INTERNATIONAL TELECOMMUNICATION UNION

# ITU-T Q.316

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

## SPECIFICATIONS OF SIGNALLING SYSTEM R1

## LINE SIGNALLING

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# PCM LINE SIGNAL RECEIVER

## ITU-T Recommendation Q.316

(Extract from the *Blue Book*)

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**NOTES**

1 ITU-T Recommendation Q.316 was published in Fascicle VI.4 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

2 In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

## 2.6 PCM LINE SIGNAL RECEIVER

2.6.1 *Recognition of signals*

System R1 must be protected against false signal recognition caused by signal simulation due to momentary loss of synchronization of the PCM system. The method of providing this protection is left to each Administration concerned to allow for maximum flexibility in the implementation of the signalling and switching system design. However, the overall system requirements given below must be met.

*a)* A state 0 signal lasting 30 ms or less must be rejected; that is, it must not be recognized as a signal.

*b)* A state 1 signal lasting 40 ms or less must be rejected if the previous state 0 signal is 350 ms or longer; that is, it must not be recognized as a signal.

*c)* Subsequent to establishing the speech path, a state 0 ring-forward (forward-transfer) signal lasting 65-135 ms must be recognized as a valid signal.

*d)* A state 0 forward signal lasting 300 ms or longer must be recognized as a valid disconnect (clear-forward) signal. Prior to attaching a register, a forward state 0 signal lasting 30 ms or longer may be recognized as a valid disconnect (clear-forward) signal.

*e)* To protect against a momentary fault causing a continuous succession of false connect (seizing) and disconnect (clear-forward) signals, the incoming equipment should be arranged to delay responding to the second of two closely spaced connect (seizing) signals. The time delay introduced should be started at the end of the initial connect (seizing) signal or on recognition of the disconnect (clear-forward) signal. The delay introduced should be a function of the round trip signalling time. For satellite circuits the recommended time is 1300 ± 100 ms. For terrestrial circuits the recommended time is 500 ± 100 ms. If the second connect (seizing) signal persists beyond this timed interval, the signal should be considered valid and a delay dialling signal returned.

*f)* Other state 0 and state 1 signals should be recognized as valid signals subsequent to the minimum limits imposed by *a)* and *b)* above, as soon as possible.

*Note* - Delays introduced by line signalling equipment should be held to a minimum consistent with the requirements covered herein to minimize signal transfer times. Minimizing the delay is especially important in the case of the answer signal and in the case of satellite circuit operation. In this latter case, if a hang-up (clear-back) signal has not been sent prior to recognition of a disconnect (clear-forward) signal, it is necessary that the idle state 0 signal, sent by the incoming exchange in response to the disconnect signal, be recognized by the outgoing exchange prior to the elapse of the guard timing specified in Recommendation Q.317, § 2.7.1.

2.6.2 *Receiving line split*

Since signalling is out-band, no receiving line split is required.

2.6.3 *Action on receipt of an alarm*

When the PCM primary multiplex has detected a fault and given an alarm (see Recommendation G.733, § 3.2) appropriate action shall be taken to remove automatically the affected circuits from service, and to terminate calls in progress, i.e. stop charging, release interconnected circuits, etc. When the alarm has been cleared the affected circuits should be automatically restored to service.