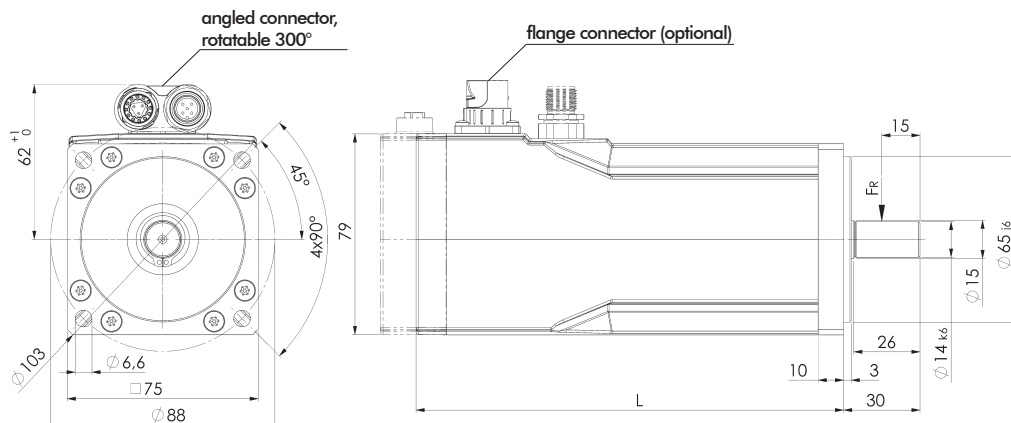
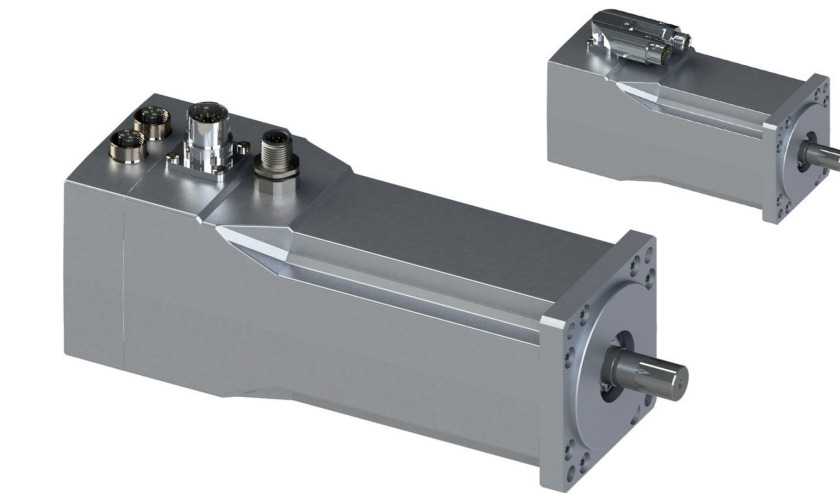


HFI 37

Integrated Synchronous Servo Drive

positioning capability
various field bus systems
functional safety STO
up to 565 Watts rated output power
with or without parking brake



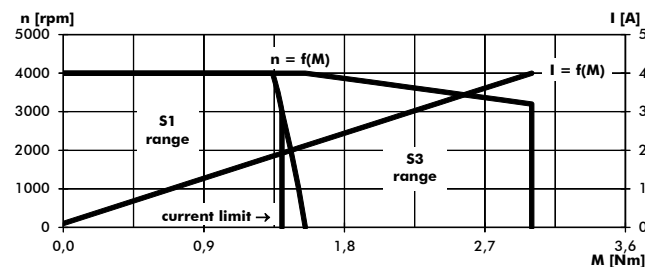
Motor type	Dimension L
HFI3760-XX00	168
HFI3760-XX00-HB	198
HFI3790-XX00	198
HFI3790-XX00-HB	228

(With optional fieldbus module the dimension L1 will be 14mm longer.)

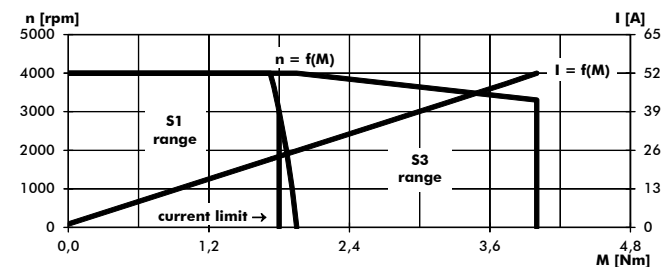
Operation characteristics:

Measured at 24VDC

HFI 3760, 48V, 3000/4000rpm



HFI 3790, 48V, 3000/4000rpm



Description:

Synchronous Servo Drives with powerful concentrated winding motor systems and integrated electronics for operation at 48VDC.

These very compact and powerful drives are well suited for peripheral application in single or multi axes systems.

The HFIs are operated either by analogue/digital signals or via the CANopen interface. By means of an optional fieldbus module, the devices can be integrated into common, Ethernet-based fieldbuses.

The fieldbus interfaces provides profile torque mode, profile velocity mode and profile position mode as well with either linear or jerk free velocity ramps.

The profile position mode supports absolute and relative target-settings. Homing is done onto limit switches, mechanical stop or at the current position.

The rotor position is evaluated through a linear magnetic angle sensor system. The sinusoidal motor current leads to smooth and constant torque development.

Optionally the drives are available with functional safety „STO“ according to Performance-Level [e], cat. 3; SIL-3.

The electrical connection is done through a compact single or dual rotary connector depending on the drive version; with optional fieldbus module and/or STO via radially arranged flange connectors.

The drive's configuration is done via RS232 and a clear and easy to use PC-Software „DSerV“ (included).

Features:

- Peripheral operation, less effort to install
- Stand alone operation with analogue speed setpoint
- Compact and powerful
- Positioning capability
- Protection class IP54 (IP65 as an option)

Options:

- Several fieldbuses: CANopen, EtherCAT, PROFINET, EtherNet/IP
- Functional safety STO (Safe Torque Off)
- 1-/2-stage planetary gear
- Parking brake
- Customer-specific solutions

edition 01.26

type series		HFI 3760		HFI 3790		
max. speed		rpm		rpm		
bus voltage		VDC		VDC		± 20%
nominal speed		rpm		rpm		
nominal current ²⁾		ADC		ADC		
nominal power ^{2) *)}		W		W		
operation acc. to VDE 0530		S1		S1		
protection acc. to VDE 0530		IP 54		IP 54		
rotating direction		reversible		reversible		
structural shape acc. to VDE 0530		IM B5 - with alignment by end plate		IM B5 - with alignment by end plate		
kind of connection		connectors (see below)		connectors (see below)		
mechanical data:						
moment of inertia motor		kgm ²		kgm ²		
nominal torque ^{2) *)}		Nm		Nm		
peak torque ^{*)}		Nm		Nm		
speed regulation constant		N ⁻¹ cm ⁻¹ rpm		N ⁻¹ cm ⁻¹ rpm		
mechanical time constant		ms		ms		
friction torque		Nm		Nm		
rotor weight		kg		kg		
total weight		kg		kg		
ball bearings		A/B-side		A/B-side		
F _R (allowable radial shaft load) ³⁾		N		N		
F _A (allowable axial shaft load)		N		N		
electrical data:						
number of phases		3		3		
number of poles		6		6		
terminal resistance ⁴⁾		Ω		Ω		
inductance ⁴⁾		mH		mH		
voltage constant ^{1) *)}		V/1000 rpm		V/1000 rpm		
torque constant ^{1) *)}		Nm/A		Nm/A		
electrical time constant		ms		ms		
thermal data:						
ambient temperature range		°C		°C		
isolation acc. to VDE 0530		F		F		
thermal time constant		min		min		
temperature-rise n.v.		K/W		K/W		
parking brake:						
static brake torque		Nm		Nm		automatically activated
power		W		W		
mass moment of inertia		kgm ²		kgm ²		
motor weight incl. parking brake		kg		kg		
signal interfaces:						
analogue input ⁵⁾		AE1		± 10V, 12Bit, Ri=22kOhm		setpoint setting
digital inputs ⁵⁾		DE1 ... DE8		0,0V ≤ Uoff ≤ 5,0V 15,0V ≤ Uon ≤ 30V		DE1 = enable DE2 ... 8 = function partly configurable
digital outputs ⁵⁾		DA1 DA2		24V, 50mA, o.C.		function configurable e.g. ready, speed indication...
serial interfaces		RS232		max. 115200Baud		for „DSerV“ software communication
(optionally) CANopen				max. 1Mbit/s, ISO11898		Ethernet-based acc. to Performance-Level [e], cat. 3; SIL-3
(optionally) field bus				EtherCAT, PROFINET, EtherNet/IP		
(optionally) safety				Safe Torque Off (STO)		
connectors:						
angled connector, rotatable 300°		(optionally)		Serie 915 itec (INTERCONTEC)		power + I/O + RS232
angled connector, rotatable 300°		(optionally)		Serie 615/915 ytec (INTERCONTEC)		power + I/O + RS232 + CANopen
flange connector		Motor (optionally)		series 915 connector, 15-pol. (INTERCONTEC)		power + I/O + RS232
field bus		(optionally)		2 x M12 socket, 4-pole, D coded		fieldbus 1 + fieldbus 2
safety		(optionally)		M12 plug, 8-pole, A coded		STO

- 1) Sinusoidal-peak

- 1) Sinusoidal-peak

3) Center of the shaft-extension.

4) Measured between two phases.

⁵⁾ Selective functions: AE1 ↔ DE6, DA1 ↔ DE5, DA2 ↔ DE4.

HFI37XX-XXXX-XX- -XX

HB = parking brake, GP = planetary gear,
CO = CANopen, EC = EtherCAT
PN = PROFINET, EI = EtherNet/IP

00 = standard version

XX = customized version

$V_2 = 24\text{VDC}$ operation voltage

2 = 24VDC operation voltage
4 = 48VDC operation voltage

S = functional safety STO

S = functional safety
N = non safety

|N = non safety
40 - HEI 3740

60 = HFI 3760
90 = HFI 3790

|90 = HFI 3790

- supply / signals cable assembled 2m / 5m

- CAN cable assembled 6m

- CAN cable assembled 5m
- fieldbus cable assembled 5m

- STO cable assembled 5m

- STO cable assembled 311

HFI 37

hybrid connector for power + I/O + RS232

signals: power supply 24/48VDC
digital/analogue inputs/outputs
serial interface RS232

connector: hybrid plug series 915
15-pole (12+3) (INTERCONTEC)

connector 15-pole
series 915



connecting side
of connector

pin assignment

A -	+Ub
B -	0V
C -	+Ubl
1 -	DE1
2 -	DE2
3 -	DE3
4 -	DA1/DE5
5 -	DA2/DE4
6 -	AE1+
7 -	AE1-/DE6
8 -	GND
9 -	DE7
10 -	TxD
11 -	RxD
12 -	DE8

field bus options

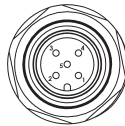
CANopen®:

profiles: CiA 301
CiA 402 drive profile

interface: galvanically isolated

connector: M12 plug 5-pole, A coded

M12 plug
5-pole, A coded



connecting side
of connector

pin assignment

1 -	CAN_SHLD
2 -	free
3 -	CAN_GND
4 -	CAN_H
5 -	CAN_L

EtherCAT (fieldbus module):

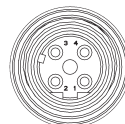
profiles: CANopen over EtherCAT (CoE)
CiA 402 drive profile

status indicators: 2 x LEDs
Module Status, Network Status

features: Integrated 2-Port-Switch

connector: 2 x M12 socket 4-pole, D coded

M12 socket
4-pole, D coded



connecting side
of connector

pin assignment

1 -	TX+
2 -	RX+
3 -	TX-
4 -	RX-

recommended cable type Cat.5e (min.)

PROFINET (fieldbus module):

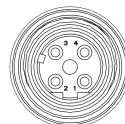
profiles: PROFINET Conformance
Class A, B and C
PROFIDRIVE

status indicators: 2 x LEDs
Module Status, Network Status

features: Integrated PROFINET IRT Switch

connector: 2 x M12 socket 4-pole, D coded

M12 socket
4-pole, D coded



connecting side
of connector

pin assignment

1 -	TX+
2 -	RX+
3 -	TX-
4 -	RX-

recommended cable type Cat.5e (min.)

EtherNet/IP (fieldbus module):

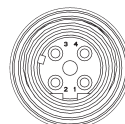
profile: Generic (CIP)

status indicators: 2 x LEDs
Module Status, Network Status

features: Integrated 2-Port-Switch

connector: 2 x M12 socket 4-pole, D coded

M12 socket
4-pole, D coded



connecting side
of connector

pin assignment

1 -	TX+
2 -	RX+
3 -	TX-
4 -	RX-

recommended cable type Cat.5e (min.)

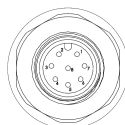
option Safe Torque Off (STO)

- SIL-3 acc. to EN 61508, EN 62061
- Performance-Level [e], Category 3 acc. to
EN ISO 13849-1

supply: 20,4 ... 28,8 VDC / max. 30 mA

connector: M12 plug 8-pole, A coded

M12 plug
8-pole, A coded

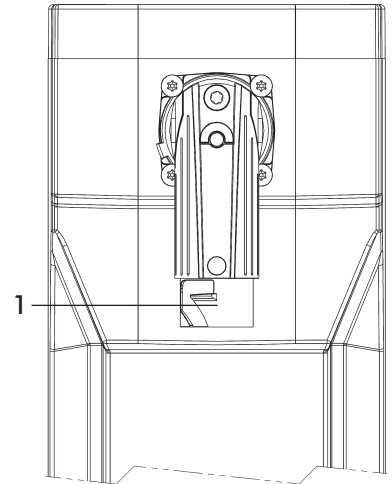


connecting side
of connector

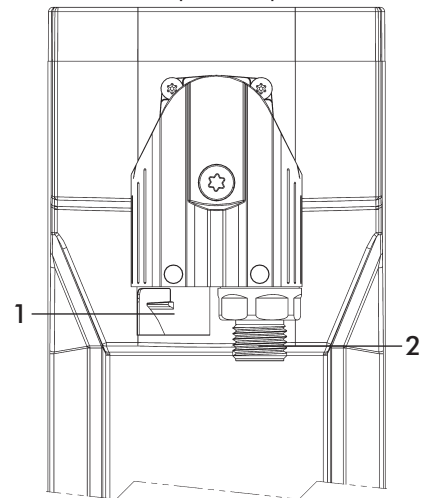
pin assignment

1 -	Status+
2 -	Status-
3 -	STO1-
4 -	STO1+
5 -	free
6 -	STO2+
7 -	STO2-
8 -	free

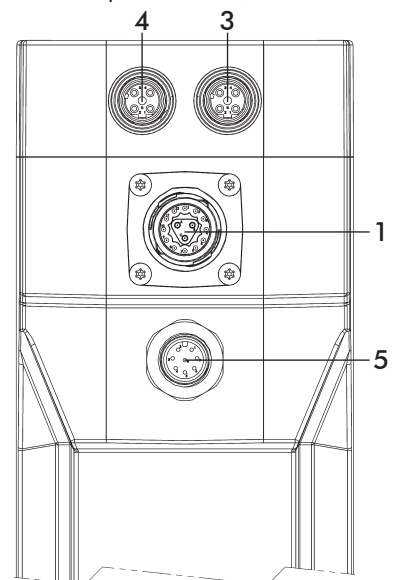
standard configuration



with option CANopen



with option fieldbus and/or STO



connectors:

- 1 power + I/O + RS232
- 2 CANopen
- 3 fieldbus 1 (in)
- 4 fieldbus 2 (out)
- 5 STO