

TRV - Taco Advanced Starter [REDUCED VOLTAGE]

The TRV is an advanced soft-starter that is loaded with protection and automation features such as underload (dry run) detection, power metering & MODbus communications. The TRV offers the benefit of reduced voltage starting. Reducing the inrush current increases energy savings and extends the life of your motor.



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Features & Benefits

- 2 -

TRV Benefits

Soft Start

- Energy savings through reduced inrush current
- Adjustable current limit, initial voltage, start/stop time
- Coast to stop
- Torque boost
- SCR over-temperature detection
- Shorted SCR detection
- Across-the-line start for emergency situations

Superior pump protection

- Class 5-30 Electronic Overload
- Phase loss/unbalance protection
- Stall/locked rotor condition
- Cycle fault
- Underpower (Protects the pump in a dry run condition)

Built-in power monitoring, fault logging and communications

- 1% ANSI grade metering
- kW and kWh data available on LCD display
- Last 15 fault types are recorded (e.g. underpower, overload, voltage/current loss/unbalance, etc.)
- Fault counter: stores how many times each fault type has occurred (Up to 255)
- Logs changes to parameter settings (e.g. overload, OV/UV, underpower)
- All power condition values are displayed
- Built-in RS-485 for Modbus RTU communication

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

Building automation system ready

- Relay outputs for fault and proof of flow verification
- Detects dry pump and alerts automation system
- Eliminates costly current sensors
- Voltage input for auto run signal (accepts 12-120VAC/DC)
- Wire directly from the automation system to the starter, no interposing relays necessary
- Emergency shutdown initiates smoke purge sequence during emergency situations for safety and code compliance
- Dry inputs for auto run, emergency shutdown, and permissive auto (N.O. dry contact closure)
- Analog input for (selectable) 0-10V, 4-20mA, 10k Thermistor, viewable as a Modbus point

Optional circuit breaker disconnect

- Molded case circuit breaker provides branch and short circuit protection
- High interrupting ratings for maximum electrical system compatibility
- No fuses required – save time and money
- Lockable handle for safety

Multi-tap control power transformer (CPT)

- Multi-tap CPT input accepts all common motor voltages
- Integrated secondary protection – *no fuses required*

Ordering and sizing information

NEMA Type 3R Indoor/Outdoor Enclosure

Combination Taco Advanced Soft Starter - 3-Phase, 208~460VAC

Includes Molded Case Circuit Breaker Disconnect

UL Three Phase HP				SCIC KAIC @		TAS-RV Part Number
208V	230V	460V	575V	208/230V	460V	
2	2	5	5	100	65	TAS3RRV9JG15
3	3	7.5	10	100	65	TAS3RRV18JG20
5	5	10	15	100	65	TAS3RRV22JG30
5	7.5	15	20	100	65	TAS3RRV32JG40
7.5	10	20	25	100	65	TAS3RRV40JG50
10	10	25	30	100	65	TAS3RRV40JG60
-	15	30	40	100	65	TAS3RRV50JG80
15	20	40	50	100	65	TAS3RRV65JG100
20	25	50	60	100	65	TAS3RRV85JG125
25	30	60	75	100	65	TAS3RRV100JG150
30	40	75	100	100	65	TAS3RRV150JG200
40	50	100	125	100	65	TAS3RRV150JG250
40	50	100	125	18	18	TAS3RRV330JG250
50	60	125	150	18	18	TAS3RRV330JG300
60	75	150	200	18	18	TAS3RRV330JG400
74	100	200	250	18	18	TAS3RRV330JG500
100	125	250	300	18	18	TAS3RRV400JG600

NEMA Type 3R Indoor/Outdoor Enclosure

Standard Taco Advanced Soft Starter - 3-Phase, 208~460VAC

UL Three Phase HP				Standard SCIC KAIC @	TAS-RV Part Number
208V	230V	460V	575V	208/230V/460V	
15	15	30	40	5	TAS3RRV50J
25	30	60	75	10	TAS3RRV100J
40	50	100	150	10	TAS3RRV150J
100	125	250	300	18	TAS3RRV400J

*A molded case circuit breaker must be used in order to obtain the high fault SCIC KAIC ratings

TRV Dimensions

- 4 -

Dimensions

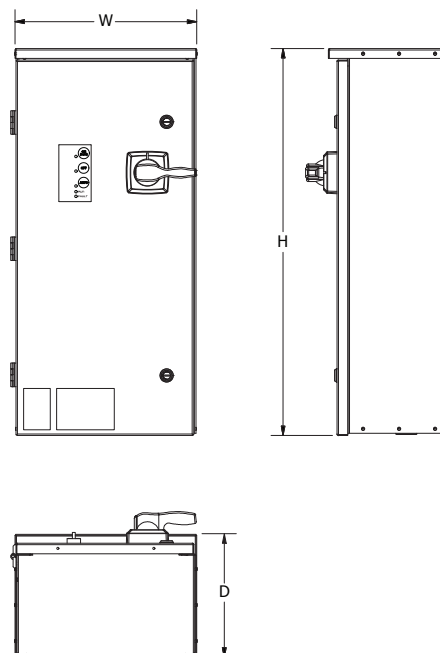
**All measurements in inches*

TRV (Combination)

Starter Size	H	W	D
TAS3RRV9JG15 ~ TAS3RRV100JG150	32	15	10
TAS3RRV150JGXXX	36	24	12
TAS3RRV330JG250 ~ TAS3RRV330JG400	42	30	12
TAS3RRV330JG500 ~ TAS3RRV400JG600	48	30	16

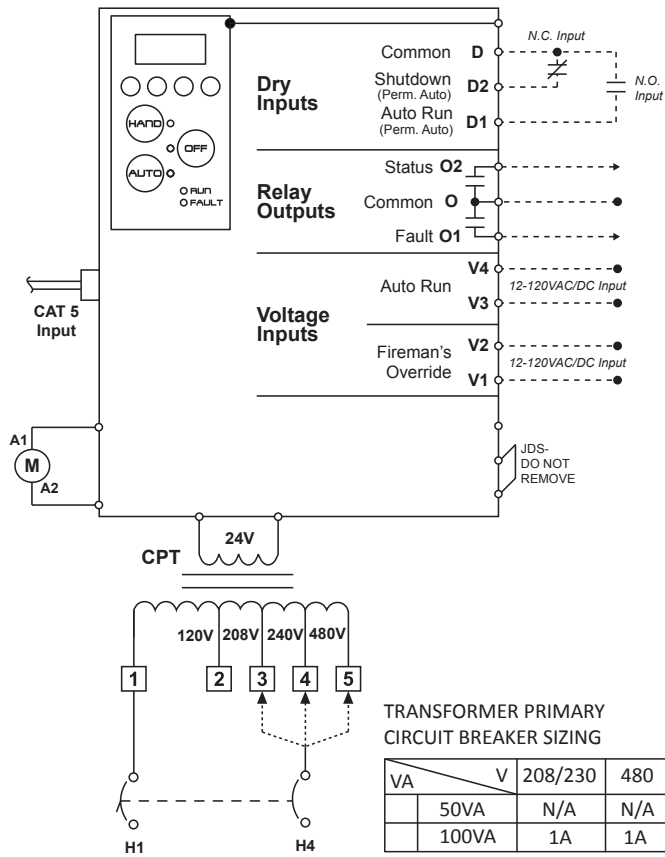
TRV (Standard)

Starter Size	H	W	D
TAS3RRV50J ~ TAS3RRV100J	32	15	10
TAS3RRV150J	36	24	12
TAS3RRV400J	42	30	12



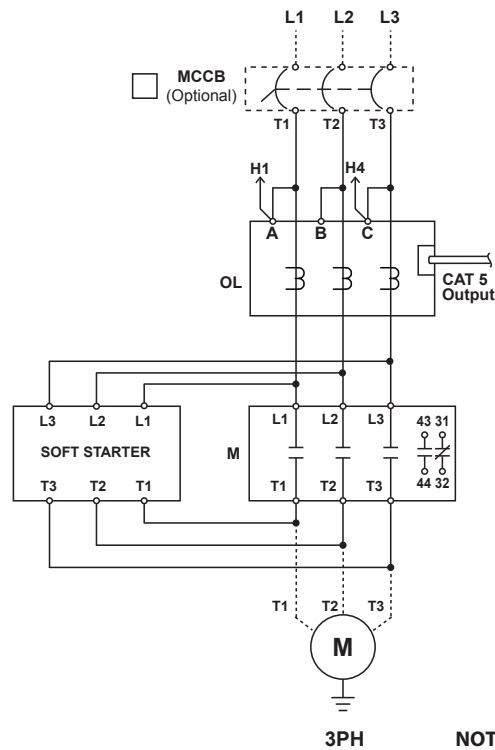
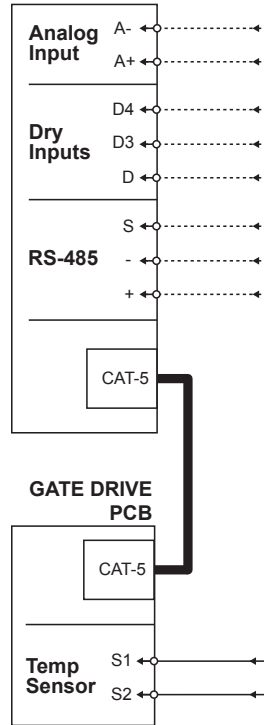
TRV Wiring Diagram

*For part specific schematics contact manufacturer



TRANSFORMER PRIMARY
CIRCUIT BREAKER SIZING

VA	V	208/230	480
50VA		N/A	N/A
100VA		1A	1A



NOTE: DASHED LINES INDICATE FIELD WIRING

TRV Specification

Starter Type		
TRV - Taco Reduced Voltage advanced starter. (Soft Starter)		
200-600VAC, 3-Phase, 50/60Hz input, Reduced voltage starter		
NEMA Type 3R Enclosed		
User Interface		
Hand-Off-Auto		Door mounted Hand-Off-Auto keypad (water-tight-membrane)
Programming		Internal 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.
	Float Switches	2) Programmable Normally Open or Normally Closed dry contacts.
	Shutdown	Normally Closed dry contact. When open, the contactor will open and the starter will disengage the contactor and will not accept a run command with the exception of Fireman’s Override. Hand/Off/Auto LEDs will flash.
	Permissive Auto	Normally Open dry contact. When closed, the starter will not accept a run command when in Auto mode.
	RS-485	Modbus RTU slave
	Analog Input	Selectable 0-10V, 4-20mA 10k Thermistor, viewable as a Modbus point
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	Fault Relay will close in the event of a fault trip. <u>Contact Ratings:</u> 0.3A @ 125VAC, 1A @ 24VAC
Operational	Starts	6/hour, 20 seconds max start time @ 400% FLA, 30 seconds max start time @ 300@ FLA
	Overload Type	Electronic, I²t 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 / Soft Starter Protection		Adjustment / Description
Overload Current Setting Range		Differs per model
Overload Trip Class		Adjustable: 5-30
Overload Service Factor		Adjustable: 0.00-2.00
Under Power		On/Off, Adjustable: 0-99% of measured electrical input
Over Power		On/Off, Adjustable: 101-200% of measured electrical input
Over / Under Voltage		On/Off, Adjustable: + 5-25% over/under the nominal voltage setting
Voltage Phase Unbalance		On/Off, Adjustable: 1-20% voltage phase deviation
Voltage Phase Loss		Always On, Adjustable: 1-50% voltage phase deviation
Voltage Phase Sequence Reversal		On/Off, Trips within 0.1 seconds upon voltage phase reversal detection
Ground Fault (Optional)		On/Off, Adjustable: 1.0-9.9A
Cycle Fault		On/Off, Trips if contactor cycle rate exceeds 20 starts/minute
Warm Start Provision		On/Off, Delays motor restart after a fault trip, based on calculated motor temperature
Current Phase Unbalance		On/Off, Adjustable: 1-50% current phase unbalance
Locked Rotor / Stall		On/Off, Trips within 0.5 seconds
Shorted SCR		Always On, Trips upon detection of a shorted SCR or no motor
Open SCR		Always On, Trips if no current is detected during startup or bypass
SCR Over-Temperature		Always On, Trips if any SCR reaches 125°C
Across-The-Line Start		On/Off, Allows the user to start the motor across-the-line
		Default Setting
		Per FLA
		10
		1.15
		Off / 60%
		Off / 120%
		On / 10%
		On / 3%
		5%
		On
		Off / 1A
		On
		On
		On / 20%
		On
		On
		On
		On
		Off

NOTES

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