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PROGRAM LIBRARY

DECUS NO.	8-827
TITLE	DDCMP: Half-Duplex Subset of Digital Data Communications Message Protocol
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DATE	12 July 1976
SOURCE LANGUAGE	PAL8

GENERAL INFORMATION

Object Computer(s) PDP8e

Source Computer (if different) _____

File Name DDCMP

Version No. 1.0

Title Half-Duplex Subset of Digital Data Communications Message Protocol

Author Jonathan R. Gross

Submitter (if other than author) _____

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Monitor/Operating System RTS8

DEC No. _____

Core Storage Required Approx. 3200 Octal

Starting Address _____

Peripherals Required DP8 (KG8 Optional)

Other Software Required RTS8, CLOCK TASK

DEC or DECUS No. _____

Source Language PAL8

Category 00 (External Utility Program) RTS8 Task

Restrictions, Deficiencies, Problems _____

Date of Planned or Possible Future Revisions _____

TAPES AVAILABLE

Paper Tapes Object Binary ☐ Object ASCII ☐ Source ☒ Other _____

DECtape ☐ LINCtape ☐ Format _____ Magtape: 7 Track ☐ 9 Track ☐ BPI _____

Object Files ☐ Source Files ☐ Documentation Files ☐ Other _____

ABSTRACT

See page 1 of DECUS Program Library Write-up

ABSTRACT FOR DDCMP

DDCMP is a half-duplex, point to point, dial up subset of D.E.C.'s Digital Data Communications Message Protocol implemented as an RTS8 task. DDCMP permits the synchronous communication of data messages between two computer systems.

DDCMP is the lowest level of software in the DDCMP-NSP-DAP hierarchy of the DECNET software. It performs the followingfunctions:

1) Controls the DP8e hardware interface (modem).
2) Establishes contact with another DDCMP system.
3) Checks the integrity and ordering of the messages.
4) Requests retransmission of messages with detected errors.
5) Envelopes messages to be sent over the circuit.
6) Interacts with the next level of software (input,output)

DP8E HARDWARE

>The DP8E interface should be strapped as follows:

a) Break Address	Any Legal	Define the symbol "BKREGA" to this address
b) Bits/Character	8	Standard
c) Clock Phase	Normal	Standard
d) Sync Code	226	Standard
e) Carrier Transition	on/off,off/on	
f) Mode	Half-Duplex	
g) Device Code	40-41	May be changed
h) Character Recognition	4	

ESTABLISHING COMMUNICATION

This version of DDCMP is for dial up communication. When the task DDCMP is activated, it first initializes the communications hardware (DP8E) then waits for the phone to ring or a message to be received. If the system is used to call another one, a message will be received when the other system answers the phone. If the system is called by another, the phone ringing will cause DDCMP to answer and start sending out probe messages.

COMMUNICATIONS LOSS

The memory location TRYS contains minus the number of times a message should be received or sent before giving up. If a REQUEST FOR REPLY message is sent TRYS times without a valid responce, communication is declaired lost, a message is printed and DDCMP is put into a run blocked state if MCR is included as one of the tasks. If the symbol RESTRT is defined, then DDCMP will reinitialize after a communications loss, otherwise the system will have to be reloaded. DDCMP waits 6 seconds before sending a REQUEST FOR REPLY message.

MESSAGE INTEGRITY AND SEQUENCING

Once communications have been established, message integrity and sequencing are handled automaticly. If the symbol KG8 is defined in the source code, then the KG8 hardware is used to calculate the CRC-16 check, otherwise it is calculated in software.

SOFTWARE INTERFACE TO INPUT AND OUTPUT

DDCMP sends and receives only the 8 low order bits of each word in the message buffers. The messages to be sent over the circuit are copied to an output buffer where a header is put on the message and a set of block check characters appended to the end. If the transmit buffer is empty, the message to be sent is copied and the RTS8 message from the sender is posted. If the previous message, however, has not been transmitted correctly, DDCMP will process no new buffers until the message has been acknoledged.

The maximum length of a message that can be sent is BUFLEN-2. The maximum message that can be received is BUFLEN-20B.

DDCMP interacts with the two tasks INPUT and OUTPUT. RTS8 messages sent to INPUT from DDCMP have the following form:

CDF instruction to the field of the receive buffer.
FIRST WORD address of the receive buffer
LENGTH of the message received (less header)

INPUT should check for a zero length message if that would cause problems. If INPUT accepts the message from DDCMP, the LENGHT word should be set to zero before posting the message. Otherwise the length word may be set to:

21 If there is a header format error.
10 If there is no room to process the buffer

NOTE... the RTS8 message should be posted as soon as possible since communications will not continue until the RTS8 message has been posted, but do not post the message before it has been processed or copied since after the RTS8 message is posted, the contents of the receive buffer may change.

Messages sent to DDCMP must have the followins form:

CDF instruction to the field of the buffer to be sent
FIRST WORD address of the buffer to be sent
LENGTH of the messase to be sent

NOTE... in order to simplify the interface between DDCMP and the other tasks, DDCMP does not return a status word to the sendins task. Therefore DDCMP does not check for a zero lensht messase or a messase sreater than the transmit buffer size.