

***VFD Submittal***

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| ***Sold To:***  | ***Date:*** ***Job Name:***  |

Trane is pleased to provide the enclosed submittal for your review and approval.

**Product Summary**

**Qty Product**

 Variable Frequency Drives

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| **Trane Sales Office Contact:** | *The attached information describes the equipment we propose to furnish for this project and is submitted for your approval.* |

**Variable Frequency Drives Schedule and Options**

**208 and 230 Volt**

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| **Qty.** | **Tag** **Numbers** | **HP (kW)** | **Frame Size NEMA1/12** | **Model** | **Nominal Voltage** | **Max.** **Amps Output** | **Mech****Dwg** | **Elect****Dwg** |
|     |       | 0.5 (.37) | A2/A5 | TR200P1K1T2 | 208–230 | 2.4 |  |  |
|     |       | 0.75 (.55) | A2/A5 | TR200P1K5T2 | 208–230 | 3.5 |  |  |
|     |       | 1.0 (.75) | A2/A5 | TR200P1K1T2 | 208–230 | 4.6 |  |  |
|     |       | 1.5 (1.1) | A2/A5 | TR200P1K1T2 | 208–230 | 6.6 |  |  |
|     |       | 2 (1.5) | A2/A5 | TR200P1K5T2 | 208–230 | 7.5 |  |  |
|     |       | 3 (2.2) | A2/A5 | TR200P2K2T2 | 208–230 | 10.6 |  |  |
|     |       | 5 (3.7) | A3A5 | TR200P3K7T2 | 208–230 | 16.7 |  |  |
|     |       | 7.5 (5.5) | B1 | TR200P5K5T2 | 208–230 | 24.2 |  |  |
|     |       | 10 (7.5) | B1 | TR200P7K5T2 | 208–230 | 30.8 |  |  |
|     |       | 15 (11) | B2 | TR200P11KT2 | 208–230 | 46.2 |  |  |
|     |       | 20 (15) | B2 | TR200P15KT2 | 208–230 | 59.4 |  |  |
|     |       | 25 (18) | C1 | TR200P18KT2 | 208–230 | 74.8 |  |  |
|     |       | 30 (22) | C1 | TR200P22KT2 | 208–230 | 88 |  |  |
|     |       | 40 (30) | C2 | TR200P30KT2 | 208–230 | 115 |  |  |
|     |       | 50 (37) | C2 | TR200P37KT2 | 208–230 | 143 |  |  |
|     |       | 60 (45) | C2 | TR200P45KT2 | 208–230 | 170 |  |  |

**460 Volt**

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| **Qty.** | **Tag** **Numbers** | **HP (kW)** | **Frame Size NEMA1/12** | **Model** | **Nominal Voltage** | **Max. Amps Output** | **Mech****Dwg** | **Elect****Dwg** |
|      |        | .5 (0.37) | A2/A5 | TR200P1K1T4 | 460 | 1.1 |  |  |
|      |        | .75 (0.55) | A2/A5 | TR200P1K5T4 | 460 | 1.6 |  |  |
|      |        | 1.0 (.75) | A2/A5 | TR200P2K2T4 | 460 | 2.1 |  |  |
|      |        | 1.5 (1.1) | A2/A5 | TR200P1K1T4 | 460 | 2.7 |  |  |
|     |       | 2 (1.5) | A2/A5 | TR200P1K5T4 | 460 | 3.4 |  |  |
|     |       | 3 (2) | A2/A5 | TR200P2K2T4 | 460 | 4.8 |  |  |
|     |       | 5 (4) | A2/A5 | TR200P4K0T4 | 460 | 8.2 |  |  |
|     |       | 7.5 (5.5) | A3/A5 | TR200P5K5T4 | 460 | 11 |  |  |
|     |       | 10 (7.5) | A3/A5 | TR200P7K5T4 | 460 | 14.5 |  |  |
|     |       | 15 (11) | B1 | TR200P11KT4 | 460 | 21 |  |  |
|     |       | 20 (15) | B1 | TR200P15KT4 | 460 | 27 |  |  |
|     |       | 25 (18) | B1 | TR200P18KT4 | 460 | 34 |  |  |
|     |       | 30 (22) | B2 | TR200P22KT4 | 460 | 40 |  |  |
|     |       | 40 (30) | B2 | TR200P30KT4 | 460 | 52 |  |  |
|     |       | 50 (37) | C1 | TR200P37KT4 | 460 | 65 |  |  |
|     |       | 60 (45) | C1 | TR200P45KT4 | 460 | 80 |  |  |
|     |       | 75 (55) | C1 | TR200P55KT4 | 460 | 105 |  |  |
|     |       | 100 (75) | C2 | TR200P75KT4 | 460 | 130 |  |  |
|     |       | 125 (90) | C2 | TR200P90KT4 | 460 | 160 |  |  |
|     |       | 150 (110) | D1 | TR200P110KT4 | 460 | 190 |  |  |

**525 - 600 Volt**

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| **Qty.** | **Tag Numbers** | **HP (kW)** | **Frame Size NEMA1/12** | **Model** | **Nominal Voltage** | **Max.** **Amps Output** | **Mech****Dwg** | **Elect****Dwg** |
|      |        | 0.5 (0.37) | A3/A5 | TR200P1K1T6 | 575 | .9 |  |  |
|      |        | 0.75 (0.55) | A3/A5 | TR200P1K5T6 | 575 | 1.3 |  |  |
|      |        | 1.0 (0.75) | A3/A5 | TR200P2K2T6 | 575 | 1.7 |  |  |
|      |        | 1.5 (1.1) | A3/A5 | TR200P1K1T6 | 575 | 2.4 |  |  |
|     |       | 2 (1.5) | A3/A5 | TR200P1K5T6 | 575 | 2.7 |  |  |
|     |       | 3 (2.2) | A3/A5 | TR200P2K2T6 | 575 | 3.9 |  |  |
|     |       | 5 (3.7) | A3/A5 | TR200P4K0T6 | 575 | 6.1 |  |  |
|     |       | 7.5 (5.5) | A3/A5 | TR200P5K5T6 | 575 | 9 |  |  |
|     |       | 10 (7.5) | A3/A5 | TR200P7K5T6 | 575 | 11 |  |  |
|     |       | 15 (11) | B1 | TR200P11KT6 | 575 | 18 |  |  |
|     |       | 20 (15) | B1 | TR200P15KT6 | 575 | 22 |  |  |
|     |       | 25 (18.5) | B1 | TR200P18KT6 | 575 | 27 |  |  |
|     |       | 30 (22) | B2 | TR200P22KT6 | 575 | 34 |  |  |
|     |       | 40 (30) | B2 | TR200P30KT6 | 575 | 41 |  |  |
|     |       | 50 (37) | C1 | TR200P37KT6 | 575 | 54 |  |  |
|     |       | 60 (45) | C1 | TR200P45KT6 | 575 | 73 |  |  |
|     |       | 75 (55) | C1 | TR200P55KT6 | 575 | 86 |  |  |
|     |       | 100 (75) | C2 | TR200P75KT6 | 575 | 108 |  |  |
|     |       | 125 (90) | C2 | TR200P90KT6 | 575 | 131 |  |  |
|     |       | 150 (110) | D1 | TR200P132KT7 | 575 | 155 |  |  |
|     |       | 200 (132) | D1 | TR200P160KT7 | 575 | 192 |  |  |
|     |       | 250 (160) | D2 | TR200P200KT7 | 575 | 242 |  |  |
|     |       | 300 (200) | D2 | TR200P250KT7 | 575 | 290 |  |  |
|     |       | 350 (250) | D2 | TR200P315KT7 | 575 | 344 |  |  |
|     |       | 400 (315) | E1 | TR200P400KT7 | 575 | 400 |  |  |
|     |       | 450 (355) | E1 | TR200P450KT7 | 575 | 450 |  |  |
|     |       | 500 (400) | E1 | TR200P500KT7 | 575 | 500 |  |  |

# TR200 Drive configuration includes:

* Input Disconnect Switch and Drive Fuse - A padlockable, defeatable, two position rotary switch that allows the input line to the drive to be disconnected. Drive fuses are located ahead of the drive and are UL listed type fuses.
* Main circuit breaker. A thermal/ magnetic current interrupt device using an ON/TRIP/OFF/RESET switch., meeting UL 489 with a minimum of 10k AIC and door interlocked external operator that protect the drive and bypass package.
* 3% input line reactors – These augment the drives built in 5% impedance provided by the Dual DC Link design.
* Contactor motor selection – Allows selection between two motors, either manually or automatically from a remote signal.
* Dual motor operation - Same as single motor, except individual motor overloads and fuses are provided to run two motors simultaneously from either the drive or from the bypass. The overload relay will shut off the controller and motors served by it when it is tripped.
* Output LC Filter – Provides for the use of longer motor leads and reduces insulation stress.
* Input EMI Filter – TR200 drives are designed to contain EMI and RFI to EN 61800-3 standards. The optional filter meets the requirements for EN 55011 limits for Class A1, A2 and B.
* Conformal Coating - All drive circuit boards except the control panel board are conformal coated to resist corrosion and the effects of a harsh environment.
* NEMA 12 enclosure - provided where specified for protection against dust, falling dirt and dripping non-corrosive liquids.
* NEMA 3R enclosure - provided where specified for outdoor use primarily to provide a degree of protection against falling rain and sleet. Enclosure includes heater, fan and controls to maintain the drive environment.

## **TR200 Electro – Mechanical Bypass (EMB2) Panel:**

* Two Contactor Style Bypass. A panel-mounted Drive/OFF/Bypass selector switch is used to electrically select whether the motor is driven by; 1) the drive, 2) connected to the full-speed bypass or 3) disconnected from both. (5kA SCCR)
* Drive only disconnect will be provided with through the door operator.
* Three Contactor Style Bypass: A panel-mounted Drive/OFF/Bypass/Test selector switch is used to electrically select whether the motor is controlled by; 1) the drive, 2) connected to the full-speed bypass, or 3) disconnected from both. The test position allows for operation in bypass while still providing power to the drive. (5kA SCCR)
* 100kA Short Circuit Current Rating. Includes main fusing which protects entire assembly.

## **Optional Control Cards:**

* MCB 101 General Purpose I/O 3 DI, 2 DO, 2 AI (voltage), and 1 AO (current)
* MCB 105 Relay Card 3 standard Form C 240 VAC, 2 A
* MCB 107 24V DC Supply Allows external 24V DC power to be connected to the TR200 Drive
* MCB 115 Programmable I/O Programmable Analog Input/Output Card
* MCB 116 Real Time Clock with Battery Backup

## **Serial Communications Card:**

The software for BACnet® MS/TP, Modbus® RTU, Johnson Controls Metasys N2 and Siemens Apogee FLN P1 protocols are incorporated in the standard drive. The following communications option board is included:

* MCA 115 LonWorks: Allows the standard drive to communicate on a LonWorks Free Topology network at 78 kbps. Card is certified as compliant with LonWorks 3.4 specifications.
* MCA 116 Advanced BACnet: As with the built in BACnet MS/TP network, the option card acts as a Master device on the network and can communicate at BAUD rates of 9.6, 19.2, 38.4 and 78.6 kBAUD. Its BAUD Rate, Device Instance Number, and MAC Address are set directly from the drive’s keypad without the need for external hardware or software.

## **Warranty:**

* The standard warranty period is 36 months from startup or 42 months from shipment. The warranty covers materials and workmanship and includes parts, labor, travel, and expenses.
* If specified, the standard 36/42 month warranty is extended to a maximum of \_\_\_ months. This warranty includes parts, labor, travel, and expenses.

**NOT INCLUDED:**

* Controls / wiring / actuators / thermostats
* Isolation
* Rigging / installation
* Hanging brackets / mounting kits
* Warranties not specified
* Any other item not listed in unit detail