

MD500 AC Drive

Open & closed 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
(400 V: 18.5 kW and above;
200 V: 11 kW and above)

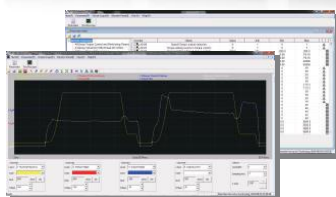
CE cUL[®] US
LISTED
E467465
IND. CONT. EQ.*¹

Enhanced reliability

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

Features & functions

- Open loop V/F & SVC control
- Closed loop FVC control
- Starting torque
 - 150% at 0.25 Hz for SVC
 - 180% at 0 Hz for FVC
- 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 & backup²

Through-hole mounting
options (0.4 to 160 kW)

General specifications

| Voltage class $\text{CE} \text{UL}$ | | Three-phase 380 to 480 Vac | | | | | | | | | | |
|-------------------------------------|----------------------------------|------------------------------------------------------------|------|------|-----|------|-----|------|------|------|------|------|
| MD500TxxxGB-INT | | 0.4 | 0.7 | 1.1 | 1.5 | 2.2 | 3.0 | 3.7 | 5.5 | 7.5 | 11 | 15 |
| Frame size | | T1 ^{*1} | | | | | T2 | | T3 | | T4 | |
| Drive input | Rated input voltage | Three-phase 380 to 480 Vac -15% to +10% | | | | | | | | | | |
| | Rated input current [A] | 1.8 | 2.4 | 3.7 | 4.6 | 6.3 | 9.0 | 11.4 | 16.7 | 21.9 | 32.2 | 41.3 |
| | Rated input frequency | 50/60 Hz $\pm 5\%$ | | | | | | | | | | |
| Drive output | Applicable motor [kW] | 0.4 | 0.75 | 1.1 | 1.5 | 2.2 | 3.0 | 3.7 | 5.5 | 7.5 | 11 | 15 |
| | Output current [A] ^{*2} | 1.5 | 2.1 | 3.1 | 3.8 | 5.1 | 7.2 | 9.0 | 13 | 17 | 25 | 32 |
| | Default carrier frequency [kHz] | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | Overload capacity | 150% 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 | 3.0 |
| | Minimum resistance [Ω] | 96 | 96 | 96 | 96 | 64 | 64 | 32 | 32 | 32 | 24 | 24 |
| Braking unit | | Built-in | | | | | | | | | | |
| Enclosure | | IP20 | | | | | | | | | | |

| Voltage class $\text{CE} \text{UL}$ | | Three-phase 380 to 480 Vac | | | | | | | | | | |
|-------------------------------------|----------------------------------|------------------------------------------------------------|------|------|------|------|------|----------------|-----------------------|----------------------|----------------------|----------------------|
| MD500TxxxG(B)-INT | | 18.5GB | 22GB | 30GB | 37GB | 45GB | 55GB | 75GB | 90G | 110G | 132G | 160G |
| 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 | 57 | 69 | 89 | 106 | 139 | 164 | 196 | 240 | 287 |
| | Rated input frequency | 50/60 Hz $\pm 5\%$ | | | | | | | | | | |
| Drive output | Applicable motor [kW] | 18.5 | 22 | 30 | 37 | 45 | 55 | 75 | 90 | 110 | 132 | 160 |
| | Output current [A] ^{*2} | 37 | 45 | 60 | 75 | 91 | 112 | 150 | 176 | 210 | 253 | 304 |
| | Default carrier frequency [kHz] | 6 | 6 | 6 | 5 | 5 | 4 | 3 | 3 | 3 | 3 | 3 |
| | Overload capacity | 150% 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 [Ω] | 24 | 24 | 19.2 | 14.8 | 12.8 | 9.6 | 6.8 | 11.4 x2 ^{*3} | 7.7 x2 ^{*3} | 7.7 x2 ^{*3} | 7.7 x2 ^{*3} |
| Braking unit | | Built-in | | | | | | MDBUN-60-5T x2 | | MDBUN-90-5T x2 | | |
| 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.

| Voltage class $\text{CE} \text{ (UL)}$ | | Three-phase 380 to 480 Vac | | | | | | | | |
|----------------------------------------|---------------------------------|------------------------------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|--|
| MD500TxxxG-INT ⁴ | | 200 | 220 | 250 | 280 | 315 | 355 | 400 | 450 | |
| 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 | 441 | 495 | 565 | 617 | 687 | 782 | |
| | Power capacity [kVA] | 334 | 375 | 404 | 453 | 517 | 565 | 629 | 716 | |
| | Rated input frequency | 50/60 Hz $\pm 5\%$ | | | | | | | | |
| Drive output | Applicable motor [kW] | 200 | 220 | 250 | 280 | 315 | 355 | 400 | 450 | |
| | Output current [A] ² | 377 | 426 | 465 | 520 | 585 | 650 | 725 | 820 | |
| | Default carrier frequency [kHz] | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| | Overload capacity | 150% for 60 s | | | | | | | 130% 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] | 38 | 42 | 48 | 54 | 60 | 69 | 78 | 87 | |
| | Minimum resistance [Ω] | 2.8×10^{-3} | 2.8×10^{-3} | 2.8×10^{-3} | 2.8×10^{-3} | 2.8×10^{-3} | 2.8×10^{-3} | 2.8×10^{-3} | 2.8×10^{-3} | |
| Braking unit | | MDBUN-200-5T x2 | | | MDBUN-200-5T x3 | | | | | |
| Enclosure | | IP00 | | | | | | | | |

| Voltage class CE | | Three-phase 200 to 240 Vac | | | | | | | | | | | | | | | |
|---------------------------|---------------------------------|------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|------|------|--------|------|----------------|----------------|----------------------|----------------------|
| MD500-2TxxxG(B)-INT | | 0.4GB | 0.7GB | 1.1GB | 1.5GB | 2.2GB | 3.7GB | 5.5GB | 7.5GB | 11GB | 15GB | 18.5GB | 22GB | 30GB | 37GB | 45G | 55G |
| Frame size | | T1 ¹ | | | | 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 | 4.6 | 6.3 | 9 | 11.4 | 16.7 | 32.2 | 41.3 | 51.3 | 57 | 69 | 89 | 106 | 139 | 164 | 196 |
| | Rated input frequency | 50/60 Hz $\pm 5\%$ | | | | | | | | | | | | | | | |
| Drive output | Applicable motor [kW] | 0.4 | 0.75 | 1.1 | 1.5 | 2.2 | 3.7 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30 | 37 | 45 | 55 |
| | Output current [A] ² | 2.1 | 3.8 | 5.1 | 7.2 | 9 | 13 | 25 | 32 | 45 | 60 | 75 | 91 | 112 | 150 | 176 | 210 |
| | Default carrier frequency [kHz] | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 4 | 3 | 3 | 3 |
| | Overload capacity | 150% 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 [Ω] | 48 | 48 | 32 | 32 | 16 | 16 | 12 | 12 | 12 | 9 | 7 | 6 | 5 | 4 | 5.5×10^{-3} | 3.7×10^{-3} |
| Braking unit | | Built-in | | | | | | | | | | | | MDBUN-60-2T x2 | MDBUN-90-2T x2 | | |
| Enclosure | | IP20 | | | | | | | | | | | | | | | |

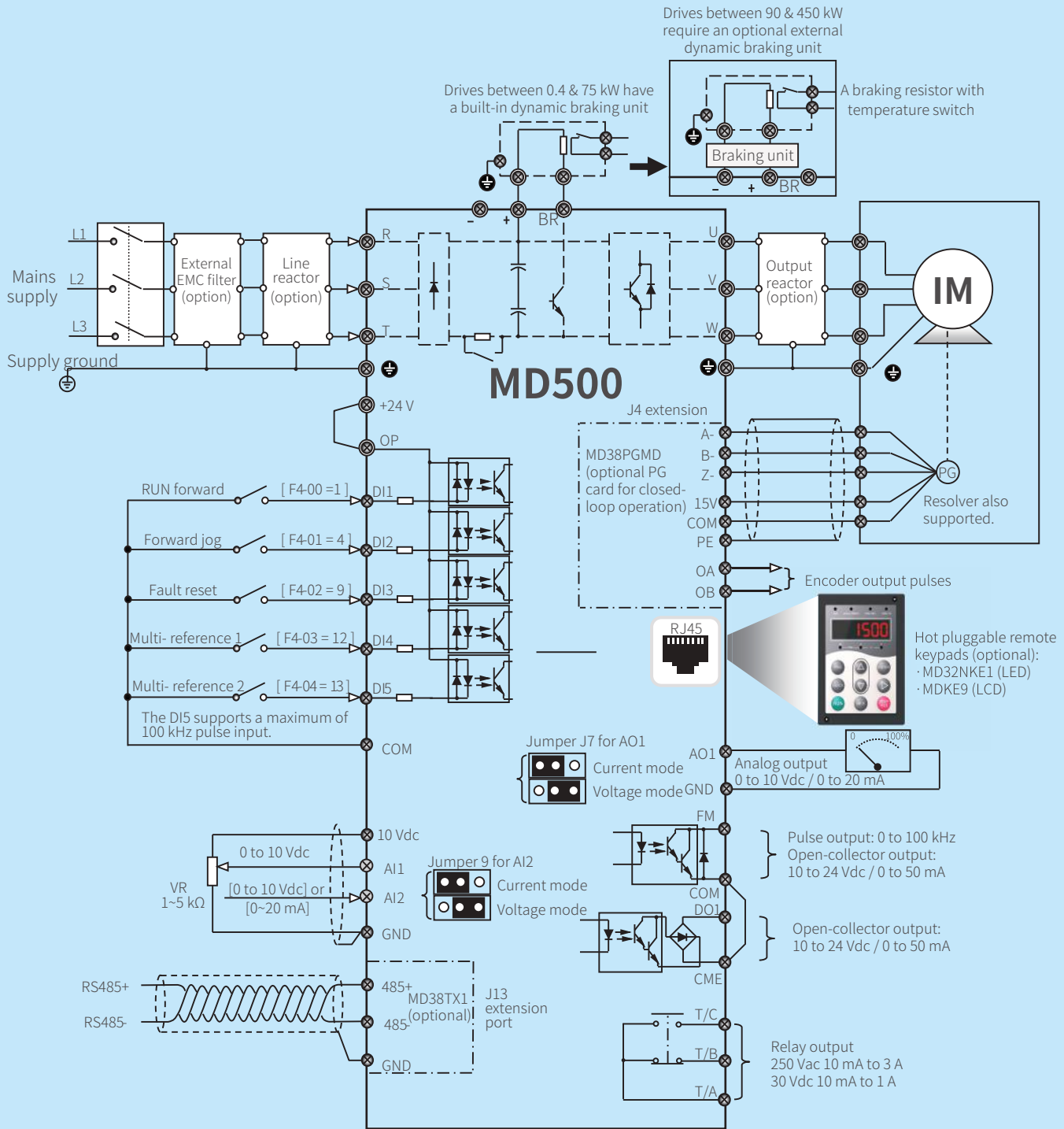
*1 0.75/1.5/2.2 kW are the preferred stocking ratings. To learn more, please get in touch with your local Inovance representative.

*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 MD500T200G-L-INT). To discuss your application, consult your local Inovance representative.

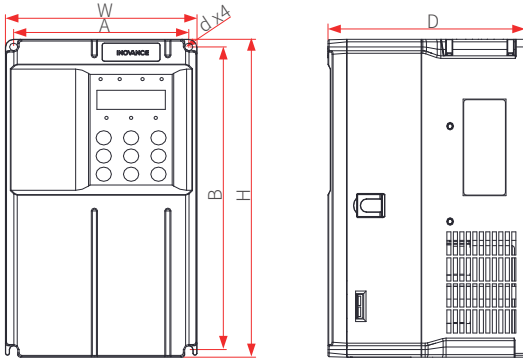
General wiring diagram



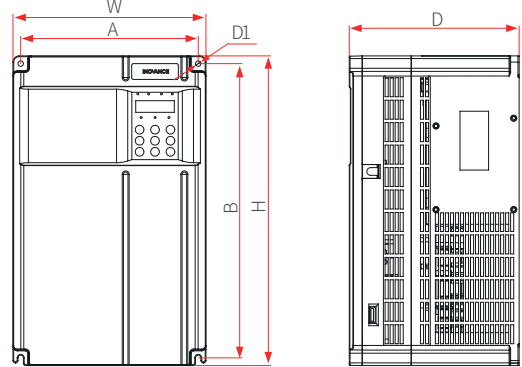
Note: This wiring diagram shows the digital inputs used in NPN (SINK) configuration. They can be used also as PNP (SOURCE) configuration.

Dimensions

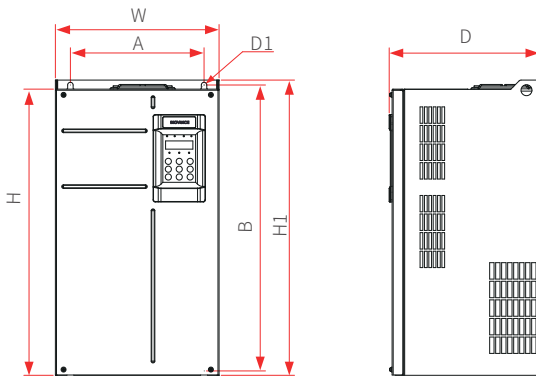
MD500T0.4GB-INT to MD500T15GB-INT
MD500-2T0.4GB-INT to MD500-2T7.5GB-INT



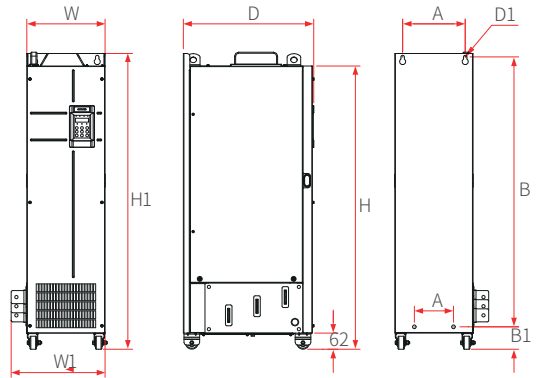
MD500T18.5GB-INT to MD500T37GB-INT
MD500-2T11GB-INT to MD500-2T18.5GB-INT



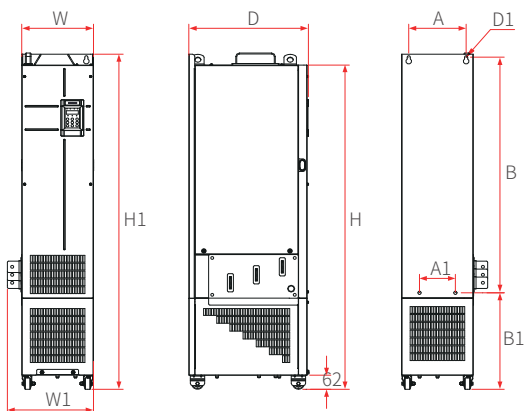
MD500T45GB-INT to MD500T160G-INT
MD500-2T22GB-INT to MD500-2T55G-INT



MD500T200G-INT to MD500T450G-INT

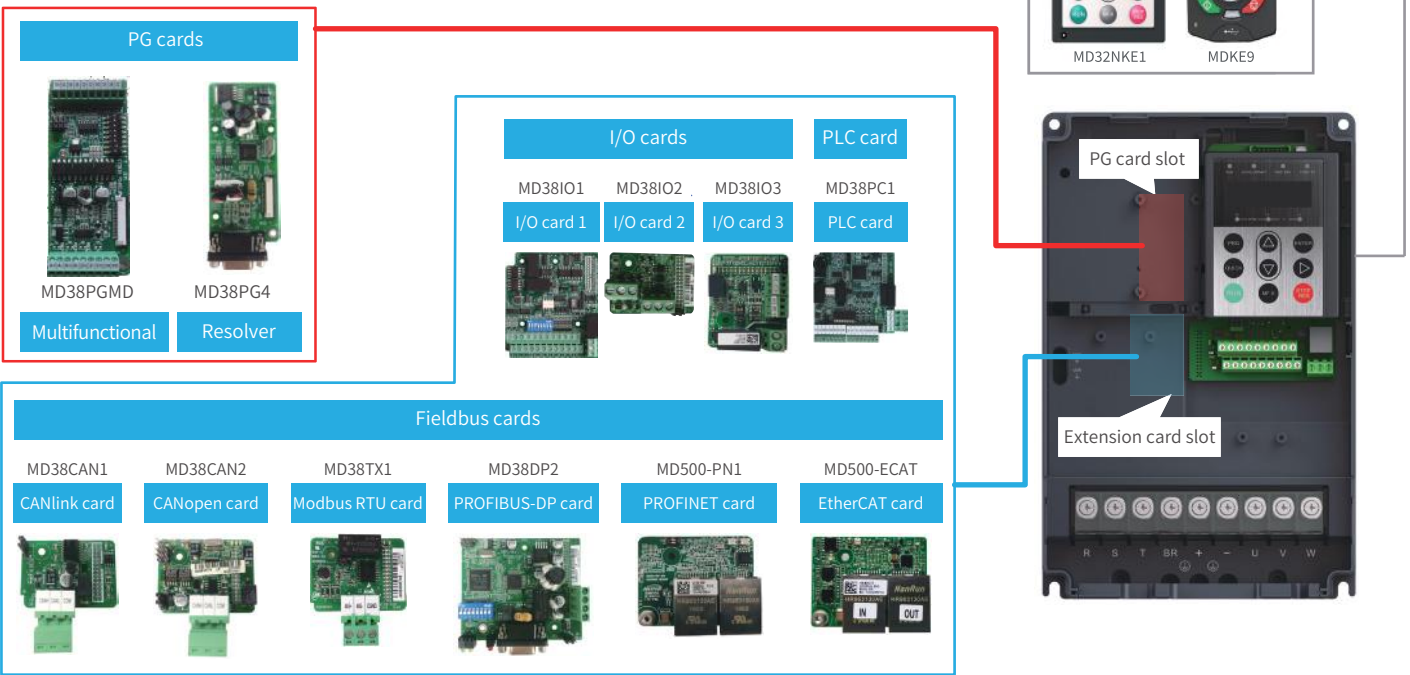


MD500T200G-L-INT to MD500T450G-L-INT



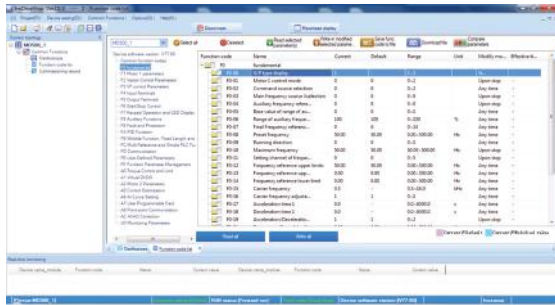
| MD500 model | Frame size | Dimensions (mm) | | | | | | | | | | Mass (kg) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------|-----|-------|-----|-------|-------|-----|-----|-----|-----|-----------|
| | | A | A1 | B | B1 | H | H1 | W | W1 | D | D1 | |
| MD500T0.4GB-INT, MD500T0.7GB-INT, MD500T1.1GB-INT MD500T1.5GB-INT, MD500T2.2GB-INT, MD500T3.0GB-INT MD500-2T0.4GB-INT, MD500-2T0.7GB-INT, MD500-2T1.1GB-INT, MD500-2T1.5GB-INT | T1 | 119 | / | 189 | / | 200 | / | 130 | / | 152 | Ø5 | 1.6 |
| MD500T3.7GB-INT, MD500T5.5GB-INT, MD500T2.2GB-INT, MD500-2T3.7GB-INT | T2 | 119 | / | 189 | / | 200 | / | 130 | / | 162 | Ø5 | 2.0 |
| MD500T7.5GB-INT, MD500T11GB-INT, MD500-2T5.5GB-INT | T3 | 128 | / | 238 | / | 250 | / | 140 | / | 170 | Ø6 | 3.3 |
| MD500T15GB-INT, MD500-2T7.5GB-INT | T4 | 166 | / | 266 | / | 280 | / | 180 | / | 170 | Ø6 | 4.3 |
| MD500T18.5GB-INT, MD500T22GB-INT, MD500-2T11GB-INT | T5 | 195 | / | 335 | / | 350 | / | 210 | / | 192 | Ø6 | 10 |
| MD500T30GB-INT, MD500T37GB-INT, MD500-2T15GB-INT, MD500-2T18.5GB-INT | T6 | 230 | / | 380 | / | 400 | / | 250 | / | 220 | Ø7 | 17.5 |
| MD500T45GB-INT, MD500T55GB-INT, MD500-2T22GB-INT, MD500-2T30GB-INT | T7 | 245 | / | 523 | / | 525 | 542 | 300 | / | 275 | Ø10 | 35 |
| MD500T75GB-INT, MD500T90G-INT, MD500T110G-INT MD500-2T37GB-INT, MD500-2T45G-INT, MD500-2T55G-INT | T8 | 270 | / | 560 | / | 554 | 580 | 338 | / | 315 | Ø10 | 51.5 |
| MD500T132G-INT, MD500T160G-INT | T9 | 320 | / | 890 | / | 874 | 915 | 400 | / | 320 | Ø10 | 85 |
| MD500T200G-INT, MD500T220G-INT MD500T200G-L-INT, MD500T220G-L-INT | T10 | 240 | 150 | 1,035 | 86 | 1,086 | 1,134 | 300 | 360 | 500 | Ø13 | 110 |
| MD500T250G-INT, MD500T280G-INT MD500T250G-L-INT, MD500T280G-L-INT | T11 | 225 | 185 | 1,175 | 97 | 1,248 | 1,284 | 330 | 390 | 545 | Ø13 | 155 |
| MD500T315G-INT, MD500T355G-INT, MD500T400G-INT, MD500T450G-INT MD500T315G-L-INT, MD500T355G-L-INT, MD500T400G-L-INT, MD500T450G-L-INT | T12 | 240 | 200 | 1,280 | 101 | 1,355 | 1,405 | 340 | 400 | 545 | Ø16 | 185 |
| | | 240 | 200 | 1,280 | 432 | 1,683 | 1,733 | 340 | 400 | 545 | Ø16 | 245 |

Extension cards and mounting position



PC software tools
InoDriveShop

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: 45 G - 55 G |
| | MDBUN-200-5T | External braking unit, rated current 200 A, for supply input voltage 380 to 480 Vac AC drives. | T models: 200 G - 450 G |
| | MDBUN-60-5T | External braking unit, rated current 60 A, for supply input voltage 380 to 480 Vac AC drives. | T models: 90 G - 110 G |
| | MDBUN-90-5T | External braking unit, rated current 90 A, for supply input voltage 380 to 480 Vac AC drives. | T models: 132 G - 160 G |
| Keypads | 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 |
| | MDCAB | 3 meter connection cable for remote keypad. | All |
| I/O cards | 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 |
| | 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 |
| Fieldbus cards | MD38PC1 | PLC card, compatible with Inovance PLC. | Frame sizes T4-T12 |
| | MD500-ECAT | EtherCAT communication card. | All |
| | MD38CAN1 | CANlink communication card, supports only CANlink. | All |
| | MD38CAN2 | CANopen communication card, supports only CANopen. | All |
| | MD38TX1 | Modbus-RTU communication card. | All |
| PG cards | MD38DP2 | PROFIBUS-DP communication card. | Frame sizes T4-T12 |
| | MD500-PN1 | PROFINET communication card. | All |
| | MD38PG4 | Interface card for resolver (10 kHz excitation) with DB9 connector. | All |
| PC comms kit | MD38PGMD | Multifunctional encoder card, compatible with differential, open-collector and push-pull encoder types. Supports differential output and open-collector output. | All |
| | MDPCKIT02 | Kit for connection with a personal computer, to be used with PC software tools. | All |
| Mounting brackets | 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 |

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