


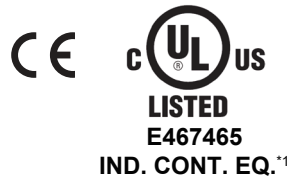
# INOVANCE

## MD290 AC Drive Open loop general purpose drive

Wide operating voltage  
Three-phase 380 to 480 Vac  
0.4 to 450 kW  
Three phase 200 to 240 Vac

Operation in high ambient  
temperature  50°C  
Please note: If operating above  
40°C derating is required

Built-in DC reactor  
(400V: 18.5 kW and above;  
200V: 11 kW and above)



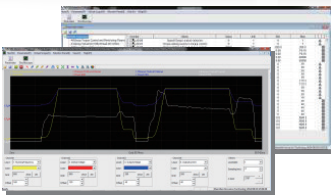
Enhanced reliability

Dual rated  
(G type and P type)

Conformally coated PCBs  
suitable for 3S2 and 3C3  
environments  
(acc. to IEC 60721-3-3)

### Features & functions

- Open loop control
- Communication options:
  - Modbus-RTU
  - PROFIBUS-DP
  - CANopen
  - CANlink
  - PROFINET
  - EtherCAT
- Automatic torque boost
- Slip compensation
- Simplified parameters for easy start up
- 4 independent S-ramps
- Flexible programmable I/Os
- User programmable functions
- Variable DC-injection braking
- Comprehensive trip diagnostics
- Output frequency: 500 Hz
- Built-in dynamic braking unit



PC-based  
software:  
simplified  
start up &  
backup<sup>2</sup>

Through-hole mounting  
options (0.4 to 160 kW)

<sup>1</sup> cUL is available for 380-480 Vac models. For other voltages, please consult with your local Inovance representative.  
<sup>2</sup> PC comms kit is required (optional accessory)

General specifications

| Voltage class $\text{CE} \text{U}$ |                                 | Three-phase 380 to 480 Vac                                 |            |            |            |            |            |            |            |           |           |            |
|------------------------------------|---------------------------------|--|------------|------------|------------|------------|------------|------------|------------|-----------|-----------|------------|
| MD290TxxxG/yyyyPB-INT              |                                 | 0.4G/0.7PB   | 0.7G/1.1PB | 1.1G/1.5PB | 1.5G/2.2PB | 2.2G/3.0PB | 3.0G/3.7PB | 3.7G/5.5PB | 5.5G/7.5PB | 7.5G/11PB | 11G/15PB  | 15G/18.5PB |
| Frame size                         |                                 | T1 <sup>1</sup>  |            |            |            | T2         |            | T3         |            | T4        |           |            |
| Drive input                        | Rated input voltage             | Three-phase 380 to 480 Vac -15% to +10%                    |            |            |            |            |            |            |            |           |           |            |
|                                    | Rated input current [A]         | 1.8/2.5  | 2.4/3.7    | 3.7/4.6    | 4.6/6.4    | 6.3/9.1    | 9.0/11.3   | 11.4/15.9  | 16.7/22.4  | 21.9/32.9 | 32.2/39.7 | 41.3/44    |
|                                    | Power capacity [kVA]            | 2.3  | 3.4        | 4.2        | 5.9        | 8.3        | 10.4       | 15.5       | 20.5       | 30.2      | 38.2      | 44.4       |
|                                    | Rated input frequency           | 50/60 Hz $\pm 5\%$   |            |            |            |            |            |            |            |           |           |            |
| Drive output                       | Applicable motor [kW]           | 0.4/0.7  | 0.7/1.1    | 1.1/1.5    | 1.5/2.2    | 2.2/3.0    | 3.0/3.7    | 3.7/5.5    | 5.5/7.5    | 7.5/11    | 11/15     | 15/18.5    |
|                                    | Output current [A] <sup>2</sup> | 1.5/2.1  | 2.1/3.1    | 3.1/3.8    | 3.8/5.1    | 5.1/7.2    | 7.2/9.0    | 9.0/13     | 13/17      | 17/25     | 25/32     | 32/37      |
|                                    | Default carrier frequency [kHz] | 6  | 6          | 6          | 6          | 6          | 6          | 6          | 6          | 6         | 6         | 6          |
|                                    | Overload capacity               | 150% for G type and 110% for P type for 60 s               |            |            |            |            |            |            |            |           |           |            |
|                                    | Max. output voltage             | Three-phase 380 to 480 Vac (proportional to input voltage) |            |            |            |            |            |            |            |           |           |            |
|                                    | Max. output frequency           | 500 Hz   |            |            |            |            |            |            |            |           |           |            |
| Braking resistor                   | Recommended power [kW]          | 0.08   | 0.14       | 0.22       | 0.3        | 0.44       | 0.6        | 0.74       | 1.1        | 1.5       | 2.2       | 3          |
|                                    | Minimum resistance [ $\Omega$ ] | 96   | 96         | 96         | 96         | 64         | 64         | 32         | 32         | 32        | 24        | 24         |
| Braking unit                       |                                 | Built-in   |            |            |            |            |            |            |            |           |           |            |
| Enclosure                          |                                 | IP 20  |            |            |            |            |            |            |            |           |           |            |

| Voltage class $\text{CE} \text{U}$ |                                 | Three-phase 380 to 480 Vac                                 |           |         |         |                |         |                |                      |                     |                     |                     |
|------------------------------------|---------------------------------|--|-----------|---------|---------|----------------|---------|----------------|----------------------|---------------------|---------------------|---------------------|
| MD290TxxxG/xxxP-INT                |                                 | 18.5G/22P  | 22G/30P   | 30G/37P | 37G/45P | 45G/55P        | 55G/75P | 75G/90P        | 90G/110P             | 110G/132P           | 132G/160P           | 160G/200P           |
| Frame size                         |                                 | T5   |           | T6      |         | T7             |         | T8             |                      |                     | T9                  |                     |
| Drive input                        | Rated input voltage             | Three-phase 380 to 480 Vac -15% to +10%                    |           |         |         |                |         |                |                      |                     |                     |                     |
|                                    | Rated input current [A]         | 43.4/51.3  | 51.3/65.8 | 57/71   | 69/86   | 89/111         | 106/143 | 139/167        | 164/198              | 196/239             | 240/295             | 287/359             |
|                                    | Power capacity [kVA]            | 54   | 60        | 65      | 79      | 102            | 131     | 153            | 181                  | 219                 | 270                 | 328                 |
|                                    | Rated input frequency           | 50/60 Hz $\pm 5\%$   |           |         |         |                |         |                |                      |                     |                     |                     |
| Drive output                       | Applicable motor [kW]           | 18.5/22  | 22/30     | 30/37   | 37/45   | 45/55          | 55/75   | 75/90          | 90/110               | 110/132             | 132/160             | 160/200             |
|                                    | Output current [A] <sup>2</sup> | 37/45  | 45/60     | 60/75   | 75/91   | 91/112         | 112/150 | 150/176        | 176/210              | 210/253             | 253/304             | 304/377             |
|                                    | Default carrier frequency [kHz] | 6  | 6         | 6       | 5       | 5              | 4       | 3              | 3                    | 3                   | 3                   | 3                   |
|                                    | Overload capacity               | 150% for G type and 110% for P type for 60 s               |           |         |         |                |         |                |                      |                     |                     |                     |
|                                    | Max. output voltage             | Three-phase 380 to 480 Vac (proportional to input voltage) |           |         |         |                |         |                |                      |                     |                     |                     |
|                                    | Max. output frequency           | 500 Hz   |           |         |         |                |         |                |                      |                     |                     |                     |
| Braking resistor                   | Recommended power [kW]          | 4  | 4.5       | 6       | 7       | 9              | 11      | 15             | 18                   | 22                  | 26                  | 32                  |
|                                    | Minimum resistance [ $\Omega$ ] | 24   | 24        | 19.2    | 14.8    | 12.8           | 9.6     | 6.8            | 11.4x2 <sup>-3</sup> | 7.7x2 <sup>-3</sup> | 7.7x2 <sup>-3</sup> | 7.7x2 <sup>-3</sup> |
| Braking unit                       |                                 | Built-in as option (for models MD290TxxxG/yyyyPB-INT)      |           |         |         | MDBUN-60-5T x2 |         | MDBUN-90-5T x2 |                      |                     |                     |                     |
| Enclosure                          |                                 | IP 20  |           |         |         |                |         |                |                      |                     |                     |                     |

\*1 0.75/1.5/2.2 kW are the preferred stocking ratings. To learn more, please get in touch with your local Inovance representative.

\*2 Rated output current at default carrier frequency.

\*3 Minimum value of the resistance for each braking unit.

| Voltage class $\text{CE} \text{U}$ |                                 | Three-phase 380 to 480 Vac  |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|------------------------------------|---------------------------------|---|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| MD290Txxxx-INT <sup>4</sup>        |                                 | 200G  | 220P                | 220G                | 250P                | 280P                | 250G                | 280G                | 315P                | 355P                | 315G                | 355G                | 400P                | 400G                | 450P                | 450G                | 500P                |
| Frame size                         |                                 | T10   |                     |                     |                     |                     | T11                 |                     |                     |                     | T12                 |                     |                     |                     |                     |                     |                     |
| Drive input                        | Rated input voltage             | Three-phase 380 to 480 Vac -15% to +10%                                 |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|                                    | Rated input current [A]         | 365   | 410                 | 410                 | 456                 | 507                 | 441                 | 495                 | 559                 | 624                 | 565                 | 617                 | 708                 | 687                 | 782                 | 782                 | 840                 |
|                                    | Power capacity [kVA]            | 334   | 375                 | 375                 | 417                 | 464                 | 404                 | 453                 | 511                 | 571                 | 517                 | 565                 | 647                 | 629                 | 715                 | 716                 | 768                 |
|                                    | Rated input frequency           | 50/60 Hz $\pm 5\%$  |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Drive output                       | Applicable motor [kW]           | 200   | 220                 | 220                 | 250                 | 280                 | 250                 | 280                 | 315                 | 355                 | 315                 | 355                 | 400                 | 400                 | 450                 | 450                 | 500                 |
|                                    | Output current [A] <sup>2</sup> | 377   | 426                 | 426                 | 465                 | 520                 | 465                 | 520                 | 585                 | 650                 | 585                 | 650                 | 725                 | 725                 | 820                 | 820                 | 880                 |
|                                    | Default carrier frequency [kHz] | 3   | 3                   | 3                   | 3                   | 3                   | 3                   | 3                   | 3                   | 3                   | 3                   | 3                   | 3                   | 3                   | 3                   | 3                   | 3                   |
|                                    | Overload capacity               | 150% for G type and 110% for P type for 60 s (130% for MD290T450G (-L)) |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|                                    | Max. output voltage             | Three-phase 380 to 480 Vac (proportional to input voltage)              |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Max. output frequency              | 500 Hz                          |   |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Braking resistor                   | Recommended power [kW]          | 38  | 38                  | 42                  | 42                  | 48                  | 48                  | 54                  | 54                  | 60                  | 60                  | 69                  | 69                  | 78                  | 78                  | 87                  | 87                  |
|                                    | Minimum resistance [ $\Omega$ ] | 2.8x2 <sup>-3</sup>   | 2.8x2 <sup>-3</sup> | 2.8x2 <sup>-3</sup> | 2.8x2 <sup>-3</sup> | 2.8x2 <sup>-3</sup> | 2.8x2 <sup>-3</sup> | 2.8x3 <sup>-3</sup> | 2.8x3 <sup>-3</sup> | 2.8x3 <sup>-3</sup> | 2.8x3 <sup>-3</sup> | 2.8x3 <sup>-3</sup> | 2.8x3 <sup>-3</sup> | 2.8x3 <sup>-3</sup> | 2.8x3 <sup>-3</sup> | 2.8x3 <sup>-3</sup> | 2.8x3 <sup>-3</sup> |
| Braking unit                       |                                 | MDBUN-200-5T x2   |                     |                     |                     |                     | MDBUN-200-5T x3     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |
| Enclosure                          |                                 | IP 00   |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |

| Voltage class $\text{CE}$ |                                 | Three-phase 200 to 240 Vac                                 |            |            |            |            |            |            |           |           |   |           |         |         |         |                     |                     |  |
|---------------------------|---------------------------------|--|------------|------------|------------|------------|------------|------------|-----------|-----------|---|-----------|---------|---------|---------|---------------------|---------------------|--|
| MD290-2TxxxG/yyyyP(B)-INT |                                 | 0.4G/0.7PB   | 0.7G/1.1PB | 1.1G/1.5PB | 1.5G/2.2PB | 2.2G/3.7PB | 3.7G/5.5PB | 5.5G/7.5PB | 7.5G/11PB | 11G/15P   | 15G/18.5P   | 18.5G/22P | 22G/30P | 30G/37P | 37G/45P | 45G/55P             | 55G/75P             |  |
| Frame size                |                                 | T1 <sup>1</sup>  |            |            | T2         |            | T3         | T4         | T5        | T6        |   | T7        |         | T8      |         |                     |                     |  |
| Drive input               | Rated input voltage             | Three-phase 200 to 240 Vac -15% to +10%                    |            |            |            |            |            |            |           |           |   |           |         |         |         |                     |                     |  |
|                           | Rated input current [A]         | 2.4/3.7  | 4.6/6.4    | 6.3/9.1    | 9/11.3     | 11.4/15.9  | 16.7/22.4  | 32.2/39.7  | 41.3/44   | 51.3/65.8 | 57/71   | 69/86     | 89/111  | 106/143 | 139/167 | 164/198             | 196/239             |  |
|                           | Rated input frequency           | 50/60 Hz $\pm 5\%$   |            |            |            |            |            |            |           |           |   |           |         |         |         |                     |                     |  |
| Drive output              | Applicable motor [kW]           | 0.4/0.75   | 0.75/1.1   | 1.1/1.5    | 1.5/2.2    | 2.2/3.7    | 3.7/5.5    | 5.5/7.5    | 7.5/11    | 11/15     | 15/18.5   | 18.5/22   | 22/30   | 30/37   | 37/45   | 45/55               | 55/75               |  |
|                           | Output current [A] <sup>2</sup> | 2.1/3.1  | 3.8/5.1    | 5.1/7.2    | 7.2/9      | 9/13       | 13/17      | 25/32      | 32/37     | 45/60     | 60/75   | 75/91     | 91/112  | 112/150 | 150/176 | 176/210             | 210/253             |  |
|                           | Default carrier frequency [kHz] | 6  | 6          | 6          | 6          | 6          | 6          | 6          | 6         | 6         | 6   | 5         | 5       | 5       | 4       | 3                   | 3                   |  |
|                           | Overload capacity               | 150% for G type & 110% for P type for 60 s                 |            |            |            |            |            |            |           |           |   |           |         |         |         |                     |                     |  |
|                           | Max. output voltage             | Three phase 200 to 240 Vac (proportional to input voltage) |            |            |            |            |            |            |           |           |   |           |         |         |         |                     |                     |  |
| Max. output frequency     | 500 Hz                          |  |            |            |            |            |            |            |           |           |   |           |         |         |         |                     |                     |  |
| Braking resistor          | Recommended power [kW]          | 90   | 160        | 250        | 340        | 500        | 800        | 1300       | 1700      | 2300      | 3000  | 3900      | 4600    | 5500    | 6800    | 5000x2              | 6000x2              |  |
|                           | Minimum resistance [ $\Omega$ ] | 48   | 48         | 32         | 32         | 16         | 16         | 12         | 12        | 12        | 9   | 7         | 6       | 5       | 4       | 5.5x2 <sup>-3</sup> | 3.7x2 <sup>-3</sup> |  |
| Braking unit              |                                 | Built-in   |            |            |            |            |            |            |           |           | Built-in as option (for models MD290-2TxxxG/yyyyPB-INT) |           |         |         |         |                     |                     |  |
| Enclosure                 |                                 | IP20   |            |            |            |            |            |            |           |           |   |           |         |         |         |                     |                     |  |

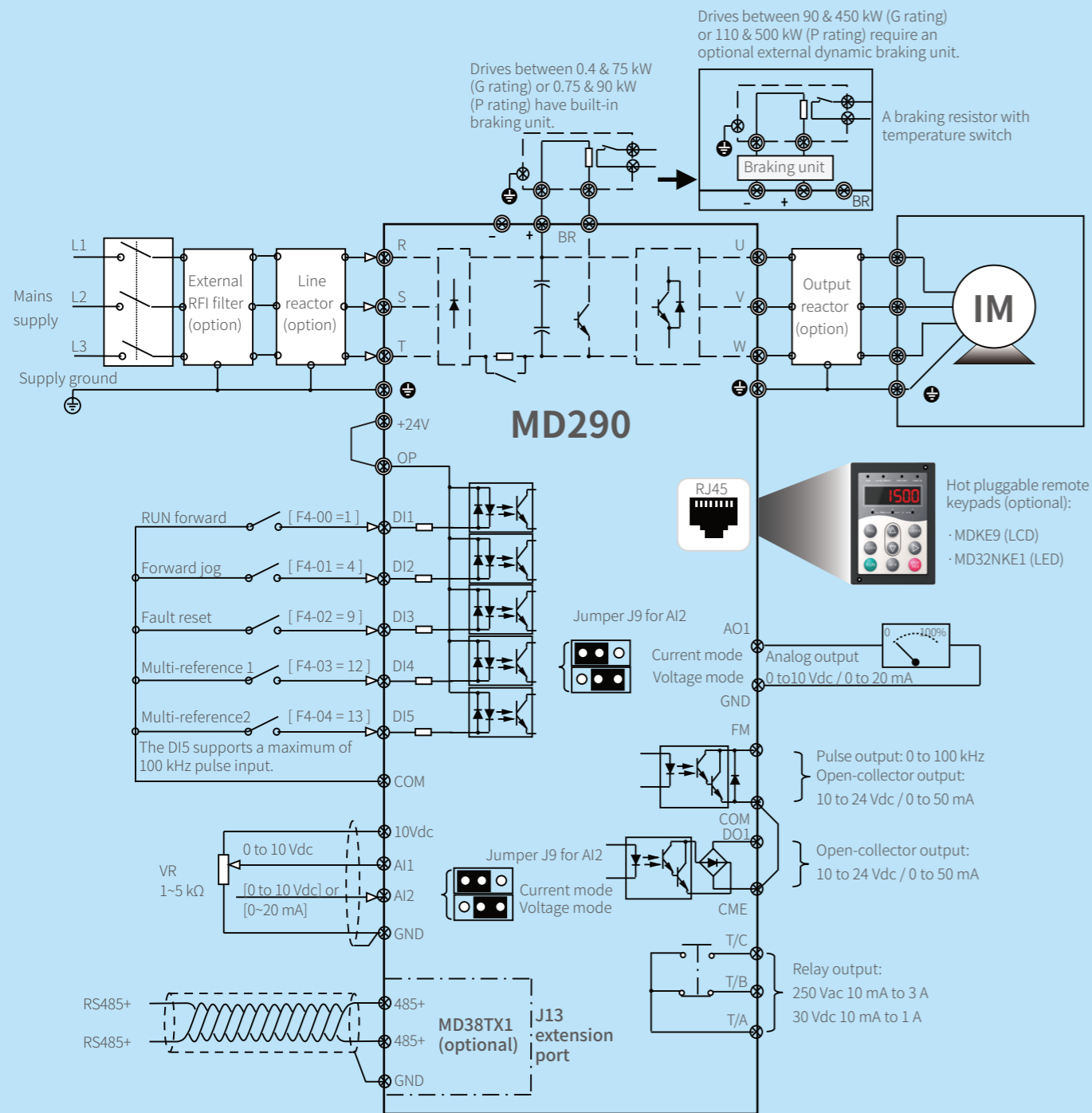
\*1 0.75/1.5/2.2 kW are the preferred stocking ratings. To learn more, please get in touch with your local Inovance representative.

\*2 Rated output current at default carrier frequency.

\*3 Minimum value of the resistance for each braking unit.

\*4 For the standard AC drive, motor cable length should be <100m. Where it is >100m, we recommend the "L" option with 1% voltage drop output reactors to overcome the effects of voltage reflections on the motor windings (e.g. drive model M290T200G-L-INT). To discuss your application, consult your local Inovance representative.

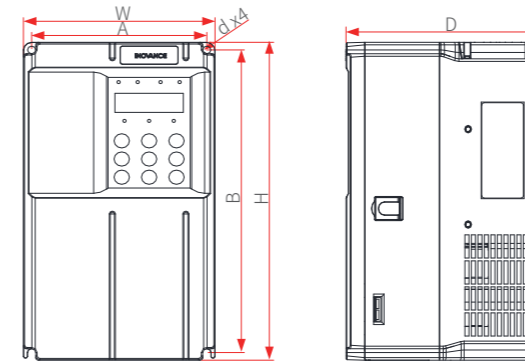
## General wiring diagram



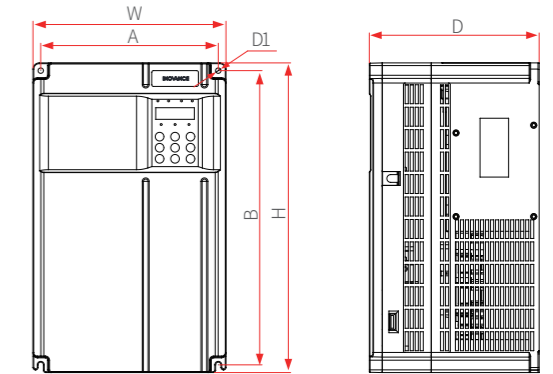
Note: This wiring diagram shows the digital inputs used in NPN (SINK) configuration. They can be used also as PNP (SOURCE) configuration.

## Dimensions

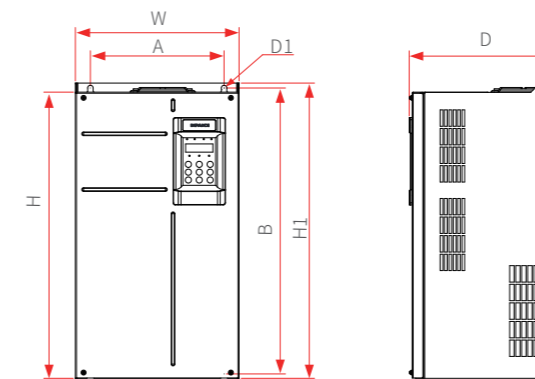
MD290T0.4G/0.7PB-INT to MD290T15G/18.5PB-INT  
MD290-2T0.4G/0.7PB-INT to MD290-2T7.5G/11PB-INT



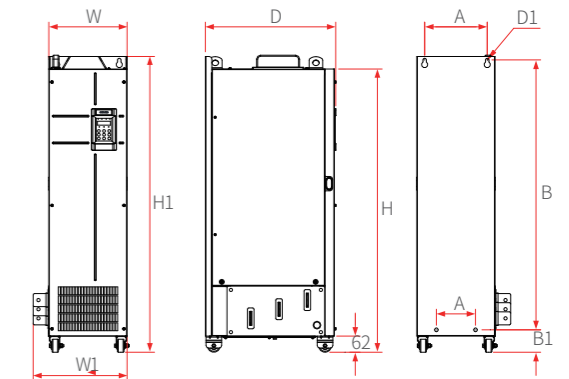
MD290T18.5G/22P(B)-INT to MD290T37G/45P(B)-INT  
MD290-2T11G/15P(B)-INT to MD290-2T18.5G/22P(B)-INT



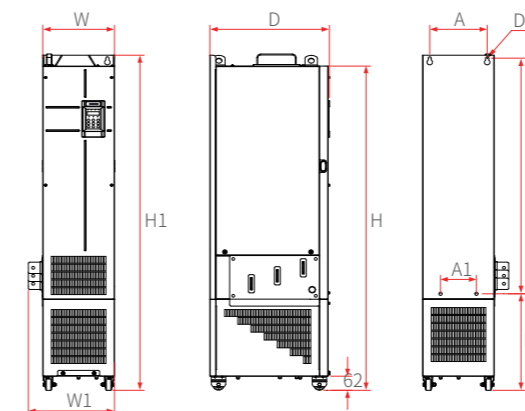
MD290T45G/55P(B)-INT to MD290T160G/200P-INT  
MD290-2T22G/30P(B)-INT to MD290-2T55G/75P-INT



MD290T200G-INT to MD290T450G-INT  
MD290T220P-INT to MD290T500P-INT



MD290T200G-L-INT to MD290T450G-L-INT  
MD290T220P-L-INT to MD290T500P-L-INT



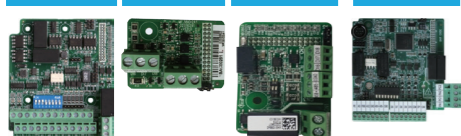
| MD290 model   | Frame size | Dimensions (mm) |     |       |     |       |       |     |     |     |     | Mass (kg) |
|---|------------|-----------------|-----|-------|-----|-------|-------|-----|-----|-----|-----|-----------|
|   |            | A               | A1  | B     | B1  | H     | H1    | W   | W1  | D   | D1  |           |
| MD290T0.4G/0.7PB-INT, MD290T0.7G/1.1PB-INT, MD290T1.1G/1.5PB-INT<br>MD290T1.5G/2.2PB-INT, MD290T2.2G/3.0PB-INT, MD290T3.0G/3.7PB-INT<br>MD290-2T0.4G/0.7PB-INT, MD290-2T0.7G/1.1PB-INT,<br>MD290-2T1.1G/1.5PB-INT, MD290-2T1.5G/2.2PB-INT               | T1         | 119             | /   | 189   | /   | 200   | /     | 130 | /   | 152 | Ø5  | 1.6       |
| MD290T3.7G/5.5PB-INT, MD290T5.5G/7.5PB-INT<br>MD290-2T2.2G/3.7PB-INT, MD290-2T3.7G/5.5PB-INT  | T2         | 119             | /   | 189   | /   | 200   | /     | 130 | /   | 162 | Ø5  | 2.0       |
| MD290T7.5G/11PB-INT, MD290T11G/15PB-INT, MD290-2T5.5G/7.5PB-INT   | T3         | 128             | /   | 238   | /   | 250   | /     | 140 | /   | 170 | Ø6  | 3.3       |
| MD290T15G/18.5PB-INT, MD290-2T7.5G/11PB-INT   | T4         | 166             | /   | 266   | /   | 280   | /     | 180 | /   | 170 | Ø6  | 4.3       |
| MD290T18.5G/22P(B)-INT, MD290T22G/30P(B)-INT,<br>MD290-2T11G/15P(B)-INT   | T5         | 195             | /   | 335   | /   | 350   | /     | 210 | /   | 192 | Ø6  | 10        |
| MD290T30G/37P(B)-INT, MD290T37G/45P(B)-INT<br>MD290-2T15G/18.5P(B)-INT, MD290-2T18.5G/22P(B)-INT  | T6         | 230             | /   | 380   | /   | 400   | /     | 250 | /   | 220 | Ø7  | 17.5      |
| MD290T45G/55P(B)-INT, MD290T55G/75P(B)-INT<br>MD290-2T22G/30P(B)-INT, MD290-2T30G/37P(B)-INT  | T7         | 245             | /   | 523   | /   | 525   | 542   | 300 | /   | 275 | Ø10 | 35        |
| MD290T75G/90P(B)-INT, MD290T90G/110P-INT, MD290T110G/132P-INT<br>MD290-2T37G/45P(B)-INT, MD290-2T45G/55P-INT, MD290-2T55G/75P-INT   | T8         | 270             | /   | 560   | /   | 554   | 580   | 338 | /   | 315 | Ø10 | 51.5      |
| MD290T132G/160P-INT, MD290T160G/200P-INT  | T9         | 320             | /   | 890   | /   | 874   | 915   | 400 | /   | 320 | Ø10 | 85        |
| MD290T200G-INT, MD290T220P-INT, MD290T220G-INT, MD290T250P-INT<br>MD290T280P-INT  | T10        | 240             | 150 | 1,035 | 86  | 1,086 | 1,134 | 300 | 360 | 500 | Ø13 | 110       |
| MD290T200G-L-INT, MD290T220P-L-INT,<br>MD290T220G-L-INT, MD290T250P-L-INT, MD290T280P-L-INT   |            | 240             | 150 | 1,035 | 424 | 1,424 | 1,472 | 300 | 360 | 500 | Ø13 | 160       |
| MD290T250G-INT, MD290T280G-INT, MD290T315P-INT, MD290T355P-INT<br>MD290T250G-L-INT, MD290T280G-L-INT,<br>MD290T315P-L-INT, MD290T355P-L-INT   | T11        | 225             | 185 | 1,175 | 97  | 1,248 | 1,284 | 330 | 390 | 545 | Ø13 | 155       |
| MD290T250G-L-INT, MD290T280G-L-INT,<br>MD290T315P-L-INT, MD290T355P-L-INT   | T11        | 225             | 185 | 1,175 | 435 | 1,586 | 1,622 | 330 | 390 | 545 | Ø13 | 215       |
| MD290T315G-INT, MD290T355G-INT, MD290T400P-INT,<br>MD290T400G-INT, MD290T450P-INT, MD290T450G-INT, MD290T500P-INT<br>MD290T315G-L-INT, MD290T355G-L-INT, MD290T400P-L-INT,<br>MD290T400G-L-INT, MD290T450P-L-INT,<br>MD290T450G-L-INT, MD290T500P-L-INT | T12        | 240             | 200 | 1,280 | 101 | 1,355 | 1,405 | 340 | 400 | 545 | Ø16 | 185       |
| MD290T315G-L-INT, MD290T355G-L-INT, MD290T400P-L-INT,<br>MD290T400G-L-INT, MD290T450P-L-INT,<br>MD290T450G-L-INT, MD290T500P-L-INT  | T12        | 240             | 200 | 1,280 | 432 | 1,683 | 1,733 | 340 | 400 | 545 | Ø16 | 245       |

## Extension cards and mounting position

**I/O cards**

MD38IO1, MD38IO2, MD38IO3, MD38PC1

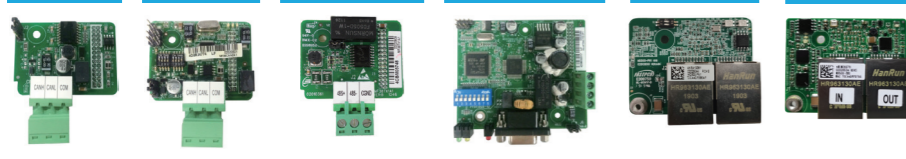
I/O card 1, I/O card 2, I/O card 3, PLC card

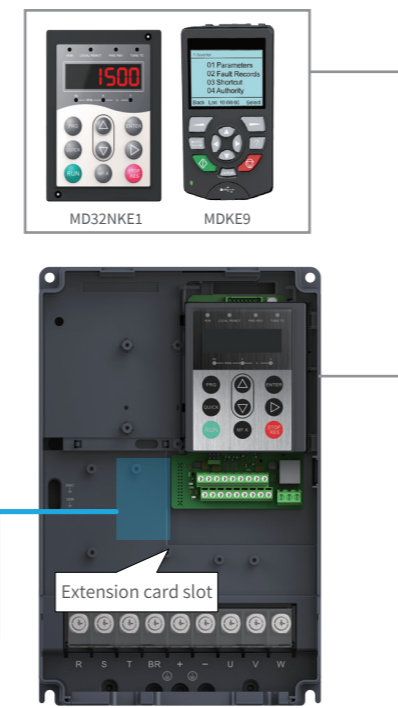


**Fieldbus cards**

MD38CAN1, MD38CAN2, MD38TX1, MD38DP2, MD500-PN1, MD500-ECAT

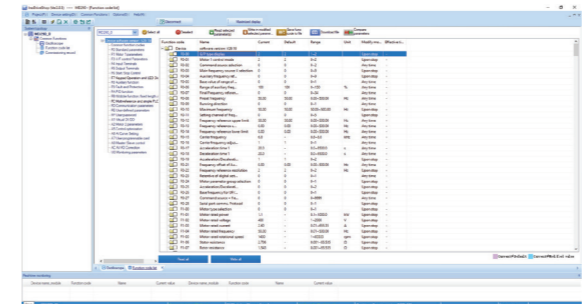
CANlink card, CANopen card, Modbus RTU card, PROFIBUS-DP card, PROFINET card, EtherCAT card





## PC software tools

InoDriveShop is Inovance's PC-based software offering. It is based on a familiar Windows interface. InoDriveShop can upload and download drive parameters, and features a variety of other functions, such as a real-time oscilloscope



Parameter uploading/downloading



Multi-drive, multi-channel oscilloscope

## Accessories list

| Category               | Model           | Function description  | Suitable for          |
|------------------------|-----------------|---|-----------------------|
| External braking units | MDBUN-60-2T     | External braking unit, rated current 60 A, for supply input voltage 200 to 240 Vac AC drives.                         | 2T models: 45G - 55G  |
|                        | MDBUN-200-5T    | External braking unit, rated current 200 A, for supply input voltage 380 to 480 Vac AC drives.                        | T models: 200G - 450G |
|                        | MDBUN-60-5T     | External braking unit, rated current 60 A, for supply input voltage 380 to 480 Vac AC drives.                         | T models: 90G - 110G  |
| Keypads                | MDBUN-90-5T     | External braking unit, rated current 90 A, for supply input voltage 380 to 480 Vac AC drives.                         | T models: 132G - 160G |
|                        | MD32NKE1        | Remote LED keypad. Includes MDCAB cable.  | All                   |
|                        | MDKE9           | Remote LCD keypad. For parameter programming and monitoring, data copy (for various MD series). Includes MDCAB cable. | All                   |
| I/O cards              | MDCAB           | 3 meter connection cable for remote keypad.   | All                   |
|                        | MDCAB-1.5       | 1.5 meter connection cable for remote keypad.   | All                   |
|                        | MD38IO1         | I/O extension card 1, provides: 5x DI, 1x AI, 1x relay output, 1x DO, 1x AO, Modbus-RTU and CANlink.                  | Frame sizes T4-T12    |
| PLC card               | MD38IO2         | I/O extension card 2, provides 3x extra DI terminals.   | All                   |
|                        | MD38IO3         | I/O extension card 3, provides 3x DI, 1x relay output, Modbus-RTU interface.  | All                   |
|                        | MD38PC1         | PLC card, compatible with Inovance PLC.   | Frame sizes T4-T12    |
| Fieldbus cards         | MD500-ECAT      | EtherCAT communication card.  | All                   |
|                        | MD38CAN1        | CANlink communication card, supports only CANlink.  | All                   |
|                        | MD38CAN2        | CANopen communication card, supports only CANopen.  | All                   |
| PC comms kit           | MD38TX1         | Modbus-RTU communication card.  | All                   |
|                        | MD38DP2         | PROFIBUS-DP communication card.   | Frame sizes T4-T12    |
|                        | MD500-PN1       | PROFINET communication card.  | All                   |
| Mounting brackets      | MDPCKIT02       | Kit for connection with a personal computer, to be used with PC software tools.                                       | All                   |
|                        | MD500-AZJ-A1T1  | Through hole mounting bracket - MD290/MD500 for frame T1.   | Frame size T1         |
|                        | MD500-AZJ-A1T2  | Through hole mounting bracket - MD290/MD500 for frame T2.   | Frame size T2         |
|                        | MD500-AZJ-A1T3  | Through hole mounting bracket - MD290/MD500 for frame T3.   | Frame size T3         |
|                        | MD500-AZJ-A1T4  | Through hole mounting bracket - MD290/MD500 for frame T4.   | Frame size T4         |
|                        | MD500-AZJ-A1T5  | Through hole mounting bracket - MD290/MD500 for frame T5.   | Frame size T5         |
|                        | MD500-AZJ-A1T6  | Through hole mounting bracket - MD290/MD500 for frame T6.   | Frame size T6         |
|                        | MD500-AZJ-A1T7  | Through hole mounting bracket - MD290/MD500 for frame T7.   | Frame size T7         |
|                        | MD500-AZJ-A1T8  | Through hole mounting bracket - MD290/MD500 for frame T8.   | Frame size T8         |
|                        | MD500-AZJ-A1T9  | Through hole mounting bracket - MD290/MD500 for frame T9.   | Frame size T9         |
| Guide Rails            | MD500-AZJ-A3T10 | Guide rails for inserting in/ extracting from the cabinet - frame sizes T10 to T12.                                   | Frame sizes T10-T12   |