

**Emerson Power**

**Transmission**

[www.emerson-ept.com](http://www.emerson-ept.com)



Brochure IG-03



*Variable Speed  
Gearmotors  
and  
C-Face Motors*



# INTELLIGEAR MEANS...

## Globally Engineered

- 50 or 60 Hertz Power Supplies
- 200 to 480 VAC  $\pm 10\%$  Three Phase
- 200 to 240 VAC  $\pm 10\%$  Single Phase
- Agency Approvals for CE,  $\text{UL}$ ,  $\text{cUL}$
- -20 to +40 C Ambient without Derating
- Performance Guaranteed via Pre-testing and Factory Set-up

## Globally Serviced

- Sales and Service by EMERSON Worldwide
- Supported and Sold by EMERSON Worldwide and by Local Authorized Distributors



**Your Choice  
Your Application...**

UL and CUL are registered trademarks of Underwriters Laboratories, Inc.

UL Listed

E211799

Ind. Cont EQ. 54 DN

The Emerson logo is a trademark and a service mark of Emerson Electric Co.

© Emerson Power Transmission Manufacturing, L. P. or affiliates 2003. All Rights Reserved.

# VERSATILITY IN SPEED CONTROL

INTELLIGEAR is a simple, low cost integrated variable speed solution. Key features make it a favored replacement of mechanical belt and traction drives, multi-speed motors, and even separate electronic drives.

## Performance Tested

All motor/drive and gear combinations have been performance tested and factory set for a minimum of 6:1 constant torque speed range (adjustable to 15:1) with optimum torques, temperature and efficiencies across the range.

## Superior Construction

Drive electronics are fully encapsulated in epoxy resin for improved heat dissipation, and virtual elimination of the effects of humidity and vibration.

## Engineered Drive Housing

Rugged finned aluminum enclosure has been tested for IP 65, and NEMA 4/12 on all sizes. Motor enclosures are TEFC.

## Compact Size

Uses latest technology in circuits and mechanical components. Typically smaller than alternative drives in size, mass, and installation costs.

## Diverse Speed Control Options

Select from a range of local and remote options to meet your specific needs for each application.

### Local

### Remote

P1

P2

P3

P4

R



Start/Stop  
Speed Pot.



Fwd/Rev/Stop  
Speed Pot.



Speed Pot.  
On/Off (by others)



Internal Pot.  
On/Off (by others)

or { 0 - 10 VDC  
4-20 ma  
Signal Following  
(by others)

# INTELLIGEAR CHARACTERISTICS AND FUNCTIONS

## Electrical Data

### Single Phase Design

Power supply	230 V $\pm$ 10%, 50 - 60 Hz
Output voltage	From input voltage down to (input voltage/speed range)
Power range	0.33, 0.50, 0.75, 1.0, 1.5, 2.0 HP

### Three Phase Design

Power supply	230 V $\pm$ 10%, 50 - 60 Hz	460 V $\pm$ 10%, 50 - 60 Hz
Output voltage	From input voltage down to (input voltage/speed range)	
Power range	0.33, 0.50, 0.75, 1.0, 1.5, 2.0 HP	0.33, 0.50, 0.75, 1.0, 1.5, 2.0, 3.0, 5.0, 7.5, 10 HP

## Characteristics and Functions

CHARACTERISTIC	INTELLIGEAR	
Overload	150 % of full load setting for 40 seconds, 10 times per hour	
Motor Frequency Variation Range	Standard	11 to 60 Hz and 6:1 constant torque up to 3 HP 12 to 74 Hz and 6:1 constant torque 5 HP
	Special	6 to 120 Hz range adjustable using console option
Efficiency	97.5 % x motor efficiency x gear efficiency	

DRIVE CONTROL	INTELLIGEAR	
Speed Reference	<ul style="list-style-type: none"> <li>Analog reference (0V or 4mA = minimum speed) (10V or 20mA = maximum speed)                             <ul style="list-style-type: none"> <li>- 0 to 10 VDC with control knob on INTELLIGEAR enclosure (options P1,P2,P3)</li> <li>- 0 to 10 VDC with potentiometer in INTELLIGEAR enclosure (option P4)</li> <li>- 0 to 10 VDC with remote potentiometer (option PR1)</li> <li>- 0 to 10 VDC with customer signal * (option R)</li> <li>- 4 to 20 mA with customer signal * (option R)</li> </ul> </li> <li>Digital reference                             <ul style="list-style-type: none"> <li>- one to four preset speeds (accessible via console option)</li> </ul> </li> </ul>	
Run/Stop	<ul style="list-style-type: none"> <li>With the three phase power supply</li> <li>With remote dry contact</li> <li>With integrated Run/Stop (option P1)</li> <li>With fieldbus options</li> </ul>	
Forward/Reverse	<ul style="list-style-type: none"> <li>With internal lead connections to motor</li> <li>With remote dry contact</li> <li>With integrated For/Rev/Speed Knob control (option P2)</li> <li>With fieldbus</li> </ul>	
Stop Mode	<ul style="list-style-type: none"> <li>On ramp (with dry contact or integrated Run/Stop option P1)</li> <li>Freewheel stop (by cutting controller input power)</li> <li>Freewheel stop (with dry contact or integrated Run/Stop option P1, accessible with console)</li> <li>With electrical mechanical brake</li> </ul>	
Ramps	<ul style="list-style-type: none"> <li>Selection of acceleration and deceleration ramps with dry contact : 2 or 5 seconds. (The factory setting is 3 seconds for max. of 74 Hz)</li> <li>Ramps adjustable from 0 to 100 seconds ( accessible with console)</li> </ul>	

INDICATION	INTELLIGEAR		
Analog Output	0 to 10V, 3mA output		
	Speed Indication	Current Indication**	Power Indication**
	0V = zero speed	0V = 0 amps	0V = 0 HP
	10V = max. speed	10V = FL amps	10V = Max. HP

### APPLICATION CONSIDERATIONS

The proper selection and application of power transmission products and components, including the related area of product safety, is the responsibility of the customer. Operating and performance requirements and potential associated issues will vary appreciably depending upon the use and application of such products and components. The scope of the technical and application information included in this publication is necessarily limited. Unusual operating environments and conditions, lubrication requirements, loading supports, and other factors can materially affect the application and operating results of the products and components and the customer should carefully review its requirements. Any technical advice or review furnished by Emerson Power Transmission Corporation and its divisions with respect to the use of products and components is given in good faith and without charge, and Emerson assumes no obligation or liability for the advice given, or results obtained, all such advice and review being given and accepted at customer's risk.

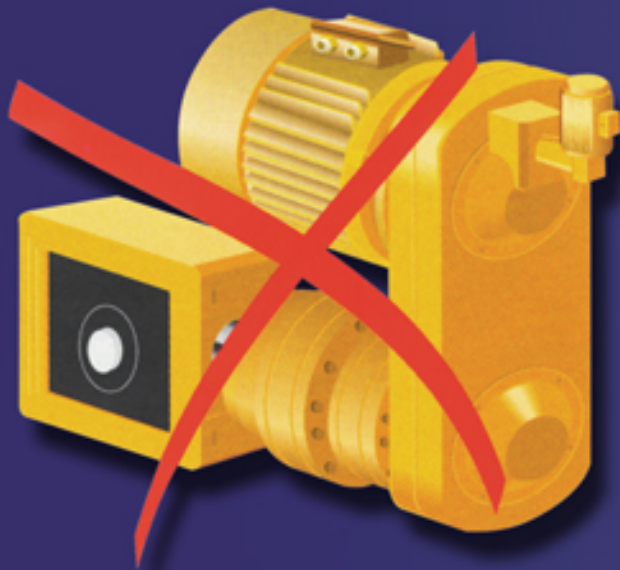
For a copy of our Standard Terms and Conditions of Sale, Disclaimers of Warranty, Limitation of Liability and Remedy, please contact EPT Customer Service at 1-800-626-2120. These terms and conditions of sale, disclaimers and limitations of liability apply to any person who may buy, acquire or use an Emerson Power Transmission Corporation product referred to herein, including any person who buys from a licensed distributor of these branded products.

**Fieldbus Protocols**  
**RP - Profibus DP**  
**RD - Devicenet**  
**RS - Interbus S**  
**RO - Can Open**

# **INTELLIGEAR DELIVERS... KEY ADVANTAGES OVER COMPETITIVE VARIABLE SPEED DRIVES**

## **INTELLIGEAR Advantages Versus Mechanical Drives**

- Reduced maintenance cost
- 97.5% efficiency means lower operating cost
- Wider constant torque speed range
- Soft starting reduces system wear
- Smaller overall size and weight
- No extra cost for remote control



## **INTELLIGEAR Advantages Versus Separate Inverters**

- Drive parameters factory set for optimum performance
- Pre-tested Motor/Drive performance as set
- Eliminates cost to wire motor to controller
- No cost/time to mount controller
- Eliminates "standing wave" phenomenon at motor

# INTELLIGEAR PRODUCT RANGE

INTELLIGEAR products combine years of field proven experience with integrating motors, drives and gearing for industrial/commercial markets with the latest technologies and drive designs. Each motor/drive combination has been tested to ensure performance even for continuous operation at the extremes of published speed ranges.



Gearing	Torque Range	Gear Mounting	Shaft Styles	Ratios
<b>CbN</b> Inline Helical	Up to 145,000 In Lbs	Footed Face Mounted Flanged	Solid	1.25 to 6,300:1
<b>OtN</b> Right Angle Helical-Bevel	Up to 88,000 In Lbs	Footed Face Mounted Flanged	Solid - single Solid - double Hollow	12.5 to 7,300:1
<b>MbN</b> Helical Shaft Mount	Up to 45,000 In Lbs	Shaft Mount Face Mounted Flanged	Finished Bore Taper Bushed	4.5 to 10,000:1
<b>HWN</b> Right Angle Helical Worm	Up to 25,000 In Lbs	Footed Face Mounted Flanged	Solid - single Solid - double Finished Bore Taper Bushed	6.3 to 12,500:1
<b>IRA</b> Right Angle Worm & Helical Worm	Up to 4,300 In Lbs	Footed Flanged	Solid - single Solid - double	7.5 to 560:1
<b>PSM</b> Inline Helical	Up to 3,500 In Lbs	Footed	Solid	2.24 to 40:1
<b>TEFC</b> 4 Pole	1/3 to 5 HP (to 10 HP by 12/03)	C-Face Footless	Solid	- -

[www.emerson-ept.com](http://www.emerson-ept.com)

Connect here to experience "the power of EPT"

**Emerson Power Transmission**

P O BOX 687 · Maysville, KY

Form #6870 4/03 10M  
Printed in U.S.A.