ScR DIRECT ADDRESS MULTIPLEX SYSTEM

FIRST LINE MANUAL

CENTRAL - CARDONALD REMOTE CONTROL

Authors: A. Paterson & D. Walker
Signalling Control U.K.
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Introduction

Cardonald DAM remote control is a small system and, consequently, it has been possible to accomodate both buses in a single rack.

The rack is fitted with a divider kit giving two 3U sections on the left of the rack for mounting power supplies and modem, and a 6U section to the right of the rack for cards.

The **upper** 3U section contains:- a switch which controls the power to all supplies, a PK55 power supply for the logic and communication supplies, and the PK60 isolation supply. In this system the 12V Isolation supply also feeds the output relays (i.e. it is also the Relay supply).

The **lower** 3U section contains the modem.

The cards in the frame are organised in two groups, each constituting one bus.

The smaller group of cards (nearest the divider) handles the data for the **CONTROLS**, and the larger group (to the right of the frame) the data for the **INDICATIONS**.

The system consists of two such racks, one at the field and one at the office. At the office the **multiplexing** bus is nearest the divider and the **demultiplexing** bus to the right of the frame. At the field the **demultiplexing** bus is nearest the divider and the **multiplexing** bus to the right of the frame.

The racks have been constructed in such a way as to enable the system to be expanded to a maximum of 56 control bits and 112 indication bits by inserting the required number of cards.

The necessary terminal blocks and associated ribbon cable for expansion beyond the installed system capacity have **not** been provided.

Alarms

The alarm system used is of the less restrictive type which allows indications to be received despite the presence of a failure on the control channel.

A failure of the field demultiplexing bus will result in the loss of the "Cardonald receiver OK" indication at the office and trigger the system alarm. As commissioned, the allocated bit is bit 6 of word B on the last card off the bus.

Failure of any other bus will trigger the system alarm by turning of the isolated transistor on the office demultiplexing bus control card via the ROK/TOFF wiring.

MODEM Indications

The MODEM used in this system is the ATS (Telemetry) Limited 248-020-012. This has five diagnostic LEDs fitted on the front edge of the card. These LEDs may provide some additional guidance in identifying the precise nature of a transmission fault and accordingly their use is described below.

RTS - This LED indicates the condition of a control signal required to enable the MODEM for transmission.

DTR - This LED indicates the condition of a control signal required to enable the MODEM to output received data.

TxD - This LED is lit whenever the TxD input is at binary 0. During normal operation of the MODEM this LED should appear to vary in intensity as it follows the binary value of the transmitted data.

CD - This LED is lit whenever the MODEM detects the carrier frequency to be present at a signal strength sufficient to guarantee the integrity of the received data.

RxD - This LED is lit whenever the RxD output is at binary 0. During normal operation of the MODEM this LED should appear to vary in intensity as it follows the binary value of the received data.

RTS, DTR and **TxD** are of limited value in detecting the presence of MODEM faults, each merely indicating the condition of an external input after passing through a single buffer stage of the MODEM.

In this application of the MODEM, the inputs to RTS and DTR are hardwired on the backplane edge-connector. If either LED is not lit the wire-wrap on the backplane should be examined before presuming the MODEM faulty.

TxD conveys much the same information as **ESD"OK"** on the multiplexing bus control card, with the additional reassurance that the data is reaching the MODEM. Should the condition of TxD differ from that of SD"OK" the wire-wrap connection between MODEM and control card should be examined before presumming the MODEM faulty.

CD and **RxD** convey considerably more information about the condition of the MODEM and other transmission equipment.

If **CD** is not lit, either the lines or the remote MODEM may be at fault. Test the lines using an earpiece. If the incoming signal is strong the MODEM should be changed.

MODEM Indications (cont.)

If **RxD** is not lit (with CD lit), the fault is probably at the remote end. However, if the earpiece shows the carrier to be being modulated, the MODEM should be changed.

If **RxD** shows incoming data, but the demultiplexing bus control card **SD"OK"** indication does not, the wire-wrap between MODEM and control card should be examined. Since there remains a buffer stage of the MODEM following the indication, a MODEM fault remains a possibility (however a control card fault is more likely).

All the above assumes that the transmission power supply is present at both MODEM and control card.

Miscellany

The lines on this system are routed via a line protection unit mounted on the KLIPPON rail.

The fixed components of this unit are protected by fuses on each leg of the lines, however, should it prove necessary, the unit as a whole can be replaced by unclipping it from the rail.

From the protection unit the lines are carried by header terminated ribbon cable to a backplane mounted PCB. This PCB interfaces the ribbon header to wire-wrap terminals from which connecting wires run to the MODEM.

Two other interfaces on the PCB connect wire-wrap cable from the cardframe backplane to KLIPPON screw terminals.

One provides a means of leading the alarm wires out to the DIN rail, the other provides a convenient means of interfacing the spade terminations of the +/-12V transmission supply to the wire-wrap pins of the modem and control cards.

SECTION 7 - DRAWINGS

CENTRAL/CARDONALD REMOTE CONTROL - RECORD OF MODIFICATION

ISSUE DATE	MODIFICATION
March 1995	Records update arising from Railtrack contract No W/94/G603 :- Manual Re-Write and Drawings Update.

CENTRAL/CARDONALD REMOTE CONTROL - FAULT LOG

DATE	FAULT & ACTION TAKEN	TECHNICIAN