

National Standards Commission



Certificate of Approval

No 11/1/1

Issued under Regulation 9
of the
National Measurement (Patterns of Measuring Instruments) Regulations

This is to certify that an approval for use for trade has been granted in respect of the

Telecom Model ECM-ARF Telephone Metering System

submitted by TELECOM AUSTRALIA
Network Operations
7/35 Collins Street
Melbourne VIC 3000.

NOTE: This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

CONDITIONS OF APPROVAL

This approval is subject to review on or after 1/8/98.
This approval expires in respect of new instruments on 1/8/99.

Instruments purporting to comply with this approval shall be marked NSC No 11/1/1 and only by persons authorised by the submitter.

It is the submitter's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the Commission and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with the Commission's Document 106.

The Commission reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

DESCRIPTIVE ADVICE

Pattern: approved 27/7/93

- The model ECM/ARF telephone metering system is a microprocessor controlled system consisting of a number of ECM (Electronic Customer Meter) metering units installed in an ARF telephone exchange.

Technical Schedule No 11/1/1 describes the pattern.

FILING ADVICE

The documentation for this approval comprises:

Certificate of Approval No 11/1/1 dated 31/12/93
Technical Schedule No 11/1/1 dated 31/12/93 (incl. Test Procedure)
Figures 1 and 2 dated 31/12/93

Signed and sealed by a person authorised under Regulation 9 of the National Measurement (Patterns of Measuring Instruments) Regulations to exercise the powers and functions of the Commission under this Regulation.





National Standards Commission

TECHNICAL SCHEDULE No 11/1/1

Pattern: Telecom Model ECM-ARF Telephone Metering System.

Submittor: Telecom Australia
Network Operations
7/35 Collins Street
Melbourne VIC 3000.

1. Description of Pattern

The Telecom model ECM/ARF telephone metering system (Figure 1a) is a microprocessor controlled system consisting of a number of ECM ('Electronic Customer Meter') metering units (Figures 1b and 2) installed in an ARF telephone exchange. The ECM units monitor the exchange equipment to determine customer charging.

1.1 The System

A model ECM/ARF telephone metering system may include up to 10 ECM metering units. Each ECM unit contains up to 10 electronic circuit boards each with 50 customer meter interfaces. A fully-equipped ECM system may have up to 5000 meter interfaces.

Meter pulses detected on each customer meter are subjected to a validation process before they increment duplicated software registers provided for each ARF exchange customer line circuit.

The contents of the software registers may be downloaded, either locally or remotely, for customer charging as required.

The ECM/ARF system is constructed in accordance with Telecom Technical Publication No NNMD7020, *Electronic Customer Meter System for ARF Exchange Technical Specification*, Issue 3.4, 15 July 1993.

The main functions of the ECM/ARF system are:

- To identify and validate meter signals for each customer;
- To record meter registrations in software meters;
- To output individual customer meter readings for the purpose of processing service orders and verifying charging on meter tests;
- To output bulk charging information via the Public Switched Telephone Network (PSTN) to a data processing centre;

- To identify, record and output statistical meter readings as required;
- To allow operational and maintenance processor functions; and
- To record maintenance and operating data.

1.2 Installation

The ECM/ARF system is installed as a complete unit and requires no modification to the ARF exchange other than to disconnect the mechanical customer metering system.

The system is installed in accordance with Telecom Technical Publication No TP01093(s), *ECM (ARF) Installation, Maintenance & Conversion Procedures*, Issue 2, October 1993.

1.3 Operation

Data communication access to the ECM/ARF system is restricted. A Telecom model Datagate modem access security and access management device at each exchange permits only authorised access to the PSTN.

An Operations and Maintenance Processor (OMP), in the form of a software program resident in a microprocessor, is provided at the exchange to allow the ECM-ARF system to receive local and remote commands and download customer meter readings and diagnostic data to a local terminal or remote terminal via the Datagate modem.

1.4 Markings

Each ECM/ARF unit is marked with the following data, together in one clearly visible location:

Manufacturer's name or mark

Model number

Serial number

NSC approval number

NSC No 11/1/1

1.5 Verification/Certification Provision

Provision is made for verification/certification mark to be applied.

TEST PROCEDURE

The metering system is verified/certified, using the 'Operation and Maintenance Processor' fitted to each ECM/ARF system, a 'Meter Pulse Generator' and a personal computer work station, in accordance with the following documents, which form part of Telecom Technical Publication No TP 01093(s):

- Document No NNSD7031, *ECM Systems for ARF Exchanges - Installation and Commissioning*, Issue 5.3, 11 June 1993.
- *ECM, Electronic Customer Meters - Meter Pulse Generator (MPG) User Manual*, Issue 1.2, January 1993.

Maximum Permissible Errors

The maximum permissible errors applicable at verification/certification are specified in clause **2.3.6 Reliability of Software Meters** of Telecom Technical Publication No NNMD7020, *Electronic Customer Meter System for ARF Exchange Technical Specification*, Issue 3.4, 15 July 1993.

FIGURE 11/1/1 - 1

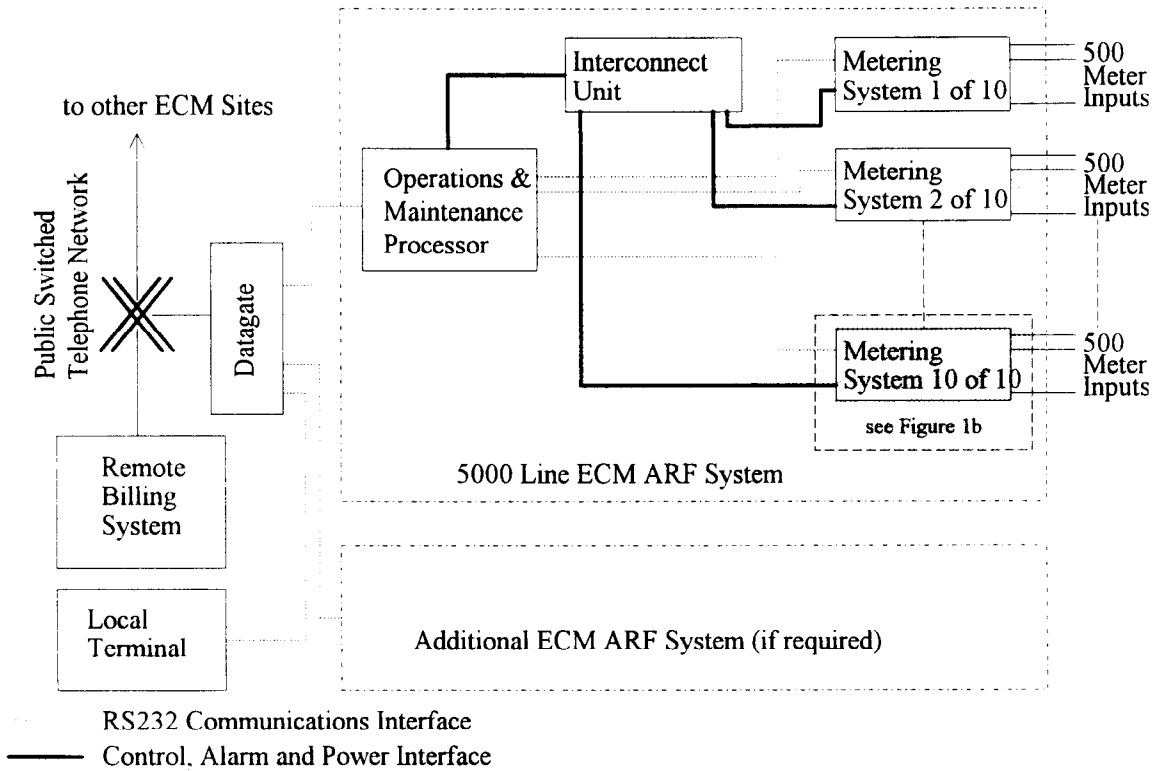


Figure 1a ECM ARF SYSTEM

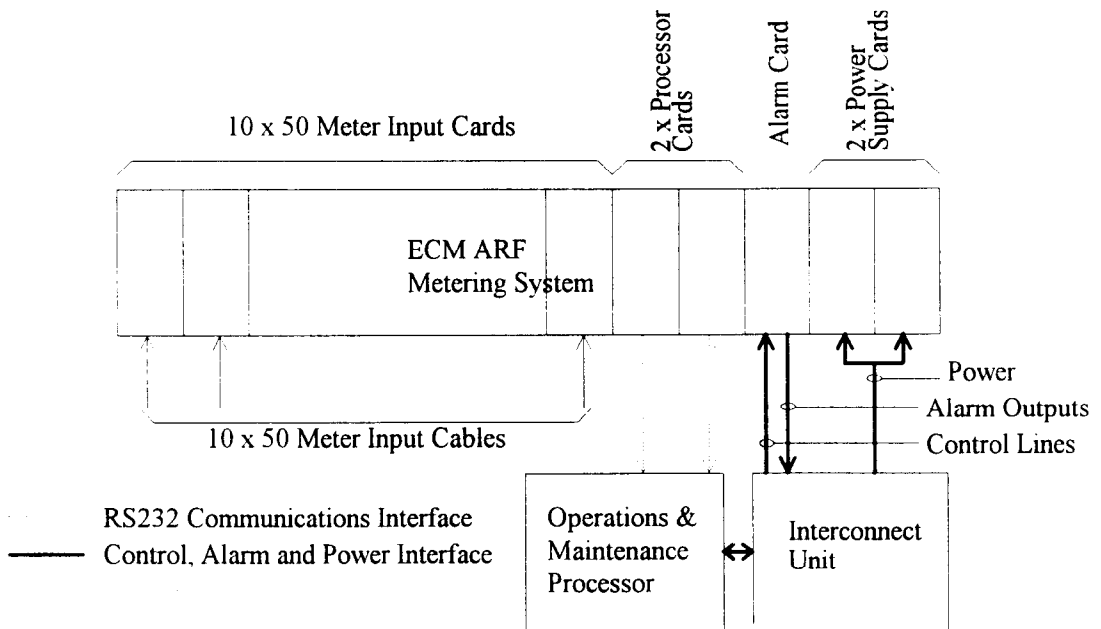
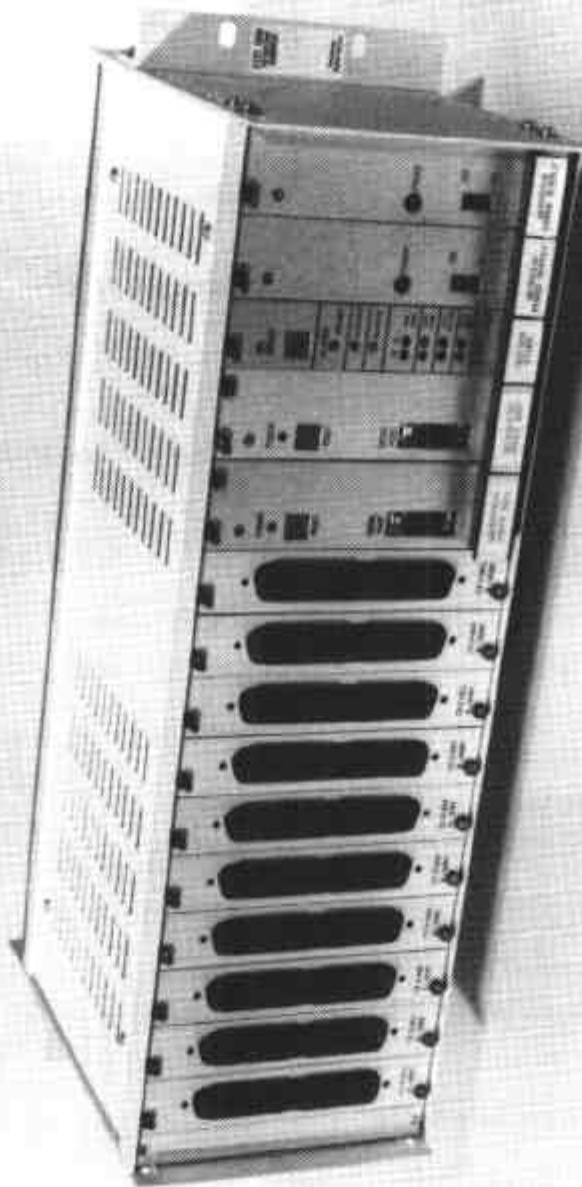


Figure 1b ECM ARF METERING SUB-SYSTEM

11/1/1
31/12/93

FIGURE 11/1/1 - 2



Telecom Model ECM Metering Unit