



**PDF417: The New Symbol
of Data Management**
Tomorrow's Transformational
Technology – Here Today

Information Transfer in a Whole New Dimension

Imagine a database that's totally portable – freed from the computer to go anywhere and yet be accessed immediately at any time. Or a paper-based communication medium that makes documents, labels and cards “live” with machine-readable information, including text, graphics, biometrics or other data. And imagine capturing this information quickly, easily and inexpensively. There's a technology that offers all this – and it's here today. It's PDF417 from Symbol Technologies.

PDF stands for “Portable Data File.” A two-dimensional symbology, a single PDF417 symbol carries up to 1.1 kilobytes of machine-readable data in a space no larger than a standard bar code.

And, unlike traditional one-dimensional bar codes, which depend on real-time links to a larger database, PDF417 symbols *are* the database. PDF417 symbols travel on paper, packages or parts. With people, too.

PDF417 technology translates into productivity. Easy to use and easy to integrate, a PDF417 application delivers the benefits of digital data communications with the simplicity of bar coding. It's very low in cost... printable in various sizes on a wide variety of media

using traditional printing technologies...easy to support...and highly robust in its error correction capabilities. Moreover, PDF417 has been recognized as the standard among two-dimensional symbologies by leading organizations worldwide.

Equally important, any business, government agency or service organization must be assured of a low-risk, long-term return on its technology investment. Symbol's PDF417 scanning equipment can also read all conventional one-dimensional bar codes, assuring compatibility with your installed bar code systems.

Another plus: PDF417 was invented by Symbol Technologies, the company with the innovative products, industry systems expertise and global support to overcome the barriers that stand between you and your vision to transform it into a vision without boundaries.



PDF417: Much More than Meets the Eye

PDF417 answers the need to capture, store and transfer large amounts of data inexpensively. It can exchange complete data files (such as text, numerics or binary) and encode graphics, fingerprints, shipping manifests, electronic data interchange (EDI) messages, equipment calibration instructions and much more. It provides a powerful communications capability—without the need to access an external database. And, for virtually no

incremental cost, you can add a PDF symbol to the documents and labels you are already printing.

Think of PDF as an independent database with complete freedom of movement, traveling together with a person or on an item, object, package, form, document, card or label. It does what wired networks can't: allows you to immediately access your data regardless of location. Plus, encryption is available as an option when additional security is required.

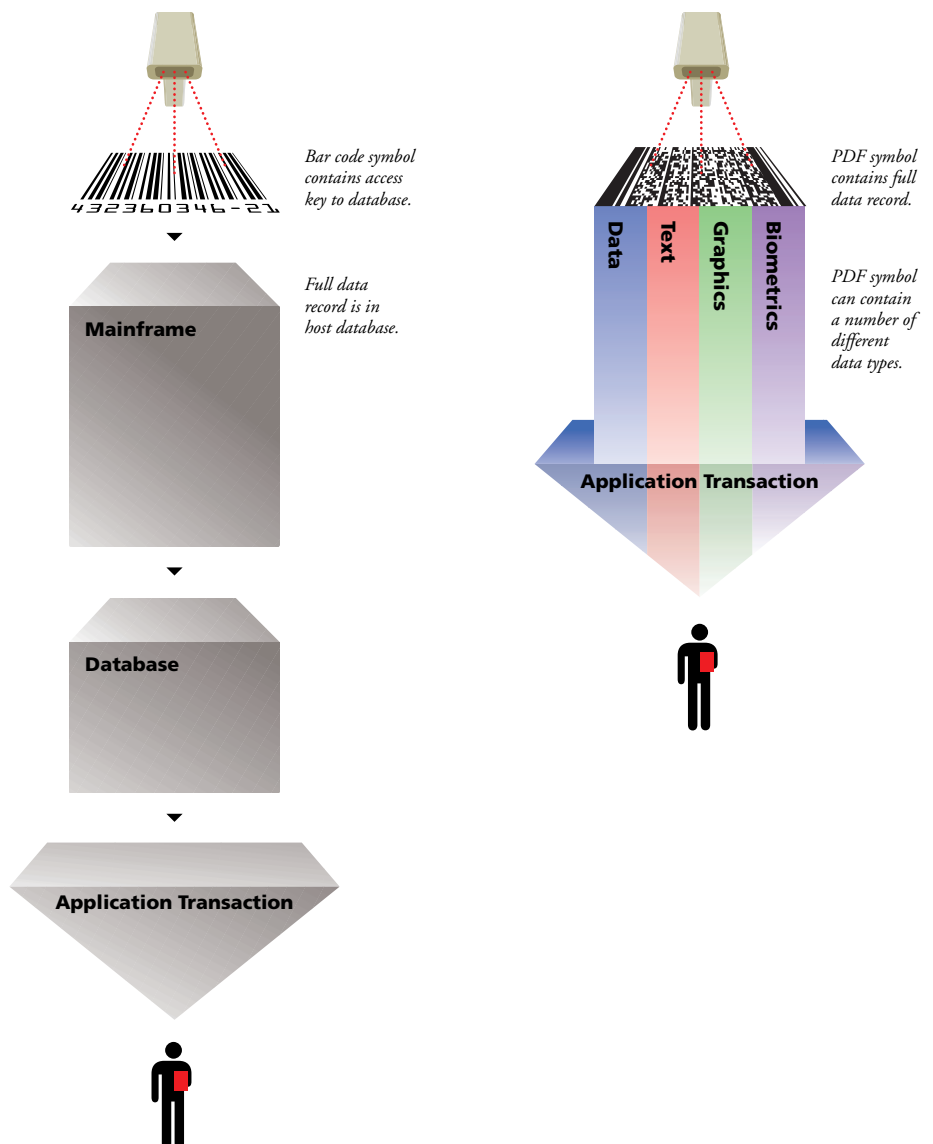
Moreover, because PDF417 is a machine-readable method of transporting data, it eliminates time-consuming and error-prone manual data entry. It functions as a paper-based computer memory that can be written once and read over and

over again. And, as a universal machine language, it communicates with all host operating systems. PDF417 encodes full ASCII, numeric or binary data and it uses sophisticated error correction algorithms to keep intact 100 percent of the data—even when as much as half the symbol is damaged. And it's self-verifying, so data errors can be detected and data integrity maintained.

PDF417 from Symbol Technologies: all of the rewards of leading-edge technology with none of the risks. Benefits like these are well worth capturing today.

What a Difference a Dimension Makes

One-dimensional bar codes contain an access code that serves as a real-time key for opening a database. A PDF417 symbol contains a complete data record and requires no access to an external database. Data, text, graphics, biometrics and voice records are immediately applied to the application transaction by simply scanning the symbol.



A Technology You Can Trust

PDF417 is the de facto standard 2-D symbology. In addition to its performance capabilities and application value in a wide range of industries, PDF417 technology is in the public domain—placed there by Symbol—and it conforms to industry and international “open” standards. For all of these reasons, PDF417 is emerging as the standard 2-D symbology by leading standards-setting organizations:

- The American National Standards Institute (ANSI) has just published a new 2-D standard: ANSI MH 10.8.3M unit loads and transport packages for two-dimensional symbols. It recommends the use of PDF417 for all shipping, receiving and supporting EDI documentation. Most standards associations will use this ANSI standard as the basis for their specific industry’s application specification.

- AIM USA and AIM Europe, accredited ANSI standards-developing organizations, which have approved and published PDF417 as a Uniform Symbology Specification (USS) standard.
- The U.S. Department of Defense, which has designated PDF417 as the standard 2-D bar code for logistics applications and EDI formatting on paper labels.
- The American Association of Motor Vehicle Administrators (AAMVA), which has approved and published PDF417 for a broad range of driver and motor vehicle applications.
- The Automotive Industry Action Group (AIAG) 2-D Applications Committee, which has selected PDF417 for its key 2-D production and logistics applications, is completing their B-10 standard for shipping and receiving.

- The Telecommunication Industry Forum (TCIF) is reviewing PDF417 as the 2-D standard for product marking.

In addition, the U.S. Department of Defense, Office of Personnel and Readiness, has issued millions of military identification cards with PDF417 symbols for use on a global basis.

Verified in Independent Testing

Not only is PDF417 technology hard at work in a wide range of important applications, it has also been proven in independent testing. In reliability testing by the Ohio University Center for Automatic Identification, 32 million PDF417 characters were read without an error. Tests at the University of Pittsburgh proved PDF417 compatibility in high-speed overhead scanning and its readability even when symbols were damaged.

Technology that’s Proven in Diverse Applications

Just about everyone in the private and public sectors is in the business of information, communication, identification and data management. PDF417 symbology serves all of these needs and has been proven in a highly diverse range of end user applications.



Government

- Identification cards (national ID, military ID, social services)
- Motor vehicle licenses and registrations
- Public safety including citations, vehicle inspections, and accident reporting
- Logistics
- Official documents
- Border/passport/customs control
- Asset management



Retail

- Manifesting for shipping and receiving
- EDI
- Inventory control
- Direct mail marketing
- Shopper loyalty programs
- Returns processing
- Warranty tracking



Transportation

- Bills of lading
- Package tracking
- EDI
- Shipping manifests

PDF: Expanding on Your Bar Code Capabilities

The two-dimensional benefits of PDF417 symbols are ideal for applications that are limited by the natural constraints of 1-D bar codes. The amount of data needed as well as the environment it exists in are key deciding factors when choosing to implement a system using 2-D symbols. A single scan of a PDF417 symbol can easily replace multiple 1-D bar codes while delivering more information more quickly.

In addition, the PDF417 symbols were developed to survive in tough environments. Robust by design, these symbols use an error correction algorithm to correct lost or missing data for damaged symbols. Up to half of the symbol can be destroyed or missing, yet it can still be decoded.



Flexible Technology that Adapts to You

Unlike some new technologies, PDF417 doesn't require users to learn different procedures, abandon existing hardware or software, or commit to costly reinvestment in facilities or systems. A PDF417 solution can often be added with little change to current applications and it can make use of existing printers and other equipment.

It's compatible with all the same printers used to print 1-D bar codes, including laser, thermal direct, thermal transfer, ink jet and others—and all are widely available today. Mainframe solutions are

also available for high-speed printing applications. You can print on a wide variety of materials—paper, cards, labels, plastics, metals and others. You can even fax PDF417 symbols. And, software packages are available for DOS/Windows-based applications.

Because PDF417 can be printed in various shapes, users can create custom layouts for the requirements of specific applications. Symbols may also be printed at various densities depending on printing technology, scanner type, and application requirement.

Total Support, Total Solutions

Together with its business partners, Symbol Technologies can provide solutions to all of your 2-D product needs, including hand-held and fixed-mount scanners, portable computers and card readers. But that's just the beginning. Because behind PDF417 stands an extensive infrastructure of support programs and system integration that can deliver total customer solutions. Symbol and its value added reseller (VAR) partners offer an unparalleled combination of resources, experience and innovation—plus uncompromising dedication to customer satisfaction. Put them together and you're assured of a successful PDF417 implementation.



Health

- Laboratory requisition processing
- Specimen tracking
- Claims processing
- Identification cards
- Reagent calibration



Manufacturing

- Process control
- Equipment calibration
- Asset tracking
- Hazardous material control
- Quality control
- Maintenance records
- Configuration management



Symbol Has Built a Complete PDF417 Product Family



Scan Engines for 2-D Scanning Solutions

The SE 900 High Speed Scan Engine with PDF417 capability features the 650-nm "brighter" laser diode and with dimensions of 0.45 in./17.3 mm H x 0.68 in./17.3 mm D x 0.81 in./20.6 mm W, and weighing less than 0.32 oz./9.0 gm, is the smallest, lightest, brightest, and fastest scan engine available today.

Optimized for aggressive reading of both 1-D and 2-D symbologies, the SE 2200 Scan Engine Series, based on the SE 1200 Series form factor, enables the design of totally integrated scanning solutions. SE 2200 scan engines feature "Smart" raster technology for efficient capture of high-density PDF417 labels and other 2-D symbols including RSS and Composite codes.

The same size, and with the same features as the SE 2223, the SE 3223 reads 1-D labels omni-directionally using a unique Cyclone scan pattern that continuously scans for linear codes. This unique scan pattern provides optimal throughput rates in presentation scanning.



P300PRO

When high-productivity scanning is required, the P300PRO delivers 560 scans per second for faster 2-D and 1-D bar code reading. High-performance field-proven laser technology makes easy work of difficult applications like scanning through layered plastic wrap or glass, such as an automobile windshield. With point-and-shoot aiming, the programmable laser spot mode focuses the laser output into a very bright, concentrated spot for easy sighting on symbols even in direct sun-

light. The "Smart" raster automatically detects a 2-D bar code and scans it vertically, eliminating the need for manual rastering.



LS 6804 Integrated 2-D and 1-D Fixed-Mount Scanner

For fast, efficient flow of materials, products, documents and information, the compact LS 6804 Fixed-Mount Scanner incorporates a high-speed raster scan engine for reading both 1-D bar codes and 2-D PDF417 symbols. With or without an operator, the LS 6804 delivers excellent speed and accuracy—even on poorly printed symbols. And, the options of vertical or horizontal mounting and automatic or manual triggering give you the ultimate in flexibility to suit your precise application.



PDT 7500 Series Portable Data Terminals

The PDT 7500 works fast under the toughest conditions—while providing advanced bar code scanning, data processing and communication features. It operates in temperatures ranging from -13° to 122° F/-25° to 50° C and withstands multiple 6 ft./ 1.8 m drops to concrete yet weighs just 19 oz./532 gm. Inside the PDT 7500 is a high-speed scan engine for fast, reliable 1-D and 2-D bar code data capture. It reads matrix and Postal Codes and can capture, view and store images and signatures. The PDT 7500 runs industry-standard MS-DOS or many Windows CE applications and supports Spectrum24 wireless LAN technology or Wide Area Networks (WANs). The PDT 7500 links workers to data and to each other.



PDF 620 Card Reader

Be assured of instant first-time PDF417 card reading with the PDF 620. It's ideal for a variety of identification applications—including national identification cards and benefit cards, drivers' licenses, retail loyalty and health care cards. The PDF 620 card reader is economical, durable, features a small footprint and is easily integrated into existing identification systems.



PDT 7200 Portable Data Terminal

Built to provide fast and reliable performance under the harshest operating conditions, this light, hand-held terminal works wherever its needed—in stores, plants and warehouses. It features voice paging and touchscreen control plus one- and two-dimensional bar code scanning. The PDT 7200 is powered by a 486-based, 32-bit microprocessor running industry-standard Microsoft® MS-DOS or Microsoft Windows® CE. It has a generous 4 MB of RAM expandable to 16 MB, plus 4-32 MB of flash memory and a high-performance scan engine—making it excellent for handling large, data-intensive applications such as tracking inventory and ordering or managing material, vehicles and equipment.

To Learn More, Just Call Symbol

At Symbol Technologies, we're dedicated to delivering PDF417 solutions. Call us to see how PDF417 technology can solve your data management challenges.

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