Procontrol P14

89AS30R0100

Module and Application Description

Analog Signal Multiplier
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89AS30R0100
Analog Signal Multiplier
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1. APPLICATION
   This module is used for converting and multiplying analog signals.

2. FEATURES
   The module is designed to process input signals of a level of 0 ... 20 mA or 4 ... 20 mA or 0 ... 10 V DC, the ranges being selected by means of jumpers. From the input signal, three output signals of 0 ... 20 mA or 4 ... 20 mA are formed which can be selected individually by using jumpers; also a signal of 0 ... 10 V is formed.

3. DESCRIPTION
   The inputs are electrically isolated from the rest of the circuitry. For supplying transmitters and other devices, a voltage of 15 V or 24 V DC is available for each input, also electrically isolated. The module contains three identical function units. The outputs are separated.

4. ANNUNCIATION FUNCTION
   A green light-emitting diode on the front panel indicates when the module is ready for operation.
5. FUNCTION DIAGRAM
6. SETTINGS

Type of input signals and output signals desired, and transmitter supply need to be selected by means of jumpers (JPxx).

### Inputs

<table>
<thead>
<tr>
<th>FE1</th>
<th>E1</th>
<th>JP10</th>
<th>JP11</th>
<th>JP12</th>
</tr>
</thead>
<tbody>
<tr>
<td>FE2</td>
<td>E2</td>
<td>JP20</td>
<td>JP21</td>
<td>JP22</td>
</tr>
<tr>
<td>FE3</td>
<td>E3</td>
<td>JP30</td>
<td>JP31</td>
<td>JP32</td>
</tr>
</tbody>
</table>

- **Inputs**
  - 0 ... 20 mA: 
    - 0 mA: circle
    - 20 mA: circle
  - 4 ... 20 mA: 
    - 4 mA: circle
    - 0 mA: circle
  - 0 ... 10 V: 
    - 0 V: circle
    - 10 V: circle

### Transmitter supply

<table>
<thead>
<tr>
<th>US1</th>
<th>JP19</th>
</tr>
</thead>
<tbody>
<tr>
<td>US2</td>
<td>JP29</td>
</tr>
<tr>
<td>US3</td>
<td>JP39</td>
</tr>
</tbody>
</table>

- **Transmitter supply**
  - 15 V: circle
  - 24 V: circle

### Outputs

<table>
<thead>
<tr>
<th>FE1</th>
<th>A11</th>
<th>JP13</th>
<th>JP14</th>
</tr>
</thead>
<tbody>
<tr>
<td>FE2</td>
<td>A21</td>
<td>JP23</td>
<td>JP24</td>
</tr>
<tr>
<td>FE3</td>
<td>A31</td>
<td>JP33</td>
<td>JP34</td>
</tr>
</tbody>
</table>

- **Outputs**
  - 0 ... 20 mA: 
    - 0 mA: circle
    - 20 mA: circle
  - 4 ... 20 mA: 
    - 4 mA: circle
    - 0 mA: circle
7. CONNECTION DIAGRAM

Connection of externally supplied signal sources

Supply

<table>
<thead>
<tr>
<th>+</th>
<th>0 (4) ... 20 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>0 ... 10 V</td>
</tr>
</tbody>
</table>

Signal

Source

89AS30

Connection of twin-core transducers

S

MU

US1,2,3

Z1,2,3

E –

E +

89AS30

Connection of four-core transducers

Possible only if their current consumption < 25 mA

Supply

Signal

MU

US1,2,3

Z1,2,3

E +

E –

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8. MODULE DESIGN

Board size: 3 units, 1 division, 160 mm deep

Connector: to DIN 41 612 / IEC 60603-2
1 x 48-pole edge connector, type F

Weight: approx. 0.3 kg

Contact assignments of connector X1

View of contact side:

<table>
<thead>
<tr>
<th></th>
<th>d</th>
<th>b</th>
<th>z</th>
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<tbody>
<tr>
<td>02</td>
<td>E3+</td>
<td>E2+</td>
<td>E1+</td>
</tr>
<tr>
<td>04</td>
<td>E3-</td>
<td>E2-</td>
<td>E1-</td>
</tr>
<tr>
<td>06</td>
<td>US3+</td>
<td>US2+</td>
<td>US1+</td>
</tr>
<tr>
<td>08</td>
<td>Z3</td>
<td>Z2</td>
<td>Z1</td>
</tr>
<tr>
<td>10</td>
<td>A31+</td>
<td>A21+</td>
<td>A11+</td>
</tr>
<tr>
<td>14</td>
<td>A31-</td>
<td>A21-</td>
<td>A11-</td>
</tr>
<tr>
<td>16</td>
<td>A32+</td>
<td>A22+</td>
<td>A12+</td>
</tr>
<tr>
<td>18</td>
<td>A32-</td>
<td>A22-</td>
<td>A12-</td>
</tr>
<tr>
<td>20</td>
<td>A33+</td>
<td>A23+</td>
<td>A13+</td>
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<tr>
<td>22</td>
<td>A33-</td>
<td>A23-</td>
<td>A13-</td>
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<tr>
<td>24</td>
<td>A34+</td>
<td>A24+</td>
<td>A14+</td>
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<tr>
<td>26</td>
<td>A34-</td>
<td>A24-</td>
<td>A14-</td>
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<td>28</td>
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<tr>
<td>30</td>
<td>Z</td>
<td>Z</td>
<td>Z</td>
</tr>
<tr>
<td>32</td>
<td>USA</td>
<td>USA</td>
<td>USB</td>
</tr>
</tbody>
</table>
Side view with jumper positions and view of module front

Input Channel 1
- JP10, JP11
- Input: 0 mA, 4 mA
- Output: 0 mA, 4 mA

Input Channel 2
- JP20, JP21
- Input: 0 mA, 4 mA
- Output: 0 mA, 4 mA

Input Channel 3
- JP30, JP31
- Input: 0 mA, 4 mA
- Output: 0 mA, 4 mA

Channel 1
- JP12
- Output 1: 0 mA, 4 mA
- Output 2: 0 mA, 4 mA
- Output 3: 0 mA, 4 mA

Channel 2
- JP14
- Output 1: 0 mA, 4 mA
- Output 2: 0 mA, 4 mA
- Output 3: 0 mA, 4 mA

Channel 3
- JP32
- Output 1: 0 mA, 4 mA
- Output 2: 0 mA, 4 mA
- Output 3: 0 mA, 4 mA

JP12, JP22, JP32

24 V, 15 V

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9. SYSTEM DATA

<table>
<thead>
<tr>
<th>Kind of influence</th>
<th>Environmental Parameter</th>
<th>Standard</th>
<th>Characteristic/Value</th>
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<tbody>
<tr>
<td>Operating conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climates environment</td>
<td>Ambient temperature</td>
<td>IEC/EN 60068-2-2</td>
<td>0°C to +70°C, 16h</td>
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<tr>
<td></td>
<td>Relative humidity</td>
<td>IEC/EN 60068-2-78</td>
<td>5% to 95% RH</td>
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<td>Atmosphere pressure</td>
<td></td>
<td>IEC/EN 60068-1</td>
<td>86 kPa to 106 kPa</td>
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<tr>
<td>Electromagnetic compatibility (EMC)</td>
<td>Electrostatic discharge immunity</td>
<td>IEC/EN 61000-4-2</td>
<td>Class 3</td>
</tr>
<tr>
<td></td>
<td>Class 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Radiated, radio-frequency, electromagnetic field immunity</td>
<td>IEC/EN 61000-4-3</td>
<td>Class 3</td>
</tr>
<tr>
<td></td>
<td>Class 3</td>
<td></td>
<td>80 MHz to 3000 MHz, 10 V/m, 80% AM (1 kHz)</td>
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<tr>
<td></td>
<td>Electrical fast transient/burst immunity</td>
<td>IEC/EN 61000-4-4</td>
<td>5/500 ns</td>
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<td>Class 3</td>
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<td>2 kV</td>
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<td></td>
<td>Class 3</td>
<td></td>
<td>2 kV</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>2 kV</td>
</tr>
<tr>
<td>Surge immunity</td>
<td>Supply lines for AC 120/230 V (burst)</td>
<td>IEC/EN 61000-4-5</td>
<td>1.2/50 ns</td>
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<tr>
<td></td>
<td>Class 4/3</td>
<td></td>
<td>4/2 kV</td>
</tr>
<tr>
<td></td>
<td>Class 1/1</td>
<td></td>
<td>0.5/0.5 kV</td>
</tr>
<tr>
<td></td>
<td>Class 3</td>
<td></td>
<td>2 kV</td>
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<tr>
<td>Immunity to conducted disturbances, induced by radio-frequency fields</td>
<td>IEC/EN 61000-4-6</td>
<td>Class 3</td>
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<td>Radiated emission</td>
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<td>CISPR16 / EN 55016</td>
<td>Limit Class A, group 1</td>
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<td></td>
<td>Class A</td>
<td></td>
<td>30 MHz to 1000 MHz</td>
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<tr>
<td>Conditions of storage and transport</td>
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</tr>
<tr>
<td>Climates environment</td>
<td>Ambient temperature</td>
<td>IEC/EN 60068-2-2</td>
<td>-40°C to +85°C, 16h</td>
</tr>
<tr>
<td></td>
<td>Relative humidity</td>
<td>IEC/EN 60068-2-30</td>
<td>5% to 100% RH</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>+25°C to 40°C (6 cycles)</td>
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<tr>
<td>Atmosphere pressure</td>
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<td>IEC/EN 60068-1</td>
<td>70 kPa to 106 kPa</td>
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</table>

10. TECHNICAL DATA

10.1 Power supply

Supply voltage +24 V DC
Current consumption approx. 110 mA + output currents

10.2 Process Interface

10.2.1 Input values E1, E2, E3

- Voltage input 0 ... 10 V (max. 30 V)
- Input resistance > 100 kOhm
- Current input 0 ... 20 mA, 4 ... 20 mA
- Load resistance RB 55 Ohm

10.2.2 Transmitter supply US1, US2, US3

- Selectable by means of jumpers 15 V DC, max. 25 mA
- 24 V DC, max. 25 mA

10.2.3 Output values

- Current outputs A11, A12, A13, A21, A22, A23, A31, A32, A33
- Selectable by means of jumpers 0 ... 20 mA
- 4 ... 20 mA
Max. burden RB: 1000 Ohm

Voltage outputs A14, A24, A34: 0 ... 10 V (max. 12 V)
Max. current: 5 mA

10.2.4 Transmission values
Transmission error at input/output within the permissible temperature range and the permissible supply voltage tolerances:
Signal delay: < 1 msec

10.3 Interference immunity (of process inputs and outputs)
The product is in conformity with the provisions of the following European Directive:


Conformity to the stated Directive is assured through the application of the following harmonized standards:

- Environment: Industry

See 2VAA002182R0301_CE-Conformity-P14.pdf for detailed technical data.

11. ORDERING DATA
Order no. for complete module:
Type designation: 89AS30R0100 Order number: GKWN000317R0100

Technical data are subject to change without notice!
# 11. REVISION HISTORY

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