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Match Function for Message Filtering

A coarse filtering mechanism for messages received from the bus is provided in the firmware of most of our units - it is known as the Match function and uses a Match Table.

[Note the changes to the AVT-418 and AVT-718 firmware on page 2 of this document.]

When the match table is cleared (on power-up, reset, or $31 $7B command) all messages received from the network are passed to the host.

When at least one entry is made to the match table, all messages received from the network are checked against the match table. If a match is found the message is passed to the host. If no match is found, the message is discarded, and the host is not notified.

A match table entry is made using the $32 $xx $yy command. The $xx value is the byte position in the message and the $yy value is the byte value.

Example

Want to receive only messages where the third byte of the message is equal to $F1.
Send the command: $32 $03 $F1.
The response will be: $42 $03 $F1.
The only network messages passed to the host will be of the form:
[$rr] [$ss] $zz $xx $F1 $mm ...
where $rr is the header byte, $ss is the received message status byte, and the message follows.
To query for all table entries,
send the command: $30
the response will be: $40 if the table is empty
$42 $xx $yy for each entry in the table.

Note that the header byte and the received message status byte are not included in the match function nor are these two bytes considered part of the message.

Important Notes

- The header byte is NOT part of the message.
- The receive status byte (or message number byte) is NOT part of the message.
- Any message the AVT unit transmits is also received from the network. Therefore it is subject to the match function. This is important where messages “from this device” are forwarded to the host.

1509 Manor View Road, Davidsonville, MD 21035 USA
+1-410-798-4038 (voice) +1-410-798-4308 (fax)
www.AVT-HQ.com support@avt-hq.com

The match table can hold ten entries where one table entry consists of a byte position and a byte value. The byte position refers to where in the network message the match byte is to be compared. The first byte of the message has a byte position value of one.

Ordering of the match table is not important. All table entries are checked until a match is found or the end of the table is encountered. If a match table entry specifies a byte position that doesn't exist for the message being checked (the message is shorter than the table entry), that table entry is not checked.

AVT-418 & AVT-718 Changes

The following generally applies to the AVT-418 and AVT-718 firmware version 5.6 and above.

Match or Discard

The 5x 1F command controls the operation of the match function.

52 1F 00: Forward 'match' messages to the host. This is the default.

52 1F 01: Discard 'match' messages.

Two-Byte logical "AND"

A match table entry can be one or two specified message bytes.

The command: $32 $xx $yy
specifies one message byte to match. If the byte in the $xx position of the message is equal to $yy value - then the function passes the message to the host or discards it (according to the setting of the 5x 1F command.

The command: $34 $xx $yy $rr $ss
specifies two messages bytes to match. The values $xx $yy are as before (position and value). The value $rr is byte position in the message and $ss is the byte value. This is a logical "AND" function. Both bytes specified have to appear in the message, in the correct location and have the correct value. If they do, then the message is either forwarded or discarded, depending on the setting of the 5x 1F command.

There are ten match table entries. Each entry can be specified to be one or two bytes to match.

The match function treats the whole table as a logical "OR" - meaning that only one entry in the table has to match to either forward or discard.