ANHUI FEICHUN SPECIAL CABLE CO., LTD.
安徽飞纯特种电缆有限公司
INDUSTRIAL DATA, CONTROL & COMMUNICATIONS CABLE SPECIALIST · WWW.FEICHUNCABLES.COM

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CLASS Product Data Sheet | UNITRONIC® LiYCY · LiYCY(TP) · BUS CAN · BUS PB · FD CP(TP)PLUS · LI2YCY PIMF · EB JE-LIYCY Series
STANDARDS DIN VDE 0812 | IEC 60228 Cl. 5 | VDE 0298-4 | DIN EN 50288 | IEC 60332-1 | EN 61010-1 (EB/IS)

PRODUCT SPECIFICATION — SHIELDED DATA, CONTROL & INDUSTRIAL BUS CABLES FOR AUTOMATION, FIELD INSTRUMENTATION, DRAG CHAIN & INTRINSICALLY SAFE CIRCUITS — FEICHUN COMPATIBLE WITH LAPP UNITRONIC® SERIES

LiYCY (CY) · LiYCY(TP) · BUS CAN · BUS PROFIBUS · FD CP(TP)PLUS · LI2YCY PIMF · EB JE-LIYCY | LIYCY(TP) 5×2×1 ★ HIGHLIGHTED

Complete UNITRONIC® data and control cable family — from simple shielded multi-core signal cables (LiYCY) and twisted-pair variants with superior crosstalk rejection (LiYCY(TP)), to impedance-matched industrial bus cables (CAN 120 Ω / PROFIBUS 150 Ω), high-flex PUR drag-chain cables for CNC and automation systems (FD CP(TP)PLUS), individually-shielded paired cables with ultra-high isolation (LI2YCY PiMF), and the blue-sheathed intrinsically safe circuit cable for hazardous-area installations (EB JE-LIYCY). All variants feature tinned copper conductors with PVC or PUR insulation and braided copper or aluminium-foil shielding. UNITRONIC LIYCY(TP) 5×2×1 mm² is the highlighted reference variant for this data sheet.

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FC LiYCY · LiYCY(TP) · BUS CAN 120Ω · PROFIBUS 150Ω · FD PUR DRAG-CHAIN · PiMF · BLUE INTRINSIC-SAFE · VDE 0812 / IEC 60228 CL.5

✦ FEICHUN UNITRONIC® DATA & CONTROL CABLE FAMILY

UNITRONIC® Series Data & Control Cables

7 Cable Families · 17 Variants · 0.25–1.5 mm² · 0.25 kV / 300 V Nominal
CAN Bus · PROFIBUS · PiMF · EB Intrinsically Safe · PUR Drag-Chain

Feichun Engineering Cables · Compatible with LAPP UNITRONIC® · DIN VDE 0812 · LIYCY(TP) 5×2×1 ★

UNITRONIC® LIYCY — CLASSIC SHIELDED DATA & CONTROL CABLE (NON-TWISTED) · 0.25 KV

1A — LIYCY: SERIES OVERVIEW & DESIGN

I SINGLE-CORE STRANDED, TINNED CU BRAID SHIELD — GENERAL INDUSTRIAL SIGNAL & DATA TRANSMISSION

UNITRONIC® LiYCY (also designated LIY-CY per DIN) is the foundational Feichun data cable for general-purpose low-frequency and high-frequency analogue or digital signal transmission in industrial environments. It features **Class 5 fine-stranded, tinned copper conductors** per IEC 60228, PVC core insulation with sequential number-print or colour identification, an inner PVC bedding layer, and a **tinned copper wire braid shield** (≥ 85 % optical coverage) terminated to a drain wire — providing effective EMC shielding from both external electromagnetic interference and from signal radiation to adjacent circuits. The PVC outer sheath complies with DIN VDE 0812 and carries the nominal voltage designation of **0.25 kV** (250 V peak), representing the typical signal voltage operating envelope for data and instrumentation cables — this is not a power distribution voltage. All conductor cross-sections from 0.25 mm² (AWG 24) to 1.5 mm² (AWG 16) are covered within the LiYCY product family.

0.25 kV (250 V Nominal) | Cu Braid Shield ≥85% | DIN VDE 0812

LIYCY VARIANTS — PHYSICAL & ELECTRICAL DATA



LiYCY 2×0.34 CY classic

UNITRONIC-CY (LIY-CY) 2×0.34 MM²	
No. cores × cross-section	2 × 0.34 mm² (AWG 22)
Outer diameter	~ 4.9 mm
Copper weight	~ 21 kg/km
Total cable weight	~ 37 kg/km
Ampacity (DIN VDE 0812)	4.5 A (per core)

TYPE	AWG	Ø (MM)	CU KG/KM	WT KG/KM	I PER CORE
UNITRONIC-CY 2×0.34	22	4.9	21	37	4.5 A
LIYCY 20×0.25	24	9.38	85	136	2.5 A ⚡
LIYCY 2×1 (0.25 kV)	18	6.3	43	72	11.0 A

UNITRONIC® LIYCY(TP) 5×2×1 MM² — 0.25 KV ★ HIGHLIGHTED REFERENCE VARIANT

LIYCY(TP) 5×2×1 MM² — 0.25 KV ★ HIGHLIGHTED

★ HIGHLIGHTED VARIANT

UNITRONIC LIYCY(TP) 5×2×1 — FULL SPECIFICATION ★	
No. pairs × cores × cross-sec.	5 × 2 × 1.0 mm²
AWG equivalent	18 AWG
Outer diameter	~ 12.8 mm
Copper weight	~ 142 kg/km
Total cable weight	~ 245 kg/km
Ampacity (DIN VDE 0812, 30 °C)	11.0 A per core
Nominal voltage	0.25 kV (250 V)
Shield type	Tinned Cu braid, ≥ 85 % OC
Insulation resistance	≥ 20 MΩ × km
Min. bending radius (dynamic)	≈ 77 mm (6 × OD)



5 twisted pairs · Cu braid LiYCY(TP) 5×2×1 · ★

★ 5×2×1 — SELECTION RATIONALE: HIGH-CURRENT MULTI-PAIR TWISTED DATA TRUNK

The **UNITRONIC LIYCY(TP) 5×2×1 mm²** occupies a unique engineering position as the largest-conductor twisted-pair variant in the LiYCY(TP) family — combining the crosstalk immunity of the TP construction with a **1.0 mm² conductor cross-section** capable of carrying up to 11 A per core. This makes it suitable not only for conventional signal and data circuits, but also for **combined signal-and-power trunks** where individual twisted pairs supply power to distributed sensors, actuators, or fieldbus nodes (e.g., IO-Link, AS-Interface auxiliary, or 4-wire RS-485 with separate pair powering transmitters). The five-pair format is ideal for **machine control interfaces** requiring simultaneous transmission of multiple differential RS-485 channels, mixed analogue and digital signals, or multi-axis encoder signal aggregation. At 12.8 mm OD and 245 kg/km, the cable is compact enough for cable tray routing yet robust enough for semi-fixed factory floor conduit installations. The Cu braid shield provides a broad-spectrum Faraday cage effective from a few kHz to several MHz, mitigating both power-frequency induction from adjacent motor cables and high-frequency

UNITRONIC® LI2YCY PIMF — INDIVIDUALLY-SHIELDED PAIRED CABLE (PER-PAIR ALUMINIUM FOIL + OVERALL BRAID)

LI2YCY PIMF 2×2×0.34 & 5×2×0.5 — ULTRA-HIGH INTER-PAIR ISOLATION



PIMF 2×2×0.34 Per-pair Al foil + Cu braid

LI2YCY PIMF VARIANTS		
Parameter	2×2×0.34	5×2×0.5
AWG equiv.	22	20
Outer Ø (mm)	8.5	12.2
Cu kg/km	48	105
Wt kg/km	90	200
Shield	Al foil/pair + overall Cu braid	

I PIMF = PAIRS INDIVIDUALLY METALLIC FOIL SHIELDED — HIGHEST INTER-PAIR CROSSTALK ISOLATION ACHIEVABLE IN A MULTI-PAIR CABLE

In the PiMF construction, **each pair is wrapped in its own aluminium-polyester composite foil shield** with a dedicated drain wire, then the entire bundle is additionally enclosed in a tinned copper wire braid overall shield. This dual-shielding architecture provides near-complete galvanic isolation between pairs — critical for simultaneous transmission of incompatible signals on adjacent pairs (e.g., pulse encoder signals on one pair while 4–20 mA analogue loops run on adjacent pairs), or for instrumentation-grade applications where cross-coupling between channels must be below −60 dBV. The LI2YCY designation also indicates **PE (polyethylene) core insulation**, which provides a significantly lower dielectric constant than PVC (εr ≈ 2.3 vs. 4.5), resulting in lower capacitance per metre, faster signal propagation velocity, and cleaner pulse response for high-speed data channels.

UNITRONIC® EB JE-LIYCY — BLUE SHEATH · INTRINSICALLY SAFE (IS) FIELDBUS CABLE

EB JE-LIYCY 40×2×0.5 — IS / EXPLOSION-PROOF CIRCUIT CABLE

EB JE-LIYCY 40×2×0.5 MM²	
Structure	40 pairs × 2 × 0.5 mm²
AWG equivalent	20 AWG



LIYCY 7×1.5 (0.25 kV)	16	~10.3	~135	~230	14.0 A ⚡

⚡ = multi-core derating required per DIN VDE 0298-4. 0.25 kV suffix denotes nominal peak signal voltage — not power distribution rating.

● UNITRONIC® LIYCY(TP) — TWISTED-PAIR SHIELDED DATA CABLE · 0.25 KV

● 1B — LIYCY(TP): TWISTED-PAIR CONSTRUCTION & CROSSTALK REJECTION

ℹ TP = TWISTED PAIR — CORE CONDUCTORS STRANDED IN PAIRS FOR SUPERIOR CROSSTALK IMMUNITY

In the **LiYCY(TP)** family, conductor cores are assembled as **twisted pairs** before cabling into the multi-pair bundle — each pair twisted at a specific lay length to maximise differential-mode noise rejection and minimise inter-pair crosstalk. This construction makes LiYCY(TP) the preferred choice for longer-distance analogue signal circuits (4–20 mA, ±10 V sensor loops), RS-485 multi-drop communication runs, and any application where signal integrity between parallel pairs is critical. The outer tinned Cu braid shield provides common-mode EMC protection identical to the non-TP variant. Pair count notation: **N×2×S** where N = number of pairs, 2 = conductors per pair, S = conductor cross-section in mm².

TYPE	AWG	Ø (MM)	CU KG/KM	WT KG/KM	I/CORE
LIYCY(TP) 2×2×0.25	24	6.3	28	54	2.5 A
LIYCY(TP) 3×2×0.25	24	7.1	34	66	2.5 A
LIYCY(TP) 2×2×0.5	20	7.9	49	91	6.0 A
LIYCY(TP) 16×2×0.5	20	16.5	215	360	6.0 A ⚡
LIYCY(TP) 4×2×1	18	11.5	114	195	11.0 A

⚡ = derating required. 16×2×0.5 with all pairs loaded: apply factor ≤ 0.45 per VDE 0298-4.



LIYCY(TP) 2×2×0.5
2 twisted pairs



LIYCY(TP) 4×2×1
4 twisted pairs

TP PAIR IDENTIFICATION

Each pair identified by colour-coded insulation per DIN VDE 0293-308. Within pair: Core 1 = coloured; Core 2 = white/grey. Pairs may be additionally numbered on higher pair-count variants. Lay length optimised per pair for crosstalk isolation and balanced line impedance.

switching noise from VFDs. Multi-core de-rating applies when all 5 pairs carry simultaneous heavy loads — consult Column 3 for calculation guidance.

● UNITRONIC® BUS — IMPEDANCE-MATCHED INDUSTRIAL FIELDBUS CABLES (CAN & PROFIBUS)

● UNITRONIC BUS CAN 1×2×0.34 — 120 Ω CANBUS CABLE



CAN pair 120 Ω
BUS CAN 1×2×0.34

BUS CAN 1×2×0.34 MM²	
Structure	1 pair × 2 × 0.34 mm²
AWG	22 AWG
Outer diameter	5.7 – 6.0 mm
Cu weight / Total weight	16 / 42 kg/km
Characteristic impedance	120 Ω (matched)
Application	CAN Bus (ISO 11898)

ℹ CAN BUS — 120 Ω TERMINATION IMPEDANCE

The **120 Ω characteristic impedance** is precisely engineered by controlling the pair geometry (conductor diameter, strand pitch, and insulation wall thickness) and dielectric constant of the core insulation. Incorrect impedance causes signal reflections that corrupt data frames — particularly at high bit rates (CAN FD up to 8 Mbit/s). Bus termination resistors at each network endpoint must match this 120 Ω value. The cable is rated for static installation — for drag-chain or continuously flexing CAN runs, specify the FD CP(TP)PLUS variant.

● UNITRONIC BUS PB FD P FC 1×2×0.64 — 150 Ω PROFIBUS-DP CABLE

BUS PB FD P FC 1×2×0.64 MM²	
Structure	1 pair × 2 × 0.64 mm² (solid)
AWG	24 (solid core)
Outer diameter	~ 8.0 mm
Cu weight / Total weight	26 / 65 kg/km
Characteristic impedance	150 Ω (PROFIBUS-DP)
Type designations	FD=drag-chain, P=PUR, FC=fast-connect

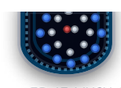
ℹ PROFIBUS-DP — 150 Ω FAST-CONNECT DRAG-CHAIN CABLE

Suffix **FD** = optimised for drag-chain (cable-carrier) dynamic flexing. **P** = polyurethane outer sheath for chemical and mechanical resistance. **FC** = Fast-Connect compatible termination, enabling tool-free assembly with M12 or standard PROFIBUS D-Sub connectors. Solid 0.64 mm² conductors ensure stable characteristic impedance and low propagation delay across the full PROFIBUS-DP transmission range (9.6 kbit/s to 12 Mbit/s).

● UNITRONIC® FD CP(TP)PLUS — PUR DRAG-CHAIN HIGHLY-FLEXIBLE TWISTED-PAIR DATA CABLE

● FD CP(TP)PLUS 4×2×0.5 & 5×2×1 — PUR HIGH-FLEX DRAG-CHAIN CABLES

PARAMETER	4×2×0.5 MM²	5×2×1 MM²
Structure (pairs×2×mm²)	4 × 2 × 0.5	5 × 2 × 1.0
AWG equivalent	20 AWG	18 AWG
Outer diameter	9.8 mm	14.1 mm



EB JE-LIYCY 40×2×0.5
Blue sheath · IS circuits

Outer diameter	~ 21.5 mm
Copper weight	~ 460 kg/km
Total cable weight	~ 650 kg/km
Outer sheath colour	Blue (mandatory for IS)
Ampacity per core	6.0 A (base) — derate heavily

⚡ EB = EXPLOSIVE AREA (BLUE SHEATH) — INTRINSICALLY SAFE (IS) CIRCUITS PER IEC 60079-11 / ATEX

The **EB designation** (German: *Eigensichere Betriebsmittel*) and mandatory **blue outer sheath** unambiguously identify this cable for exclusive use in **intrinsically safe (Ex i) circuits** in hazardous locations (Zones 0, 1, 2 for gas; Zones 20, 21, 22 for dust). The blue sheath colour is a legally mandated visual marker per IEC 60079-14 and EN 50014 — preventing accidental interconnection with non-IS circuits in hazardous areas. The JE-LIYCY construction uses PE insulation for low capacitance (critical for IS energy budget calculation), with an overall tinned copper braid shield that must be connected at a single point only (to avoid ground-loop interference in IS circuits). The 40-pair format is used for large ATEX control panel wiring harnesses routing multiple IS measurement loops from field transmitters in the hazardous zone to the safe-area marshalling rack. **All 40 pairs carry IS-limited energy levels** — individual pair current must remain within the IS barrier's limiting parameters (typically ≤ 100 mA per IEC 60079-11, Entity model). Derating for 40 simultaneously loaded pairs is extreme (factor < 0.40).

● ELECTRICAL ENGINEERING REFERENCE — AMPACITY PER DIN VDE 0812 & MULTI-CORE DERATING (VDE 0298-4)

⚠ DATA CABLE AMPACITY IS DETERMINED BY CONDUCTOR CROSS-SECTION PER DIN VDE 0812 — SHEATH MATERIAL HAS NO EFFECT ON THE BASE CURRENT RATING

Unlike power cables (governed by IEC 60502 / VDE 0276), data and communications cables are rated under **DIN VDE 0812** which establishes maximum allowable conductor temperature as the sole limiting criterion. The base values below apply at **30 °C ambient temperature with 3 loaded conductors, free air**. When more conductors are simultaneously loaded, thermal interaction within the cable bundle reduces permissible current — mandatory derating per DIN VDE 0298-4 applies.

CROSS-SECTION	AWG	AMPACITY (30 °C, FREE AIR)	TYPICAL CABLES
0.25 mm²	24	2.5 A	LiYCY(TP) ×0.25 series
0.34 mm²	22	4.5 A	UNITRONIC-CY 2×0.34; BUS CAN
0.50 mm²	20	6.0 A	LiYCY(TP) ×0.5; FD ×0.5; PIMF ×0.5; EB ×0.5
0.64 mm²	22S	7.5 A	BUS PB FD (solid core)
1.00 mm²	18	10–11 A	LiYCY 2×1; LiYCY(TP) ×2×1; FD 5×2×1 ★
1.50 mm²	16	14 A ⚡	LiYCY 7×1.5 — derate for 7 cores

MULTI-CORE DERATING FACTOR — DIN VDE 0298-4 TABLE 26 (ALL CORES LOADED SIMULTANEOUSLY)

3 cores (base)	× 1.00
4–5 cores	× 0.75
6–10 cores	× 0.60
11–24 cores	× 0.50
25–40+ cores	≤ × 0.40

Copper weight (kg/km)	68	138
Total weight (kg/km)	125	240
Ampacity per core	6.0 A	11.0 A
Outer sheath	PUR (Polyurethane) — halogen-free option	

ℹ FD = FLEXIBLE DRAG-CHAIN · PUR SHEATH · CP = COMPACT PROFILE · TP = TWISTED PAIR

Designed explicitly for **continuous travel in cable carrier / energy chain (Schleppkette) systems** on CNC machining centres, robotic assembly cells, and linear handling systems. The PUR sheath resists machine oils, coolants, and cutting fluids. The fine-stranded Class 6 conductors and specialised core stranding withstand tens of millions of flex cycles without wire fatigue. Minimum dynamic bending radius ≈ 7.5 × OD; maximum travel speed 4 m/s in the cable track. The compact CP profile reduces carrier fill and allows tighter minimum bend radii versus conventional round cables.

*Worked examples: LIYCY(TP) 5×2×1 ★ (10 conductors all loaded): 11 A × 0.60 = **6.6 A/core**.*
*EB JE-LIYCY 40×2×0.5 (80 conductors): 6 A × ≤0.40 = ≤ **2.4 A/core** — IS barrier limits typically far below this value, so IS energy budget governs in practice rather than thermal derating.*

APPLIED INTERNATIONAL STANDARDS & COMPLIANCE

- `DIN VDE 0812` — Primary construction and electrical performance standard for data and communication cables; defines maximum conductor temperatures, insulation voltage, and conductor classification for the LiYCY / LiYCY(TP) family. Ampacity values in this sheet are derived from this standard at 30 °C, free air, 3 loaded conductors.
- `DIN VDE 0298-4` — Multi-core current derating tables for cables with multiple simultaneously loaded conductors; Table 26 provides the derating factors applied to the base VDE 0812 ampacity values cited in the reference table above.
- `IEC 60228 Class 5` — Fine-stranded flexible tinned copper conductors; all UNITRONIC signal cable variants. Class 5 ensures maximum fatigue endurance for frequent retermination and semi-flexible installation. FD drag-chain variants use Class 6 (extra-flexible).
- `ISO 11898-2` — CAN Bus physical layer; UNITRONIC BUS CAN 1×2×0.34 provides the specified 120 Ω characteristic impedance, maximum capacitance per metre, and conductor resistance for compliant CAN network design up to CAN FD 8 Mbit/s bit rates.
- `EN 50288-7` — Industrial instrumentation multicore cables; covers UNITRONIC LiYCY(TP) and PiMF families for analogue and digital signal transmission in automation environments.
- `IEC 60079-14 / EN 50014 (ATEX)` — Installation standard for electrical equipment in explosive atmospheres; mandates blue outer sheath for IS circuit cables (EB JE-LIYCY), single-point shield earthing, and segregation from non-IS wiring. The EB cables must be used exclusively in Ex i circuits with certified IS barriers.

LiYCY Cu braid shield | LiYCY(TP) 5×2×1 ★ | LiYCY(TP) twisted pair
BUS CAN 120 Ω | PROFIBUS 150 Ω | FD PUR drag-chain
PiMF per-pair shield | EB Blue IS circuits | VDE 0812 ampacity

ORDERING & CONTACT INFORMATION

Specify complete type designation, core arrangement, cross-section, and nominal voltage.
Examples:
`UNITRONIC LIYCY(TP) 5×2×1 0.25kV, 100 m drum`
`UNITRONIC BUS CAN 1×2×0.34, 500 m coil`
`EB JE-LIYCY 40×2×0.5, blue sheath, 200 m`
All 17 UNITRONIC® variants listed in this data sheet available from stock. Custom pair counts, non-standard cross-sections, FD drag-chain adaptations, and armoured variants available on enquiry.
Compatible replacement for LAPP UNITRONIC® series with equivalent or superior performance.
Test certificates per IEC 60228 / DIN VDE 0812 available on request.
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All data are nominal values subject to normal manufacturing tolerances. Ampacity per DIN VDE 0812 at 30 °C ambient, free air, 3 loaded conductors. Apply multi-core derating factor per DIN VDE 0298-4 before specifying operating currents for multi-core configurations.
Highlighted: UNITRONIC LIYCY(TP) 5×2×1 mm² ★ · 0.25 kV · 17 variants · LiYCY / LiYCY(TP) / BUS CAN 120Ω / PROFIBUS 150Ω / FD PUR / PiMF / EB Blue IS · Compatible replacement for LAPP UNITRONIC® Series