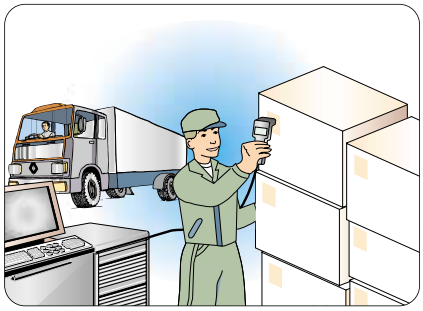
QR Code and Two-Dimensional Code Scanners

Two-dimensional code accommodates far more information than bar code and is gaining acceptance in a growing range of applications. DENSO's QR Code offers compelling advantages over other two-dimensional codes. The company markets a comprehensive line of readers and software for two-dimensional code.

In the marketplace

Manufacturers developed two-dimensional codes in the 1980s to compress more data into less space than was possible with bar code. But developers' resistance to open specifications and the resultant lack of an industrywide standard impeded the spread of two-dimensional coding. Another problem was the technological difficulty of reading the codes reliably. At DENSO, we developed QR Code to be easy to read, and we make it available to users everywhere as a standardized code.

We released QR Code in 1994, and it now accounts for more than 60% of the two-dimensional coding in Japan, according to Automatic Identification Manufacturers, Inc. (AIM), an association that coordinates standards.



QR Code has earned listings under the AIM standards, the Japanese Industrial Standard (JIS), the ISO/IEC international standards, and the Japan Automobile Manufacturers Association, Inc.'s JAMA-EDI standards. In North America, QR Code is under consideration by the Automotive Industry Action Group (AIAG) as a standard.

In comparison with competitors

Our QR Code allows for faster and easier reading than competing two-dimensional codes that hold a comparable amount of data. DENSO is one of the few manufacturers in the world that offers a comprehensive line of scanners for two-dimensional code.

Issues and outlook

We estimate that the global market for two-dimensional code scanners totaled $60 million in 2000, up threefold over 1997. By 2003, we project that the market for two-dimensional code scanners will reach $160 million a year. The pace of growth will depend on progress in making the equipment widely affordable. Costs declined rapidly in the bar code industry as volume grew, and we anticipate a similar decline in two-dimensional code scanners.

Technical highlights

QR Code holds 10 to 100 times as much information per unit of area as bar code does. A patch of code can hold up to 7,089 numeric characters. Users capture the information by passing a reader over the code in any direction. QR Code allows for encoding kanji as the default character script, and it handles kanji with 20% less data than competing codes require. QR Code has a built-in capability for interpolating data correctly from code patches that are dirty or damaged.

■ QR Code

We have developed two-dimensional code scanners to read QR Code and other two-dimensional codes on different kinds of media. In late 2000, we introduced a thoroughly upgraded series of handheld terminals.

QR Code scanners

Applications