



# SERIES TS 870 • 100 - 1200 AMP AUTOMATIC TRANSFER SWITCHES

COMMERCIAL & INDUSTRIAL

**REGAL**<sup>®</sup>



## THOMSON POWER SYSTEMS TS 870 AUTOMATIC TRANSFER SWITCHES OFFER THE FOLLOWING:

### ENCLOSED CONTACT POWER SWITCHING UNITS

- Fully enclosed silver alloy contacts provide high withstand rating & 100% continuous current rating.
- 3 cycle short circuit current withstand.
- 10 cycle 6X overload current rating
- Completely isolated utility and generator side power switching units.
- Power switching units can incorporate overcurrent protection, allowing cost savings in upstream devices.
- Not damaged if manually switched while in service.

### RELIABLE MOTOR-OPERATED TRANSFER MECHANISM

- Heavy duty brushless gearmotor and operating mechanism provide mechanical interlocking (for open transition ATS) and extreme long life.
- Stored Energy: Motor Operators for fast CTTS
- Safe manual operation permits operation under adverse conditions.

### SUPERIOR SERVICEABILITY

- All mechanical and control devices are visible and front accessible.
- All control wires and power busses are front-accessible.
- Plug-in TSC 900 Transfer Switch Controller

### CONTROL FEATURES

- TSC 900 microprocessor based controller with 7" color touch screen graphical display and programmable inputs/outputs.
- Isolation plug permits disconnecting control circuits from all power sources.

### PRODUCT DATA

- Models from 100-1200 Amp continuous current
- Available 2, 3 or 4 pole
- All models 50/60Hz rated
- Voltage range 120-600 VAC
- 3 phase, 3 or 4 wire systems
- Open Transition or Closed Transition ATS
- 1000/1200A offer fast Open Transition transfer, with in-phase monitoring

### QUALITY ASSURANCE

- ISO 9001 Registered

### SEISMIC CERTIFICATION

TS 870 ATS is certified for installation and operation per the following requirements:

- IBC 2012– Section 13, Occupancy Category IV
- ASCE7-05 Region 3 (minimum SS=200%)

### SAFETY STANDARDS

- UL 1008 Automatic Transfer Switches for use in Emergency Systems
- CSA C22.2 No. 178 Automatic Transfer Switches
- NFPA 110 Standard for Emergency and Standby Power Systems

### WARRANTY

- 2 year limited warranty included

**Thomson Power Systems TS 870** Standard Automatic Transfer Switches employ two mechanically interlocked power switching units with a microprocessor based controller to automatically start a generator and transfer system load to a generator supply in the event of a utility supply failure. System load is then automatically retransferred back to the utility supply following restoration of the utility power source to within normal operating limits. All load transfer sequences are "Open Transition" (i.e. "break-before make") with adjustable neutral position delay to ensure adequate voltage decay for preventing out of phase transfers.

TS 870 Automatic Transfer Switches are certified to UL 1008 & CSA 178 Standards for use in Emergency Power System applications.

All TS 870 transfer switches have been 3 cycle withstand current tested in accordance with UL 1008 & CSA 178. Additionally they can withstand 6 times overload for 10 cycles. The standard TS 870 Automatic Transfer Switch is rated for 100% system load. The TS 870 design allows optional use of integral over current trip elements within the power switching units. All TS 870 series transfer switches use a TSC 900 microprocessor based controller which provides all necessary control functions for fully automatic operation. The controller is equipped with 7" color touch-screen graphical display which provides Operating Status and controls. All parameters and configurations are entered without opening the front door.



## CLOSED TRANSITION ATS (MOMENTARY)

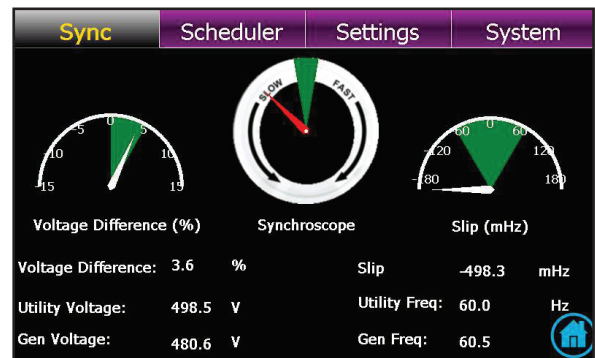
**Thomson Power Systems TS 870 Closed Transition Transfer Switch (CTTS)** employ two stored energy, motor operated electrically interlocked molded case (MCCB/MCS) power switching units and a microprocessor based controller to automatically allow a Closed Transition (Make-before-Break) load transfer when both utility and generator sources are available. All Closed Transition transfer sequences ensure both sources of power are in synchronism prior to transfer and load is transferred without power interruption. Automatic control & protection circuits ensure the generator and utility supplies are only in parallel for a maximum of 100 milliseconds to permit an uninterrupted load transfer.

In the event of a utility supply failure, the TS 870 CTTS will automatically revert to an Open Transition load transfer sequence to transfer system load automatically to the generator supply. System load is then automatically re-transferred back to the utility supply utilizing a Closed Transition transfer sequence following restoration of the utility power source to within normal operating limits. All Closed Transition transfer sequences will be inhibited when only one source of power is available. The Closed Transition feature is a standard option that can be applied to TS 870 model.

TS 870 CTTS are specifically designed and certified to UL 1008 CTTS Standards, for use in Emergency Power System applications such as Healthcare Commercial, Industrial, or Government institutions that require automatic standby power and minimal power interruptions to the load.

The TS 870 CTTS series transfer switches use the TSC 900 Controller, with built-in Sync Check relay which contains adjustable voltage/slip frequency threshold limits. The paralleling time is less than 100 milliseconds. A timer monitors the closed-transition period, and will isolate, should the closed-transition time exceed the setting of the timer. If the device fails to open within 100 mS an additional Extended Paralleling Protection is provided to ensure isolation by opening the other source within 500 mS.

Closed Transition Mode can be bypassed to Open Transition Mode within the TSC 900 Controller. An Auto/Manual Switch is provided for safe Manual operation in Open Transition mode with positive push button controls.



## DUAL SOURCE ATS

Thomson Power Systems TS 870 Dual Source Automatic Transfer Switches employ two mechanically interlocked power switching units with a microprocessor based controller to automatically control two sources of power such as dual utility feeders or dual prime operating generator sets. Upon failure of the preferred operating source, the load will automatically be transferred to the alternate source. System load is then automatically re-transferred back to the preferred operating source following restoration of the power source to within normal operating limits. All load transfer sequences are "Open Transition" (i.e. "break-before-make") with adjustable neutral position delay unless the Closed Transition option (CTTS) is supplied with the transfer switch.

Dual Source is available in three different configurations as follows:

- DU- Dual Utility Sources
- DSG- Dual Standby Generators (Slave ATS)
- DPG- Dual Prime Generators (Prime Power)

TS 870 DS Automatic Transfer Switches are specifically designed and certified to CSA 178 and UL 1008 Standards. All TS 870 DS transfer switch models have been 3 cycle withstand current tested in accordance with UL 1008 and CSA 178 which allow high current ratings.

The TS 870 DS series transfer switches use a type TSC 900 microprocessor based controller.



## SERVICE ENTRANCE ATS (For U.S. Market Only)

Thomson Power Systems TS 870 Service Entrance (SE) Automatic Transfer Switches incorporate an isolating mechanism and over current protection on the utility supply thereby removing the need to have a separate, upstream circuit breaker/disconnect switch. This unique Service Entrance Rated Automatic Transfer Switch design is incorporated into a standard sized automatic transfer switch enclosure.

Standard features of the Service Entrance Rated Automatic Transfer Switch include a NEMA 1 rated enclosure, pad-lockable Service Disconnect control switch and status indications.

TS 870 SE Service disconnect operation ensures a high level of safety for system maintenance personnel. Normal operation and performance of the automatic transfer switch is unaffected by the Service Entrance ATS feature. The TS 870 SE Automatic Transfer Switch is rated for the system load and requires upstream over current protection on the generator supply.

The TS 870 SE series transfer switches use a type TSC 900 microprocessor based controller.

## WITHSTAND CURRENT RATINGS (ALL MODELS)

MODEL	RATED CURRENT (AMPS)	MAX VOLTAGE	WITHSTAND CURRENT RATING AMPS (RMS) <sup>1</sup>		
			@240V	@480V	@600V
TS 87XA - 0100	100A	600	65,000	25,000	18,000
TS 87XA - 0150	150A	600	65,000	25,000	18,000
TS 87XA - 0200	200A	240	65,000	N/A	N/A
TS 87XA - 0250	250A	600	65,000	65,000	35,000
TS 87XA - 0400	400A	600	65,000	50,000	35,000
TS 87XA - 0600	600A	600	65,000	50,000	35,000
TS 87XA - 0800	800A	600	65,000	50,000	35,000
TS 87XA - 1000	1000A	600	200,000	100,000	65,000
TS 87XA - 1200	1200A	600	200,000	100,000	65,000

<sup>1</sup> Note: For power switching devices equipped with optional overcurrent trip units, standard interrupting ratings are identical to withstand ratings shown at 240V and 480V. For interrupting ratings at 600V, contact Thomson Power Systems.

## ENCLOSURE DIMENSIONS/CABLE TERMINALS (NEMA 1, ASA #61 GRAY)

AMPERAGE	NUMBER OF POLES	DIMENSIONS INCHES (mm) <sup>1</sup>			SHIPPING WEIGHT lbs (kg)	TERMINAL RATING <sup>3</sup>	
		HEIGHT	WIDTH	DEPTH		QTY (PER PHASE)	RANGE
100A	2, 3, 4	31.1" (790)	22.3" (566)	14" (356)	143 lbs (65)	1	#14 - 1/0
150A	2, 3, 4	31.1" (790)	22.3" (566)	14" (356)	143 lbs (65)	1	#2 - 4/0
200A	2, 3, 4	31.1" (790)	22.3" (566)	14" (356)	143 lbs (65)	1	#6 - 350 mcm
250A	2, 3, 4	35.1" (892)	27.3" (693)	14" (356)	172 lbs (78)	1	#6 - 350 mcm
400A	2, 3	43.1" (1095)	34.3" (871)	13" (330)	227 lbs (103)	2	2/0 - 500 mcm
400A	4	48.1" (1222)	37.8" (960)	14.5" (368)	256 lbs (116)	2	2/0 - 500 mcm
600A	2, 3	46.1" (1171)	36.3" (922)	14.5" (368)	248 lbs (113)	2	2/0 - 500 mcm
600A	4	48.1" (1222)	37.8" (960)	14.5" (368)	256 lbs (116)	2	2/0 - 500 mcm
800A	2, 3	48.1" (1222)	37.8" (960)	14.5" (368)	309 lbs (140.4)	3	2/0 - 500 mcm
800A	4	63.1" (1603)	40.8" (1036)	14.5" (368)	367 lbs (167)	3	2/0 - 500 mcm
400A - 800A CTTS	2,3,4	64" (1626)	30" (762)	14" (356)	400 lbs (181)	3	2/0 - 500 mcm
1000A/1200A (All)	2, 3, 4	70" (1780)	34.3" (871)	14" (356)	550 lbs (249)	4	4/0 - 500 mcm

Optional NEMA 3R & 4X class enclosures available — consult Thomson Power Systems.

For ATS with Distribution Breaker Option contact factory for dimensions.

<sup>1</sup> Enclosure dimensions are for reference. (DO NOT USE FOR CONSTRUCTION)

<sup>3</sup> All cable connections suitable for copper or aluminum

<sup>4</sup> Optional terminal ratings are available in some models – Consult Thomson Power Systems



## STANDARD FEATURES (With TSC 900 Controller)

- 7" color touch screen graphical display for monitoring 3 Phase Utility/Generator voltage, system frequency and timer countdown operation
- Front Panel Programming using touchscreen graphical display with password security
- Load on Utility & Load on Generator indication
- Utility & Generator Source available indication
- 3 Phase Voltage sensing on Utility & Generator Sources
- Generator AC frequency sensing
- Utility under voltage control setpoint 70 - 95% (adjustable)
- Generator under voltage control setpoint 70 - 95% (adjustable)
- Generator under frequency control setpoint 70 - 90% (adjustable)
- Engine warm-up timer 0-60 min. (adjustable)
- Utility return timer 0-60 min. (adjustable)
- Engine start timer 0-60 sec. (adjustable)
- Engine cooldown timer 0-60 min. (adjustable)
- Neutral position delay timer 0-120 sec. (adjustable)
- Load Disconnect Contact (LDC) for pre/post transfer control to signal external building systems such as elevators during transfer operations
- Programmable Generator Exercise Timer (EXT) with easy to use event, Calendar Based, On-load or Off-load Programmability
- Real-time clock c/w battery back-up & daylight-savings programming
- Data logging including total transfers to generator, total utility power failures, load on utility hours, load on generator hours and utility or generator voltage/frequency data at time of fault
- Eight user Programmable Output Contacts rated 2A, 120/240V resistive, Form C. Each output contact is user programmable to 20 different functions including: Load on Utility, Load on Gen, Load Disconnect Contact (LDC), Fail to Transfer (FTT), Utility Power Available (UPA), Generator Power Available (GPA), Utility Power Fail, Engine start, ATS Not in Auto, and ATS in Auto. The Transfer Switch is pre-programmed with the following outputs enabled:
  - Load on Utility
  - Load on Gen
  - Load Disconnect Contact (LDC)
  - Fail to Transfer (FTT)
  - ATS Not in Auto
- Local utility power fail simulation test
- Remote utility power fail simulation test pushbutton input
- Local plant exercise initiate pushbutton control
- Engine start contact (7A, 120/240VAC resistive max.)
- Transfer fail/forced transfer logic
- Automatic force transfer to alternate supply should load voltage become de-energized
- 50 or 60Hz capable (115V control power)
- Remote Load Test/Peak Shave Input
- NEMA 1 Enclosure
- Solid Neutral on 4 wire Systems
- Auto Configuring System Voltage Type (3 wire delta or 4 wire Wye capable without additional sensing transformers)
- ATS Load Bus Power Metering Capability (Amp, Volt, Freq, kW, kVA, PF). Requires Current Transformer Option Kit
- Under/Over Frequency Protection- Utility and Generator Sources
- 3 Phase Over Voltage Protection - Utility and Generator Sources
- Phase Sequence and Phase Rotation Protection between Utility and Generator Sources
- Voltage Phase Loss/Unbalance Protection
- Programmable Inputs (Quantity 16 Digital Input-voltage free input)
- RS232 Modbus™ Remote Communication Port (Modbus™ Serial RTU) via GHC
- Optional Ethernet Modbus Remote Communication Port (Modbus™ TCP) via GHC
- USB Communication Port (Quantity 3 via GHC)
- Serviceable Plug-in Connectors
- Event Logging (Time/Date Stamping)



# ORDERING INFORMATION

When placing an order, specify the following 21 digit ATS MODEL CODE as per the features and applications described below.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
T	S		8	7																	

### 1-3. SERIES

TS - TRANSFER SWITCH

### 4 & 5. MODEL

87 - 870 SWITCH

### 6. POLES

2 - 2 POLE  
3 - 3 POLE  
4 - 4 POLE

### 7. CONFIGURATION TYPE

A - ATS  
X - SPECIAL

### 8 - 11. AMPERAGE

0100  
0150  
0200<sup>5</sup>  
0250  
0400  
0600  
0800  
1000  
1200

### 12. APPLICATION

A - STANDARD  
B - SERVICE ENTRANCE  
C - DUAL UTILITY CONTROL  
D - DUAL STANDBY GEN (Slave ATS)  
H - DUAL PRIME GEN CONTROL  
X - SPECIAL

### 13. OPERATION TYPE

1 - OPEN TRANSITION  
2 - MANUAL ELEC. OP.  
3 - CLOSED TRANSITION (MOMENTARY)<sup>7</sup>  
X - SPECIAL

### 14. SAFETY STANDARDS

A - UL 1008 (Service Entrance)  
B - CSA C22.2 NO 178  
C - UL 1008 / CSA 178  
X - NOT APPLICABLE

### 15. VOLTAGE

1Ø 3 WIRE  
D - 120/240

### 3Ø 4 WIRE (GROUNDED NEUTRAL)

E - 120/208<sup>1</sup>  
F - 127/220  
G - 120/240<sup>1</sup> (DELTA)  
H - 220/380<sup>2</sup>  
S - 230/400<sup>2</sup>  
J - 240/416  
K - 254/440  
M - 277/480<sup>1</sup>  
N - 347/600<sup>1</sup>  
Y - MULTIVOLTAGE (STOCK SWITCHES ONLY)  
*Customer to specify voltage when ordering*

### 3Ø 3 WIRE

P - 208  
Q - 220  
R - 240  
U - 416  
V - 480  
W - 600  
X - SPECIAL

### 16. CONTROLLER

5 - TSC 900 c/w GHC Graphic Display  
7 - NONE (MANUAL)

### 17. ENCLOSURE TYPE

A - NEMA 1, ASA #61 GRAY  
B - NEMA 2, ASA #61 GRAY  
C - NEMA 12, ASA #61 GRAY  
D - NEMA 3R SD, ASA #61 GRAY  
E - NEMA 3R DD, ASA #61 GRAY  
F - NEMA 3RX/4X DD  
(304 STAINLESS STEEL)<sup>3</sup>  
G - NONE (OPEN STYLE)  
L - NEMA 3RX/4X DD  
(316 STAINLESS STEEL)<sup>3</sup>  
X - SPECIAL

### 18. UTILITY SWITCHING DEVICE

K - MOLDED CASE SWITCH (100 - 1200A)  
M - MOLDED CASE SWITCH C/W THER-MAG TRIP (100-200A)  
N - MOLDED CASE SWITCH C/W ELECTRONIC TRIP (250-1200A)  
P - MOLDED CASE SWITCH C/W ELECTRONIC & GF TRIP (250-1200A)

### 19. GENERATOR SWITCHING DEVICE

K - MOLDED CASE SWITCH (100 - 1200A)  
M - MOLDED CASE SWITCH C/W THER-MAG TRIP (100-200A)  
N - MOLDED CASE SWITCH C/W ELECTRONIC TRIP (250-1200A)  
P - MOLDED CASE SWITCH C/W ELECTRONIC & GF TRIP (250-1200A)

### 20. POWER CONNECTIONS

A - STANDARD  
B - ATS CONNECTION PLATE 100A-400A  
C - ATS CONNECTION PLATE 600A-800A  
D - ATS CONNECTION PLATE 1000A-1200A  
E - ATS CONNECTION PLATE 100A-400A FOR U&G  
F - ATS CONNECTION PLATE 600A-800A FOR U&G  
G - ATS CONNECTION PLATE 1000A-1200A FOR U&G  
X - SPECIAL

### 21. ATS CONNECTION CONFIGURATION

A - STANDARD  
B - ALTERNATE B (400-1200A)  
C - ALTERNATE C (400-1200A)  
D - ALTERNATE D (400-1200A)

### NOTES

<sup>1</sup> MULTI-VOLTAGE CAPABLE  
<sup>2</sup> FOR 50 Hz APPLICATION  
<sup>3</sup> STANDARD ENCLOSURE RATING IS N3RX AT 800A, N4X FOR 1000/1200A AND 600A AND BELOW  
<sup>5</sup> 240V MAX  
<sup>7</sup> CLOSED TRANSITION OPTION 400A - 1200A ONLY

## AVAILABLE IN STOCK

The following standard ATS models are available from stock:

AMPERAGE	3 POLE	2 POLE OPTION TS 872	SERVICE ENTRANCE RATED ATS	SOLID NEUTRAL	MULTI-VOLTAGE (CUSTOMER TO SPECIFY 208-600V)	TSC 900 CONTROLLER	NEMA 1 ENCLOSURE	NEMA 3R ENCLOSURE OPTIONS	8 PROGRAMMABLE OUTPUT CONTACTS (2A,240VAC)	MODBUS™ RTU REMOTE COMMUNICATION PORT (SERIAL RS 232)
100A	Standard	Available Option		Standard	Standard	Standard	Standard	Available Option	Standard	Standard
150A	Standard	Available Option		Standard	Standard	Standard	Standard	Available Option	Standard	Standard
200A	Standard	Available Option	Available Option	Standard	240V Max	Standard	Standard	Available Option	Standard	Standard
250A	Standard	Available Option	Available Option	Standard	Standard	Standard	Standard	Available Option	Standard	Standard
400A	Standard	Available Option	Available Option	Standard	Standard	Standard	Standard	Available Option	Standard	Standard
600A	Standard	Available Option	Available Option	Standard	Standard	Standard	Standard	Available Option	Standard	Standard
800A	Standard	Available Option	Available Option	Standard	Standard	Standard	Standard	Available Option	Standard	Standard

Standard  
Available Option in Stock



## OPTIONAL FEATURES (Specify separately from ATS MODEL CODE when ordering)

CODE	DESCRIPTION
<b>AUXILIARIES:</b>	
AUX-BG	Generator Bypass Auxiliary Contact
AUX-BU	Utility Bypass Auxiliary Contact
KOTS	Key Operated Test Switch- Auto/Off/Engine Start/Test
PPR-10	Programmable Power Relay Includes 10A Form C Contact Wired to Terminal Block (Up to Qty 3). Requires 24VDC External Control Power
TS-STG	24Vdc or 120VAC Shunt Trip Generator Switch (external power source required)
TS-STU	24Vdc or 120VAC Shunt Trip Utility Switch (external power source required)
<b>COMMUNICATION:</b>	
EMB-TCP/IP	Ethernet Modbus™ Remote Communication Port (Modbus™ TCP) via GHC
RS485A	RS 232 to RS 485 Remote Communication Adapter
WF-USB	WIFI USB Stick
THS 900	Remote Communication Application- Windows Based
RA 900	* Requires EMB-TCP/IP Option
<b>ENCLOSURE:</b>	
GHC-SS	Sunshade for GHC Screen
LCK	Enclosure Lockable Door (Single point T-Handle lock)
TS-H1	Enclosure Strip Heater c/w Thermostat (120VAC external power source required)
TS-H2	Enclosure Strip Heater c/w Thermostat (internally powered from ATS load)
<b>FUNCTION:</b>	
DU	Dual Utility Control Package
DSG	Dual Standby Generator Control Package (Slave ATS). Requires 24DCC Option to Power TSC 900
DPG	Dual Prime Generator Control Package.
MTS	Manually Initiated Electrically Operated Transfer Switch c/w Source Selector Switch, Position Indicating Lights, Source Available Lights
TCP	Transfer Switch Connection Plate for Generator Supply
TS-SS	Internal Multi-Voltage Selector Switch (208V/240V/480V)
<b>METERING:</b>	
LPM	Transfer Switch Load Power Metering CT Kit (Amp, Volt, Freq, kW, kVA, PF) **Requires CT Kit
CTKxxxx	Current Transformer Kit (xxxx -Specify CT Size 0100, 0150, 0250, 0400, 0600, 0800, 1200)
MUP	Multifunction Utility Protective Relay – Basler IPS100 (Protection Functions 27, 32, 47, 50/51, 67, 81O/U (Note: May be required by local utility for Momentary CT applications. Consult factory for other makes and models.)
<b>POWER:</b>	
24DCC	24 Volt DC-DC Converter, Regulated
SPD	Surge Protection Device
<b>OTHER:</b>	
3YR	Additional 12 Month Parts & Labour Warranty
5YR	Additional 48 Month Parts & Labour Warranty



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NOTE: Specifications subject to change without notice.

**APPLICATION CONSIDERATIONS**

The proper selection and application of power generation 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, 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 Regal Beloit America, Inc. and its affiliates with respect to the use of products and components is given in good faith and without charge, and Regal 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.

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