Cypak Report Card: The Compliance Connection

General

The Cypak report card is a flexible solution for a patient diary and questionnaires of many types.

Up to 32 separate questions can be programmed:

- Simple yes/no
- Hamilton scale
- Visual analogue scale
- Other methods

The card is easy to use. Simply press lightly on the card and the answer is recorded and confirmed by a 'beep' sound from the integrated buzzer.

The card contains a real-time clock so the exact time and data may be recorded with the answers. The clock and beeper may be programmed with a reminder schedule for user convenience.

The recorded data is stored safely and can be read by a variety of electronic devices – mobile phone, pda, or personal computer. The Cypak Report Cards makes the recording and processing of questionnaire data easier than ever before.

Medicine compliancy

The client presses the Start button when he or she has taken medication. The dosage event is time stamped and recorded.

If appropriate, the client is also prompted to answer questions relevant to the therapy. For example, the client may tell whether weight or blood pressure is increasing, the level of pain, or the occurrence of undesirable side-effects.

The Report Card enables compliancy to be tracked while using standard medication packaging – no special packs or dispensers are needed.

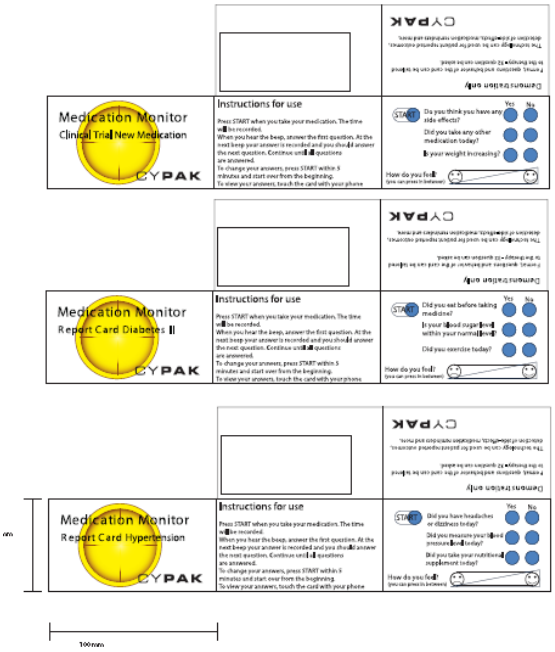
Clinical trials

The Report Card can be used instead of or alongside a traditional patient diary, providing confirmation that medicine has indeed been taken at the stated time.

Diet record

Clients can check their intake of foods and supplements by pressing a button next to a list of items.

Examples:



Questionnaires

The Cypak Report Card can be used for many applications in consumer research. The results are read into a computer program simply by touching the card with a standard RFID reader or Cypak USB reader.

How it works

Electronic sensors are printed onto the card using carbon based ink and standard printing techniques. When the ink on the button and the ink on the sensor track are joined, an electrical signal is sent to the CPK082 ASIC for recording.

Cypak have been developing this printing technology for almost 10 years, and solutions are reliable and suitable for volume manufacturing.

The CPK082 is a programmable Application Specific Integrated Circuit (ASIC) for integration in packaging and devices to monitor compliance. The CPK082 operates as an RFID Active Tag, with processor, memory, active management of up to 32 sensors

The ASIC is fully programmable and enables a variety of low cost applications requiring reliable data capture and storage while consuming very little power. The design accommodates the integration of printed sensors on paperboard, plastics, fabrics, and other substrates.

CPU and memory

CPK082 is built around a 8051 compatible programmable microprocessor. The 32 kByte EEPROM memory is programmed and erased by the CPU allowing reconfigurable software, and data logging into non-volatile memory.

RFID

Soft radio techniques are used to support several RFID protocols on the same hardware. The radio interface and codec are implemented in hardware while higher layers are implemented as firmware run by the CPU. With firmware, the CPK082 supports Cypak Close Proximity Interface (CPI), or standard HF RFID protocols such as ISO15693 or ISO14443-A. The latter enables Near Field Communication (NFC).

Antennas are connected directly to the chip. Cypak CPI enables low cost printable (carbon black) patch antennas. Coil antennas are used for standard HF RFID applications.

Low power

The design is very low power and features an advanced fail-safe power-on-reset and battery switch-over circuit. The ultra-low power consumption allows long operating time with small sized batteries. Power can also be extracted from the RF interface, enabling data capture after the battery has drained or a pure passive device. A battery discharge function enables total drain of the lithium cell batteries prior to disposal.

Buzzer driver

The buzzer driver provides direct and powerful push-pull drive of an external piezo sounder. Extra ESD protection enables fail-safe assembly and operation. The outputs can be controlled directly or by the PWM for more accurate pitch.

Clocks and timers

The chip hosts an internal RC oscillator (32 Khz) and supports a external crystal (32 Khz watch crystal) for more accurate timing. An on-board PLL is used to step up the base clock source. Maximum CPU clock is 4 Mhz. Two programmable low power wakeup timers are available plus three standard 8051 timers.

Complete electronic module

All electronic components are mounted on a module that is glue mounted to the report card prior to folding and gluing.

Contact

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