

Purpose:

This document provides information for the Variable Frequency Drives (VFD's) packages available from Harrington for use with MR motorized trolleys. Described are the basic VFD applications as they apply to the MR trolley.

Variable Frequency Drives:

VFD packages are mounted directly to the trolley in an electrical enclosure and include:

- VFD programmed and tested to the customers specifications
- Branch circuit fuses to protect the drive and motor
- All necessary hardware and wiring

Harrington Part No.	Voltage	MR Trolley Capacities
INV123MR	208-230V-3-60	1, 2 & 3 Ton
INV223MR		5 Ton
INV146MR	460V-3-60	1, 2 & 3 Ton
INV246MR		5 Ton
INV357MR	575V-3-60	1, 2, 3 & 5 Ton

VFD Basics:

VFD's control a motor by switching the 3 phase AC power source on and off (starting and stopping the motors) and by varying the power source frequency (Hz). By varying the frequency, the speed of the motor is affected proportionally – i.e. ½ the frequency equals ½ the motor speed. The VFD replaces the standard trolley contactor control.

The VFD Harrington offers is programmable and controlled by a microprocessor. It is designed specifically for hoist and crane applications and comes preloaded with many easy-to-select programs which fit numerous applications. The most common applications are listed below. Once a program has been selected for the application, individual parameters such as acceleration, deceleration and speeds can be changed or “tweaked” as required. Program changes are easily accomplished in the field.

Applications:

Soft start/stop only — Provides adjustable acceleration, deceleration and one speed. This allows the trolley's speed to gradually ramp up and down. Uses single speed control pendant (1 step buttons).

Multi-speeds — Provides up to 5 “repeatable” speeds and allows for adjustable acceleration and deceleration between speeds. The number of pendant button steps corresponds to the number of speeds the VFD provides – i.e. 3 step button = 3 speeds.

Infinitely Variable — Provides the ability to lock into any speed that the operator accelerates or decelerates to. To accomplish this, 2 step pendant buttons are used as follows:

- 2nd Step (fully depressed): Trolley accelerates and stops accelerating if the highest speed is reached.
- 1st Step: Trolley holds a constant speed that was reached by accelerating or decelerating. If the button is depressed to the first step when the trolley is stopped, the trolley will travel at the lowest speed.
- Let Go of Button: Trolley will decelerate and ultimately stop if the first or second step is not energized.

Pendant Requirements:

Pendant Assembly for multiple speeds:

Refer to the information pertaining to the individual pendant for the number of button steps/speeds available.

Pendant Cords for ERM's:

ERM Speeds or Pendant Button Steps		Conductors Required		Pendant Cable	
ER Hoist	MR Trolley	NEMA 3R Pendant	NEMA 4 Pendant	NEMA 3R Pendant	NEMA 4 Pendant
1	1	5	6	16/6P	16/6P
1	2	6	7	16/6P	16/8P
1	3	7	8	16/8P	16/8P
1	4	8	9	16/8P	16/12P
1	5	9	10	16/12P	16/12P
2	1	6	7	16/6P	16/8P
2	2	7	8	16/8P	16/8P
2	3	8	9	16/8P	16/12P
2	4	9	10	16/12P	16/12P
2	5	10	11	16/12P	16/12P

Notes:

1. All VFD's use enclosure p/n 9006731. Refer to EDOC0130 for important dimensions associated with using this enclosure.
2. Standard enclosure p/n 9006731 is NEMA 12/13.
3. NEMA 4 or 4X enclosures available per special quote.
4. The VFD utilizes ER hoist transformer for control voltage (110V). The optional 24 or 48V are not available with VFD applications.
5. VFD's can be used with L (40 ft/min) or S (80 ft/min) trolley models.
6. Use VFD's with single speed motors only.
7. All MR VFD applications are limited to 10 to 100% of the trolleys rated speed.
8. If other ER or MR options are used in conjunction with the MR VFD a special quote is required. These options include, but are not limited to: hoist VFD, Mainline Contactor (761), Selector Control, etc.