

# Alarm unit

## SINEAX C 402, SIRAX C 402

- for DC currents or voltages

### Type of protection



[EEx ia] IIC

### Certificate

|                       |                      |
|-----------------------|----------------------|
| Mechanical design     | <br>PTB 97 ATEX 2192 |
| Housing S17, SINEAX   |                      |
| Housing S35, SINEAX   |                      |
| Plug-in module, SIRAX |                      |

### Measuring input

for connection to certified intrinsically safe circuits with the following max. value:  $U = 30\text{ V}$

$U_o = 6\text{ V}$                        $L_i = 20\ \mu\text{H}$   
 $I_o = 63\ \mu\text{A}$                      $C_i = 20\ \text{nF}$   
 linear characteristic

#### Verification of the Intrinsic Safety acc. to EN 60 079-14

With the measurement of DC currents resp. DC voltages two intrinsically safe circuits are connected. The **certified** tables on page 2 give the values for  $L_o$  and  $C_o$  for typical applications. **The tables are calculated by PTB and serve to be used as the verification of the intrinsic safety.**

|            | Power supply                            | Contact circuits  |
|------------|---|---|
| Rated data | 24-60 V resp.<br>85-230 V AC / 110 V DC | 250 V AC / 2 A resp.<br>125 V DC / 0.24 A resp.<br>30 V / 1 A |
| $U_m$      | 253 V AC resp. 125 V DC                 | 253 V   |



SINEAX C 402-1 in housing S17



SINEAX C 402-4 in housing S35



SIRAX C 402-6 as plug-in module.

# Verification of Intrinsic Safety

**Table 1**

Values of  $L_o$  and  $C_o$  for measuring DC currents or voltages in intrinsically safe circuits which **linearly** limit the current.

| $U_i$ | $I_i$  | Explosion group |        |        |         |
|-------|--------|-----------------|--------|--------|---------|
|       |        | IIC             |        | IIB    |         |
|       |        | $L_o$           | $C_o$  | $L_o$  | $C_o$   |
| 13 V  | 29 mA  | 40 mH           | 258 nF | 150 mH | 1580 nF |
| 19 V  | 29 mA  | 40 mH           | 110 nF | 150 mH | 840 nF  |
| 24 V  | 29 mA  | 40 mH           | 66 nF  | 150 mH | 560 nF  |
| 30 V  | 29 mA  | 40 mH           | 42 nF  | 150 mH | 370 nF  |
| 13 V  | 59 mA  | 10 mH           | 258 nF | 40 mH  | 1580 nF |
| 19 V  | 59 mA  | 10 mH           | 110 nF | 40 mH  | 840 nF  |
| 24 V  | 59 mA  | 10 mH           | 66 nF  | 40 mH  | 560 nF  |
| 30 V  | 59 mA  | 10 mH           | 42 nF  | 40 mH  | 370 nF  |
| 13 V  | 79 mA  | 6 mH            | 258 nF | 22 mH  | 1580 nF |
| 19 V  | 79 mA  | 6 mH            | 110 nF | 22 mH  | 840 nF  |
| 24 V  | 79 mA  | 6 mH            | 66 nF  | 22 mH  | 560 nF  |
| 30 V  | 79 mA  | 6 mH            | 42 nF  | 22 mH  | 370 nF  |
| 13 V  | 100 mA | 3 mH            | 258 nF | 12 mH  | 1580 nF |
| 19 V  | 100 mA | 3 mH            | 110 nF | 12 mH  | 840 nF  |
| 24 V  | 100 mA | 3 mH            | 66 nF  | 12 mH  | 560 nF  |
| 30 V  | 100 mA | 3 mH            | 42 nF  | 12 mH  | 370 nF  |

**Table 2**

Values of  $L_o$  and  $C_o$  for measuring DC currents or voltages in intrinsically safe circuits which **linearly** limit the current.

| $U_i$ | $I_i$  | Both $L_o$ and $C_o$ |        |       |        |
|-------|--------|----------------------|--------|-------|--------|
|       |        | Explosion group      |        |       |        |
|       |        | IIC                  |        | IIB   |        |
|       |        | $L_o$                | $C_o$  | $L_o$ | $C_o$  |
| 13 V  | 29 mA  | 2 mH                 | 150 nF | 10 mH | 652 nF |
| 19 V  | 29 mA  | 5 mH                 | 71 nF  | 10 mH | 367 nF |
| 24 V  | 29 mA  | 5 mH                 | 44 nF  | 10 mH | 250 nF |
| 30 V  | 29 mA  | 6 mH                 | 12 nF  | 25 mH | 167 nF |
| 13 V  | 59 mA  | 2 mH                 | 150 nF | 9 mH  | 652 nF |
| 19 V  | 59 mA  | 2 mH                 | 71 nF  | 10 mH | 367 nF |
| 24 V  | 59 mA  | 2 mH                 | 35 nF  | 10 mH | 250 nF |
| 30 V  | 59 mA  | 2 mH                 | 3 nF   | 10 mH | 154 nF |
| 13 V  | 79 mA  | 2 mH                 | 150 nF | 9 mH  | 652 nF |
| 19 V  | 79 mA  | 2 mH                 | 71 nF  | 10 mH | 367 nF |
| 24 V  | 79 mA  | 2 mH                 | 28 nF  | 10 mH | 250 nF |
| 30 V  | 79 mA  | -                    | - nF   | 10 mH | 132 nF |
| 13 V  | 100 mA | 2 mH                 | 150 nF | 5 mH  | 652 nF |
| 19 V  | 100 mA | 2 mH                 | 71 nF  | 10 mH | 367 nF |
| 24 V  | 100 mA | 1 mH                 | 22 nF  | 3 mH  | 250 nF |
| 30 V  | 100 mA | -                    | -      | 7 mH  | 107 nF |

**Table 3**

Values of  $L_o$  and  $C_o$  for measuring DC currents or voltages in intrinsically safe circuits with **electronic** current limitation.

| $U_i$ | $I_i$  | Type of protection |               |            |        |
|-------|--------|--------------------|---------------|------------|--------|
|       |        | EEx ib IIC         |               | EEx ib IIB |        |
|       |        | $L_o$              | $C_o$         | $L_o$      | $C_o$  |
| 13 V  | 29 mA  | 5 mH               | 147 nF        | 10 mH      | 635 nF |
| 19 V  | 29 mA  | 9 mH               | 68 nF         | 25 mH      | 367 nF |
| 24 V  | 29 mA  | 1.8 mH             | 31 nF         | 25 mH      | 221 nF |
| 30 V  | 29 mA  | not permitted      | not permitted | 10 mH      | 137 nF |
| 13 V  | 59 mA  | 3 mH               | 148 nF        | 10 mH      | 635 nF |
| 19 V  | 59 mA  | 0.33 mH            | 35 nF         | 15 mH      | 225 nF |
| 24 V  | 59 mA  | not permitted      | not permitted | 5 mH       | 179 nF |
| 13 V  | 79 mA  | 1.5 mH             | 146 nF        | 10 mH      | 459 nF |
| 19 V  | 79 mA  | not permitted      | not permitted | 6 mH       | 240 nF |
| 24 V  | 79 mA  | not permitted      | not permitted | 0.49 mH    | 59 nF  |
| 13 V  | 100 mA | 0.7 mH             | 143 nF        | 6 mH       | 442 nF |
| 19 V  | 100 mA | not permitted      | not permitted | 1.8 mH     | 312 nF |

All tables have been calculated by PTB.

The tables 1 and 3 are an integral part of the certificate.