# DTE power via MDI,
# An Alternative Proposal

# IEEE 802.3 DTE power via MDI

## Devices available today:

- Few under 16 inches$^2$.
- Utility limited compute and network facilitation.
- Applications limited.
- None distribute power.
- None expect power delivery.

# IEEE 802.3 DTE power via MDI

## Devices available tomorrow:

- Net appliances will become common.
- Faultless connections will be required.
- Test and measurement applications increase.
- Industrial applications require sealed MDI.
- Size continues to decrease.
- Reliable power distribution is assumed.

# IEEE 802.3 DTE power via MDI

## An Alternative Approach to Powering Connected Devices

# IEEE 802.3 DTE power via MDI

## The Keyed RJ45 *plug* as a solution!

- Positively protects unsuspecting nodes
- No reliability penalties, key MTBF >> contacts
- No new termination tooling required
- No appreciable cost increase
- Available from a number of sources

# IEEE 802.3 DTE power via MDI

## The Keyed RJ45 *Jack* as a solution!

- No reliability penalties, key MTBF >> contacts
- No appreciable cost increase
- Form factors for 98% of applications
- Available from a number of sources
- Accepts non-keyed plugs for legacy applications

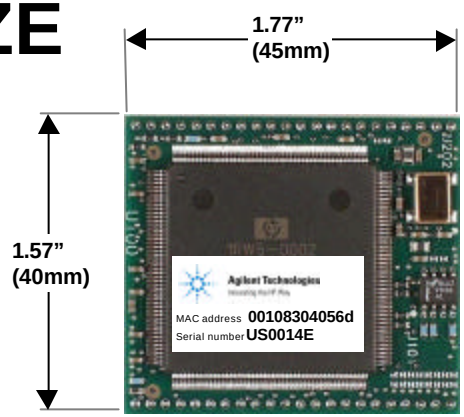
# IEEE 802.3 DTE power via MDI

## The Keyed MDI as a solution.

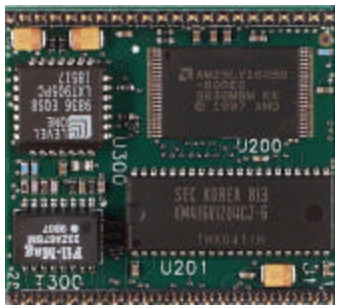
- Extremely high reliability
- Mechanical and visible lockout
- Available from a number of manufacturers
- No additional “discovery” time
- No size increase
- No appreciable cost increase

# IEEE 802.3 DTE power via MDI

## SIZE




FRONT VIEW




REAR VIEW

| | Surface Area | | Volume* | |
|---|---|---|---|---|
| | inches$^2$ | cm$^2$ | inches$^3$ | cm$^3$ |
| **sans RJ45** | 2.79 | 18.00 | 2.31 | 37.80 |
| **with RJ45** | 3.14 | 20.23 | 2.59 | 42.46 |

*** Volume of total assembly including power supply and a transducer IEEE 1451.2 STIM (Smart Transducer Interface Module).**

**This module conforms to IEEE 1451.2, is moving towards total IEEE 1451.1 compliance, and contains ALL the components for an Ethernet device except for jack and power supply.**

**The next iteration will reduce the size by 50%!**

# IEEE 802.3 DTE power via MDI

**NO additional electronic components that:**

- **Consume additional space**
- **Decrease reliability**
- **Increase costs**

# IEEE 802.3 DTE power via MDI

**No new magnetic components that may:**

- Consume more space
- Potentially may degrade communications
- Delay new products for lack of new magnetics
- Increase costs

# IEEE 802.3 DTE power via MDI

**No "Power Discovery" that may require:**

- **Additional components and/or**
- **Larger magnetic components**
- **Delays functional node discovery/logon**

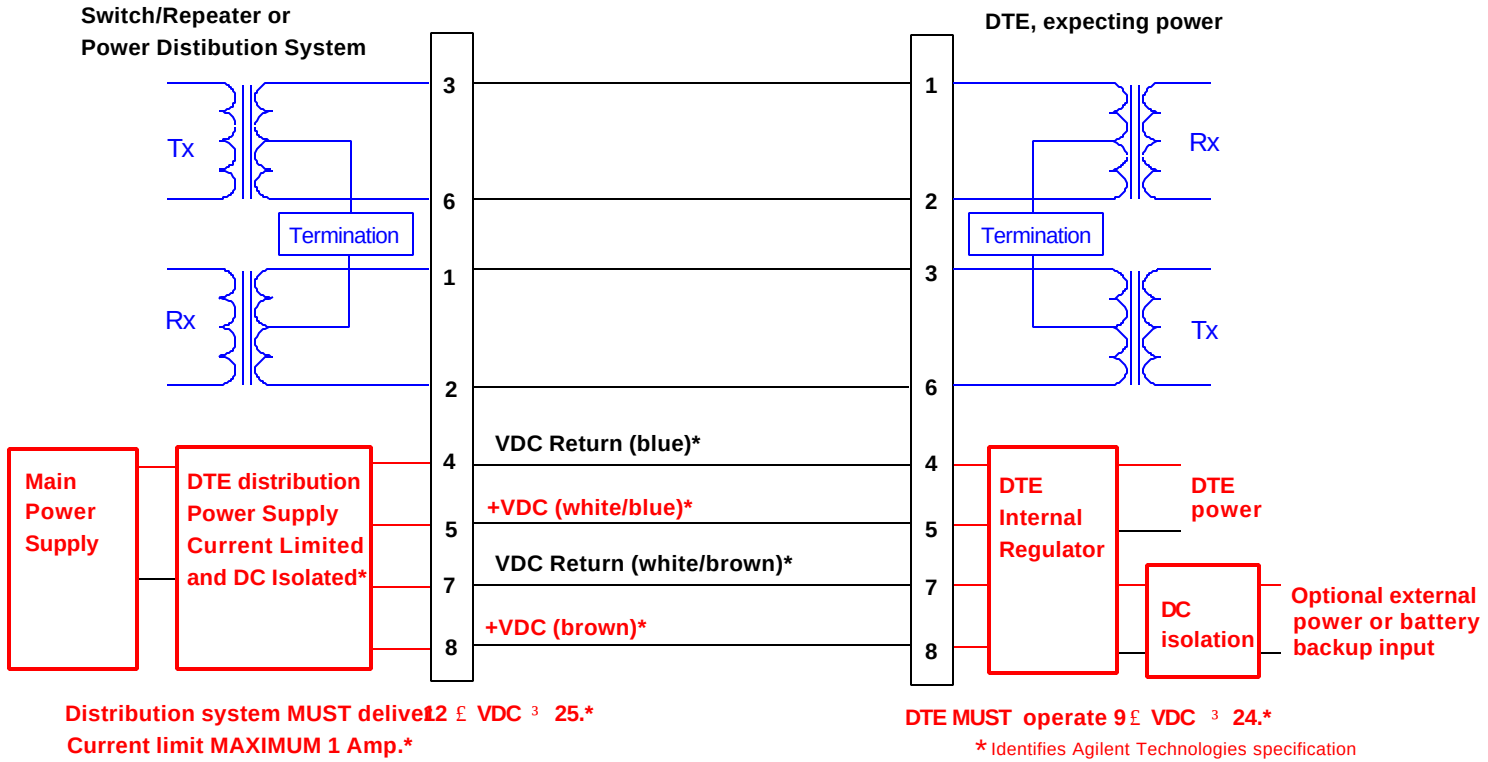
# IEEE 802.3 DTE power via MDI

## Optimum Solution Criteria:

- Reliability, No reliability penalties
- Size, No new electronic components
- No new technological hurdles
- Virtually No cost increase

# IEEE 802.3 DTE power via MDI

## A Prototype Interconnect:




**Also amenable to mid-point insertion.**

**Observe IEEE 802.3 Dielectric Breakdown requirements on MDI!**

# IEEE 802.3 DTE power via MDI

## *Some Existing* Keyed RJ45 Part numbers

**AMP:**

| Jacks, SIDE entry | | Jacks, TOP entry | Multi-position Jacks | Plugs |
|---|---|---|---|---|
| 557730-1 | 555167-1 | 558310-1 | 558068-1, 10 jacks | 5-569543-2 |
| 520252-4 | 558066-1 | 520260-4 | 555078-1, 8 jacks | 5-554743-3 |
| 520244-4 | 558526-1 | 555799-1 | 558178-1, 8 jacks | 5-554169-3 |
| 554517-1 | 556591-1 | | | |
| 555166-1 | | | | |

**Molex GC/Waldom:**

| Jack SIDE entry | Plug |
|---|---|
| 95060-2882 | 602341 |

**Hirose Electric Company, LTD:**

| Jack SIDE entry |
|---|
| TM5RJ-88 |
| TM5RJ2-88 |

**Kycon:**

| Jacks, SIDE entry | Jacks, TOP entry | Plug |
|---|---|---|
| GD-A-88K | GD-PA-88K | MP88-1000 |
| GD-B-88K | GD-PN-88K | MPS88R-1000 |
| GDL-A-88K | | MPS88R-1000-S |
| GDL-A-88K-50 | | MP88-5000 |
| GDL-N-88K | | MPS88R-5000 |
| GDL-S-88K | | MPS88R-5000-S |

**Maxconn: yes**

**Regal: yes**

# IEEE 802.3 DTE power via MDI

## Conclusion:

**From the small sampling of keyed RJ45 MDI sources, it is obvious that if this Task Force selected a keyed solution, there would be no delay for NEW powered Ethernet products.**

# IEEE 802.3 DTE power via MDI

## Summary of advantages for a keyed MDI:

- Almost immediate implementation
- Positive protection for unsuspecting legacy devices
- Keyed Jack accepts legacy devices
- No size increase due to more or larger components
- No “turn on” delay
- Few, if any, implementation hurdles
- Virtually No cost increase
- Few, if any, disadvantages