

StreamDevice: aai Records

Note: aai record support is disabled per default. Enable it in `src/CONFIG_STREAM`.

Normal Operation

With aai records, the format converter is applied to each element. Between the elements, a separator is printed or expected as specified by the `Separator` variable in the protocol. When parsing input, a space as the first character of the `Separator` matches any number of any whitespace characters.

During input, a maximum of `NELM` elements is read and `NORD` is updated accordingly. Parsing of elements stops when the separator does not match, conversion fails, or the end of the input is reached. A minimum of one element must be available.

During output, the first `NORD` elements are written.

The format data type must be convertible to or from the type specified in the `FTVL` field. The variable `x[i]` stands for one element of the written or read value.

DOUBLE format (e.g. `%f`):

Output: `x[i]=double(VAL[i])`

`FTVL` can be "DOUBLE", "FLOAT", "LONG", "ULONG", "SHORT", "USHORT", "CHAR", "UCHAR", or "ENUM" (which is treated as "USHORT").

Input: `VAL[i]=FTVL(x[i])`

`FTVL` must be "FLOAT" or "DOUBLE"

LONG or ENUM format (e.g. `%i` or `%{}`):

Output: `x[i]=long(VAL[i])`

`FTVL` can be "LONG", "ULONG", "SHORT", "USHORT", "CHAR", "UCHAR", or "ENUM" (which is treated as "USHORT").

Signed values are sign-extended to long, unsigned values are zero-extended to long before converting them.

Input: `VAL[i]=FTVL(x[i])`

`FTVL` can be "DOUBLE", "FLOAT", "LONG", "ULONG", "SHORT", "USHORT", "CHAR", "UCHAR", or "ENUM" (which is treated as "USHORT").

The value is truncated to the least significant bytes if `FTVL` has a smaller data size than `long`.

STRING format (e.g. `%s`):

If `FTVL=="STRING"`:

Output: `x[i]=VAL[i]`

Input: `VAL[i]=x[i]`

Note that this is an array of strings, not an array of characters.

If `FTVL=="CHAR"` or `FTVL=="UCHAR"`:

In this case, the complete aai is treated as a large single string of size `NORD`. No separators are printed or expected.

Output: `x=range(VAL, 0, NORD)`

The first `NORD` characters are printed, which might be less than `NELM`.

Input: `VAL=x, NORD=length(x)`

A maximum of `NELM-1` characters can be read. `NORD` is updated to the index of the first of the trailing zeros. Usually, this is the same as the string length.

Other values of `FTVL` are not allowed for this format.

Initialization

During initialization, the `@init` handler is executed, if present. All format converters work like in normal operation.

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