



## MEDIUM VOLTAGE SURGE ARRESTER TYPE PROXAR-IN AC IN SILICONE HOUSING

### CATALOGUE CARD

#### APPLICATION

Surge arresters type **PROXAR-IN AC** in silicone housing are intended for protection AC power engineering networks against multiple lightning and switching overvoltages in MV substations, cables and transformers. This surge arrester is destined to all special technical requirements as well.

#### OPERATING CONDITIONS

Surge arresters adapted for outdoor and indoor installation, temperate and tropical climate up to 1000 m over the sea level. The possibility for install in any working positions. Working temperature -45 °C do +60 °C.

#### ADVANTAGES

- Low residual voltage
- High energy input capacity
- Stable U-I characteristics even after multiple strokes
- Housing resistant to rough handling
- Explosion and shatter – resistant design
- Pollution resistant and UV
- Ability to install in any position (vertically or horizontally)
- Maintenance free
- Low weight, easy transportation and storage

#### ADDITIONAL EQUIPMENT

The surge arrester can be equipped with additional line and ground accessories. At the customer's request and after agreeing with the manufacturer, any type of accessories can be supplied.

#### ELECTRICAL DATA

Arrester classification according to EN 60099-4: 2014

Line discharge class according to IEC 60099-4: 2009

System voltage (Um)

Rated voltage (Ur)

Nominal discharge current In 8/20 μs

High current impulse Ihc 4/10 μs

Rated repetitive charge transfer rating Qrs

Rated thermal Energy Qth

Long duration current impulse, 2000 μs

Short circuit rating

Maximal level of partial discharges

DH(Distribution High)

1

3.6 – 36 kV

1.2 – 45 kV

10 kA

100 kA

0.4 C

1.1 C

325 A

31.5 kA/0.2s

≤5 pC

Service conditions:

- ambient temperature
- altitude up to
- frequency

-45 °C do +60 °C\*

1000 m\*

48 – 62 Hz

Mechanical data:

- specified long-term load (SLL)
- specified short-term load (SSL)
- torsional strength

210 Nm

336 Nm

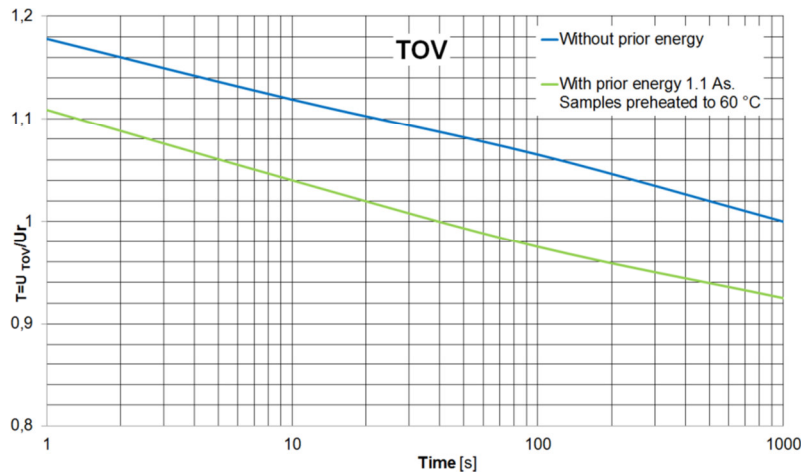
50 Nm

\*) for higher parameters please contact with manufacturer

| TYPE<br>PROXAR-IN AC | Rated<br>voltage<br>$U_r$<br><br>kV | Maximum<br>operating<br>voltage<br>$U_c$<br><br>kV | Residual voltage in [kV] pk at a specified impulse current |                   |       |       |       |                    |      |      |
|----------------------|-------------------------------------|----------------------------------------------------|------------------------------------------------------------|-------------------|-------|-------|-------|--------------------|------|------|
|                      |                                     |                                                    | Wave 1/...<br>$\mu$ s                                      | Wave 8/20 $\mu$ s |       |       |       | Wave 30/60 $\mu$ s |      |      |
|                      |                                     |                                                    | 10kA                                                       | 2.5kA             | 5kA   | 10kA  | 20kA  | 125A               | 250A | 500A |
| 1.2                  | 1.2                                 | 1.0                                                | 3,55                                                       | 2.8               | 2.9   | 3.2   | 3.5   | 2.3                | 2.3  | 2.4  |
| 2.2                  | 2.2                                 | 1.8                                                | 6,49                                                       | 5.0               | 5.4   | 5.9   | 6.5   | 4.2                | 4.3  | 4.5  |
| 2.5                  | 2.5                                 | 2.0                                                | 7,38                                                       | 5.7               | 6.1   | 6.8   | 7.4   | 4.7                | 4.9  | 5.1  |
| 3                    | 3                                   | 2.4                                                | 8,85                                                       | 6.9               | 7.4   | 8.1   | 8.8   | 5.7                | 5.9  | 6.1  |
| 4                    | 4                                   | 3.2                                                | 11,68                                                      | 9.2               | 9.8   | 10.8  | 11.8  | 7.6                | 7.8  | 8.2  |
| 5                    | 5                                   | 4.0                                                | 14,60                                                      | 11.5              | 12.3  | 13.5  | 14.7  | 9.5                | 9.8  | 10.2 |
| 6                    | 6                                   | 4.8                                                | 17,52                                                      | 13.8              | 14.7  | 16.2  | 17.7  | 11.4               | 11.7 | 12.2 |
| 7                    | 7                                   | 5.6                                                | 20,44                                                      | 16.1              | 17.2  | 18.9  | 20.6  | 13.3               | 13.7 | 14.3 |
| 8                    | 8                                   | 6.4                                                | 23,29                                                      | 18.4              | 19.7  | 21.6  | 23.5  | 15.2               | 15.7 | 16.3 |
| 9                    | 9                                   | 7.2                                                | 26,20                                                      | 20.7              | 22.1  | 24.3  | 26.5  | 17.1               | 17.6 | 18.3 |
| 10                   | 10                                  | 8.0                                                | 29,11                                                      | 23.0              | 24.6  | 27.0  | 29.4  | 19.0               | 19.6 | 20.4 |
| 11                   | 11                                  | 8.8                                                | 32,02                                                      | 25.2              | 27.0  | 29.7  | 32.4  | 20.8               | 21.5 | 22.4 |
| 12                   | 12                                  | 9.6                                                | 34,93                                                      | 27.5              | 29.5  | 32.4  | 35.3  | 22.7               | 23.5 | 24.5 |
| 13                   | 13                                  | 10.4                                               | 37,84                                                      | 29.8              | 31.9  | 35.1  | 38.3  | 24.6               | 25.4 | 26.5 |
| 14                   | 14                                  | 11.2                                               | 40,75                                                      | 32.1              | 34.4  | 37.8  | 41.2  | 26.5               | 27.4 | 28.5 |
| 15                   | 15                                  | 12.0                                               | 43,67                                                      | 34.4              | 36.9  | 40.5  | 44.1  | 28.4               | 29.4 | 30.6 |
| 16                   | 16                                  | 12.8                                               | 46,58                                                      | 36.7              | 39.3  | 43.2  | 47.1  | 30.3               | 31.3 | 32.6 |
| 17                   | 17                                  | 13.6                                               | 49,49                                                      | 39.0              | 41.8  | 45.9  | 50.0  | 32.2               | 33.3 | 34.7 |
| 18                   | 18                                  | 14.4                                               | 52,40                                                      | 41.3              | 44.2  | 48.6  | 53.0  | 34.1               | 35.2 | 36.7 |
| 19                   | 19                                  | 15.2                                               | 55,31                                                      | 43.6              | 46.7  | 51.3  | 55.9  | 36.0               | 37.2 | 38.7 |
| 20                   | 20                                  | 16.0                                               | 58,22                                                      | 45.9              | 49.1  | 54.0  | 58.9  | 37.9               | 39.2 | 40.8 |
| 21                   | 21                                  | 16.8                                               | 61,13                                                      | 48.2              | 51.6  | 56.7  | 61.8  | 39.8               | 41.1 | 42.8 |
| 22                   | 22                                  | 17.6                                               | 64,04                                                      | 50.5              | 54.1  | 59.4  | 64.7  | 41.7               | 43.1 | 44.8 |
| 23                   | 23                                  | 18.4                                               | 66,95                                                      | 52.8              | 56.5  | 62.1  | 67.7  | 43.6               | 45.0 | 46.9 |
| 24                   | 24                                  | 19.2                                               | 69,86                                                      | 55.1              | 59.0  | 64.8  | 70.6  | 45.5               | 47.0 | 48.9 |
| 25                   | 25                                  | 20.0                                               | 72,78                                                      | 57.4              | 61.4  | 67.5  | 73.6  | 47.4               | 48.9 | 51.0 |
| 26                   | 26                                  | 20.8                                               | 75,69                                                      | 59.7              | 63.9  | 70.2  | 76.5  | 49.3               | 50.9 | 53.0 |
| 27                   | 27                                  | 21.6                                               | 78,60                                                      | 62.0              | 66.3  | 72.9  | 79.5  | 51.2               | 52.9 | 55.0 |
| 28                   | 28                                  | 22.4                                               | 81,51                                                      | 64.3              | 68.8  | 75.6  | 82.4  | 53.1               | 54.8 | 57.1 |
| 29                   | 29                                  | 23.2                                               | 84,42                                                      | 66.6              | 71.3  | 78.3  | 85.3  | 55.0               | 56.8 | 59.1 |
| 30                   | 30                                  | 24.0                                               | 87,33                                                      | 68.9              | 73.7  | 81.0  | 88.3  | 56.9               | 58.7 | 61.2 |
| 33                   | 33                                  | 26.4                                               | 96,06                                                      | 75.7              | 81.1  | 89.1  | 97.1  | 62.5               | 64.6 | 67.3 |
| 36                   | 36                                  | 28.8                                               | 104,80                                                     | 82.6              | 88.5  | 97.2  | 105.9 | 68.2               | 70.5 | 73.4 |
| 39                   | 39                                  | 31.2                                               | 113,53                                                     | 89.5              | 95.8  | 105.3 | 114.8 | 73.9               | 76.3 | 79.5 |
| 42                   | 42                                  | 33.6                                               | 122,26                                                     | 96.4              | 103.2 | 113.4 | 123.6 | 79.6               | 82.2 | 85.6 |
| 45                   | 45                                  | 36.0                                               | 131,00                                                     | 103.3             | 110.6 | 121.5 | 132.4 | 85.3               | 88.1 | 91.7 |

There is a possibility of manufacturing surge arresters for different voltages that are not listed in the table.

## TOV CHARACTERISTIC



Power frequency voltage versus time characteristic TOV without prior duty

|                        |                         |
|------------------------|-------------------------|
| $U_{TOV}$ for $t=1$ s  | $1.178 U_r = 1.473 U_c$ |
| $U_{TOV}$ for $t=3$ s  | $1.150 U_r = 1.438 U_c$ |
| $U_{TOV}$ for $t=10$ s | $1.119 U_r = 1.399 U_c$ |

Power frequency voltage versus time characteristic TOV with prior energy 1.1 As.

|                        |                         |
|------------------------|-------------------------|
| $U_{TOV}$ for $t=1$ s  | $1.109 U_r = 1.386 U_c$ |
| $U_{TOV}$ for $t=3$ s  | $1.078 U_r = 1.348 U_c$ |
| $U_{TOV}$ for $t=10$ s | $1.040 U_r = 1.300 U_c$ |

TOV characteristic for PROXAR-IN AC

# TECHNICAL DATA FOR HOUSING

| Type<br>PROXAR-IN AC | Insulation withstand<br>voltage of housing |                       | Minimal distances                    |                                                                           | Height<br>H | Creepage<br>distance | Flash-over<br>distance | Housing<br>number | Weight |
|----------------------|--------------------------------------------|-----------------------|--------------------------------------|---------------------------------------------------------------------------|-------------|----------------------|------------------------|-------------------|--------|
|                      | 50 Hz<br>wet<br>(60s)                      | 1.2/50 $\mu$ s<br>dry | Distance<br>between<br>arresters „b” | Distance between<br>arrester and the<br>nearest grounded<br>structure „a” |             |                      |                        |                   |        |
|                      | kV                                         | kV                    | mm                                   | mm                                                                        |             |                      |                        |                   |        |
| 1.2                  | 10                                         | 21                    | 105                                  | 58                                                                        | 80          | 127                  | 100                    | 01                | 0.27   |
| 2.2                  |                                            |                       | 105                                  | 58                                                                        |             |                      |                        |                   | 0.29   |
| 2.5                  |                                            |                       | 105                                  | 58                                                                        |             |                      |                        |                   | 0.30   |
| 3                    |                                            |                       | 105                                  | 58                                                                        |             |                      |                        |                   | 0.31   |
| 4                    | 17                                         | 35                    | 105                                  | 58                                                                        | 96          | 143                  | 113                    | 02                | 0.47   |
| 5                    |                                            |                       | 105                                  | 59                                                                        |             |                      |                        |                   | 0.48   |
| 6                    |                                            |                       | 105                                  | 68                                                                        |             |                      |                        |                   | 0.49   |
| 7                    | 26                                         | 54                    | 105                                  | 77                                                                        | 118         | 242                  | 137                    | 03                | 0.62   |
| 8                    |                                            |                       | 105                                  | 85                                                                        |             |                      |                        |                   | 0.63   |
| 9                    |                                            |                       | 110                                  | 94                                                                        |             |                      |                        |                   | 0.64   |
| 10                   | 34                                         | 70                    | 119                                  | 103                                                                       | 137         | 338                  | 157                    | 04                | 0.72   |
| 11                   |                                            |                       | 127                                  | 111                                                                       |             |                      |                        |                   | 0.73   |
| 12                   |                                            |                       | 136                                  | 120                                                                       |             |                      |                        |                   | 0.74   |
| 13                   | 42                                         | 88                    | 145                                  | 129                                                                       | 158         | 436                  | 181                    | 05                | 0.92   |
| 14                   |                                            |                       | 153                                  | 137                                                                       |             |                      |                        |                   | 0.93   |
| 15                   |                                            |                       | 162                                  | 146                                                                       |             |                      |                        |                   | 0.94   |
| 16                   | 60                                         | 125                   | 171                                  | 155                                                                       | 198         | 555                  | 217                    | 06                | 1.19   |
| 17                   |                                            |                       | 179                                  | 163                                                                       |             |                      |                        |                   | 1.20   |
| 18                   |                                            |                       | 188                                  | 172                                                                       |             |                      |                        |                   | 1.21   |
| 19                   |                                            |                       | 197                                  | 181                                                                       |             |                      |                        |                   | 1.22   |
| 20                   |                                            |                       | 205                                  | 189                                                                       |             |                      |                        |                   | 1.23   |
| 21                   |                                            |                       | 214                                  | 198                                                                       |             |                      |                        |                   | 1.24   |
| 22                   | 84                                         | 174                   | 223                                  | 207                                                                       | 257         | 767                  | 277                    | 07                | 1.25   |
| 23                   |                                            |                       | 231                                  | 215                                                                       |             |                      |                        |                   | 1.61   |
| 24                   |                                            |                       | 240                                  | 224                                                                       |             |                      |                        |                   | 1.62   |
| 25                   |                                            |                       | 249                                  | 233                                                                       |             |                      |                        |                   | 1.63   |
| 26                   |                                            |                       | 257                                  | 241                                                                       |             |                      |                        |                   | 1.64   |
| 27                   |                                            |                       | 266                                  | 250                                                                       |             |                      |                        |                   | 1.65   |
| 28                   |                                            |                       | 275                                  | 259                                                                       |             |                      |                        |                   | 1.66   |
| 29                   |                                            |                       | 283                                  | 267                                                                       |             |                      |                        |                   | 1.67   |
| 30                   | 105                                        | 218                   | 292                                  | 276                                                                       | 308         | 972                  | 331                    | 08                | 1.68   |
| 33                   |                                            |                       | 318                                  | 302                                                                       |             |                      |                        |                   | 2.00   |
| 36                   |                                            |                       | 344                                  | 328                                                                       |             |                      |                        |                   | 2.04   |
| 39                   | 130                                        | 270                   | 370                                  | 354                                                                       | 368         | 1187                 | 391                    | 09                | 2.47   |
| 42                   |                                            |                       | 396                                  | 380                                                                       |             |                      |                        |                   | 2.50   |
| 45                   |                                            |                       | 422                                  | 406                                                                       |             |                      |                        |                   | 2.53   |

Note: It is possible to make a surge arrester in a different housing than the catalog version.

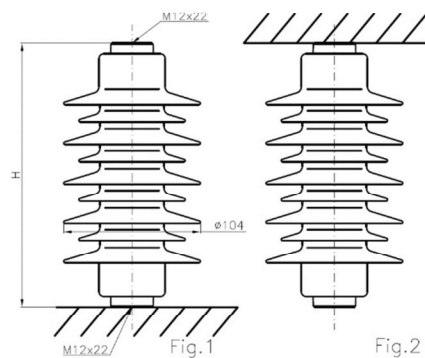
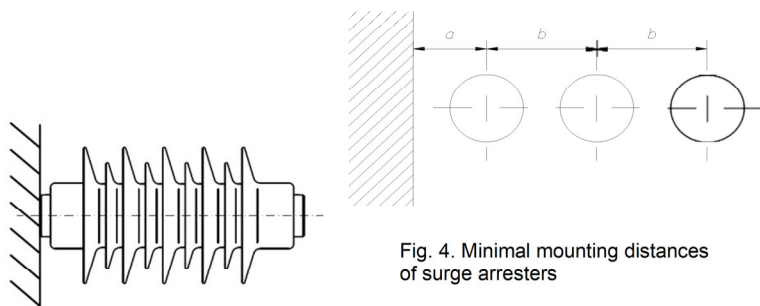


Fig. Surge arrester PROXAR-IN AC

The drawings above show the PROXAR-IN AC surge arrester. Surge arrester can work in a vertical position fig.1, inverted position fig.2 and horizontal position fig.3.



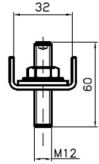
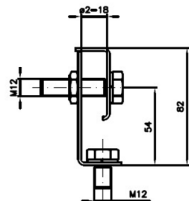
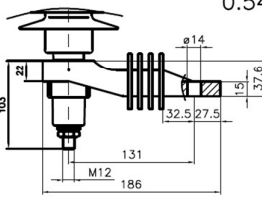
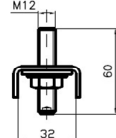
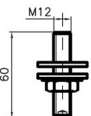
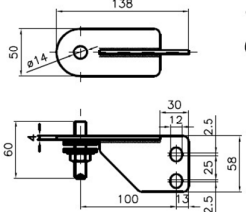
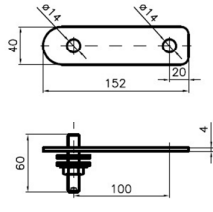
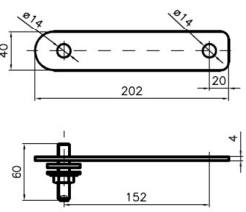
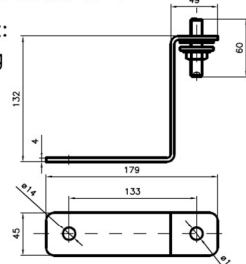
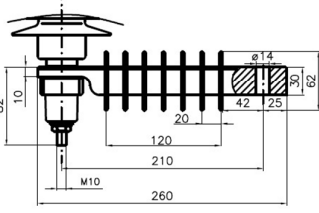
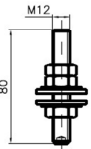
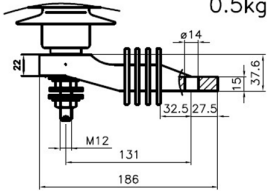
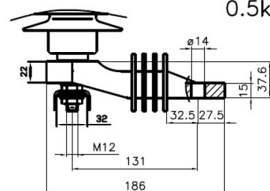
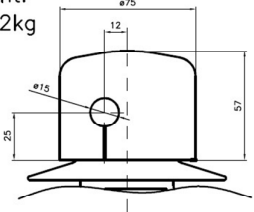
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>LINE ACCESSORIES</b></p> <p><b>LINE TERMINAL 1</b></p> <p>Weight: 0.093kg</p>  <p><b>Stainless steel</b></p>          | <p><b>LINE TERMINAL 2</b></p> <p>Weight: 0.063kg</p>  <p><b>Stainless steel</b></p>              | <p><b>LINE TERMINAL 3</b></p> <p>Weight: 0.15kg</p>  <p><b>Stainless steel</b></p>          |
| <p><b>EARTH ACCESSORIES</b></p> <p><b>INSULATING BRACKET WITH DISCONNECTOR 1</b><br/>(Ur ≤ 30kV)</p> <p>Weight: 0.54kg</p>  | <p><b>EARTH TERMINAL 2</b></p> <p>Weight: 0.093kg</p>  <p><b>Stainless steel</b></p>             | <p><b>EARTH TERMINAL 3</b></p> <p>Weight: 0.063kg</p>  <p><b>Stainless steel</b></p>        |
| <p><b>EARTH ACCESSORIES</b></p> <p><b>VERTICAL SUPPORT 4</b></p> <p>Weight: 0.51kg</p>  <p><b>Hot-dip galvanized</b></p>   | <p><b>HORIZONTAL SUPPORT 5</b></p> <p>Weight: 0.21kg</p>  <p><b>Hot-dip galvanized</b></p>      | <p><b>HORIZONTAL SUPPORT 6</b></p> <p>Weight: 0.27kg</p>  <p><b>Hot-dip galvanized</b></p> |
| <p><b>EARTH ACCESSORIES</b></p> <p><b>BRACKET Z 7</b></p> <p>Weight: 0.48kg</p>  <p><b>Hot-dip galvanized</b></p>         | <p><b>INSULATING BRACKET WITH DISCONNECTOR 8</b><br/>(Ur &gt; 30kV)</p> <p>Weight: 0.48kg</p>  | <p><b>EARTH TERMINAL 9</b></p> <p>Weight: 0.1kg</p>                                       |
| <p><b>INSULATING BRACKET A</b><br/>(Ur ≤ 30kV)</p> <p>Weight: 0.5kg</p>                                                   | <p><b>INSULATING BRACKET B</b><br/>(Ur ≤ 30kV)</p> <p>Weight: 0.5kg</p>                        | <p><b>ACCESSORIES</b></p> <p><b>ANTI-BIRD CAP 1</b></p> <p>Weight: 0.032kg</p>            |

Fig.5. Equipment for surge arrester type PROXAR-IN AC

Order configurator\*\*:

\*\*\*) Empty fields to fill

I. Type of product

**PROXAR-IN**

II. Rated voltage Ur

See table – TECHNICAL DATA

Ur

III. Voltage type

Alternating voltage (48 – 62 Hz)

AC

IV. Assembly (according Fig. 1; 2; 3)

– Vertical

1

– Reversed

2

– Horizontal

3

V. Line accessories (according fig. 5)

– without line terminal

0

– line terminal 1

1

– line terminal 2

2

– line terminal 3

3

VI. Earth accessories (according fig. 5)

– without earth terminal

0

– insulating bracket with disconnector 1 (Ur ≤ 30kV)

1

– earth terminal 2

2

– earth terminal 3

3

– vertical bracket 4

4

– horizontal bracket 5

5

– horizontal bracket 6

6

– bracket Z 7

7

– insulating bracket with disconnector 8 (Ur > 30kV)

8

– earth terminal 9

9

– insulating bracket A

A

– insulating bracket B

B

VII. Accessories (according fig. 5)

– without anti-bird cap

0

– With anti-bird cap 1

1

VIII. Housing number

See table – TECHNICAL DATA FOR HOUSING

Housing number

Order example:

| I         | II | III | IV | V | VI | VII | VIII |
|-----------|----|-----|----|---|----|-----|------|
| PROXAR-IN | 22 | AC  | 1  | 1 | 0  | 1   | 0 6  |

**PROXAR-IN 22 AC 110106** – 3 pcs.

Description: Surge arrester type **PROXAR-IN** of rated voltage Ur=22kV for **AC** system in vertical mounting version -1, line terminal - 1, without earth terminal - 0, with bird cap 1, housing number – **06**,

**TASCOM VIET NAM COMPANY LIMITED |Tax Code: 0103792519**

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ATTENTION

The manufacturer reserves the right to change technical data or designee without prior notice.

**PROXAR®** is a registered trademark newest family of surge arresters produced by Protektel

PROXAR-IN AC/KK/06/EN edition 04.2019