

BBC Radio 1 Needletimer – 1986

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Radio 1 plays a large number of records in its programme schedule. As the BBC under the 1956 Copyright Act has to pay royalties to the Record Companies, to the Performing Rights Society and to Phonographic Performance Limited, accurate timing of the duration for which each record is played is important.

David Price, Chief Assistant Radio 1, felt that in this technological age there must be a way of timing the actual transmitted duration of records accurately and reliably without the need for someone to time them individually with a stopwatch. He passed the idea on to Radio Engineering Services, and Paul Newell developed the "Radio 1 Needletimer".

The Needletimer itself consists of a Central Processor card, an Interface card and a Power Supply Unit, mounted in a 3U Eurocard Rack which is located in the Radio 1 Continuities Apparatus Room in Egton House. A printer and an alarm panel are installed on the Radio 1 reception desk. The timer prints out the start time and the duration of each record played. The receptionist can then identify the record title from the programme running sheet and time it accurately from the print out.

An improved version is under construction which will also time the Compact Disc players. Each of the two Radio 1 transmission suites (continuities) has eight outputs connected to the Needletimer, three from the turntables, three from the studio faders and two from "In-Network" indication. When a turntable is running and a fader is opened into network the timer records the fact. The programme continuously stores the start and stop times of all turntables in both continuities.

When a turntable stops, the software checks whether the continuity was in network at the start or at the finish of the record. If so, the duration is calculated and the information is printed out. In this way the system copes with continuity changeovers., The times of "In-Network" and "Out-of-Network" for each continuity are also shown on the print out. If the timer programme should stop for any reason, such as for example the printer being switched off, an alarm sounds and an indicator light goes from green to flashing red.

The Central Processor Unit (CPU) is based on a commercial single board computer card using the same 6502 processor as the BBC microcomputer. It includes 16 bits of input/output at TTL logic levels, an RS 423/422 interface, a battery-backed clock and a Random Access Memory (RAM). It uses a version of the BBC micro operating system with a machine code monitor. The unit is made by Control Universal Ltd., of Cambridge.

The software for the CPU was developed on a BBC microcomputer in assembly language down-loaded using RS423 link. The 6502 interface card has sixteen optically isolated inputs. Twelve of the inputs are "AND"-ed together in pairs to give a total of ten outputs at TTL logic level. The card also contains the alarm system. This consists of a monostable which is triggered by the program at regular intervals. It has to be reset regularly by the software to prevent the alarm going off.