Submittal Data Information

301-2690

TAS - Taco Advanced Starter

EFFECTIVE: NOVEMBER 3, 2014 SUPERSEDES: NEW

JOB _____ ENGINEER _____

CONTRACTOR _____ REP. _____

ITEM NO. _____

TAS - TACO ADVANCED STARTER

1Ø, 120-230V, 1/10-30HP
3Ø, 200-600V, 1/2-100HP
HOA Keypad with LCD Display
BACnet Comms, power metering, underload (dry run)

FEATURES

Power metering
- 1% ANSI grade metering
- Pulse/analog output for accurate measurements (optional)
- kW and kWh data available on LCD display

Superior pump protection
- SMARTSTART® Protection
  - 1-95A Electronic Overload
  - Locked rotor
  - Cycle fault
  - Max time to start
  - Out of calibration (detects incorrect FLA setting)
- Selectable trip class 5-30
- Current and voltage phase unbalance
- Over/under power
  - Prevents dry run pump damage
- Over/under voltage
- Reverse phase

Proof of flow verification
- True power measure detects belt loss and alerts automation system
- Eliminates costly current sensors

Voltage & dry contact inputs for auto run command
- Wire directly from the automation system to the starter, no interposing relays necessary
- Save on installation costs and increase reliability.

Valve control
- Provides a 24VAC (or optional 120VAC) output for powering a motorized valve actuator
- Interlocks valve with starter ensuring proper sequence of operation
- Prevents damage to pipes, saves energy from heat loss
- Saves on automation panel points, reduces wiring, saves on installation costs

HOA keypad with LCD display
- Plain English operation – easy to set up and simple to operate
  LEDs indicate Hand/Off/Auto modes, run and fault conditions

Flexible control transformer (CPT)
- Multi-tap CPT input accepts all common motor voltages
- Integrated secondary protection

Combination versions include disconnect
- Motor circuit protection disconnect provides short circuit protection
- High interrupting ratings for maximum electrical system compatibility
- No fuses required
- Lockable handle for safety

BACnet or Modbus Communications with power metering for energy savings
- Ideal for LEED projects (Measurement & Verification credit), tenant sub-metering cost allocation, load shedding and performance contracting
- Native RS-485 76800 BPS for high performance

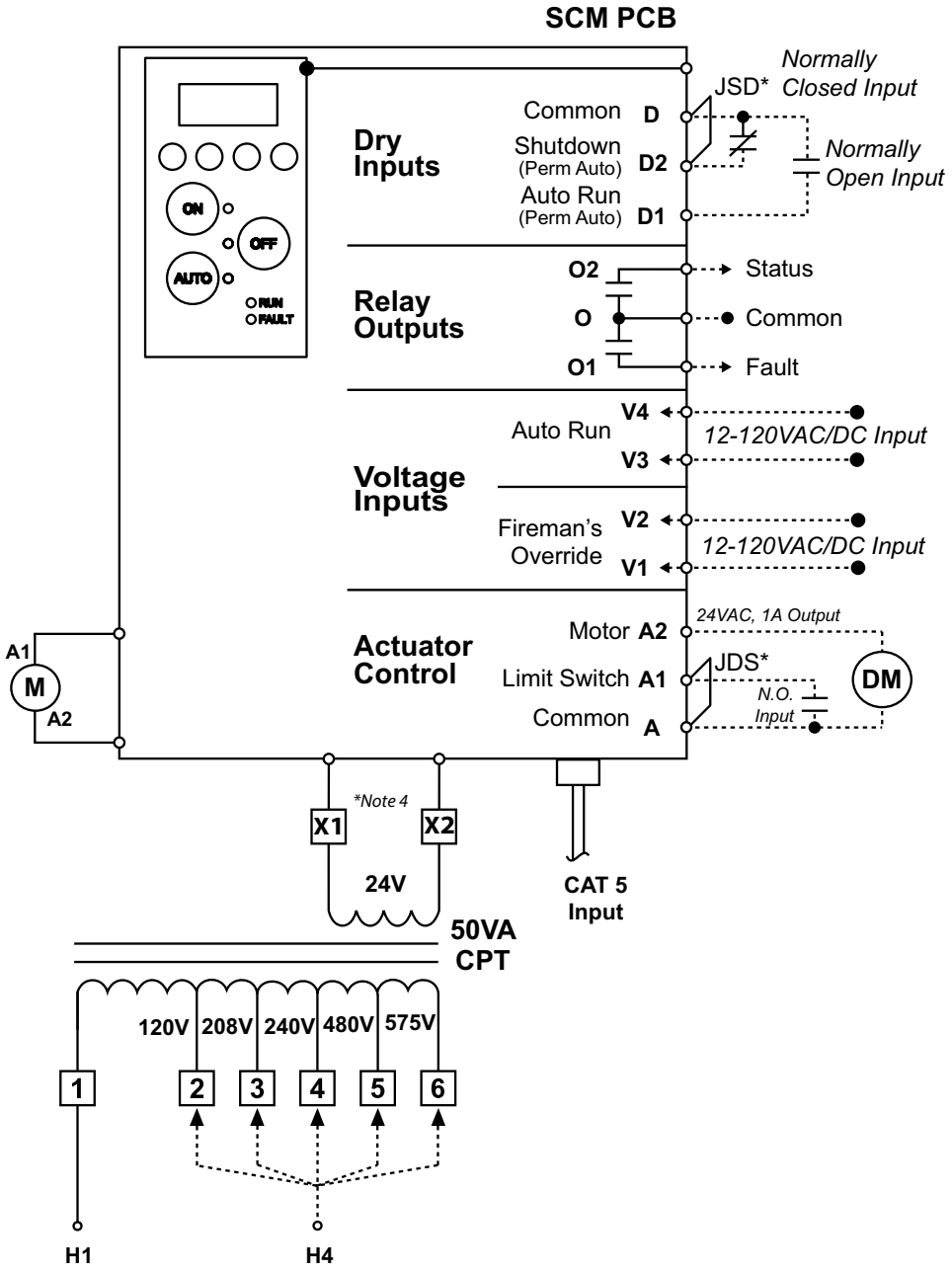
Comprehensive point list including HOA status, overload faults, and all metering attributes (kW, kWh, kVar, V, A, etc. aggregate and per phase).
- **Includes power** metering display with programmable parameters Tested to BTL standards

Fault Logging
- Records up to 100 faults and alarms (e.g. underpower, overload, etc.)

TAS Specifications

Starter Type			
TAS - Taco Advanced Starter			
120-600VAC, 1 & 3-Phase, 50/60Hz input, Across the line, full-voltage non-reversing			
NEMA Type 1 or 3R Enclosed			
User Interface			
Hand-Off-Auto		Door mounted Hand-Off-Auto keypad (water-tight-membrane)	
Programming		Door mounted display with programming keys (LCD, back-lit, 16 character)	
Mode Indication		Integrated LEDs, Hand-Off-Auto-Run-Fault indication	
Standard Control Operations			
Inputs	Voltage Auto-Run	Accepts 12-130VAC/DC. Applying voltage will send a run command to the starter when in Auto mode.	
	Dry Contact Auto-Run	Normally Open dry contact. When closed, the starter will be commanded to run when in Auto mode.	
	Fireman's Override	Accepts 12-130VAC/DC. Applying voltage will command the motor to run in all modes and will supersede a Shutdown command. Hand/Off/Auto/Run/Fault LEDs will flash.	
	Float Switches	2) Programmable Normally Open or Normally Closed dry contacts.	
	Permissive Auto	Normally Open dry contact. When closed, the starter will not accept a run command when in Auto mode.	
	Actuator Position Switch	Normally Open dry contact. To be used in series with customer provided actuator contacts which disable the motor starter until the actuator is in position. (ie. The contactor will not close unless this contact is closed)	
Outputs	Status Relay	Normally Open relay contacts. Status Relay will close when the motor draws a user defined percentage of the FLA setting. Fault Relay will close in the event of a fault trip. Contact Ratings: 0.3A @ 125VAC, 1A @ 24VAC	
	Fault Relay		
	Actuator Power	24VAC, 1A max. (Optional 120VAC, 0.25A max.)	
Operational	Overload Type	Electronic, I^2t trip curve	
	Power Fail Modes	Restart in last mode (Hand/Off/Auto) with no delay (default)	
		Restart in Off mode	
		Restart in Off mode if power failure lasts longer than 2 seconds. Restart in last mode if power failure is less than 2 seconds.	
	On/Off Time Delay	On/Off, Adjustable: 0.1-99 seconds	
	Fault Reset	Adjustable: Manual or Automatic	
Environmental			
Ambient Operating Temp		-5° to 140° F (-20° to 60° C)	
Ambient Storage Temp		-5° to 185° F (-20° to 85° C)	
Relative Humidity		5% to 95% non-condensing	
Motor Protection		**Adjustment / Description**	**Default Setting**
Overload Current Setting Range		Differs per model	Per FLA
Overload Trip Class		Adjustable: 5-30	10
Overload Service Factor		Adjustable: 0.00-2.00	1.15
Under Power		On/Off, Adjustable: 0-99% of measured electrical input	Off / 60%
Over Power		On/Off, Adjustable: 101-200% of measured electrical input	Off / 120%
Over / Under Voltage		On/Off, Adjustable: ±5-25% over/under the nominal voltage setting	On / 10%
Voltage Phase Unbalance		On/Off, Adjustable: 1-20% voltage phase deviation	On / 3%
Voltage Phase Loss		Always On, Adjustable: 1-50% voltage phase deviation	5%
Voltage Phase Sequence Reversal		On/Off, Trips within 0.1 seconds upon voltage phase reversal detection	On
Ground Fault (Optional)		On/Off, Adjustable: 1.0-9.9A	Off / 1A
Cycle Fault		On/Off, Trips if contactor cycle rate exceeds 20 starts/minute	On
Warm Start Provision		On/Off, Delays motor restart after a fault trip, based on calculated motor temperature	On
SMARTSTART **Protection**		**Adjustment / Description**	**Default Setting**
Current Phase Unbalance		On/Off, Adjustable: 1-50% current phase unbalance	On / 20%
Locked Rotor / Stall		On/Off, Trips within 0.5 seconds	On
Out of Calibration		On/Off, Trips after 10 seconds if the FLA setting is incorrect (set above calculated FLA range), ie. Start current is outside of an acceptable range. (fla setting * 5 < inrush < fla setting * 14).	On
Max Time to Start		On/Off, Regardless of FLA or I^2t curve, always trip at start if starting current is outside of an acceptable range (inrush / 5) and still decreasing after 10 seconds.	On

TAS WIRING DIAGRAM



SUBMITTED EQUIPMENT SCHEDULE

QTY	TAG	TAS PART#	NEMA SIZE	HP	VOLTAGE	PHASE	BACnet Comm w/ Power Metering	Modbus Comm w/ Power Metering
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3-POLE CONTRACTOR SPECIFICATIONS

Frame size				22AF		40AF	
Type				MRC-9B	MRC-18B	MRC-32A	MRC-50LA
Terminal Type				Screw		Screw	
Number of poles				3 pole		3 pole	
Rated operation voltage, Ue				690V		690V	
Rated insulation voltage, Ui				690V		1000V	
Rated frequency				50/60Hz		50/60Hz	
Rated impulse withstand voltage, Uimp				6kV		8kV	
Max. operating rate in operating cycles per hour (AC3)				1800 operations per hour		1800 operations per hour	
Durability			Mechanical	15 mil. operations		12 mil. operations	
			Electrical	2.5 mil. operations		2 mil. operations	
Current and power	AC-1, Thermal current		A	25	40	50	70
	AC-3	200/240V	kW A	2.5 11	4.5 18	7.5 32	15 55
		380/440V	kW A	4 9	7.5 18a	15 32	22 50
		500/550V	kW A	4 7	7.5 13	18.5 28	30 43
		690V	kW A	4 6	7.5 9	18.5 20	30 28
UL rating (50/60Hz)	Continuous current		A	25	40	50	70
	Single Phase	110~120V	HP	0.5	1	2	3
		220~240V	HP	1.5	3	5	10
	Three Phase	200~208V	HP	2	5	7.5	20
		220~240V	HP	3	7.5	10	25
		440~480V	HP	5	10	20	40
		550~600V	HP	7.5	15	25	50
	NEMA size			00	0	1	2
Size and weight	MRC	Weight Size (WxHxD)	lbs in	0.73 lbs 1.77 x 2.89 x 3.39 in		0.88 lbs 1.77 x 3.27 x 3.54 in	1.98 lbs 2.17 x 4.17 x 4.69 in
	MRD	Weight Size (WxHxD)	lbs in	1.12 lbs 1.77 x 2.89 x 4.63 in		1.32 lbs 1.77 x 3.27 x 4.61 in	2.65 lbs 2.17 x 4.17 x 5.76 in
Auxiliary (standard)				**1NO & 1NC**		**1NO & 1NC**	
Auxiliary	Side mount			MA-1		MA-1	
	Front mount			CA-2, CA-4		CA-2, CA-4	

**Minimum conduct current of auxiliary contactor is DC 17V 5mA*
***10A max, Not motor duty rated.*

150AF	
MRC-85LA	MRC-150LA
Lug	
3 pole	
690V	
1000V	
50/60Hz	
6kV	8kV
1800 operations per hour	
12 mil. operations	5 mil. operations
2 mil. operations	1 mil. operations
135	210
25 85	45 150
45 85	75 150
45 75	70 100
45 45	50 60
135	210
7.5	15
15	25
30	40
40	50
60	100
75	75
3	4
3.53 lbs 2.76 x 5.51 x 5.35 in	5.29 lbs 0.15 x 0.24 x 0.20 in
5.73 lbs 2.76 x 5.51 x 6.78 in	
1NO & 1NC	
MA-1	
CA-2, CA-4	

MANUAL MOTOR STARTER SPECIFICATIONS

Frame Size	Rated operational current Ie (A)	Magnetic release operating current (A)	Branch Motor Protection (UL508)								
			1-phase [HP] (50/60Hz)		3-phase [HP] (60Hz)				KAIC Ratings [kA]		
			115V	230V	200V	230V	460V	575V	240V	480V	600V
32AF	0.16	2.1	-	-	-	-	-	-	100	50	10
	0.25	3.3	-	-	-	-	-	-	100	50	10
	0.4	5.2	-	-	-	-	-	-	100	50	10
	0.63	8.2	-	-	-	-	-	-	100	50	10
	1	13	-	-	-	-	-	1/2	100	50	10
	1.6	20.8	-	1/10	-	-	3/4	3/4	100	50	10
	2.5	32.5	-	1/6	1/2	1/2	1	1.5	100	50	10
	4	52	1/8	1/3	3/4	3/4	2	3	100	50	10
	6	78	1/4	1/2	1	1.5	3	5	100	50	10
	8	104	1/3	1	2	2	5	5	100	50	10
	10	130	1/2	1.5	2	3	5	7.5	100	50	10
	13	169	1/2	2	3	3	7.5	10	100	50	10
	17	221	1	3	3	5	10	15	100	50	10
	22	286	1.5	3	5	7.5	15	20	100	30	10
	26	338	2	3	7.5	7.5	15	20	100	30	10
	32	416	2	5	7.5	10	20	30	100	30	10
	40	520	3	7.5	10	10	30	30	100	30	10
63AF	10	130	1/2	1.5	2	3	5	7.5	100	50	10
	13	169	1/2	2	3	3	7.5	10	100	50	10
	17	221	1	3	3	5	10	15	100	50	10
	22	286	1.5	3	5	7.5	15	20	100	50	10
	26	338	2	3	7.5	7.5	15	20	100	50	10
	32	416	2	5	7.5	10	20	30	100	50	10
	40	520	3	7.5	10	10	30	30	100	50	10
	50	650	3	10	15	15	30	40	100	50	10
	63	819	5	10	20	20	40	60	100	50	10
	65	845	5	10	20	20	40	60	100	50	10
100AF	17	221	1	3	3	5	10	15	100	50	10
	22	286	1.5	3	5	7.5	15	20	100	50	10
	26	338	2	3	7.5	7.5	15	20	100	50	10
	32	416	2	5	7.5	10	20	30	100	50	10
	40	520	3	7.5	10	10	30	30	100	50	10
	50	650	3	10	15	15	30	40	100	50	10
	63	819	5	10	20	20	40	60	100	50	10
	75	975	5	15	20	25	50	60	100	50	10
	90	1170	7.5	20	25	30	60	75	100	50	10
	100	1300	10	20	30	30	75	100	100	50	10

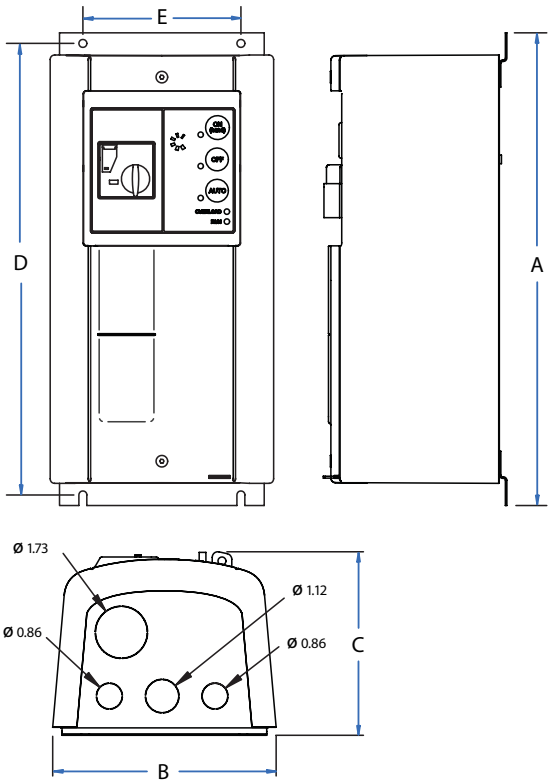
CMS-32HI

CMS-63HI

CMS-100HI

UL TYPE 1

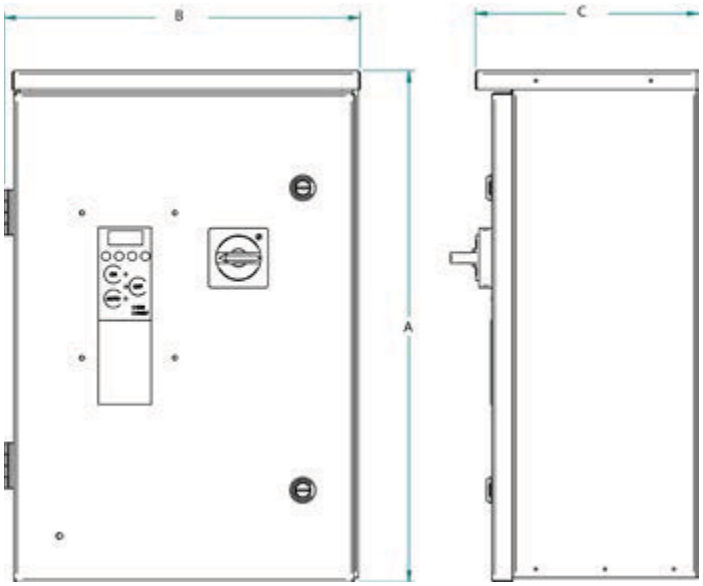
STANDARD & COMBINATION (FRAME SIZE 1)



Enclosure Frame Size 1	A	B	C	D	E
TAS19 ~ TAS150 STANDARD	15.7	7.5	6.1	15	5.3
TAS19 ~ TAS132 COMBINATION					
Enclosure Frame Size 2	A	B	C	D	E
TAS185 STANDARD	14	12	6.5	13.3	9.5
Enclosure Frame Size 3	A	B	C	D	E
TAS150 ~ TAS185 COMBINATION	20	16	10	15.3	11.3

UL TYPE 3R DIMENSIONS

STANDARD (FRAME SIZE 1 - 3)



Enclosure Frame Size 1	A	B	C
TAS3R9 ~ TAS3R85 STANDARD	16.3	12.5	7.7
Enclosure Frame Size 2	A	B	C
TAS3R9 ~ TAS3R50 COMBINATION	22.3	15.5	9.7
Enclosure Frame Size 3	A	B	C
TAS3R85 COMBINATION	32.3	15.5	9.7

Do your **best work.®**

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