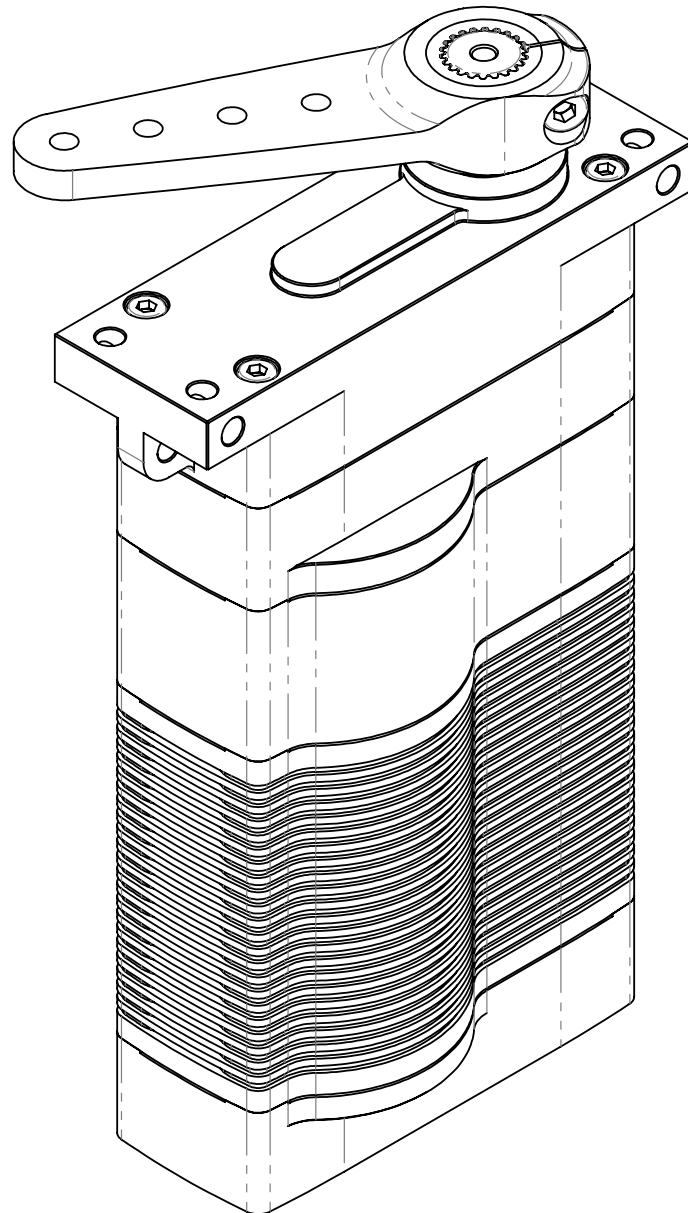


## DA 30 High Torque Technical Specification



DA 30-HT-30-5848



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## 1. General Description

To guarantee maximum safety and reliability, our DA 30 High Torque features a brushless motor and a contactless wear free position sensor. Its oversized motor makes it possible to provide very high continuous torque outputs. This means maximum service life with the greatest-possible power delivery and its design prevents electromagnetic emissions (EMI) caused by brush sparking. The housing made of saltwater-resistant aluminum is HART-coat treated, meets the IP-67 standard for water and dust sealing and provides an integrated Sub-D connector (MIL spec. circular connector or cable gland on request). Brackets integrated in the housing for horizontal and vertical assembly. 8-fold, ball-bearing supported, steel gear train, drive shaft with ANSI multi-tooth.

The DA 30 series can be equipped with a standard PWM input (Pulse Width Modulation) that has two different interfaces: a differential, galvanic isolated interface (Opto-Coupler) and a single-ended interface with CMOS levels that is also used to program the servo parameters. It includes analog position feedback to detect the drive shaft position. A differential RS-422 PWM interface can be chosen instead of the opto-coupled interface.

The DA 30 with digital serial command interface (RS-485) receives its commands via a CRC secured protocol. It can return not only the shaft position in digital format, but also several diagnostic data such as the level of the supply voltage, current consumption and the temperature of the motor and electronics in digital form (optionally also the humidity within the actuator case). These kind of diagnostic capabilities help to determine the health state of the actuators before, during and after deployment.

Interface Options:

### **PWM-OPTO**

PWM-Level Compatible, OPTO-coupler PWM Interface

### **PWM-TTL**

PWM-Level Compatible, TTL PWM Interface

### **RS 422/TTL**

RS 422-Level Compatible, Differential PWM Interface

### **RS 485 (2-wire)**

RS-485 Compatible, Asynchronous Serial Command Interface

### **RS 485 Redundant**

RS 485 Redundant Communication Interface and Redundant Power Supply

### **RS 485 (4-wire)**

RS 485 Separated Receiver and Transmitter Lines for Interface A and B

For RS 485-Versions Only:

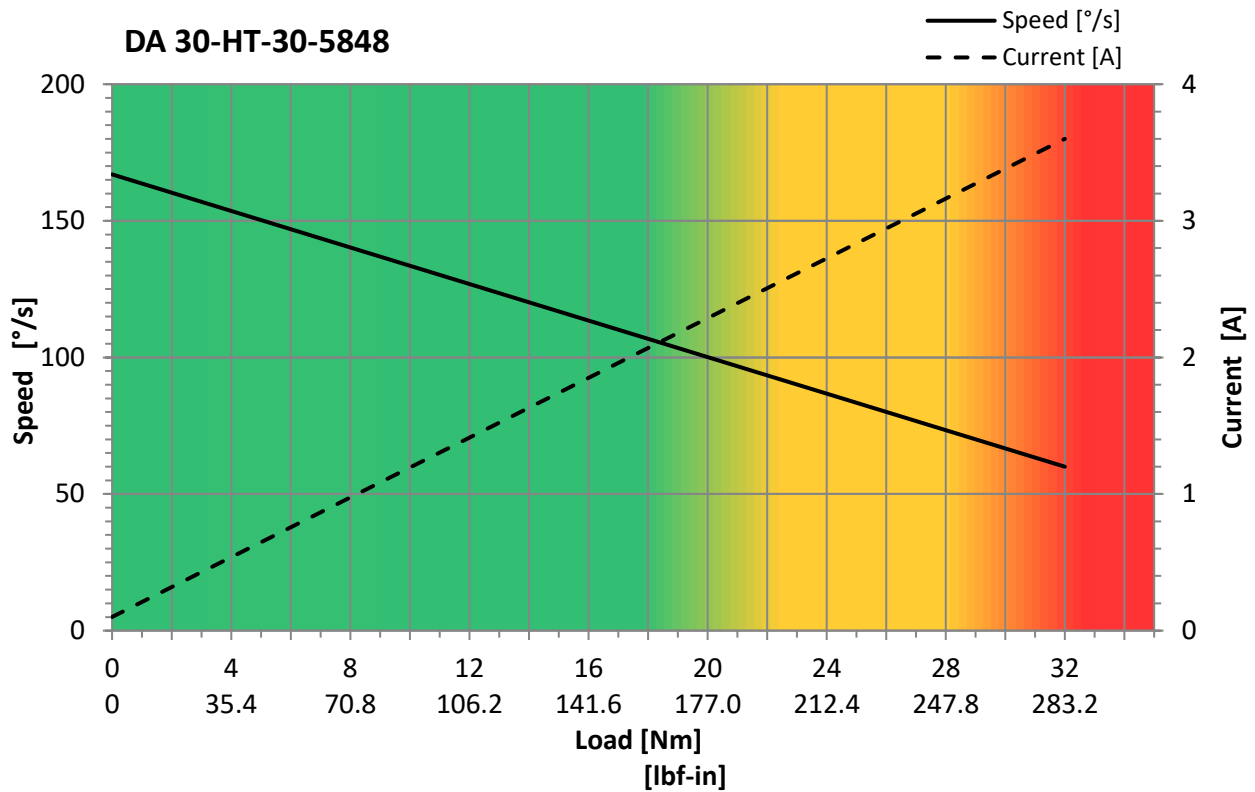
Customized commands can be implemented on request. Humidity sensor available.

## 2. Operating Data

		DA 30-HT-30-5848...
Supply Voltage (rated)		28 V DC
Supply Voltage Range		24 ... 32 V DC
Standby Current <sup>1</sup>	at rated voltage	< 0.05 A
Rated Current <sup>1</sup>	at rated voltage	2.0 A
Peak Current <sup>1</sup>	at rated voltage	3.6 A
Rated Torque <sup>1</sup>	at rated speed	18.0 Nm (159 lbf-in)
Peak Torque <sup>1</sup>	at rated voltage	32.0 Nm (283 lbf-in)
No Load Speed <sup>1</sup>	at rated voltage	165 °/s
Rated Speed <sup>1</sup>	at rated torque	100 °/s
Default Travel Angle		±45° = 90° total travel
Max. Travel Angle <sup>2</sup>		±85° = 170° total travel
Backlash (mechanical)		≤ 0.5°
Position Error under Temperature <sup>3</sup>		≤ ±1.0°
Operating Temperature Range <sup>4</sup>		-30°C ... +70°C (-22°F ... +158°F)
Storage Temperature Range		-55°C ... +85°C (-67°F ... +185°F)

- 1) Tolerance ±10%
- 2) Programming Tool # 985.4 for PWM-Versions required
- 3) -20°C ... +50°C , Δt = 70°C (-4°F ... +122°F , Δt = 126°F)
- 4) Low Temperature Modification (-70°C /-94°F) on request

### 3. Performance



**Operation Mode:**

■ Continuous

■ Short Time  
<10s , 60s cool down

■ Overload  
<1s , 60s cool down

## 4. Materials and Protective Features

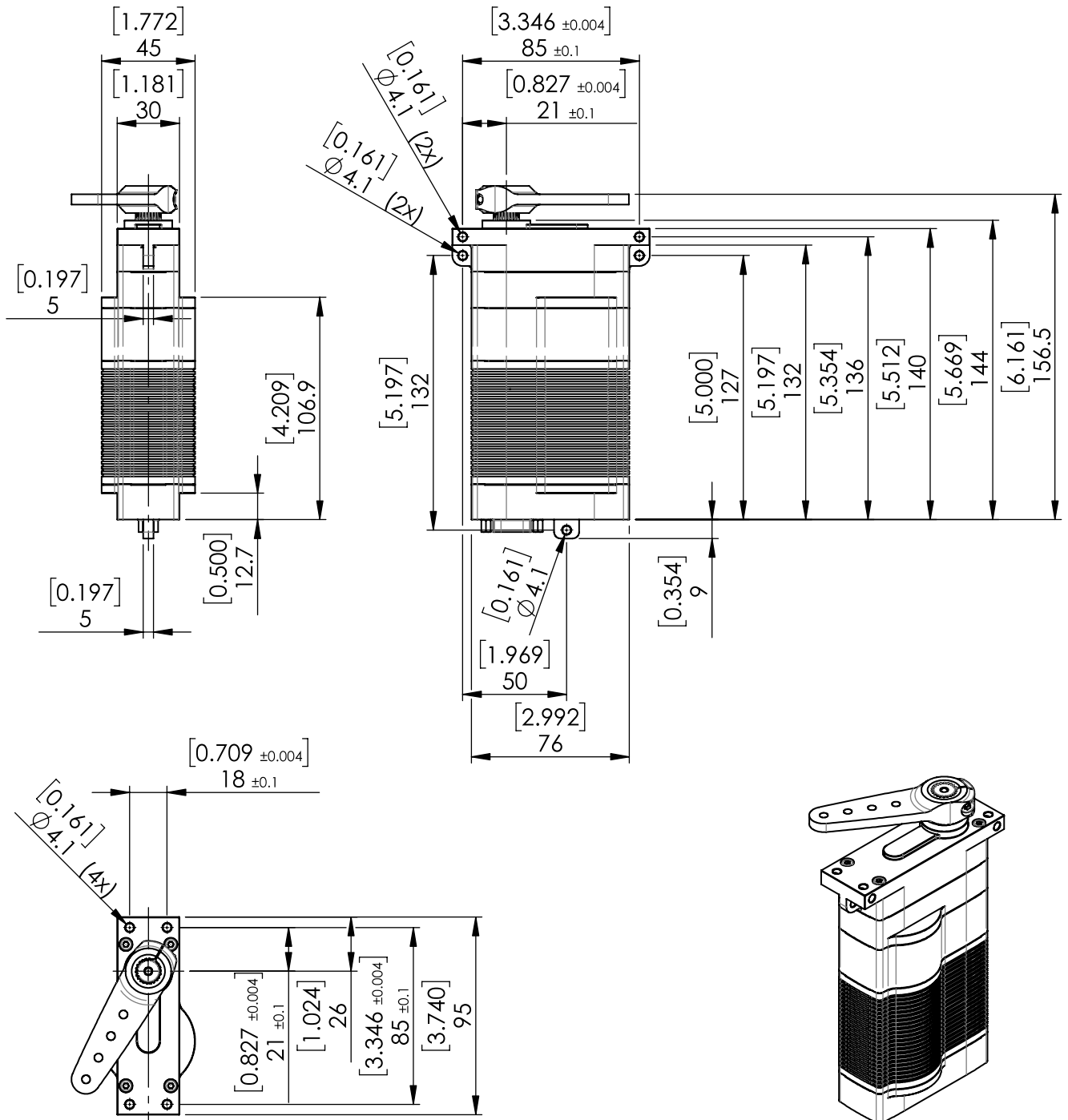
Case Material	Saltwater resistant Aluminum Alloy
Splash Water Resistance	IP 67
Case Surface Treatment	HART®-Coat
Salt Water Resistance	>100 hrs.
EMI / RFI Shielding	Case Shielding
Motor Type	Brushless DC Motor
Gear Set Material	Hardened Steel
Position Sensor	Contactless
Position Feedback	Standard
RS 485 Communication Interface	Optional
Humidity Sensor	Optional
Temperature Sensor	Standard, Motor and PCB

## 5. Dimensions

Case Dimensions	140 mm x 76 mm x 30.0 (45.0) mm 5.512 in x 2.992 in x 1.181 (1.772) in
Standard Tolerances	Unless otherwise specified according to DIN ISO 2768 - m
Weight	1100 g (38.8 oz) ±10%

## 5.1. Installation Dimensions

Valid for all Versions  
DA 30-HT-30-5848...



Not to scale

Dimensions: [in], mm

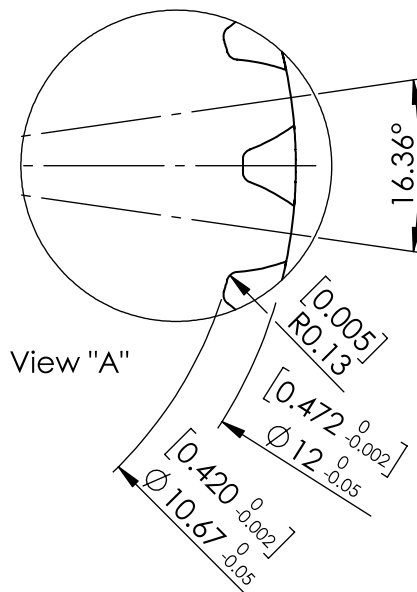
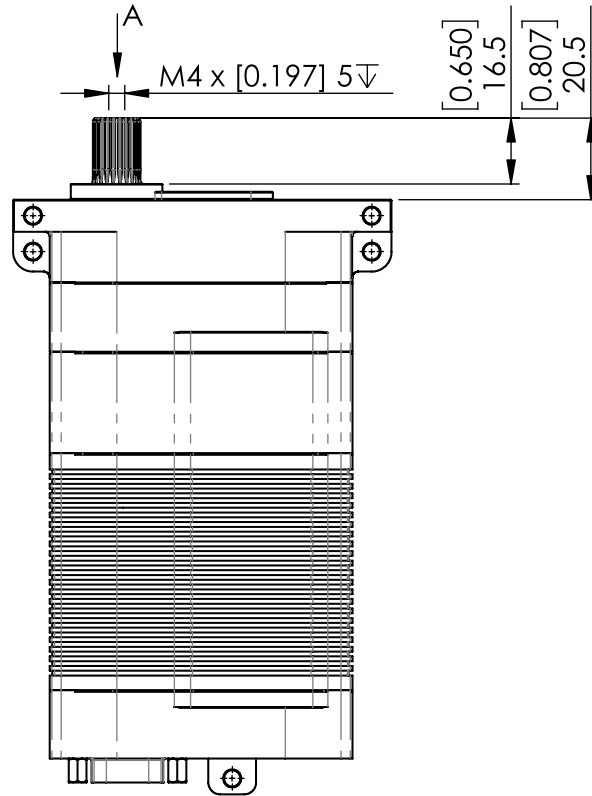
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Date: 05/2018

Revision: D

## 5.2. Output Shaft Spline

Valid for all Versions  
DA 30-HT-30-5848...



Output Shaft Spline  
similar to DIN 867

Not to scale

Dimensions: [in], mm

Content is subject to change without notice

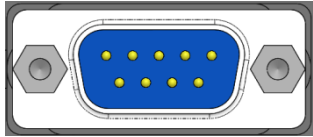
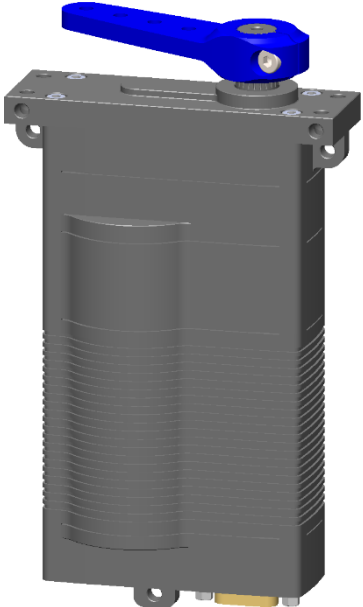


## 6. Electrical Connection Options

### PWM-OPTO Interface

Integrated Connector

Item # DA 30-HT.30.5848.1.\_

	<b>Standard Connector</b>		
	Manufacturer	ITT Cannon	
	Type	DEMM-9PE	
	Mating	D-SUB DE-9f	
	<b>PWM-OPTO Pin Assignment</b>		
	1	PWM (AO)	Command Signal, Anode Optocoupler
	2	PWM (CO)	Command Signal, Cathode Optocoupler
	3	Diff FB A	Differential Position Feedback Signal, Output A
	4	to Pin 7	Connect to Pin 7 (Supply Ground)
	5	Case GND	Case Ground
	6	+V DC	Supply Voltage
7	GND	Supply Ground, Signal Ground	
8	Pos FB	Single Ended Position Feedback Signal	
9	Diff FB B	Differential Position Feedback Signal, Output B	

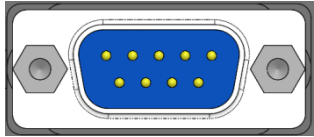
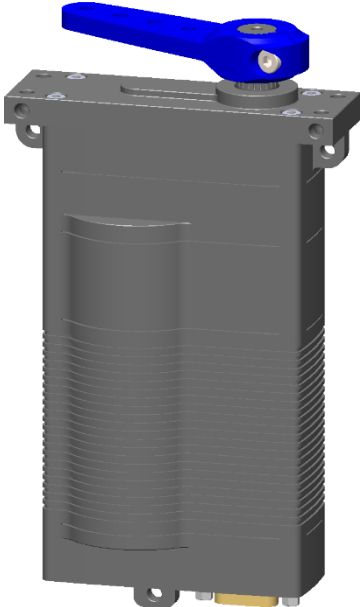
**NOTE:**

Access to the actuator parameters is possible via the TTL-PWM-Interface only.  
Programming Tool # 985.4 required.

## PWM-TTL Interface

Integrated Connector

Item # DA 30-HT.30.5848.1.\_

 <p>1 2 3 4 5 6 7 8 9</p>	<b>Standard Connector</b>		
	Manufacturer	ITT Cannon	
	Type	DEMM-9PE	
	Mating	D-SUB DE-9f	
	<b>PWM-TTL Pin Assignment</b>		
	1	NC	Do not connect
	2	NC	Do not connect
	3	Diff FB A	Differential Position Feedback Signal, Output A
	4	PWM	Command Signal
	5	Case GND	Case Ground
	6	+V DC	Supply Voltage
	7	GND	Supply Ground, Signal Ground
	8	Pos FB	Single Ended Position Feedback Signal
	9	Diff FB B	Differential Position Feedback Signal, Output B

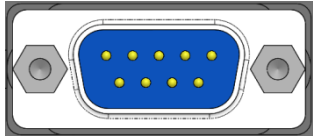
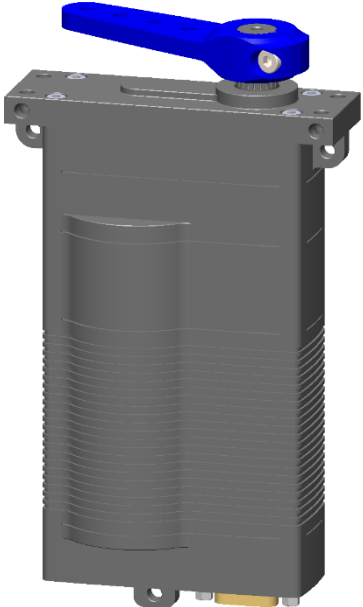
**NOTE:**

Access to the actuator parameters is possible via the TTL-PWM-Interface only.  
Programming Tool # 985.4 required.

## PWM-RS 422/TTL Interface

Integrated Connector

Item # DA 30-HT.30.5848.2.\_

	<b>Standard Connector</b>		
	Manufacturer ITT Cannon		
	Type DEMM-9PE		
	Mating D-SUB DE-9f		
	<b>PWM-RS 422/TTL Pin Assignment</b>		
	1	RS 422 / PWM	Non-Inverted RS 422-Input
	2	RS 422 / PWM	Inverted RS 422-Input
	3	Diff FB A	Position Feedback Signal, Output A
	4	TTL / PWM	Command and Parameter Input
	5	Case GND	Case Ground
	6	+V DC	Supply Voltage
7	GND	Supply Ground, Signal Ground	
8	Pos FB	Single Ended Position Feedback Signal	
9	Diff FB B	Differential Position Feedback Signal, Output B	

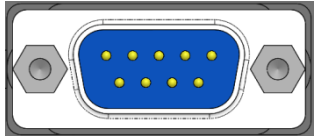
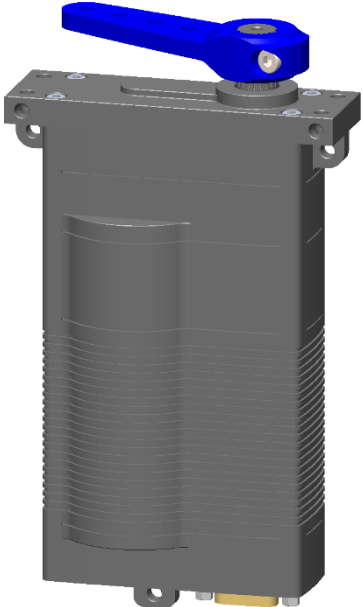
**NOTE:**

Access to the actuator parameters is possible via the TTL-PWM-Interface only.  
Programming Tool # 985.4 required.

## RS 485 Interface (2-wire)

Integrated Connector

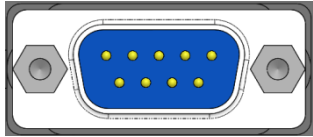
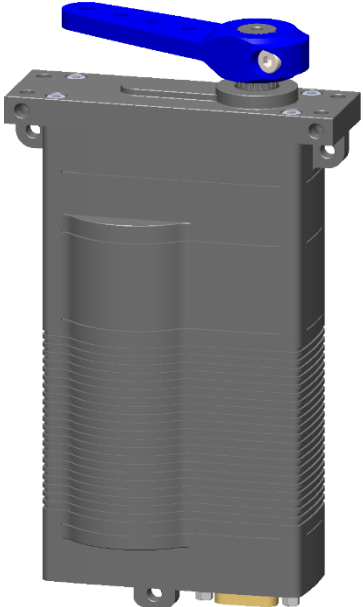
Item # DA 30-HT.30.5848.3.\_

	<b>Standard Connector</b>		
	Manufacturer	ITT Cannon	
	Type	DEMM-9PE	
	Mating	D-SUB DE-9f	
	<b>RS 485 (2-wire) Pin Assignment</b>		
	1	RS 485 A	Non-Inverted Input/Output
	2	RS 485 B	Inverted Input/Output
	3	-	Do not connect
	4	+V DC (2)	Supply Voltage, Secondary
	5	Case GND	Case Ground
	6	+V DC (1)	Supply Voltage, Primary
7	GND (1)	Supply Ground, Signal Ground, Primary	
8	GND (2)	Supply Ground, Signal Ground, Secondary	
9	-	Do not connect	

## RS 485 Redundant Interface

Integrated Connector

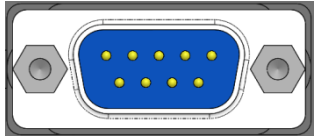
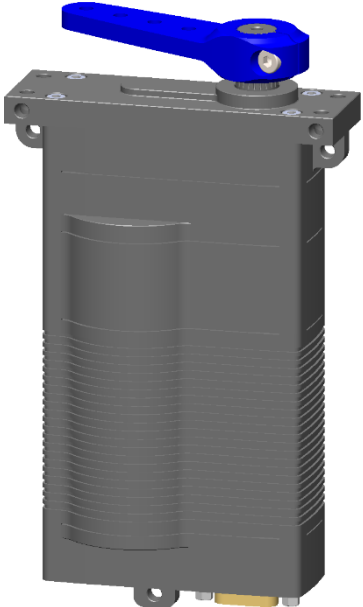
Item # DA 30-HT.30.5848.4\_

	<b>Standard Connector</b>		
	Manufacturer	ITT Cannon	
	Type	DEMM-9PE	
	Mating	D-SUB DE-9f	
	<b>RS 485 Redundant Pin Assignment</b>		
	1	RS 485 A (1)	Interface 1, Non-Inverted Input/Output
	2	RS 485 B (1)	Interface 1, Inverted Input/Output
	3	RS 485 A (2)	Interface 2, Non-Inverted Input/Output
	4	+V DC (2)	Supply Voltage, Secondary
	5	Case GND	Case Ground
	6	+V DC (1)	Supply Voltage, Primary
7	GND (1)	Supply Ground, Signal Ground, Primary	
8	GND (2)	Supply Ground, Signal Ground, Secondary	
9	RS 485 B (2)	Interface 2, Inverted Input/Output	

## RS 485 Interface (4-wire)

Integrated Connector

Item # DA 30-HT.30.5848.5\_

 <p>1 2 3 4 5 6 7 8 9</p>	<b>Standard Connector</b>		
	Manufacturer		
	Type		
	Mating		
	<b>RS 485 (4-wire) Pin Assignment</b>		
	1	RS 485 A (Rx)	Receiver, Non-Inverted, Input
	2	RS 485 B (Rx)	Receiver, Inverted, Input
	3	RS 485 A (Tx)	Transmitter, Non-Inverted, Output
	4	+V DC (2)	Supply Voltage, Secondary
	5	Case GND	Case Ground
	6	+V DC (1)	Supply Voltage, Primary
	7	GND (1)	Supply Ground, Signal Ground, Primary
8	GND (2)	Supply Ground, Signal Ground, Secondary	
9	RS 485 B (Tx)	Transmitter, Inverted, Output	

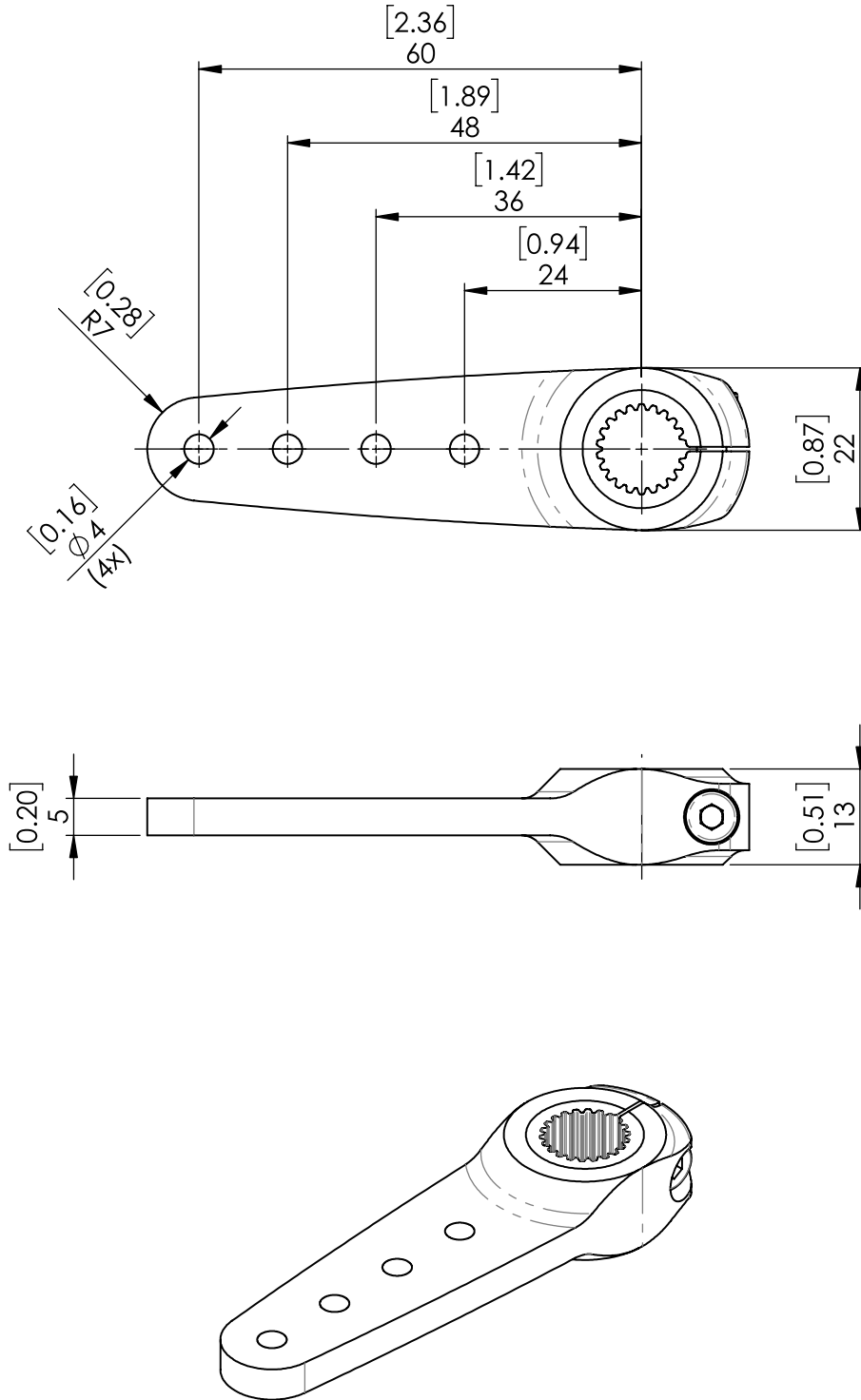
## 7. Accessories

Item	Item-No.
Aluminum Servo Arm	1941.21
Programming Tool PWM	985.4
Programming Tool RS-485	985.5

All accessories to be purchased separately.

### 7.1. Servo Arm

Item # 1941.21



Not to scale

Dimensions: [in], mm

Content is subject to change without notice



## 8. Item Number System

DA	30-HT	.	30	.	58	48	.	1	.	H
<b>Servo Class</b>								<b>Sensor</b>		
30mm High Torque Class								H Humidity		
								X without		
<b>Supply Voltage</b>								<b>Interface</b>		
30V DC		30						1 PWM-OPTO / TTL		
								2 PWM-RS 422 / TTL		
								3 RS 485 (2-wire)		
								4 RS 485 Redundant		
								5 RS 485 (4-wire)		
						<b>Servo Type</b>				
						5848				



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