



## Dual Purpose Drive

### TMdrive®-10e2-DP

### TMdrive®-10e2-DP Dual Purpose Drive

The TMdrive®-10e2-DP (Dual Purpose Drive) is the solution for migration from legacy DC drives and motors to modern AC motors. Built on TMEIC technology, is a Drive family that allows controlling the existing DC motors and allows later replacing the DC motors by AC motors with minimal firmware reconfiguration, keeping the hardware investment intact.

#### Advantages:

- ▶ Ideal solution for modernization projects where the user wishes to upgrade from a legacy DC system to a modern AC system
- ▶ Capable of controlling either a DC or AC motor
- ▶ Allows for flexibility in planning system modernizations in a manner that accommodates constraints created by operating demands and budgetary considerations
- ▶ New AC motors can be powered and controlled using TM10e2-DP drives with AC motor control firmware installed
- ▶ DC motors can be powered and controlled using TM10e2-DP drives with DC motor control firmware installed
- ▶ DC Motors can be replaced at any time with AC motors and powered by the previously installed TM10e2-DP drives
- ▶ Uses standard TMdrive®-10e2 drive power and control hardware for AC and DC motor control
- ▶ When DC motors are upgraded to AC, the drive can be reconfigured for AC motor control by switching the firmware from the DC to the AC motor control function set
- ▶ The drive can then be quickly returned to achieve the required operational performance
- ▶ Very competitive at small drive sizes

#### Features and Benefits:

- ▶ Uses Standard IGBT gating with Pulse Width Modulation
- ▶ Four quadrant regenerative operation from DC armature
- ▶ Non-reversing, non-plugging field power – no additional field supply is required in most cases
- ▶ Standard DC source converter used for all AC and DC drives
- ▶ Converter operates with reduced harmonics and unity power factor for reduced impact on the plant power system

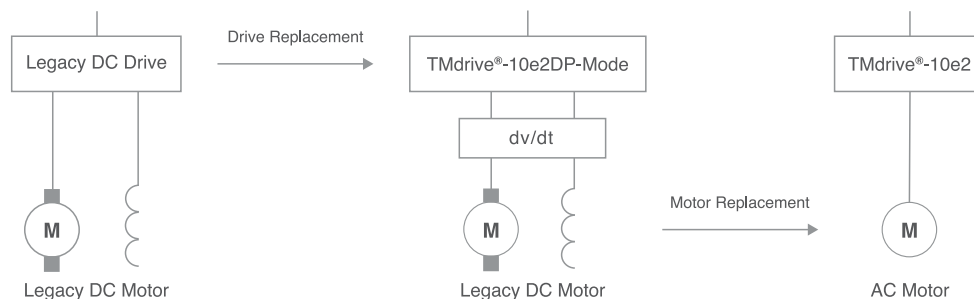


## Comparison between thyristor and IGBT systems

The TMdrive®-10e2-DP IGBT reduces RMS current ripple over 3:1 in comparison with traditional 6-pulse thyristor drives. Reduced RMS ripple results in less motor heating and better commutation. Traditional DC transmission systems operate with a power factor (PF) of approximately 0 to 0.8 mismatch with a properly sized infrastructure. The regenerative TMdrive®-P10e2 converter operates at a PF of 1.0 with wires and minor transformer requirements, improved efficiency and less energy costs. If the existing public service infrastructure is poor, it will be stronger after upgrading the DP system.

Housing	DC voltage bus	C 500 V 150% OL Motor		AC 460 V 150% OL Motor	
		Maximum nominal current	Motor kW	Alternate current	Motor kW
15	680	11.5	5.5	18.0	11.6
30	680	22.5	10.7	35.0	22.5
60	680	47.5	22.6	75.0	48.3
100	680	68.0	32.3	128	82.4
150	680	102	48.5	204	131
250	680	161	76.5	270	174
400	680	252	120	455	293
600	680	417	198	700	450
750	680	520	247	935	602
900	680	640	304	1150	740

- ▶ IGBT gating reduces armature RMS current ripple more than 3:1 compared to traditional 6-pulse thyristor drives
- ▶ Reduced RMS ripple results in lower motor heating and better commutation
- ▶ Legacy DC drive systems operate at a Power Factor (PF) between approximately 0 and 0.8 lagging with appropriately sized infrastructure
- ▶ The TMdrive®-P10e2 regenerative converter operates at 1.0 PF with smaller cables and transformer requirements, higher efficiency and lower utility costs
- ▶ If the existing utility infrastructure is marginal, it will be more robust after upgrading with the Dual Purpose Drive system



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