

ATS Control System

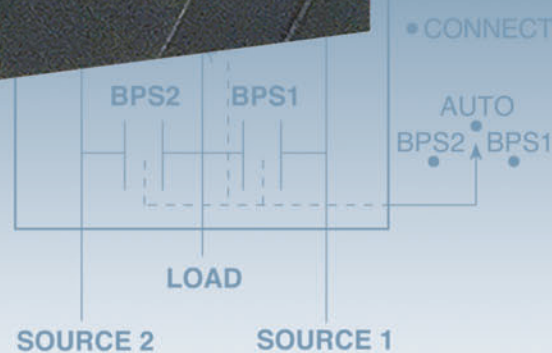
RPTCS



• ISOLATED
• CONNECTED

AUTO

BF



Russellectric
POWER CONTROL PEOPLE YOU CAN RELY ON

RPTCS Automatic Transfer Switch Control System

RPTCS: Transfer Switch Control System

- 1) Color LCD screen
- 2) Context-sensitive soft keys
- 3) Navigation keys
- 4) LED status indicator lights
- 5) Direct-acting function keys
- 6) USB port



Control of All Operational Functions

Used exclusively on Russelectric RTS Series transfer and bypass/isolation switches, the Russelectric RPTCS microprocessor automatic transfer control system controls all operational functions of the ATS. Each RPTCS is programmed at the factory to control standard switch features as well as customer-specified options.

Controller design accommodates the addition of accessories.

Intuitive Graphical User Interface

The RPTCS's graphical control panel provides an operator with rapid access to relevant information and controls through intuitive sequences. It also allows access to control settings and other available information.

Setup, alarm acknowledgement, and review of actual data are easily accomplished using the controller's soft keys and color display. The intuitive menu guides the user through controller setup and the entering of configuration data, including communications and timing set points, adjustable control

parameters (interlocks, alarms, and security), and event logging.

The panel contains a 3.5" (320 x 240 pixel) backlit color LCD screen, and pushbutton keys for display and command functions. Pushbuttons for ALARM RESET, TEST, CONTROL, and INFO provide direct-acting control. Several LED indicators show switch status. Details are displayed on-screen when the user navigates to the appropriate screen.

Located directly below the display screen, five soft keys are used to perform navigation and screen-specific functions, and to acknowledge pop-up windows. Labels for these keys are context-sensitive and appear in grey boxes along the bottom of the LCD screen.

Fully Programmed at the Factory

All RPTCS Controls are fully programmed at the factory with default setpoints.

Changing Setpoints

Operators can easily review and alter these default setpoints (except for factory setpoints, which can only be

modified by Russelectric personnel within established limits through the controller graphical interface.

Configuration setpoints are categorized as follows:

- ATS Configuration
- CT-VT Configuration
- Inputs
- Outputs
- Communications
- RPTCS System (including Security)
- Events
- Event Counters

Communication

The RPTCS Control supports two communications interfaces:

- Modbus RTU via RS485
- Modbus TCP/IP via 10/100Base-T Ethernet (optional)

An external communication port on the control's faceplate allows fast, easy connection to a laptop.

Actual Values

Actual values — measured values and control, maintenance, and fault analysis information — can be easily displayed on the RPTCS's screen through the menu.

Real-time metering of voltage (phase-to-phase and phase-to-neutral) and frequency of both normal and emergency power sources is standard. Available options include metering of phase and neutral current; percent of unbalanced current; percent of unbalanced voltage; accumulated energy (KWH, KVAH, and KVARH); and per-phase and 3-phase totals for real power (KW), apparent power (KVA), reactive power (KVAR), and power factor. All metering can be accessed through the menu.

Operational Status

The RPTCS provides information on a switch's operational status in the form of alarms, status messages, or general messages. Alarm messages are preceded by a red triangle and status messages by an orange square. General information messages are displayed in black text.

When the controller is first powered up, the status screen will display any parameters that must be entered for proper operation of the ATS. Trips, inhibits, faults/alarms, and control messages are displayed as status messages. The operator can easily scroll through these messages using the up and down keys.

Information messages are provided in two forms: information only and information with navigation. The latter are marked with an "Enter" key on the right, which when depressed takes the operator directly to the respective screen.

Status Inputs and Status Outputs screens display lists of the current state of each input or output respectively. A Status System screen shows the status of communication interfaces (serial and Ethernet).

Optional upgrades allow for up to 512 lines of custom control logic programming.

System Exerciser

The RPTCS has a built-in exerciser that is set up and enabled from the Exerciser Info Screen. This feature allows the user to test the system periodically or to schedule exercises for the operating system periodically in order to minimize utility costs.

The Exerciser Info screen provides access to all parameters for scheduling exercises, as well as dates for the last exercise and next scheduled one.

An Exerciser Setup screen allows selection of the type of exercise and date for up to 7 events, daily, weekly, semi-monthly, or 24 events yearly. Types of exercises include Transfer of Load with Time Delay and No Transfer — Test Without Load/Generator Start Only. Unscheduled manual testing can also be performed. A "Test Cancel" button allows an operator to abort a test in progress.

Diagnostics

Diagnostics screens display information such as an event record, learned data, power summary, system counters, and system information. These screens are very helpful in diagnosing the cause of a fault or alarm.

An Event Log screen lists the ten most recent events (from the event recorder) with the most recent at the top.

An Event Log/Statistics screen displays date and time information as well as the reason for the last failure of the preferred source. It also provides statistics on how long the load has been in either source, how many transfers have occurred, and total time the load has been without power.

A Power Summary screen displays phase rotation, voltages and angles, frequency, and phase difference for both sources.

Fixed system information is displayed on the System Parameters screen. Information includes the order code, serial number, and hardware and software revision.

Information on the last transfer event and load conditions at the time are presented on the Event Log screen.

Optional Wave Form Capture

The RPTCS can also monitor power quality with available waveform capture and historical trending.



Sample RPTCS ATS Control System Screens

Operational Status

\Status\Message 8 Feb 12 10:04
Load Connected to S1
 ■ S2 Disconnected
 ■ S1 Connected
 ■ S1 Available
 Msg Inputs Outputs System Flex

System Parameters

8 Feb 12 10:45
Test in Progress

Type	Configuration
Name ATS #4	Trans Type Closed
Type Closed Trans Bypass	Mode Auto Xfer
Amps 400	BypRsrTrmr Disabled
Volts 480	BTR Enabled
Job# 98019-5	Load Shed Enabled
Mod# RTS30-ABOC4004CM	Exerciser Enabled
S1 Utility	Commit Disabled
S2 Generator	Test Mode Active

 Values Status Setpoints Diag Exerciser

Help Screen

\Setpnts\Operation\Timers 8 Feb 12 10:50
 Delay for Generator Start(s) 3 Sec
 Delay - Xfer to Nonpreferred Src Not Set
 Delay - Xfer to Preferred Src(s) 12 Sec
 Delay - Cntr Off Pos. to Non-Pref 1 Sec
 Delay - Cntr Off Pos. to Pref.Src 1 Sec
 Delay for Engine Cutdown(s) 7 Sec
 Time Delay for Gen Sag 1 Sec
 Preferred Sag Timer (10ms) 20
 Pre Load Control 1 Timer(s) Not Set
 Post Load Control 1 Timer(s) Not Set
 Bypass Non-Pref Timers Disabled
 Fail to Sync Timer(s) 180
 S1 Setting S2 Setting Timers

Power Summary

\Values\Summary 8 Feb 12 10:43

S1		S2		Power
208	Vab	202	Vab	262.9 kW
208	Vbc	202	Vbc	264.4 kVA
210	Vca	203	Vca	-28.1 kvar
60.10	Hz	60.14	Hz	0.99 lead

 Summary Amps Volts Power PQ

System Configuration

\Setpnts\Cfg\CT-VT 8 Feb 12 10:46
Phase CT Type 5 A Secondary
 CT Primary (A) 4000
 VT Ratio (VT:1) 1.00
 Nominal ATS Amps (A) 400
 ATS Secondary Voltage (V) 480
 Supply Frequency (Hz) 60
 ATS Number of Poles Four Poles
 S1 Number of Phases Three Phase
 3 Phase Voltage Connection Wye
 S1 Type Utility
 S2 Number of Phases Three Phase
 3 Phase Voltage Connection S2 Wye
 ATS CT-VT Inputs Outputs >>

Control Settings

\Setpnts\Control\General 8 Feb 12 10:34
Preferred Source S1
 Commit Xfer to S2 Disabled
 Transition Mode Select Delayed
 Local Load Shed Mode Remote Load Shed
 Local Load Shed KW Bypass Disabled
 Sync Phase Angle Limit (°) 5
 Slip Rate (Hz) 0.20
 Load Phase Rotation Check Disabled
 Load Phase Rotation ABC
 General Interlock Alarms ManXfer

Timer Configuration

\Setpnts\Operation\Timers 8 Feb 12 10:50
 Delay for Generator Start(s) 3 Sec
 Delay - Xfer to Nonpreferred Src Not Set
 Delay - Xfer to Preferred Src(s) 12 Sec
 Delay - Cntr Off Pos. to Non-Pref 1 Sec
 Delay - Cntr Off Pos. to Pref.Src 1 Sec
 Delay for Engine Cutdown(s) 7 Sec
 Time Delay for Gen Sag 1 Sec
 Preferred Sag Timer (10ms) 20
 Pre Load Control 1 Timer(s) Not Set
 Post Load Control 1 Timer(s) Not Set
 Bypass Non-Pref Timers Disabled
 Fail to Sync Timer(s) 180
 S1 Setting S2 Setting Timers

Event Log

\Diag\Events 8 Feb 12 10:29
 Total Number of Events Since Last Clear 2867

#	Date/Time	Cause
2867	8 Feb/10:00:17.700	Xfer to Alternate Source
2868	Event Record Details #:	
2868	Vbn	120 V
2868	Vcn	120 V
2868	Freq	60.09 Hz
2868	Power Factor	0.99 lead
2868	Real Power	274.3 kW
2868	Reactive Power	-27.7 kvar
2868	Apparent Power	275.7 kVA
2869	8 Feb/10:00:00.020	Switch Exercising

 Clear Stats Phasors About >>