

# SIEMENS



**VISIONIK<sup>®</sup>**  
**Building Process Station BPS**  
**User's Guide**

CM2B8301E  
03.2003

Siemens Building Technologies  
Building Automation



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## Revision history

The following changes were made to the edition dated 08.1999:

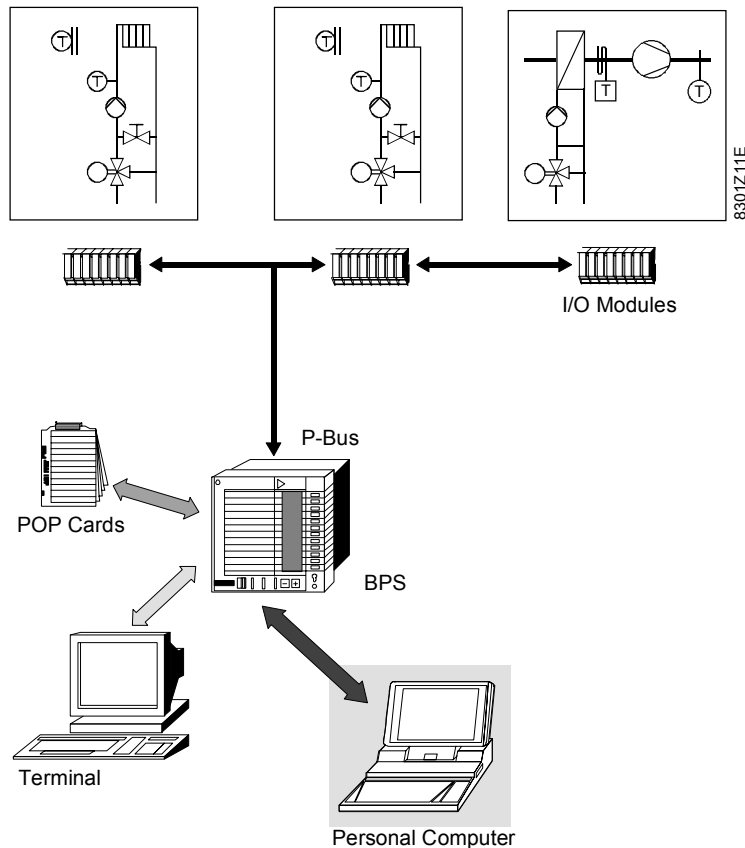
Paragraph / Change	Page
Devices involved - Deleted version information	1-1
Further reading - Updated document name - Deleted version information and order number	1-2

# 1. About this Document

## 1.1 What does this document describe?

### Summary

This document describes the operation of building services installations that are controlled and regulated by the VISONIK **B**uilding **P**rocess **S**tation (BPS).



### System involved

This description covers the

- VISONIK building control system of Siemens Building Technologies Ltd.

### Operational modes

Local operation is covered using Building Process Stations having the following configurations:

- POP Card operation on the Building Process Station itself
- Operating with menus or COLBAS instructions using:
  - A personal computer (PC) and VISOTOOL editor on the TTY3 Tool Interface
  - A terminal on the TTY1 or TTY2 V.24 interfaces.

### Devices involved

This description covers the VISONIK BPS device types. These are:

- PRV2.32, PRV2.64 and PRV2.128 for the P-Bus I/O module
- PRV2.00 as a communication master for individual room control or foreign systems.

### Note

In this description we interchangeably use the terms "Building Process Station" and "BPS" when referring to the VISONIK Building Process Station.

## 1.2 For whom is this document intended?

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### Reader

This document is intended for persons having access rights to operating levels 1 and 2 (KEY1 and KEY2) of VISONIK systems.

- For our customers, this includes:
  - caretakers and janitors
  - operators
  - technical maintenance servicing personnel
  - HVAC specialists.
- For our employees, this includes:
  - New personnel in technical office duty and customer service.

---

### Objective

If you belong to one of the above groups, then this User's Guide should allow you to:

- execute targeted and appropriate operator manipulations using available operating equipment on already operational plants.
- interpret the terminology of menus, reports, etc. resulting from these manipulations.

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### Document structure

We have structured this User's Guide in accordance with the above objectives as follows:

- The individual chapters for the three operational modes are independent of one another with regard to your manipulations.
- To keep you from having to continually turn pages to find explanations of terms in our examples, whenever possible we provide them at the location where they appear.
- For reference purposes, we have collected more detailed information as supplements in a common section.
- Examples are selected for simplicity.

---

### Further reading

If you are an expert having access rights to operating level 3 (KEY3), you can find additional information in the following specialized documents:

- COLBAS Language Description
- VISONIK Point Types and Parameter Description
- VISONIK System Basics

---

### Feedback desired

If you happen to find a mistake in this guide or feel that important information for practical applications is missing, please let us know. Thank you.

## 1.3 Important Safety Tips

### 1.3.1 Safety Symbol

---



We will flag especially important safety warnings using the warning triangle at the left. These warnings must be followed in all cases to avoid physical injuries and equipment damage.

### 1.3.2 General Safety Directives

---

#### Proper use

Trouble-free and safe operation of building service installations requires, among other things, that operations and diagnoses are properly carried out.

The following safety directives are oriented directly toward the Building Process Station and associated system components, and to their surroundings such as, for example, the control cabinet and the technical equipment of the plant.



Thus please follow more than just the safety directives on this page. To prevent physical injuries or equipment damage, abide by safety regulations in general, such as, for example, general accident prevention rules.

Especially observe the following:

Removing, bypassing or neutralizing safety equipment, safety functions and monitoring equipment is strictly forbidden.

Do not remove covers, housings or other protective equipment etc. Never operate the plant or plant component if such parts are missing or damaged.

### 1.3.3 Operating Dangers

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#### No inherent danger from the system itself

The Building Process Station and directly connected devices present no danger if operated properly.



Residual dangers exist in the plants if you do not abide by the directives specified in the plant-specific documentation for setting limit values, etc.

These residual dangers, however, can lead to dangers only if the prescribed safety equipment is not functional or in place on the customer side.

There could be other operating dangers from customer devices and/or plant parts. Inform yourself about these items by reading the documentation for the affected plant or the relevant manufacturing documentation. Always observe the warnings in the plant area and on the devices.

### 1.3.4 Safety Equipment

---

#### Device safety

Among other things, the technical safety for devices is guaranteed when the Building Process Station and the I/O bars are supplied with safety extra-low voltage (SELV) in agreement with the currently-valid standards.

#### Plant safety

Plant safety is guaranteed from the system side by the evaluation of plant-specific signals, such as, e.g., safety chains and feedback values.

The previous two sections are also relevant to plant safety.



- **Upon danger, immediately press the EMERGENCY OFF button or switch OFF the plant main switch!**
- **Immediately start rescue actions!**

## 1.4 Operator Possibilities Summarized

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### Plant operation



You can carry out the following actions on the connected plant:

- Change the nominal conditions of plant control
  - Adjust setpoints
  - Release groups
- 

### Modify time switch program



You can modify the following time switch programs:

- Weekday catalog (WDC)
  - Exception catalog (EXC)
  - Operating time changes
  - Special day catalog (SDC)
- 

### List reports



You can call up various reports using the PC, namely:

- SYR system reports
  - ALR Alarm reports
  - ERP Error reports
  - PLT Plant point reports
  - Interrogation of individual data points
  - Group reports
  - etc.
- 

### Note

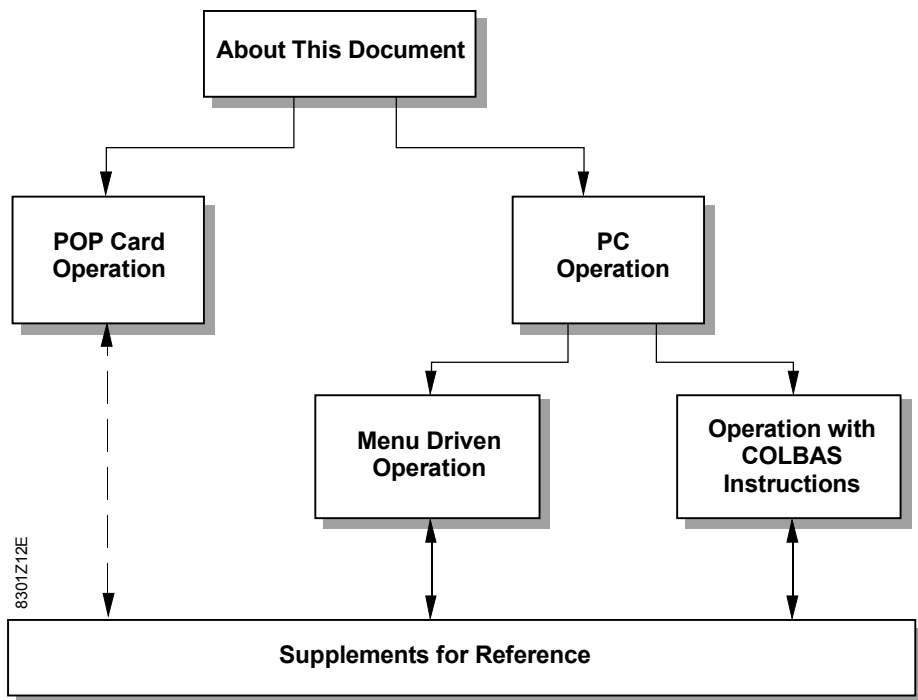
The actual operating possibilities differ in their details depending on:

- the operational mode (POP Cards, menu operation or COLBAS instructions)
- the possibilities specified in the scope of delivery and during planning
- the current access rights (KEY1 or KEY2)

## 1.5 Which chapters do I need?

### Organization of User's Guide

We have structured this document so that you can find pure user operations on a chapter-by-chapter basis. We also offer supplementary and detailed information whenever we feel you need more details or associations.



### Legend

Here is an abbreviated overview of the contents of each chapter:

Part	Description	Chapter
About this Document	This chapter.	1
POP Card Operation	If you are a POP Card user, you can skip to chapter 2 now, where we explain operation using plant examples.	2
PC Operation	PC operation can vary depending on whether the operating dialog is installed in BPS or not. If you are a PC user, refer to section 1.6.	1.6
Menu-Driven Operation	Menu-driven operation using a PC is user-friendly. It runs using an easily understandable user dialog.	3
Operating with COLBAS Instructions	This operation uses part of the COLBAS-programming language. During individual operations, you are continuously presented with the instructions you need.	4
Supplements for Reference	If you do not find something in a chapter, the Supplements for Reference offer more detailed information. Although written for PC operation, POP Card users can also use them.	5

## 1.6 Concerning PC Operation

### 1.6.1 Prerequisites

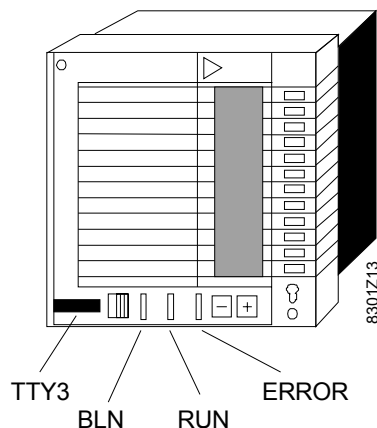
#### What do I need?

If you have KEY1 and KEY2 access rights for the Building Process Station and wish to operate the PC, ensure that the following prerequisites are fulfilled:

1. The Building Process Station has already been made operational by experts.
2. The Building Process Station is in the RUN status

#### Operating status of the Building Process Station

The three light emitting diodes (LED) at the lower front side provide information about the operational status of the Building Process Station.



#### What the LEDs mean

When lit, the individual LEDs have the following meanings:

LED	Meaning
<b>RUN</b>	<b>RUN-Status display:</b> <ul style="list-style-type: none"><li>- The operating voltage (AC 24 V) is available</li><li>- System functions are OK.</li></ul>
<b>BLN</b> Fast flashing	<b>BLN communication display status:</b> <ul style="list-style-type: none"><li>- The BPS is part of a Building Level Network</li></ul>
<b>BLN</b> Flashing every two seconds	<b>BLN communication display status:</b> <ul style="list-style-type: none"><li>- The BPS is in autonomous operation</li></ul>
<b>ERROR</b>	<b>Error display status:</b> User-specific programming, such as for: <ul style="list-style-type: none"><li>- Operating system error</li><li>- Error in applications</li><li>- Inadequate buffer battery charge</li></ul>

#### TTY3 connector

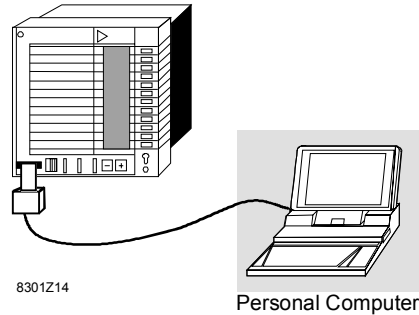
TTY3 is the tool interface for connecting PCs with a suitable adapter (see next page).

## 1.6.2 Make Connection

### Connecting the PC

If you are connecting a PC, you can use the following entry sequence at the Building Process Station to determine whether the user program is installed. To connect your PC to the Building Process Station you need:

- 1 PVW1.3F tool adapter, for insertion into the TTY3 interface of the BPS
- 1 connecting cable (e.g., LVE1.2018) to the serial interface on the PC.



### Start VISOTOOL editor

After you have connected your PC, proceed as follows:

1. Switch on your PC
2. Start the VISOTOOL editor

#### Note

The VISOTOOL editor is normally installed at C:\VISOTOOL\EDITOR. Start it by entering **Editor**. The editor responds as follows:

```
DOS Load/Save CommsSetup Modem Setup Record Version
Online ??? (PRV2) COM2: 4800 Baud 115 kB free --- Status line

[ Version ]
LANDIS & GYR
VISOTOOL 4.0
EDITOR
VERSION 12.40
22-DEC-1994
Press F1 for new information ...
```

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Note: You can find a detailed description of the VISOTOOL editors in the document of the same name: Order number UXPS0401E.

### Search for the baud rate of the BPS

Before using the Building Process Station, its baud rate must agree with that of the operating device. Proceed as follows:

1. Press any key to close the version window.
2. Enter **<Alt> <B>** (= "Find baud rate" command)

If the connection is successful, the BPS answers in the status line with:

```
Online PRV2 .
```

### 1.6.3 Is the User Dialog installed?

#### BPS login

Execute a login to determine if the operating program is installed in the Building Process Station. The format of the acknowledgment provides the answer. There are two steps for Building Process Station login:

Step	Entry/Answer	Description
1	<b>HELLO</b> <CR>  <b>KEY:</b>	You can enter <i>HELLO</i> in upper or lower case letters. Then press <ENTER> i.e., <CR>  The Building Process Station answers: Key is a request for a password entry. See under <b>Access Protection</b> below
2	<b>PASSWORD</b> <CR>	As a user, you enter a password (you will not be able to see your entries on the screen)

#### Acknowledging the BPS without an operating program

If the operating program is not installed, the Building Process Station acknowledges entry of a valid password (here for KEY2) as follows:

```
BUILDING PROCESS STATION PRV2.64 V14.04 @BPS.NR=11 ($013) @BPS.INV=4491
ACCESS LEVEL=2 AT MO, 20-MAY-1996, 11:57:51
```

#### Acknowledging the BPS with an operating program

If the operating program is installed, the Building Process Station immediately starts the user dialog following entry of a valid password for KEY1 or KEY2:

```
OpD      11:41:53      B P S - O P E R A T I N G   D I A L O G   14-JUN-1996/FR
MENU      Q          End
          1          Group1          North heating
          2          Group 2          South heating
          3          Group3          Office air cond.
          P          Report
          S          Special day SDC
          M          Message buffer
OpD      11:41:53      B P S - O P E R A T I N G   D I A L O G   14-JUN-1996/FR
Select ...:
```

#### Incorrect password

If a password is incorrectly entered, the Building Process Station outputs the following message:

```
ACCESS LEVEL=0 : ILLEGAL KEY
```

#### Access protection

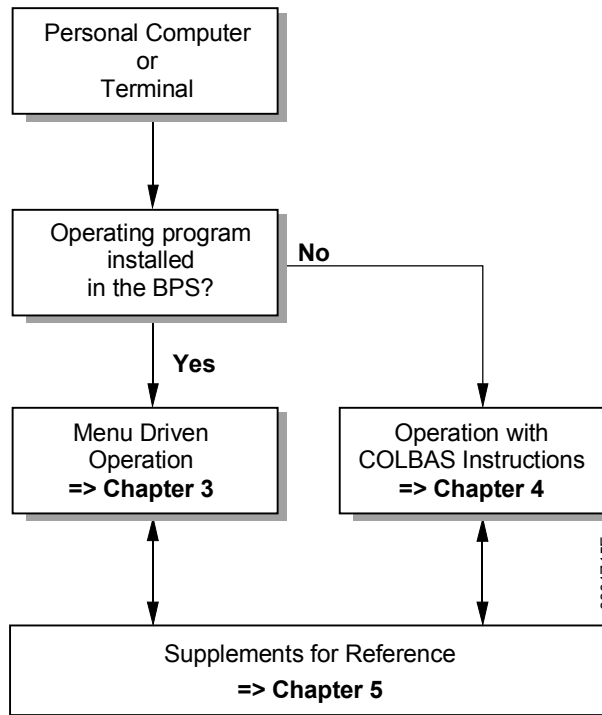
The Building Process Station has access protection to protect against unauthorized manipulation. It is set up by the individual responsible for the system. The access protection is configured into three operating levels with associated access rights. Each of the three operating levels has a password assigned to it (KEY1 to KEY3).

In this User's Guide we will only be concerned with the operating possibilities associated with KEY1 and KEY2.

## 1.6.4 Where should I continue reading?

### Decision aid

The parts of this User's Guide that you need are dependent on whether the operating program is installed in your BPS or not. The following flowchart will lead you to the next chapter:



### Note

The PC is considered to be an operator's terminal throughout this User's Guide. However, the general meaning of the presentation is equally valid for a terminal already connected to the TTY1 or TTY2 connections of the Building Process Station.

### Individual chapters 3 and 4

The access possibilities for the current operating mode are described in the chapters as follows.

Name	Description
<i>Menu-driven operation</i> chapter 3	Menu-driven operation requires a PC with VISOTOOL editor (or the terminal) <b>and</b> the operating program in the BPS.
<i>Operating with COLBAS instructions,</i> chapter 4	Some of the COLBAS instructions are used for this operation. You will require a PC with a VISOTOOL editor. (The terminal functions directly).

### Supplemented chapter 5

Chapter 5 provides more detailed information for both operational modes. It covers the same themes as the individual chapters, yet conveys:

- Descriptions with illustrations for definitions and basic system characteristics.
- Additional tables for supplementing the information of the operating examples.

You should access the supplements in accordance with your individual needs. We will point out recommended references using notes in the text.

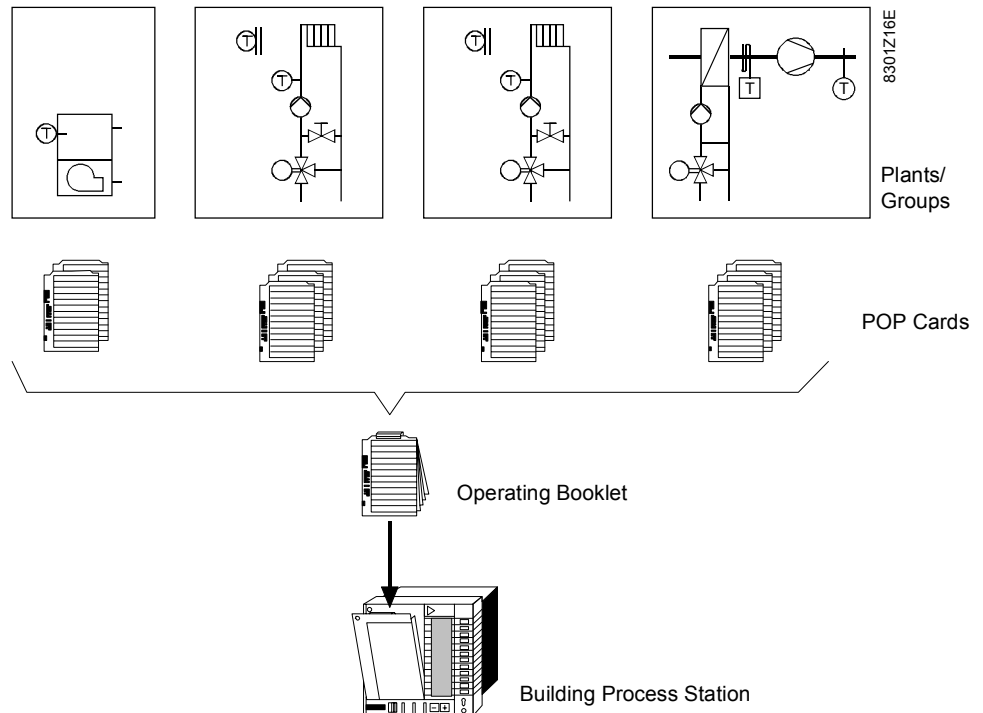


## 2. POP Card Operation

### 2.1 The Concept

#### Summary

The following figure shows the principle of plant operation using the Building Process Station with integrated POP Cards



#### Description

The concept of plant operation using POP Cards is typically configured as follows:

- Each Building Process Station has a number of service plants or groups that are functionally and operationally distinguishable units of the entire system. As indicated in the above figure, these could be, for example:
  - a heat generator
  - a heat distributor with two heating groups
  - a ventilation plant.
- There are 2 to 3 specific POP Cards for each of these plants or groups. These cards are referred to as Project Cards. Using these, you can easily execute the most important user operations. A conceivable subdivision of cards per plant might be, for example:
  - 1 card for defaults of the operating status
  - 1 card for setting setpoints
  - 1 card for modifying the time switch programs.
- The cards of all plants are collected into a booklet and stored in the operating card holder of the Building Process Station.

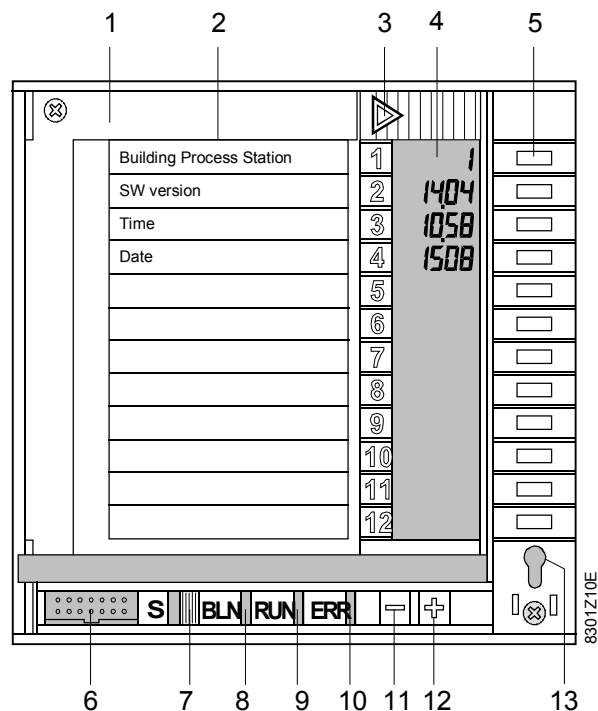
#### Note

Supplementary Service Cards and Standard Cards are available for system specialists. Their use is covered in the expert documentation.

## 2.2 Operating Elements

### Front view

The following figure is a front view of the Building Process Station and its operating elements:



### Legend

The following legend gives an abbreviated description of the individual parts:

No.	Description
1	Card holder for the POP Cards
2	Neutral Front Card
3	Slide lock for opening the card holder
4	LCD display field with 12 lines each with four characters
5	Line buttons for calling up and saving assigned values
6	TTY3 tool interface for connecting an operator's PC
7	Slide switch S, for resetting the operating system
8	BLN LED. Status indicator for the BLN communication
9	RUN LED. Operating indicator
10	ERR LED. Indicator for plant and device disturbances (if programmed)
11	(-) positioning button. Decreases the value in the selected display field.
12	(+) positioning button. Increases the value in the selected display field.
13	Keyhole for opening the front cover.

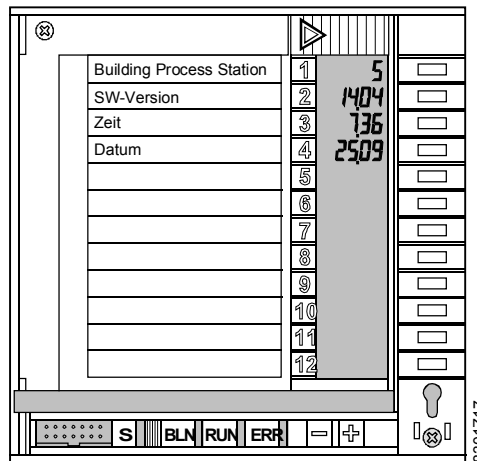
## 2.3 Basic Operations

### 2.3.1 Initial Status

#### Front Card

When installed the Building Process Station is generally set up to show the Standard Front Card with its four display lines:

- Line 1: Number of the Building Process Station
- Line 2: SW version
- Line 3: Current time
- Line 4: Current date (alternates approx. every 3 sec. between day.month and year)



#### Note

A Standard Card, supplemented with plant-specific display lines, can also be used as the Front Card.

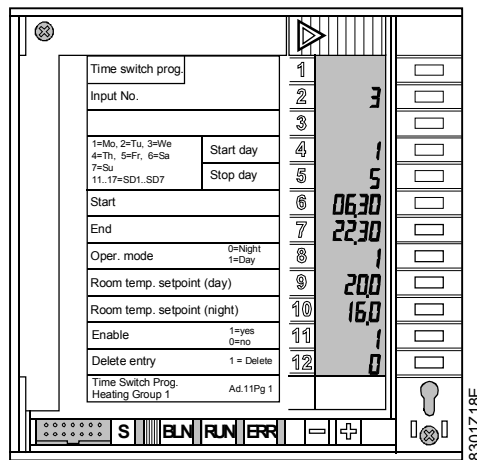
#### The first Project Card

You work with the plant's Project Card when operating the plant.

Activating the Project Card:

- Open the front cover of the Building Process Station by turning its key counter-clockwise. The card that is visible then becomes active.

Example below: The first Project Card is for the time switch program of heating group 1.



#### Note

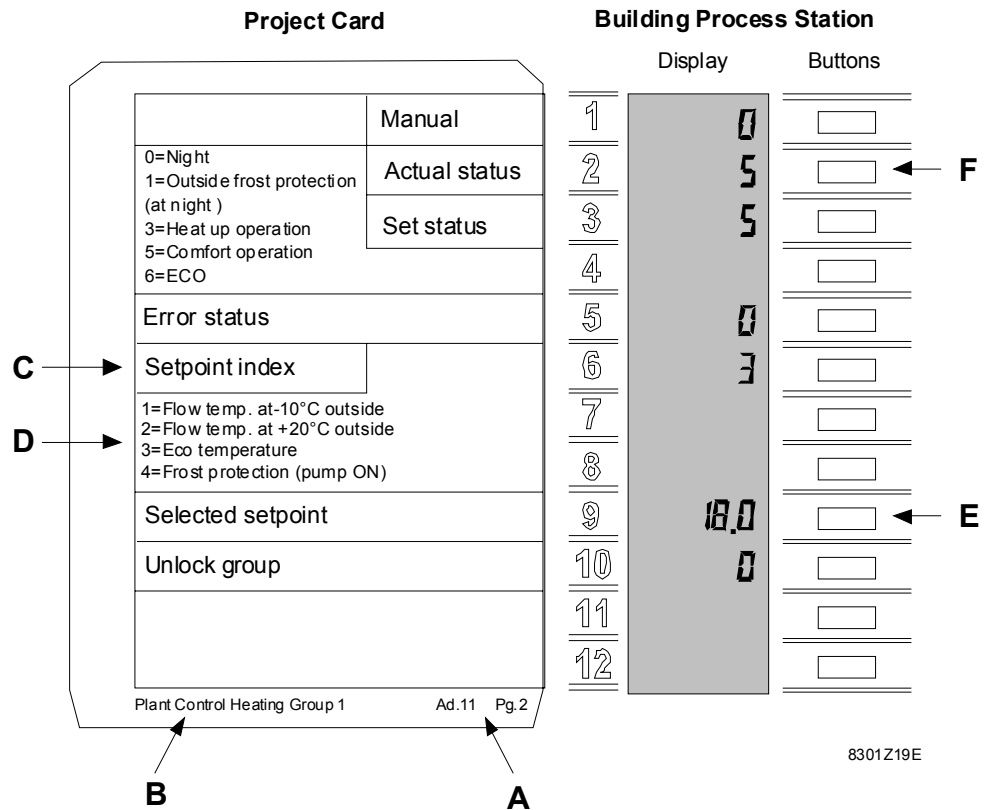
If, after opening the cover, you see values displayed that do not belong to the card, then refer to Error Displays on page 2-6.

## 2.3.2 Project Card Layout

### View

The following drawing shows an example, left to right, of a Project Card, a simplified drawing of the display field and the operating buttons of the Building Process Station.

*Note:* For illustrative purposes, the Project Card below does not show the barcode for the optical reader of the Building Process Station.



### Explanation

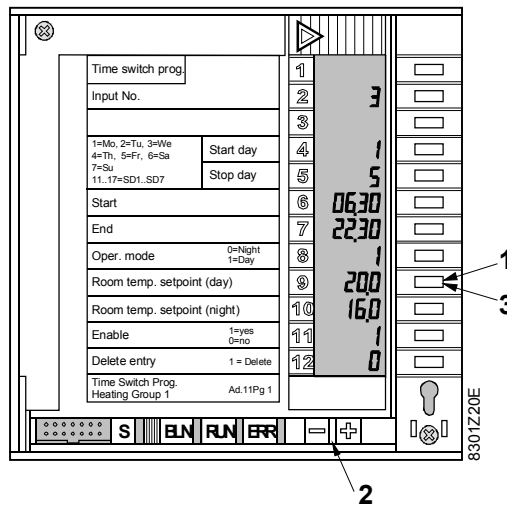
The Project Card layout and how it relates to the operating elements of the Building Process Station is as follows:

Letter	Explanation
A	Address of the Building Process Station and number of the card page. Here: Address 11, Card page 2
B	Identifier of the function and the group that can be serviced with the card. Here: Plant control, Heating group 1
C	The larger typefaces on the card indicate those functions and values that can be modified or displayed. These correspond to the display and key lines of the BPS. Here: Setpoint index, Line 6
D	The smaller typeface indicates those setpoints that can be selected for the associated function. Here: Flow temperature at -10.C outside, etc.
E	Example of a value that can be adjusted: Eco temperature 18.0°C (Setpoint index 3)
F	Example of a pure display line: Actual value 5 = Comfort operation

## 2.3.3 Change values

### Procedure

You can change the process value assigned to a Project Card as follows:



Step	Operation	How to execute	Result / Comment
1	Select line	Press the line button	Display of this line flashes
2	Adjust value	Keep pressing the [ + ] or [ - ] positioning button below the display field until you have reached the value you desire.	For fine adjustments, tap the button desired.
3	Accept value	Press the previously selected line button again.	The display stops flashing: The BPS has accepted the new value.

### Note

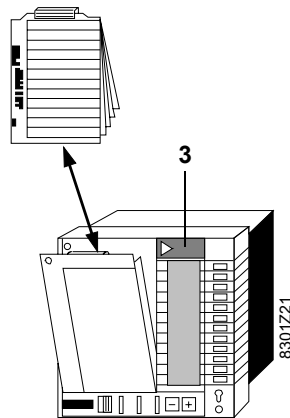
You can only change those values that change to a flashing display after pressing the associated line button, such as , e.g., operating status, setpoints, etc.

You can abort a started entry by pressing another line button. The BPS then keeps the previous setting.

## 2.3.4 Change POP Cards

### Principle

If you wish to access the elements listed on another card, then bring that card to the front.



### Procedure

To change cards, proceed as follows:

Step	Description
1	Move the slide lock (3) in the direction of the arrow to eject the <b>card holder</b> .
2	Remove the <b>card set</b> and bring the card side with the desired operations to the front.
3	Insert the <b>card set</b> into the card holder from the top with the desired card facing you. Then close the card holder by gently pressing on the upper edge.  <b>Important:</b> Uniformly insert the cards towards the bottom. This ensures that the optical card reader can read and interpret the barcode on the front-most card.
4	<b>Check</b> whether the card has been identified. You can see this as follows: The black squares flash several times on all the lines after which the new values and functions of the card side are displayed.

### Error displays

After the new card has been inserted, possible errors are reported by the Building Process Station as follows:

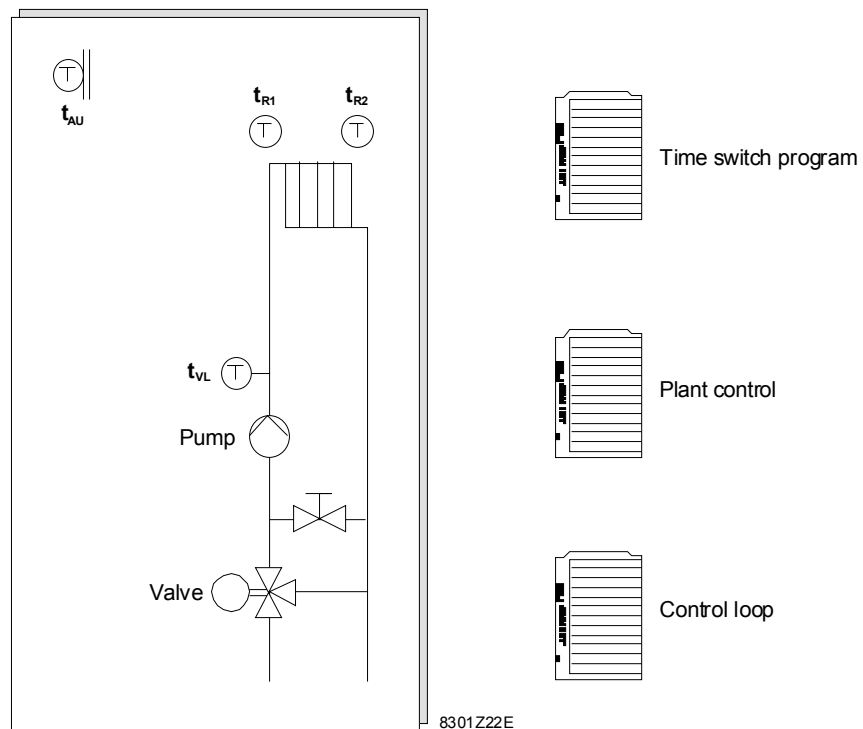
Display	Error
<b>PPPP</b> flashes on the topmost line	The barcode could not be correctly read. => Try again.
<b>EEEE</b> flashes on the uppermost two lines	Invalid, inappropriate card side.

## 2.4 Operating Example

### 2.4.1 The Plant

#### Block diagram

The following block diagram shows the layout of a plant example and the associated Project Cards:



#### Explanation

This example deals with a heating group as part of an entire plant. The most important elements and functions are:

- Plant / pump control
- Regulating the flow temperature  $t_{VL}$  according to
  - Outside temperature  $t_{AU}$
  - Room temperature (average measurement with sensors  $t_{R1}$  and  $t_{R2}$ )
- Control and regulation of the group using an Optimum Start Stop Program.

Three Project Cards were made up for this heating group for:

1. Set / change time switch program
2. Plant control: Enter setpoints
3. Control loop: Read / interpret actual value.

The sequence of the Project Cards is chosen depending on their expected frequency of use.

The following pages describe the operating possibilities with individual cards.

## 2.4.2 Time switch program

### Project Card 1

Using Project Card 1 of this example, you can read and modify the time switch catalog of the heating group as well as the associated room temperatures. Possible values are shown in the display below:

Project Card		Building Process Station	
Time switch prog.		Display	
Input No.:		1	
		2	1
		3	
1=Mo, 2=Tu, 3=We 4=Th, 5=Fr, 6=Sa	Start day	4	1
7=Su 11..17=SD1..SD7	Stop day	5	5
Start		6	07.00
End		7	19.00
Oper. mode	0=Night 1=Day	8	1
Room temp. setpoint (day)		9	21.00
Room temp. setpoint (night)		10	16.00
Enable	1=yes 0=no	11	1
Delete entry	1=Delete	12	0
Time Switch Prog. Heating Group 1 Ad.11 Pg.1		8301Z23E	

### Explanation

Using this card you can read and change the following values:

Value	Explanation
Entry No.	Number of the relevant entry in the time switch catalog of this plant. Each entry defines a switching program.
Start Day	The start day of the entry as a number, here 1 for Monday.
Stop Day	The stop day of the associated entry, here 5 for Friday. (This is a week switching program).
Start	The assignment start for the affected heating zone.
End	The assignment end for the affected heating zone.
Operating Mode	The operating mode for the day and assignment times selected above, here 1 = day.
Day Setpoint	The setpoint assigned to day operating mode of room temperature.
Night Setpoint	The setpoint assigned to night operating mode of room temperature.
Enable	Is the entry enabled for processing? Here 1 = Yes.
Delete entry	With 1 you can delete the displayed entry number (the associated switching program).

### Note

You can find more detailed information for the time switch program in section 5.3.

## 2.4.3 Plant Control

### Project Card 2

Using Project Card 2 of this example, you can read and modify the operating status of plant control as well as the setpoint for the flow temperature. Possible values are shown in the display below:

Project Card		Building Process Station	
	Manual	1	0
0=Night 1=Outside frost protection (at night ) 3=Heat up operation 5=Comfort operation 6=ECO	Actual status	2	5
	Set status	3	5
		4	
Error status		5	0
Setpoint index		6	3
1=Flow temp. at -10°C outside 2=Flow temp. at +20°C outside 3=Eco temperature 4=Frost protection (pump ON)		7	
		8	
Selected setpoint		9	18,0
Unlock group		10	0
		11	
		12	

8301Z24E

### Explanation

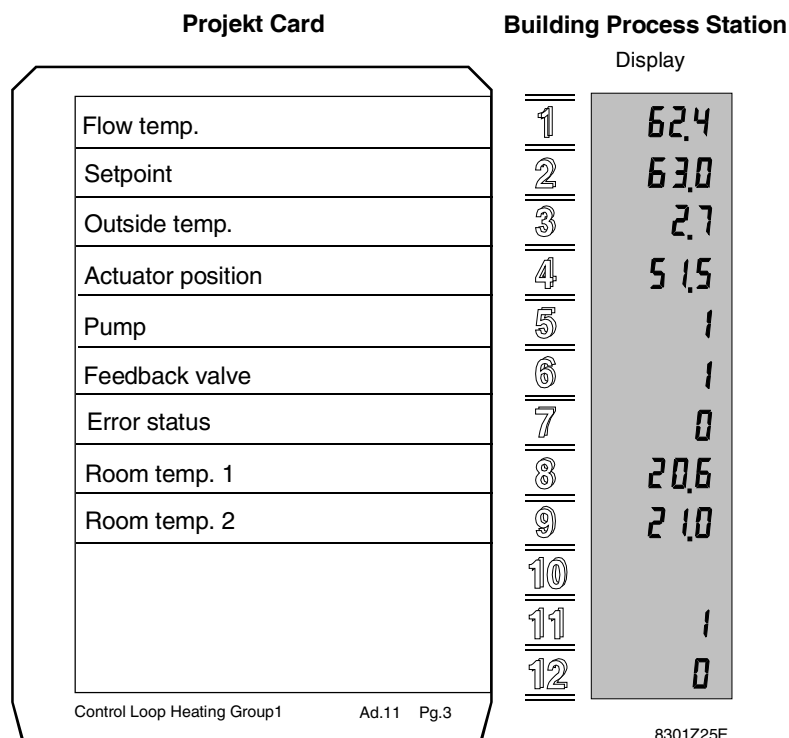
Using this card you can read or modify the following values:

Value	Explanation
Manual	A plant usually runs in automatic operation (display = 0). You can switch to manual operation by entering a 1 on this line.
Actual status	The current plant operating mode is displayed, here 5 for comfort operation.
Nominal status	In manual operation, you can enter the operating modes shown in lower case, such as, e.g., 6 for operation ECO.
Error condition	Display 0: Plant running OK Other values: The meanings are explained on the back of the card or in the plant description.
Setpoint index	Select the desired setpoint for changing. Here 3 for Eco temperature.
Selected setpoint	The setpoint selected above can be read and changed (here 18).
Enable group	For enabling the group following a disabling error (only possible if the disturbance no longer exists).

## 2.4.4 Control loop

### Project Card 3

You can read the main value of the control loop of the heating group using Project Card 3 of this example. The purpose is to allow supervision and possible error diagnosis. The following display shows possible values.



### Explanation

This card is used for supervision and diagnosis. The values are read-only.

Value	Explanation
Flow temperature	The measured flow temperature of the heating group (actual value).
Setpoint	The momentary setpoint calculated from the information on Card 2 for the flow of this heating group.
Outside temp.	The measured outside temperature.
Positioning actuator position	The current preset position for the positioning actuator of this group.
Pump	Switching command to the circulation pump (1=ON, 0=OFF).
Feedback	Pump feedback signal (1 = available, 2 = unavailable).
Fault condition	Display 0: Pump running OK. Other values: The meanings are explained on the back of the card or in the plant description.
Room temperature 1	Momentary value for one of the room temperature sensors (part of the average measurement).
Room temperature 2	Momentary value of the other room temperature sensor (part of the average measurement).

# 3. Menu Driven Operation

## 3.1 Summary

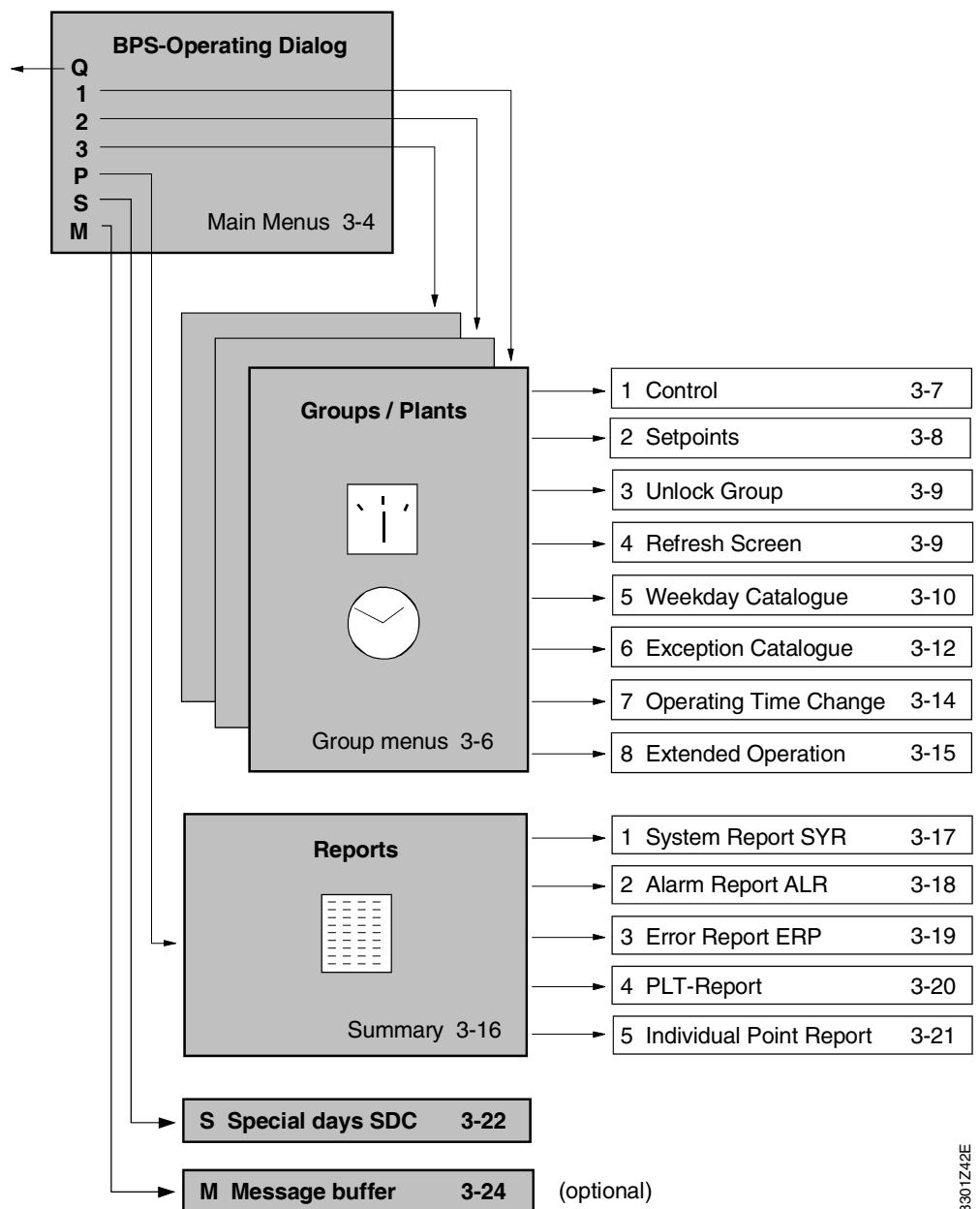
### 3.1.1 Menu Guide

#### Menu format

The following diagram shows the menu format for the operating dialog . It provides you with:

- Group-oriented menus, such as, e.g., the setpoint and the weekday catalogue
- Menus valid for all groups, such as reports and special day catalogues

Follow the diagram until you find the operation you need. The number to the right of each menu box is the page number associated with the information.



8301242E

#### Before you start:

- Take note of the differences in the operating possibilities for KEY1 / KEY2, page 3-2.
- Study the three basic operations, page 3-3.

### 3.1.2 Differences Between KEY1 / KEY2

#### Introduction

Menu-driven operation of the Building Process Station offers a number of intervention possibilities for dialog proceedings. In the following table you can see which are available depending on whether you have KEY1 or KEY2 as an access level. The symbols in the figure mean:

- o = read only
- + = read and write

#### Operating with groups

The various service plants are shown as groups.

Intervention possibilities	KEY1	KEY2	Page
- AUTO/MANUAL control	o	+	3-7
- Setpoints / defaults	+ / o	+ / +	3-8
- Parameters	+	+	3-8
- Enable groups	o	+	3-9

#### Process time switch catalogue

Each group/plant has its own time switch catalogues in the BPS.

Intervention possibilities	KEY1	KEY2	Page
- Weekday catalogue	o	+	3-10
- Exception catalogue	o	+	3-12
- Operating time change	o	+	3-14
- Special day catalogue	o	+	3-22

#### Expanded operation

This menu is optional and only available if specified as part of the delivery.

Intervention possibilities	KEY1	KEY2	Page
- List group reports (for example)	o	o	3-15

#### Reports listen

The reports listed refer to all groups/plants in the BPS

Intervention possibilities	KEY1	KEY2	Page
- List System report SYR	o	o	3-17
- List Alarm report ALR	o	o	3-18
- List Error report ERP	o	o	3-19
- List PLT report	o	o	3-20
- Generate individual point reports	o	o	3-21

#### Message buffer

This menu is **optional** and only available if specified as part of the delivery.

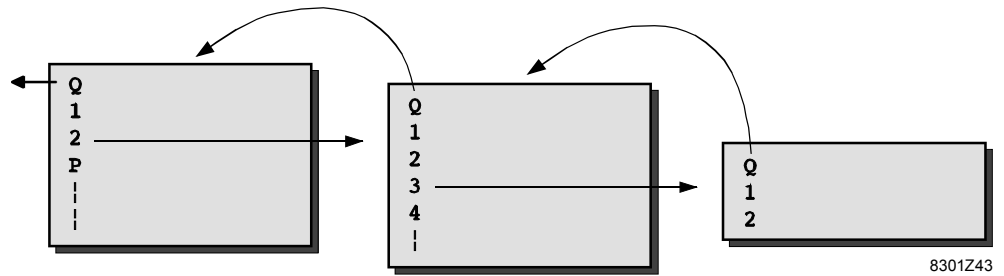
Intervention possibilities	KEY1	KEY2	Page
- call up saved messages	o	o	3-24

### 3.1.3 The 3 Basic Operations

#### 1. Select menus

You do menu operation for the Building Process Station using dialogs. You move through the menus as follows:

- Select the leading character for the submenu you desire
- Enter <Q> (Quit) to exit the menu or the operating dialog



*Example:* **2 <Enter>** leads to the next submenu

#### 2. Change status

If statuses can be changed in a menu, the dialog shows the possibilities. Select by entering the relevant number.

```
Q          Quit
1          Auto
2          Manual
Select ...:
```

*Example:* **1 <Enter>** selects automatic operation

#### 3. Modify value

If a menu point allows modifying a value, the dialog shows the possibilities, such as, e.g.,:

```
Setpoints (continue with Enter)
Heating: = 20 degrees C :
Cooling: = 22 degrees C : 24
```

Operations:

- Value unchanged **<Enter>**
- Change value **nn <Enter>** (nn = new value)

*Example:* **24 <Enter>** presets a new cooling setpoint

#### Inadmissible entries

If you make an inadmissible entry, it will be intercepted and you will be requested to make a valid entry. Depending on the situation, this occurs as follows:

– **Cannot be executed** or **Entry error** message

– Repeat the request such as e.g., **Select:**

– Repeat the affected entry line, such as, e.g., in the weekday catalogue:

**Days (MO, TU, WE, TH, FR, SA, SU) = MO..FR :**

This appears following entry of a non-defined abbreviation (e.g., WD instead of WE)

## 3.2 Main Menu

### 3.2.1 Entering

#### Login

You login to a Building Process Station in two steps as follows:

1. **HELLO** <CR>
2. **KEY: Password** <CR>

#### Note

You will not see the characters of your password as you enter them.

#### Main menu

After you have entered a valid password for KEY 1 or KEY2 and after a short system message, BPS directly starts the main menu of the operating dialog:

```
OpD      11:41:53      B P S   O P E R A T I N G   D I A L O G   17-JUL-1996/WE
MENU      Q           End
          1           Group1      North heating
          1           Group2      South heating
          2           Group3      Office air cond.
          P           Reports
          S           Special days SDC
          M           Message buffer
OpD      11:41:53      B P S   O P E R A T I N G   D I A L O G   17-JUL-1996/WE
Select . . . :
```

#### Menu point meaning

The individual menu points of the main menu have the following meanings:

Menu point	Designation	Meaning
Q	End	Quits the operating program
1	Group 1 North heating	Selects the submenus for group 1 (here "North heating"): Plant control and time switch catalogues.
2	Group 2	As above, except for "South heating"
3	Group 3	As above, except for "Office air cond."
P	Reports	Selects the submenus for the various reports: reports for Alarm, System, Error, PLT and Individual points.
S	Special days	Selects the special day catalogue (it is valid for <b>all</b> groups in the current BPS).
M	Message buffer (optional)	Allows access to the message buffer (only when included in the delivery and enabled by the person responsible for the system)

#### About the examples

The examples in this User's Guide are simplified to some extent. There will thus be some discrepancies between the data specified and the current system.

## 3.2.2 Access Protection and Time-out

### Concept

The Building Process Station has two protective mechanisms against unauthorized operation: access protection and access time-out. These function as follows:

- **Access protection:**

Access protection prevents unauthorized access to the Building Process Station. It has three operating levels with associated access rights. Each operating level has a password assigned to it (KEY1 to KEY3). Access protection is set up by the person responsible.

- **Access time-out:**

In order to protect the Building Process Station from unauthorized use even if you forget to logout, a factory-installed time-out of approximately 60 seconds is set as default. The time-out activates if:

- you no longer make entries
- the Building Process Station is not transferring data to the terminal.

### BPS response

Depending on the time-out cause, the Building Process Station responds as follows:

Cause	Response
Wrong password	– The Building Process Station responds: <code>ACCESS LEVEL=0 : ILLEGAL KEY</code>
Access time-out expires	– If in the submenus, the operating dialog jumps one menu back – If in the main menu, the operating dialog is quit and the Building Process Station responds with e.g., <code>BYE AT WE, 17-JUL-1996, 15:59:07</code>
Access attempt after time-out	– The Building Process Station responds with: <code>TSK203 ACCESS LEVEL=0 : NO ACCESS</code>

## 3.2.3 Quitting

### Command

If you enter **<Q>** while in the main menu, you will quit the operating dialog.

The Building Process Station acknowledges this with the following message:

```
BUILDING PROCESS STATION PRV2.64 V14.04 @BPS.NO.=11 ($013) @BPS.INV=5339
BYE AT WE, 17-JUL-1996, 16:17:43
```

### Note

After quitting, you no longer have direct access the Building Process Station. To make further changes, you must login again by entering **HELLO** followed by your valid password.

## 3.3 Plant Operation

### 3.3.1 Group Menu

#### Group concepts

A plant in VISONIK is generally referred to as a group. During engineering, each plant receives a group number and a plant name. In the following example, we use group 2 with the designation "AirCondOffice". Any operating access that relates to the current plant is performed via the group menu.

```

OpD      16:18:42      B P S   O P E R A T I N G   D I A L O G   17-JUL-1996/WE
MENU
Q          Quit
1          Control Auto          Actual Status   Off
2          Setpoints/Defaults
           Heating              20 / 12 degrees C
           Cooling              22 / 28 degrees C
2          Parameter
           Supply Air, minimum  16          degrees C
3          Unlock Group
4          Refresh Screen
5          Weekday Catalogue     WDC
6          Exception Catalogue   EXC
7          Todays Op. Time Change RTC
U          Group Report
OpD      16:18:13      B P S   O P E R A T I N G   D I A L O G   17-JUL-1996/WE
Select ...:

```

#### Menu point

The individual points of the group menu initiate the following functions:

Menu point	Designation	Function
Q	Quit	Quit and return to main menu
1	Control	Read / modify the plant's operating status e.g., auto, manual, plant ON/OFF, etc.
2	Setpoints/Defaults Heating Cooling	Read / modify the heating and cooling setpoints and defaults of the associated plant
2	Parameter	Read / modify additional setpoints and parameters. Here: limit value minimum of the supply air temperature
3	Unlock Group	To enable the plant after an interlock fault
4	Refresh Screen	Initiates interrogation of current values from the BPS (special for current status after enabling)
5	Weekday Catalogue	Read / edit the weekday catalogue of the affected plant
6	Exception Catalogue	Read / edit the exception day catalogue of the affected plant
7	Todays Op. Time Change	Entry of a one-time operating time change
U	Group Report	Example of an expanded operation (option)

## 3.3.2 Control

### Terminology

Control refers to the technique of entering the default conditions associated with the operational status of the plant. We distinguish between "auto" and "manual."

- **Auto:** The Building Process Station itself calculates the operational status of the plant in accordance with the defined criteria.
- **Manual:** You select from the values offered for the current operational status.

### Examine actual status

The actual status is displayed in the group menu. In the following example, the settings for Control group 2 is "Auto" and the actual status is "Off".

```
OpD      16:18:42      B P S   O P E R A T I N G   D I A L O G   17-JUL-1996/WE
MENU                                           * Group 3  AirCondOffice *
Q        Quit
1        Control   Auto                Actual Status   Off
```

### Select control

Example: The control should be changed to "Manual" and the setpoint default set to "On". The following choices appear after you enter <1> in the group menu:

```
Q        Quit
1        Auto
2        Manual
Select ...:
```

### Preset operating status

Had you entered <2> in the previous menu, the possible operating statuses would be offered with manual control. In this example, these would be:

```
Q        Quit
1        Off
2        On
3        Heating
Select ...:
```

If you enter <2> here, the "On" plant state is requested.

### Check new value

After successful selection, the dialog returns to the group menu and displays the acknowledgment: As shown below, the target and actual statuses are now set to "On":

```
OpD      16:19:28      B P S   O P E R A T I N G   D I A L O G   17-JUL-1996/WE
MENU                                           * Group 3  AirCondOffice *
Q        Quit
1        Manual Control                Actual Status   ON
                                           Set Status     ON
```

#### Note:

If the manual control "ON" is not possible because of a safety requirement in the Building Process Station, then the "Off" condition of the actual status remains unchanged.

### 3.3.3 Setpoints / Defaults

#### Terminology

Setpoints, defaults and parameters are preselected values for the service plant. They can be read and, depending on access rights, can also be modified.

- **Setpoints:** Main setpoints of the plant during the occupancy time
- **Defaults:** Main setpoints of the plant outside the occupancy time
- **Parameters:** Additional serviceable setpoints of the associated plant.

#### *Two operating menu variations:*

- The "Parameter" title appears by itself in the group menu under point 2 for plants without an Optimum Start Stop Program (OSTP).
- For those plants with OSTP, the "Setpoints/Defaults" appears first in the group menu under point 2. If there are additional serviceable values, they follow under an additional point 2 with a "Parameter" title.

#### Read values

The momentarily valid main setpoints and parameters of the plant are displayed under point 2 of the group menu. The following is an example for a plant with OSTP:

2	<b>Setpoints/Defaults</b>		
	Heating	20 / 12	degrees C
	Cooling	22 / 30	degrees C
2	<b>Parameter</b>		
	Min. Supply Air	15	degrees C

#### Modify values

After you have selected menu point 2, new entries are offered one after another by the operating dialog:

**Setpoints (Continue with Enter)**

Heating = 20 degrees C :

Cooling = 22 degrees C : 24

**Defaults (Continue with Enter)**

Heating = 12 degrees C : 14

Cooling = 30 degrees C :

**Parameter (Continue with Enter)**

Min. Supply Air = 15 degrees C : 17

The following values remain unchanged in the above dialog:

- Heating setpoint = 20°C / Cooling default = 30°C

On the other hand, the following values were changed:

- Cooling setpoint to 24°C / Heating default to 14°C / Min. supply air to 17°C

#### Check new values

Following entry or acknowledgment of the last value, the operating dialog returns to the group menu and displays the new setpoints:

2	<b>Setpoints/Defaults</b>		
	Heating	20 / 14	degrees C
	Cooling	24 / 30	degrees C
2	<b>Parameter</b>		
	Min. Supply Air	17	degrees C

### 3.3.4 Unlocking Groups

#### Concept / purpose

The plant may be automatically switched off because of an interlock fault, such as, for example, FROST. After eliminating the problem, you can use the enable command to return to normal operation.

```
3          Unlock Group
```

#### Enabling

Selecting menu point 3 unlocks the plant / group without further entries. After the entry, the following message appears:

```
Group 2 Unblocked !
```

The operating dialog then returns to the group menu.

### 3.3.5 Refresh screen

#### Purpose

Information on the actual status of a plant is always in the form of a momentary snapshot of relationships existing at the time of menu call up. Values that subsequently change are **not** automatically updated. If you desire the latest values, call them up by selecting menu point 4.

```
OpD      16:18:42      B P S   O P E R A T I N G   D I A L O G   17-JUL-1996/WE
MENU
Q        Quit
1        Control Auto          Actual Status   On <=====
2        Setpoints/Defaults
        Heating                20 / 12 degrees C
        Cooling                22 / 28 degrees C
2        Parameter
        Supply Air, Minimum    16      degrees C
3        Unlock Group          <=====
4        Refresh Screen
```

#### Note

Update with this menu point mainly after unblocking. The idea is to check whether the actual status of the plant is again set to "On."

### 3.3.6 Read Weekday Catalogue

#### Weekday catalogue concept

The weekday catalogue WDC is valid at any one time for one plant/group. It has time entries that:

- are dependent on the day of the week (weekdays, Saturdays and Sundays)
- are always repeatedly executed.

#### Select Weekday catalogue

Procedure:

1. Select the desired group/plant in the main menu
2. Enter <5> "Weekday catalogue WDC" in the group menu

#### Two variations

The appearance and meaning of the weekday catalogues that appear can vary. They depend on whether the plant involved has or does not have the Optimum Start Stop Program (OSTP) as follows:

##### 1. **Plants without OSTP:**

The times in this weekday catalogue WDC refer directly to the operating commands of plant control. The WDC is recognizable through the LCM1 parameter (Local Command 1 = Local Operating Command 1).

OpD	13:57:32	WEEKDAY CATALOG WDC	23-JUL-1996/TU					
No	Day	Destination 1 plant 1	Start time..Stop time		Parameters			
			LCM1	PAR1	PAR2	PAR2	PAR4	
1	MO..FR		!07:00..20:00	!1	!. !.	!. !.	!. !.	
2	SA		!07:00..17:00	!3	!. !.	!. !.	!. !.	

##### 2. **Plants with OSTP:**

Only those occupancy times are entered in this weekday catalogue for which the comfort temperature setpoints are valid for the OSTP program. The WDC is recognizable through the ZOCC parameter (Zone Occupied).

OpD	13:58:24	WEEKDAY CATALOG WDC	23-JUL-1996/TU					
No	Day	Destination 2 plant 2	Start time..Stop time		Parameter			
			ZOCC					
1	MO..FR		!08:00..18:00	!1	!. !.	!. !.	!. !.	
2	SA		!08:00..16:00	!1	!. !.	!. !.	!. !.	

#### Entry fields of the weekday catalogue

The entry fields of the weekday catalogues have the following meanings:

Entry field	Meaning
No.	Line number of the entry
Days	Weekdays, for which the time entry on the affected line is valid
Start time Stop time	Within these times the following values entered are valid for the parameter (above fig. : For LCM1 or ZOCC)
!	! before the line number: the entry is not active ! elsewhere: these are separators
Parameters	A maximum of five values are entered here per plant. They are assigned individual parameters.

### 3.3.7 Modify Weekday Catalogue

**Example:**  
**Modify stop time**

The procedure for modifying entries in the weekday catalogue does not depend on whether the plant has the Optimum Start Stop Program. We wish to make the following modifications to the weekday catalogue shown below:

Entry No..1, Change stop time from 22:00 to 20:00.

No.	Days	Start time..Stop time		Parameters				
		LCM1	PAR1	PAR2	PAR2	PAR4		
1	MO..FR	!08:00..22:00	!1	!.	!.	!.	!.	
2	SA	!08:00..16:00	!3	!.	!.	!.	!.	

```

MENU      Q      Quit
          1      List
          2      Entries/Modify
          3      Delete
Select... : 2
Entry (1 to 255, Q = Quit) = 1 : 1
  
```

**Switching time**

After selecting menu point 2 for "Entries/Modify" and entry 1, the operating dialog acknowledges the selection and requests the days, and the start and stop times:

```

Entry = 1 to change
Days (MO,TU,WE,TH,FR,SA,SU) = MO to FR :
Start time = 08:00:00 :
Stop time = 22:00:00 : 20:00
  
```

The stop time has been changed from 22:00 to 20:00.

**Set state**

The plant set statuses to which the entry can be assigned now appear:

```

          0      Off
          1      On
          3      Heating
Select... : 1
Activation = 1 :
  
```

**Activation**

After entering the set status, the activation can be set. It can be:

- **Activation = 1:** The entry is activated, i.e., executed
- **Activation = 0:** The entry is not activated (! is in front of the entry number)

In the example, set status "On" was requested and the activation "1" acknowledged.

**Check entry**

Following the return with Quit <Q> you can check the modified entry:

No.	Days	Start time..Stop time		Parameters				
		LCM1	PAR1	PAR2	PAR2	PAR4		
1	MO..FR	!08:00..20:00	!1	!.	!.	!.	!.	
2	SA	!08:00..16:00	!3	!.	!.	!.	!.	

**New entries**

You can create entries as explained above except that instead of an existing entry, you select a new one (e.g., 3):

```

Entry (1..255, Q=Quit) = 2 : 3
  
```

### 3.3.8 Read Exception Catalogue

#### Exception catalogue concept

The Exception Catalogue EXC is valid at any one time for a plant/group and holds the time entries for special events such as courses, meetings, special business hours on public holidays, etc. These entries are:

- date dependent
- one-time or repeat annually

#### Select exception catalogue

Procedure:

1. Select the desired group/plant from the main menu
2. Enter <6> "Exception catalogue" in the group menu

#### Two variations

The appearance and meaning of the exception catalogues that appear can vary. They depend on whether the plant involved has or does not have the Optimum Start Stop Program (OSTP) as follows:

##### 1. **Plants without OSTP:**

The times in this Exception Catalogue EXC refer directly to the operating commands of plant control. The EXC is recognizable through the LCM1 parameter (Local Command 1 = Local Operating Command 1).

OpD	14:05:26	EXCEPTION - CATALOG EXC					23-JUL-1996/TU			
Destination 1 plant 1										
No.	Start date..Stop date	Start time..Stop time	Parameters							
			LCM1	PAR1	PAR2	PAR2	PAR4			
1	04-JUL-1996	!08:00..22:00	!0	!.	!.	!.	!.	!.	!.	!.

##### 2. **Plants with OSTP:**

Only those occupancy times are entered in this exception catalogue for which the comfort temperature setpoints are valid for the OSTP program. The EXC is recognizable through the ZOCC parameter (Zone Occupied).

OpD	14:06:43	EXCEPTION - CATALOG EXC					23-JUL-1996/TU			
Destination 2 plant 2										
No.	Start date .Stop date	Start time..Stop time	Parameters							
			ZOCC							
2	01-AUG-1996..16-AUG-1994	!08:00..16:00	!0	!.	!.	!.	!.	!.	!.	!.

#### Entry fields of the exception catalogue

Entry fields of the exception catalogue have the following meanings:

Entry field	Meaning
No.	Line number of the entry
Start date.. Stop date	Date or period of the entry
Start time..Stop time	The values subsequently entered are valid within these times for the parameter (here LCM1 or ZOCC).
!	! before the line number: The entry is not active ! elsewhere: These are separators
Parameters	A maximum of five values are entered here per plant. These are assigned individual parameters.

### 3.3.9 Modify Exception Catalogue

**Example:**  
**New entry**

The procedure for modifying the entries in the exception catalogue does not depend on whether the plant has the Optimum Start Stop Program.  
In the following exception catalogue a new entry should be made for:

- 25th and 26th December 1996, 08:00..18:00
- plant control "OFF"

No.	Start date ..Stop date	Start time..Stop time	Parameters				
			LCM1	PAR1	PAR2	PAR2	PAR4
1	04-JUL-1996	!08:00..22:00	!0	!.	!.	!.	!.
2	01-AUG-1996..16-AUG-1994	!08:00..16:00	!0	!.	!.	!.	!.

```

MENU          Q          Quit
              1          List
              2          Enter/Change
              3          Delete
Select... : 2
Entry (1..255, Q=Quit) = 1 : 3
  
```

**Switching times**

After selecting menu point **2** for "Entries/Modify" and a new entry **3**, the operating dialog acknowledges your selection and requests data:

```

Entry = 3 new entries
Start date = 05-AUG-1996 : 25-DEC-1996
Stop date = 05-AUG-1996 : 26-DEC-1996
Start time = 10:04:08 : 08:00
Stop time = 10:04:08 : 18:00
  
```

The data required above is entered here.

**Set status**

Plant set statuses now appear. Entries can be assigned to them:

```

          0          Off
          1          On
          3          Heating
Select... :0
Activation = 1 :
  
```

**Activation**

After entering the set status, the activation can be set. It can be:

- **Activation = 1:** The entry is activated, i.e., is executed
- **Activation = 0:** The entry is not activated (! is in front of the entry number)

In the example above, set status "Off" was requested and activation "1" acknowledged.

**Check entry**

Following the return with Quit <Q>, you can check the modified entry:

No.	Start date ..Stop date	Start time..Stop time	Parameter				
			LCM1	PAR1	PAR2	PAR2	PAR4
1	04-JUL-1996	!08:00..18:00	!0	!.	!.	!.	!.
2	01-AUG-1996..14-AUG-1996	!08:00..18:00	!0	!.	!.	!.	!.
<b>3</b>	<b>25-DEC-1996..26-DEC-1996</b>	<b>!08:00..18:00</b>	<b>!0</b>	<b>!.</b>	<b>!.</b>	<b>!.</b>	<b>!.</b>

### 3.3.10 Enter Operating Time change

#### Operating time change concept

Die Operating time change is valid at any one time for a group/plant. With it you can:

- lengthen or shorten the active time entry for the current day.

The existing time programs must not be changed in the process.

#### Select operating time change

Procedure:

1. Select the desired group/plant in the main menu
2. Enter <7> "Operating time change" in the group menu
3. Enter the desired Stop time change, e.g., **+1:30**
4. Verify the activation with <Enter>

```
7      Operating Time Change BZV
U      Group report
OpD    08:08:26      B P S   O P E R A T I N G   D I A L O G   03-OCT-1996/TH
Select... : 7
Stop time change = +00:00 : +1:30
Activation = 1 :
```

Following a successful entry, the operating dialog returns to the group menu.

#### Note

The following important notes **supplement** the above instructions:

Subject	Note
Shorten operating time	Enter as explained above, but with a <b>minus sign</b> in front of the desired time. Example: <b>-1:00</b> for an Operating time shortening of 1 hour.
Entry validity	Activating the entered Operating time change is valid only for the <b>current day</b> . It is then reset.
No active entries	If, at the moment of entry, no time switch catalogue entry is active for associated group, the operating dialog displays: "TSP no entry active" You can nevertheless enter a stop time change as described above. <b>Important:</b> Check whether an active and valid entry exists in the WDC or EXC switch catalogues for this group for this day. If not, the intended change will have no affect. (cf. drawings A and B in section 4.3.5).

### 3.3.11 Extended Operation

**Concept**

Extended operation offers:

- additional, specific menu points in the operating dialog.

*Note:* Extended operation is an option. It is only available if specified in the order and configured by engineering.

**Example:  
Group reports**

If a large number of data points are collected in a Building Process Station having various plants, it may be desirable for the sake of overview to:

- list a report per plant/group with only the associated points.

The "group report" menu point **U** was included in the example for this purpose.

```

7      Operating time change BZV
U      Group report
OpD    08:08:26      B P S   O P E R A T I N G   D I A L O G   03-OCT-1996/TH
Select... : U
    
```

**Selection and output**

The listing is started with the **<U>** entry in the group menu of the affected plant, in this example, a supply air plant for the "Kitchen Canteen."

```

SYR      11:50:37      R E P O R T - S T A R T      07-MAR-1996/FR
.  MW    $d011'000 ( 1.1 2R1K)  Supply air temperature
          07-MAR-1996 12:28:39 AI=19.8 °C
.  ML    $d011'010 ( 5.1 4D20R)  Frost protection unit
          11-JAN-1996 09:42:05 DI=ON
.  STU   $d011'020 ( 9.1 2Y10S_M) Air heater valve
          07-MAR-1996 12:27:45 AO=42 %
.  SBR1  $d011'030 ( 13.1 2Q250_M) Supply air fan
          07-MAR-1996 07:30:05 DO=1      RM=1      MACT=0
.  PLT   $d011'PLT1 (DISP=0)    Group 1 BPS $11 Kitchen Canteen
          07-MAR-1996 07:30:02 PSTA=ON
.  RGB   $d011'RGB1 (SEQ=0)     BPS $11 Supply air regulator
          03-MAY-1996 00:00:00 PRV/SPV=19.8/20 degrees C      ASEQ=0
SYR      11:50:38      R E P O R T - E N D E      07-MAR-1996/FR
Continue with Enter :
    
```

**Explanation**

This report lists all the data points of the plant that are important to you. There are two lines per data point. The following items provide an overview:

Item	Example: MW point in above report
Point Designation	Supply air temperature
Main value of the point	AI=19.8°C (measured value for the supply air temperature)
Point state	A period (.) at the beginning of the line means that the status is OK.

**Additional information**

You can find additional information on the subject of reports in sections 3.4 and 5.4.

## 3.4 Report Lists

### 3.4.1 Summary

#### Menu

If you enter <P> in the main menu, the report menu appears:

```
OpD      11:42:16      B P S   O P E R A T I N G   D I A L O G   14-JUN-1996/FR
MENU      Q           Q u i t
          1           S y s t e m   r e p o r t s   S Y R
          2           A l a r m   r e p o r t s   A L R
          3           E r r o r   r e p o r t s   E R P
          4           P L T   r e p o r t
          5           I n d i v i d u a l   p o i n t   r e p o r t
OpD      11:42:16      B P S   O P E R A T I N G   D I A L O G   14-JUN-1996/FR
Select ...:
```

#### Reports

The individual reports provide you with the following information:

Menu point	Report	Information
1	System report SYR	The System report SYR lists: <ul style="list-style-type: none"><li>- All I/O points and function points of the affected Building Process Station (BPS).</li></ul> <p><i>I/O points are:</i></p> <ul style="list-style-type: none"><li>- All data points that are connected with the Building Process Station via I/O modules.</li></ul> <p><i>Function points are:</i></p> <ul style="list-style-type: none"><li>- BPS internal data blocks without direct connection to I/O modules. They are nevertheless responsible for executing plant functions such as, e.g., the RGB regulation blocks.</li></ul>
2	Alarm report ALR	The Alarm report lists: <ul style="list-style-type: none"><li>- Those I/O points and function points that are in an error or warning state.</li></ul>
3	Error report ERP	The Error report lists: <ul style="list-style-type: none"><li>- Those I/O points and function points that are in an error state.</li></ul>
4	PLT report	The PLT report lists: <ul style="list-style-type: none"><li>- The available plant PLT points and their operating statuses.</li></ul>
5	Individual point report	The Individual point report lists: <ul style="list-style-type: none"><li>- The status of a specific point that you interrogated.</li></ul>

#### Note

Section 5.4 contains supplementary information about report formats.

### 3.4.2 System Report SYR

#### Report contents

The System report SYR lists the following points of the Building Process Station:

- all I/O points
- all function points

#### Selection and example

To start listing the system report, enter

**<1>** in the menu for the report.

The following example shows a report excerpt with typical data points:

```

SYR          11:50:37          R E P O R T - S T A R T          02-MAY-1996/TH
.   ML   $d009'000 ( 1.1 2D20)   North boiler
          03-MAY-1996 05:53:21 DI=1
.   SBR1 $d009'010 ( 5.1 2QD)   Supply air fan
          03-MAY-1996 07:30:05 DO=1           RM=1           MACT=0
-   MW   $d009'021 ( 9.2 2R1K)   Supply air temp.
          03-MAY-1996 11:50:37 AI=15.8 °C           <LOL=18
.   STU  $d009'030 (13.1 2Y10)   LE valve
          03-MAY-1996 11:50:37 AO=40 %
.   PLT  $d009'PLT1 (LZON=1)     Plant 1 BPS $1 1st floor south
          03-MAY-1996 11:50:37 PSTA=1
.   RGB  $d009'RGB1 (SEQ=0)     BPS $1 1st floor south
          03-MAY-1996 00:00:00 PRV/SPV=19.8/20 degrees C           ASEQ=0
.   ZON  $d009'ZON1 (DISP=0)    Zone 1 BPS $1 1st floor south
          03-MAY-1996 11:50:37 ZOSTA=2
    
```

#### Note

The report displays a one-time record of the current statuses without any ongoing update. Thus, whenever you wish to see the latest values, you must repeat the interrogation.

#### Example explanation

Section 5.4.1 gives you more information about report formats. The following is an explanation of the points used in the above example:

Point	Parameter	Explanation
ML	DI=1	Signal with a value (digital input) DI = 1. Meaning here: The north boiler is switched on.
SBR1	DO=1 RM=1 MACT=0	Single speed switch command, value DO=1, supply air fan. Feedback RM (of supply air fan) is available. Manual command inactive.
MW	AI=15.8 °C <LOL=18	The measurement (analog input) is 15.8°C. The measurement is below the limit value (LOL) of 18°C.
STU	AO=40%	The positioning signal (analog output) for the valve is 40%
PLT1	PSTA=1	Plant point with status (PSTA) = 1 = ON
RGB1	PRV/SPV =19.8/20°C	Regulator block of plant 1st floor south with: process value (measurement) PRV = 19.8°C / setpoint SPV = 20°C.
ZON1	ZOSTA=2	Zone 1 (=OSTP program of plant 1) is in the active phase of ZOSTA=2, Optimum Start Heating.

#### Note

Since system reports can be very extensive, we recommend simultaneous output to a printer (VISOTOOL-Editor / <F10> / Record / Printer: On).

### 3.4.3 Alarm Report ALR

#### Report contents

The Alarm report ALR lists:

- all points, that have an **error status** or **warning status**.

*Error status:*

Data point in a defined error state

Example: The "0" status of a status point corresponds to the "Frost" error state.

*Warning status:*

Data point outside the defined warning limit.

Example: The measurement of a cooling room is below the warning value of 7°C.

#### Selection and example

You can start the list by entering

**<2>** in the menu for the reports.

The following example is an excerpt with some typical data points:

ALR	09:32:28	R E P O R T - S T A R T			24-MAY-1996/FR
* ML	\$d009'000 ( 1.1 2D20)	North boiler			
	27-MAY-1996 08:27:15	DI=0		DI=EST	
!MA SBR1	\$d009'010 ( 5.1 2QD)	Supply air fan			
	03-MAY-1996 07:30:05	DO=1	RM=1	MACT=1	
- MW	\$d009'020 ( 9.1 2R1K)	Room temperature			
	24-MAY-1996 11:50:19	AI=16.9 °C		<LOWL=18	
- MW	\$d009'021 ( 9.2 2R1K)	Supply air temperature			
	27-MAY-1996 09:14:26	AI=14.2 °C		<LOL=17	

#### Note

The report displays a one-time record of the current statuses without any ongoing update. Thus, whenever you wish to see the latest values, you must repeat the interrogation.

#### Example explanation

Section 5.4.1 gives you more information about report formats. The following is an explanation of the points used in the above example:

Point	Parameter	Explanation
ML	* DI=0	This status point is in the error state The status signal (digital input) has the signal value of DI=0
SBR1	!MA DO=1 RM=1 MACT=1	Warning status: The switching output is set to manual. The switching command (digital output) DO is 1=ON The feedback from the supply air fan is available Manual operation is enabled by: - the AUTO/MAN switch on the I/O module, or - the remote/local switch in the mechanical plant.
MW	- AI=16.9 <LOWL=18	The measurement has exceeded the lower warning limit. The current measurement (analog input) is 16.9°C The value is below the warning limit (LOWL) of 18°C
MW	- AI=14.2°C <LOL=17	The measurement MW has gone below the lower limit. The current measurement (analog input) is 14.2°C The value is below the defined limit value (LOL) of 17°C

### 3.4.4 Error Report ERP

#### Report contents

The Error report ERP lists:

- all points, that are in an **Error state** (also referred to as fault condition).

Example: The status "0" of a status point corresponds to the "Frost" error state.

#### Selection and Example

Listing is started by entering

**<3>** in the menu for the reports.

The following example shows two typical examples:

```

ERP          09:32:28          R E P O R T - S T A R T          24-MAY-1996/FR
*   ML   $d009'000 ( 1.1 2D20)   North boiler
          27-MAY-1996 08:27:15 DI=0          DI=EST
-   MW   $d009'021 ( 9.2 2R1K)   Supply air temp.
          27-MAY-1996 09:14:26 AI=14.2 °C   <LOL=17
ERP          09:32:28          R E P O R T - E N D          24-MAY-1996/FR
Continue with Enter :
    
```

#### Note

The report displays a one-time record of the current statuses without any ongoing update. Thus, whenever you wish to see the latest values, you must repeat the interrogation.

#### Example explanation

Section 5.4.1 gives you more information about report formats. The following is an explanation of the points used in the above example:

Point	Parameter	Explanation
ML	* DI=0	This status point is in the error status. The status signal (digital input) has the signal value of DI=0
MW	- AI=14.2°C <LOL=17	The measurement MW has exceeded the lower warning limit. The current measurement (analog input) is 14.2°C The value is below the defined limit value (LOL) of 17°C

### 3.4.5 PLT Report

#### Report contents

The PLT Report lists:

- all available PLT plant points

#### Selection and example

Start the listing by entering:

<4> in the menu for the reports.

The following report shows two typical examples:

```
SYR          11:50:37          R E P O R T - S T A R T          02-MAY-1996/TH
.   PLT  $d052' PLT1      (LZON=1)      Heating group west
          01-JUL-1996  14:37:01  PSTA=ON
*   PLT  $d052' PLT2      (DISP=10)     Canteen ventilation
          01-JUL-1996  14:37:01  PSTA=OFF      LKD=1      LOCK=0      STOP=1      FBER=1
SYR          11:50:38          R E P O R T - E N D          02-MAY-1996/TH
Continue with Enter :
```

#### Note

The report displays a one-time record of the current statuses without any ongoing update. Thus, whenever you wish to see the latest values, you must repeat the interrogation.

#### Example explanation

Section 5.4.1 gives you more information about report formats. The following is an explanation of the points used in the above example:

Point	Parameter	Explanation
PLT1	.	The point is in standard operation
	(LZON=1)	This plant point is assigned to a zone (Optimum Start Stop program)
	PSTA=ON	The plant operating status is ON
PLT2	*	The point is in a fault state
	(DISP=10)	The plant point is assigned to dispatcher point 10 (one dispatcher point controls other plant elements)
	PSTA=OFF	The plant operating status is OFF
	LKD=1	There is an interlocked fault
	STOP=1	Plant fault
	FBER=1	Error in the feedback signal.

#### Note

See chapter 5 for more detailed information about *Plant point PLT*.

### 3.4.6 Individual Point Report

#### Report contents

The individual point lists:

- information about a specific selected point

#### Selection and example

Make the following entries to select the point you need:

1. **<5>** in the menu for the reports
2. **Point address**, in accordance with the request via the operating dialog

In the following example you requested a report for the point having address \$011:

```
Address ($/@) (Q=Quit) $000 : $011
.   SBR1 $d052'011 ( 6.1 2QD)   BPS $1 1st floor south plants text 1
      24-MAY-1996 11:50:19 DO=0
Address ($/@) (Q=Quit) $000 : Q
```

#### Note

The report displays a one-time record of the current statuses without any ongoing update. Thus, whenever you wish to see the latest values, you must repeat the interrogation.

#### Explanation

Section 5.4.1 gives you more information about report formats. The following is an explanation of the points used in the above example:

Information	Explanation
.	The point is in standard operation
SBR1	There is a point of type SBR1 (switching command, single speed) at the entered address of \$011.
\$d052'011	Corresponds to the point address entered, with prefixed BPS address (052)
( 6.1 2QD)	The corresponding I/O module address is 6.1 An I/O module of type 2QD is installed at this location.
DO=0	The switching command is 0, i.e., not pending.
24-MAY 1996 11:50:19	The point status was last modified on this date and at this time, that is, the shutdown command was issued.

#### Note

See chapter 5 for more detailed information about *point types and control data points*.

## 3.5 Special Day Catalogue SDC

### 3.5.1 Read Special Day Catalogue

#### Terminology

The **Special Day Catalogue SDC** is valid for all groups of a Building Process Station. It is used for public holidays, vacations, special occasions, etc. It holds entries that

- assign arbitrary weekdays or special days to a date.

The time switch program takes those entries in the weekday catalogue into account in that the weekday or special day in question is executed.

*Example:* A holiday that falls on a weekday is declared to be a Sunday.

Days assignable in the Special Day Catalogue SDC:

- **Weekdays:** Monday to Sunday MO..SU
- **Special days:** 7 special days SD1..SD7

#### Select special day catalogue

You start the listing of the existing entries by entering

**<S>** in the main menu.

Example:

```
OpD      14:56:42      SPECIAL DAY - CATALOG SDC      14-JUN-1996/FR
                No.  Start date ..Stop date  Day type
                1   25-DEC-1996..27-DEC-1996  !SU
                2   01-JAN                      !SD1
OpD      11:56:51      SPECIAL DAY - CATALOG SDC      14-JUN-1996/FR
MENU      Q           Quit
                1           List
                2           Edit
                3           Delete
Select ...: 2
```

#### Interpretation of the entries

The entries in the above example have the following meanings:

Entry No.	Meaning
1	The 3 weekdays from the 25th December 1996 to the 27th December 1996 have been defined as Sundays (SU). This means that these days in the weekday catalogues of all groups will be processed as though they were Sundays, thus, e.g.: – no entries will be executed – reduced operation instead of normal operation.
2	1st January is annually processed as special day SD1. On this day, those entries that are flagged with SD1 will be taken into account in all weekday catalogues.

### 3.5.2 Change Special Day Catalogue

**Example:**  
**new entry**

The following new entry should be made in the following Special Day Catalogue SDC:

- Declare that the 1st May is to become a Sunday on an annual basis
- Do not activate the new entry yet

```
OpD      14:56:42      SPECIAL DAY - CATALOG SDC      14-JUN-1996/FR
          No. Start date..Stop date Day type
          1  25-DEC-1996..27-DEC-1996 !SU
          2  01-JAN                          !SD1
OpD      11:56:51      SPECIAL DAY - CATALOG SDC      14-JUN-1996/FR
MENU      Q          Quit
          1          List
          2          Edit
          3          Delete
Select ...: 2
```

After entering <2> in the selection menu, the details are added with the following dialog:

```
Entry (1..255, Q=Quit) = 1 : 3
```

```
Entry No. = 3 to edit
```

```
Start date = 05-AUG-1996 : 1-MAY-1996
```

```
Stop date = 05-AUG-1996 : 1-MAY-1996
```

```
Day type (MO,TU,WE,TH,FR,SA,SU,SD1..SD7) = SD1 : SU
```

```
Activation = 0 : 0
```

```
Entry (1..255, Q=Quit) = 4 : Q
```

**Check entry**

Following return with Quit <Q> you can check the new entry:

```
OpD      14:56:42      SPECIAL DAY - CATALOG SDC      14-JUN-1996/FR
          No. Start date..Stop date Day type
          1  25-DEC-1996..27-DEC-1996 !SU
          2  01-JAN                          !SD1
          !3 01-MAY-1996                      !SU
OpD      11:56:51      SPECIAL DAY - CATALOG SDC      4-JUN-1996/FR
```

**Note**

An exclamation point (!) in front of an entry number means that this entry is not active (activation = 0).

Entries in the special day catalogue only have meaning if the corresponding entries exist in the weekday catalogues (cf. section 5.3.2).

## 3.6 Message Buffer

### Concept

In the message buffers of the Building Process Station

- messages are stored and output automatically or upon call-up.

**Note:** The "Message Buffer" menu is optional. It is available only if specified in the order and set up by engineering.

### Message types

Various message types can be set up, such as, e.g.,

- messages about a specific data point
- operating hours count
- statistical messages for 2-3 values, such as, e.g., temperatures or energy counters
- etc.

### Menu

You can call up the message buffer menu by entering

**<M>** in the main menu.

The following figure shows the submenu for calling up the stored messages:

```
OpD      11:41:53      B P S   O P E R A T I N G   D I A L O G   20-MAR-1996/WE
MENU      Q           Q u i t
          1           A l l   m e s s a g e s
          2           M e s s a g e s   o f   s e l e c t e d   p r i o r i t y
          3           M e s s a g e s   o f   s e l e c t e d   t y p e s
          4           M e s s a g e s   o f   s e l e c t e d .   p o i n t s
OpD      11:41:53      B P S   O P E R A T I N G   D I A L O G   20-MAR-1996/WE
Select . . . :
```

After you have selected the desired menu points, the associated messages are listed.

### Example of a message

The following example shows a buffer message for the selected point, here the operating hour count for burner 1:

```
+-----+-----+-----+-----+-----+-----+-----+-----+
Prio Date      Time  TEL  ADR      TXI      Mt  BPS012      WE 17-JUL-1996 11:41:53
 2 31-JAN-96 23:59:00 0 $000 SB Burner 1 3  OHR:      253.7h      SCC:    3
 2 29-FEB-96 23:59:00 0 S000 SB Burner 1 3  OHR:      278.4h      SCC:    3
+-----+-----+-----+-----+-----+-----+-----+-----+
Delete messages (j/n) . . . :
```

### Explanation

Entries of interest to you have the following meanings:

Entry	Meaning
Date / Time	Date and time when the message was logged
ADR / TXI	Address, point type and designation of the point logged
OHR: / XXX.Xh	Accumulated operating hour count at the message log time

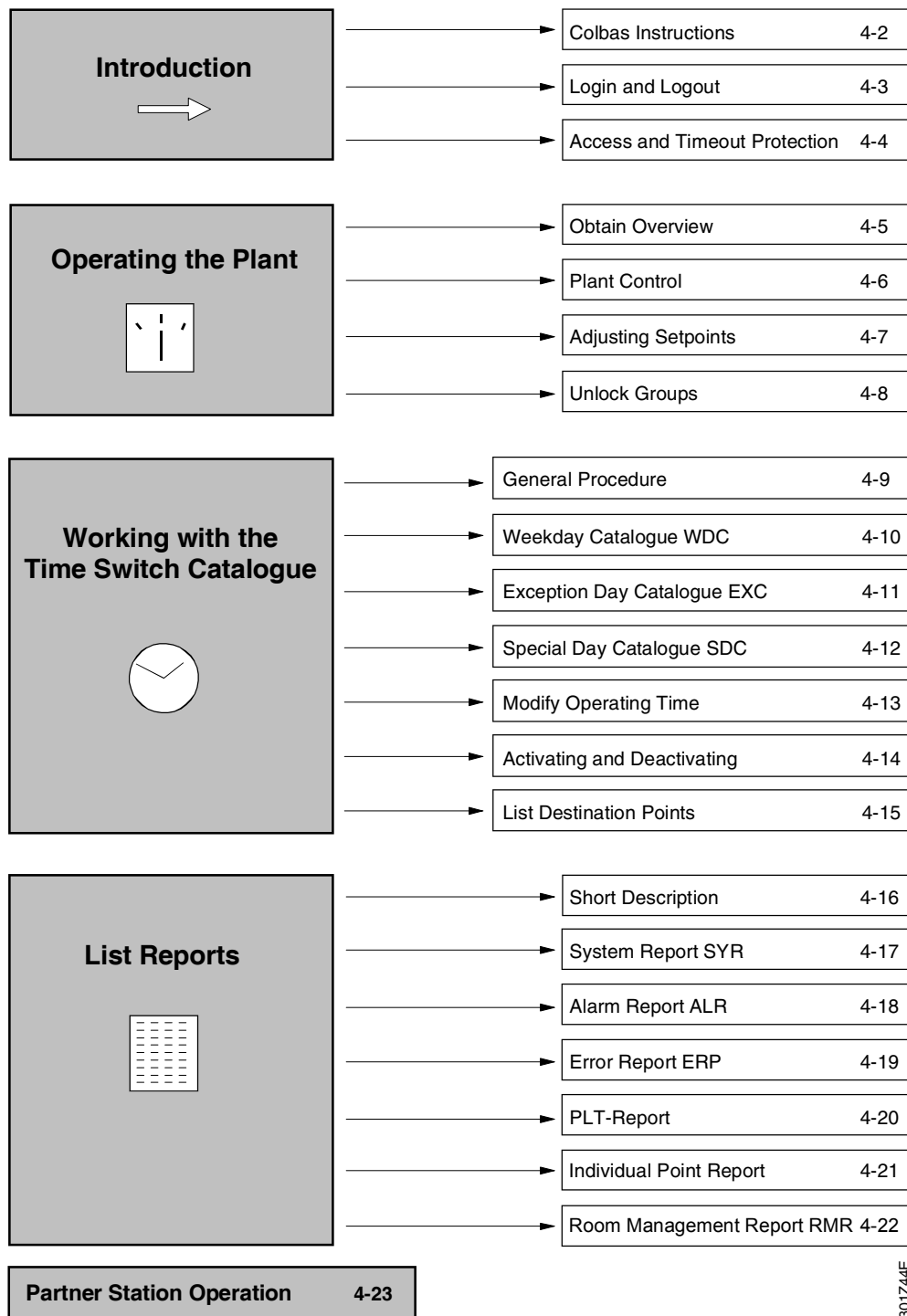
# 4. Operating with COLBAS Instructions

## 4.1 Introduction

### 4.1.1 Summary

#### Chapter layout

The following diagram shows the operating possibilities covered by the COLBAS instructions. The numbers to the right are the associated page numbers of this chapter.



830124ME

## 4.1.2 COLBAS Instructions

### What does COLBAS mean?

COLBAS stands for **C**ontrol **O**riented **L**anguage for **B**uilding **A**utomation **S**ystems. This language was developed by Landis & Gyr from the well-known BASIC programming language to satisfy the needs of measurement, control and regulation technology.

### Format of the COLBAS operating commands

A COLBAS operating command always begins with a **keyword**. The keyword specifies which instruction should be executed. Additional elements, such as, e.g., point or line numbers, often follow the keyword.



### Examples

Two examples of operating commands follow,

- with keyword alone
- with keyword plus additional element.

Operating Command	Result
<b>SYR</b>	This command with keyword alone results in the output of a complete system report.
<b>LIST \$mmp</b>	This command with an additional element lists the data of the element, here the module point with the address \$mmp

### Input conventions

Observe the following rules when working with the dialog for the Building Process Station:

- End each entry sequence using the <RETURN> or <ENTER> key. We refer to this key as <CR> here. Where it is obvious that <CR> is needed, we will not refer to it.
- Separate the additional element from the keyword with a space.
- You can enter the operating command in upper or lower case letters.

### Presentation

To differentiate between inputs and outputs, this chapter applies the following typeface formats for text and screen representations:

- *Italics* for your entries to the Building Process Station
- Standard for outputs / responses from the Building Process Station

### Control commands

There are supplements to the COLBAS commands, namely control commands for special actions. These commands are created with control characters in that you must press and hold the <Ctrl> key along with another key.

Example:

**<CTRL> <S>**

When you hold down both the <Ctrl> and <S> keys at the same time, you generate the command to stop a listing of e.g., a system report.

### Difference between KEY1 / KEY2

We will use the command set available at the KEY2 level in this document. Some of these command are also available at the KEY1 access level. Which commands are available at each level is given in the summary of the operating commands, section 4.6.

### 4.1.3 Login and Logout

---

#### Login

Perform the following two steps to log into the Building Process Station:

1. **HELLO** <CR>
2. **KEY: Password** <CR>

Comment: You will not see your password characters on the screen when you enter them.

---

#### BPS response

Following input of a valid password—here for KEY2—the operating task of the Building Process Station responds with:

```
BUILDING PROCESS STATION PRV2.64 V14.04 @BPS.NR=11 ($013) @BPS.INV=4491
ACCESS LEVEL=2      AT MO, 22-JUL-1996, 11:57:51
```

#### TSK203 operating task

The COLBAS programs in the Building Process Station are referred to as tasks (TSK). Besides the freely programmable application programs, there are a number of fixed tasks assigned. One of them is Task 203 which processes the operations on the TTY3 tool interface.

---

#### Logout

If you wish to block access by other persons while you are absent from the controls or if no timeout has been installed, logout from the Building Process Station with:

**BYE** <CR>

The Building Process Station quits the operating task and responds with:

```
BUILDING PROCESS STATION PRV2.64 V14.04 @BPS.NR=11 ($013) @BPS.INV=4491
BYE      AT MO, 22-JUL-1996, 12:28:48
```

#### Note

To regain entry to the Building Process Station after quitting the operating task, you must again login with **HELLO** and re-enter your password.

---

#### Access to other interfaces

The login with **HELLO** and logout with **BYE** only holds for the interface to which the terminal is connected.

Example:

Entering **HELLO** to the TTY3 tool interface does not allow access to the TTY1 and TTY2 interfaces.

## 4.1.4 Access and Timeout Protection

### Terminology

The Building Process Station has two protective mechanisms against unauthorized operation: access protection and access timeout . They function as follows:

- **Access protection:**

Access protection prevents unauthorized access to the Building Process Station. It has three operating levels with associated access rights. Each operating level has a password assigned to it (KEY1 to KEY3). Access protection is set up by the person responsible.

- **Access timeout:**

In order to protect the Building Process Station from unauthorized use even if you forget to logout, a timeout of from 2 to 60 minutes can be set by the person responsible for the system. The timeout activates if:

- you no longer make entries
- the Building Process Station is not transferring data to the terminal.

### BPS response

Depending on the timeout cause, the Building Process Station responds as follows:

Cause	Reaction
Wrong password	– The Building Process Station responds: <b>ACCESS LEVEL=0 : ILLEGAL KEY</b>
Operating task busy	– If you login with your PC via TTY3, but the operating task is already active via another interface (e.g., for a terminal on TTY2), the following message appears: <b>ACCESS LEVEL=0 : OPERATION_TASK OCCUPIED</b>
Access timeout expires	– The Building Process Station responds with: (Example): <b>BBT AT MO, 22-JUL-1996, 13:18:39</b> <i>Note: BBT means <b>Bye By Timeout</b></i>
Access attempt after timeout	– The Building Process Station responds with: <b>TSK203 ACCESS LEVEL=0 : NO ACCESS</b>
Unauthorized operation	– Example: Upon entry of the <i>PRINT</i> command in KEY1, the Building Process Station responds with: <b>ACCESS LEVEL=1 : NO ACCESS</b>

## 4.2 Operating the Plant

### 4.2.1 Obtain overview

---

#### The "Task" concept

COLBAS programs are referred to as tasks. Tasks are independent programming units. They can:

- function in parallel and independently from one another
- can be individually started and stopped.

During engineering, the control and regulation functions for service plants assigned to a BPS are realized with a series of associated tasks and then loaded to the BPS.

---

#### Existing tasks

If you wish to obtain an overview of the tasks available, then enter the *DIR* command after login. The Building Process Station responds with a directory of available tasks. Insofar as operation is concerned, plant tasks are the most interesting. Example:

##### **DIR**

```
TSK10 : -- Heat generation
TSK20 : -- Heating, North group
TSK30 : -- Heating, South group
TSK40 : -- Air conditioning, offices
TSK193 : -- Message buffer
```

---

#### Classification

If the engineering is carried out in accordance with L&G standards, the following classifications as a rule are used:

Task 10	Plant 1	Plant point PLT1	Zone ZON1	Destination DST1
Task 20	Plant 2	Plant point PLT2	Zone ZON2	Destination DST2
Task 30	Plant 3	Plant point PLT3	Zone ZON3	Destination DST3

etc.

*Note:* You can find additional information about the PLT plant points, ZON zones and the DST destinations in chapter 5.

---

#### Active tasks

If you enter command *ACT*, the Building Process Station lists those tasks that are currently active. Example:

##### **ACT**

```
TSK10 : (1) ACTIVE
TSK20 : (1) ACTIVE
TSK30 : (1) ACTIVE
TSK40 : (1) ACTIVE
TSK193: (1) NOT ACTIVE
```

---

#### Note

The current project documentation offers a complete overview, in particular of:

- the contents
- the data point list of the individual groups / plants.

## 4.2.2 Plant Control

### Concept

Control refers to the technique of entering the default operating statuses for the associated plant. We distinguish between "auto" and "manual" as follows:

### Terminology

- **Auto:** The Building Process Station calculates the operational status of the plant in accordance with the defined criteria.
- **Manual:** You can preset the operating status.

### Example

A plant is running in automatic mode. The current status is "Off."  
For testing, you wish to switch the plant to "Heating."

The individual point report for the PLT2 plant point of the affected plant responds:

```
prot plt2
.   PLT  $d004' PLT2      (DISP=1)      Canteen ventilation
                                01-JUL-1996  14:37:01  PSTA=OFF      LKD=0      LOCK=0      STOP=0      FBER=0
```

Procedure to manually select the operating status:

1. Actively set the manual operating mode for the plant point: Parameter **MACT**
2. Enter the manual operating mode you desire: Parameter **MCOM**

### Dialog with BPS

The dialog with the Building Process Station for this procedure is as follows:

Dialog line	Commentary
<i>PLT2.MACT</i>	Interrogation of the current status of MACT
TSK203 0	The operating task of BPS responds with MACT=0, i.e., MCOM is ignored—automatic operation is active.
<i>PLT2.MACT=1</i>	Activate manual operation with parameter MACT=1
<i>PLT2.MACT</i>	Check the status of MACT
TSK 203 1	The BPS acknowledges with 1; the entry was accepted
<i>PLT2.MCOM=3</i>	Entry of the desired operating status. For this plant, the choices are: 1 = Off, 2 = On, 3 = Heating
<i>PLT2.MCOM</i>	Check the status of MCOM
TSK203 3	BPS responds with 3: the entry was accepted

### Check status

To check, the individual point report of the plant point is listed again:

```
prot plt2
!MA  PLT  $d004' PLT2      (DISP=1)      Canteen ventilation
                                01-JUL-1996  14:38:25  PSTA=3      WHY=1      CPRI=4
```

Meaning of the parameters in this report:

!MA            The plant point is set to manual operation  
PSTA=3        The operating status is 3 = heating  
WHY=1        The reason is manual intervention  
CPRI=4        The resulting priority is 4

### Do not forget

After you have successfully completed the test, be sure to return plant control to "automatic"!

## 4.2.3 Adjusting Setpoints

### Terminology

The following terminology is used in VISONIK in conjunction with setpoints:

For plants with Optimum Start-Stop-Program (OSTP):

- **Setpoints:**

= Setpoints during occupancy time with parameters

**SPC** for cooling

**SPH** for heating

- **Defaults:**

= Setpoints outside of occupancy time, with parameters

**SPCD** for cooling

**SPHD** for heating

- **Parameters**

Additional setpoints, such as minimum limit value for supply air, etc.

**PAR1..PAR8**

For plants without Optimum Start-Stop-Program (OSTP), all setpoints are defined using parameters PAR1 to PAR8.

### Display plant and zones

Proceed as follows if you wish to read the existing setpoints and parameters:

1. Display plant tasks (see section 4.2.1)
2. Select desired plant / task, e.g., *TSK30*
3. Display zones with *DIR ZON*

```
tsk30
TSK30 EDITOR

dir zon
@ZON3 ; -- Heating, South Group
```

### Change setpoints and defaults

The following example shows you how to modify the SPH setpoint for the room temperature from 21°C to 20.5°C during the occupancy time. Procedure :

Dialog line	Commentary
ZON3.SPH	Interrogate the current temperature
TSK30 21	Response of the Building Process Station (21°C = current SPH)
ZON3.SPH:=20.5	Enter new value (20.5°C)
ZON3.SPH	To check: Interrogate new value
TSK30 20.5	Response of the Building Process Station (20.5°C = new SPH)

### Modify parameters

In principle, the procedure is the same as that above for the setpoints and defaults, but here you work with the PLT plant point.

Example:

For an air conditioning system, the setpoint PAR2 parameter is assigned to cooling. You want to adjust it from 23°C to 24°C. The COLBAS dialog then appears as follows:

```
dir plt
@PLT4 ; -- Office air cond.
plt4.par2
TSK40 20
plt4.par2:=21
plt4.par2
TSK40 21
```

## 4.2.4 Unlock Groups

**Concept / purpose** If the plant is automatically shutdown because of an interlock fault, you can restart the plant following elimination of the fault using the Enable command.

**Example** Your plant with plant point PLT2 has been interlocked as a result of an immediate interlocking fault, such as activation of the frost protection thermostat.

The alarm report responds with:

```
ALR      05:50:37      R E P O R T - S T A R T      03-JAN-1996/WE
*   PLT  $d003'PLT2    (DISP=1)    Canteen ventilation
      03-JAN-1996  05:49:22  PSTA=OFF    LKD=1    LOCK=1    STOP=0    FBER=0
ALR      05:50:37      R E P O R T - E N D      03-JAN-1996/WE
```

Explanation:

- The plant with plant point PLT2 was shutdown PSTA=OFF
- As a result of an immediately occurring interlock fault LOCK=1
- The plant is interlocked. LKD=1

**Procedure** Do the following to restart the plant:

1. Check to ensure that the fault has been eliminated:

```
prot plt2
*   PLT  $d003'PLT2    (DISP=1)    Canteen ventilation
      03-JAN-1996  06:28:22  PSTA=OFF    LKD=1    LOCK=0    STOP=0    FBER=0
```

This is the case, because LOCK=0.

2. Restart by entering the command:

***PLT2.LKD=0***

3. Check the plant status:

```
prot plt2
.   PLT  $d003'PLT2    (DISP=1)    Canteen ventilation
      03-JAN-1996  06:29:48  PSTA=ON     LKD=0    LOCK=0    STOP=0    FBER=0
```

Result:

- The point status is normal (.)
- The plant has been restarted LKD=0
- It is running again PSTA=ON

## 4.3 Working with the Time Switch Catalogue

### 4.3.1 General procedure

#### Obtain overview

If you would like an overview, you can list a directory of all DSTn destination points of the time switch catalogue TSC. Do this with the command:

#### **DIR TSC**

#### Example

```
DIR TSC
TSC
DST1          ; -- North heating group
DST2          ; -- Office ventilation
```

#### List time switch catalogue

Time switch catalogues are available for the DSTn destination points indicated. You can see them using the *LIST* command as follows:

#### **LIST DSTn.WDC**

#### **LIST DSTn.EXC**

#### Example

List the weekday catalogue WDC for the DST1 destination point "North heating group":

```
LIST DST1.WDC
.DST1.WDC
 1   MO..FR          !08:00..18:00 !1   !.   !.   !.
!2   SA              !08:00..16:00 !0   !.   !.   !.
EXIT
```

#### Edit time switch catalogue

To edit a time catalogue of a certain destination start with the following:

#### **EDIT DSTn.WDC**

#### **EDIT DSTn.EXC**

The rest of the procedure is identical for all time switch catalogues:

Step	Entry	Sequence
1	<i>EDIT DSTn.WDC</i>	Call up the DST editor to edit the desired time switch catalogues (.WDC or .EXC)
2	Entry	Enter line number, time entries, values
3	<i>LIST</i>	List the time switch catalogues to check the new entries
4	<i>EXIT</i>	Quit the DST editor / Return to operating task

#### Special day catalogue SDC

In contrast to the above information, the commands for listing and editing the special day catalogues are as follows:

#### **LIST SDC or EDIT SDC**

#### Note

Section 5.3 contains important information about the time switch program, the destination points and the time switch catalogue.

## 4.3.2 Weekday Catalogue WDC

### List catalogues

List the current switching times and values of the desired weekday catalogue before processing. Example:

```
LIST DST1.WDC
.DST1.WDC
 1 MO..FR          !08:00..22:00 !1    !.    !.
!2 SA             !08:00..16:00 !0    !.    !.
EXIT
```

### Change switching times

When changing switching times, newly enter the affected line and then list the new entry for checking purposes. Example:

You wish to change the switching time of **line 1** for the above catalogue to **07:00** to **20:00**.

```
EDIT DST1.WDC
DST1.WDC EDITOR
1 MO..FR, 07:00..20:00, 1

LIST
.DST1.WDC
 1 MO..FR          !07:00..20:00 !1    !.    !.
!2 SA             !08:00..16:00 !0    !.    !.
```

### Important!

- The affected line must always be **completely** entered—not just the changes. If, for example, value 1 following the time entry were left out, the hours in this field would be "." i.e., the output value would no longer be defined.
- The commas serve as separators. The BPS changes these to exclamation points when you output with *LIST*. Note: You need not enter the spaces.

### Modify output value

After you call up the editor, you must again enter an entire line.

Example: You want to change the output value for Saturday from 0 to 1 (= occupied).

```
2 SA, 8:00..16:00, 1

LIST
.DST1.WDC
 1 MO..FR          !08:00..22:00 !1    !.    !.
!2 SA             !08:00..16:00 !1    !.    !.
```

### Activate entry

You can activate an individual line using the ACT=1 command.

Example: Line 2 should be activated, i.e., executed starting with the next Saturday.

```
DST1.WDC2.ACT:=1

LIST
.DST1.WDC
 1 MO..FR          !08:00..22:00 !1    !.    !.
 2 SA             !08:00..15:30 !1    !.    !.
EXIT
```

### New entry

Making a new entry is essentially the same as making a change, that is:

1. Enter a new line number
2. Enter the day, times and values

### 4.3.3 Exception Day Catalogue EXC

#### List catalogues

The existing entries of the desired exception day catalogue are listed first. Example:

```
LIST DST1 . EXC
.DST1 . EXC
 1    01-AUG                !08:00..18:00 !0    !.    !.
*2    01-AUG-1996..14-AUG-1996 !08:00..18:00 !0    !.    !.
EXIT
```

#### Expired entries

Expired entries are flagged with an asterisk \* at the beginning of the line number.

#### New entries

Enter new entries in editor mode as follows:

1. Call up the destination and time switch catalogues, such as e.g.,: *EDIT DST1.EXC*
2. Enter the line number, date, time and value(s).

Please observe the **Important!** paragraph in section 4.3.2

#### Distinguish: one-time / recurring

In the exception days catalogue, we differentiate between entries with one-time dates and those having recurring dates:

Entry	Characteristic	Example
One-time date	Processed only once	15-AUG-1996 19-FEB-1996..23-FEB-1996
Recurring date	Processed each year	1-AUG (for Switzerland) 25-DEC..02-JAN

#### Delete entry

If you have KEY1/KEY2 access rights, you can deactivate entries using ACT=0, but not delete them.

Example: You want to deactivate line 1 of the exception day catalogue above.

```
DST1 . EXC2 . ACT:=0

LIST
.DST1 . EXC
!1    01-AUG                !08:00..18:00 !2    !.    !.
*2    01-AUG-1996..14-AUG-1996 !08:00..18:00 !2    !.    !.
EXIT
```

### 4.3.4 Special Day Catalogue SDC

**Example, SDC catalogue** First you list the existing entries of the special day catalogue. Example:

```
LIST SDC
.SDC
SDC.SIG          = 0
1    01-MAY                !SD1
*2   10-JUL-1996..12-JUL-1996 !SU
3    23-DEC-1996..28-DEC-1996 !SU
EXIT
```

Expired entries

Expired entries are marked with an asterisk \* in front of the line number.

**Example, WDC catalogue**

Entries in the special day catalogue are only meaningful if a WDC catalogue is available for the affected destination as in the following example:

```
LIST DST1.WDC
.DST1.WDC
1    MO..FR                !08:00..22:00 !1    !.    !.
2    SA                    !08:00..16:00 !1    !.    !.
3    SD1                   !18:00..22:00 !0    !.    !.
```

**Connection between SDC / WDC catalogues**

The following relationship exists between the SDC / WDC catalogues above:

- On line 1 of the special day catalogue, the 1st of May is declared to be a special day SD1 annually. As a result, the entry on line 3 of DST1.WDC will always be executed on the 1st of May.
- On line 3 of the special day catalogue, the days from the 23rd to the 28th of December 1996 are declared to be a one-time Sunday. No entry, however, is executed in DST1.WDC because there are no entries for Sundays.

**New entries in the SDC catalogue**

You make new SDC catalogue entries in editor mode as follows:

1. Call up the SDC editor mode with *EDIT SDC*
2. Enter line number, date, time and value(s)

Please observe the **Important!** paragraph in section 4.3.2

**Distinguish: one-time / recurring**

In the special days catalogue we differentiate between entries with one-time dates and those having recurring dates:

Entry	Characteristic	Example above
One-time date	Processed only once	23-DEC-1996..28-DEC-1996
Recurring date	Processed each year	01-MAY

**Delete entry**

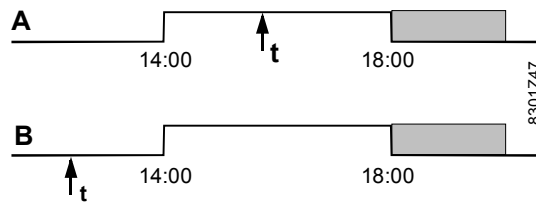
If you have KEY1/KEY2 access rights, you can deactivate entries using ACT=0, but not delete them (see section 4.3.3).

### 4.3.5 Modify Operating Time

**Concept and application** Using the operating time modification, you can extend or shorten the occupancy time preset in the weekday catalogue on a short-term basis for a certain occasion. You can do this without having to change legitimately recurring entries of the weekday catalogue.

**Command** Make the entries for the respective destination point using the following two parameters:  
**TODAY** for the duration of the operating time modification  
**TDACT** to activate the change you defined

**Note** You can use the operating time change of the WDC entry with the above parameters in the following situations:  
 – within the current occupancy time, e.g., time t (graph A)  
 – before the immediately following occupancy time, e.g., time t (graph B):



**Example for lengthening** You wish to lengthen the operating time of DST2.WDC 1.5 hours before expiration of the current occupancy time. Procedure:

```
LIST DST2.WDC
1 MO..FR !08:00..18:30 !1 !. !.
DST2.TODAY:=-1:30
DST2.TDACT:=1
```

*Result:* The operating time extends to 20:00 hours on this day. Following expiration of the extension, TDACT is reset to 0 by the time switch program.

**Shortened operating time** You can use the same technique to shorten an operating time. To do this, enter the time with a leading minus sign, such as e.g.: *DST2.TODAY:=-1:00*

**Lengthening via entry in EXC** If you wish to lengthen the after-next occupancy time (see drawing C) or some other later occupancy time, then use the EXC entry.



**Example with EXC** The operating time should be extended from 18:00 to 22:00 hours on the 23rd of December:

```
LIST DST2.WDC
1 MO..FR !08:00..18:00 !1 !. !.
EDIT DST2.EXC
14 23-DEC-1996 !18:00..22:00 !1 !. !.
```

### 4.3.6 Activating and Deactivating

#### Activation concept

Activation informs you whether a program part is active, i.e., executed or enabled for execution. This deals with:

- the time switch program TSP itself
- the destination points DSTn
- individual entries in the time switch catalogues TSC

The active signal runs with the ACT parameter. Thus:

**ACT=1** activation set                               => program part active  
**ACT=0** activation not set                       => program part inactive

#### TSP time switch program

You can interrogate the status of the time switch program TSP (=TSK250) with:

##### **ACT 250/F**

- Response, if active:                   .TSP     : (4) WAITING     DURING 00:00:06
- Response, if inactive:               .TSP     : NOT ACTIVE

Use the following entries to start and stop the time switch program:

- Start                                   **TSC.ACT:=1**
- Stop                                   **TSC.ACT:=0**

*Note:* You can alternately use **STSP** (start) or **ETSP** (stop).

#### DST Destination point

For the time switch catalogue to process a specific destination, the destination point itself has to be active. To interrogate, enter:

##### **DST1.ACT**

TSK203 1

If the response of TSK203 is "0", then you have to activate the destination point:

##### **DST2.ACT=1**

#### Individual TSC entries

Line 2 of the EXC catalogue of destination 1 is deactivated in the following example:

```
LIST DST1.EXC
.DST1.EXC
 1 01-AUG !08:00..18:00 !2 !. !.
 2 01-AUG-1996..14-AUG-1996 !08:00..18:00 !0 !. !.
DST1.EXC2.ACT:=0
LIST DST1.EXC
 1 01-AUG !08:00..18:00 !2 !. !.
!2 01-AUG-1996..14-AUG-1996 !08:00..18:00 !0 !. !.
```

#### Currently valid catalogues and entries

You can interrogate the currently valid catalogue and entry of a destination with **ACTCAT** and **ACTIDX**.

In the following example, interrogation for DST1 yields: WDC and entry line 1 are active.

##### **DST1.ACTCAT**

TSK203 WDC

##### **DST1.ACTIDX**

TSK203 1

### 4.3.7 List Destination Points

**Purpose**

By listing the DST destination points you can obtain valuable related information, such as:

- the technical address of the destination and the assigned parameters
- the available time switch catalogue and information from the active catalogue and line
- a possibly available operating time change and its duration, etc.

Example:

```

LIST DST1
.DST1           ; -- North heating group
DST1.SIG        = 0
DST1.ACT        = 1
DST1.TA         = PLT1.TA
DST1.TYP        = 3
DST1.TXI        = #p3
DST1.TXI2       = #p3
DST1.TODAY      = +00:00
DST1.TDACT      = 0
-- DST1.ACTCAT  = WDC
-- DST1.ACTIDX  = 1
DST1.MODE       = 1
DST1.PAR        =                               ZOCC
DST1.DFV        =                               0    !.    !.
.DST1.WDC
1    MO..FR          !08:00..18:00 !1    !.    !.
.DST1.EXC
*1   07-JUN-1996    !12:00..13:00 !0    !.    !.
    
```

**DST parameters**

The parameters in the list of the destination point have the following meanings:

Parameter	Meaning
SIG	Signature, such as a version number
ACT	Activation destination point: 0 = not set, 1 = set
TA	Address: point address or task
TYP	Type of parameter assignment for DSTn.PAR Here type=3, for PLT with zone standard, yields parameter ZOCC
TXI	Text number for point designation
TXI2	Text number for point designation, part 2
TODAY	Duration of the operating time change
TDACT	Activation operating time change: 0 = not set, 1 = set
ACTACT	Valid catalogue: The currently valid entry is found in the affected catalogue, here WDC with output ZOCC=1
ACTIDX	Valid entry: line number of the currently valid entry
MODE	Type of value output: 0 = one-time, 1 = cyclic, every minute
PAR	Parameter: Holds the output parameter of the time switch program. Here: ZOCC for occupancy 0/1, or no/yes
DFV	Default value, here ZOCC=0 for occupancy = no

## 4.4 List Reports

### 4.4.1 Short Description

#### Report types

The following table provides an overview of reports that you can generate:

Command	Report	Information for the Operator
<b>SYR</b>	System report	The System report SYR lists: <ul style="list-style-type: none"><li>- all I/O points and function points of the affected Building Process Station (BPS)</li></ul> <i>I/O points are:</i> <ul style="list-style-type: none"><li>- all data points that are connected with the BPS via an I/O module.</li></ul> <i>Function points are:</i> <ul style="list-style-type: none"><li>- Internal to BPS data blocks without direct connection to the I/O modules. They are nevertheless responsible for executing plant functions such as the regulator block RGB</li></ul>
<b>ALR</b>	Alarm report	The Alarm report lists: <ul style="list-style-type: none"><li>- Those I/O points and function points that are in an error or warning state.</li></ul>
<b>ERP</b>	Error report	The Error report lists: <ul style="list-style-type: none"><li>- Those I/O points and function points that are in an error state.</li></ul>
<b>SYR PLT</b>	PLT report	The PLT report lists: <ul style="list-style-type: none"><li>- The available plant points PLT and their operating status.</li></ul>
<b>PROT adr.</b>	Individual point report	The individual point report lists: <ul style="list-style-type: none"><li>- The data of a specific point that is interrogated under its address (adr.).</li></ul>

#### Selectors

You can use the SYR, ALR and ERP commands with selectors as follows:

**/F** F=Full: All points, including system points, are listed  
Command: *SYR/F*

**/T=typ** T=type: All points of a specific type are listed  
Example: *SYR/T=MW* lists all measurement points

**/G=n** G=Group: All points of group n are listed  
Example: *SYR/G=5* lists all points of group 5

#### Range

Instead of listing all points of a Reports, you can alternately request only one specific point designation having a defined address range, such as e.g.,:

**SYR \$100..200**, for a system report of I/O points having addresses 100 to 200.

#### Note

We will discuss the individual reports on the following pages. You can find general information about the format and contents of reports in section 5.4.

## 4.4.2 System Report SYR

### Report contents

The system report SYR lists the following points of BPS in compact form:

- all I/O points
- all function points

### Command

Start the listing of system reports with:

**SYR** <CR>

### Example

The following example shows a report excerpt having typical data points:

```

SYR          11:50:37          R E P O R T - S T A R T          02-MAY-1996/TH
.  ML  $d009'000 ( 1.1 2D20)   North boiler
          03-MAY-1996 05:53:21 DI=1
.  SBR1 $d009'010 ( 5.1 2QD)   Supply air fan
          03-MAY-1996 07:30:05 DO=1          RM=1          MACT=0
-  MW  $d009'021 ( 9.2 2R1K)   Supply air temperature
          03-MAY-1996 11:50:37 AI=15.8 °C          <LOL=18
.  STU  $d009'030 ( 13.1 2Y10) LE valve
          03-MAY-1996 11:50:37 AO=40 %
.  PLT  $d009'PLT1 (LZON=1)    Plant 1 BPS $1 1st floor South
          03-MAY-1996 11:50:37 PSTA=1
.  RGB  $d009'RGB1 (SEQ=0)     BPS $1 1st floor South
          03-MAY-1996 00:00:00 PRV/SPV=19.8/20 degrees C          ASEQ=0
.  ZON  $d009'ZON1 (DISP=0)    Zone 1 BPS $1 1st floor South
          03-MAY-1996 11:50:37 ZOSTA=2
  
```

### Note

The report displays a one-time record of the current statuses without any ongoing update. Thus, whenever you wish to see the latest values, you must repeat the interrogation.

### Explanation

See section 5.4.1 for an explanation of the general format of reports. The following are explanations for the points of the above examples:

Point	Parameter	Explanation
ML	DI=1	Status signal with status value (digital input) DI = 1 Here: The north boiler is switched on.
SBR1	DO=1 RM=1 MACT=0	Single speed switch command, value DO=1, supply air fan. Feedback RM (of supply air fan) is available. Manual command inactive.
MW	AI=15.8 °C <LOL=18	The measurement (analog input) is 15.8°C. The measurement is below the limit value (LOL) of 18°C.
STU	AO=40%	The positioning signal (analog output) for the valve is 40%
PLT1	PSTA=1	Plant point with status (PSTA) = 1 = ON
RGB1	PRV/SPV =19.8/20°C	Regulator block of plant 1st floor south with: process value (measurement) PRV = 19.8°C / setpoint SPV = 20°C.
ZON1	ZOSTA=2	Zone 1 (=OSTP program of plant 1) is in the active phase of ZOSTA=2, Optimum Start Heating

### 4.4.3 Alarm Report ALR

#### Report contents

The Alarm report ALR lists:

- all points, that have an **error state** or **warning state**.

*Error state:*

Data point in a defined error state.

Example: The "0" state of a status point corresponds to the "Frost" error state.

*Warning state:*

Data point outside the defined warning limit.

Example: The measurement of a cooling room is below the warning value of 7°C.

#### Command

You can start the listing of the Alarm reports with:

**ALR <CR>**

#### Example

The following example is an excerpt with some typical data points:

```

ALR          09:32:28          R E P O R T - S T A R T          27-MAY-1996/FR

*   ML   $d009'000 (  1.1 2D20)   North boiler
          27-MAY-1996 08:27:15 DI=0          DI=EST
!MA SBR1 $d009'010 (  5.1 2QD) Supply air fan
          03-MAY-1996 07:30:05 DO=1          RM=1          MACT=1
-   MW   $d009'020 (  9.1 2R1K) Room temperature
          24-MAY-1996 11:50:19 AI=16.9 °C          <LOWL=18
-   MW   $d009'021 (  9.2 2R1K) Supply air temperature
          27-MAY-1996 09:14:26 AI=14.2 °C          <LOL=16

ALR          09:32:28          R E P O R T - E N D          27-MAY-1996/FR
    
```

#### Note

The report displays a one-time record of the current statuses without any ongoing update. Thus, whenever you wish to see the latest values, you must repeat the interrogation.

#### Explanation

See section 5.4.1 for an explanation of the general format of reports. The following are explanations for the points of the above examples:

Point	Parameter	Explanation
ML	* DI=0	This status point is in the error state The status signal (digital input) has the DI=0 status value
SBR1	!MA DO=1 RM=1 MACT=1	Warning state: The switching output is set to manual. The switching command (digital output) DO is 1=ON The feedback from the supply air fan is available. Manual operation is enabled by: - the AUTO/MAN switch on the I/O module, or - the remote/local switch in the mechanical plant.
MW	- AI=16.9 <LOWL=18	The measurement has exceeded the lower warning limit. The current measurement (analog input) is 16.9°C The value is below the warning limit (LOWL) of 18°C C
MW	- AI=14.2°C <LOL=16	The measurement MW has gone below the lower limit. The current measurement (analog input) is 14.2°C The value is below the defined limit value (LOL) of 16°C

## 4.4.4 Error Report ERP

### Report contents

The Error report ERP lists:

- all points, that are in an **Error state** (also referred to as fault condition).

Example: The state "0" of a status point corresponds to the "Frost" error state.

### Command

The error report listing is started by entering:

**ERP** <CR>

### Example

The following example shows two typical examples:

```
ERP          09:32:28          R E P O R T - S T A R T          24-MAY-1996/FR
*   ML   $d009'000 ( 1.1 2D20) North boiler
          27-MAY-1996 08:27:15 DI=0          DI=EST
-   MW   $d009'021 ( 9.2 2R1K) Supply air temp.
          27-MAY-1996 09:14:26 AI=14.2 °C          <LOL=17
ERP          09:32:28          R E P O R T - E N D          24-MAY-1996/FR
```

### Note

The report displays a one-time record of the current statuses without any ongoing update. Thus, whenever you wish to see the latest values, you must repeat the interrogation.

### Explanation

Section 5.4.1 gives you more information about report formats. The following is an explanation of the points used in the above example:

Point	Parameter	Explanation
ML	*	This status point is in the error state.
	DI=0	The status signal (digital input) has the signal value of DI=0
MW	-	The MW measurement has exceeded the lower warning limit.
	AI=14.2°C	The current measurement (analog input) is 14.2°C
	<LOL=17	The value is below the defined limit value (LOL) of 17°C

## 4.4.5 PLT-Report

### Report contents

The PLT Report lists:

- all available PLT plant points

### Command

Start the listing by entering:

***SYR PLT <CR>***

### Example

Two typical plant points are selected for the following example:

```
SYR      11:50:37          R E P O R T - S T A R T          02-MAY-1996/TH
.  PLT  $d052'PLT1      (LZON=1) Heating group west
          01-JUL-1996  14:37:01  PSTA= ON
*  PLT  $d052'PLT2      (DISP=10) Canteen ventilation
          01-JUL-1996  14:37:01  PSTA=OFF      LKD=1      LOCK=0      STOP=1      FBER=1
SYR      11:50:38          R E P O R T - E N D          02-MAY-1996/TH
```

### Note

The report displays a one-time record of the current statuses without any ongoing update. Thus, whenever you wish to see the latest values, you must repeat the interrogation.

### Example explanation

Section 5.4.1 gives you more information about report formats. The following is an explanation of the points used in the above example:

Point	Parameter	Explanation
PLT1	.	The point is in standard operation
	(LZON=1)	This plant point is assigned to a zone (Optimum Start-Stop program)
	PSTA=ON	The plant operating status is ON
PLT2	*	The point is in a fault state
	(DISP=10)	The plant point is assigned to dispatcher point 10 (one dispatcher point controls other plant elements)
	PSTA=OFF	The plant operating status is OFF
	LKD=1	There is an interlocked fault
	STOP=1	Plant fault
FBER=1	Error in the feedback signal	

### Additional information

See chapter 5 for more detailed information about *Plant point PLT*.

## 4.4.6 Individual Point Report

### Report contents

The individual point lists:

- information about a specific selected point

### Command

Start the output with:

***PROT address*** <CR>

but replace "address" with \$mmp, PLTn, RGBn, ZONn, VIPn.

### Example 1

In the following example you request information about regulator block 8:

```
PROT RGB8 <CR>  
RGB8      Supply air temp. reg.                      PRV=19.41                      SPV=19.5
```

### Explanation

The listed information has the following meaning:

Information	Explanation
RGB8	Regulator block No. 8
Supply air temp. regulator	Plant-specific text
PRV=19.41	Process value = controlled variable (actual value) = 19.41 (°C)
SPV=19.5	Setpoint value = regulator -setpoint = 19.5 (°C)

### Example 2

In this example you are interested in what is assigned to address \$011:

```
PROT $011  
. SBR1 $d052'011 ( 6.1 2QD) BPS $9 Canteen ventilation  
24-MAY-1996 11:50:19 DO=0
```

### Explanation

Section 5.4.1 gives you more information about report formats. The following is an explanation of the points used in the above example:

Information	Explanation
.	The point is in standard operation
SBR1	There is a point of type SBR1 (switching command, single speed, with feedback signal) at the entered address of \$011.
DO=0	The switching command is 0, i.e., not pending.

### Note

The report displays a one-time record of the current statuses without any ongoing update. Thus, whenever you wish to see the latest values, you must repeat the interrogation.

### Additional information

See section 5.5 for more detailed information about *point types and addressing data points*.

## 4.4.7 Room Management Report RMR

### Report contents

The room-management-report lists:

- Information about the groups, rooms and regulators of a connected single-room regulation system. Depending on the system configuration, this deals with:
  - TEC Terminal Equipment Controller
  - MONOGR single room regulators and switching devices

### Command

To start a listing of a complete room management report, enter:

**RMR <CR>**

### Example

The following example shows the beginning of a room management report for all TEC rooms TCR. Shown is:

\$d007' TCR1, i.e., the room TCR1 on BPS 007 with the TEC regulator T33

```

RMR      08:23:54          R E P O R T - S T A R T          18-JAN-1996/TH
TCR $d007' TCR1      (T33..34)
      18-JAN-1996 18:32:35 AOPST=Comfort RRTP=20.3 ERSTA=0
SOPST=Economy          APRST=Fully occupied
SOMOD=Local           ASTH =1                VSPA =0 m3/h
MACT =0               ASTC =0                VEXA =0 m3/h
MOPST=Economy         RRSC =3 °C              RWINO=Closed
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
! TEC ! ARTP ! OHWA ! OCWA ! OXWA ! OHAIR ! OCAIR ! OHHB ! OEAIR ! OFAN ! AIRVS1 ! AIRVE !
!     !     ! OHWA2 ! OCWA2 !     !     !     !     !     !     ! AIRVS2 !     !
!     ! [C] ! [%] ! [%] ! [%] ! [%] ! [%] ! [%] ! [%] ! [m3/h] ! [m3/h] ! [m3/h] !
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
! 33 ! 20.3 ! 0 ! 0 ! 0 ! 0 ! 35 ! 0 ! 35 ! 0 ! 0 ! 0 !
!     !     ! 57 ! 0 !     !     !     !     !     !     ! 0 !     !
+-----+-----+-----+-----+-----+-----+-----+-----+-----+

```

### Explanation

The following provides a short explanation of report items, which give information about the current status of the room TCR1 and regulator T33:

Information	Explanation
AOPST=Comfort	The current <u>operating</u> status of the room is "Comfort"
RRTP=20.3	The corresponding room temperature (from T33/T34) is 20.3(°C)
ERSTA=0	The point status of the TCR1 is OK (no fault)
APRST=Fully ocp	The current <u>occupancy</u> status of the room is "fully occupied"
TEC	Address of the Terminal Equipment Controller, here 33
ARTP	Current room temperature / measured actual value of this TEC regulator, here 20.3 (°C)
OHWA2	Positioning value of the "heating with water 2" output (e.g., heating valve of the basic load heating), here 57%
OCAIR	Positioning value of the "cooling with air" output (supply air damper=butterfly valve), here 35%
OEAIR	Positioning value of the "extract" output (extract air damper=butterfly valve), here 35%

### Note

For information about the meaning of the other parameters as well as about the various sectors for partial reports, see document CM2Z8301E2, divider 3 (part 3).

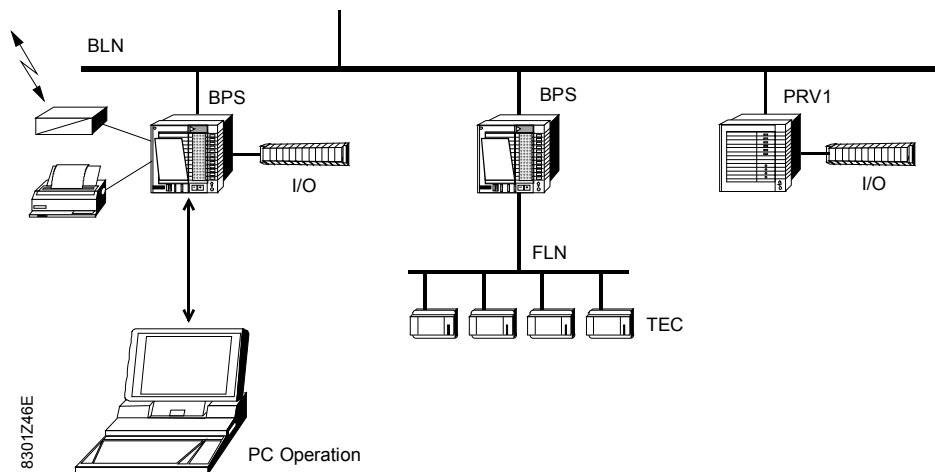
## 4.5 Partner Station Operation

### Operating topology

Using the access right KEY2 you can also carry out service operations in other parts of a VISONIK system such as:

- BPS and PRV1 partner stations on the same Building Level Network (BLN)
- TEC Terminal Equipment Controllers on the connected Floor Level Network (FLN)
- Partner stations of other VISONIK systems via modem.

The actual operating possibilities available are dependent on the respective system configuration and the respective communication cards in the Building Process Station. The following figure provides a basic overview.



### Selecting a Partner Station

When selecting a partner station, use the command:

#### **DUS**

For example: The following is a dialog for making a connection from a Building Process Station (PS=0) that is directly connected to a terminal, with a partner process station (PS=5) on the same Building Level Network:

```
DUS  
PS = 0, SYS = 0, WAY = 2) : 5  
Waiting for connection  
(PS = 5, SYS = 0) : OK
```

### Operating the Partner Station

Upon an OK, you can interrogate the number of the process station for checking purposes. If it is OK, a summary of the plants in the partner station is requested:

```
SYSNR  
TSK203 5  
  
DIR  
TSK10 : -- Heat generation  
TSK20 : -- Heating, group east  
TSK30 : -- Heating, group west  
TSK40 : -- Canteen ventilation
```

Operation of the plants is as described in the previous sections.

### End Operation

To quit the operating station, enter the command: **CTRL/E**

## 4.6 Summary of the Operating Commands

### Area of application of the lists

The following operating commands from the COLBAS instruction set are used in this User's Guide:

- **KEY2:** You can access the entire list below
- **KEY1:** You can only access the commands marked with an "x"

Command	Meaning	KEY1
ACT	List active tasks	x
ALR	Output of an Alarm report	x
BYE	Quit operating level	x
DIR	List directory of tasks	x
DUS	Select a different station	
ERP	Output an error report	x
HELLO	Login / select new operating level	x
LIST \$mmp	List module point data	
LIST DSTn...	List point data from DSTn, PLTn, RGBn, ZONn, etc.	
LIST WDC, EXC, SDC	List time switch catalogue entries	
PROT \$mmp	List module point data, whereby: mm = module location p = module point	x
RMR	Output a room management report	x
STSP, ETSP	Start and stop time switch program	
SYR	Output a system report	x
TSC	Select time switch catalogue	
<CTRL>E	Quit time switch catalogue Quit partner station (DUS)	
<CTRL>S	Stop listing	x
<CTRL>Q	Restart listing	x

## 4.7 Error Messages

### BPS Reaction upon an Input command

Each of your entries is checked for correct syntax by the Building Process Station. An incorrect entry is neither accepted nor stored by the Building Process Station; instead, an error message will be output.

### Error message list

The following table lists possible error numbers that can occur if you have access at the KEY1 and KEY2 levels as well as their meanings:

Error number	Meaning
3	Line number does not exist
7	Inadmissible command
12	Illegal line number
13	General SYNTAX error
14	Entered line is too long
19	Comma missing, or comma expected
24	Inadmissible process image point address
25	Inadmissible parameter for this point type
27	Value outside of the associated value range
84	Process image point does not exist or is not configured
87	No I/O module available (not connected)
89	Parameter with this name does not exist

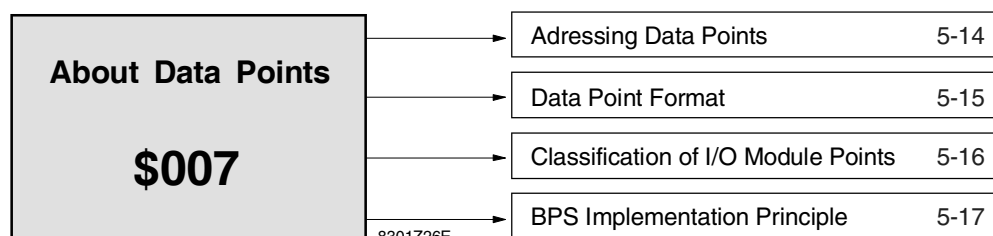
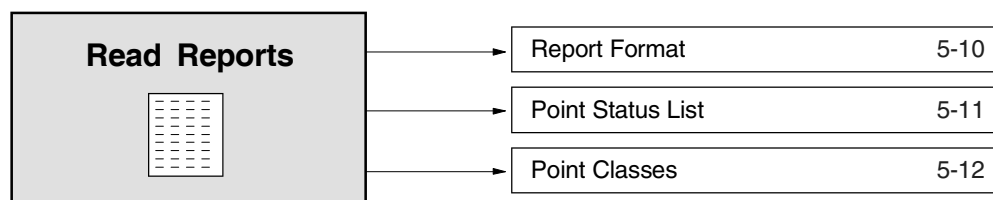
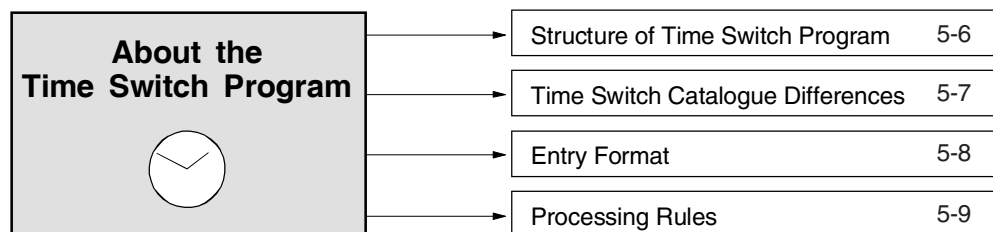
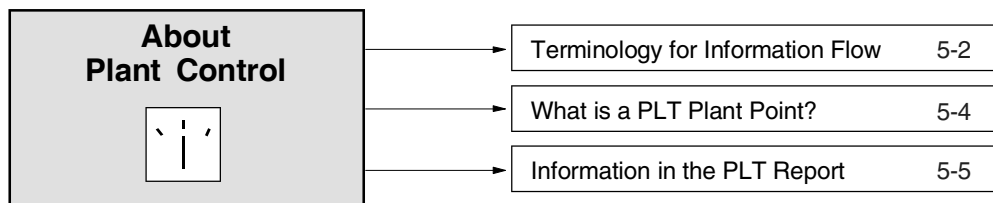


# 5. Supplements to Look Up

## 5.1 Summary

### About the supplements

In this section we will explain expressions in more detail. We will relate them in the same way that you will experience them when working with the Building Process Station. This approach is not thought of as instructions for engineering and commissioning; there are special handbooks for this purpose (see section 1.2).



### Using the summary

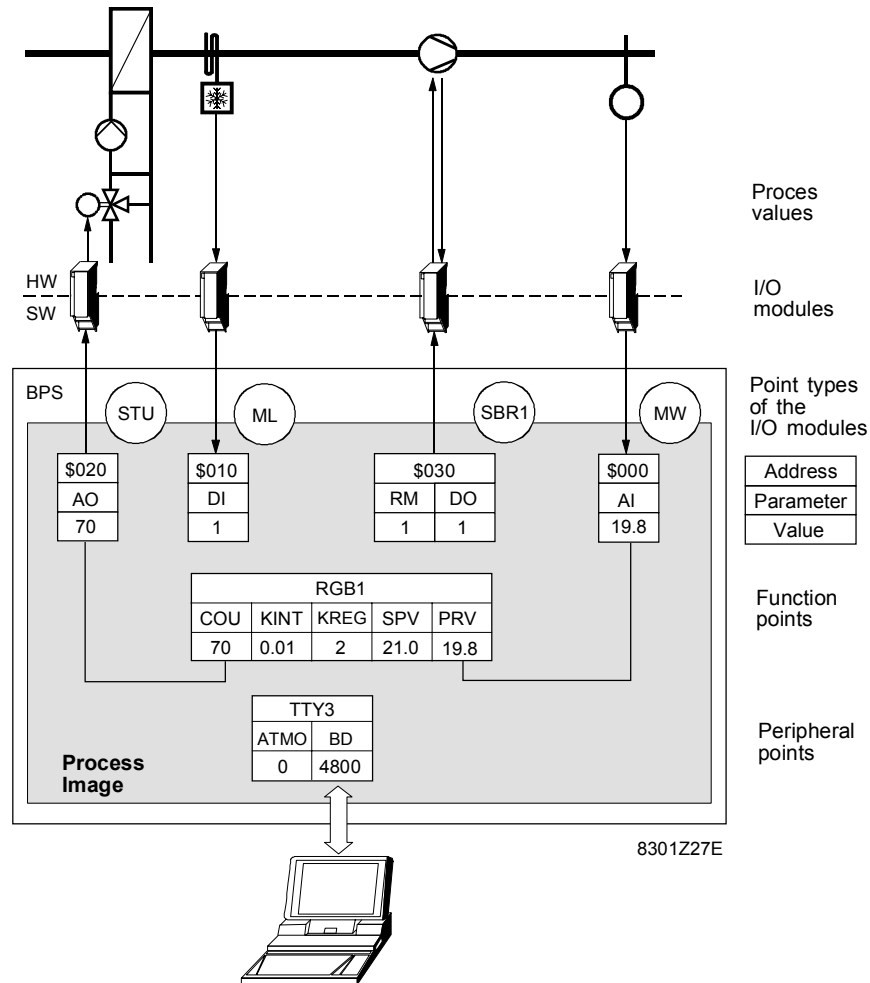
The blocks of the overview above correspond to main points in the sections that cover the various operating modes. Use the blocks to the right to find the supplementary information you need. The numbers in the blocks are the relevant page numbers.

## 5.2 About Plant Control

### 5.2.1 Terminology for Information Flow

#### Principle

The following figure shows a simplified version of the information exchange between the service plant and the Building Process Station. We have selected elements that you would normally encounter. The process bus has been left out for clarity.



#### Terminology

The terminology used in the figure has the following meanings:

Concept	Meaning
Process values	All values that are important for the operation of the plant (process). These values are exchanged between the I/O modules and the BPS
HW / SW	Conceptual transfer line between hardware and software
I/O modules	Device for matching process values to the process bus
Point types of the I/O modules	(Data) point types and parameters are defined in accordance with the various types of process values and their functions.
Address	Technical address of the current data point in the BPS
Parameter	The address of the characteristics associated (with a data point)
Value	Current value of the affected parameter

continued on next page

**Process image**

All process values are stored in the RAM memory of the Building Process Station. The values are updated continuously during program processing. The process image allows access to process values and their parameters for a wide range of data points.

As an example, the figure shows some functioning of a control loop, namely:

- transfer of a measurement MW of the supply air sensor to the regulator block RGB1
- transfer of a COU regulator output signal to the I/O module point STU for transfer to the positioning valve.

**About the point types of the I/O modules**

If you are assigned a KEY1/KEY2 access level, then you will be frequently confronted with these point types during PC operation. The following is an explanation of the point types and parameters used in the example:

Point type	Signal	Main parameter	Value	Meaning
MW	Measurement	AI (analog input)	19.8	Supply air temperature °C
SBR1	Switching command	DO (digital output)	1	Fan ON
	Feedback signal	RM (digital input)	1	Feedback signal available
ML	Status signal	DI (digital input)	1	ON (not FROST)
STU	Positioning command	AO (analog output)	70	% of the manip. variable

**About function point RGB1**

The RGB regulator block is an example of a function point (here RGB1 = regulator block with address 1). Some of the parameters of interest to you are shown in the figure and explained below:

Parameter	Nomenclature	Value	Remark
PRV	Controlled variable, process value	19.8	Actual value of the supply air temperature
SPV	Regulator setpoint	21.0	Setpoint of the supply air temp.
KREG	Regulator amplification	2	Proportional amplification
KINT	Integral contribution	0.01	Adjustment
COU	Regulator output variable	70	Goes to point \$020 for transfer to the ventilation heating valve

**About peripheral point TTY3**

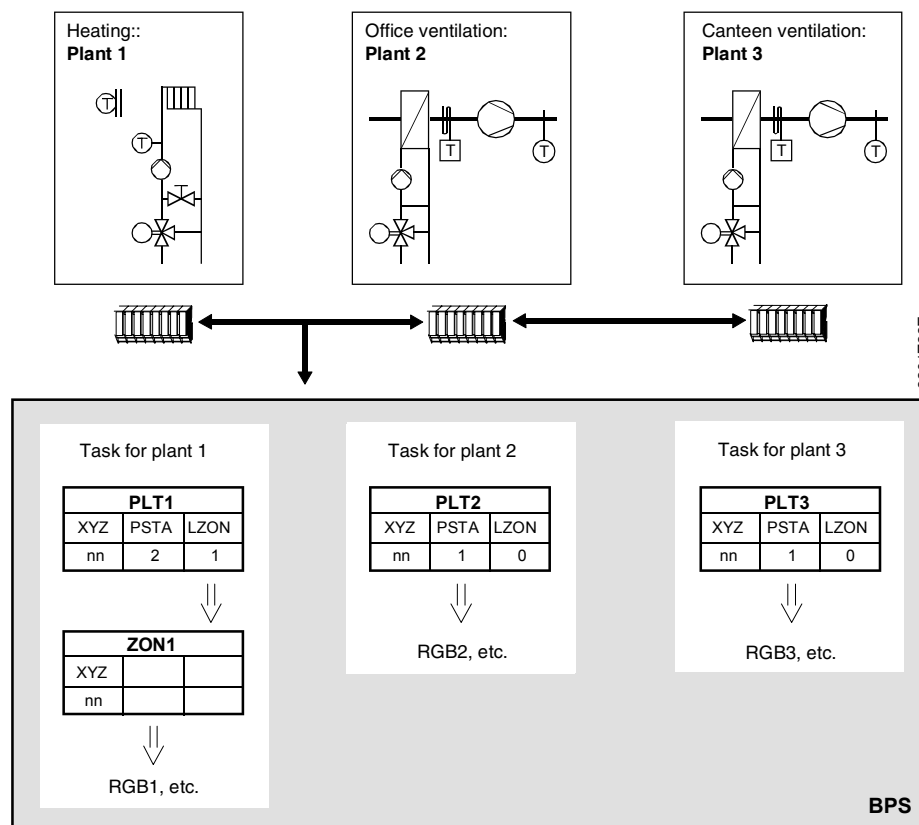
The data traffic with the PC is regulated via this data block. The parameters in the figure have the following meanings:

Parameter	Nomenclature	Value	Remark
BD	Baud rate	4800	Default value for the speed of the data transmission PC / BPS
ATMO	Access timeout	0	No access timeout defined

## 5.2.2 What is a PLT Plant Point?

### Summary

All actions that influence the operation of a plant run via a single software point in the Building Process Station, namely the PLT plant point. The figure shows the main relationship between plant and plant point.



### Explanations

The expressions in the above figure have the following meanings:

Expression	Description
Task	The entirety of all functions of the Building Process Station is divided into tasks. In this way, each plant has its own task for plant-specific control and regulation programs, such as: Task for plant 1 / Heating, Task for plant 2 / Office ventilation, etc.
PLTn	The PLTn plant point is a component of the plant tasks. All operating commands that have an effect on the plant (remote, local, manual, error) are collected in it. PLT1 is thus the plant point of plant 1 / Heating
PSTA	The operating commands collected in the plant point are evaluated and the results used to establish the PSTA plant target value, e.g., 0 = plant OFF, 1 = plant ON, 11 = FROST, etc.
ZONn	If a plant is controlled by an Optimum Start Stop Program OSTP, a zone in the plant task is assigned in VISONIK. In the above example, this is the case for plant 1 / Heating (ZON1). The ZONn function point holds the data and parameters needed by the OSTP program.
LZON	If a zone is associated with plant point PLT, the parameter LZON=1 is set.

### 5.2.3 Information in the PLT Report

**Example for a PLT report:**

The PLT points from 2 plants are listed in the following example:

- **\$d052'PLT1:** This is the plant point for plant 1 in BPS No. 52  
An Optimum Start Stop Program is defined for this plant (LZON=1)
- **\$d052'PLT2:** This is the plant point for plant 2 in BPS No. 52. Dispatcher point 10 is assigned to it for control of additional plant elements (DISP=10)

.	PLT	\$d052' PLT1	(LZON=1)	Heating group West					
			01-JUL-1996 14:37:01	PSTA=OFF	WHY=0	CPRI=0			
*	PLT	\$d052' PLT2	(DISP=10)	Canteen ventilation					
			01-JUL-1996 14:37:01	PSTA=11	LKD=1	LOCK=0	STOP=1	FBER=1	

**Plant operating status**

The operational status of a plant is displayed using the PSTA (Plant Status) parameter. PSTA is the main parameter of the PLT plant point.

Parameter/Value	Meaning
PSTA=0	Plant operational status OFF
PSTA=1..15	Plant- operational status 1 to 15, such as, e.g., ON, ON reduced, frost, etc.

**Faults / Enabling**

The STOP, LOCK and FBER parameters indicate the type of plant fault:

Parameter/Value	Meaning
STOP=1	Plant fault, immediate and no interlocking effect. As soon as the fault no longer exists, normal operation is restarted and STOP=0 set.
LOCK=1	Plant fault, immediate with interlocking effect (e.g., FROST). The LKD parameter is also set to 1 automatically upon the next calculation cycle for the PLT plant point. As soon as the fault no longer exists, LOCK changes to 0.
FBER=1	Error in the operation feedback signal and delay time expired. FBER causes an interlock. The LKD parameter is also set to 1 upon the next calculation cycle for the plant point.
LKD=1	The plant is interlocked. It does not start up by itself when the error is removed—even if LOCK has been reset to 0. The plant must be enabled by entering LKD=0.

**Cause of the plant operating status**

The WHY parameter supplies the cause that led to the current plant operating status PSTA.

Parameter/Value	Meaning
WHY=0	Undefined cause
WHY=1	Manual intervention
WHY=2	BPS command, local
WHY=3	DCS command, remote
WHY=4	Error / Fault

## 5.3 About the Time Switch Program

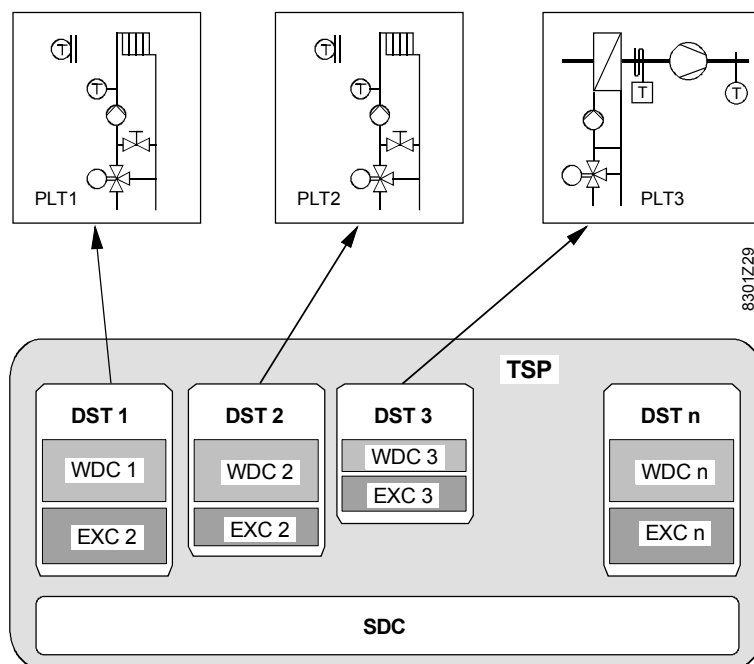
### 5.3.1 Structure of Time Switch Program

#### Task of the time switch program

The time switch program TSP (Time Switch Program) of the Building Process Station controls the service plants or individual plant parts such as pumps, lights, etc., depending on time, weekday and date.

#### Format and classification of the time switch catalogs

Various time switch catalogs TSC belong to the time switch program. The following figure shows the format of the time switch catalog and its assignment principle for the destination points DST:



#### Legend

The following table explains the function of the destination points and time switch catalogs:

Ref.	Name	Function
DST	Destination points	The destination points DST form the transfer location between the time switch program TSP and the output destinations (see below).
WDC	Weekday catalogs	The weekday switching program for the associated destinations are defined in the weekday catalogs.
EXC	Exception day catalogs	The exception programs for the associated destinations are defined in the exception day catalogs.
SDC	Special day catalog	Special days are defined in the special day catalog. In contrast to WDC and EXC, these entries hold for all defined destinations.

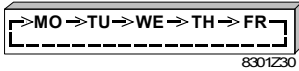
#### What are output destinations?

The output destinations are the objectives of the DST destination points. They can be:

- plants to be controlled via PLT points or plant parts via I/O point addresses
- functions on a software basis (COLBAS tasks)

## 5.3.2 Time Switch Catalog Differences

### Weekday catalog WDC



The weekday catalog contains time entries **dependent on weekdays**, that can be repeatedly executed

*Example:*

```
1      MO..FR                !07:00..18:30  !1
```

*Explanation:*

The entry in line 1 specifies, that from Monday to Friday on each day from 07:00 to 18:30, the value 1 will be output, e.g., as an enable command for a ventilation plant.

*Application:* For the normal occupancy time on workdays, Saturdays and Sundays.

### Exception day catalog EXC



The exception day catalog holds **date dependent** time entries. The entries can be one-time or annually recurring.

*Example:*

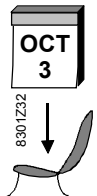
```
2      21-JUN-1996          !18:30..22:00  !1
```

*Explanation:*

The entry on line 2 specifies that on 21st June 1996, during the time from 18:30 to 22:00, the value 1 will be output (one-time).

*Application:* For special occupancy times, such as evening courses, events, etc.

### Special day catalog SDC



The entries in the special day catalog assign a date to an arbitrary weekday. They can be one-time or recurring and affect all WDC catalogs.

*Example:*

Entry in the SDC special day catalog:

```
5      03-OCT-1996          !SU
```

Entry in one of the weekday catalogs WDC:

```
1      MO..FR                !07:00..18:30  !1
```

*Explanations:*

- According to the WDC weekday catalog, command 1 is normally output for the affected destination from Monday to Friday, 07:00 to 18:30.
- In the special day catalog SDC, the 3rd October 1996 (a Thursday) is declared to be a Sunday. No WDC entry is made since no entries for Sundays exist in the WDC catalog.

*Application:* For public holidays, vacations and special occasions that affect all plants.

### Important differences between EXC and SDC

There are two important differences between the exception day catalog EXC and the special day catalog SDC:

Exception day catalog EXC	Special day catalog SDC
Entries in the exception day catalog EXC are <b>destination dependent</b> , and are thus valid for a specific destination point only.	Entries in the special day catalog SDC hold <b>for all destination points</b>
Entries in the exception day catalog EXC are <b>independent of WDC-entries</b>	Entries in the special day catalog SDC are only meaningful <b>if WDC entries</b> are available

### 5.3.3 Entry Format

#### Example

The format of the various switching catalogs is identical. The following example shows two lines of the weekday switch catalog of destination point DST1:

```
.DST1.WDC
1    MO..FR          !08:00..18:00 !1    !.    !.    !.    !.
!2   SA             !08:00..16:00 !0    !.    !.    !.    !.
```

#### The 4 fields

The information on the individual lines of the time switch catalog are divided into four fields. Relative to line 1 of the example above, these are, from left to right:

Designation	Entry in the above example
Line number	1
Day field	MO..FR
Time field	08:00..18:00
Value field	1            !.            !.            !.            !.

#### Line number

The line number is a whole number in the range from 1 to 32767. The following characters can appear in front of the numbers:

- An exclamation point (!) before the line number means that the affected entry is not set to active, i.e., will not be executed (line 2 in the above example).
- An asterisk (\*) before the line number flags an expired time entry.

#### Day field

The day field holds an individual week or special day or a range of weeks or special days.

- Weekdays:            The abbreviations of the weekdays are used as follows:  
**MO, TU, WE, TH, FR, SA, SU**
- Special days 1 to 7: The abbreviation for special days are as follows:  
**SD1, SD2, SD3, SD4, SD5, SD6, SD7**

In the example, line 1, the range from Monday to Friday is entered.

#### Time field

The time field holds the individual clock times (= time point) or a time period, whereby:

**hh**    hours        (0..24)  
**mm**    minutes      (0..60)

In the example, line 1, a time period from 08:00 to 18:00 has been entered.

#### Value field

The value field holds the set status to which the parameters are assigned during the time period entered. A maximum of 5 values can appear. The values can be:

- a numerical number for a defined status or value
- a point '.' for "don't care", i.e., the status is undetermined.

The exclamation point (!) in front of the individual values serves as a separator.

In the above example, line 1, the value 1 has been entered in the first value field, according to e.g., "plant for operation AUTO enabled" from 08:00 to 18:00.

#### Note

We will not always show five value fields in this description.

### 5.3.4 Processing Rules

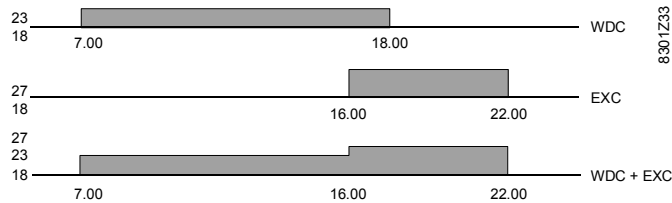
#### Processing cycle

The time switch program TSP processes the entries of all time switch catalogs in a cycle of one minute. At the same time this is the smallest possible resolution for making entries. Changes that you make to the time switch catalogs are taken into account on the next cycle.

#### WDC/EXC overlap

**Rule:**

Entries from exception day catalogs EXC always have priority compared to entries in weekday catalogs WDC. Example:



Explanation: On the affected day, the entry of the exception day catalog EXC is executed starting from the entered time, i.e., setpoint 27 starts at 16:00 hours.

#### Contradictory entries

The time switch program generally accepts all syntactically correct entries. If you are making a new entry, however, no check is made to ensure that there are not already other entries in the same catalog that conflict with the new entry.

**Rule:**

If there is a conflict, the time switch program always works with the entry having the higher line number.

Example from a weekday catalog:

1	MO . . FR	!08:00 . . 12:00	!1	!21	!26
2	FR . . SA	!09:00 . . 18:00	!1	!24	!30

There is a conflict on Friday from 09:00 to 12:00 hours owing to a time overlap for the entries in the second and third value fields. In accordance with the rules, the following values are output:

```
08:00 => entry 1
09:00 => entry 2
12:00 => no change (entry 2 remains current)
18:00 => default value (for non-occupancy)
```

=> When making entries, please be very careful to avoid such conflicts.

#### Error situations

For destinations that are not configured or not available, situations can occur that prevents TSP from correctly carrying out certain time switch entries. In such cases the following occurs:

- the affected output is suppressed
- the time switch program issues a diagnostic message to the terminal and then continues on with its processing.

The diagnostic message specifies the destination that the TSP attempted to use (but could not) or issues an error message.

Example: TSP PLT10 \*\*\* ERROR 71

Meaning: The process image point (PLT10) entered in the TSP is not configured.

## 5.4 Read Reports

### 5.4.1 Report Format

#### General

All reports have essentially the same structure. For each point, two lines were output as follows:

**1st line:** Point status, point type, address, module type, point text (plant-specific)

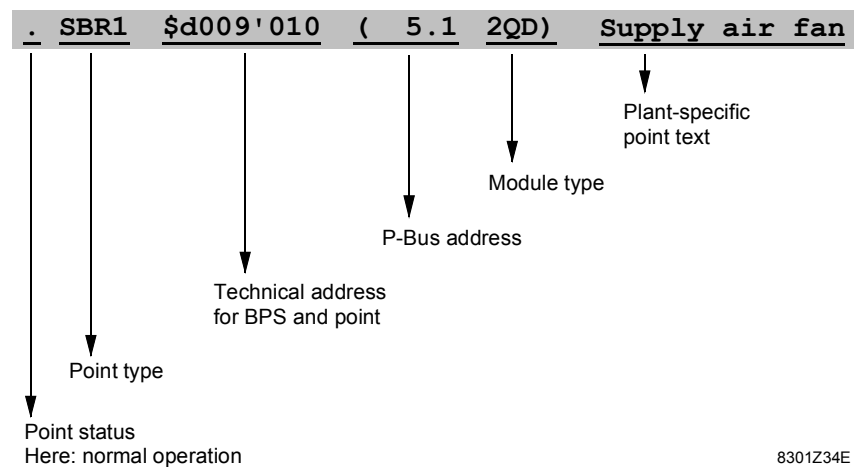
**2nd line:** Date, time, important supplementary information

#### Example

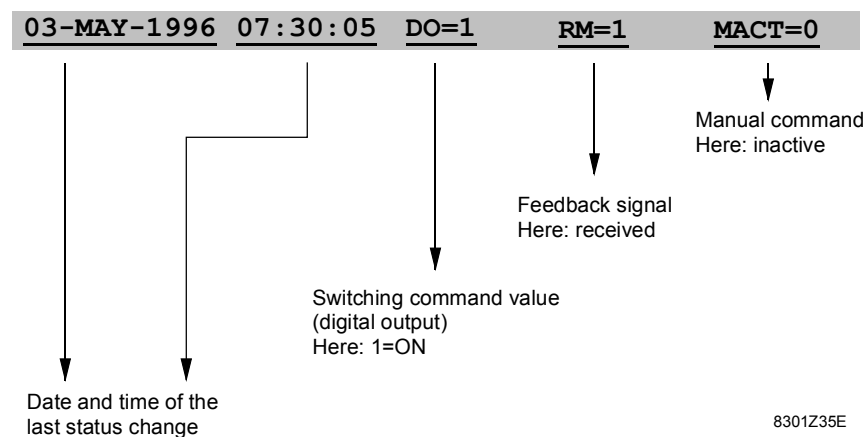
The following example shows an excerpt from a system report SYR. It deals with an I/O point of type SBR1 (Switching command, single-speed).

```
. SBR1 $d009'010 ( 5.1 2QD) Supply air fan
      03-MAY-1996 07:30:05 DO=1 RM=1 MACT=0
```

#### Information 1st line



#### Information 2nd line



#### Additional explanations

You can find more information about the terminology from the following:

Concept	Additional explanations in section:
Point status	5.4.2
Point type	5.4.3
Addressing	5.5.1, 5.5.3

## 5.4.2 Point Status List

### Introduction

A data point can take on various statuses in VISONIK. This information is specified in the SYR, ALR, ERP and PROT reports at the beginning of each line with an abbreviated designation. This information provides you with valuable data for error diagnosis, especially for the peripheral devices connected via the I/O module point.

### Example of a display

The following information was listed (along with others) in an error report ERP:

```

ERP          09:32:28          R E P O R T - S T A R T          24-MAY-1996/FR
?FB SBR1   $d011'010 ( 5.1 2QD)   Supply air fan
          27-MAY-1996 08:27:15 DO=On          DO<>FBV
  
```

### Explanation

The symbol “**?FB**” at the beginning of the 1st line of this entry means: The switching command feedback signal from the fan protection was not received. Possible reason: The protection did not activate, or the feedback contact is sticking. An electrician should carry out a local check (control panel).

### Point status list

The complete list of the possible point statuses and their symbols:

Display	Meaning
.	The point is in standard operation.
*	The point is in a fault status.
+	The main value of the point is above the defined limit value.
-	The main value of the point is below the defined limit value.
?HW	The hardware (module) is not available.
!DA	The time delay is active.
!SC	The status change of the day counter exceeded the specified limit.
?FB	The feedback signal is unequal to the defined target value.
!MA	The point is set to manual operation (per SW or on the I/O module).
?SW	The configured point type does not correspond to the available module type.
!OS	The point is out of service (on a software basis). The information was not processed.
!FI	The point is fictionally set, i.e., without connection to I/O modules.
!SM	The Server is master.

### Status priorities

During engineering, the individual points were assigned message priorities (MSGP) for expediency. The report displays are output with the relevant number of markers.

MSGP	Number of markers	Display in reports
0	no markers	
1	one markers	. * + -
2	two markers	.. ** ++ --
3	three markers	... *** +++ ---

## 5.4.3 Point Classes and Point Types

### About the terminology

The sum of all possible, real and fictitious data points in a system are grouped for expediency in VISONIK. In accordance with the various system parts and tasks, point classes differ in that they each have a number of associated point types.

### List of the point classes and point types

In the following summary, the point classes of the Building Process Station are specified and supplemented with a short explanation. The associated point types are also specified.

Point Class	Explanation / Associated Point Types
<b>I/O module point P-Bus</b>	<p>Collective designation for all input/output information points. They form the connection between the BPS and the mechanical plant via the I/O modules.</p> <p><i>Point types:</i></p> <p>ML for status signals (digital input)            MW for measurements (analog input)            SB1 for switching commands, single-speed            SBRx for switching commands, 1 to 3 speed, with feedback signal            STP Positioning command for pneumatic positioning modules (analog output)            STU Positioning command for voltage and current signals (analog output)            ST3P Positioning command for 3 point output            ZW for counter values (counter input)            PBUS process bus</p>
<b>Function Points</b>	<p>These are internal BPS data blocks that do not have any direct connection to the I/O modules, but are nevertheless responsible for executing plant functions.</p> <p><i>Point types:</i></p> <p>CVP Conversion parameters            PLT Plant points            RGB Regulator blocks            VIP Virtual points            ZON OSTP zones</p>
<b>Station points</b>	<p>These points are used to control the behavior of the BPS and the operation software (operating system).</p> <p><i>Point types:</i></p> <p>BPS Building Process Station            OS Operating System</p>
<b>Interfaces</b>	<p>These points are used to regulate the traffic over the V.24 interfaces, including telephony.</p> <p><i>Point types:</i></p> <p>PHON Telephony parameters, MODEM interface            TTY1 Main V.24 interface            TTY2 Auxiliary V.24 interface            TTY3 Tool interface for PC operation</p>

continued on next page

Continuation of: Point Classes and Point Types

Point Class	Explanation / Associated Point Types
<b>BLN points</b>	<p>The data traffic on the Building Level Network (SDLC ring) is organized using these points. The ring connects the individual BPS partner stations with one another and with the higher order management station (DCS/Insight).</p> <p><i>Point types:</i>            BLN Building Level Network (software data)            RING SDLC ring (hardware)</p>
<b>FLN points</b>	<p>Information exchange with the single room TECs (Terminal Equipment Controller) takes place using the FLN points.</p> <p><i>Point types:</i>            FLN Floor Level Network            PBN2 Profibus Network 2 (FLN)            TCG TEC group            TCR TEC room            TED TEC energy requirements</p>
<b>Link points</b>	<p>The link points serve two purposes:</p> <ul style="list-style-type: none"> <li>- Acceptance of spare inputs/outputs on connected single room TECs (Terminal Equipment Controller) for use in the BPS.</li> <li>- Acceptance of data points from foreign devices that are integrated via the BPS in the VISONIK system (CFE-application of the BPS).</li> </ul> <p><i>Point types:</i>            AI Analog input            AO Analog output            CI Counter Input            DI Digital input            DO Digital output</p>
<b>Monogyр-points</b>	<p>Monogyр points are used to exchange information with connected Monogyр devices.</p> <p><i>Point types:</i>            MBUS MONOGR bus            MGG MONOGR group            MGR MONOGR room            SEZ MONOGR switching device SEZ81. ...</p>

## 5.5 About Data Points

### 5.5.1 Addressing Data Points

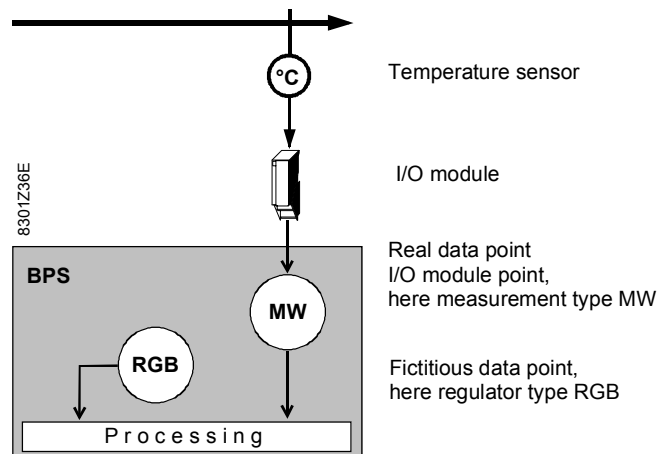
#### Data point concept

In Building Management Systems, the *data point* concept is generally used interchangeably with the *information point* concept. *Data points* and *information points* are subordinated designations for information sources and information sinks of all types in a process or service plant.

We differentiate between:

- **real data points** having a physical connection to the mechanical plant via the I/O modules. Thus also the designation **I/O module point**.
- **fictitious data points** without direct connection to the mechanical plant (defined purely on a software basis).

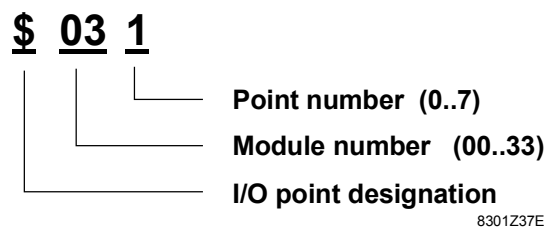
Example:



#### Addressing the I/O point

For identification purposes, each I/O data point in the Building Process Station has an address, generally expressed as: \$mmp.

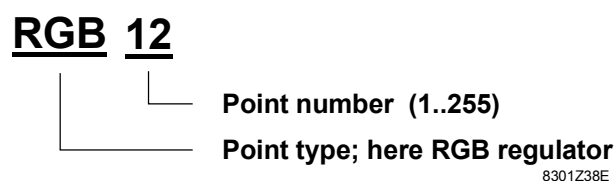
Example:



#### Addressing the fictitious points

Each fictitious point in the Building Process Station also has a unique address, generally expressed as: TYP.ADR (1..255)

Example:



## 5.5.2 Data Point Format

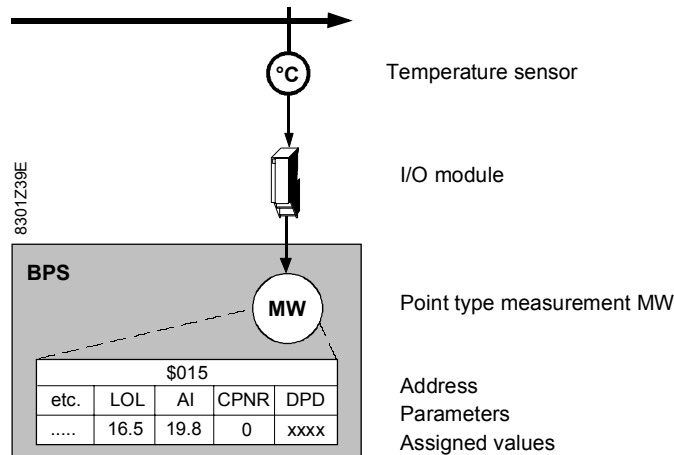
### Generally valid:

Each data point—real or fictitious—has the same format. They are defined using the following elements:

- address
- parameter (several)
- assigned values.

### Example

The figure shows an I/O module point, type MW for measurement:



### Explanations

The values entered above show only a selection of the entire parameter set of values for the measurement MW point type. The meanings of these example values are:

Parameter	Value	Meaning
DPD	xxxx	Current raw measurements in bits
CPNR	0	Standard conversion for the Ni1000 sensor
AI	19.8	Analog input = current, converted measurement (°C)
LOL	16.5	Lower limit = lower limit value is 16.5 (°C)

### How do I obtain specific information about data points?

In order to obtain targeted information about a data point, you can use the following instructions in **COLBAS** operation:

#### Associated parameters

```
LIST $015/F
```

All the parameters associated with the I/O module point are listed:

```
.$015.CTYP = MW ;--
$015.AI = 19.8
$015.CPNR = 0
etc.
```

#### Value of a parameter

```
$015.AI
```

The current value of parameter AI of \$005 is displayed:

```
TSK203 17.8
```

```
RGB1.COU
```

The current value of parameter COU of RGB1 is displayed:

```
TSK203 63.4
```

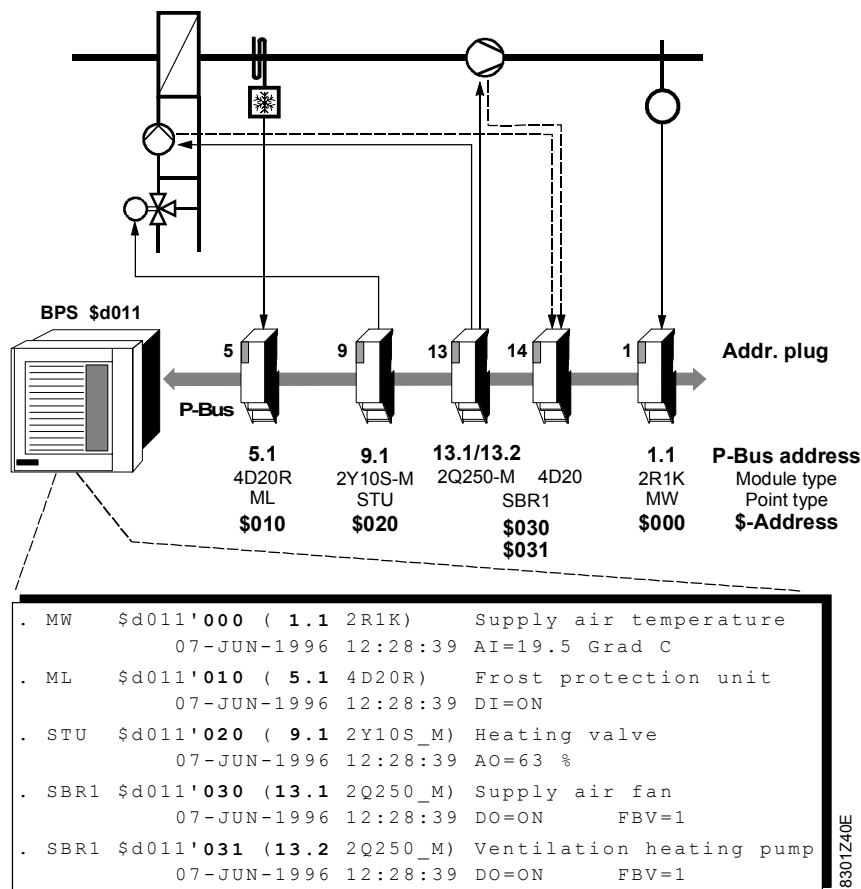
#### Explanation TSK 203

Basic task of the BPS for operation via the TTY3 tool interface in COLBAS

## 5.5.3 Classification of I/O Module Points

### Example

The following figure shows a simple plant with the associated I/O modules and the relevant excerpt from the system report. The example shows the relationship between the address information in the report and the plant components.



### Explanations

The explanation relates to the second report line in the figure and connections to an associated plant part, namely, the frost protection unit.

Expression	Designation	Explanation
ML	Point type	The point type designates the type of the data point, here ML for status signals
\$d011'010	-\$-address	The \$-address or technical address in the BPS is a conversion of the P-Bus-address according to system qualified rules. The address consists of: <ul style="list-style-type: none"> <li>- the BPS number in the System, here 011</li> <li>- the point number in the BPS, here 010 for module 01, point number 0</li> </ul>
5.1	P-Bus-address	The P-Bus address or logical address characterizes the "location" on the process bus. Here: 5.1 for module 5, point number 1
4D20R	Module type	Type designation for the associated I/O module
5	Addr. plug	Using a coded address plug, the I/O module receives the address on the P-Bus, here 5

## 5.5.4 BPS Implementation Principle

### Implementation reason

The UNIGYR and VISONIK systems today use the same process bus (P-Bus) and the same I/O module range. To provide compatibility with earlier systems, the I/O modules in the Building Process Station mimic the VISONIK-specific addressing.

### Number of module points in BPS

The Building Process Station supports:

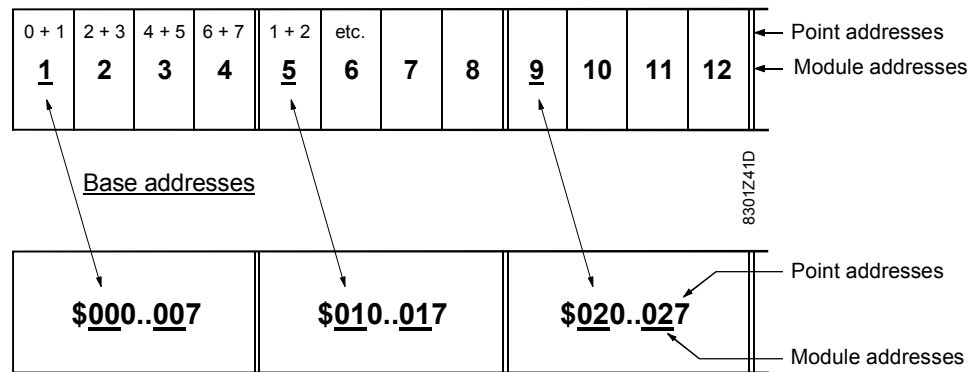
- 28 module locations (00 to 33 octal) each with a maximum of 8 points (0 to 7 octal)
- This yields a total of  $28 \times 8 = 224$  module points (\$000 to \$337)

Module addressing on the P-Bus uses decimal numbers from 1 to 112. Each module can be loaded with two data points. This also yields the 224 module points.

### Classification

The following figure shows the conversion principle for assigning the P-Bus module addresses to the \$-Addresses of the Building Process Station:

I/O module and point addresses on P-Bus



Associated \$ADR module and point addresses in BPS

### Basis address

The P-Bus base addresses of 1, 5, 9, etc., which correspond to the \$-Addresses 00, 01, 02, etc., play a special role in the module address classification. These locations are fixed for copying in the BPS. During plant engineering they were taken into account (thus the address jumps for the numbers and plugs).

### Example

The following explanations relate to the previously shown plant example of the "Classification of the I/O Module Points" section.

P Bus-Address	BPS Address	Explanation
9.1	\$020	On the P-Bus, the positioning output for the heater valve is assigned to I/O module no. 9, point 1. Reversed, this corresponds to BPS-address module no. 02, point 0.
13.1/13.2	\$030/\$031	The single switching module, having basis address 13, accommodates the two switching commands (each SBR1) for the supply air fan and the ventilation heating pump. These switching commands are assigned I/O module addresses 13.1 / 13.2, that is, BPS addresses \$030 / \$031. <i>Note:</i> Because the 4D20 module uses the next address 14, the feedback signals (FBV) in the BPS are displayed under the same addresses, namely \$030 and \$031.



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