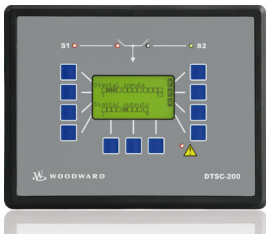


DTSC-200

Automatic Transfer Switch Controller

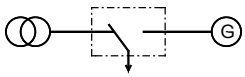
APPLICATIONS

The extremely flexible DTSC-200 controller is easily configured for a wide range of automatic transfer switch applications including Main-Gen, Gen-Gen or Main-Main systems using circuit breakers or latching contactors. Source transfer can be performed as open, delayed or closed transition with in-phase monitoring (synch check) that can be enabled for all transition types to ensure smooth transfer. The closed transition overlap time can be limited to less than 100 ms for momentary, make-before-break transfers, or extended indefinitely for paralleling via discrete input. "Custom" features like transfer inhibit, source selection, load shed/restore, elevator pre-signal and engine test programs come standard.

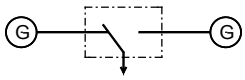
LogicsManager™ - Programmable Boolean logic functions along with ample, expandable discrete I/O allows for complex transfer schemes ***without using external relay logic or a separate PLC!***

FlexApp™ - Easily configures the DTSC-200 for:

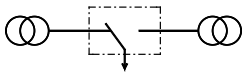
- Utility-to-Generator
  Utility is preferred with a generator as the emergency source



- Generator-to-Generator
  One genset is preferred with a second genset as backup



- Utility-to-Utility
  Utility is preferred with second utility as the emergency source



DynamicsLCD™ - The graphic LCD interface with sealed soft-keys displays source voltage, frequency, phase rotation, current, real/reactive power, I/O status and alarms. Maintenance calls and event history (300 FIFO entries with real time clock and 6 year battery) are easily viewed and are password protected.

A line diagram with four high-intensity LEDs clearly displays source availability and breaker closed status.

The galvanically-isolated CANopen port permits connection of up to (2) Woodward IKD-1 modules, providing as much as 16 additional discrete inputs *and* outputs.

RS-485 Modbus RTU Slave full-duplex communication allows for remote annunciation and SCADA interface.

DESCRIPTION

I/Os

- ***FlexRange™*** - True R.M.S. 3-phase voltage measuring with separate inputs for 120 Vac (max. 150 Vac) or 480 Vac (max. 600 Vac) for both Source 1 and Source 2
- True R.M.S. 3-phase load current/power
- 12 configurable discrete inputs
- ***LogicsManager™*** - 9 programmable discrete outputs
- CANopen communication port
- RS-485 Modbus RTU Slave interface port

Monitoring (ANSI #)

- **Source monitoring**
  Configurable fail and restore limits/timers for:
  - Over / under voltage (59/27)
  - Over / under frequency (81O/U)
  - Voltage balance (47)
  - Phase rotation
- **Load monitoring**
  - Overload (32)
  - Overcurrent (50/51)
- **Switch monitoring**
  - Switch position feedback
  - Transfer failure
- Synch check (in-phase monitoring) (25)
- Battery over / under voltage
- Parallel time monitoring

Features

- Open, delayed or closed transition transfer
- In-phase monitoring (synch check)
- Make-before-break overlap time < 100 ms
- Extended parallel
- Preferred source selection
- Transfer and/or retransfer inhibit
- Load shed and/or restore
- Elevator pre-signal
- Engine exerciser (load/no-load) test
- Configurable via PC and/or front panel
- Multi-level password protection
- Multi-language capability (English & German, Spanish, Polish, Russian included, other languages upon request)
- IKD-1 DI/DO expansion board connectivity
- Modem connectivity with DPC cable (P/N 5417-557)
- Remote control via RS-485 / CAN / discrete input signals

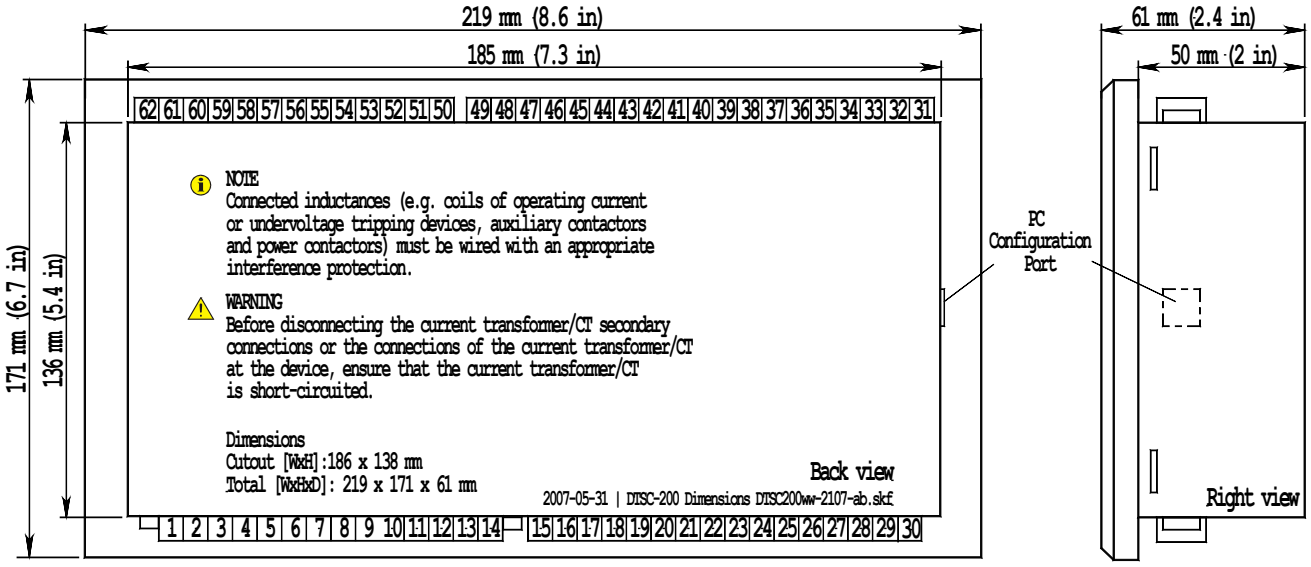
- **For ATS control using circuit breakers or latching contactors**
- **Open, delayed or closed transition transfer**
- **In-Phase monitoring (synch check) for all transition types**
- ***LogicsManager™* programmable logic functions eliminate relay logic or PLC's**
- ***FlexApp™* technology for Main-Gen, Gen-Gen or Main-Main applications**
- ***FlexRange™* true R.M.S. voltage, current and power sensing**
- ***DynamicsLCD™* flexible, multifunctional display**
- **LEDs for source availability and breaker status**
- **Freely configurable, expandable discrete I/O**
- **Adjustable timers**
- **Source selection**
- **Transfer/return inhibit**
- **Extended parallel**
- **Load shed and restore**
- **Engine exerciser (load/no-load) routine with fully adjustable interval**
- **PC and/or front display configuration**
- **CANopen / Modbus RTU**
- **6.5 to 40.0 Vdc powered**
- **CE marked, Ghost-R**
- **UL/cUL Listed**

SPECIFICATIONS

Power supply ..... 12/24 Vdc (6.5 to 40.0 Vdc; not buffered)
Inrush current ..... max. 50 A peak, 1 ms
Input capacitance ..... 2000 µF
Intrinsic consumption ..... max. 8 W
in power save mode (backlight, relays off) ..... 3 W
Ambient temperature (operation) ..... -20 to 60 °C / -4 to 140 °F
Ambient temperature (storage) ..... -30 to 80 °C / -22 to 176 °F
Max. operating altitude ..... 2000 m (6,500 ft)
Ambient humidity ..... 95 %, non-condensing
Voltage ..... (both ranges within one unit on different terminals, ⅄/Δ)
100 Vac [1] Rated (V_{rated}) ..... 69/120 Vac
Max. value (V_{max}) ..... 86/150 Vac
Rated ($V_{phase-ground}$) ..... 150 Vac
Rated surge volt.(V_{surge}) ..... 2.5 kV
and *400 Vac [4]* Rated (V_{rated}) ..... 277/480 Vac
Max. value (V_{max}) ..... 346/600 Vac
Rated ($V_{phase-ground}$) ..... 300 Vac
Rated surge volt.(V_{surge}) ..... 4.0 kV
Accuracy ..... Class 1
Measurable alternator windings 3p-3w, 3p-4w, 1p-2w, 1p-3w
Setting range ..... primary ..... 50 to 650,000 Vac
Linear measuring range ..... $1.25 \times V_{rated}$
Measuring frequency ..... 50/60 Hz (40 to 70 Hz)
Input resistance per path ..... [1] 0.498 MΩ, [4] 2.0 MΩ
Max. power consumption per path ..... < 0.15 W
Current Rated (I_{rated}) ..... [1] ../1 A or [5] ../5 A
Linear measuring range ..... $I_{source} = 3.0 \times I_{rated}$,
Burden ..... < 0.15 VA
Rated short-time current (1 s) ..... [1] $50 \times I_{rated}$, [5] $10 \times I_{rated}$

Discrete inputs ..... isolated
Input range ..... 12/24 Vdc (8 to 40.0 Vdc)
Input resistance ..... approx. 20 kΩ
Discrete outputs Group A [R 1-4] ..... isolated
Contact material ..... AgCdO
Load (GP) ..... 2.00 Aac@250 Vac / 2.00 Adc@24 Vdc
Discrete output Engine Start [R5] ..... isolated
Contact material ..... AgNi 90/10
Load (GP) ..... 10.00 Aac@250 Vac
Discrete outputs Group B [R 6-9] ..... isolated
Contact material ..... AgNi 90/10
Load (GP) ..... 10.00 Aac@250 Vac
RS-485 interface ..... isolated 500 Vac
CAN bus interface ..... isolated 500 Vac
Housing Flush ..... Type easYpack
Dimensions Flush ..... 219×171×61 mm (8.6x6.7x2.4 in)
Front cutout Flush ..... 186 [+1.1]×138 [+1.0] mm
Material ..... glass fiber-reinforced plastic
Connection ..... screw/plug terminals AWG 14 / 2.5 mm²
Front ..... insulating surface
Protection system ..... with proper installation
Front ..... IP54 (with clamp fastening)
Front ..... IP65 (with screw fastening)
Back IP20
Weight ..... approx. 800 g (1.75 lb)
Disturbance test (CE) ..... tested acc. to applicable EN guidelines
Listings ..... UL, cUL, GOST-R

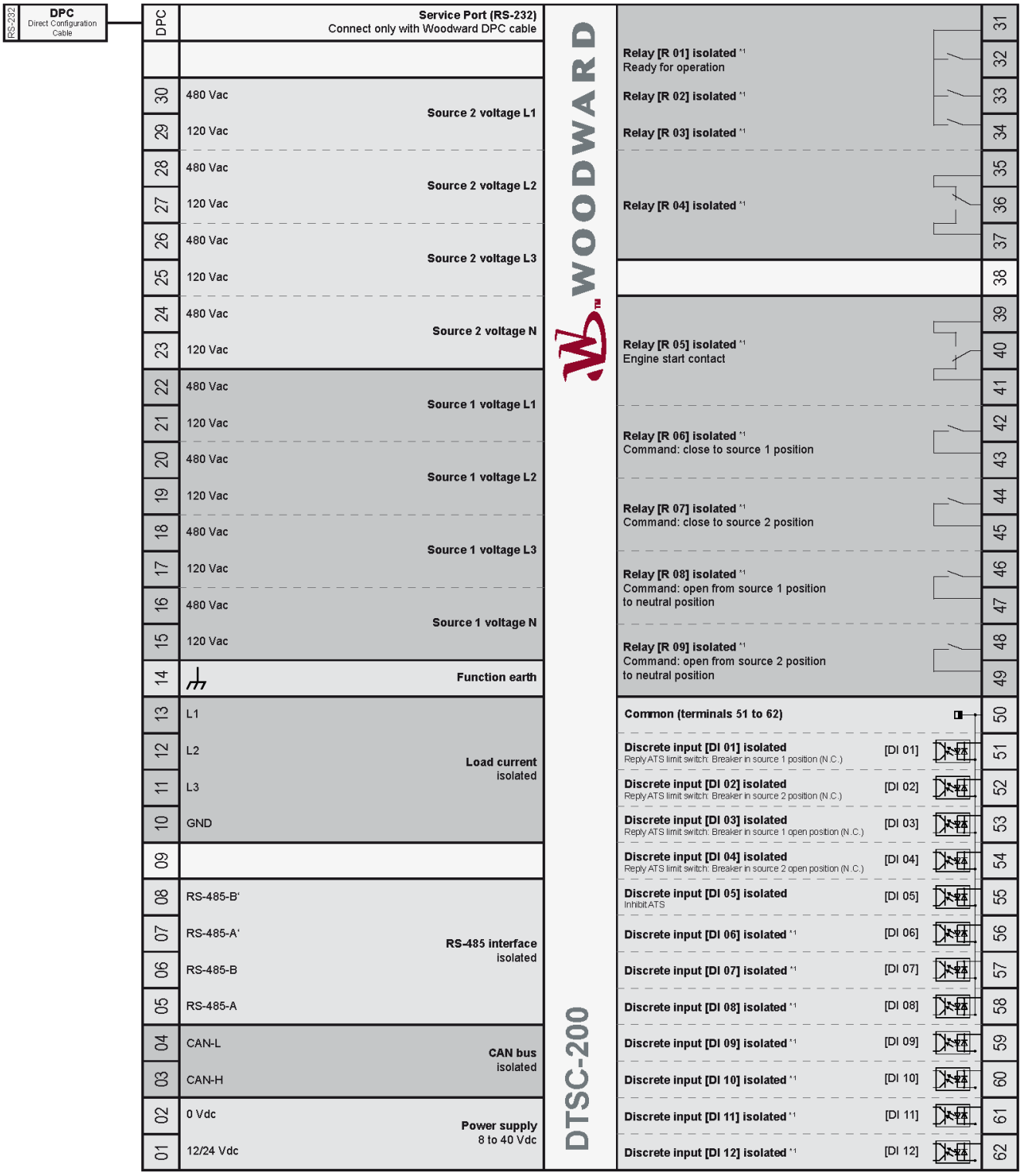
DIMENSIONS



PART NUMBERS AND ORDER CODES

Model	Rated PT secondary *FlexRange™*	Rated CT secondary	Part Number (P/N)	Description	Configuration Software
200	69/120 Vac ***and*** 277/480 Vac	../5 A	8440-1868	DTSC-200-55B	ToolKit
		../1 A	8440-1867	DTSC-200-51B	ToolKit

WIRING DIAGRAM



Subject to technical modifications.

*1 = configurable via LogicsManager

DTSC-200 Wiring Diagram | Rev. A

WOODWARD

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37398C - 2013/9/Stuttgart

FEATURES OVERVIEW

Digital Transfer Switch Controller		DTSC-200
Measuring		
Source voltage (3phase/4-wire)	rated 69/120 Vac	✓
- True R.M.S.	max. 86/150 Vac	✓
- *FlexRange™*	rated 277/480 Vac	✓
	max. 346/600 Vac	✓
Load current #1 (3phase/4-wire, true RMS)	../1 A or ../5 A	✓
Breaker Control		
Open transition (break-before-make)		✓
Delayed transition (break-before-make) + timed neutral position		✓
Closed transition (make-before-break)		✓
Application		
Utility to generator		✓
Utility to utility		✓
Generator to generator (2 start signals)		✓
Features		
Programmable elevator pre-signal		✓
Programmable motor load disconnect signal		✓
Transfer commit		✓
Test modes #2		✓
Transfer mode selector #2		✓
Load shed #2		✓
Shunt trip enable #2		✓
Extended parallel time #2		✓
Automated display backlight shutdown selectable		✓
Daylight saving time		✓
Source priority selection #2		✓
Vector group adjustment for in-phase monitoring		✓
Fully adjustable timers #3		✓
Status LEDs for source availability and breaker state		✓
Accessories		
Soft-keys (advanced LC display)	*DynamicsLCD™*	✓
Configuration via PC #4		✓
Event recorder with real time clock (battery backup)		300
Flush-mounting (screw or clamp fastening)		✓
Monitoring	ANSI#	
Source: voltage	59/27	✓
Source: frequency	81O/81U	✓
Source: voltage asymmetry	47	✓
Source: rotation field		✓
Load: overload	32	✓
Load: overcurrent	50/51	✓
Switch: plausible switch position		✓
Switch: transition failure		✓
Battery: voltage		✓
Synch check (inphase monitoring)	25	✓
Parallel time monitoring		✓
I/Os		
Discrete inputs (configurable)		12
Discrete outputs (configurable)	*LogicsManager™*	9
Direct configuration interface #4		✓
CANopen communication bus (isolated)		✓
RS-485 Modbus RTU Slave full/half-duplex (isolated)		✓
Listings/Approvals		
UL/cUL Listed		✓
GOST-R		✓
CE Marked		✓

#1 Selecton during order; both ../5 A (standard) or both ../1 A (alternatively)
#2 via internal conditions or remote command
#3 neutral delay timers (1 to 6500 s), elevator pre-signal timers (1 to 6500 s), motor load disconnect timers (1 to 6500 s), stable timers (1 to 6500 s), outage timers (0.1 to 10.0 s), engine start delay timers (1 to 300 s)
#4 Configuration software 'Toolkit' available free at Woodward.com, connection requires Woodward DPC cable P/N 5417-1251