

# Airbag Control Unit

TRW continues to lead the way in the design, engineering and development of advanced restraint system controller (airbag crash sensor) technology.

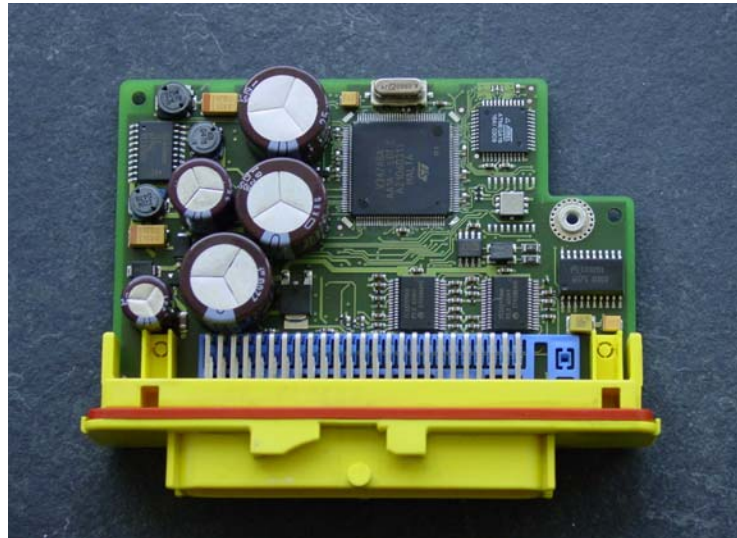
The latest controller design provides the flexibility to control a number of passive restraint devices such as airbags and seatbelt pretensioners. This system has the capability to accept inputs from remote acceleration sensors, airbag deactivation switches, buckle pretensioner switches and occupant detection to adjust the restraint system response accordingly.

## General description

The heart of the restraint system controller is TRW's proprietary V-Sensor Crash Severity Algorithm. This algorithm is designed to be flexible enough to accommodate a variety of inputs that can be used to modify the system response to various crash scenarios.

Unique in the industry, the V-Sensor algorithm utilizes a virtual occupant model to predict the response of the occupants to the crash acceleration pulses. This result is a substantial improvement in tailoring the system's response to the occupant. As occupant information becomes known – such as weight, size or position relative to the airbag – the virtual occupant model is able to better select the appropriate system response.

The module design can be configured to control up to 16 squibs and offers a flexibility to accommodate various inputs and output requirements. By using an additional acceleration sensor whose output is processed by a second controller, it is possible to refrain from using a mechanical safing sensor. Herewith rear crash detection and safing is supported.



## Features

- Working temperature range: -40°C to 85°C
- A second controller / acceleration sensor takes over the safing function
- Supports front-, side-, rear and rollover (optional) crash detection
- Integrated rollover option (optional)
- Support dual stage inflators
- Supports Remote Acceleration Sensors (RAS) and / or pressure sensors
- Operating range: 6.0 V to 26.5 V
- Operating temp range: -40°...+85° C
- Up to 16 squibs
- Occupant detection for passenger side

# TRW Weight Sensing System with Bizerba Sensors

TRW continues to lead the way in the design, engineering, and development of advanced restraint systems like Weight Sensing Systems for Occupant Detection and classification. The current TRW design for Weight Sensing Systems includes different sensor technologies for different system integration approaches. Each system fulfills the FMVSS 208 rule from the NHTSA. The described system works with sensors from Bizerba.

**General Description:**

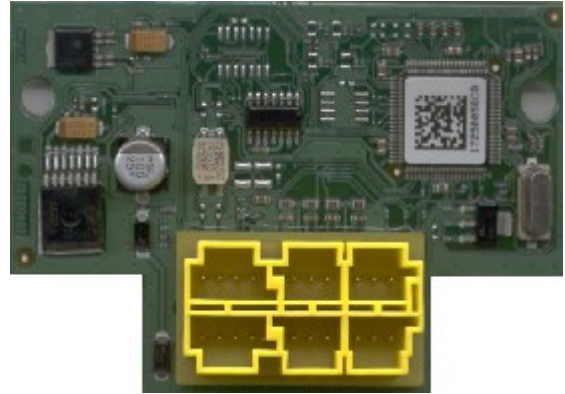
The ECU is a 16 bit microcontroller system with direct battery connection and sleep mode capability.

The communication between the Bizerba Sensors and the ECU is digital with individual sensor identification for system and service purposes. A Bus communication is feasible. The system is link via the CAN Bus to the Airbag Control Unit.

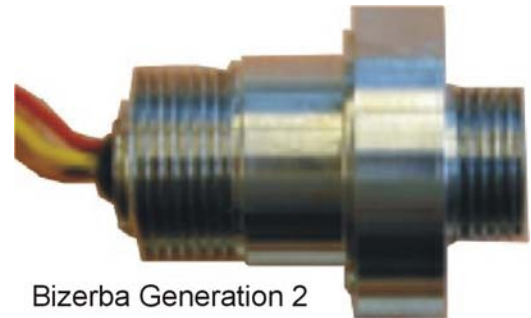
The System output is influencing the deploy strategy of the Airbag Control Unit according to the FMVSS 208 rules. The Driver/Passenger information is following the customer rules by using the Passenger Airbag Lamp and "Clear Text Messages" in the dashboard.

This patented airbag design incorporates a simple vent door in the airbag module. Upon deployment, the inflating bag "senses" the occupant position and distance from the module. The closer the occupant is positioned to the airbag, the more gas is allowed to escape from the module. This action reduces the deployment forces against the occupant.

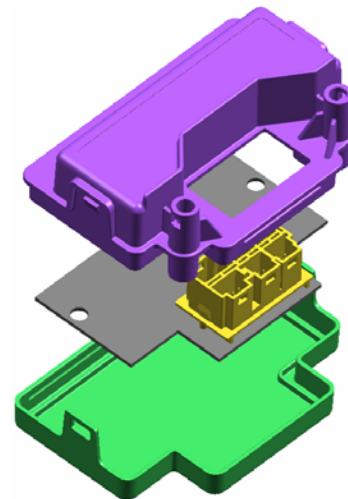
This low-cost solution for helping to meet the out-of-position (OOP) requirements of FMVSS 208 is passive and completely integrated into the airbag module. It eliminates the need for occupant sensing sensor input to tailor module performance.



TRW Weight Sensing ECU PCB



Bizerba Generation 2



TRW ECU Housing Concept

**Features**

- Working temperature range: -40°C to 85°C
- Single sensor change possible in service
- Full y functional after a "no fire crash" without service
- CAN communication to airbag control unit with CAN (83,3 kBd / 125 kBd)