

# INOVANCE

## MD290 AC Drive General-purpose Open Loop

**NEW**

Wide operating voltage  
Three-phase 380 to 480 Vac,  
0.4 to 500 kW

CE



**NEW**  
LISTED  
E467465  
IND.CONT.EQ.

Operation in high  
ambient temperature



**NEW**

Built-in DC reactor  
(18.5 kW and above)



**NEW**

Through-hole mounting  
Options (0.4 to 160 kW)

**NEW**

Enhanced reliability protection  
against humidity and  
pollution dust

\*2 PC-Based  
Software  
simplified  
startup &  
backup



### Features & Functions

- Open-loop V/F
- Communication Options:
  - Modbus-RTU
  - Profibus-DP
  - CANopen
  - CANlink
- Automatic torque boost
- Slip compensation
- Simplified parameter for easy startup
- 4-independent S-ramps
- Flexible programmable I/O connection
- User programmable function
- Variable DC injection braking
- Comprehensive trip diagnostics
- Output frequency 500 Hz

\*1 UL for 132 kW and above are coming soon.

\*2 PC Comms kit hardware (optional).

## General Specifications

| Voltage Class                      |                                 | Three-phase 380 to 480 Vac                                    |            |            |            |            |            |            |            |           |           |            |
|------------------------------------|---------------------------------|---------------------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|-----------|-----------|------------|
| Drive model:<br>MD290TxxG/xxPB-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                                                            |            |            |            |            |            | 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, ±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>1</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, 60 Sec                   |            |            |            |            |            |            |            |           |           |            |
|                                    | Max. output voltage             | Three-phase 380 to 480 Vac<br>(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          |
|                                    | Recommended resistance [Ω]      | 1450                                                          | 800        | 500        | 380        | 260        | 190        | 150        | 100        | 75        | 50        | 38         |
| Braking unit                       |                                 | Built-in                                                      |            |            |            |            |            |            |            |           |           |            |
| Enclosure                          |                                 | IP 20                                                         |            |            |            |            |            |            |            |           |           |            |

| Voltage Class                     |                                  | Three-phase 380 to 480 Vac                                    |         |         |         |         |         |         |                |           |                |           |
|-----------------------------------|----------------------------------|---------------------------------------------------------------|---------|---------|---------|---------|---------|---------|----------------|-----------|----------------|-----------|
| Drive model:<br>MD290TxxG/xxP-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]          | 49.5/59                                                       | 59/65.8 | 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, ±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>-1</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, 60 Sec                   |         |         |         |         |         |         |                |           |                |           |
|                                   | Max. output voltage              | Three-phase 380 to 480 Vac<br>(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        |
|                                   | Recommended resistance [Ω]       | 32                                                            | 27      | 20      | 16      | 13      | 10.5    | 7.7     | 6.4            | 5.3       | 4.4            | 3.6       |
| Braking unit                      |                                  | Built-in (For models MD290TxxG/xxP <b>B</b> -INT)             |         |         |         |         |         |         | MDBUN-60-5T x2 |           | MDBUN-90-5T x2 |           |
| Enclosure                         |                                  | IP 20                                                         |         |         |         |         |         |         |                |           |                |           |

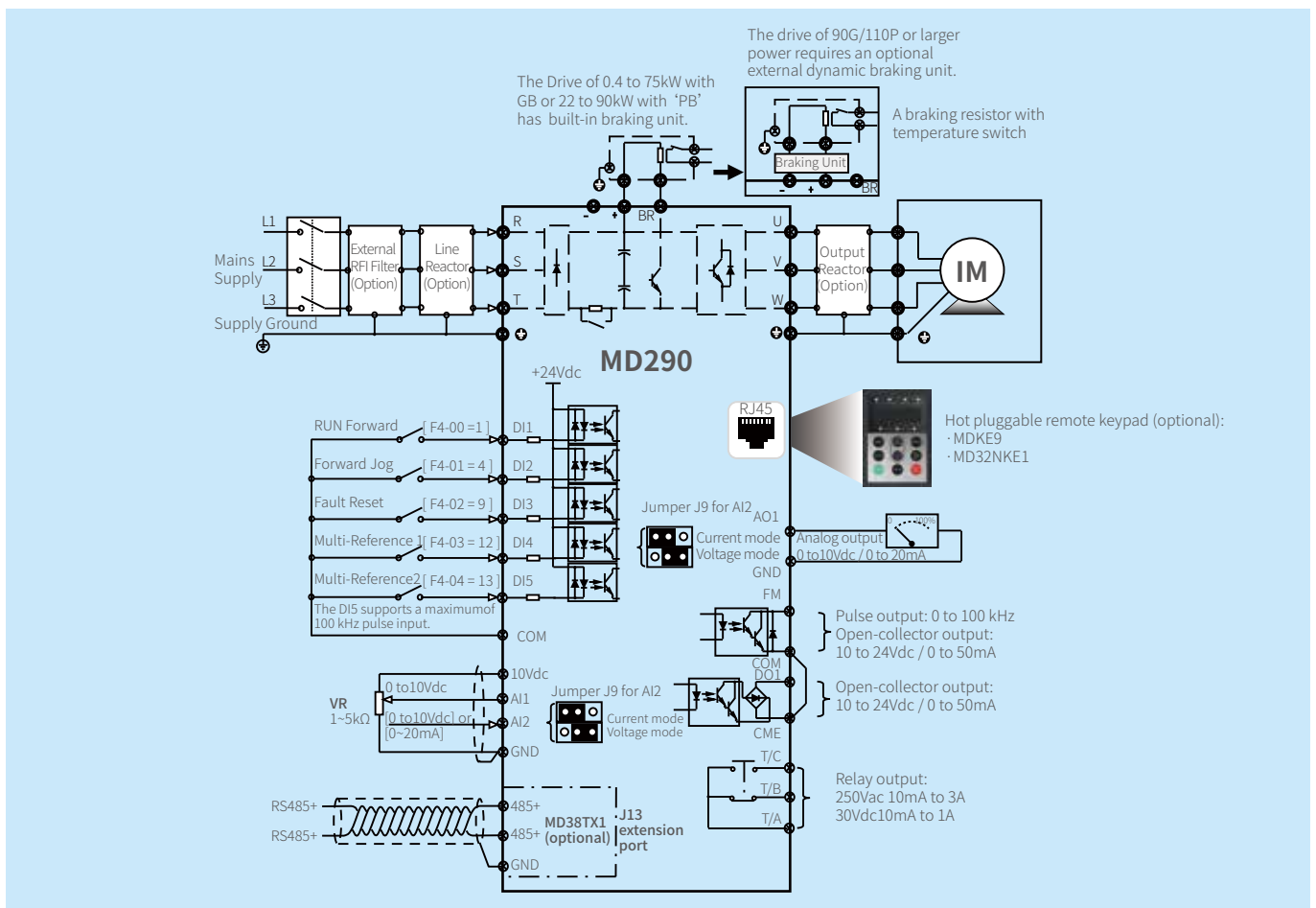
| Voltage Class                                     |                                 | Three-phase 380 to 480 Vac                                             |      |      |      |      |      |      |      |               |      |      |      |      |      |      |      |
|---------------------------------------------------|---------------------------------|------------------------------------------------------------------------|------|------|------|------|------|------|------|---------------|------|------|------|------|------|------|------|
| Drive Model:<br>MD290Txxxx (-L) <sup>2</sup> -INT |                                 | 200G                                                                   | 220P | 220G | 250P | 250G | 280P | 280G | 315P | 315G          | 355P | 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  | 441  | 507  | 495  | 559  | 565           | 624  | 617  | 708  | 687  | 782  | 782  | 840  |
|                                                   | Power capacity [kVA]            | 334                                                                    | 375  | 375  | 417  | 404  | 464  | 453  | 511  | 517           | 571  | 565  | 647  | 629  | 715  | 716  | 768  |
|                                                   | Rated input frequency           | 50/60 Hz, ±5%                                                          |      |      |      |      |      |      |      |               |      |      |      |      |      |      |      |
| Drive Output                                      | Applicable motor [kW]           | 200                                                                    | 220  | 220  | 250  | 250  | 280  | 280  | 315  | 315           | 355  | 355  | 400  | 400  | 450  | 450  | 500  |
|                                                   | Output current [A] <sup>1</sup> | 377                                                                    | 426  | 426  | 465  | 465  | 520  | 520  | 585  | 585           | 650  | 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, 60 Sec (130% for MD290T450G (-L)) |      |      |      |      |      |      |      |               |      |      |      |      |      |      |      |
|                                                   | Max. output voltage             | Three-phase 380 to 480 Vac<br>(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   |
|                                                   | Recommended resistance [Ω]      | 2.9                                                                    | 2.9  | 2.7  | 2.7  | 2.3  | 2.3  | 2.1  | 2.1  | 1.9           | 1.9  | 1.7  | 1.7  | 1.5  | 1.5  | 1.3  | 1.3  |
| Braking unit                                      |                                 | MDBU-200-C x2                                                          |      |      |      |      |      |      |      | MDBU-200-C x3 |      |      |      |      |      |      |      |
| Enclosure                                         |                                 | IP 00                                                                  |      |      |      |      |      |      |      |               |      |      |      |      |      |      |      |

Notes:

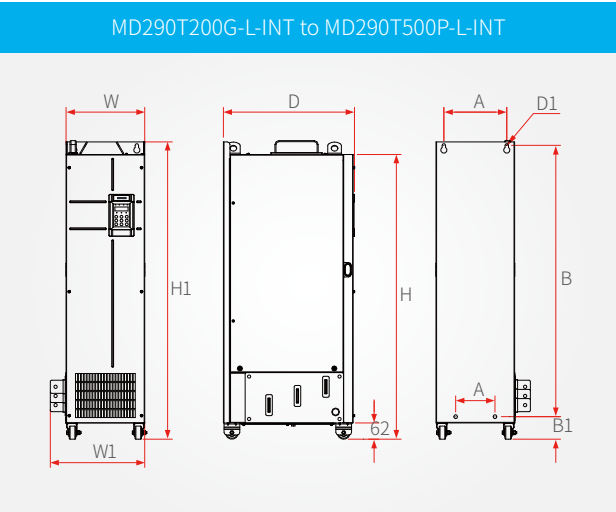
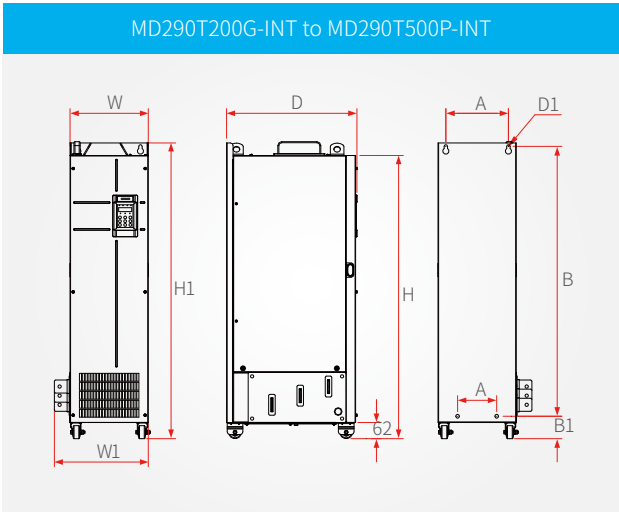
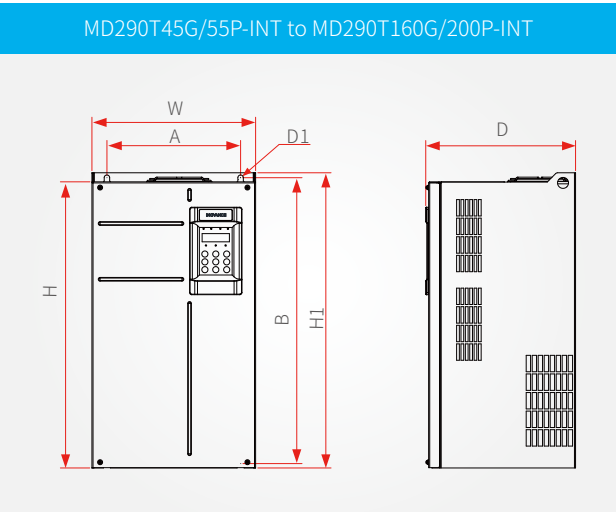
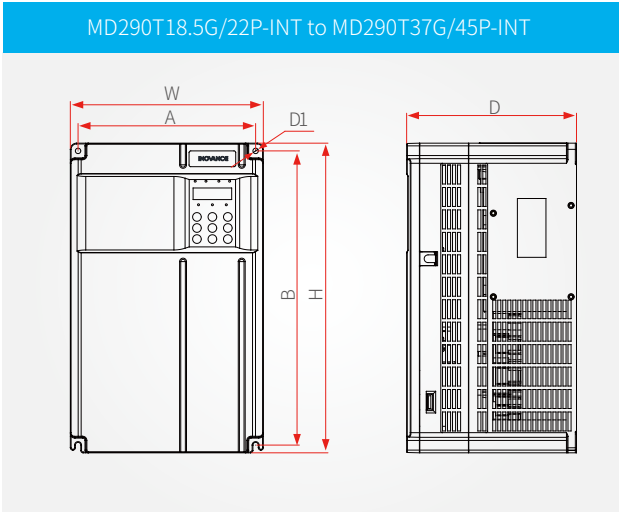
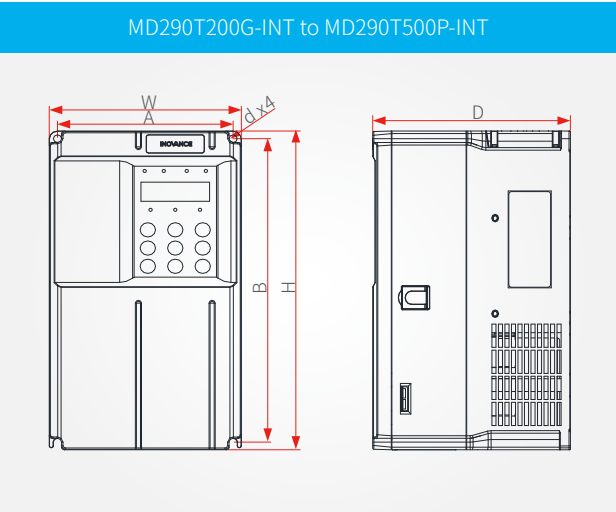
\*1 Default carrier switching frequency at rated output current.

\*2 For the standard AC Drive, we recommend motor cable lengths to be <100m. Where your installation exceeds 100m, the "L" version is an option with inbuilt AC Output Reactor (1%) which can help to overcome the effects of long cable installation. To discuss your application, contact Inovance Technology and or the Authorized Distributor.

## General Wiring Diagram

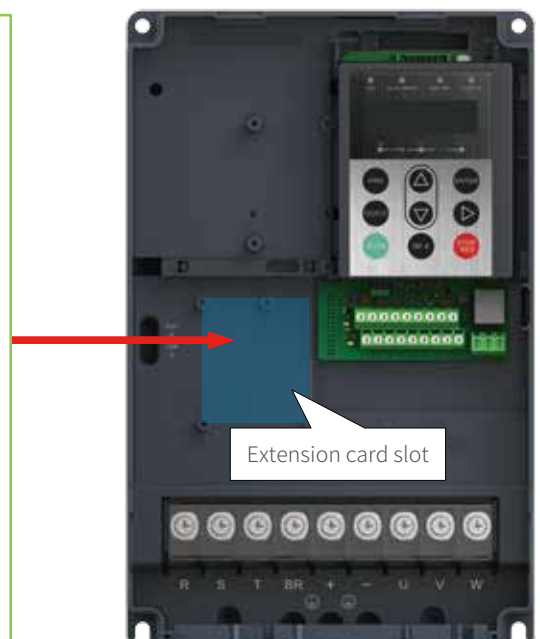
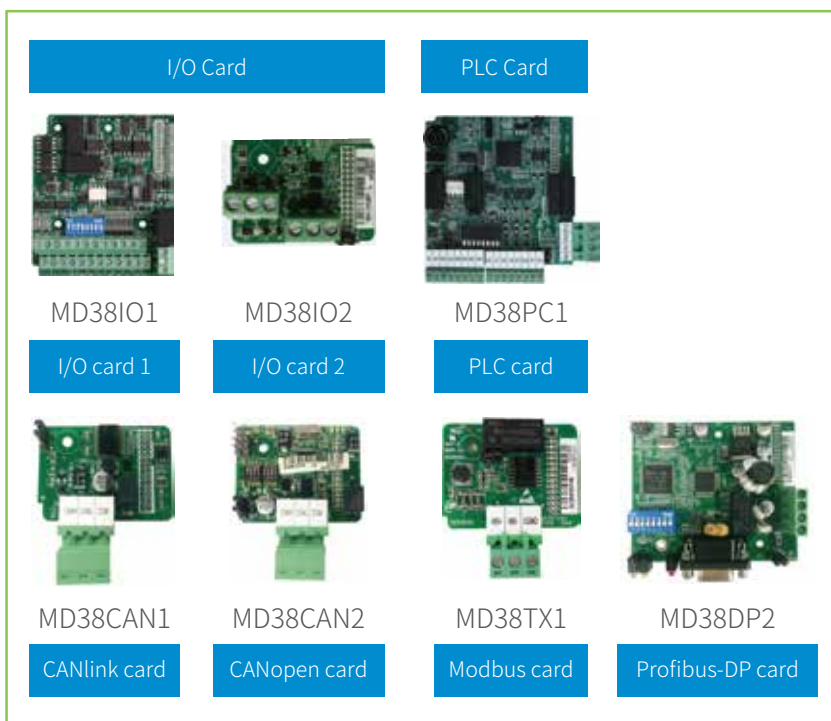


General Wiring Diagram



| MD290 Model                                                                                                                                    | Frame size | Dimensions (mm) |     |       |     |       |       |     |     |     |     | Weight (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           | T1         | 119             | /   | 189   | /   | 200   | /     | 130 | /   | 152 | Ø5  | 1.6         |
| MD290T3.7G/5.5PB-INT, MD290T5.5G/7.5PB-INT                                                                                                     | T2         | 119             | /   | 189   | /   | 200   | /     | 130 | /   | 162 | Ø5  | 2.0         |
| MD290T7.5G/11PB-INT, MD290T11G/15PB-INT                                                                                                        | T3         | 129             | /   | 238   | /   | 250   | /     | 140 | /   | 170 | Ø6  | 3.3         |
| MD290T15G/18.5PB-INT                                                                                                                           | T4         | 166             | /   | 266   | /   | 280   | /     | 180 | /   | 170 | Ø6  | 4.3         |
| MD290T18.5G/22P-INT, MD290T22G/30P-INT                                                                                                         | T5         | 195             | /   | 335   | /   | 350   | /     | 210 | /   | 192 | Ø6  | 9.1         |
| MD290T30G/37P-INT, MD290T37G/45P-INT                                                                                                           | T6         | 230             | /   | 380   | /   | 400   | /     | 250 | /   | 220 | Ø7  | 17.5        |
| MD290T45G/55P-INT, MD290T55G/75P-INT                                                                                                           | T7         | 245             | /   | 523   | /   | 525   | 542   | 300 | /   | 275 | Ø10 | 35          |
| MD290T75G/90P-INT, MD290T90G/110P-INT, MD290T110G/132P-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, MD290T200G-INT, MD290T250P-INT                                                                                 | T10        | 240             | 150 | 1,035 | 86  | 1,086 | 1,134 | 300 | 360 | 500 | Ø13 | 110         |
| MD290T200G-L-INT, MD290T220P-L-INT, MD290T200G-L-INT, MD290T250P-L-INT                                                                         |            | 240             | 150 | 1,035 | 424 | 1,424 | 1,472 | 300 | 360 | 500 | Ø13 | 160         |
| MD290T250G-INT, MD290T280P-INT, MD290T280G-INT, MD290T315P-INT                                                                                 | T11        | 225             | 185 | 1,175 | 97  | 1,248 | 1,284 | 330 | 390 | 545 | Ø13 | 155         |
| MD290T250G-L-INT, MD290T280P-L-INT, MD290T280G-L-INT, MD290T315P-L-INT                                                                         |            | 225             | 185 | 1,175 | 435 | 1,586 | 1,622 | 330 | 390 | 545 | Ø13 | 215         |
| MD290T315G-INT, MD290T355P-INT, MD290T355G-INT, MD290T400P-INT, MD290T400G-INT, MD290T450P-INT, MD290T450G-INT, MD290T500P-INT                 | T12        | 240             | 200 | 1,280 | 101 | 1,355 | 1,405 | 340 | 400 | 545 | Ø16 | 185         |
| MD290T315G-L-INT, MD290T355P-L-INT, MD290T355G-L-INT, MD290T400P-L-INT, MD290T400G-L-INT, MD290T450P-L-INT, MD290T450G-L-INT, MD290T500P-L-INT |            | 240             | 200 | 1,280 | 432 | 1,683 | 1,733 | 340 | 400 | 545 | Ø16 | 245         |

## Extension Cards and Mounting Position



## Accessories List

| Category         | Model           | Function description                                                                                                                   | Suitable for               | Part No.      |
|------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------|
| Braking unit     | MDBU-200-C      | External braking unit, rating 200 A for braking current, for input 380 to 480 Vac AC Drive                                             | 200G to 450G, 220P to 500P | To be advised |
|                  | MDBUN-60-5T     | External braking unit, rating 60 A for braking current, for input 380 to 480 Vac AC Drive                                              | 90G/110P to 110G/132P      | To be advised |
|                  | MDBUN-90-5T     | External braking unit, rating 90 A for braking current, for input 380 to 480 Vac AC Drive                                              | 132G/160P to 160G/200P     | To be advised |
| Keypad           | MD32NKE1        | Remote LED keypad.                                                                                                                     | All                        | 01013061      |
|                  | MDKE9           | Remote LCD Keypad. For parameter programming and monitoring, data copy (for various MD series, replacement of MDKE7)                   | All                        | 01040037      |
|                  | MDCAB           | 3-meter connecting cable for remote keypad.                                                                                            | All                        | 01013008      |
|                  | MDCAB-1.5       | 1.5-meter connecting cable for remote keypad.                                                                                          | All                        | 15048471      |
| I/O card         | MD38IO1         | I/O extension card 1, provides the following extension terminals: 5x DI, 1x AI, 1x relay output, 1x DO, 1x AO, Modbus-RTU and CANlink. | 15G/18.5P to 450G, 500P    | 01013098      |
|                  | MD38IO2         | I/O extension card 2, provides 3x extra DI terminals.                                                                                  | All                        | 01013103      |
| PLC card         | MD38PC1         | PLC card, completely compatible with the Inovance PLC.                                                                                 | 15G/18.5P to 450G, 500P    | 01013104      |
| Fieldbus         | MD38CAN1        | CANlink communication card (Inovance proprietary serial comms)                                                                         | All                        | 01013100      |
|                  | MD38CAN2        | CANopen communication card                                                                                                             | All                        | 01013102      |
|                  | MD38TX1         | Modbus-RTU communication card                                                                                                          | All                        | 01013112      |
|                  | MD38DP2         | Profibus-DP communication card (Modbus gateway)                                                                                        | 15G/18.5P to 450G, 500P    | 01013144      |
| Mounting bracket | MD500-AZJ-A1T1  | Through-hole Mounting Bracket for Frame size 1.                                                                                        | 0.4G/0.7P to 3.0G/3.7P     | 01040072      |
|                  | MD500-AZJ-A1T2  | Through-hole Mounting Bracket for Frame size 2.                                                                                        | 3.7G/5.5P to 5.5G/7.5P     | 01040073      |
|                  | MD500-AZJ-A1T3  | Through-hole Mounting Bracket for Frame size 3.                                                                                        | 7.5G/11P to 11G/15P        | 01040074      |
|                  | MD500-AZJ-A1T4  | Through-hole Mounting Bracket for Frame size 4.                                                                                        | 15G/18.5P                  | 01040075      |
|                  | MD500-AZJ-A1T5  | Through-hole Mounting Bracket for Frame size 5.                                                                                        | 18.5G/22P to 22G/30P       | 01040001      |
|                  | MD500-AZJ-A1T6  | Through-hole Mounting Bracket for Frame size 6.                                                                                        | 30G/37P to 37G/45P         | 01040002      |
|                  | MD500-AZJ-A1T7  | Through-hole Mounting Bracket for Frame size 7.                                                                                        | 45G/55P to 55G/75P         | 01040003      |
|                  | MD500-AZJ-A1T8  | Through-hole Mounting Bracket for Frame size 8.                                                                                        | 75G/90P to 110G/132P       | 01040004      |
|                  | MD500-AZJ-A1T9  | Through-hole Mounting Bracket for Frame size 9.                                                                                        | 132G/160P to 160G/200P     | 01040005      |
|                  | MD500-AZJ-A3T10 | Assemble the guide rail for frame size T10 to T12.                                                                                     | 200G to 450G, 220P to 500P | 01040009      |

For more information, please contact our local offices.



**Hong Kong SAR**  
**Inova Automation Co., Ltd.**  
 International Export Office  
 Tel.: (852) 2751 6080  
 info@inova-automation.com  
[www.inova-automation.com](http://www.inova-automation.com)

**Germany-Pleidelshheim**  
**Inovance Technology Europe GmbH**  
 Tel.: (49) 7144 899 0  
 info@inova-automation.com

**India**  
**Inova Automation Pvt. Ltd.**  
 Head Office Chennai  
 Tel.: (91) 95 0008 8025  
 Sales Office Ahmedabad  
 Tel.: (91) 79 4003 4272  
 Delhi, Mumbai, Kolkata,  
 Pune, Bengaluru, Coimbatore  
[info.inovaindia@inova-automation.com](mailto:info.inovaindia@inova-automation.com)

**Italy-Milano**  
**Inova Automation Italy Srl**  
 Tel.: (39) 02 2682 2318  
[info@inova-automation.it](mailto:info@inova-automation.it)

**Turkey-Istanbul**  
**Inova Automation Co. Ltd. Turkey**  
 Tel.: (90) 216 706 1789  
[info.turkey@inova-automation.com](mailto:info.turkey@inova-automation.com)

**Iran-Teheran**  
**Inova Automation (Parsian)**  
 Tel.: (98) 21 88600501/2  
[Info.iran@inova-automation.com](mailto:Info.iran@inova-automation.com)

**South Korea-Seoul**  
**Inova Automation Korea**  
 Tel.: (82) 10 7428 5732  
[info@inova-automation.com](mailto:info@inova-automation.com)