Sichere Handytickets
und schnelle Kontrolle

VDV-BARCODE
MOBILE+

standardized
mobile tickets
copy protection
authentication
signature
certificate
ID media
Motics
inspection
revenue protection
2D-Barcode
visual output
Smartphone

VDV-Barcode Mobile+
Sichere Handytickets und schnelle Kontrolle
WHAT IS THE VDV-BARCODE MOBILE+ ABOUT?

Nowadays, whenever a passenger requests a ticket for public transport with his smartphone, he gets a 2D barcode ticket. Buying tickets via app is particularly easy for the occasional customer and an attractive access to public transport. However, that means higher inspection efforts for the transport company that has to inspect these tickets. The reason for this is, that in addition of the scanning of the ticket the passengers ID media must be checked. Only in this way the ticket can be assigned uniquely to the person who is currently using it.

This is necessary because today the 2D barcode has no copy protection. So anyone could buy a mobile phone ticket, copy it via screenshot and send it to all his friends. The control device may detect if a ticket has been manipulated, but an unmodified copy is considered a valid ticket. If there is no inspection of the ID medium, the inspector cannot be sure whether it is a legally purchased ticket or one of countless copies.

Due to the growing popularity of mobile phone tickets in public transport today’s 2D barcode poses a risk to the revenues of transport companies. The solution to protect tickets and to ensure revenue security is the VDV barcode mobile+.
WHAT IS THE VDV-BARCODE MOBILE+?

Basically, it is a further development of the existing VDV barcode. Today, VDV barcodes conforming to the standard are signed with security certificates. These are used for authentication, so that the controller can be sure that the checked mobile phone ticket has not been tampered with. In the course of further development, the VDV barcode is now protected against copying by a dynamic security element. For example, this could be a time stamp that renews itself every few seconds. If the ticket is then copied and sent, the dynamic element stops and no longer updates itself. When a copy is checked, it is immediately indicated that the ticket is invalid. Due to the dynamic element, however, the VDV barcode mobile+ has a restriction compared to the existing VDV barcode: While the VDV barcode can also be used for paper tickets, the VDV barcode mobile+ can only be used on digital media that have an optical output, i.e. a display.

VDV-Barcode mobile+

Protects the 2D barcode against tampering and forgery with a security certificate

Prevents copying via screenshot by a dynamic element (e.g. time stamp every 30 seconds)
**FOR WHOM IS THE VDV-BARCODE MOBILE* IMPORTANT?**

For all companies that issue mobile phone tickets, need to check tickets quickly and want to prevent copies and manipulations of 2D barcodes. So all those who want to secure their ticket revenues in this distribution channel.

No distinction should be made between high-priced fare products such as monthly or season tickets and individual tickets. Finally, 365 individual tickets are also a season ticket and the VDV-Barcode mobile* enables the most frequent attack scenarios of 2D barcode forgeries to be eliminated, regardless of the tariff product.

All transport companies and associations – and this applies worldwide – which offer their passengers open public transport without access barriers, have the possibility to guarantee the control of mobile phone tickets quickly and safely with the VDV-Barcode mobile*.

The signature confirms the authenticity of the ticket and the dynamic element couples the ticket to the passenger’s smartphone. There is no need to check another ID medium.
HOW EXACTLY DOES THE VDV-BARCODE MOBILE+ WORK?

To ensure the described level of security, the VDV-Barcode mobile+ consists of several features. First, the app of the transport company or transport authority must be extended by a software-based security core. This is described in the specification of the VDV barcode mobile+ and is already part of the VDV KernaPlattform. This safety core fulfills two functions:

On the one hand, it couples the app of the transport company to the customer’s smartphone. This means that the app as a whole, including the tickets stored in it, cannot be copied and started on other smartphones. In addition, the security core stores the certificate with the cryptographic key in order to be able to create the secure ticket. To transfer the certificate to the security core, a „Mobile Ticketing Crypto Service“, or Motics for short, is required. It works like a virtual smartcard manufacturer and provides the connection between the security management of ((e)Ticket Deutschland and the security core on the smartphone of the passenger.

Special short-term certificates were developed for the VDV-Barcode mobile+, which have limited terms of 3 months each, instead of five years as for the smartcard certificates. To enable the VDV-Barcode mobile+ to be checked quickly, the inspection infrastructure requires a software update. The infrastructure must be able to decrypt both the certificate and the dynamic element. However, as this is a further development of the existing VDV barcode, the VDV-Barcode mobile+ is backwards compatible and can also be read by the existing inspection infrastructure. However, without the possibility of checking the dynamic element, which would require an additional ID medium again.

In the medium term, the VDV-Barcode mobile+ is to be extended to include a real challenge-response procedure and thus achieve the same level of security as a smartcard. This requires direct communication between the smartphone and the control terminal. This will be possible in the future via Bluetooth as well as via NFC.
HOW CAN I USE THE VDV-BARCODE MOBILE+?

The specifications of the VDV-Barcode mobile+ have been part of the VDV Kernapplikation since May 2018. As soon as the Motics is set up and goes into operation, copy-protected and signed mobile phone tickets can be issued.

In order to be able to issue the secured tickets as quickly as possible, we recommend that you soon identify what adjustments to your own app and control infrastructure have to be made and report an estimated number of the required short-term certificates to the VDV eTicket Service.

Similar to the joint procurement of smartcards, VDV eTicket Service will organise the tendering of the Motics and bundle the requirements for the public transport sector.
Der VDV eTicket Service ist Partner und Dienstleister für die Verkehrsunternehmen und -verbünde rund um eTicket Deutschland. Er ist verantwortlich für die VDV-Kernapplikation, die als deutscher Standard für das elektronische Fahrgeldmanagement eingeführt ist. Neben dem Betrieb der zentralen Hintergrundsysteme und dem Sicherheitsmanagement bietet der VDV eTicket Service Fachseminare und Beratungen über alle Themen zu eTicket Deutschland an. Als Regiegesellschaft unterstützt der VDV eTicket Service die VDV-Smartphonestrategie mit der Einführung von IPSI. Zusätzlich koordiniert er die Standardisierung und die technische Wegbereitung für NFC im deutschen ÖPNV.