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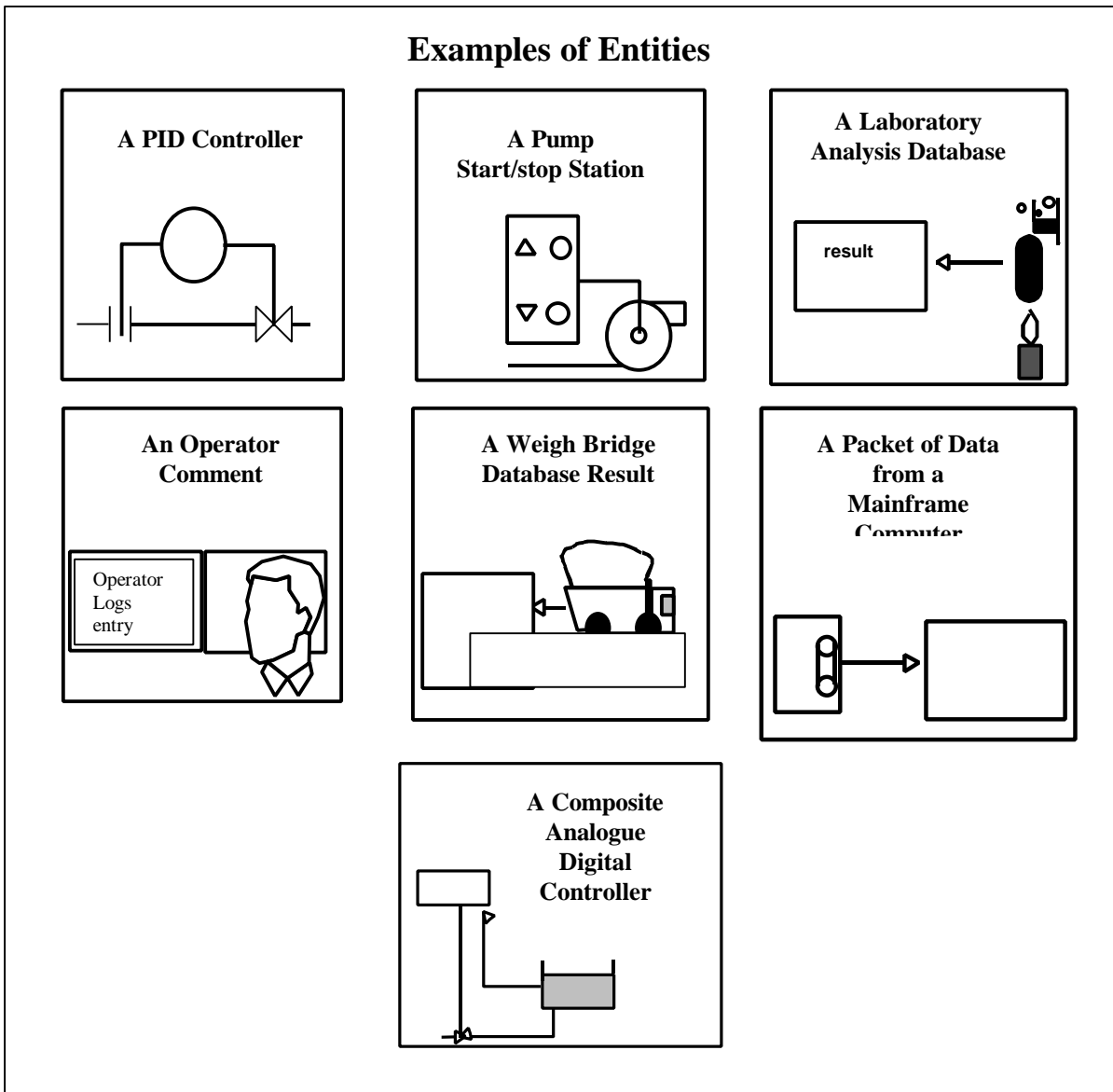
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## 2. Entities

### 2.1 All about Entities

#### What are Entities?

In order to make sense of the mass of data coming into the computer, you group the data into convenient bundles and give them a name. These convenient bundles of data are called *entities* or tags and the unique name given to each bundle is the *entity name* or tag name.



In order to get information relating to any entity, all you have to know is the entity name - nothing else. Once *MacroView* knows the entity name, it will get the data for you.

## Attributes - what entities are made of

The individual data elements that make up an entity are called *attributes*. Each entity generally has 5, 10 or more *attributes*.

**For example:** the attributes of a controller consist of its process variable, setpoint, output, control constants, alarm limits, etc.

You can see all the attributes belonging to an entity by calling up the detail display.

*What you type*

Select the Detail Icon from the Application Matrix or use "D" at the keyboard.

CL	0	ESTP	0	ALM	1	INTL	1	START	0	STOP	0	RUN	1	PV	37
----	---	------	---	-----	---	------	---	-------	---	------	---	-----	---	----	----

VF-221 DOCUMENTATION:	ADDRESS:	STN1:B19:9IN35/62	
ABVFMTR DOCUMENTATION:	SOURCE:	SOYBEAN	SCANTIME:
----	TYPE:	ABVFMTR	USER:
----	SECURITY:	50	CONSOLE:

All the elements shown on the detail display are attributes. We usually refer to these elements as **entity.attr** where attr is the attribute of the entity. Eg. **VF-221.PV**

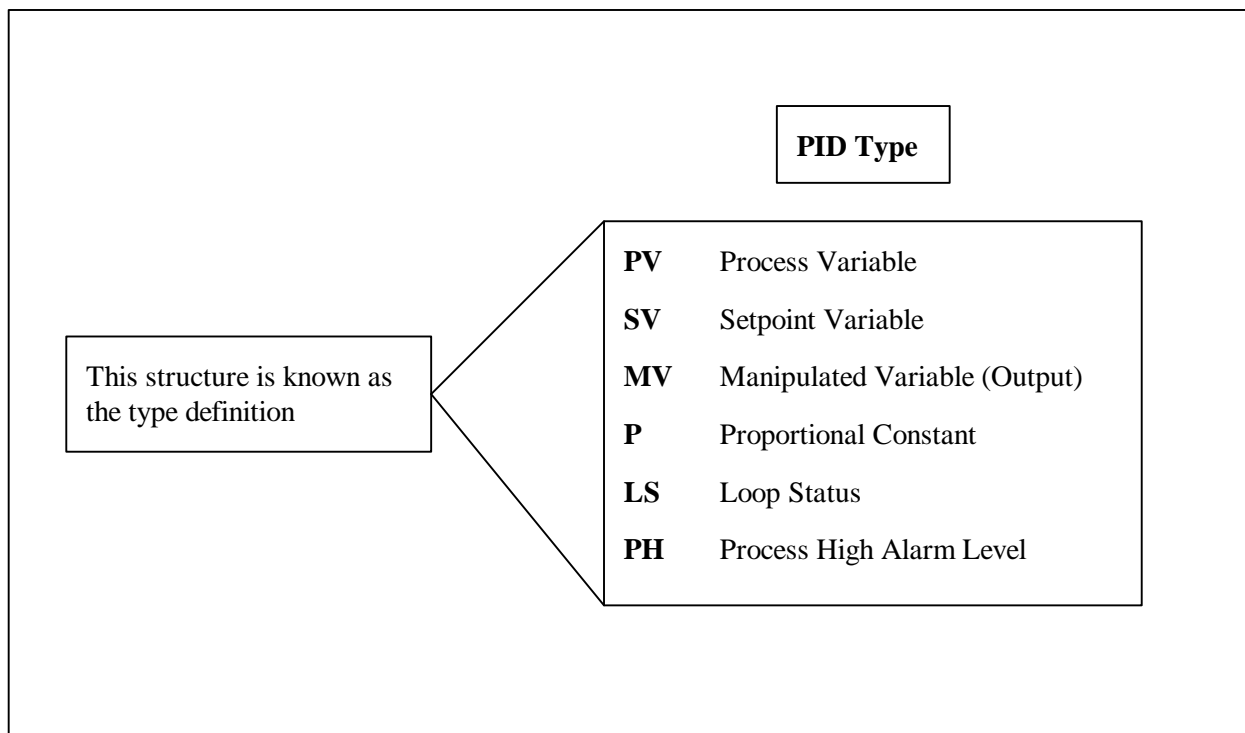
## Types - Defining the Entity Structure

Every entity consists of a number of attributes.

The *structure* of the entity is called the entity *Type*.

The type refers to the number of attributes, what they are called, what format the attributes are, etc. For example, a PID controller may consist of 14 attributes, the first attribute is the Process Variable, the second the Setpoint, etc.

This structure is called the entity type. It is a convenient way to talk about complete blocks of data.



When your system is delivered, a number of type definitions relating to your process control equipment will be included with the system.

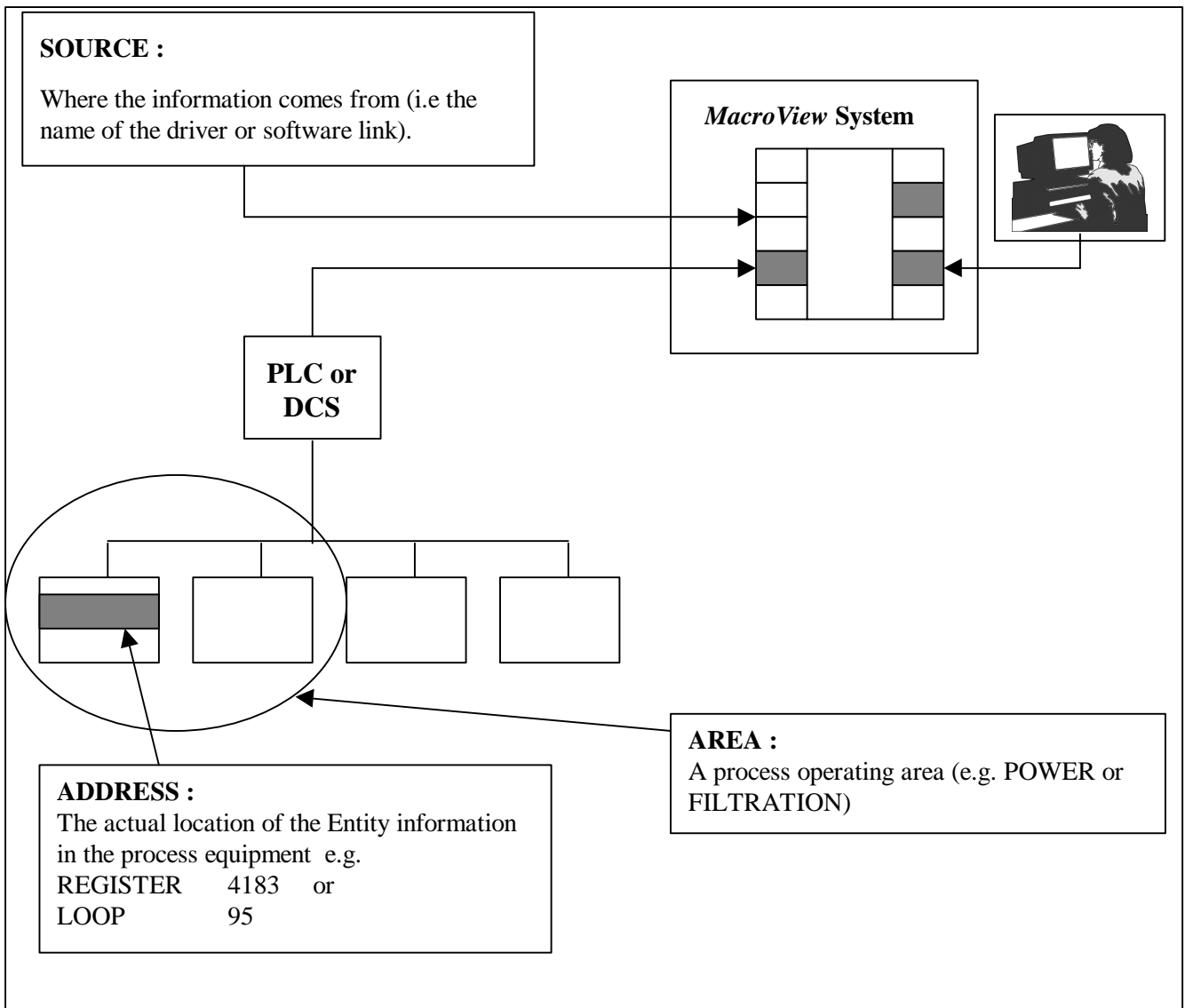
You may also create your own type definitions to reflect the structure of your process. (See the Types Chapter).

## Information required to configure an Entity

In addition to the entity name and the entity type, *MacroView* also needs other information about the entities. For example:

- i. **Source:** where the information comes from.(e.g. a PLC or a DCS or a database).
- ii. **Address:** usually the physical address in the source (e.g. a register address or a database).
- iii. **Area:** the entity's operating area.

These details are stored in *MacroViews*' **data dictionary** and are used by *MacroView* to find the data



## Summarizing the concepts

In summary, let's look at the data entries discussed so far.

For each system there are Type Definitions which:

- i. Are provided with the system or customized by you.
- ii. Define the names of attributes, format of attributes etc. (8 characters for attributes names except for databases where it is 10 characters).

Each entity includes the:

- **Entity Name:** e.g. FIC100 (up to 8 characters)
- **Entity Type:** e.g. PID (up to 8 characters)
- **Source:** e.g. UXL or A-B or Allen-Bradley (8 characters)
- **Area:** e.g. POWER or FILTER (up to 8 characters)
- **Address:** e.g. A4001 or U04LP003 for register 4001 or Unit 4 loop 3 (up to 40 characters)

These configuration entries as well as others are discussed in detail in the next section.

Once the configuration data has been entered, you need only refer to the entity name and attribute to retrieve data.

The remaining data (e.g. AREA, SOURCE, ADDRESS, TYPE etc.) is held in the data dictionary and is used by the system to perform the mechanics of data collection.

## Using the Entities Information

Once you have created the entities, you may access the real-time data using the attribute and entity names.

For example, to access the process variable of the entity LC110 in a graphic or program you simply use LC110.PV to identify the information you need.

You may also access the data dictionary information in exactly the same way.

For example the area field of LC110 is accessed using LC110.AREA.

The table below is a list of the data dictionary fields and all their mnemonics - these fields are available for all entities.

**Table 7: Entity Database Structure**

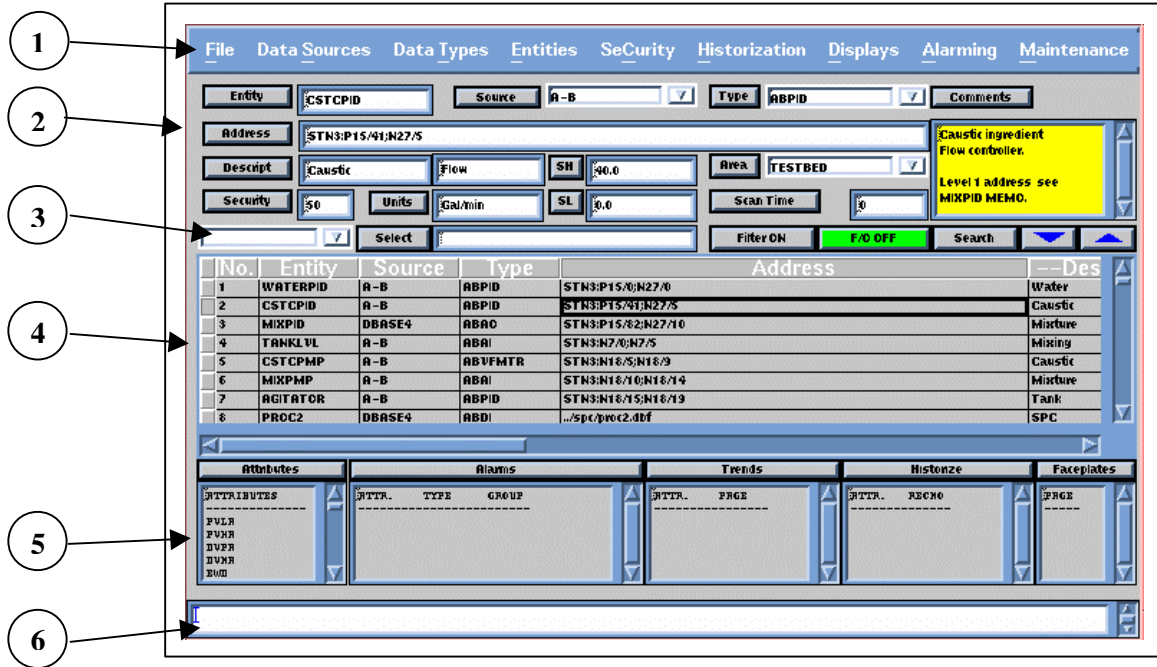
Field	Field Name	Type	Width	Description
1	ENTITY	Character	8	The Entity name
2	SOURCE	Character	8	The name of the source or driver
3	TYPE	Character	8	The type structure
4	ADDRESS	Character	40	The address of the entity
5	DESC1	Character	8	First eight characters of the description
6	DESC2	Character	8	Second eight characters of the description
7	ENGUNIT	Character	8	The Engineering Units
8	SH	Character	8	The Scale High
9	SL	Character	8	The Scale Low
10	ENTDOC	Memo	10	The full page Entity description
11	AREA	Character	8	The process area
12	SECURITY	Numeric	2	The security code
13	SCANTIME	Numeric	4	The rate in seconds the entity is scanned

For a complete description of the data dictionary, you can refer to the document **entities(F)**.

## 2.2 The Entities Configuration Screen

To get to the entities configuration screen, just select *Entities:Detail*

### Entity Configuration Options



### Entity Configuration Concepts

- Menu:** Provides a means of Adding Blank Records., Adding Like (cloning) and Deleting Entities
- Detail Area:** The detail area shows the various items of the selected entity in the entity database. The next sections in this chapter provide detailed instructions on how to configure these items.
- Filter and Search:** The Browse widget can be filtered to show only those records that satisfy a certain condition. You create a filter by (i) selecting a field to filter on from the pull-down combo box and (ii) entering a criteria into the filter area. When you click on the filter button, only those records satisfying the filter conditions will be shown.
- Browse Area:** This shows a (possibly filtered) window of entities. You may scroll through the entities and examine details about a selected entity simply by clicking on the record of interest. You may also use the Browse widget to branch to other configuration screens. Simply double click on the column of interest. E.g. Double click on the Sources Column to bring up the Sources Configuration screen.
- Additional Information Windows:** These windows show information that is related to the selected record but that is in other databases. You may also click on the label areas of these windows to get to other configuration screens.
- Message Area:** Suggestions, help and error messages are sent to this area to assist you in your configuration.

You may also use the same filter to search through the database.

## Configuring Entities (Entity Name)

### Entity name

*What you type*

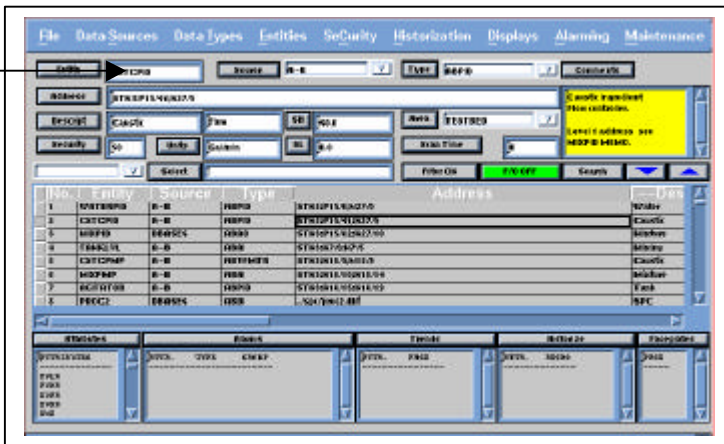
Enter the new entity name. You may use up to 8 characters. Please see the hints below for more information.

*Example*

FIC100 for a flow indicator controller.  
LIC100 for a level indicator controller.

*How it Works*

The entity name is the key that is used for all operations throughout the configuration. Once you have configured the entity, you do not have to remember PLC addresses, etc. any more - all you have to remember is this entity name.



### 1 *Entities:Detail*

*How to get there*

This brings up the entities detail screen.

2 Click on the entity to be modified: The entity detail will appear in the top window.

3 Alternatively, you may add a blank entity using *Entities:Detail:Add Blank* and edit the new entity.

*Hint*

Allowable characters include:

uppercase alpha: A - Z

numerics: 0 - 9

symbols: \_

**NOTE :**

Do not use spaces in the entity name and we discourage the use of , % , \* , + , / , @ , & . These characters may be interpreted by the operating systems as having some other meaning.

*Hint*

Make the name easy to remember e.g. FIPMP43 for Flow Indicator for Pump 43 (compared to a poor entity name F39743). An easy to remember name will save a vast amount of searching later on.

It will be useful to set a site convention for Entity naming.

*This to Avoid*

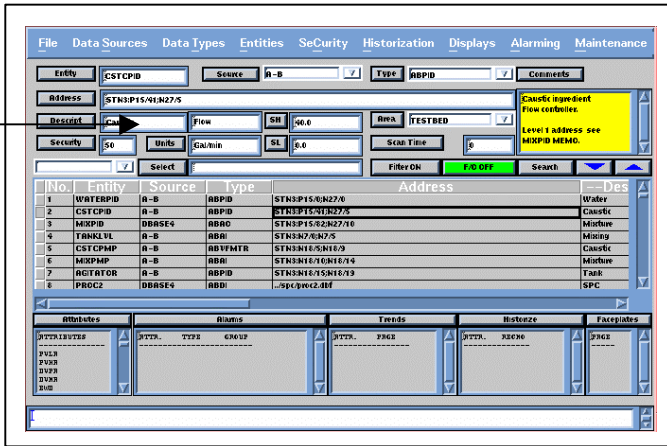
Possible problems - if the entity name already exists, the configurator will not allow you to create it again - you must edit the existing entity.

Using the dBase program to directly edit the data bases can cause problems with indexing in some cases. The configurator will take care of indexing where required.



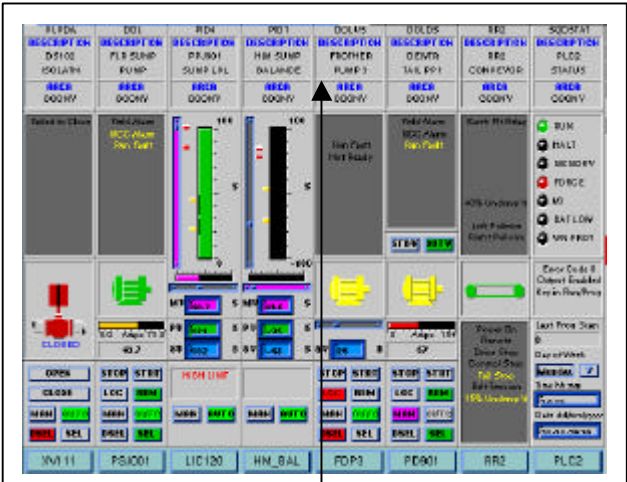
## Configuring Entities (Descriptions)

- 1 **Entities:Detail** How to get there  
 This brings up the entities detail screen.
- 2 Click on the entity to be modified: The entity detail will appear in the top window.
- 3 Alternatively, you may add a blank entity using **Entities:Detail:Add Blank** and edit the new entity.



### Entity Descriptions

<i>What you type</i>	Type in the description. Two fields are allotted for a maximum of 16 characters. Press enter after the first description.
<i>Example</i>	<b>RR2      Conveyor</b>  Would be a description for a conveyor



<i>How it Works</i>	This concise description is used widely throughout the system, where the entity name is too cryptic, for example in alarms, group and trend displays, etc.  Choose your descriptors carefully: good easy-to-understand descriptors are real time-savers.
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## Configuring Entities (Area, Security)

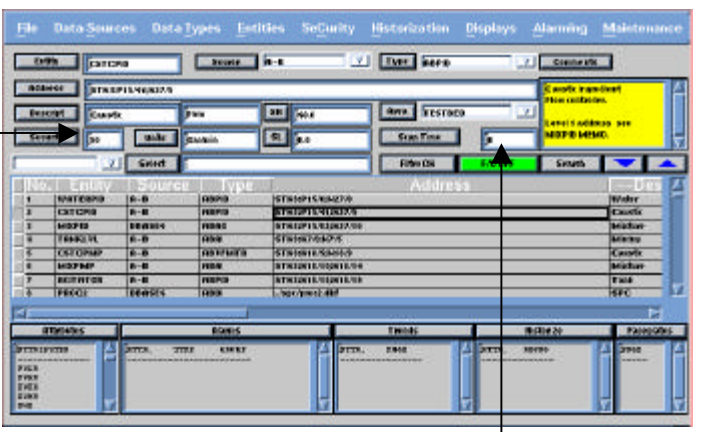
**Security**

What you type

Enter the security permission code (0 to 99).  
 0 - anyone can adjust the entity  
 99 - High security level - only personnel with an access level of 99 may adjust the entity.

Hint

Decide on a clear authority policy before you start configuration. Try to keep the policy as simple as possible.  
 Default recommendations:  
 0-29 Operators  
 30-59 Supervisors  
 60-99 Engineers  
 Please see the Section "Security Strategies" in the Security Chapter.



- 1 **Entities:Detail** How to get there  
This brings up the entities detail screen.
- 2 Click on the entity to be modified: The entity detail will appear in the top window.
- 3 Alternatively, you may add a blank entity using **Entities:Detail:Add Blank** and edit the new entity.

**Area**

What you type

Select the operating area in which the entity is situated. Use up to 8 Alpha-numeric characters.

Example

POWER for the Power Area  
 FILTER for the Filtration Area  
 You may leave this field blank if you do not want to use separate areas.

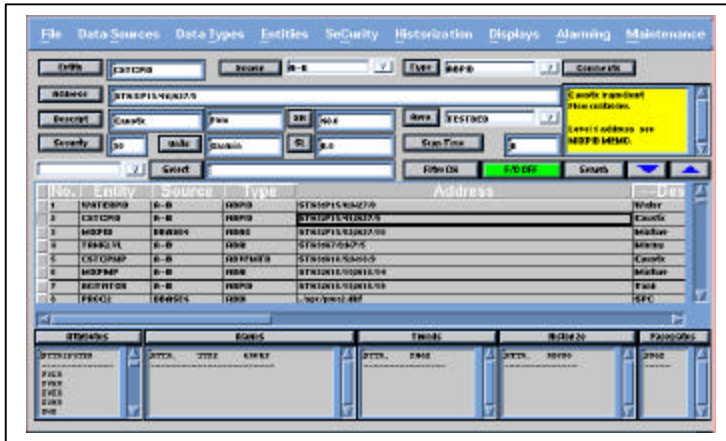
How it Works

**MacroView** uses this in deciding which consoles are to process alarms and are to be allowed control access for this entity. You can get more information about areas in the Security Chapter.

Hint

The area is generally related to an area of responsibility or sometimes a physical part of the process. Having too many areas can become confusing.

## Configuring Entities (Scan Time)



- 1 **Entities:Detail**  
This brings up the entities detail screen. How to get there
- 2 Click on the entity to be modified: The entity detail will appear in the top window.
- 3 Alternatively, you may add a blank entity using **Entities:Detail:Add Blank** and edit the new entity.

### Scan Time

This is only used by sorted image drivers (usually large DCS systems) and text file updates. Refer to the Sources and Drivers appendix to see if you need to enter this setting for your source.

What you type

Enter the time in seconds that **MacroView** is required to scan the Attributes of this entity. Enter an integer value from 1 to 9999. Note: Attributes are scanned at multiples of this time. (Determined by the type of the entity.)

Hint

Every driver has a limit to the amount of data that it can transfer. You need to choose this scan period wisely. Choose the scan time based on the dynamics of the tag (for example a large tank level may only need to be scanned once every 3 minutes) and the kind of user likely to access the entity.

How it Works

This value is used by the driver to determine how frequently it should scan this entity to maintain an image in memory. This enables a rapid display call-up as the **MacroView** graphics utility will access the image for the value required, instead of having to make specific requests on the driver and communication link.

Attributes are scanned at rates that are a multiple of the scan rate you enter here. For example, if the PV is set at 5 seconds, the MV may be scanned every 10 seconds. This multiplier is held in the type definition. See the Sorted Image Based Sources section in the Types Chapter.

Hint

For more information on setting the scan time and how this affects the driver, please consult the Sources Chapter in this manual

## Configuring Entities (Scaling & Eng Units)

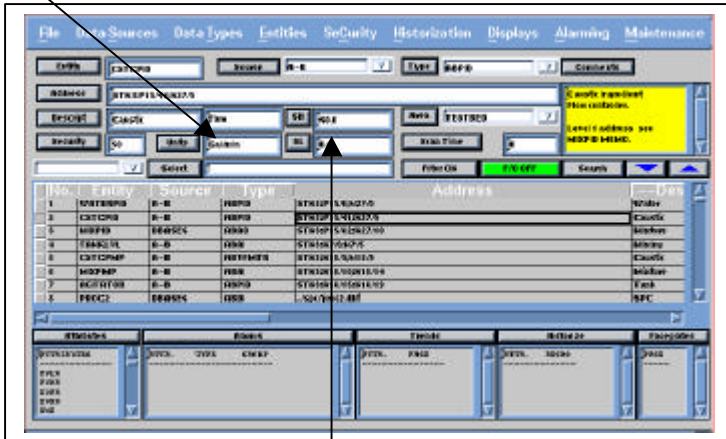
**Units**

*What you type*

Type in the engineering units for the entity, using up to 8 alphanumeric characters or symbols.

*Example*

% or DEGF or M3/hr etc



- 1 **Entities:Detail** *How to get there*  
This brings up the entities detail screen.
- 2 Click on the entity to be modified: The entity detail will appear in the top window.
- 3 Alternatively, you may add a blank entity using **Entities:Detail:Add Blank** and edit the new entity.

**Scale High / Scale Low**

*What you type*

Type in the High and Low limits of the entity. The number of decimal places you enter in the scale high field determines the default number of decimal places in graphics (e.g. if you set Scale High = 100.0 then the number 74.39 will be displayed as 74.4.) Note that this default may be overridden by the source type which may set the number of decimal places itself.

*How it Works*

These values are used by *MacroView* to range the indicators in trends and bar graphs.

*Example*

Scale High = 125  
Scale Low = 25

*How it Works*

In the case of digital Entities, the Scale High and Low are words that can be used to indicate the ON and OFF states.

*Example*

Scale High = RUNNING  
Scale Low = STOPPED

*How it Works*

For some PLC image format types, the Scale High and Low values may be used to scale the raw PLC values to meaningful engineering units. See the Types Chapter.

## Configuring Entities (Comment)

### Comment

*What you type*

Simply Type in the comments (Notes) you need for this entity.

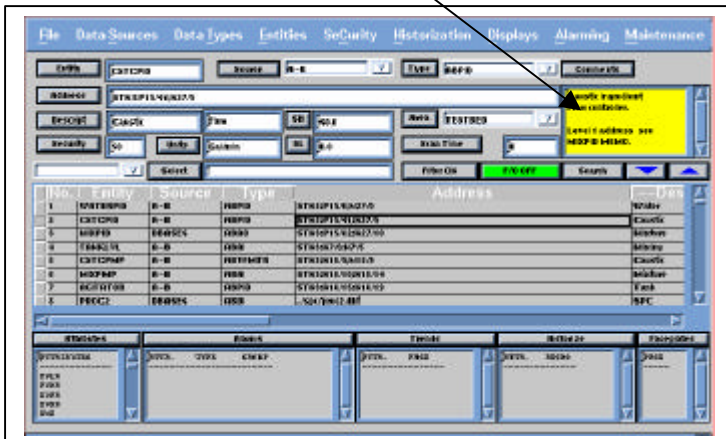
### 1 *Entities:Detail*

This brings up the entities detail screen.

*How to get there*

2 Click on the entity to be modified: The entity detail will appear in the top window.

3 Alternatively, you may add a blank entity using ***Entities:Detail:Add Blank*** and edit the new entity.



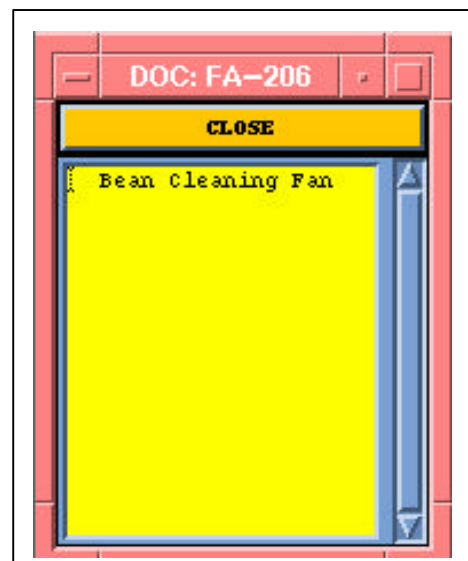
### Comment

*How it Works*

The comment (or Note) field uses the memo facility available in dBase. Users can access the information in the Navigator by simply clicking on the Note pop-up key (^N). It will show in yellow if there is a comment associated with the entity

*Hint*

The short description is quite often insufficient for an operator to understand the functions of an entity. Use this field to describe how the entity should behave, how to adjust it, what to watch out for, etc.



## 2.3 Checking out the Entities

Once you have entered all the entity information you should do the following:

- Back up the information.
- Print out the database using the Document option in the entities menu.
- Thoroughly check all the information you have entered and correct any errors.
- Confirm that the drivers to the sources are installed and running.
- Confirm that the relevant hardware is attached and commissioned.
- Individually check out each entity by calling up the detail displays.

If you have completed all these checkout procedures and are having difficulties, consult your *MacroView* distributor for assistance.

### **NOTE:**

**When the *MacroView* Operations program starts it will read the Entities database and create a look up table, which is used when referring to this database each time. If major changes are made to the Entities database, such as adding or deleting records or changing the Source or Type fields of an existing record the *MacroView* Operation program must be restarted. This is done by simply closing the Navigator and restarting it.**