

## ACS255 IP66 micro drive

### Ratings and types

#### Type designation

This is the unique reference number (shown above and in the first column, below) that clearly identifies your drive by power rating and frame size. Once the drive's type designation has been selected, the frame size (column 7) can be used to determine the drive dimensions, shown on the next page.

Insert either "1", "2", "4" or "6", depending on your chosen voltage, into the type designation shown above.

#### Construction

"01U" within the type designation (shown above) varies depending on the drive phase and EMC filtering. Choose below the one you need.

#### Voltages

ACS255 is available in two voltage ranges:

- 1 = 110 to 120 V
- 2 = 200 to 240 V
- 4 = 380 to 480 V
- 6 = 500 to 600 V

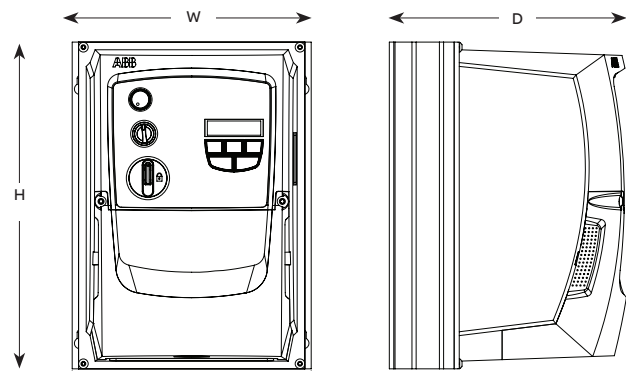
- 01 = 1-phase
- 03 = 3-phase
- U = No EMC filter
- F278 = Operator controls: Disconnect, FWD/REV/OFF selector, Speed Potentiometer

| Type code                                                               | Braking<br>chopper<br>(included) | P <sub>N</sub><br><br>HP | P <sub>N</sub><br><br>kW | Output<br>current<br>I <sub>2N</sub><br>A | Weight<br><br>lb | Frame<br>size |
|-------------------------------------------------------------------------|----------------------------------|--------------------------|--------------------------|-------------------------------------------|------------------|---------------|
| 1-phase supply voltage 110 to 120V, +/-10%, 3-phase output 200 to 240 V |                                  |                          |                          |                                           |                  |               |
| ACS255-01U-02A3-1+B063(+F278)                                           | -                                | 0.5                      | 0.37                     | 2.3                                       | 6.5              | E1            |
| ACS255-01U-04A3-1+B063(+F278)                                           | -                                | 1.0                      | 0.75                     | 4.3                                       | 6.5              | E1            |
| ACS255-01U-05A8-1+B063(+F278)                                           | X                                | 1.5                      | 1.1                      | 5.8                                       | 9.3              | E2            |
| 1-phase supply voltage 200 to 240V, +/-10%, 3-phase output 200 to 240 V |                                  |                          |                          |                                           |                  |               |
| ACS255-01U-02A3-2+B063(+F278)                                           | -                                | 0.5                      | 0.37                     | 2.3                                       | 6.5              | E1            |
| ACS255-01U-04A3-2+B063(+F278)                                           | -                                | 1.0                      | 0.75                     | 4.3                                       | 6.5              | E1            |
| ACS255-01U-06A1-2+B063(+F278)                                           | -                                | 1.5                      | 1.1                      | 6.1                                       | 6.5              | E1            |
| ACS255-01U-07A0-2+B063(+F278)                                           | -                                | 2.0                      | 1.5                      | 7.0                                       | 6.5              | E1            |
| ACS255-01U-10A5-2+B063(+F278)                                           | X                                | 3.0                      | 2.2                      | 10.5                                      | 9.3              | E2            |
| ACS255-01U-15A3-2+B063(+F278)                                           | X                                | 5.0                      | 3.7                      | 15.3                                      | 17.0             | E3            |
| 3-phase supply voltage 200 to 240 V, +/-10%                             |                                  |                          |                          |                                           |                  |               |
| ACS255-03U-02A3-2+B063(+F278)                                           | -                                | 0.5                      | 0.37                     | 2.3                                       | 6.5              | E1            |
| ACS255-03U-04A3-2+B063(+F278)                                           | -                                | 1.0                      | 0.75                     | 4.3                                       | 6.5              | E1            |
| ACS255-03U-06A1-2+B063(+F278)                                           | -                                | 1.5                      | 1.10                     | 6.1                                       | 6.5              | E1            |
| ACS255-03U-07A0-2+B063(+F278)                                           | X                                | 2.0                      | 1.5                      | 7.0                                       | 9.3              | E2            |
| ACS255-03U-10A5-2+B063(+F278)                                           | X                                | 3.0                      | 2.2                      | 10.5                                      | 9.3              | E2            |
| ACS255-03U-18A0-2+B063(+F278)                                           | X                                | 5.0                      | 4.0                      | 18.0                                      | 17.0             | E3            |
| 3-phase supply voltage 380 to 480 V, +/-10%                             |                                  |                          |                          |                                           |                  |               |
| ACS255-03U-01A2-4+B063(+F278)                                           | -                                | 0.5                      | 0.37                     | 1.2                                       | 6.5              | E1            |
| ACS255-03U-02A2-4+B063(+F278)                                           | -                                | 1.0                      | 0.75                     | 2.2                                       | 6.5              | E1            |
| ACS255-03U-03A3-4+B063(+F278)                                           | -                                | 1.5                      | 1.1                      | 3.3                                       | 6.5              | E1            |
| ACS255-03U-04A1-4+B063(+F278)                                           | -                                | 2.0                      | 1.5                      | 4.1                                       | 6.5              | E1            |
| ACS255-03U-05A8-4+B063(+F278)                                           | X                                | 3.0                      | 2.2                      | 5.8                                       | 9.3              | E2            |
| ACS255-03U-09A5-4+B063(+F278)                                           | X                                | 5.0                      | 4.0                      | 9.5                                       | 9.3              | E2            |
| ACS255-03U-14A0-4+B063(+F278)                                           | X                                | 7.5                      | 5.5                      | 14.0                                      | 17.0             | E3            |
| ACS255-03U-18A0-4+B063(+F278)                                           | X                                | 10.0                     | 7.5                      | 18.0                                      | 17.0             | E3            |
| 3-phase supply voltage 500 to 600 V, +/-10%                             |                                  |                          |                          |                                           |                  |               |
| ACS255-03U-02A1-6+B063(+F278)                                           | X                                | 1.0                      | 0.75                     | 2.1                                       | 10.6             | P2            |
| ACS255-03U-03A1-6+B063(+F278)                                           | X                                | 2.0                      | 1.5                      | 3.1                                       | 10.6             | P2            |
| ACS255-03U-04A1-6+B063(+F278)                                           | X                                | 3.0                      | 2.2                      | 4.1                                       | 10.6             | P2            |
| ACS255-03U-06A5-6+B063(+F278)                                           | X                                | 5.0                      | 4.0                      | 6.5                                       | 10.6             | P2            |
| ACS255-03U-09A0-6+B063(+F278)                                           | X                                | 7.5                      | 5.5                      | 9.0                                       | 10.6             | P2            |
| ACS255-03U-12A0-6+B063(+F278)                                           | X                                | 10.0                     | 7.5                      | 12.0                                      | 16.1             | P3            |
| ACS255-03U-17A0-6+B063(+F278)                                           | X                                | 15.0                     | 11.0                     | 17.0                                      | 16.1             | P3            |

P<sub>N</sub> for kW = Typical motor power in 400 V at normal use  
P<sub>N</sub> for hp = Typical motor power in 460 V at normal use  
I<sub>2N</sub> for A = Continuous rms current. 50% overload is allowed for one minute in ten minutes.

ACS255 IP66 micro drive

Dimensions and weights

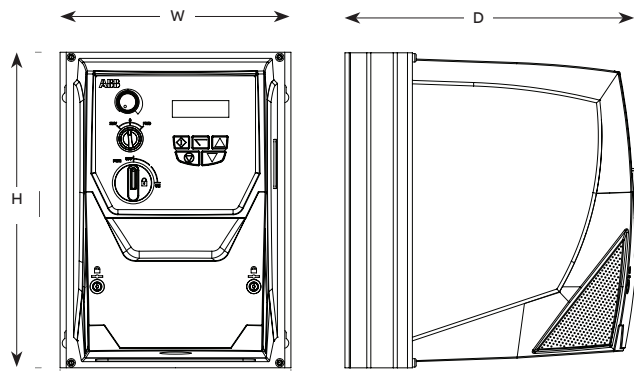


120, 240, 480 V

IP66 120, 240, 480V

| Frame size | Height |     | Width |     | Depth |     | Weight |      | Dimension drawing |
|------------|--------|-----|-------|-----|-------|-----|--------|------|-------------------|
|            | in     | mm  | in    | mm  | in    | mm  | lb     | kg   |                   |
| E1         | 9.13   | 232 | 6.34  | 161 | 7.05  | 179 | 6.50   | 2.95 | 3AXD10000274009   |
| E2         | 10.12  | 257 | 7.40  | 188 | 7.34  | 186 | 9.26   | 4.20 | 3AXD10000274011   |
| E3         | 12.20  | 310 | 8.29  | 210 | 9.00  | 229 | 16.97  | 7.70 | 3AXD10000274012   |

H = Height  
W = Width  
D = Depth



600 V

IP66 600V

| Frame size | Height |     | Width |     | Depth |     | Weight |      | Dimension drawing |
|------------|--------|-----|-------|-----|-------|-----|--------|------|-------------------|
|            | in     | mm  | in    | mm  | in    | mm  | lb     | kg   |                   |
| P2         | 10.12  | 257 | 7.40  | 188 | 9.41  | 239 | 10.60  | 4.80 | 3AXD10000274017   |
| P3         | 12.20  | 310 | 8.29  | 211 | 9.88  | 251 | 16.10  | 7.30 | 3AXD10000274018   |

H = Height  
W = Width  
D = Depth

# Cooling

## Cooling air flow for IP20 drives

IP20 drives are designed to be installed in a protective enclosure. Heat dissipation and air flow values are given to assist with sizing enclosure sizes and cooling provisions. ACS255 drives 1 HP and above are fitted with heat sink cooling fans as standard. Drives below 1 HP do not have an

internal cooling fan and rely on natural convection to cool the internal components. The cooling air must be free from corrosive substances and must not be above the maximum ambient temperature of 40 °C (50 °C with derating on IP20 drives only). For more specific limits see the individual Data Sheet pages (for IP20 & IP66 drives) in this catalog.

## Cooling air flow

| Type designation                       | Frame size | Heat dissipation<br>W | BTU/hr | Air flow<br>m³/h | ft³/min |
|----------------------------------------|------------|-----------------------|--------|------------------|---------|
| <b>1-phase AC supply, 110 to 120 V</b> |            |                       |        |                  |         |
| ACS255-01U-02A3-1                      | E1         | 11                    | 38     | 19               | 11      |
| ACS255-01U-04A3-1                      | E1         | 23                    | 77     | 19               | 11      |
| ACS255-01X-05A8-1                      | E2         | 33                    | 113    | 44               | 26      |
| <b>3-phase AC supply, 500 to 600 V</b> |            |                       |        |                  |         |
| ACS255-03U-02A1-6                      | P2         | 23                    | 77     | 19               | 11      |
| ACS255-03U-03A1-6                      | P2         | 45                    | 154    | 19               | 11      |
| ACS255-03U-04A1-6                      | P2         | 66                    | 225    | 19               | 11      |
| ACS255-03U-06A5-6                      | P2         | 120                   | 409    | 19               | 11      |
| ACS255-03U-09A0-6                      | P2         | 165                   | 563    | 19               | 11      |
| ACS255-03U-12A0-6                      | P3         | 225                   | 768    | 44               | 26      |
| ACS255-03U-17A0-6                      | P3         | 330                   | 1126   | 44               | 26      |
| ACS255-03U-22A0-6                      | P3         | 450                   | 1535   | 44               | 26      |

Note: IP66 drives are designed to be mounted outside of an enclosure. The heat sink is designed for maximum cooling with natural convected airflow.

## Free Space Requirements

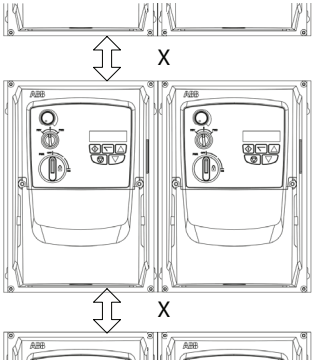
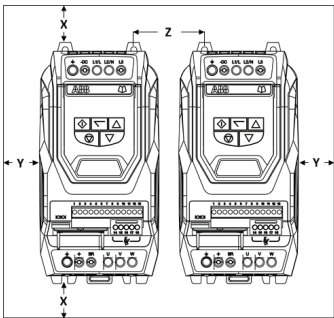
| Enclosure Type | Frame size | Space Above & Below (X) |     | Space Either Side (Y) |    | Space Between (Z) <sup>1</sup> |    |
|----------------|------------|-------------------------|-----|-----------------------|----|--------------------------------|----|
|                |            | in                      | mm  | in                    | mm | in                             | mm |
| IP20           | 1          | 1.97                    | 50  | 1.97                  | 50 | 1.30                           | 33 |
| IP20           | 2          | 2.95                    | 75  | 1.97                  | 50 | 1.81                           | 46 |
| IP20           | 3          | 3.94                    | 100 | 1.97                  | 50 | 2.05                           | 52 |
| IP66           | All        | 7.87                    | 200 | 0.39                  | 10 | 0                              | 0  |

Notes:

1) Dimension Z assumes that the drives are mounted side by side with no clearance. For the IP66 drives, can be installed side-by-side with the heatsink flanges touching. This gives adequate ventilation space between drives.

2) Drive must be installed on a vertical flat surface that is able to support the weight of the drive.

3) Spacing requirements are guidelines only and do not take into account other sources of heat in the environment. Operating ambient temperature of the drive must be maintained at all times.



## Fuses and cable sizes

The following table provides the output current rating information for the various ACS255 models. ABB Drives always recommend that selection of the correct ACS255 is based upon the motor full load current at the incoming supply voltage.

Cable dimensioning for nominal rated currents is shown in the table below together with the corresponding fuse types for short-circuit protection of the input power cable.

The rated fuse currents given in the table are the maximums for the mentioned fuse types. If smaller

fuse ratings are used, check that the fuse rms current rating is larger than the nominal input current. If 150% output power is needed, multiply nominal input current by 1.5.

Check that the operating time of the fuse is below 0.5 seconds. The operating time depends on the fuse type, the supply network impedance as well as the cross-sectional area, material and length of the supply cable. In case the 0.5 seconds operating time is exceeded with the gG or T fuses, ultra rapid (aR) fuses in most cases reduce the operating time to an acceptable level.

| Type Code                                             | Power | Fuse |                     | Maximum Supply and PE Cable Size |     | Nominal Output Current A | Motor Cable Size |     | Max Motor Cable Length<br>m | Frame Size |
|-------------------------------------------------------|-------|------|---------------------|----------------------------------|-----|--------------------------|------------------|-----|-----------------------------|------------|
|                                                       | HP    | A    | UL Class<br>CC or J | mm²                              | AWG |                          | mm²              | AWG |                             |            |
|                                                       |       |      |                     |                                  |     |                          |                  |     |                             |            |
| 1-phase 110V...115V AC (+/-10%) - 3 Phase 230V Output |       |      |                     |                                  |     |                          |                  |     |                             |            |
| ACS255-01U-02A3-1                                     | 0.5   | 10   | 10                  | 8                                | 8   | 2.3                      | 1.5              | 14  | 100                         | E1         |
| ACS255-01U-04A3-1                                     | 1     | 25   | 20                  | 8                                | 8   | 4.3                      | 1.5              | 14  | 100                         | E1         |
| ACS255-01U-05A8-1                                     | 1.5   | 32   | 30                  | 8                                | 8   | 5.8                      | 1.5              | 14  | 100                         | E2         |
| 1-phase 200...240V AC (+/-10%) - 3 Phase Output       |       |      |                     |                                  |     |                          |                  |     |                             |            |
| ACS255-01U-02A3-2                                     | 0.5   | 10   | 6                   | 8                                | 8   | 2.3                      | 1.5              | 14  | 100                         | E1         |
| ACS255-01U-04A3-2                                     | 1     | 10   | 10                  | 8                                | 8   | 4.3                      | 1.5              | 14  | 100                         | E1         |
| ACS255-01U-06A1-2                                     | 1.5   | 16   | 15                  | 8                                | 8   | 6.1                      | 1.5              | 14  | 100                         | E1         |
| ACS255-01U-07A0-2                                     | 2     | 16   | 17.5                | 8                                | 8   | 7                        | 1.5              | 14  | 100                         | E2         |
| ACS255-01U-10A5-2                                     | 3     | 25   | 25                  | 8                                | 8   | 10.5                     | 1.5              | 14  | 100                         | E2         |
| ACS255-01U-15A3-2                                     | 5     | 40   | 40                  | 8                                | 8   | 15.3                     | 4                | 10  | 100                         | E3         |
| 3-phase 200...240V AC (+/-10%) - 3 Phase Output       |       |      |                     |                                  |     |                          |                  |     |                             |            |
| ACS255-03U-02A3-2                                     | 0.5   | 6    | 6                   | 8                                | 8   | 2.3                      | 1.5              | 14  | 100                         | E1         |
| ACS255-03U-04A3-2                                     | 1     | 10   | 10                  | 8                                | 8   | 4.3                      | 1.5              | 14  | 100                         | E1         |
| ACS255-03U-06A1-2                                     | 1.5   | 10   | 15                  | 8                                | 8   | 6.1                      | 1.5              | 14  | 100                         | E1         |
| ACS255-03U-07A0-2                                     | 2     | 16   | 15                  | 8                                | 8   | 7                        | 1.5              | 14  | 100                         | E2         |
| ACS255-03U-10A5-2                                     | 3     | 16   | 17.5                | 8                                | 8   | 10.5                     | 1.5              | 14  | 100                         | E2         |
| ACS255-03U-18A0-2                                     | 5     | 32   | 30                  | 8                                | 8   | 18                       | 2.5              | 10  | 100                         | E3         |
| 3-phase 380...480V AC (+/-10%) - 3 Phase Output       |       |      |                     |                                  |     |                          |                  |     |                             |            |
| ACS255-03U-01A2-4                                     | 0.5   | 6    | 6                   | 8                                | 8   | 1.2                      | 1.5              | 14  | 100                         | E1         |
| ACS255-03U-02A2-4                                     | 1     | 6    | 6                   | 8                                | 8   | 2.2                      | 1.5              | 14  | 100                         | E1         |
| ACS255-03U-03A3-4                                     | 1.5   | 10   | 10                  | 8                                | 8   | 3.3                      | 1.5              | 14  | 100                         | E1         |
| ACS255-03U-04A1-4                                     | 2     | 10   | 10                  | 8                                | 8   | 4.1                      | 1.5              | 14  | 100                         | E2         |
| ACS255-03U-05A8-4                                     | 3     | 16   | 10                  | 8                                | 8   | 5.8                      | 1.5              | 14  | 100                         | E2         |
| ACS255-03U-09A5-4                                     | 5     | 16   | 15                  | 8                                | 8   | 9.5                      | 1.5              | 14  | 100                         | E2         |
| ACS255-03U-14A0-4                                     | 7.5   | 25   | 25                  | 8                                | 8   | 14                       | 1.5              | 12  | 100                         | E3         |
| ACS255-03U-18A0-4                                     | 10    | 32   | 30                  | 8                                | 8   | 18                       | 2.5              | 10  | 100                         | E3         |
| 3-phase 500...600V AC (+/-10%) - 3 Phase Output       |       |      |                     |                                  |     |                          |                  |     |                             |            |
| ACS255-03U-02A1-6                                     | 1     | 10   | 6                   | 1.5                              | 14  | 2.1                      | 1.5              | 14  | 100                         | P2         |
| ACS255-03U-03A1-6                                     | 2     | 10   | 6                   | 1.5                              | 14  | 3.1                      | 1.5              | 14  | 100                         | P2         |
| ACS255-03U-04A1-6                                     | 3     | 10   | 10                  | 1.5                              | 14  | 4.1                      | 1.5              | 14  | 100                         | P2         |
| ACS255-03U-06A5-6                                     | 5     | 10   | 10                  | 1.5                              | 14  | 6.5                      | 1.5              | 14  | 100                         | P2         |
| ACS255-03U-09A0-6                                     | 7.5   | 16   | 15                  | 2.5                              | 12  | 9                        | 1.5              | 14  | 100                         | P2         |
| ACS255-03U-12A0-6                                     | 10    | 25   | 20                  | 4                                | 10  | 12                       | 1.5              | 14  | 100                         | P3         |
| ACS255-03U-17A0-6                                     | 15    | 25   | 25                  | 4                                | 8   | 17                       | 2.5              | 10  | 100                         | P3         |
| ACS255-03U-22A0-6                                     | 20    | 40   | 35                  | 10                               | 8   | 22                       | 4                | 10  | 100                         | P3         |

### Notes:

1) Larger fuses must not be used when the input power cable is selected according to this table.

2) For UL compliant installation, use Copper wire with a minimum insulation temperature rating of 70°C, UL Class CC or Class J Fuses

3) Other fuse types can be used if they meet the ratings and the melting curve of the fuse does not exceed the melting curve of the fuse mentioned in this table.

4) The maximum motor cable length stated applies to using a shielded motor cable. When using an unshielded cable, the maximum cable length limit may be increased by 50%. When using the ABB Drives recommended output choke, the maximum cable length may be increased by 100%

5) The PWM output switching from any inverter when used with a long motor cable length can cause an increase in the voltage at the motor terminals, depending on the motor cable length and inductance. The rise time and peak voltage can affect the service life of the motor. ABB Drives recommend using an output choke for motor cable lengths of 50m or more to ensure good motor service life