Department of consumer and corporate affairs / Ministère de la consommation et des corporations

STANDARDS BRANCH - DIRECTION DES NORMES

NOTICE OF APPROVAL E-75

OTTAWA July 7, 1969.

LANDIS & GYR TAPE PUNCHER TYPE NDB1

Rating and Informative Data

Power supply	115/120V 60 Hz
Power consumption	quiescent approx. 10VA
	during encoding approx. 70VA
Punching speed	370msec/character (digit)
Paper feed per character	0.1 inch (2.54mm)
Length of paper tape	approx. 400 meters

This approval covers the use of the tape puncher with the following optional features:

2nd and 3rd selector switch stage, providing a maximum of 150 points for coder read-out and/or additional information. The selector switch point allocation is flexible and varies according to the number and type of coders used as well as associated calculators which may take various forms when necessary for processing of the punched tape.

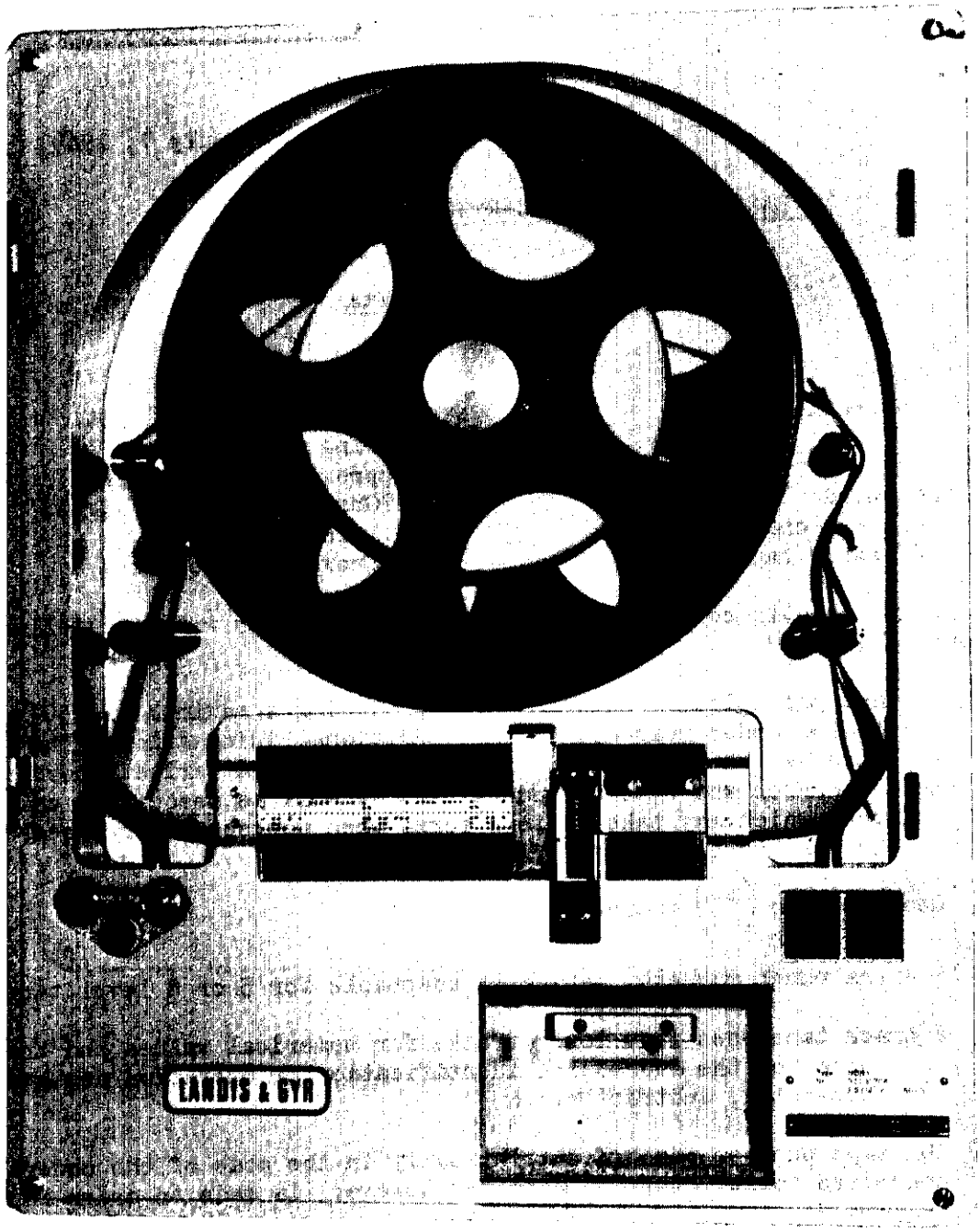
Decoder with $\binom{10}{1}$ output

3 extra punch magnets, making it adaptable for 5 or 8 level tape

8 track tape uses five lower tracks for numerical values and the top three for the addressing identification or operation designation, like sub-total, subtract etc.

The tape puncher punches automatically in the code of the coders connected to it; the $\binom{10}{1}$ decoder however, is made to order for

LANDIS & GYR TAPE PUNCHER TYPE NDB1



one of the following codes:

Telex International

Binary $\binom{5}{2}$

B.C.D. 1-2-4-8-P

DESCRIPTION

The Landis & Gyr Tape Puncher Type "NDB1" collects electrically and punches out electromechanically on a paper tape the readings of one time-date coder and up to 34 impulse operated digital coders type "FC-".

It reads out the individual coder decades using one point of the selector switch for each decade.

The first three points of the selector switch are used for initiating the read-out cycle and punching of the "start" and "validity" codes.

Next seven points are allocated for the time-date coder which leaves 40 points of the 50 in the first stage available for Demand Coders or Meter Register Coders.

In the 3-stage selector switch a maximum of 140 points are provided for the digital coders.

The principle of operation of the instrument is electro-mechanical which provides time-correlated reliable readings for a number of billing meters on a single punched tape, which is computer compatible for automatic processing at a later date, by means of normal commercial office machines and easily readable by naked eye.

The code punched on the tape is entirely determined by the code drums used, but all coders feeding the same tape puncher must have identical code.

The drums are easily adaptable for 3 different codes

B.C.D.	1-2-4-8-P	track values
Telex International	5-4-3-2-1	track values
Straight Binary $\binom{5}{2}$	0-1-2-4-7	track values

The read-out operation of the puncher is controlled from a separate time switch with two sets of contacts, the proper operational sequence (overlapping) of which is a must-condition for the actuation of the tape puncher.

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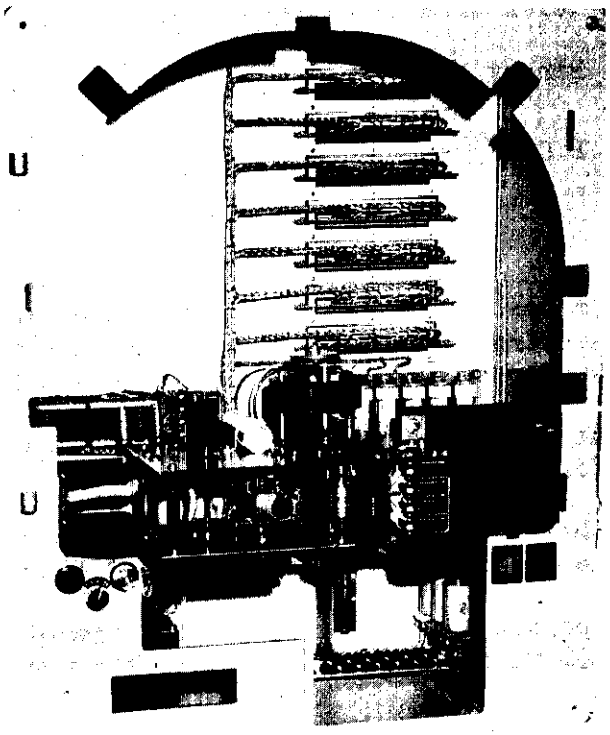
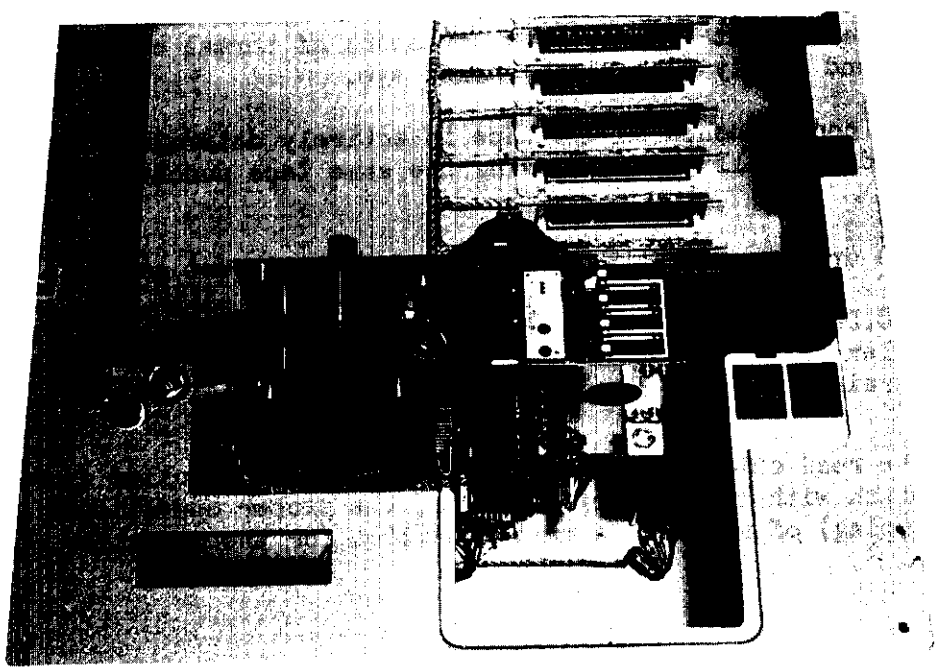




The 6 volt battery unit, with its trickle charger, in conjunction with the time switch takes over the function of 5 minute contact during power interruption in order to keep the timing signal in step up to approximately 48 hours, so that when power is restored no readjustment in timing of the time-date coder is needed.

The tape puncher consists of the following functional modules:

Mains unit - incorporating supply transformer and full-wave rectifier.

Battery, with its trickle charger, which contributes to the reliability of the time impulse circuit.

Paper feed and control

Supervisory unit for encoding signal

Punching magnets mechanism for 5 or 8 level tape

Programming unit, with its selector motor, for coder impulse inputs - it is a multiple-cam shaft controlling the sequence of operation over appropriate follower levers.

The entire instrument is installed in a rectangular metal box arranged for switchboard mounting with glass front door which has locking provision for use by the utility. A surface mounting casing with rear connecting terminals is also available.

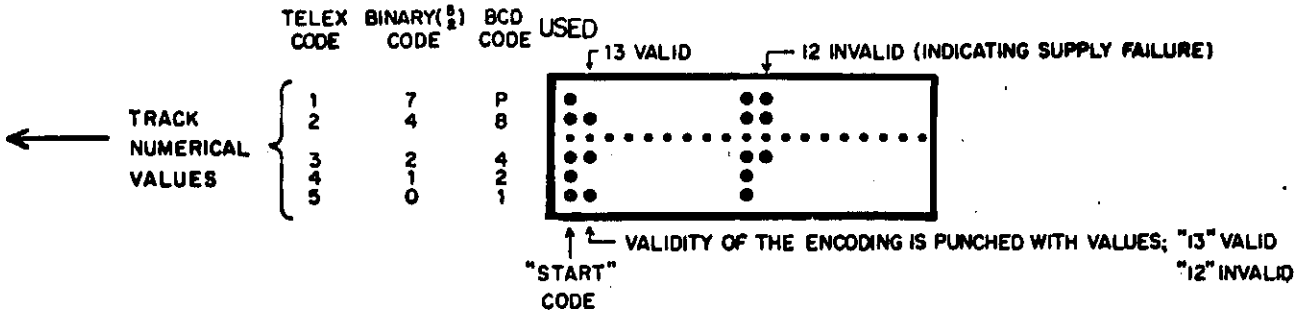
The terminals for power supply and incoming pulses are located at lower back and plug-in connectors for the coders at upper back.

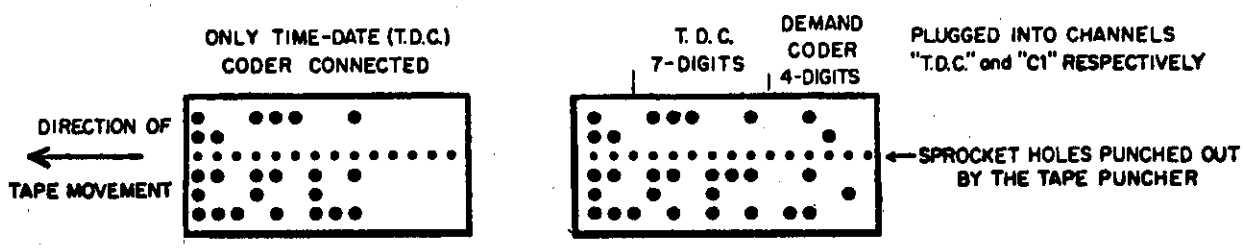
Multi core cables are supplied with the instrument for interconnections between the coders and the tape puncher. Positioning notches in the connector boards (male connectors) and riders in the plugs (female connectors) prevent accidental connection of e.g. the time-date coder to a count coder input.

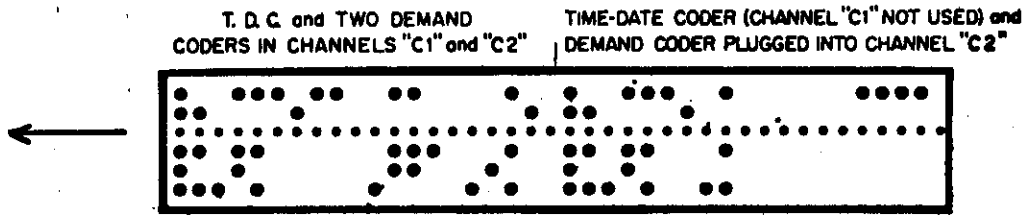
OPERATION

The tape puncher is controlled by the separate time switch which actuates the intermediary relay for the count magnet of the time-date coder to count a 5 minute step, and the start relay through whose contacts the selector motor and clutch relay are energized.

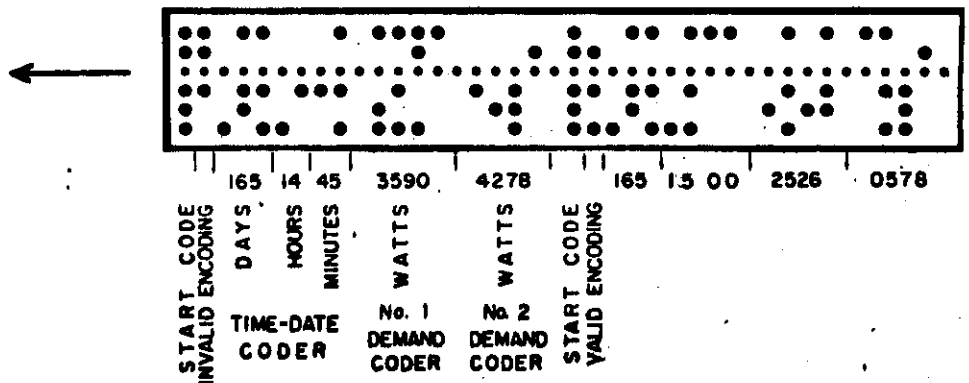
THE SAMPLES OF THE PUNCHED PAPER TAPE USED BY THE TAPE PUNCHER TYPE "NDB 1"







THE CONSECUTIVE ENCODING OF TIME-DATE CODER and TWO DEMAND CODERS FEEDING INTO CHANNELS "T.D.C.", "C1" and "C2" RESPECTIVELY



NOTE : THE ABOVE SAMPLES PERTAIN TO B.C.D. (1-2-4-8-P) CODE.

As the selector steps to position "0" contacts "W X and Y" close locking the motor and clutch for a complete run and on step one the simultaneous encoding of all coders takes place by energizing their sensing solenoids.

On point two the "start code" is punched as all five magnets are energized. Also an impulse goes to the paper feed start relay and clutch solenoid. At the same time the "validity" of the encoding is punched with values 13 for "valid" or 12 for "invalid".

As the selector steps to point three the encoding operation of all coders has been completed and the first digit of the time-date coder is read out. At the same time the validity relay is reset to the "valid" position.

Now the selector switch will read out all coder digits successively and the puncher punches each digit's numerical value on the paper tape and simultaneously feeds it into a decoder unit for an electric calculator, if this optional feature is incorporated.

At step fifty, contacts "W X and Y" open and the selector motor and its clutch are switched off terminating the encoding cycle.

If a supply failure occurs during a read-out, the selector switch will stop on an intermediary position and will resume operation at this point upon restoration of power, completing properly the punch-out of the last encoding. However, for the following punch-out, relating actually to one or several demand periods during which auxiliary power was missing, the corresponding punched value will be designated "invalid" and should be dicarded.

It is characteristic of B.C.D. code that the punched record on the tape for each character (digit) would always consist of an odd number of punched holes.

The use of this instrument is restricted to temperatures between 0°C and 40°C.

The verification of the tape puncher involves checking that the code position indicators of all coders connected to the puncher are reproduced exactly on the paper tape by the tape puncher.

Approval granted to:

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Ref: SL-100-87