

## RFID

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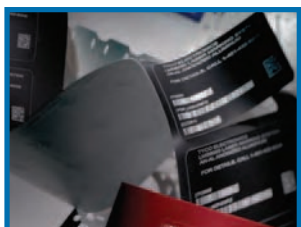
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**OBSOLETE**  
**NOT the LATEST**  
**REVISION**

## RFID (Radio Frequency Identification)

**RFID (Radio Frequency Identification)** is a technology that promises to revolutionize the way in which the products move across the supply chain all the way from the manufacturer to the consumer. With the ability to collect and distribute information without human intervention along the supply pipeline, RFID is in an enviable position to create collaborative interlinks between suppliers, manufacturers, movers and customers thus improving efficiencies, accuracy, speed to market and quality and hence reducing true costs and total cost of ownership for everyone along the way.

### What is RFID

RFID is a technology that utilizes radio waves at certain frequencies to communicate data through the IT structure to the various business processes in an organization. It is a business approach to obtain information about products accurately, fast, efficiently and in real time so the business processes can function in a balanced mode with minimum investment or working capital, thus maximizing enterprise profitability. A basic system includes an RFID tag, a printer/encoder, an interrogator reader and antenna, software to read/write on the tag and connectivity to a customer defined box that runs the enterprise/site level applications to manage the motion of the parts/SKUs/assets.

### RFID tag:

An RFID tag consists of a specific RFID chip bonded using thermal contacts to an etched or printed antenna on to a plastic film. This 'inlay' is then laminated to/embedded into an application specific/customer defined polymer film or form factor. The chip in the tag carries a 'license plate' of the product it is applied to while the antenna allows for the chip to be interrogated/written to using an encoder or interrogator/reader.

### Printer/Encoder:

A printer/encoder is a thermal transfer (or any other print technology) printer with an RF module that allows for the printer to simultaneously encode the RFID chip while printing readable/scan-able information on the tag surface. It typically has a near field capability such that only one tag is read/encoded to at once but can run at over 6 inches/sec to print/encode multiple tags in a sequence.

### Interrogator/reader and Antenna:

An RFID reader and antenna set is the heart of the RFID system. When strategically placed along critical read points in a manufacturing or distribution center location, it interrogates multiple RFID tags at the same time and sends the information over to the ERP/MRP systems to take suitable action, whether it's invoicing, cross docking, placing an order, confirming a receipt or simply inventory tracking. All these translate to real dollars for the business. These readers/antennae can be positioned on the dock doors, on conveyor belts, on racks, in manufacturing cells, in quality labs or can be hand-carried around just like the bar-code scanners, depending upon the scale and scope of the RFID implementation. Depending upon the type of tags and nature of the environment, the readers can pick tag info from as far as 10 feet for passive (no power source) tags and 100 feet for active (battery powered) tags.



**For additional information on RFID,  
call 1-866-440-RFID (7343)  
or visit  
[www.rfid.tycoelectronics.com](http://www.rfid.tycoelectronics.com)**

### Software/Connectivity platform:

Typically referred to as middleware and edgware (for being the buffer between the RFID hardware and the ERP/MRP/WMS system), this system manages the RFID hardware for operation, up-time and optimization. The system manages events and event logging, communicates transactions and provides visual/audible cues to the operating workforce. In addition, it filters the large amount of data received from the hardware and converts to usable information and then sends this information to the database or specific fields in the customer's system so business transactions can be consummated. This is the most complex piece in the RFID puzzle and utmost care should be taken to partner with a corporation that has the stability and resources to not only integrate the various pieces together but also to create a platform that is both scaleable and extensible.

## Pre-printed bar code labels



Since 1986 we've met the diverse needs of commercial, industrial, governmental and institutional customers by providing innovative solutions to their unique bar code label requirements. Solutions include custom sizes, colors, graphics, laminations, special adhesives, die-cuts and original creative designs.

### Quality materials

Tyco Electronics Identification buys master rolls of label stock and converts it to meet the needs of our customers. Our purchasing power, combined with our converting capabilities, allows us to provide the highest quality materials at great prices.

### Sequential number tracking

If your application requires sequential numbering, Tyco Electronics will keep an automated log of sequence numbers printed for each order. Even if you have an assortment of labels, multiple locations, or use subcontractors to produce your product, we will insure that there are no duplicate numbers printed — reliable!

### Production proofs

For every new label job, Tyco Electronics will provide a paper copy/electronic proof of your label prior to running the job. This allows you to review and approve the size, layout and graphics on the label prior to a full production run.

### 20 step quality check

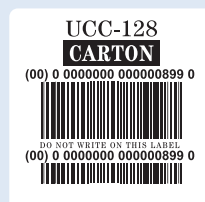
Tyco Electronics enforces more than 20 quality checks during the manufacturing and quality assurance processes: these quality checks include many automated tests with state of the art equipment. We test every roll of labels for readability, accuracy and scan rates and we will not ship any labels that do not pass our quality assurance tests.

For more information, contact a Tyco Electronics customer service representative at:

**US** 1-800-430-7226  
**Europe** +44(0) 1495 244 000



High Temperature Harsh  
Environment Circuit Board



Pallet/Carton



Product ID



Security



Asset Tag

Vertical  
Rack



Signs  
&  
Magnetic  
Labels  
Also  
Available

## Permark® 316

Tyco Electronics Permark® 316 stainless steel markers are recommended for marking in hostile environments. Using state-of-the-art technology and no inks, the marking process produces a permanent, deep surface mark with a darkened character in high contrast to the background. Permark® markers are produced to individual customer requirements on a fast turn-around basis with the flexible and easy-to-use Permark® software that allows electronic or manual data entry. Completed markers are supplied in customer defined kits for ease of installation. We recommend installation with 316 stainless steel cable ties.

### Features and benefits

- Pre-marked to customer requirements
- Customer-defined kits for ease of installation
- Excellent character legibility
- One-piece, 316 stainless steel construction
- Variety of fixing methods
- Mark will endure the lifetime of a Permark® S/S marker
- Excellent resistance to weather extremes and high levels of UV light
- Resistant to corrosive marine and industrial atmospheres
- Excellent resistance to a variety of hydrocarbons organic chemicals, acids, alkalis and inorganic salts  
For resistance to a specific chemical, contact your local Tyco Electronics representative



### Temperature rating

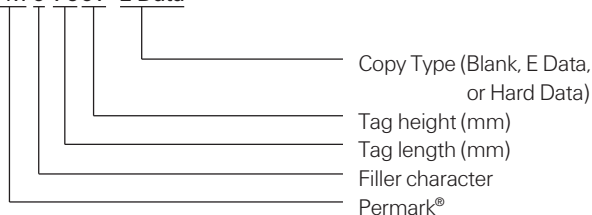
Operating temperature range    -80°C to +500°C    -112°F to +932°F

### Printer information

Pre-printed per customer requirements.

### Part numbering system

PM 0 7507- E Data



## Permark® 316

### Available sizes and formats

| Ordering description | Product description       | Size (L x H) |                    | Printable area (L x H) |                    |
|----------------------|---------------------------|--------------|--------------------|------------------------|--------------------|
|                      |                           | mm           | inches             | mm                     | inches             |
| PM09512-Blank        | Blank 316 S/S marker      | 95 x 12      | <i>3.74 x 0.47</i> | 55 x 10                | <i>2.16 x 0.40</i> |
| * PM09512-E Data     | Pre-marked 316 S/S marker | 95 x 12      | <i>3.74 x 0.47</i> | 55 x 10                | <i>2.16 x 0.40</i> |
| ** PM09512-Hard Data | Pre-marked 316 S/S marker | 95 x 12      | <i>3.74 x 0.47</i> | 55 x 10                | <i>2.16 x 0.40</i> |

\* Data supplied electronically

\*\* Data supplied in hard copy

### Options

|                  |                                                                                                     |
|------------------|-----------------------------------------------------------------------------------------------------|
| Fonts            | Various available                                                                                   |
| Lines per marker | One, two or three (Determined by selected font height. Minimum 1 mm / 0.04" spacing between lines.) |
| Saddle fixings   | 13 mm L x 2.4 mm H ( <i>0.51" L x 0.09" H</i> )                                                     |
| Hole fixings     | 7 mm ( <i>0.28"</i> )                                                                               |
| Standard colors  | Metallic                                                                                            |

| Font heights             | Characters per line |           |
|--------------------------|---------------------|-----------|
|                          | Standard            | Condensed |
| 2.5 mm ( <i>0.10"</i> )  | 30                  | N/A       |
| 3.0 mm ( <i>0.12"</i> )  | 25                  | N/A       |
| 4.0 mm ( <i>0.16"</i> )  | 20                  | 30        |
| 5.0 mm ( <i>0.20"</i> )  | 15                  | 25        |
| 6.0 mm ( <i>0.24"</i> )  | 15                  | 25        |
| 8.0 mm ( <i>0.31"</i> )  | 10                  | 20        |
| 10.0 mm ( <i>0.40"</i> ) | 10                  | 15        |

### Available sizes and formats

| Ordering description | Product description       | Size (L x H) |                    | Printable area (L x H) |                   |
|----------------------|---------------------------|--------------|--------------------|------------------------|-------------------|
|                      |                           | mm           | inches             | mm                     | inches            |
| PM07507-Blank        | Blank 316 S/S marker      | 75 x 7       | <i>2.95 x 0.28</i> | 50 x 5                 | <i>1.6 x 0.20</i> |
| PM07507-E Data       | Pre-marked 316 S/S marker | 75 x 7       | <i>2.95 x 0.28</i> | 50 x 5                 | <i>1.6 x 0.20</i> |
| PM07507-Hard Data    | Pre-marked 316 S/S marker | 75 x 7       | <i>2.95 x 0.28</i> | 50 x 5                 | <i>1.6 x 0.20</i> |

\* Data supplied electronically

\*\* Data supplied in hard copy

### Options

|                  |                                                  |
|------------------|--------------------------------------------------|
| Fonts            | Various available                                |
| Lines per marker | One only                                         |
| Saddle fixings   | 9.5 mm L x 2.4 mm H ( <i>0.37" L x 0.09" H</i> ) |
| Hole fixings     | None                                             |
| Standard colors  | Metallic                                         |

| Font heights            | Characters per line |           |
|-------------------------|---------------------|-----------|
|                         | Standard            | Condensed |
| 4.0 mm ( <i>0.16"</i> ) | 15                  | 25        |
| 5.0 mm ( <i>0.20"</i> ) | 10                  | 20        |

### Permark 316 Stainless Steel Cable Ties

| All Weather Cable Ties                | Package Quantity | Product Order Code |
|---------------------------------------|------------------|--------------------|
| 4.6 x 200 mm ( <i>0.18" x 7.9"</i> )  | 100              | SST71-316          |
| 4.6 x 360 mm ( <i>0.18" x 14.3"</i> ) | 100              | SST71-316          |



## AL-AN, ACR-400, POLY-A200 and POLY-A400

### ANODIZED ALUMINUM – TTDS-131

| DIE CUT SIZE   | PART NUMBERS        | Colors |
|----------------|---------------------|--------|
| 0.50" x 0.50"  | AL-AN-127127-0.50-0 | Red    |
| 1.50" x 0.50"  | AL-AN-381127-1.5-0  | Blue   |
| 1.825" x 1.00" | AL-AN-381191-1.25-0 | Black  |
| 1.50" x 0.750" | AL-AN-445191-1.25-0 | Green  |
| 1.75" x 0.750" | AL-AN-464254-1-0    |        |
| 2.00" x 1.00"  | AL-AN-508254-1-0    |        |
| 2.50" x 1.50"  | AL-AN-635381-0.75-0 |        |

### POLY A200 – TTDS-130

| DIE CUT SIZE   | PART NUMBERS            | Colors |
|----------------|-------------------------|--------|
| 0.50" x 0.50"  | POLY-A200-127127-0.50-0 | Black  |
| 1.50" x 0.50"  | POLY-A200-381127-1.5-0  |        |
| 1.825" x 1.00" | POLY-A200-381191-1.25-0 |        |
| 1.50" x 0.750" | POLY-A200-445191-1.25-0 |        |
| 1.75" x 0.750" | POLY-A200-464254-1-0    |        |
| 2.00" x 1.00"  | POLY-A200-508254-1-0    |        |
| 2.50" x 1.50"  | POLY-A200-635381-0.75-0 |        |

### POLY A400 – TTDS-129

| DIE CUT SIZE   | PART NUMBERS            | Colors |
|----------------|-------------------------|--------|
| 0.50" x 0.50"  | POLY-A400-127127-0.50-9 | Black  |
| 1.50" x 0.50"  | POLY-A400-381127-1.5-9  |        |
| 1.825" x 1.00" | POLY-A400-381191-1.25-9 |        |
| 1.50" x 0.750" | POLY-A400-445191-1.25-9 |        |
| 1.75" x 0.750" | POLY-A400-464254-1-9    |        |
| 2.00" x 1.00"  | POLY-A400-508254-1-9    |        |
| 2.50" x 1.50"  | POLY-A400-635381-0.75-9 |        |

### ACR-400 Polyester – TTDS-139

| DIE CUT SIZE   | PART NUMBERS           | Colors |
|----------------|------------------------|--------|
| 0.50" x 0.50"  | TYCO-ACR-127127-0.50-0 | Black  |
| 1.50" x 0.50"  | TYCO-ACR-381127-1.5-0  |        |
| 1.825" x 1.00" | TYCO-ACR-381191-1.25-0 |        |
| 1.50" x 0.750" | TYCO-ACR-445191-1.25-0 |        |
| 1.75" x 0.750" | TYCO-ACR-464254-1-0    |        |
| 2.00" x 1.00"  | TYCO-ACR-508254-1-0    |        |
| 2.50" x 1.50"  | TYCO-ACR-635381-0.75-0 |        |

All labels listed above can be purchased in matte or gloss finishes.  
Other materials can be optimized by Tyco Electronics.  
Please contact your sales engineer.



### Specifications

#### AL-AN

|                             |                                                                                                                                     |                 |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Operating temperature range | –40°C to +120°C                                                                                                                     | –40°F to +302°F |
| Thickness:                  | Film: 0.076mm (0.003 in.)<br>Adhesive: 0.05mm (0.002 in.)<br>Liner: 62 lb Densified kraft<br>Tolerance: ±10%<br>Type of alloy: 1100 |                 |

#### ACR-400 POLY

|                             |                                                                                                                                               |                 |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Operating temperature range | –50°C to +200°C                                                                                                                               | –58°F to +392°F |
| Thickness:                  | Film: 0.118mm (0.004 in.)<br>Adhesive: 0.05mm (0.002 in.)<br>Liner: Compressed paper, plastic coated, dimensionally stable<br>Tolerance: ±10% |                 |

#### POLY-A200

|                             |                                                                                                                                     |                 |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Operating temperature range | –40°C to +125°C                                                                                                                     | –40°F to +257°F |
| Thickness:                  | Film: 0.066mm (0.026 in.)<br>Adhesive: 0.026mm (0.001 in.)<br>Liner: 78 lb semi-bleached clay coated mando liner<br>Tolerance: ±10% |                 |

#### POLY-A400

|                             |                                                                                                                                     |                 |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Operating temperature range | –40°C to +125°C                                                                                                                     | –40°F to +257°F |
| Thickness:                  | Film: 0.109mm (0.043 in.)<br>Adhesive: 0.026mm (0.001 in.)<br>Liner: 78 lb semi-bleached clay coated mando liner<br>Tolerance: ±10% |                 |

### Recommended Marking System

Tyco Electronics LMS6000, LMS9000 or other approved Nd: YAG laser marking systems

## HPTM Adhesive rail terminal tags for dot matrix printing

Tyco Electronics HPTM is a specially formulated heavy gauge fabric material with a high tack permanent acrylic adhesive, designed for applications in control panel backboards for rail signal circuit identification.

The standard 1.0" hole pitch design meets AAR terminal post specifications and makes installation fast and convenient.

HPTM adheres to most smooth surfaces including bare and painted metal, as well as painted plywood used for rail signal terminal boards. It is resistant to common fluids, lubricants and solvents.

For reliable print performance and durability, use with Tyco Electronics's RI Quick-Dry series ribbon.

### Features and benefits

- Specially formulated fabric material with exceptional tear strength
- Dot matrix printable
- Performance exceeds military specifications
- High-performance acrylic adhesive



### Temperature rating

|                                 |                |                 |
|---------------------------------|----------------|-----------------|
| Operating temperature range     | -40°C to +80°C | -40°F to +176°F |
| Minimum application temperature | +10°C          | +50°F           |

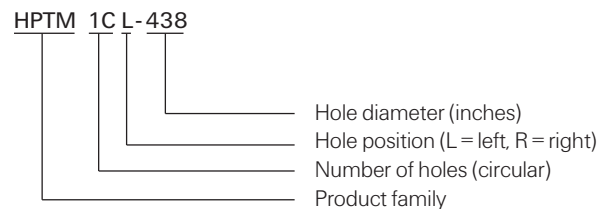
### Specifications/approvals

|                  |                         |
|------------------|-------------------------|
| Tyco Electronics | TTDS-049                |
| Military         | SAE AS81531 4.6.2       |
|                  | MIL-STD-202 method 215J |
| Industry         | AAR Terminal Post       |

### Printer information

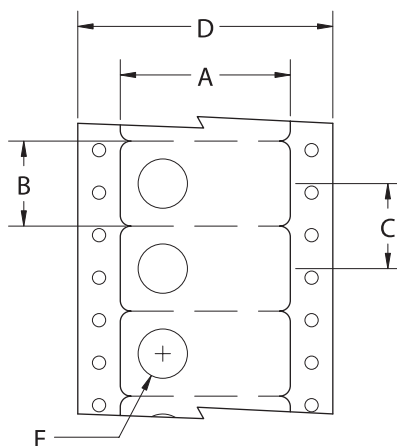
|                          |                                          |
|--------------------------|------------------------------------------|
| Tyco Electronics printer | AM63 10 (dot matrix)                     |
| Tyco Electronics ribbon  | 1892BK04 (dot matrix)                    |
|                          | 1892BK03 (dot matrix – high performance) |

### Part numbering system



## HPTM Adhesive rail terminal tags for dot matrix printing

### Ordering information



### Available sizes and formats

| Ordering description | Hole position | (A) Tag width |               | (B) Tag height |               | (C) Vertical repeat |               | (D) Web width |               | (E) Hole diameter |               |
|----------------------|---------------|---------------|---------------|----------------|---------------|---------------------|---------------|---------------|---------------|-------------------|---------------|
|                      |               | mm            | <i>inches</i> | mm             | <i>inches</i> | mm                  | <i>inches</i> | mm            | <i>inches</i> | mm                | <i>inches</i> |
| HPTM1CL-312          | Left          | 38.10         | <i>1.500</i>  | 25.40          | <i>1.000</i>  | 25.40               | <i>1.000</i>  | 76.20         | <i>3.000</i>  | 7.90              | <i>0.312</i>  |
| HPTM1CR-312          | Right         | 38.10         | <i>1.500</i>  | 25.40          | <i>1.000</i>  | 25.40               | <i>1.000</i>  | 76.20         | <i>3.000</i>  | 7.90              | <i>0.312</i>  |
| HPTM1CL-438          | Left          | 38.10         | <i>1.500</i>  | 25.40          | <i>1.000</i>  | 25.40               | <i>1.000</i>  | 76.20         | <i>3.000</i>  | 11.10             | <i>0.438</i>  |
| HPTM1CR-438          | Right         | 38.10         | <i>1.500</i>  | 25.40          | <i>1.000</i>  | 25.40               | <i>1.000</i>  | 76.20         | <i>3.000</i>  | 11.10             | <i>0.438</i>  |
| HPTM1CL-500          | Left          | 38.10         | <i>1.500</i>  | 25.40          | <i>1.000</i>  | 25.40               | <i>1.000</i>  | 76.20         | <i>3.000</i>  | 12.70             | <i>0.500</i>  |
| HPTM1CR-500          | Right         | 38.10         | <i>1.500</i>  | 25.40          | <i>1.000</i>  | 25.40               | <i>1.000</i>  | 76.20         | <i>3.000</i>  | 12.70             | <i>0.500</i>  |

### Options

|               |          |                 |
|---------------|----------|-----------------|
| Package sizes | Standard | 1000 piece pack |
| Colors        | Standard | White           |



## HPKTM Adhesive-backed polypropylene tags for thermal transfer printing

Tyco Electronics HPKTM is a semi-rigid polypropylene film with a permanent acrylic adhesive that is designed for application to control panel backboards for rail signal circuit identification. The standard 1.0" hole pitch design meets AAR terminal post specifications and makes installation fast and convenient. HPKTM adheres to most smooth surfaces including bare and painted metal, as well as painted plywood used for rail signal terminal boards. It is resistant to common fluids, lubricants and solvents. For reliable print performance and durability, use with Tyco Electronics's RHD series ribbon.

### Features and benefits

- Self-adhesive backing for quick and easy fixing
- Thermal transfer printable
- Recommended for indoor use
- Resistant to common fluids, lubricants and solvents



### Temperature rating

Operating temperature range     $-29^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$      $-20^{\circ}\text{F}$  to  $+176^{\circ}\text{F}$

### Specifications/approvals

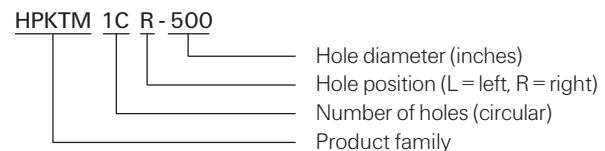
Industry    AAR Terminal Post

### Printer information

Tyco Electronics printer    T308S\* (thermal transfer)  
Tyco Electronics ribbon    1330-0607-10\* (thermal transfer)

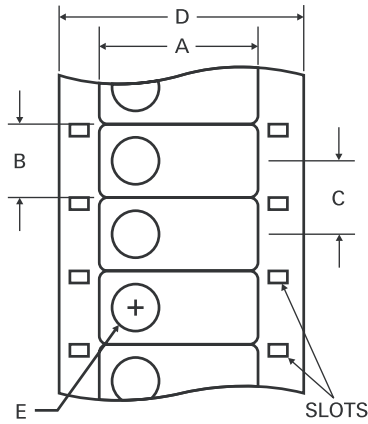
*\*Alternative printers and ribbons are available for special applications. Contact Tyco Electronics Identification for more information.*

### Part numbering system



## HPKTM Adhesive-backed polypropylene tags for thermal transfer printing

### Ordering information



### Available sizes and formats

| Ordering description | Hole position | (A) Tag width |               | (B) Tag height |               | (C) Vertical repeat |               | (D) Web width |               | (E) Hole diameter |               |
|----------------------|---------------|---------------|---------------|----------------|---------------|---------------------|---------------|---------------|---------------|-------------------|---------------|
|                      |               | mm            | <i>inches</i> | mm             | <i>inches</i> | mm                  | <i>inches</i> | mm            | <i>inches</i> | mm                | <i>inches</i> |
| HPKTM1CL-312         | Left          | 38.10         | <i>1.500</i>  | 25.40          | <i>1.000</i>  | 25.40               | <i>1.000</i>  | 76.20         | <i>3.000</i>  | 7.90              | <i>0.312</i>  |
| HPKTM1CR-312         | Right         | 38.10         | <i>1.500</i>  | 25.40          | <i>1.000</i>  | 25.40               | <i>1.000</i>  | 76.20         | <i>3.000</i>  | 7.90              | <i>0.312</i>  |
| HPKTM1CL-438         | Left          | 38.10         | <i>1.500</i>  | 25.40          | <i>1.000</i>  | 25.40               | <i>1.000</i>  | 76.20         | <i>3.000</i>  | 11.10             | <i>0.438</i>  |
| HPKTM1CR-438         | Right         | 38.10         | <i>1.500</i>  | 25.40          | <i>1.000</i>  | 25.40               | <i>1.000</i>  | 76.20         | <i>3.000</i>  | 11.10             | <i>0.438</i>  |
| HPKTM1CL-500         | Left          | 38.10         | <i>1.500</i>  | 25.40          | <i>1.000</i>  | 25.40               | <i>1.000</i>  | 76.20         | <i>3.000</i>  | 12.70             | <i>0.500</i>  |
| HPKTM1CR-500         | Right         | 38.10         | <i>1.500</i>  | 25.40          | <i>1.000</i>  | 25.40               | <i>1.000</i>  | 76.20         | <i>3.000</i>  | 12.70             | <i>0.500</i>  |

Additional sizes and formats available by custom quotation.

### Options

|              |                  |       |
|--------------|------------------|-------|
| Package size | 1,000 piece pack |       |
| Colors       | Standard         | White |

## HLTМ-FB/HXTM-FB Non-adhesive-backed polyolefin tags

Tyco Electronics HLTМ-FB/HXTM-FB is a semi-rigid, heavy gauge crosslinked polyolefin material without an adhesive backing, designed for use in a variety of applications including terminal post and terminal board signal circuit identification. The heavy gauge thickness is ideal for applications requiring exceptional durability. Mark permanence exceeds military requirements. They are resistant to common fluids, lubricants, solvents and abrasion. For reliable print performance and durability, use with Tyco Electronics approved printers and ribbons.

### Features and benefits

- Specially formulated polyolefin material
- Flame retarded
- Resistant to common fluids, lubricants and solvents
- Dot matrix (HLTМ-FB) or thermal transfer (HXTM-FB) printable
- Print performance exceeds military standards



### Temperature rating

|                             |                 |                 |
|-----------------------------|-----------------|-----------------|
| Operating temperature range |                 |                 |
| HLTМ-FB                     | -55°C to +135°C | -67°F to +275°F |
| HXTM-FB                     | -30°C to +105°C | -22°F to +221°F |

### Specifications/approvals

|                  |                         |
|------------------|-------------------------|
| Tyco Electronics | TTDS-408 (HLTМ)         |
| Military         | SAE AS8153 1 4.6.2      |
|                  | MIL-STD-202 Method 215J |

### Printer information

|                          |                                |
|--------------------------|--------------------------------|
| Tyco Electronics printer |                                |
| HLTМ-FB                  | AM63 10* (dot matrix)          |
| HXTM-FB                  | T3 12M (thermal transfer)      |
| Tyco Electronics ribbon  |                                |
| HLTМ-FB                  | 1892BK04* (dot matrix)         |
| HXTM-FB                  | 1966-RIBBON (thermal transfer) |

*\*Alternative printers and ribbons are available for special applications. Contact Tyco Electronics Identification for more information.*

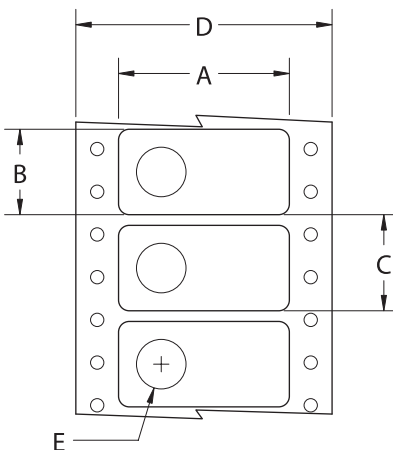
### Part numbering system

HLTМ1FBWE-312



## HLTM-FB/HXTM-FB Non-adhesive-backed polyolefin tags

### Ordering information



### Available sizes and formats

| Ordering description        | Hole position | (A) Tag width |               | (B) Tag height |               | (C) Vertical repeat |               | (D) Web width |               | (E) Hole diameter |               |
|-----------------------------|---------------|---------------|---------------|----------------|---------------|---------------------|---------------|---------------|---------------|-------------------|---------------|
|                             |               | mm            | <i>inches</i> | mm             | <i>inches</i> | mm                  | <i>inches</i> | mm            | <i>inches</i> | mm                | <i>inches</i> |
| H<format>TM1FB<color>-312   | Left*         | 38.10         | <i>1.500</i>  | 22.20          | <i>0.875</i>  | 25.40               | <i>1.000</i>  | 127.00        | <i>5.000</i>  | 7.90              | <i>0.312</i>  |
| H<format>TM1FB<color>-438   | Left*         | 38.10         | <i>1.500</i>  | 22.90          | <i>0.900</i>  | 25.40               | <i>1.000</i>  | 127.00        | <i>5.000</i>  | 11.00             | <i>0.438</i>  |
| H<format>TM1FB<color>-500   | Left*         | 38.10         | <i>1.500</i>  | 22.20          | <i>0.875</i>  | 25.40               | <i>1.000</i>  | 127.00        | <i>5.000</i>  | 12.70             | <i>0.500</i>  |
| H<format>TM1FB<color>-625** | Left*         | 38.10         | <i>1.500</i>  | 25.40          | <i>1.000</i>  | 50.80               | <i>2.000</i>  | 127.00        | <i>5.000</i>  | 15.90             | <i>0.625</i>  |

\* Hole position is versatile (left or right) on HLTM-FB series tags.  
Additional sizes and formats available by custom quotation.

### Options

|               |          |                                |                                          |
|---------------|----------|--------------------------------|------------------------------------------|
| Package sizes | Standard | 550 piece pack                 | **300 piece pack (HLTM1FB625/HXTM1FB625) |
| Colors        | Standard | White                          | Yellow                                   |
|               | Code     | WE                             | YW                                       |
| Format        | L        | For dot matrix printable       |                                          |
|               | X        | For thermal transfer printable |                                          |

Ordering example: HLTM1FBWE-312

## TP Tape High Performance color-coded cost saving system for tube identification

The system is designed for use as a thermal transfer printable, self-laminating identification for the various types of tubes in the aerospace, defense and marine industry. Made from polyester with a permanent acrylic adhesive, this cost saving system allows you to print on a unique range of pre color-coded labels on demand and eliminates the use and maintenance of paints, stencils, hot-stamps and etching tools. The system even does the job in a fraction of the time compared to similar technologies.

### Features and benefits

- Continuous operating temperature of  $-40^{\circ}\text{C}$  to  $+163^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$  to  $+325^{\circ}\text{F}$ )
- Resists exposure to water, oil, conventional cleaning agents, oil-based solvents and other fluids commonly associated with commercial and military aircraft
- Color coded to meet MIL-STD-595B requirements
- Meets MIL-STD-1247 standards for hydraulic lines, fuel lines, oxygen lines, inerting fluid lines, etc.
- Performance tested to RW 2068, a punishing standard for aggressive fluid and temperature resistance in military and commercial aircraft
- Available in die-cut or continuous formats to cover all ranges of tube diameters
- Die-cut version available in white or yellow printable area
- Continuous version available in white\* or clear printable area

*\*To be used only with TP-CLEAR-CONT over-laminating product*



### Temperature rating

|                             |                                                 |                                                 |
|-----------------------------|-------------------------------------------------|-------------------------------------------------|
| Operating temperature range | $-40^{\circ}\text{C}$ to $+163^{\circ}\text{C}$ | $-40^{\circ}\text{F}$ to $+325^{\circ}\text{F}$ |
|-----------------------------|-------------------------------------------------|-------------------------------------------------|

### Specifications/approvals

|                  |                                   |
|------------------|-----------------------------------|
| Tyco Electronics | RW 2526                           |
|                  | TTDS-028                          |
| Military         | MIL-T-9906C (except initial peel) |
|                  | MIL-STD-595B                      |
|                  | MIL-STD-1247                      |
|                  | MIL-STD-101B                      |

### Printer information

|                          |                                 |
|--------------------------|---------------------------------|
| Tyco Electronics printer | T308S* (thermal transfer)       |
| Tyco Electronics ribbon  | 1330-0607-10 (thermal transfer) |

*\*Alternative printers and ribbons are available for special applications. Contact Tyco Electronics Identification for more information.*

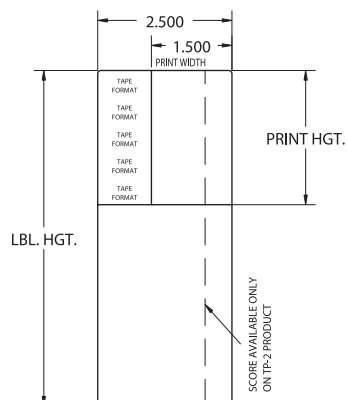
### Part numbering system

TP3 - PNEU - 1.250

- Size (1.250: for tube with OD of 1.250")
- Tube type (PNEU: for pneumatic lines)
- Product type (TP3: TP Tape type 3, 1.1 turns of printable legend around tube)

## TP Tape High Performance color-coded cost saving system for tube identification

### Ordering information



### Available sizes and formats

| Order description      | Printer type | Label width |        | Fits tube diameter |        | Labels per pack   |
|------------------------|--------------|-------------|--------|--------------------|--------|-------------------|
|                        |              | mm          | inches | mm                 | inches |                   |
| TP<format>(XXXX)-0.188 | Thermal      | 63.50       | 2.500  | 4.77               | 0.188  | 2500              |
| TP<format>(XXXX)-0.250 | Thermal      | 63.50       | 2.500  | 6.35               | 0.250  | 2000              |
| TP<format>(XXXX)-0.312 | Thermal      | 63.50       | 2.500  | 7.92               | 0.312  | 2000              |
| TP<format>(XXXX)-0.375 | Thermal      | 63.50       | 2.500  | 9.52               | 0.375  | 1500              |
| TP<format>(XXXX)-0.500 | Thermal      | 63.50       | 2.500  | 12.70              | 0.500  | 1500              |
| TP<format>(XXXX)-0.625 | Thermal      | 63.50       | 2.500  | 15.88              | 0.625  | 1000              |
| TP<format>(XXXX)-0.750 | Thermal      | 63.50       | 2.500  | 19.05              | 0.750  | 1000              |
| TP<format>(XXXX)-0.875 | Thermal      | 63.50       | 2.500  | 22.21              | 0.875  | 750               |
| TP<format>(XXXX)-1.000 | Thermal      | 63.50       | 2.500  | 25.40              | 1.000  | 750               |
| TP<format>(XXXX)-1.125 | Thermal      | 63.50       | 2.500  | 28.58              | 1.125  | 500               |
| TP<format>(XXXX)-1.250 | Thermal      | 63.50       | 2.500  | 31.75              | 1.250  | 500               |
| TP<format>(XXXX)-1.375 | Thermal      | 63.50       | 2.500  | 34.93              | 1.375  | 500               |
| TP<format>(XXXX)-1.500 | Thermal      | 63.50       | 2.500  | 38.10              | 1.500  | 500               |
| TP<format>(XXXX)-1.625 | Thermal      | 63.50       | 2.500  | 41.28              | 1.625  | 400               |
| TP<format>(XXXX)-1.750 | Thermal      | 63.50       | 2.500  | 44.45              | 1.750  | 400               |
| TP<format>(XXXX)-CONT  | Thermal      | 63.50       | 2.500  | 50.80+             | 2.000+ | 100 ft continuous |

### Options

|        |      |                                                                                          |
|--------|------|------------------------------------------------------------------------------------------|
| Format | None | Standard TP Tape                                                                         |
| 2      |      | For a slit at 2 inches from the left edge (total width 2" instead of 2.5")               |
| 3      |      | For 1.1 turns of color-coded label around the pipe instead of 1.5 turns                  |
| 4      |      | For white printable area instead of yellow                                               |
| WE     |      | For white/slit product for European markets, use order description: TP-WE(XXXX)ST-(size) |

#### Identification code (XXXX)

|        |                    |        |                  |       |                 |
|--------|--------------------|--------|------------------|-------|-----------------|
| AIRCON | Air conditioning   | HYDRO  | Hydraulic        | PYRO  | Pyrotechnic     |
| BATACT | Battery activator  | INAIR  | Instrument air   | RAIN  | Rain repellent  |
| COMGAS | Compressed gas     | INERT  | Inert fluid      | RCAT  | Rocket catalyst |
| COOL   | Coolant            | LUBE   | Lubrication      | RFUEL | Rocket fuel     |
| DEICE  | Deicing fluid      | MC     | Miscellaneous    | ROXI  | Rocket oxidizer |
| ELECT  | Electrical conduit | MONO   | Mono propellant  | SOLV  | Solvent         |
| FIRE   | Fire protection    | OXYGEN | Breathing oxygen | VAC   | Vacuum          |
| FUEL   | Fuel               | PNEU   | Pneumatic        | WATER | Water injection |



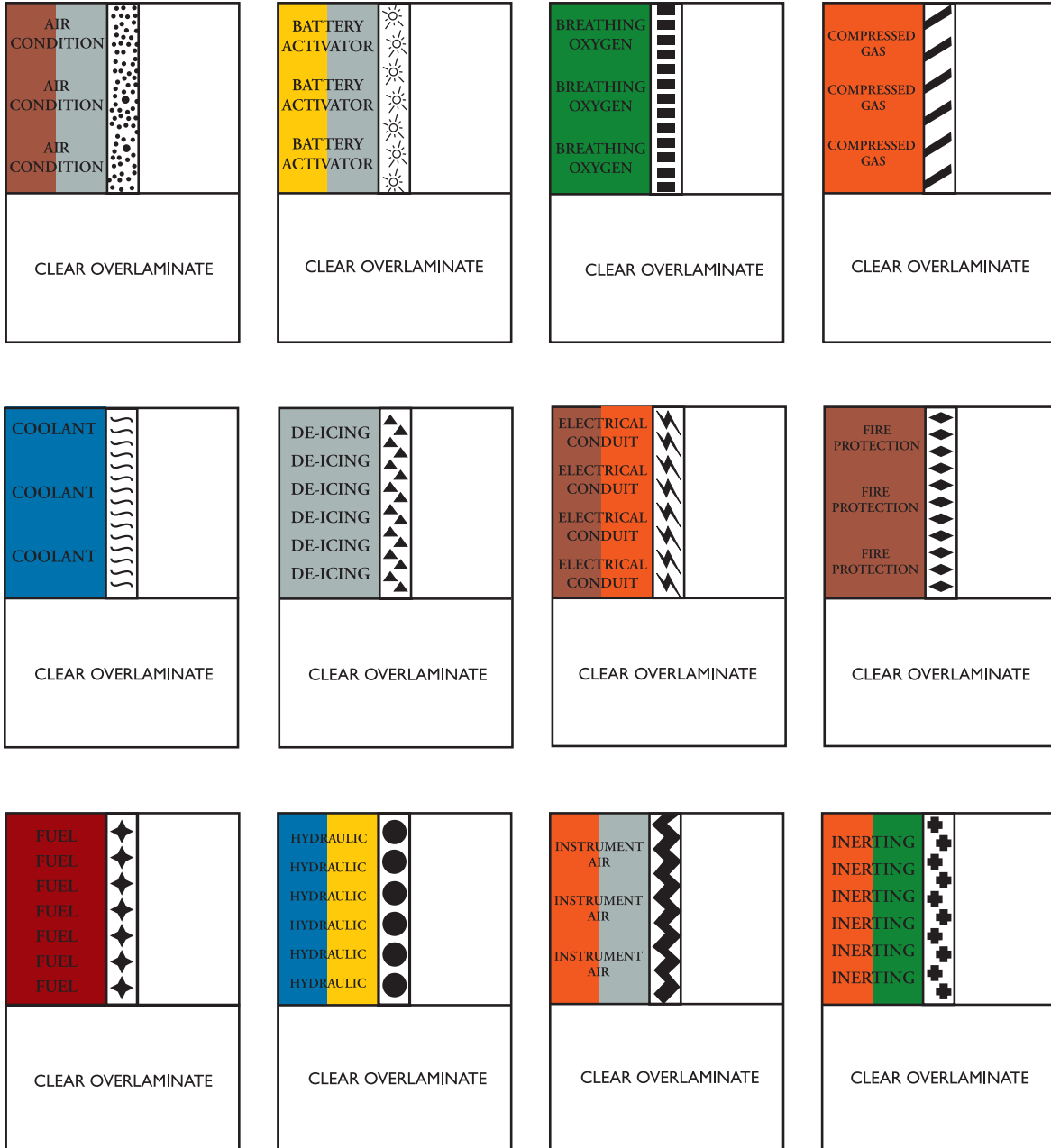
**TP Tape High Performance color-coded cost saving system for tube identification**

| Colors | Brown | Red   | Orange | Yellow | Green |
|--------|-------|-------|--------|--------|-------|
| Code   | 10076 | 11136 | 12197  | 13655  | 14187 |

Colors conform to Federal Standard FED-STD-595B

Continuous format TP Tape is supplied with respective legends imprinted, as shown below. Die cut formats are not printed.

For example, TP3AIRCON-CONT will have AIR CONDITION printed on each label. TP3AIRCON-O.625 will not.



## TP Tape High Performance color-coded cost saving system for tube identification

| Colors | Blue  | Grey  | Black | White | Pink  | Light Green |
|--------|-------|-------|-------|-------|-------|-------------|
| Code   | 15102 | 16473 | 17038 | 17925 | 21668 | 24664       |

Colors conform to Federal Standard FED-STD-595B

Continuous format TP Tape is supplied with respective legends imprinted, as shown below. Die cut formats are not printed.

For example, TP3AIRCON-CONT will have AIR CONDITION printed on each label. TP3AIRCON-0.625 will not.

