

THE DIGITAL PAIR GAIN EQUIPMENT

A project report presented in partial fulfillment of the requirements for the award of Advanced Diploma in Electrical Engineering of MARA Institut of Technology.

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## PREFACE

To satisfy telephone demand in areas where existing cable pairs are already fully utilised, and the number of waiters does not justify additional network development immediately, pair gain equipment is recommended to be used.

The four (4) channel Pair Gain system is used to provide multiple independent voice, data or facsimile service over a single unloaded copper pair cable. The equipment provides an economical alternative solution to the heavy capital cost outlay that is required to give telephone service to pockets of waiters. It enables the time frame to give service to these new customers to be reduced from a few months to only one or two days. Once the cable schemes are completed in the areas where the pair gain equipment has been installed, these equipment can be redeployed to clear waiters in other areas.

This report is made to provide a guidelines for the installation, testing and commissioning of the Digital Pair Gain Equipment. This report is divided into two part. Chapter one to five describes the theory and chapter six to nine describes the installation guidelines.

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## 1.0 INTRODUCTION

Digital pair gain equipment is a line concentrator type of equipment where two or more telephones can share one common physical cable pair without any loss of secrecy or service quality to any one of the telephone users. As this equipment works on an existing telephone line, it can be installed quickly and service can be given to the new customers or waiters within one day. This equipment can be redeployed if the customer gives up his phone and moves elsewhere.

The usage of pair gain equipment is not new to Telecom Malaysia as it had been installed before to clear no cable pair waiters. It is often called 1+1 carrier equipment and it is the first generation of pair gain equipment. The pair gain equipment and its technology had evolved since 1970 from a short distance, low reliability equipment to a long distance Integrated Service Digital Network (ISDN) type equipment in 1990.

### 1.1 Evolution of Digital Pair Gain Technology

Pair gain technology or sometimes called Added Main Line (AML) is an established technology which uses one pair of copper cable to give service to two or more telephone customers. There are four types of equipment available, namely: