

UNIGYR®

Program Cards

for PRU1... universal process units

PAA1...



Scale 1 : 2

Program cards for user programs in the function block technique for use with the PRU1... universal process units. Configuration of the regulation, control and supervision functions on the software side by means of the «UNIGYR Design» PC program tool.

Range of cards for the entire HVAC field or for certain parts of it, classified according to plant complexity.

Use

There are six basic types of program cards providing control, regulation and supervision functions for the following fields of application:

- «**Ventilating/air conditioning**» cards for operation of VAC plant
- «**Heating**» cards for operation of heat generators and heat loads
- «**Heating and ventilating/air conditioning**» cards for combined operation of VAC plant and heat loads
- «**Room Management System**» cards for regulation and control tasks in individual rooms
- «**Heating bus**» card for H-bus set for the connection of SIGMAGYR heating controllers with bus capability to UNIGYR
- «**District heat**» card for operation of district heat plant

Type summary

Ventilating/ air conditioning

Program card for medium to large plants
or for plants of higher complexity
(with 32 kB configuration memory) **PAA1.2A-...**

Program card for large and complex plants
(with 32 kB configuration memory) **PAA1.3A-...**

Heating

Program card for medium to large plants
(with 16 kB configuration memory) **PAA1.2H-...**

Program card for large and complex plants
(with 32 kB configuration memory) **PAA1.3H-...**

Heating and ventilating/ air conditioning

Program card for small plants or for
plants of low complexity
(with 16 kB configuration memory) **PAA1.2HA-...**

Program card for medium to large plants or
for plants of medium to high complexity
(with 32 kB configuration memory) **PAA1.3HA-...**

Program card, variant of PAA1.3HA... card
with emphasis on heat distribution
(with 32 kB configuration memory) **PAA1.3V01-...**

Room management system

Program card with regulation and control
functions for individual rooms
(with 16 kB configuration memory) **PAA1.2M-...**

Program card with regulation and control
functions for individual rooms
(with 32 kB configuration memory) **PAA1.3M-...**

Heating bus

Program card for H-bus set for the connection
of SIGMAGYR heating controllers type
RVL50/RVL55 with bus capability to UNIGYR
(with 32 kB configuration memory) **PAA1.3H55-...**

District heat

Program card with regulation and control
functions for district heat plant
(with 32 kB configuration memory) **PAA1.3DH-...**

Delivery

The type references of the program cards actually delivered carry the current software
version at the end, in place of the three periods given above, e.g. PAA1.3A-04.

Equipment combinations

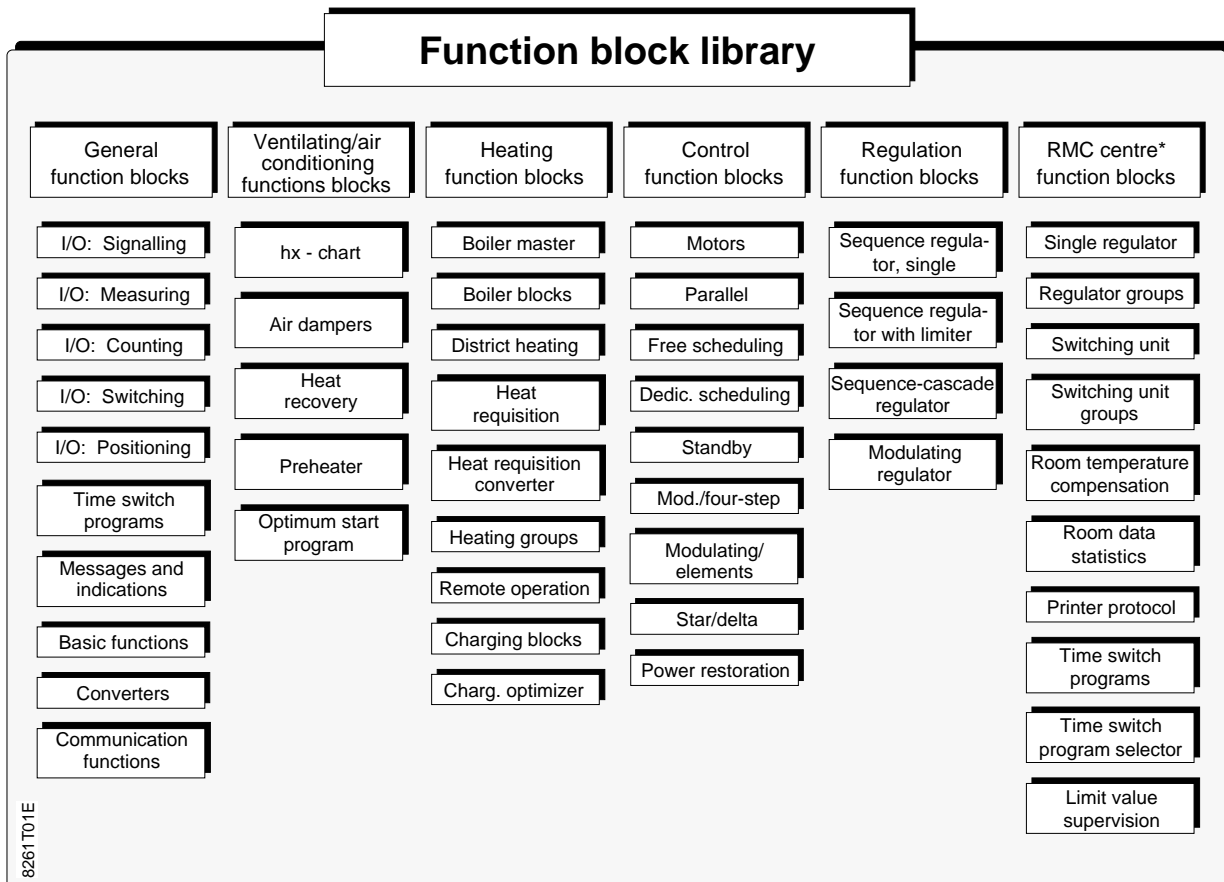
The program cards are plugged into the universal process units of which there are two
versions:

Type of process unit	Type reference	Data sheet
Universal process unit for a maximum of 32 load units	PRU1.32	8241
Universal process unit for a maximum of 64 load units	PRU1.64	8241

Functions

The diagram below shows the entire range of function blocks without making reference to individual types of program cards.

This, however, does not represent the total number of function blocks available. For example, the basic functions in the group "General function blocks" comprise 20 function blocks.



* Function blocks for individual room regulation when using the universal process unit as an RMC centre (RMC = Room Management Control)

Overview of function blocks by program cards

The tables on the next two pages show the various function blocks integrated in the different basic types of program cards.

Here, too, similar function blocks are often combined under the same heading in order to limit the size of the table; the converters in the group "General function blocks" are an example.

For a detailed description of the structure, the scope of functions and the mode of operation of the individual function blocks, please refer to the «Manual of Functions», Z8281.

Function blocks	Program cards PAA...						
	1...A..	1...H..	1...HA..	1.3V01	1...M..	1.3H55..	1.3DH...
I/O blocks							
Status input block	•	•	•	•	•	•	•
Measured value input block	•	•	•	•	•	•	•
Counting value input blocks	•	•	•	•	•	•	•
Switching output blocks	•	•	•	•	•	•	•
Position output blocks	•	•	•	•	•	•	•
Control blocks							
Large motor control block	•		•	•			
Small motor control block		•				•	•
Parallel control block	•	•	•	•		•	•
Free scheduler control block	•	•	•	•		•	•
Dedicated scheduler control block	•	•	•	•		•	•
Standby control block	•	•	•	•		•	•
Modulating/step control block	•	•	•	•		•	•
Modulating/element control block	•		•				
Star/delta control block	•	•	•				
Power restoration control block	•	•	•				
Ventilating/air conditioning blocks							
hx-chart	•		•				
Air damper block	•		•	•			
Heat recovery block	•		•	•			
Preheater block	•		•	•			
Optimum start program block, ventilation	•		•				
Regulation blocks							
Sequence regulator, single	•		•	•			
Sequence regulator with limiter	•		•	•			
Sequence/cascade regulator	•		•	•			
Modulating regulator	•	•	•	•	•	•	•
Heat provisioning blocks, heating							
Internal boiler master		•				•	•
External boiler master		•				•	•
Internal boiler block		•				•	•
External boiler block		•				•	•
District heating block		•	•	•			•
Heat distribution blocks, heating							
Heat requisition block		•	•	•			•
Heat requisition converter	•	•	•	•			•
Large heating group block		•		•			•
Remote operation block		•		•			•
Small heating group block	•	•	•	•			•
Domestic hot water pump charging block		•	•				•
Domestic hot water charging optimizer		•	•				•
Domestic hot water electric heating block		•	•				•
Time switch blocks							
Time switch programs 1-2-3	•	•	•	•	•	•	•
Special day switching block	•	•	•	•	•	•	•

Function blocks	Program cards PAA...						
	1...A..	1...H..	1...HA..	1.3V01	1...M..	1.3H55..	1.3DH...
Status and indication blocks							
Step indication block	•	•	•	•	•	•	•
Common fault block	•	•	•	•	•	•	•
Step status block	•	•	•	•	•	•	•
Limit value status block	•	•	•	•	•	•	•
Basic function blocks							
Switching blocks	•	•	•	•	•	•	•
Priority blocks	•	•	•	•	•	•	•
Counting and statistics blocks	•	•	•	•	•	•	•
Supervision blocks	•	•	•	•	•	•	•
Signal handling blocks	•	•	•	•	•	•	•
Pulse blocks	•	•	•	•	•	•	•
Clock block	•	•	•	•	•	•	•
Differential block							•
Integral block							•
Converter blocks							
Linear converter	•	•	•	•	•	•	•
Polynomial converter	•	•	•	•	•	•	•
Pulse width modulator	•	•	•	•	•	•	•
Modulating/three-position converter	•	•	•	•	•	•	•
Modulating/two-position converter	•	•	•	•	•	•	•
Step/binary group converter	•	•	•	•	•	•	•
Binary group/step converter	•	•	•	•	•	•	•
Multistep switch	•	•	•	•	•	•	•
Digital step switch	•	•	•	•	•	•	•
Heat metering disable block							•
Communication blocks							
Data polling block	•	•	•	•	•	•	•
Data provisioning block	•	•	•	•	•	•	•
Registration block	•	•	•	•	•	•	•
Telephone block	•	•	•	•	•	•	•
Printer block	•	•	•	•	•	•	•
Fault report start block	•	•	•	•	•	•	•
Transmit and/or receive blocks						•	
Control						•	
RMC blocks (individual room control)							
Controllers RCExx					•		
Controller group RCExx					•		
Switching unit SEZ81					•		
Switching unit group SEZ81					•		
Outside temperature compensation					•		
Statistics block					•		
Printer report					•		
Time switch programs 6 and 12					•		
Time switch program selector					•		
Differential limit value supervision					•		
Fleeting					•		

Technical design

The program cards contain a function block library with control, regulation and supervision blocks.

For the plant-specific program, the required function blocks are combined and interlinked in line with their functions, hierarchy and scheduling.

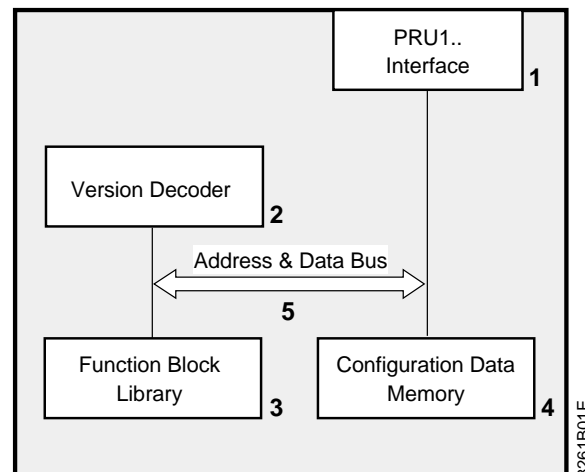
This plant configuration is made with the help of the «UNIGYR Design» PC program tool and is stored on the card as the user program. With the program tool, it can be read, altered, or extended and then stored again at any time (uploading/downloading).

A program card contains the following principal functional parts:

- the **function block library**, filed in EPROM as firmware
- the **configuration data memory**, containing the stored plant configuration with the project-specific setting parameters in EEPROM which, depending on the plant's size and complexity, has a capacity of 16 or 32 kB
- the **version decoder**, which checks whether the version of the function block library (firmware) agrees with the version of the configuration program (software)
- the **interface** to the universal process unit, including the connector

Block circuit diagram of program cards

PAA1...



- 1 Interface to the universal process unit (connector)
- 2 Version decoder between function block library and configuration program
- 3 Function block library (firmware in EPROM having a storage capacity of 256 kB)
- 4 Configuration data memory (plant configuration stored in EEPROM having a storage capacity of 16 or 32 kB)
- 5 Address and data bus between function block library and version decoder on the one hand and configuration data memory and interface to the process unit on the other

Mechanical design

Printed circuit boards in the form of plug-in cards. To protect the electronic components, both sides are provided with a plastic cover.

The only visible difference between the various types of program cards is their labeling.

Engineering notes



Data sheet 8241, «Universal Process Units PRU1...», contains system-related engineering know-how. It should be studied before reading the following sections while paying special attention to the information relating to safety.

Correct use

Within the overall system, these program cards must always be used on applications as described on the front page and in the chapters «Use», «Engineering notes» and «Technical data» of the present data sheet. The respective chapters of data sheet 8241, «Universal Process Units PRU1...», must also be taken into consideration.

Plant operating program

The plant operating program is generated either by Landis & Gyr or the product user. It is prepared based on plant-, regulation-, control- and supervision-specific requirements. For the configuration of the applications, the UNIGYR system software offers the powerful programs «UNIGYR Design» and «Autoconfigurator». Comprehensive documentation, such as the «Manual of Functions», Z8281, supports the configuration of applications.

Fitting notes

The instructions supplied with the program cards show how the program cards are to be inserted into the process unit.

Commissioning notes

Prerequisites

At the time of commissioning, the program card must be configured in line with the plant's specific requirements and then inserted in the process unit. For additional information that needs to be observed, refer to data sheet 8241, «Universal Process Units PRU1...», same chapter.

Service functions

Using any non-configured program card and the service card «I/O Module Service», module functions can be tested independent of the plant. To do this, the I/O modules must be addressed, however; that is, the address plugs must be fitted.

At the time of commissioning, the program card must be configured with the help of the PC program tool «UNIGYR Design», in line with the plant's specific requirements, and then inserted in the process unit.

Using any non-configured program card and the operating cards, module functions can be tested independent of the plant. To do this, the I/O modules must be addressed, however; that is, the address plugs must be fitted.

Technical data

Memory for plant operating program	Function block memory (EPROM)	256 kB
	Configuration memory (EEPROM)	
	Program cards PAA1.2....	16 kB
	Program cards PAA1.3....	32 kB
CE conformance	In compliance with the directives of the European Union	
	Electromagnetic compatibility	89/336/EWG
Electromagnetic compatibility	Emissions	EN 50 081-1
	Immunity	EN 50 082-2

