

## RCP 20, 21: P-controller

### How energy efficiency is improved

Enables the implementation of individually optimised controls for maximum efficiency in pneumatic installations.

### Areas of application

Pneumatic control in ventilation and air-conditioning equipment of temperature, pressure, pressure differential, humidity and flow rate in combination with appropriate transducers.

### Features

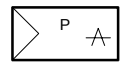
- P fixed-value controller
- P fixed-value/schedule controller
- Controllers can be used universally for the most varied of applications
- Housing, rack and front doors made of thermoplastic
- Suitable for wall or panel mounting
- Functional description and commissioning help inserted in front door
- Front panel with adjusters and 3 covered recesses for plug-in pressure gauge (XMP) making commissioning easier
- Setpoint adjuster X<sub>S</sub> adjustable manually with scales for all Centair measuring ranges
- All settings very easy to make with a coin and % scale
- M4 measuring connections, control action adjustable (delivered with control action B)
- Compressed-air connections R<sub>p</sub> 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

### Technical description

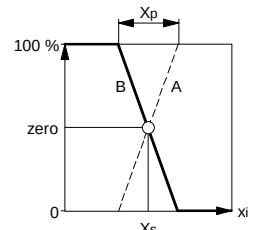
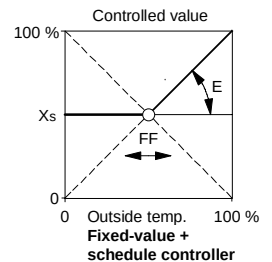
- Supply pressure 1.3 bar ± 0.1
- Easily accessible adjusters for X<sub>S</sub> (setpoint), X P4 (P range), T<sub>n</sub> (reset time), E (influence) and FF (schedule start point)
- Inputs for:
  - remote setpoint adjustment
  - controlled variable
  - command variable
- Outputs for:
  - output pressure for dampers or actuator



T03054



Y03247

P-controller  
B03811Fixed-value +  
schedule controller  
B03257

| Type                          | Description                            | Air capacity <sup>1)</sup><br>l <sub>n</sub> /h | Air consumption <sup>2)</sup><br>l <sub>n</sub> /h | Weight<br>kg |
|-------------------------------|----------------------------------------|-------------------------------------------------|----------------------------------------------------|--------------|
| <b>RCP 20 F001</b>            | fixed-value P-controller, min. limiter | 400                                             | 40                                                 | 0,7          |
| <b>RCP 21 F001</b>            | fixed-value + schedule P-controller    | 400                                             | 60                                                 | 0,7          |
| <b>RCP 20:</b>                |                                        | <b>RCP 21:</b>                                  |                                                    |              |
| Setpoint X <sub>S</sub>       | 0...100%                               | Setpoint X <sub>S</sub>                         | 0...100%                                           |              |
| Remote adjust. of setpoint    | 0...100%                               | Remote adjustment of setpoint                   | 0...100%                                           |              |
| P-band X <sub>P3</sub>        | 0...100%                               | P-band X <sub>P3</sub>                          | 0...100%                                           |              |
| Zero point                    | 0...100%                               | Zero point                                      | 0...100%                                           |              |
| Limiter B                     | 0...100%                               | Shift starting point FF                         | 0...100%                                           |              |
|                               |                                        | Influence E                                     | 0,25...3                                           |              |
| Supply pressure <sup>3)</sup> | 1,3 bar ± 0,1                          | Connection diagram, RCP 20                      | <a href="#">A02686</a>                             |              |
| Input pressures               | 0,2...1,0 bar                          | Connection diagram, RCP 21                      | <a href="#">A02687</a>                             |              |
| Output pressures              | 0,2...1,0 bar                          | Dimension drawing                               | <a href="#">M297100</a>                            |              |
| Permissible amb. temp.        | 0...55 °C                              | Fitting instructions                            | <a href="#">MV 3246</a>                            |              |

### Accessories

**0297103 000** Additional bag of scales with 8 different scales according to the transducer used.

**0297133 000** Universal scales for setpoint adjuster X<sub>S</sub>; gradation 120, 80/160, 50/100, 30/60

1) 200 l<sub>n</sub>/h for RCP 20 with limiter B activated.

2) Without transducer; air consumption for transducer connection 3 is 33 l<sub>n</sub>/h more.

3) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.

Operation

RCP 20 and RCP 21

The transducer at connection 3 converts the control variable into the pneumatic standard signal 0,2...1,0 bar (equivalent to 0...100%) within its measuring range. This actual-value signal  $x_{i3}$  is compared with the fixed setpoint  $X_S$ . If there is control deviation, the output pressure changes depending on the set P-band  $X_{P3}$  (P-control). When the actual value is equal to the setpoint ( $x_{i3} = X_S$ ), the output pressure always assumes the value zero (0,6 bar).

By including the limiter B, the RCP 20 allows the output pressure  $y$  to be limited to a (variable) minimum value.

With a pressure of 0,2...1,0 bar at input 6, the setpoint can be set remotely from 0...100%. The internal setpoint setting then functions as a minimum limitation.

A restrictor ( $\varnothing$  0,2 mm) for supplying the transducer is fitted at connection 3. The signals from the transducer and the output pressure can be checked via the M4 measuring connection or shown via the manometer.

RCP 21: additional functions

The transducer at connection 5 converts the command variable (e.g. outside temperature) into the pneumatic standard signal 0,2...1,0 bar (equivalent to 0...100%). This signal ( $x_{i5}$ ) is fed to the command circuit which, together with the setting parameters FF and E, creates a program for the setpoint shift of the following P-controller. The characteristic for the influence E can be placed in any of the four quadrants.

Because the outside temperature is often fed to more than one controller, the transducer at connection

Additional details

RCP 20: Front plate with adjusters for setpoint, P-band, zero and minimum limiter of  $y$ .

RCP 21: Front plate with adjusters for setpoint, P-band, zero, influence and shift starting point.

Additional information on accessories

0297103 000 Additional bag of eight alternative scales

|             |              |
|-------------|--------------|
| 5...35 °C   | 20...90 %rh  |
| -20...40 °C | 0...5 mbar   |
| 0...120 °C  | 5...10 mbar  |
| 80...200 °C | 10...15 mbar |

Technical information

Technical manual: *centair* system 304991 003

5 must be supplied by a separate ( $\varnothing$  0,2 mm) restrictor.

Connection diagrams

Dimension drawing

RCP 20

RCP 21

Dimension drawing

Example: Room-temperature control

Example: Room-temperature control

|   |                                             |          |                                                 |          |                                           |
|---|---------------------------------------------|----------|-------------------------------------------------|----------|-------------------------------------------|
| 1 | Supply pressure                             | $X_S$    | Variable setpoint                               | $x_{i3}$ | Control variable                          |
| 2 | Output pressure                             | $X_{P3}$ | P-band for P-controller                         | $x_{i5}$ | Command variable                          |
| 4 | Actual value for P-controller               | zero     | zero point                                      | $y$      | Output pressure                           |
| 5 | Command variable for fixed-value + schedule | FF       | Shift starting point for fixed-value + schedule | S1       | Control action for fixed-value + schedule |
| 6 | Remote setpoint adjustment                  | E        | Influence                                       | S2       | Control action for controller             |
|   |                                             | B        | Limiter                                         |          |                                           |

