REVISION HISTORY			
NUMBER	DATE	DESCRIPTION	NAME
2.8.5.1685 2.8.5.1711- 1711+g1c4ab78c6	2026-10-30	Current release snapshot of Network UPS Tools (NUT).	
2.8.5	2026-04-07	Some changes to docs and recipes, especially for parallel builds; introduced a way to build with private shared libraries to save space. Updated NUT SEMVER definition some more, added a normalization and comparison script. Some rounds of code-hardening project. Added reference RPM/DEB recipes to test NUT iterations on OBS. Numerous driver updates, some new ones introduced.	JK
2.8.4	2025-08-07	Fixed a few regressions introduced by release v2.8.3. Some changes to docs and recipes, especially for parallel builds. Updated NUT SEMVER definition some more. Some rounds of code-hardening project. Numerous driver updates, some new ones introduced.	JK
2.8.3	2025-04-07	Some changes to docs and recipes, libupsclient API and functionality. Updated NUT SEMVER definition and added scripting around it. Groundwork for vendor-defined status and INSTCMD buzzwords like "ECO". Fixed some regressions and added improvements for certain new device series.	JK
2.8.2	2024-04-01	Some changes to docs and recipes, libnutscan API and functionality. Added nutconf (library and tool). Fixed some regressions and added improvements for certain new device series.	JK
2.8.1	2023-10-31	Some changes to API, docs and recipes, in particular to simplify local builds and tests (e.g. to help end-users check if current NUT codebase trunk has already fixed an issue they see with a packaged installation). Revived NUT for Windows effort, further improved other OS integrations. NUT became reference for "UPS management protocol", Informational RFC 9271. Documentation files refactored to ease maintenance. More drivers and new driver categories introduced.	JK

REVISION HISTORY			
NUMBER	DATE	DESCRIPTION	NAME
2.8.0	2022-04-26	Change of maintainer. Many changes to API, docs (both style and content), and recipes, with a stress on non-regression test-ability, run-time debug-ability, general codebase maintainability, as well as OS integrations (notably nut-driver-enumerator for systemd and SMF service instance maintenance). Added a lot in area of CI support and documented pre-requisite package lists for numerous platforms, and CI agent set-up. Added libusb-1.x support and many new driver categories (and drivers), and daisychain device connection support. Instant commands enhanced with TRACKING to enable protocol-based waiting for completion of a particular INSTCMD or SET operation.	JK
2.7.4	2016-03-09	NUT variables namespace updated, in particular for outlet groups, alarms and thresholds, ATS devices, and battery.charger.status to supersede CHRG and DISCHRG flags published in ups.status readings. NUT network protocol extended with NUMBER type; some API changes.	AQ
2.7.3	2015-04-22	Documentation revised, including some API changes. Added NUT DDL links. NUT variables namespace updated.	AQ
2.7.2	2014-04-17	The nut-website project was offloaded into a separate repository. FreeDesktop HAL support was removed (obsoleted in GNOME consumer). Introduced nutdrv_atcl_usb driver.	AQ
2.7.1	2013-11-19	NUT source codebase migrated from SVN to Git (and from Debian infrastructure to GitHub source code hosting). jNut binding split into a separate project. Introduced libnutclient (C++ binding), al175, apcupsd-ups and nutdrv_qx drivers, Mozilla NSS support for simpler licensing than OpenSSL, and a newer apcsmart implementation. Documentation support enhanced with a spell checker, contents massively updated to reflect project changes.	CL

REVISION HISTORY			
NUMBER	DATE	DESCRIPTION	NAME
2.6.5	2012-08-08	New macosx-ups driver, new implementation of mge-shut driver. NUT variables namespace updated. Docs cleaned up and revised.	AQ
2.6.4	2012-05-31	New NUT network protocol commands (LIST CLIENTS, LIST RANGE and NETVER), and socket protocol commands (ADDRANGE, DELRANGE). NUT variables namespace updated. Introduced nut-recorder tool.	AQ
2.6.3	2012-01-04	No substantial changes to documentation.	AQ
2.6.2	2011-09-15	Introduced nut-scanner tool and nut-ipmipsu driver, systemd support, and a new apcsmart implementation.	AQ
2.6.1	2011-06-01	Introduced default.* and override.* optional settings in ups.conf, an ups.efficiency report, and outlet.0 special handling.	AQ
2.6.0	2011-01-14	First release of AsciiDoc documentation for Network UPS Tools (NUT).	AQ

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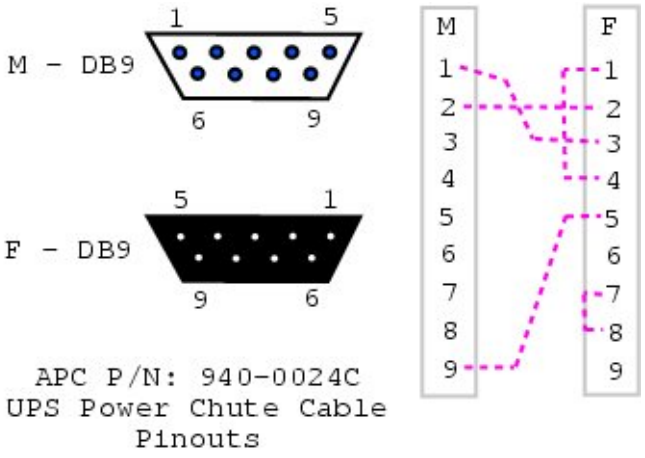
1 APC

1.1 940-0024C clone

From D. Stimits



Note
The original 940-0024C diagram was contributed by Steve Draper.

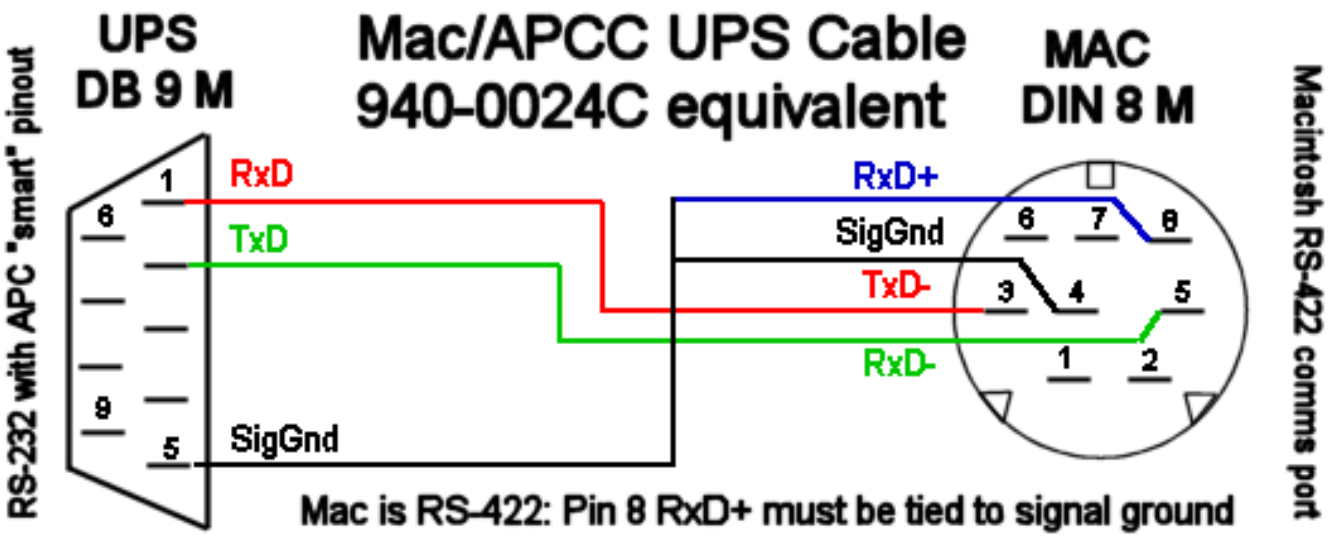
1.2 940-0024E clone

Reported by Jonathan Laventhol

This cable is said to use the same wiring as 940-0024C clone.

1.3 940-0024C clone for Macs

From Miguel Howard



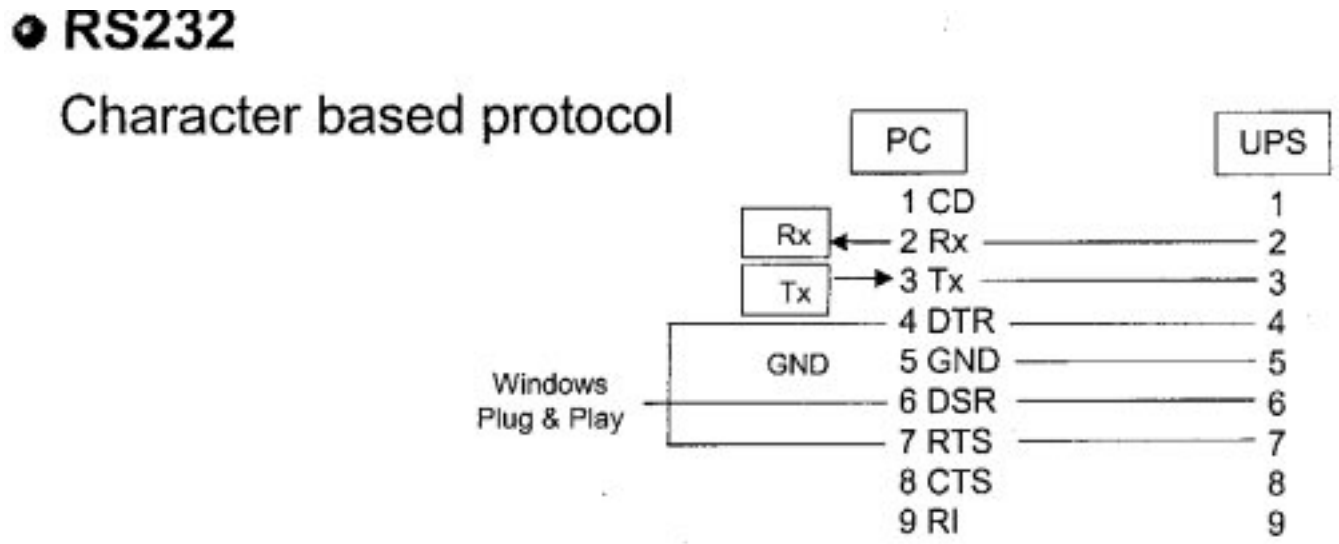
2 Belkin

2.1 OmniGuard F6C***-RKM

From "Daniel"

A straight-through RS-232 cable (with pins 2-7 connected through) should work with the following models:

- F6C110-RKM-2U
- F6C150-RKM-2U
- F6C230-RKM-2U
- F6C320-RKM-3U



3 Eaton

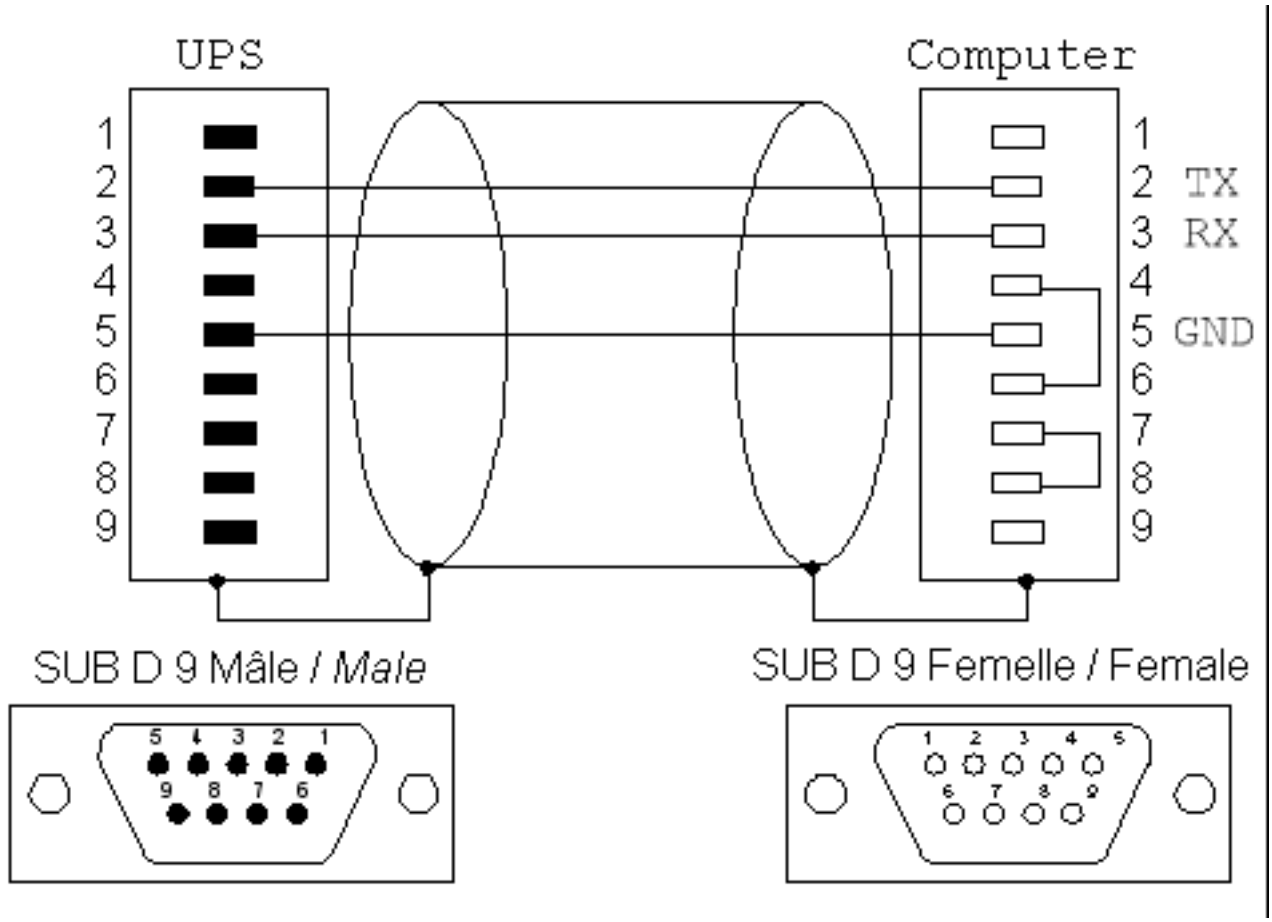
Documents in this section are provided courtesy of Eaton.

3.1 MGE Office Protection Systems

The three first cables also applies to MGE UPS SYSTEMS and Eaton.

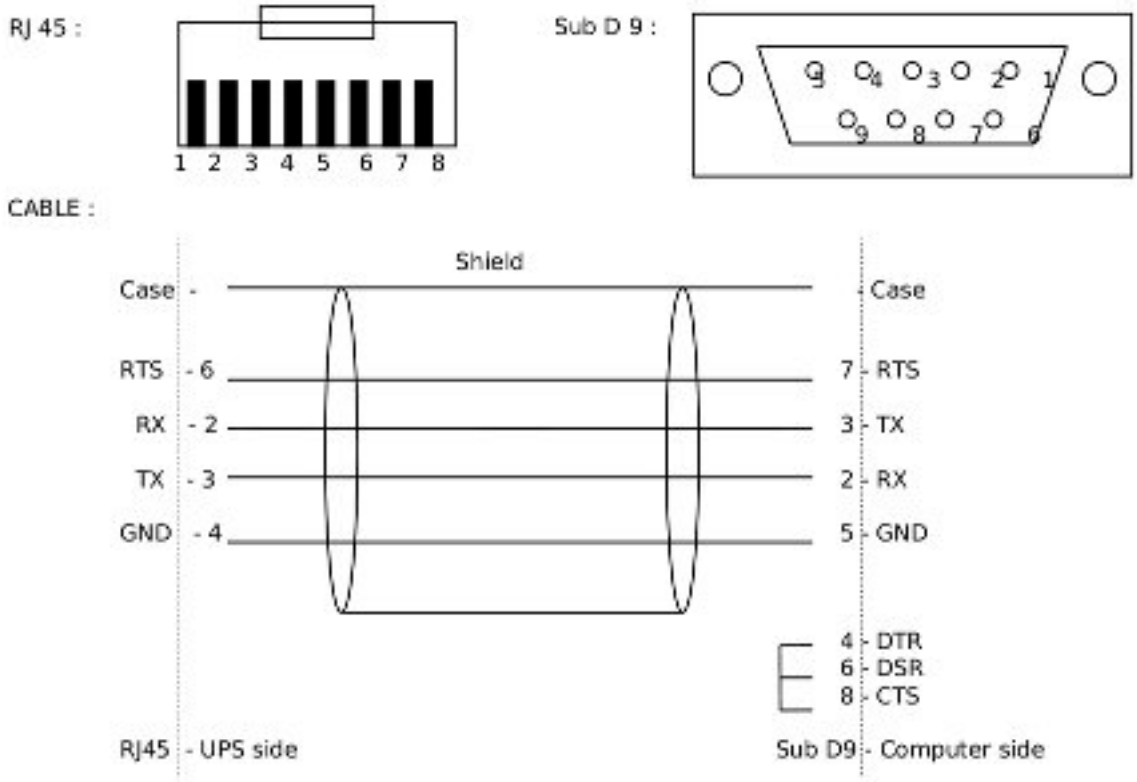
3.1.1 DB9-DB9 cable (ref 66049)

This is the standard serial cable, used on most units.



3.1.2 DB9-RJ45 cable

This cable is used on the more recent models, including Ellipse MAX, Protection Station, . . .



3.1.3 NMC DB9-RJ45 cable

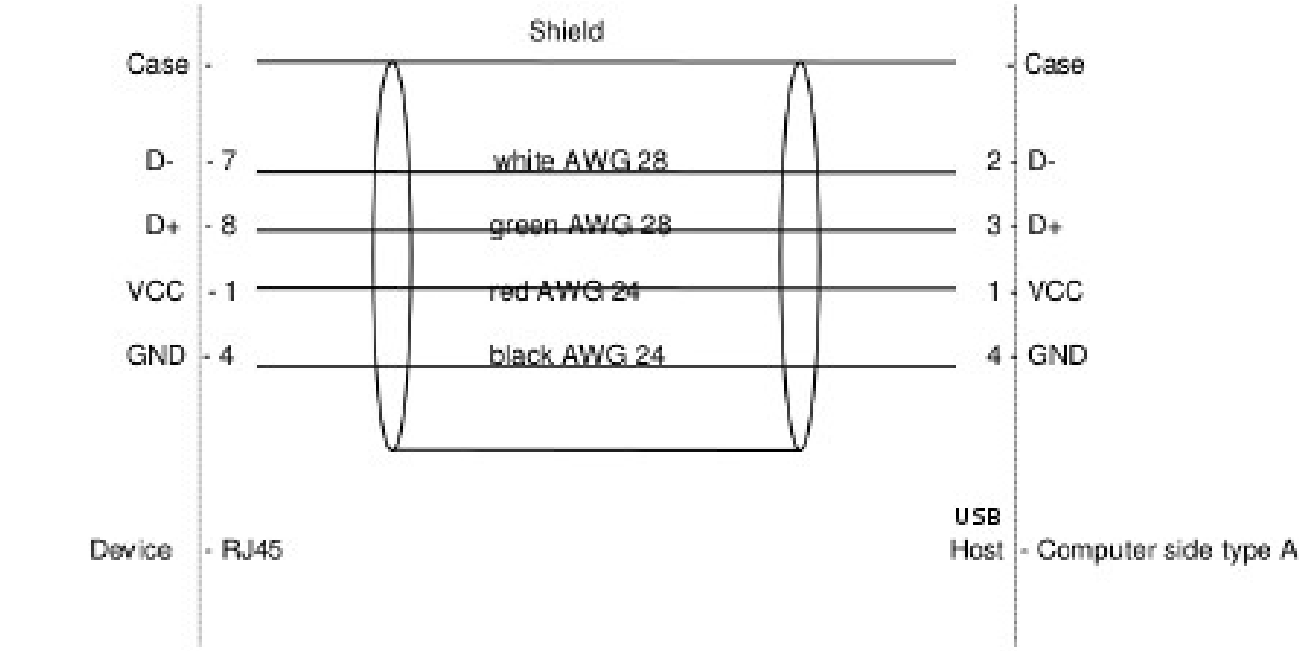
The following applies to the MGE 66102 NMC (Network Management Card), and possibly other models. The NMC connection is an 8P8C RJ45-style jack.

Signal	PC	NMC
	1,4,6	
TxD	2	3
RxD	3	6
GND	5	4
	7,8	
	shield	shield

3.1.4 USB-RJ45 cable

This cable is used also on the more recent models, including Ellipse MAX, Protection Station, . . .

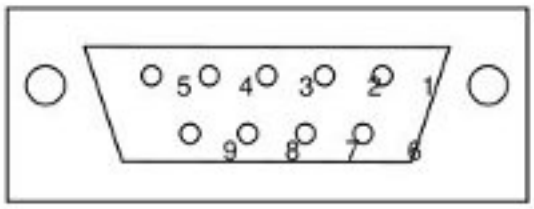
CABLE :



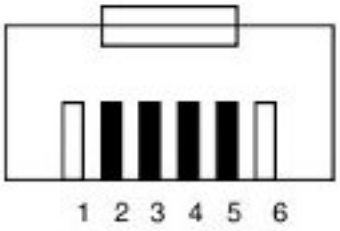
3.1.5 DB9-RJ12 cable

This cable is used on some older Ellipse models.

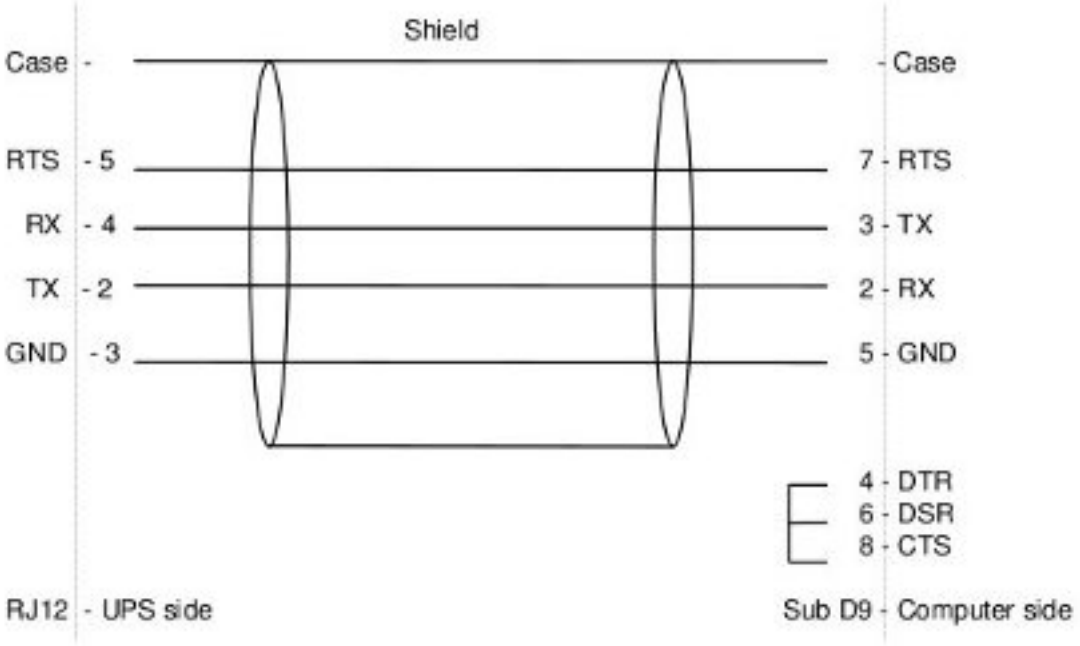
Sub D 9 :



RJ 12 :

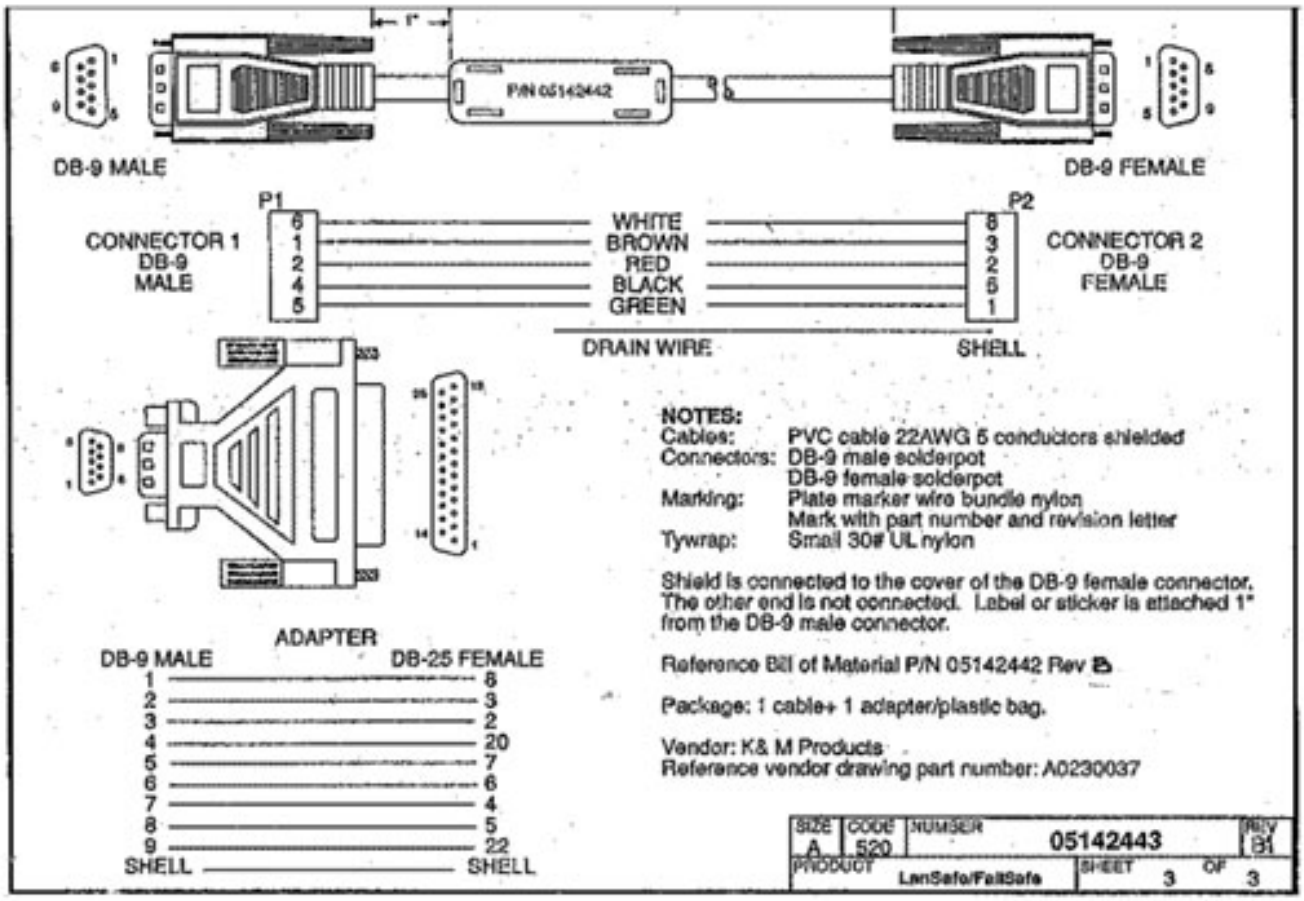


CABLE :



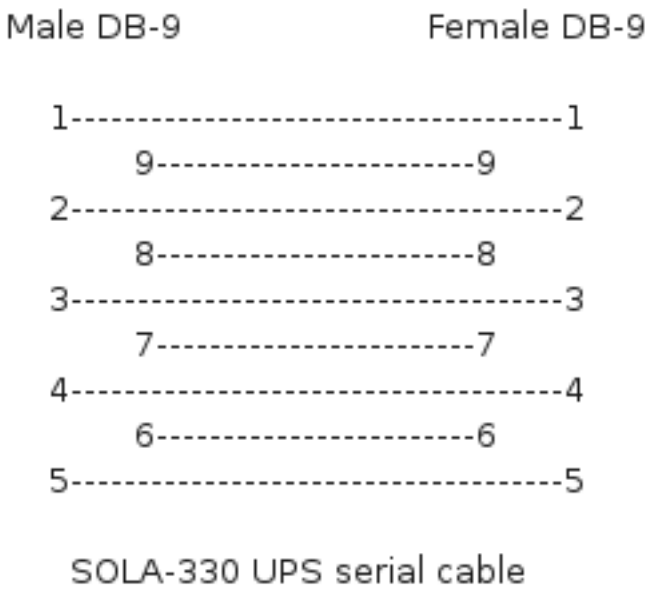
3.2 Powerware LanSafe

LanSafe for
3115 /5105 /5119/9110/9150 /9305



3.3 SOLA-330

Just uses a normal serial cable, with pin 1-1 through to 9-9.



SOLA-330 UPS serial cable

4 HP - Compaq

4.1 Older Compaq UPS Family

This cable can be used with the following models:

T700, T1000, T1500, T1500j, T700h, T1000h, T1500h, R1500, R1500j, R1500h, T2000, T2000j, T2400h, T2400h-NA, R3000 / R3000j, R3000h, R3000h-International, R3000h-NA, R6000h-NA, R6000i, R6000j.

```
UPS          PC  9 pin connector

 1 ---------- 3
 2 ---------- 2
              4 -\
 4 ---------- 5   |
              6 -/
 6 ---------- 7
```

Contributed by Kjell Claesson and Arnaud Quette.

5 Phoenixtec (Best Power)

Many Best Power units (including the Patriot Pro II) have a female DB-9 socket with a non-standard pinout.

Signal	PC	UPS
	1,4,6	NC
TxD	2	2
RxD	3	1
GND	5	4
	7,8	NC

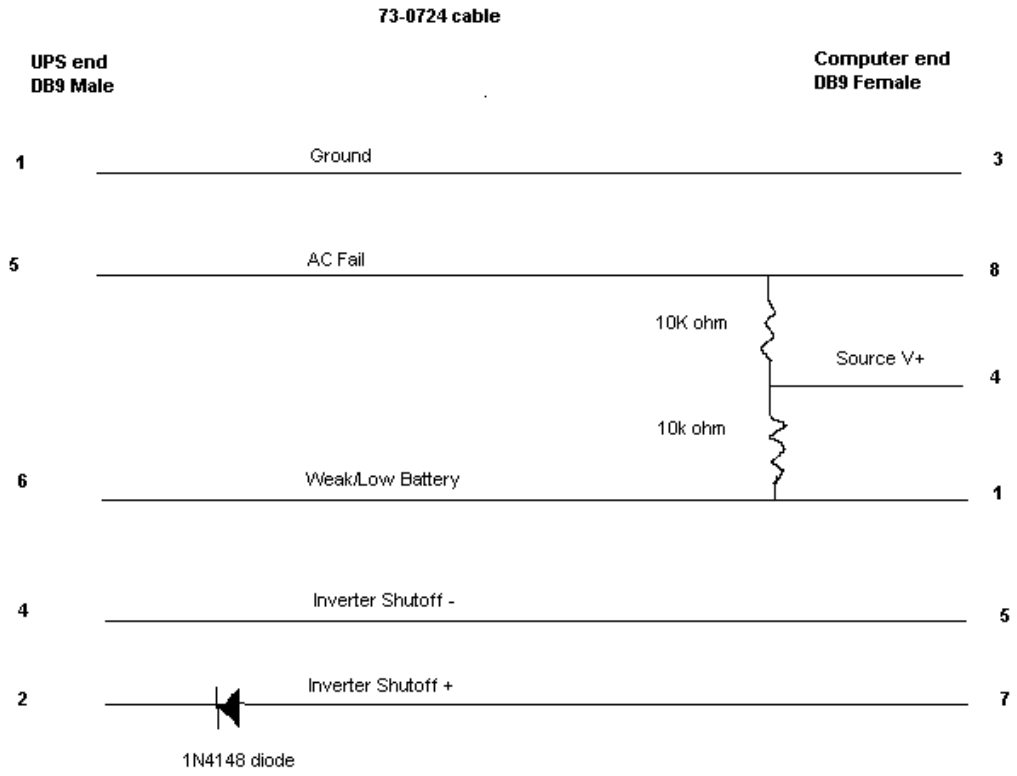
Sources:

- http://pinoutsguide.com/UPS/best_power_pinout.shtml
- http://lit.powerware.com/ll_download.asp?file=m_patriotproii_jan99.pdf
- Stan Gammons

6 Tripp-Lite

From Tripp-Lite, via Bryan Kolodziej

This cable (black 73-0844 cable) is used on various models, using the "Lan 2.2 interface" and the genericups driver (upstype=5).



7 Text cable references

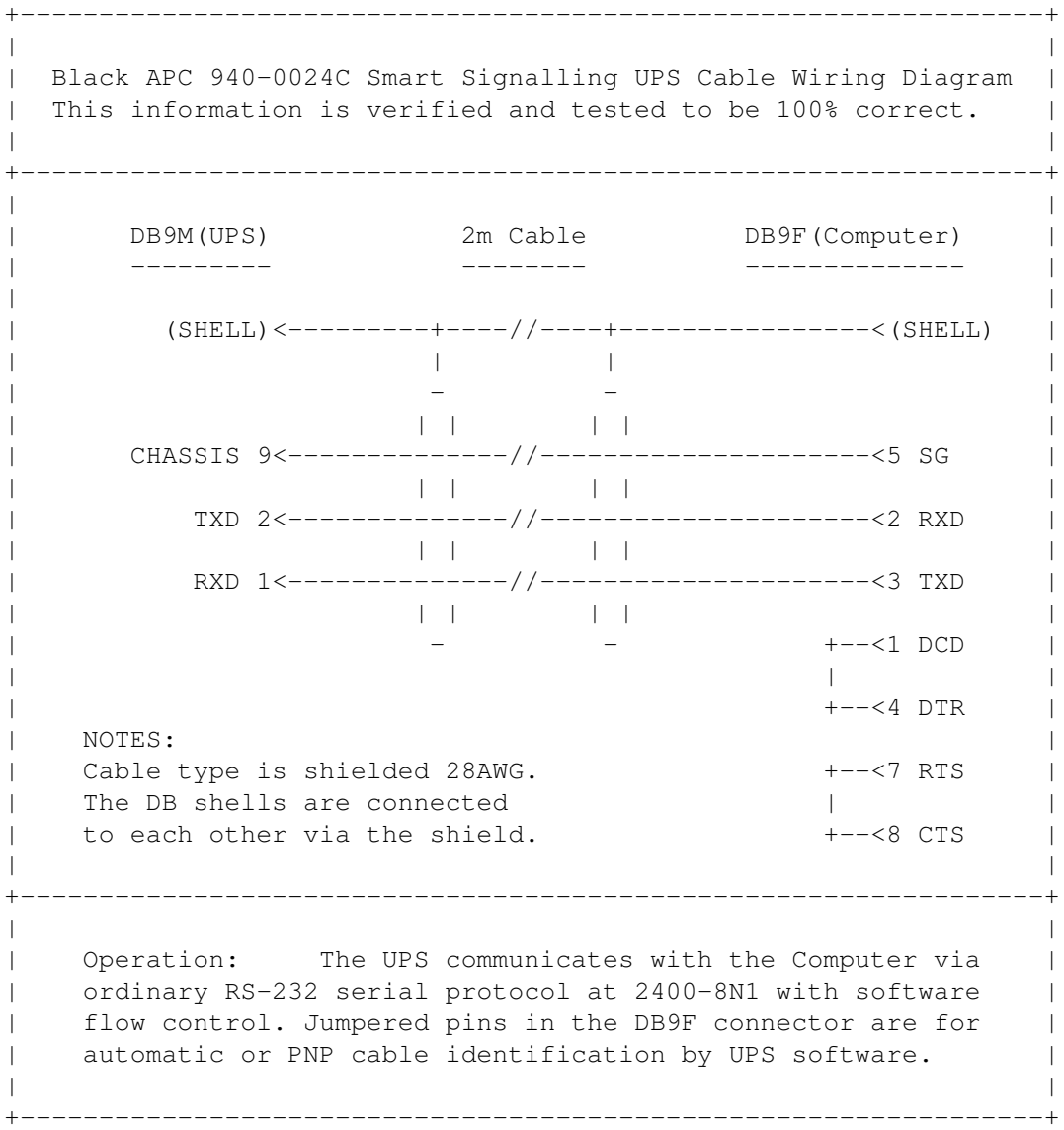
The following original text references retain their pin diagrams, notes and contributor attribution.

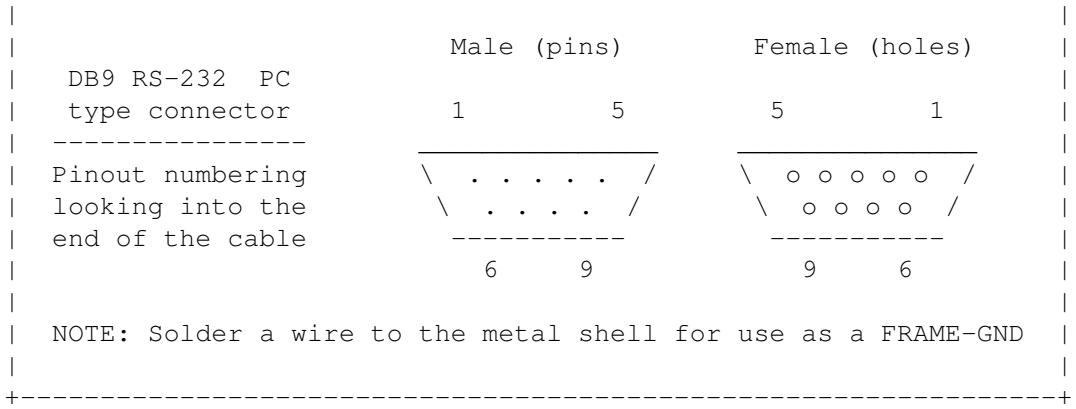
7.1 APC Back-UPS RS 500 serial cable

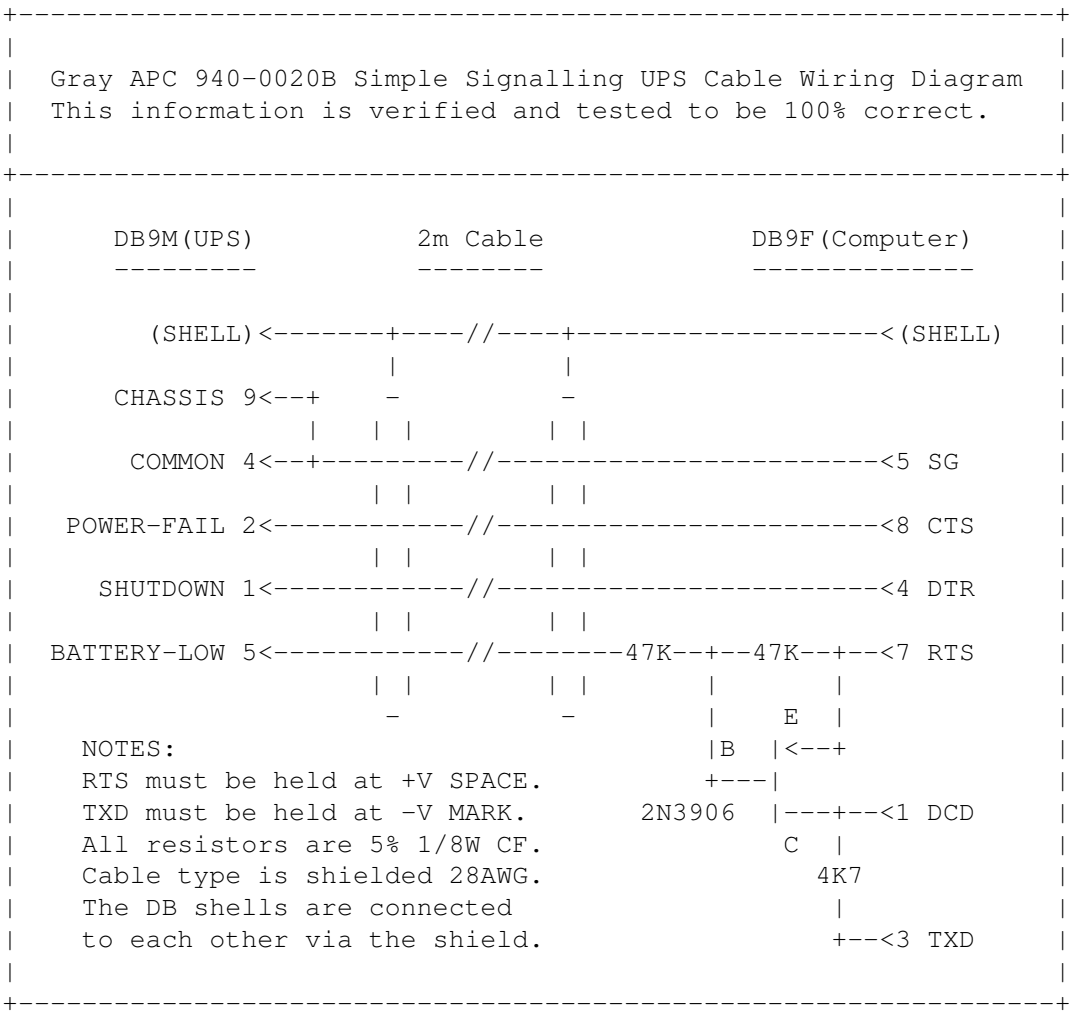
```
Desc: APC UPS cable - for Back-UPS RS 500
File: apc-rs500-serial.txt
Date: 14 July 2004
Auth: Russell Kroll <rkroll@exploits.org>, Martin Edlman <edlman@fortech.cz>

This document was constructed from a mail from Martin.  He figured out
the pinouts to make the Back-UPS RS 500 work with a normal serial port.
Here are the details:

---

UPS side                        PC side
RJ45 (8 pins)                   DB9F

1 orange/white                  2,8,9
2 orange                        1
3 green/white                   chassis/ground
4 blue                          -
5 blue/white                    -
6 green                         5
7 brown/white                   4,6
8 brown                         -

      +---+
+-----+   +-----+
|               |
+---------------+
 8 7 6 5 4 3 2 1

view from back (cable entry)
---

Note this results in OL=-CTS, LB=DCD, SD=ST, CP=RTS, so it should work
with the existing genericups type 20.
```

7.2 APC cable reference

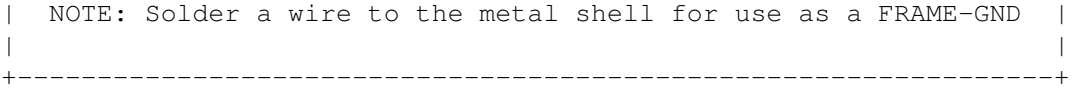
```
Desc: APC UPS cables
File: apc.txt
Date: 12 February 2010
Auth: Arjen de Korte <adkorte-guest@alioth.debian.org

http://lists.alioth.debian.org/pipermail/nut-upsuser/2005-August/000118.html

Note that APC UPS serial cable part numbers follow a numbering scheme
where the "940-" prefix identifies them as cables.

       940-1000        straight through cable
       940-0103        null modem cable
       940-0020        Basic Signaling Cable (OB and kill power)
       940-0023        Simple Signaling Cable (OB only)
       940-LL24        Smart Signaling Cable
       940-0095        PnP Cable (see Apcupsd manual for diagram)
       940-0119        Simple Signaling Cable (OB and kill power)
       940-0127        RJ45-10P10C to USB Cable
       940-0128        Simple Signaling Cable for Back-UPS CS

"LL" represents the length:

       00      six feet
       NN      NN feet

The suffix letter represents a minor revision in physical design, or a
change of OEM, _not_ a change of wiring or pin-out, and all cables
differing only in this suffix letter are electrically interchangeable.
Note though the following quote from the APC Discussion Forums:  "At one
point there were a small number of revision D cables [940-0024D] that
had some shielding issues from the manufacturer that could maybe cause
[...] [spontaneous] self-tests)."
```


Black APC 940-0024C Smart Signalling UPS Cable Wiring Diagram
This information is verified and tested to be 100% correct.
DB9M(UPS)
2m Cable
DB9F(Computer)
(SHELL)
(SHELL)
CHASSIS 9
5 SG
TXD 2
2 RXD
RXD 1
3 TXD
1 DCD
4 DTR
7 RTS
8 CTS
NOTES:
Cable type is shielded 28AWG.
The DB shells are connected
to each other via the shield.
Operation: The UPS communicates with the Computer via ordinary RS-232 serial protocol at 2400-8N1 with software flow control. Jumpered pins in the DB9F connector are for automatic or PNP cable identification by UPS software.

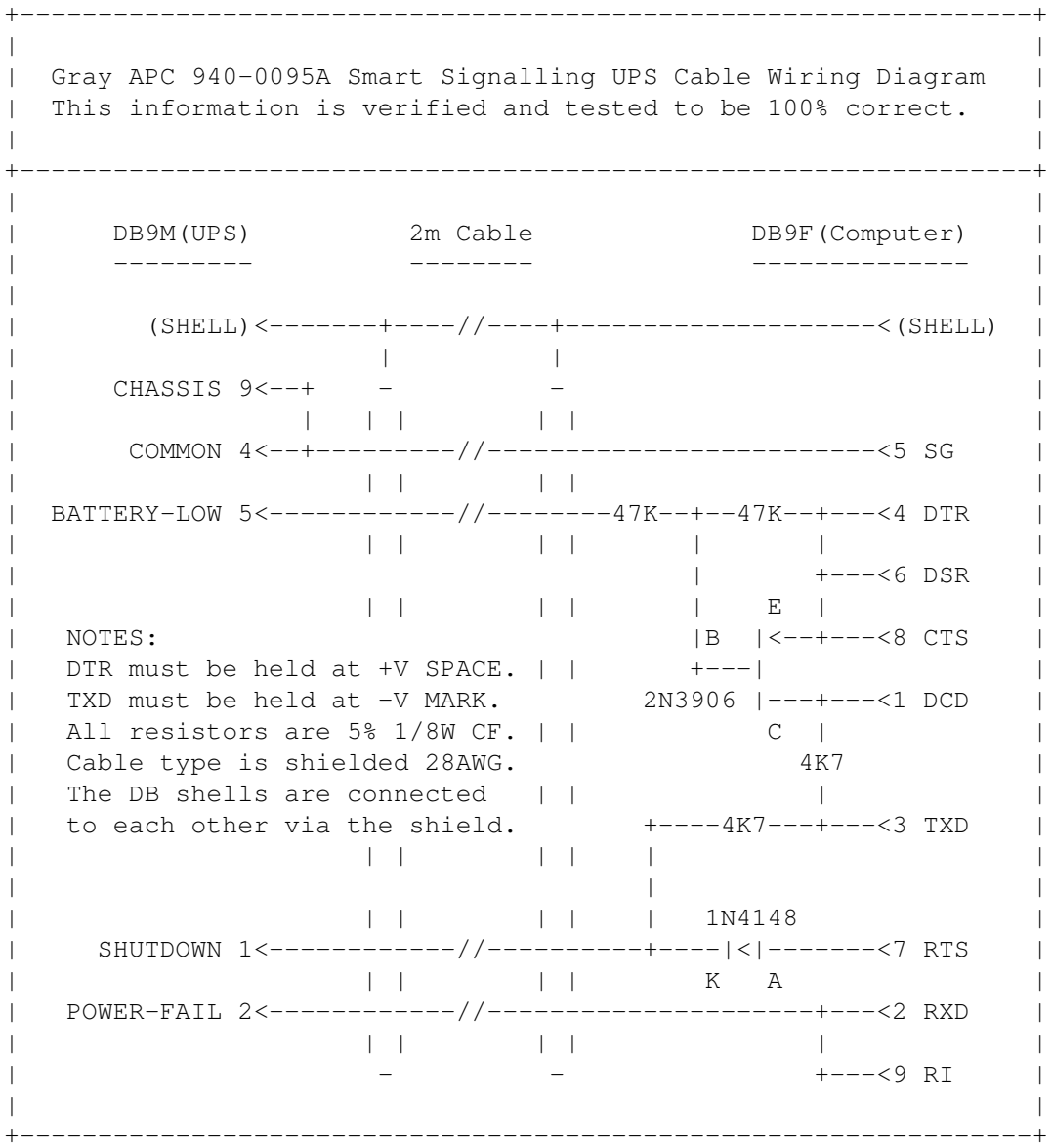

Male (pins)
Female (holes)
DB9 RS-232 PC type connector
1 5
5 1
Pinout numbering looking into the end of the cable
6 9
9 6
NOTE: Solder a wire to the metal shell for use as a FRAME-GND


Gray APC 940-0020B Simple Signalling UPS Cable Wiring Diagram
This information is verified and tested to be 100% correct.
DB9M(UPS)
2m Cable
DB9F(Computer)
(SHELL)
(SHELL)
CHASSIS 9
COMMON 4
5 SG
POWER-FAIL 2
8 CTS
SHUTDOWN 1
4 DTR
BATTERY-LOW 5
47K
47K
7 RTS
NOTES:
RTS must be held at +V SPACE.
TXD must be held at -V MARK.
All resistors are 5% 1/8W CF.
Cable type is shielded 28AWG.
The DB shells are connected
to each other via the shield.
2N3906
B
E
C
1 DCD
4K7
3 TXD

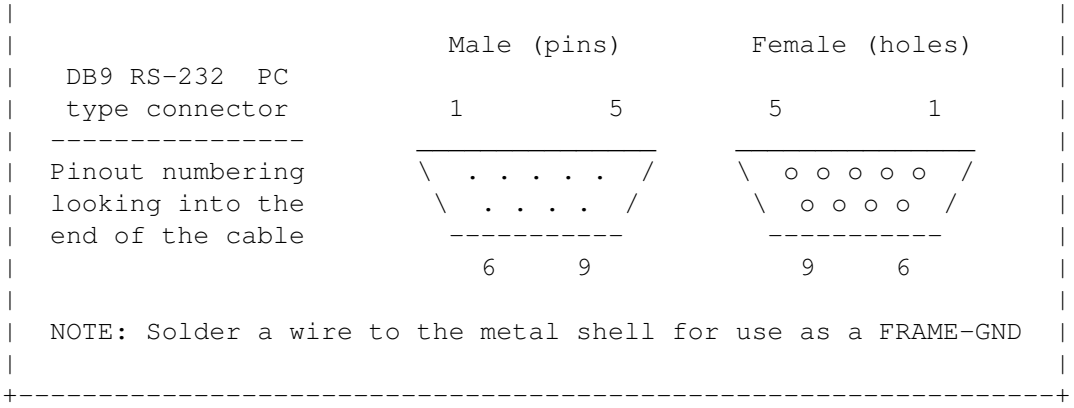
Operation: The UPS communicates with the Computer via the RS-232 handshaking lines only, and does not use any serial protocol. Upon power fail, the UPS forces CTS to -V MARK. When the battery is low, the UPS forces DCD to +V SPACE via the transistor. When the Computer forces a +V SPACE on DTR, the UPS will shut down and turn off. Presence of the cable can be sensed by signaling on TXD while monitoring DCD.



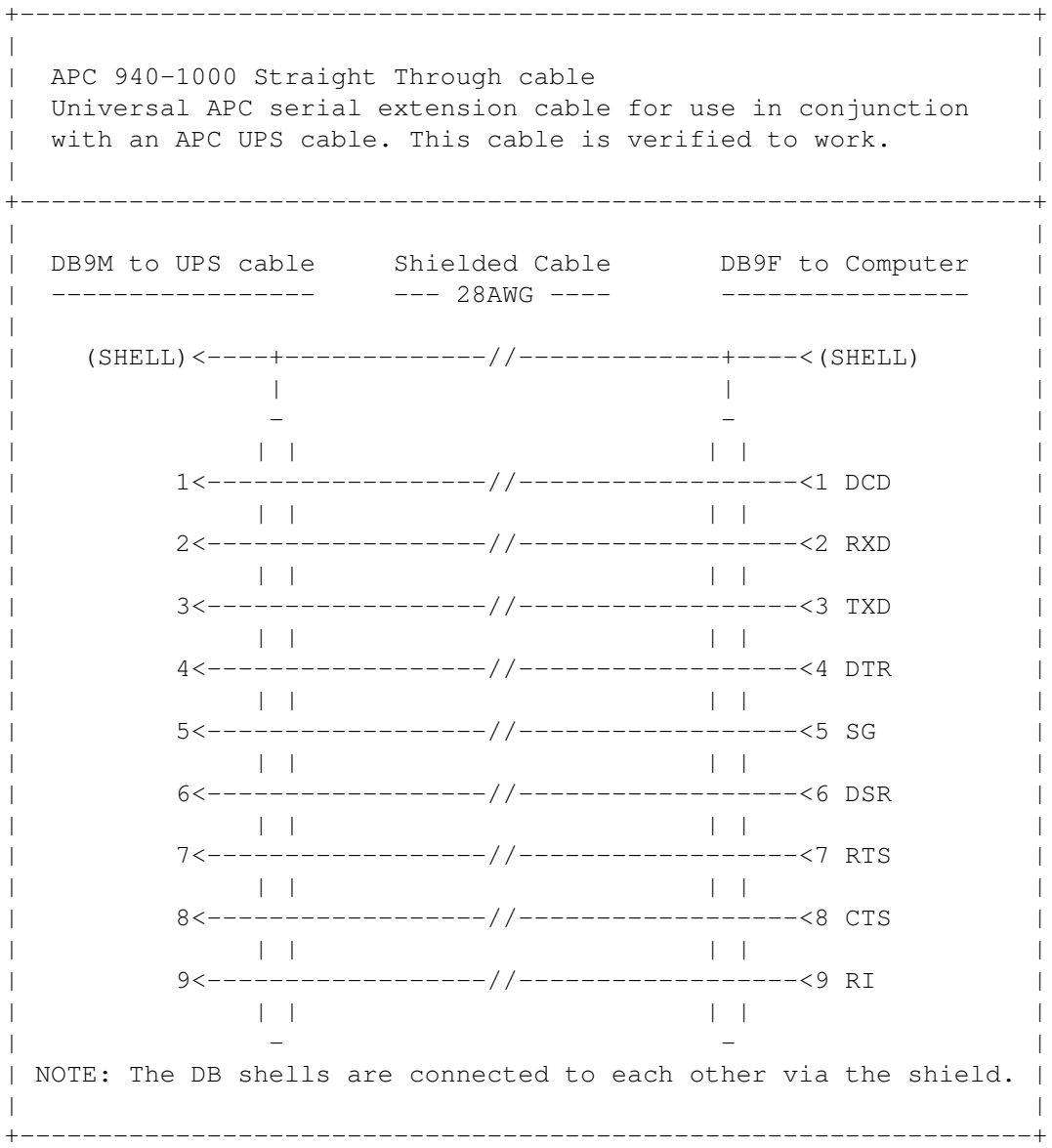
NOTE: Solder a wire to the metal shell for use as a FRAME-GND

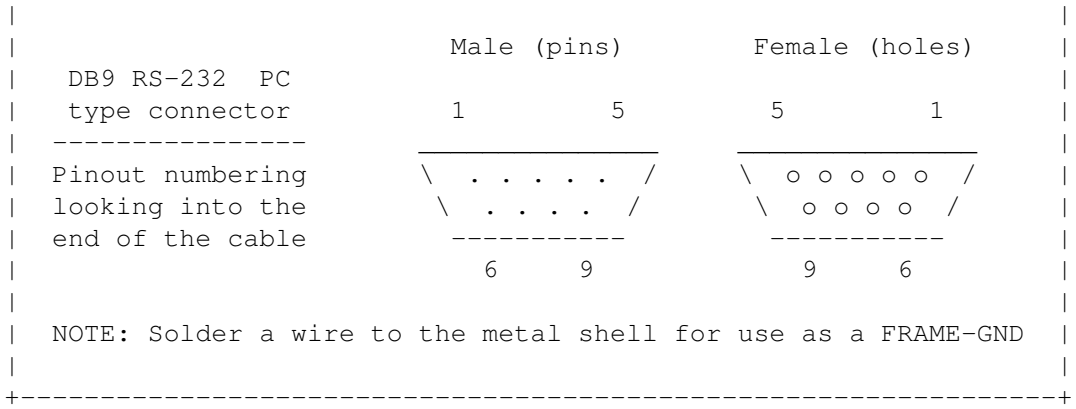

Gray APC 940-0095A Smart Signalling UPS Cable Wiring Diagram
This information is verified and tested to be 100% correct.
DB9M(UPS)
2m Cable
DB9F(Computer)
(SHELL)
(SHELL)
CHASSIS 9
COMMON 4
5 SG
BATTERY-LOW 5
47K
47K
4 DTR
6 DSR
E
B
8 CTS
NOTES:
DTR must be held at +V SPACE.
TXD must be held at -V MARK.
All resistors are 5% 1/8W CF.
Cable type is shielded 28AWG.
The DB shells are connected
to each other via the shield.
2N3906
1 DCD
C
4K7
4K7
3 TXD
1N4148
SHUTDOWN 1
7 RTS
K
A
POWER-FAIL 2
2 RXD
9 RI

Operation: The UPS can communicate with the Computer solely via the RS-232 handshaking lines, or via RS-232 serial protocol at 2400-8N1 with software flow control. Upon power fail, the UPS forces RI to -V MARK. When the battery is low, the UPS forces DCD to +V SPACE via the transistor. When the Computer forces a +V SPACE on RTS, the UPS will shut down and turn off. Jumpered pins in the DB9F connector allow for automatic automatic or PNP cable identification by UPS software.



NOTE: Solder a wire to the metal shell for use as a FRAME-GND


APC 940-1000 Straight Through cable
Universal APC serial extension cable for use in conjunction with an APC UPS cable. This cable is verified to work.
DB9M to UPS cable
Shielded Cable
--- 28AWG ----
DB9F to Computer
(SHELL)
(SHELL)
1
DCD
2
RXD
3
TXD
4
DTR
5
SG
6
DSR
7
RTS
8
CTS
9
RI
NOTE: The DB shells are connected to each other via the shield.


Male (pins)
Female (holes)
DB9 RS-232 PC type connector
1 5
5 1
Pinout numbering looking into the end of the cable
6 9
9 6
NOTE: Solder a wire to the metal shell for use as a FRAME-GND

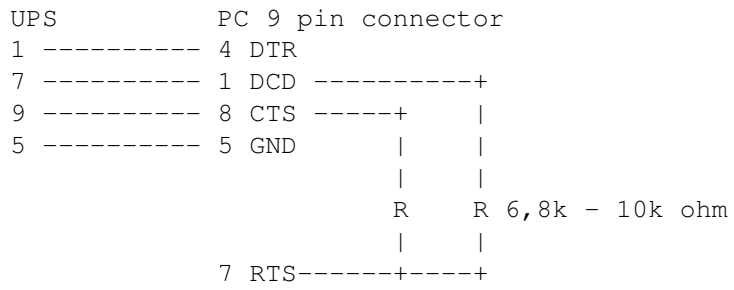
7.3 GE, IMV and Victron cable reference

```
Desc: IMV Victron UPS cables
File: victron.txt
Date: 13 April 2002
Auth: Daniel Prynych <Daniel.Prynych@hornet.cz>

Data cable 1 for UPS:
  GE/IMV/Victron Match - 500 700 700L 1000 1000L 1500 2200 3000
  GE/IMV/Victron NetPro (NetPro 19 ") - 600 1000 1200 2000 3000 4000

Driver: victronups (newvictronups)


UPS         PC  9 pin connector
1 --------- 3
2 --------- 2
5 --------- 5 GND
            4 DTR
            |
            1 DCD

-------------------------------------

Data cable 2 for UPS:
   GE/IMV Victron Match Lite (all types)


Driver: victronups (newvictronups)

UPS         PC  9 pin  connector
2 --------- 3
3 --------- 2
4 --------- 5 GND
            4 DTR
            |
            1 DCD

---------------------------------
```

Crack cable: for UPS

  Victron Lite (no IMV Victron Match Lite)

Driver: genericups



GE is General Electric Company.

On July 31, 2001, the General Electric Company, acquired IMV (Victron) company.

7.4 IMV Match19 cable reference

```
Desc: IMV Match19 700 - 1500
File: imv.txt
Date: 06 April 2002
Auth: Niels S. Richthof <niels@richthof.de>


"UPS-VIC23-2"        PC 9 pin connector

  1 ---------------- 3
  2 ---------------- 2
  4 ---------------- 7
  5 ---------------- 5
```

7.5 MGE UPS SYSTEMS serial cable reference

```
Desc: MGE UPS SYSTEMS serial cable
File: mgeups.txt
Date: 10 April 2002
Auth: Arnaud Quette <arnaud.quette@free.fr> or <arnaud.quette@mgeups.com>

This document describes the cable for MGE smart protocols : UTalk (ASCII),
and SHUT (Serial HID UPS Transfer, binary) .

First notice that MGE UPS SYSTEMS supply a standard cable, bundled with
the UPS unit and compatible with MS Windows and Unices (Ref 66049). For
more information, see below note about serial cable, PnP and Unix.

Cable description
-----------------

UPS                   COMPUTER
MALE DB9              FEMALE DB9

  2 ---------------- 2 TX
  3 ---------------- 3 RX
  5 ---------------- 5 GND
                  -- 4
                 |
                  -- 6
                  -- 7
                 |
                  -- 8


UPS connector description
-------------------------

       5  4  3  2  1
      _______________
      \o  o  o  o  o/
       \ o  o  o  o/
         ---------
         9  8  7  6

  9 pin Male DB-9 connector on UPS


Notes
-----
        - this is a universal serial cable, so it should work with
        any MGE serial model.
        - max. length of cable is 1,80 m.
        - Computer pin 6 (RTS) is reserved for PnP use, which could
        trouble communication on some Unices if cabled. However, new
        models (such as Ellipse, Evolution, Pulsar and Comet EXtreme,
        EXtreme C, ...) handle this, so you can safely cable pin 6 or
        use a standard (bundled) "windows" cable (Ref 66049).
```

7.6 Powerware cable reference

```
Desc: Powerware 3115 factory cable
File: powerware.txt
Date: 22 July 2005
Auth: various

1) Powerware 3115 factory cable
From Peter Åstrand <altic@lysator.liu.se>

UPS         PC  9 pin connector
5 --------- 1
2 --------- 2
1 --------- 3
4 --------- 5
6 --------- 8

2) Powerware 5119 RM Cable Layout
From Daniel Thompson <danht@callthenet.com>

UPS <-----------> PC
DB9-M <---------> DB9-F
Pin 1 <-----------> Pin 3
Pin 2 <-----------> Pin 8
Pin 4 <-----------> Pin 4
Pin 5 <-----------> Pin 1
Shells Grounded Both Ends
```

7.7 Repotec cable reference

```
Desc: Repotec 800A (800VA) & 162A (1600VA) cable
File: repotec.txt
Date: 11 April 2001
Auth: Theodor Milkov <zimage@delbg.com>


PC                      UPS

1 (DCD) <----+---------- 2
             |
             R 5.6k
             |
7 (RTS) >----+

3 (Tx)  >--------------- 6

4 (DTR) <----+---------- 5
             |
             R 5.6k
             |
8 (CTS) >----+

5 (GND) -------------+-- 4
                     |
                     +-- 7
```

7.8 SMS cable reference

```
Desc: SMS UPS cables, for Upsilon compatible SMS UPS
File: sms.txt
Date: 9 October 2001
Auth: Marcio Gomes <tecnica@microlink.com.br>


COMPUTER        UPS
FEMEA DB9      MACHO DB9
2    ----------  6
3    ----------  9
4/8  ----------  5
5    ----------  8

- This cable is working with Manager III 1300 VA and 650 VA, SMS UPS's
- Jump in computer side pins 4/8 and connect to pin 1 in UPS side
- Use NUT blazer_ser driver
```