | 8410 | Radio      |
| BSI  | Built-in Systems Interface           | 8415 | CD changer |
| 0004 | Control panel / Multifunction screen | 8500 | Navigation |
| 8080 | Automatic climate control            | 8600 | Alarm      |

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