ECMA

EUROPEAN COMPUTER MANUFACTURERS ASSOCIATION

STANDARD ECMA-28

FOR

MULTIPLE STATION SELECTION PROCEDURES

An Extension of the Basic Mode Control Procedures
for Data Communication Systems
According to Standard ECMA-16

April 1971

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BRIEF HISTORY

Technical Committee TC9 of ECMA issued in May 1968
their Standard ECMA-16 for Basic Mode Control Procedures
for Data Communication Systems using the ECMA 7 bit
Coded Character Set. Further work was undertaken on
procedures for multiple station selection. A proposal
by ECMA was filed in June 1970 with ISO/TC97/SC6 and
approved by the various delegations.

The present Standard ECMA-28 corresponds to this proposal.
It is an extension of the Basic Mode Standard ECMA-16. It
defines the procedures by which a Master station may
select more than one Slave station.

It has been accepted by the General Assembly of ECMA on
Dec. 11, 1970.

1. SCOPE

This Standard ECMA-28 is an optional extension of
Standard ECMA-16 on Basic Mode Control Procedure for
Data Communication Systems.

This means that:

i)   those systems which conform to Standard ECMA-16
      do not necessarily have to include the functions
      described in the present Standard.

ii)   systems implementing the functions described here-
      after must comply with the present Standard to
      conform to the Standard ECMA-16 on Basic Mode
      Control Procedures.

This Standard defines the Multiple Station Selection
as an extension to the Basic Mode Control Procedures
for Data Communication Systems.

When a system is designed to work both with and without
the Multiple Selection Procedure, some means must be
provided for the Master Station to notify the Slave
stations which procedure is to be entered (for example,
by assigning two different addresses to each station
having both facilities).

2. DEFINITION

2.1 Multiple Selection is a means by which a Master
    station may select more than one Slave station
    so that all the selected Slave stations receive
    the same transmission at the same time.

3. SELECTION SUB-PHASE

Three methods providing various degrees of protection
are proposed for the Selection Sub-phase. They are
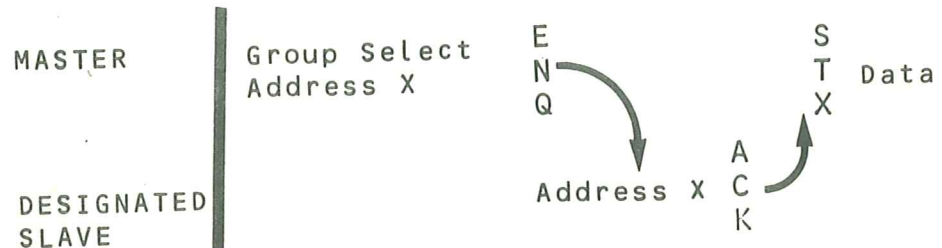listed in the order of decreasing degree of protection.

3.1 Sequential Selection with individual replies from
    the selected

    Stations:
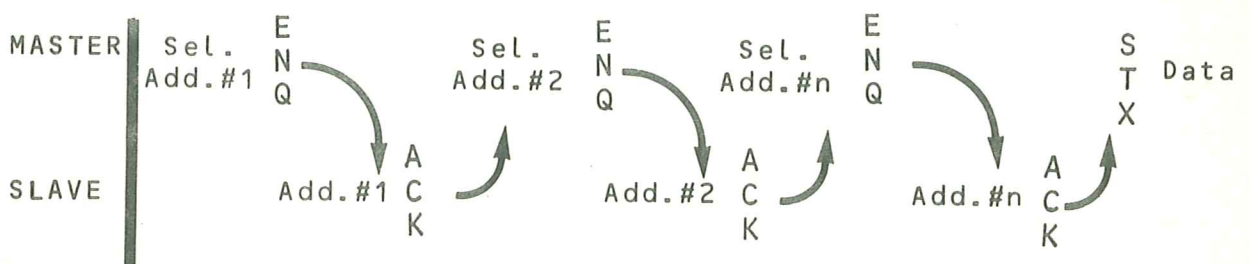
3.2 Group Selection with reply from one designated Station

For example, the most distant one, or strategically located, or any station indicated within the Selection Sequence.

```
MASTER    |  Group Select      E            S
          |  Address X         N ⌐          T   Data
          |                    Q            X
          |
          |                              A
DESIGNATED|              Address X  C
SLAVE     |                              K
```

3.3 Group Selection with Fast Select

```
          |                              S
MASTER    |     Group Select            T     Data
          |     Address                 X
          |
```

NOTE 1: Group Select Address may replace the individual Select address or it may be a Sequence of different Selection addresses.

NOTE 2: Group Selection with fast Select can be preceded by a normal Selection to one station of the group. This Selection has the purpose of designating the Station in charge of replying to the fast select message.
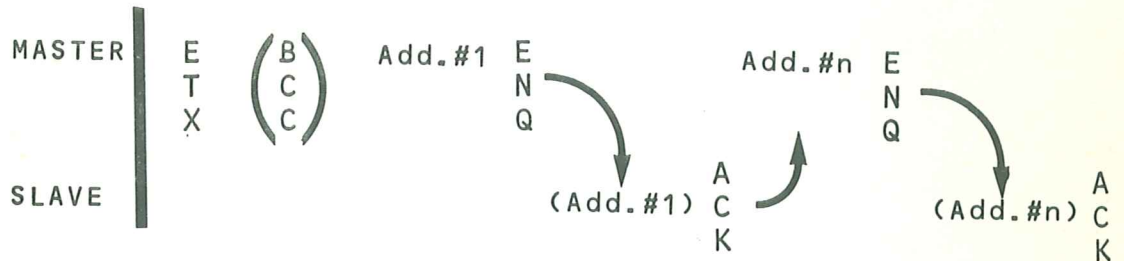
4. INFORMATION TRANSFER PHASE

Three methods providing various degrees of protection are proposed for the Information Transfer Phase. They are listed in the order of decreasing degree of protection.
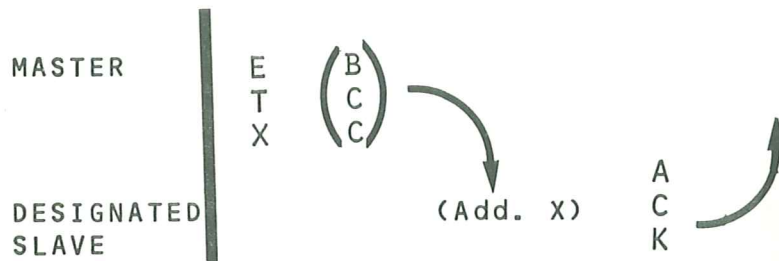
4.1 Information Transfer with individual replies from the Slave Station

After each transmission block, the Master station sends a Delivery Verification Supervisory Sequence, consisting of a prefix identifying a single Slave

station, followed by ENQ. Only Tributary stations
having slave status should respond to Delivery
Verification Supervisory Sequences:

```
MASTER  │  E  ⎛B⎞   Add.#1 E                Add.#n E
        │  T  ⎜C⎟          N                       N
        │  X  ⎝C⎠          Q  ⟍                    Q  ⟍
        │                      ⟍                       ⟍
        │                       ↓         A              ↓     A
SLAVE   │                (Add.#1) C  ↗          (Add.#n) C
        │                         K                      K
```

**4.2 Information Transfer with reply from one designated
Station (for example, the most distant, or strate-
gically located)**

```
MASTER     │  E  ⎛B⎞
           │  T  ⎜C⎟  ⟍
           │  X  ⎝C⎠   ⟍
           │            ↓              A
DESIGNATED │     (Add. X)  C   ↗
SLAVE      │                  K
```

X being the address of the designated Station.

4.3 No reply

Although "no reply" case is not considered by the
Basic Mode, it is recognized that it may conve-
niently be used for general announcement (e.g.
Conference) and the broadcasting of messages of a
"clear text" type.

5. RELATIONS BETWEEN SELECTION PROCEDURES AND INFORMATION TRANSFER PROCEDURES

Although the adoption of one of the three Selection
Procedures does not preclude the adoption of any one
of the three procedures for Information Transfer, it
is recognized that some pairings would not be realistic.
Straightforward pairings could be, for example, 2.1
with 3.1, 2.2 with 3.2, and 2.3 with 3.3.