



The future proof solution

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Objective

Signal pairs vs. Idle pairs

- **Which pairs provide the best path to worldwide use of IP-products for all kinds of applications including telephony, home automation, ?**
- **Which pairs provide the chance to congruer the largest market segment ?**



Targets of the 802.3af Standard

- **Provide power over premises cabling worldwide**
- **Exploit cabling compliant with cabling standard ISO/IEC 11801 and its national adaptations**



Use of signalling pairs for power is no burden for the end system

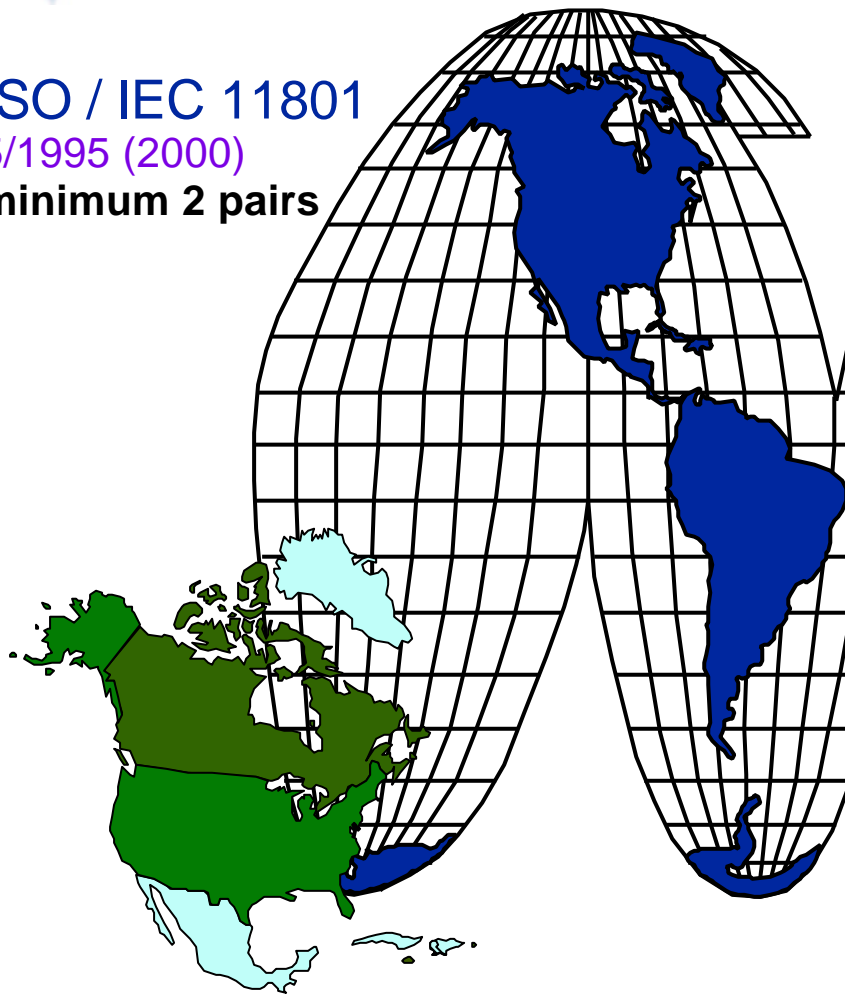
The 802.3af task force affirms that the technical and economic feasibility of delivering power over the wire pair set 1-2, 3-6 has been established, and that the technical and economic feasibility of delivering power over the wire pair set 4-5, 7-8 has also been established.

**(Motion at september interim meeting
The motion carried.)**

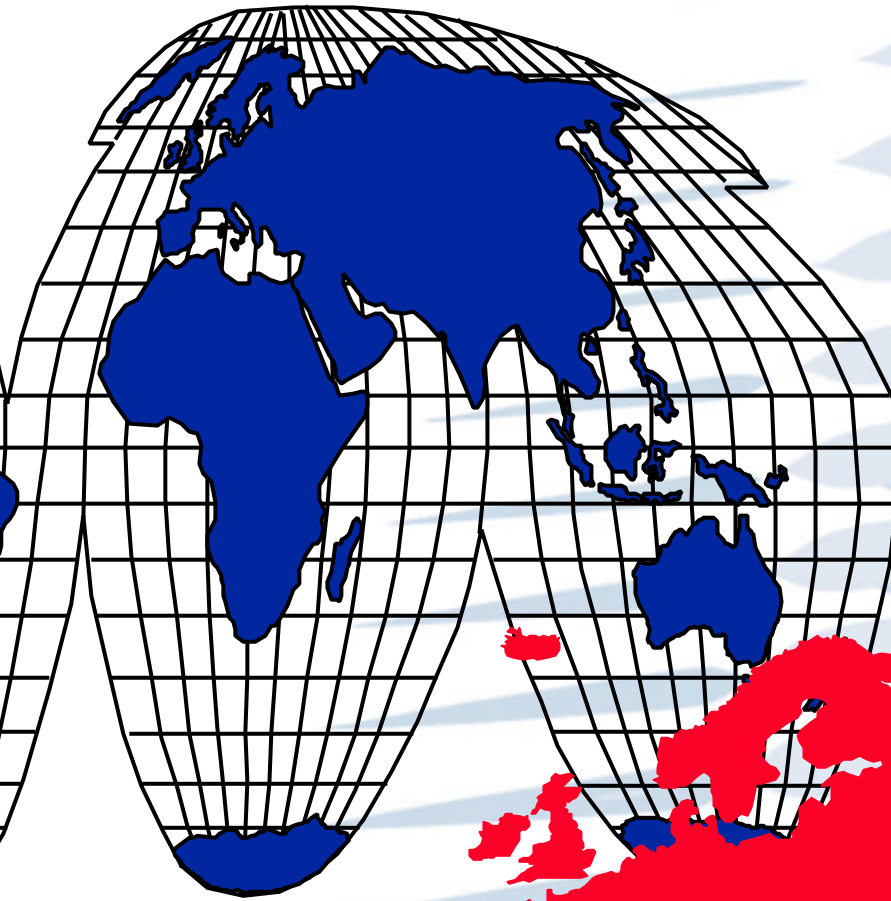


Cabling standards today

ISO / IEC 11801
5/1995 (2000)
minimum 2 pairs



EIA / TIA 568 (A)
1994 / (99)
minimum 4 pairs



EN 50173
5/1995 (2000)
minimum 2 pairs





Why use other pairs than needed for signalling?

- **Save pairs for other applications**
 - outside North America and with Class F cable sharing is quite common
- **provide flexibility to user**
- **make best use of cable capacity**
- **lower cost in material (cable, outlets)**
- **low cost in installation**



Why use other pairs than needed for signalling?

- **less space necessary**
- **reduced fire load**
- **2-pair patchcords (cheap)**
- **Y-patchcords for 2 applications**
- **avoid discrimination of intelligent termination systems (like ACO, SML)**
- **widen cabling park usable**



Why should we be limited to class D Cabling ?

- Its easier to change the socket in the wall than the cable behind
- Adapters and equipment cords with different plugs are not elegant but effective
- Huge park of installed cable

Type 1 for TR	2 pairs
POT	1 pair + (1 spare)
CCCB (Home automation)	1 pair + (1 spare)



Other cables

- **IBM Type1 - cabling**
 - **the balun is an excellent matching device to exploit the installed base of IBM Type1 cables.**
- **IBM-Type 1 cables consist of 2 pairs**



Liaison letter requirements from ISO/IEC JTC 1/SC 25/WG3

- Meet ISO / IEC 11801 as implemented worldwide (minimum 2 pairs per outlet)
- Question 6 on installed base is fuzzy

Original question:

„What percentage of 60603-7 connectors world-wide terminate less than 4-pair?“

To get the right answer the question should be:

„What percentage of 60603-7 connectors and outlets world-wide provide 2 unused pairs to provide power on?“

Reason: 4 pair sockets are shared between two applications e.g. In Australia



Is the pairset future proof ?

- **ISO/IEC 11801 stays with a minimum of two pairs per outlet**
- **ISO/IEC 11801 allows other connectors in the distributor to save space and cost**
= > 2 pair connectors
- **Cabling class F (up to 600 MHz with PiMF-cables) are predicted for cablesharing**
= > 2 pairs per application are expected and the rule in present installations



Pattern for other protocols

- **1000BASE-T on 4 pairs is bound to use the signalling pairs
(part of the 802.3af objectives)**
- **ATM, Token Ring, IEEE 1394, FDDI TP-PMD, PBX and other may follow suit easily**



	Signal Pairs 1,2 – 3,6	Idle Pairs 4,5 – 7,8
Technical feasibility	✓	Whenever pairs present and not used by 3 rd party
Economical feasibility	✓	
Compliant with ISO/IEC 11801 Standard worldwide	✓	NO
Liaison Letter proper consideration of	✓	NO
Easy to implement for 1000BASE-T	✓	NO
Futureproof	✓	NO
Applicable to installed cabling park	100 %	< 70 %
Exploitation of park beyond ICO/IEC 11801	✓	NO
End system	Win	-
End user	Win	loose

CONCLUSION

To provide power via the MDI

**The Signal pairs 1-2 , 3-6
are the optimal solution
for the largest market segment.**