

New Product



# New Model ETC On Board Equipments "MOBE-100/200 Series"

MACHINERY HEADQUARTERS  
TRANSPORTATION SYSTEMS DEPARTMENT

Mitsubishi Heavy Industries, Ltd. (MHI) has been developing consistent products in the field of electronic toll collection (ETC) system ranging from roadside equipment to onboard equipment. MHI has supplied a large number of roadside systems to be installed in toll plazas as necessary infrastructure, and has made large market investments in the field of onboard equipment mounted on vehicles ever since the ETC service started in March 2001. With the increase in ETC lanes in the future, the onboard ETC equipment is expected to have its market expanded. However, the price-down of the equipment is a key point to this regard. Based on the independent survey of the customers' needs, MHI has developed MOBE-100/200 to cut down on prices while keeping the high performance. The newly developed machines (systems) are described below.

## 1. Features of products

- (1) Line-up of products: integrated antenna type (MOBE-100) and separate antenna type (MOBE-200)
- (2) Streamlined and simple in design

### MOBE-100

- Realization of compact products with size three-fourth of the conventional MHI products
- Compact in body and equipped (as standard items) with liquid crystal (LC) display, buzzer and external interface
- Tilted antenna face (10°) ensuring well-suited installation to the dashboard

### MOBE-200

- Realization of main unit case smallest in volume in Japan and extra thin with thickness 14.8 mm (accord-

- ing to the survey of MHI as of January 2003)
  - Being separate antenna type, there is no restriction to the installation position of the main unit.
  - Small in size, the antenna unit does not stand out when installed to the dashboard.
  - Main unit available in three different colors
- (3) Common power supply of 12 V/24 V makes the equipment applicable to various types of vehicles from passenger cars to trucks.

Further, because of the wiring made possible through the fuse box of the vehicle, the installation time has been drastically shortened as compared with the conventional unit.

- (4) Equipped with the function of preventing the IC card from being left in the slot

In case the vehicle engine is turned off, and the IC card remains inserted in its pocket (slot), the buzzer gets activated, urging the user to draw out the IC card.

- (5) User interface:
- LC display with back light (MOBE-100)
  - Audio guide function to enable confirmation through sound (MOBE-200)
  - Simple to operate using two buttons
- (6) Model with outside-mountable-antenna also available, allowing installation also to vehicles with heat wave reflecting glass (MOBE-201)

## 2. Product specifications

The appearance of the product is shown in the title photograph in Fig. 1 and the specifications of the products in Table 1.

Table 1 Main specifications of ETC onboard equipment

Model	MOBE-100	MOBE-200
Type	Integrated antenna type	Separate antenna type
Main unit dimensions (mm)	65 (W) X 96 (D) X 27 (H)	70 (W) X 113 (D) X 14.8 (H)
Input voltage (V)	DC 12/24	DC 12/24
Operating frequency (GHz)	5.8 (ASK modulation)	5.8 (ASK modulation)
LCD display	7-segment, 6-digit, with back light	-
LED display	2-color X 2 pieces	2-color X 2 pieces
Audio guidance	-	Available (4-stage volume)
Switch	2 pieces	2 pieces
External interface	RS-232 C	RS-232 C
Card inserting section (slot)	Partial insertion	Full insertion with eject button
Function of preventing IC card from being left in the slot	Available (buzzer)	Available (buzzer)



Fig. 1 Appearance of MOBE-200