



# Caledonian

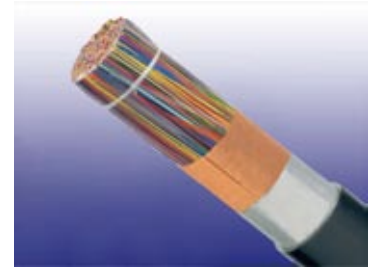
## OUTDOOR TELEPHONE CABLES

[www.caledonian-cables.co.uk](http://www.caledonian-cables.co.uk) [www.addison-cables.com](http://www.addison-cables.com)

## Thin Wall Cellular PE Insulated & PE Sheathed Air Core Cables to CW 1224

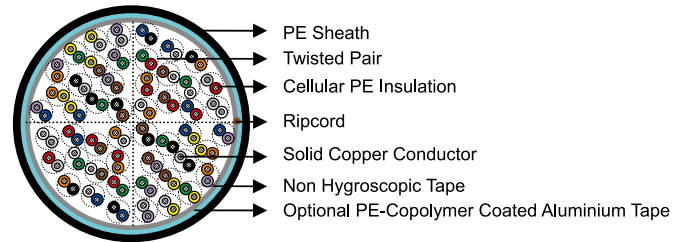
### APPLICATION

The cables are designed for local main network where it is pressurized. They are used as subscriber distribution cables and as connection between central offices. The cables are suitable for installation in ducts in access or trunk networks.



### STANDARDS

- CW 1224



### CONSTRUCTION

- **Conductors:** Solid annealed bare copper, 0.32/0.4/0.5/0.63/0.9mm as per class 1 of BS 6360/IEC 60228.
- **Insulation:** Cellular polyethylene as per BS EN 50290-2-23/IEC 60708/BS 6234.
- **Twisted Pairs:** Insulated conductors are twisted into pairs with varying lay length to minimize crosstalk.
- **Cabling Element:** Twisted Pairs.
- **Cable Core Assembly:** Cables with up to 100 pairs are composed of 25-pair units or 12/13-pair units; cables with over 100 pairs are composed of 25, 50 or 100-pair units cabled together. Any extra pairs form a separate unit. Units are identified by colour coded binders.
- **Core Wrapping:** One or more non-hygroscopic polyester tapes are helically or longitudinally laid with an overlap. These tapes furnish thermal, mechanical as well as high dielectric protection between shielding and individual conductors.
- **Moisture Barrier(optional):** A layer of aluminium tape (0.15mm) coated with PE-copolymer on one or both sides and applied longitudinally with overlap over the cable core to provide 100% electrical shielding coverage and ensures a barrier against water vapor.
- **Sheath:** Black low density polyethylene as per BS 6234/IEC 60708, being able to withstand exposure to sunlight, temperature variations, ground chemicals and other environmental contaminants.
- **Ripcord:** Ripcord may be provided for slitting the sheath longitudinally to facilitate its removal.
- **Spare Pairs (optional):** Spare pairs may be incorporated for 200 and larger pair cables.
- **Continuity Wire (optional):** One tinned copper drain wire may be longitudinally laid to ensure electrical continuity of the screen.

### ELECTRICAL PROPERTIES

|                            |                 |      |       |       |       |       |
|----------------------------|-----------------|------|-------|-------|-------|-------|
| Nominal Conductor Diameter | mm              | 0.32 | 0.4   | 0.5   | 0.63  | 0.9   |
| Conductor Gauge Size       | AWG             | 28   | 26    | 24    | 22    | 19    |
| Conductor Size             | mm <sup>2</sup> | 0.08 | 0.126 | 0.196 | 0.312 | 0.636 |

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|  |         |       |      |      |       |       |
|--|---------|-------|------|------|-------|-------|
| Maximum Average Conductor Resistance @20°C                                   | Ω/km    | 223   | 143  | 91   | 58    | 28    |
| Minimum Insulation Resistance @500V DC                                       | MΩ·km   | 6500  | 6500 | 6500 | 6500  | 6500  |
| Maximum Average Mutual Capacitance @800Hz*                                   | nF/km   | 53    | 53   | 53   | 56    | 59    |
| Maximum Individual Mutual Capacitance @800Hz (for 99% cases)                 | nF/km   | 60    | 60   | 60   | 60    | 64    |
| Maximum Individual Capacitance Unbalance @800Hz pair-to-pair (for 99% cases) | pF/500m | 275   | 275  | 275  | 275   | 275   |
| Maximum Conductor Loop Resistance @20°C                                      | Ω/km    | 470   | 300  | 192  | 114   | 60    |
| Impedance @1KHz  | Ω       | 1000  | 994  | 796  | 660   | 445   |
| Impedance @100KHz  | Ω       | 156   | 147  | 134  | 125   | 122   |
| Impedance @512KHz  | Ω       | 122   | 120  | 118  | 117   | 116   |
| Impedance @1MHz  | Ω       | 120   | 117  | 115  | 114   | 113   |
| Maximum Average Attenuation @0.8KHz  | dB/km   | 1.76  | 1.64 | 1.30 | 1.04  | 0.74  |
| Maximum Average Attenuation @1KHz  | dB/km   | 1.8   | 1.68 | 1.35 | 1.08  | 0.76  |
| Maximum Average Attenuation @3KHz  | dB/km   | 3.4   | 3.18 | 2.52 | 2.01  | 1.42  |
| Maximum Average Attenuation @150KHz  | dB/km   | 16.8  | 11.4 | 8.3  | 6.2   | 4.4   |
| Maximum Average Attenuation @772KHz  | dB/km   | 29.5  | 24.3 | 19.4 | 15.4  | 10.8  |
| Maximum Average Attenuation @1000KHz   | dB/km   | 33.5  | 27.1 | 21.4 | 17.5  | 12.8  |
| Dielectric Strength Conductor to Conductor (3secs)                           | V DC    | 500   | 500  | 500  | 500   | 500   |
| Nominal Insulation Thickness   | mm      | 0.095 | 0.13 | 0.15 | 0.175 | 0.225 |
| Nominal Insulated Conductor Diameter   | mm      | 0.51  | 0.66 | 0.8  | 0.98  | 1.35  |

\* Mutual capacitance values may be increased by 3% for cables with a nominal number of pairs less than 400.

## MECHANICAL AND THERMAL PROPERTIES

**Temperature range during operation (fixed state):** -30°C – +70°C

**Temperature range during installation (mobile state):** -20°C – +50°C

**Minimum bending radius:** 10 x Overall Diameter (unarmoured cables); 15 x Overall Diameter (armoured cables)

## COLOUR CODE

Standard colour code is per CW 1224 given in Colour Code Chart

## DIMENSIONS AND WEIGHT

Cellular PE Insulated & LAP Sheathed Air Core Cable to CW 1224

| Cable Code                              | Number of Pairs | Minimum Sheath Thickness mm | Maximum Overall Diameter mm | Nominal Weight kg/km |
|---|-----------------|-----------------------------|-----------------------------|----------------------|
| 0.32mm Conductor, 0.51mm Insulated Wire |                 |                             |                             |                      |
| TP1224-02Y(L)2Y-100P032                 | 100             | 1.6                         | 16.0                        | 266                  |
| TP1224-02Y(L)2Y-200P032                 | 200             | 1.7                         | 20.0                        | 490                  |
| TP1224-02Y(L)2Y-300P032                 | 300             | 1.7                         | 23.5                        | 706                  |
| TP1224-02Y(L)2Y-400P032                 | 400             | 1.8                         | 26.0                        | 910                  |
| TP1224-02Y(L)2Y-500P032                 | 500             | 1.8                         | 28.5                        | 1085                 |
| TP1224-02Y(L)2Y-600P032                 | 600             | 1.9                         | 31.0                        | 1330                 |
| TP1224-02Y(L)2Y-800P032                 | 800             | 1.9                         | 34.5                        | 1740                 |
| TP1224-02Y(L)2Y-1000P032                | 1000            | 2.0                         | 38.0                        | 2150                 |
| TP1224-02Y(L)2Y-1200P032                | 1200            | 2.1                         | 41.0                        | 2560                 |
| TP1224-02Y(L)2Y-1600P032                | 1600            | 2.2                         | 46.5                        | 3370                 |
| TP1224-02Y(L)2Y-2000P032                | 2000            | 2.3                         | 51.5                        | 4180                 |
| TP1224-02Y(L)2Y-2400P032                | 2400            | 2.4                         | 55.5                        | 4990                 |
| TP1224-02Y(L)2Y-3200P032                | 3200            | 2.5                         | 63.0                        | 6610                 |



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| Cable Code                              | Number of Pairs | Minimum Sheath Thickness mm | Maximum Overall Diameter mm | Nominal Weight kg/km |
|---|-----------------|-----------------------------|-----------------------------|----------------------|
| TP1224-02Y(L)2Y-4000P032                | 4000            | 2.7                         | 71.0                        | 8230                 |
| TP1224-02Y(L)2Y-4800P032                | 4800            | 2.7                         | 76.0                        | 9850                 |
| 0.4mm Conductor, 0.66mm Insulated Wire  |                 |                             |                             |                      |
| TP1224-02Y(L)2Y-50P04                   | 50              | 1.6                         | 15.5                        | 220                  |
| TP1224-02Y(L)2Y-100P04                  | 100             | 1.6                         | 19.0                        | 380                  |
| TP1224-02Y(L)2Y-200P04                  | 200             | 1.7                         | 24.5                        | 700                  |
| TP1224-02Y(L)2Y-300P04                  | 300             | 1.8                         | 28.5                        | 1009                 |
| TP1224-02Y(L)2Y-400P04                  | 400             | 1.9                         | 32.0                        | 1300                 |
| TP1224-02Y(L)2Y-500P04                  | 500             | 1.9                         | 35.0                        | 1550                 |
| TP1224-02Y(L)2Y-600P04                  | 600             | 2.0                         | 38.0                        | 1900                 |
| TP1224-02Y(L)2Y-800P04                  | 800             | 2.1                         | 43.0                        | 2490                 |
| TP1224-02Y(L)2Y-1000P04                 | 1000            | 2.2                         | 47.5                        | 3075                 |
| TP1224-02Y(L)2Y-1200P04                 | 1200            | 2.3                         | 51.5                        | 3660                 |
| TP1224-02Y(L)2Y-1400P04                 | 1400            | 2.4                         | 55.5                        | 4235                 |
| TP1224-02Y(L)2Y-1600P04                 | 1600            | 2.4                         | 58.5                        | 4818                 |
| TP1224-02Y(L)2Y-2000P04                 | 2000            | 2.5                         | 64.5                        | 5980                 |
| TP1224-02Y(L)2Y-2400P04                 | 2400            | 2.6                         | 70.0                        | 7645                 |
| TP1224-02Y(L)2Y-3000P04                 | 3000            | 2.8                         | 74.0                        | 9466                 |
| TP1224-02Y(L)2Y-3200P04                 | 3200            | 3.0                         | 80.0                        | 10076                |
| 0.5mm Conductor, 0.8mm Insulated Wire   |                 |                             |                             |                      |
| TP1224-02Y(L)2Y-50P05                   | 50              | 1.6                         | 17.0                        | 320                  |
| TP1224-02Y(L)2Y-100P05                  | 100             | 1.7                         | 22.0                        | 540                  |
| TP1224-02Y(L)2Y-200P05                  | 200             | 1.8                         | 28.5                        | 1000                 |
| TP1224-02Y(L)2Y-300P05                  | 300             | 1.9                         | 33.5                        | 1500                 |
| TP1224-02Y(L)2Y-400P05                  | 400             | 2.0                         | 37.5                        | 1944                 |
| TP1224-02Y(L)2Y-500P05                  | 500             | 2.1                         | 41.5                        | 2577                 |
| TP1224-02Y(L)2Y-600P05                  | 600             | 2.1                         | 44.5                        | 2800                 |
| TP1224-02Y(L)2Y-800P05                  | 800             | 2.3                         | 51.5                        | 3743                 |
| TP1224-02Y(L)2Y-1000P05                 | 1000            | 2.4                         | 56.0                        | 4450                 |
| TP1224-02Y(L)2Y-1200P05                 | 1200            | 2.5                         | 61.5                        | 5460                 |
| TP1224-02Y(L)2Y-1600P05                 | 1600            | 2.6                         | 69.5                        | 7060                 |
| TP1224-02Y(L)2Y-2000P05                 | 2000            | 2.7                         | 75.0                        | 8660                 |
| TP1224-02Y(L)2Y-2400P05                 | 2400            | 2.7                         | 80.0                        | 10260                |
| 0.63mm Conductor, 0.98mm Insulated Wire |                 |                             |                             |                      |
| TP1224-02Y(L)2Y-100P063                 | 100             | 1.7                         | 25.0                        | 785                  |
| TP1224-02Y(L)2Y-200P063                 | 200             | 1.9                         | 33.5                        | 1490                 |
| TP1224-02Y(L)2Y-300P063                 | 300             | 2.0                         | 39.5                        | 2200                 |
| TP1224-02Y(L)2Y-400P063                 | 400             | 2.1                         | 44.5                        | 2890                 |
| TP1224-02Y(L)2Y-600P063                 | 600             | 2.3                         | 53.5                        | 4235                 |
| TP1224-02Y(L)2Y-800P063                 | 800             | 2.5                         | 61.0                        | 5590                 |
| TP1224-02Y(L)2Y-1000P063                | 1000            | 2.6                         | 67.5                        | 6800                 |
| TP1224-02Y(L)2Y-1200P063                | 1200            | 2.7                         | 73.5                        | 8100                 |
| TP1224-02Y(L)2Y-1600P063                | 1600            | 2.7                         | 80.0                        | 10700                |
| 0.9mm Conductor, 1.35mm Insulated Wire  |                 |                             |                             |                      |
| TP1224-02Y(L)2Y-50P09                   | 50              | 1.7                         | 24.5                        | 805                  |
| TP1224-02Y(L)2Y-100P09                  | 100             | 1.9                         | 32.5                        | 1515                 |
| TP1224-02Y(L)2Y-200P09                  | 200             | 2.1                         | 45.0                        | 2935                 |
| TP1224-02Y(L)2Y-300P09                  | 300             | 2.4                         | 56.0                        | 4318                 |
| TP1224-02Y(L)2Y-400P09                  | 400             | 2.5                         | 62.0                        | 5700                 |

\*The above part number will be changed for unscreened cables by deleting the (L).