TS Series

TS... Touchscreen Kits
for use with LMV3, LMV5 and RWF... Controls

Description
TS... series touchscreen kits provide a human machine interface (HMI) with a Siemens LMV3 or LMV5 linkageless control. Each kit provides data collection and trending for a hot water or steam boiler. An optional RWF55 control for load or water level modulation easily interfaces with TS... series touchscreen kit.

Each TS... touchscreen kit includes a 6” or 10” touchscreen along with a plate kit. The touchscreen and plate kit can be pre-mounted in an enclosure, or mounted by others in a control panel.

A PLC first-out annunciator provides additional analog, digital, temperature, and/or draft controls inputs and outputs.

Flexible communication interface options to the building management system (BMS) provide streamlined data collection, monitoring and control.
**Features**

- Local touchscreen interface with Siemens LMV/RWF controllers
- Schneider touchscreens available in 6” or 10”
- Boiler graphics and field tag information are field-configured
- LMV... static, fuel and internal lockout and error history displayed
- Fuel-air ratio control curve displayed
- Alarm history stored for most recent 250 faults/alarms
- Detailed annunciation of LMV... digital inputs and outputs
- Remote setpoint, firing rate and/or enable of the LMV... or RWF... via BMS
- Water level control option and status via RWF55
- Metric or Standard units displayed
- English or Spanish languages
- Clear English or Spanish text for alarms
- Circulating pump/isolation valve control outputs for hydronic boilers (option with expanded annunciator)
- Expanded annunciator options include:
  - Four (4) analog inputs with field configurable label, span and type (0-10V, 2-10V, 0-20mA or 4-20mA), low and high alarm setpoints, with auto or manual reset. Totalization available per minute or per hour.
  - Four (4) Pt1000 (or Pt100) RTD temperature inputs with field configurable label, low and high alarm setpoints, with auto or manual reset.
  - Two (2) analog outputs with field configurable span and type (0-10V, 2-10V, 0-20mA or 4-20mA); low and high alarm setpoints, with auto or manual reset. Totalization available per minute or per hour.
  - Two (2) digital outputs with field configurable logic, including on and off delays. Manual or automatic reset.
  - First-out annunciation option, including thirteen (13) 120 VAC inputs with field labeling capability
  - Eight (8) selectable data logging variables stored in CSV format on USB drive
  - Four (4) selectable variables for trending up to 7 days
  - Economizer temperature monitoring, (additional RTD card with four (4) inputs)
  - Draft control using SCC Inc. SQM5... actuator
  - Connection of two additional RWF55 controllers
  - Variable Speed Drive information and setup when preprogrammed VFD (Yaskawa) provided by SCC Inc.
• Screen saver with PV, setpoint, demand and status
• Standard Modbus TCP/IP to BMS communications
  o Additional BMS communication options available
• Email communications and text messaging for up to six (6) recipients including alarms, faults and screen shots (screen shot viewer via USB)
• Remote monitoring via Smart Phone or tablet
• Compatible with SCC Master Panel Lead Lag system

Application
TS... touchscreen kits are suited for hydronic boiler, steam boiler, and other applications utilizing an LMV3 or LMV5 linkageless control system.

Components
All TS... touchscreen kits include the following components:

• 6” or 10” touchscreen
• Plate kit including power supply and branch circuit protection
• Cables for quick connections between the plate kit, touchscreen, and LMV... system
• Interconnect terminals for field wiring

The following optional features are available:
• Draft Control
• Annunciation Options Including:
  o 13 digital 120 VAC alarm annunciation inputs.
  o 4 analog inputs (0-20mA - 4-20mA - 0-10V - or 2-10V)
  o 2 analog outputs (0-20mA - 4-20mA - 0-10V - or 2-10V)
  o 4 Pt100/Pt1000 RTD inputs for general purpose
  o 4 Pt100/Pt1000 RTD inputs for monitoring economizer temperatures
  o 5 output Relays for:
    ▪ Starting circulating pump on Hot water boilers
    ▪ Monitoring a digital value (2 outputs)
    ▪ Annunciation alarms
    ▪ PLC normal operation indication
• BMS communication other than standard Modbus
• Open plate kit, or in enclosure
### Product Part Numbers

<table>
<thead>
<tr>
<th>Touchscreen Size</th>
<th>TS</th>
<th>D</th>
<th>B</th>
<th>S</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>8</td>
<td>2</td>
<td>5</td>
<td>W</td>
</tr>
</tbody>
</table>

#### Touchscreen
- Touchscreen Size
  - 6 = 6” touchscreen
  - 0 = 10” touchscreen
  - F = 6” touchscreen mounted > 15 ft away from AZL (LM V5 only)
  - J = 10” touchscreen mounted > 15 ft away from AZL (LM V5 only)

#### Draft Control
- X = No draft control included
- D = Draft control included with annunciation option 5 below
- E = Draft control included with annunciation option 8 below

#### Annunciation and Monitoring Options
- X = No PLC and annunciation inputs
- 1 = Standard annunciation, 13 120VAC inputs
- 2 = 13 120VAC annunciation inputs and 4 analog inputs
- 3 = 13 120 VAC annunciation inputs and 4 RTD 100/1000 Ohm inputs
- 4 = 13 120 VAC annunciation inputs, 4 RTD 100/1000 Ohm inputs dedicated for Economizer
- 5 = 13 120 VAC annunciation inputs, 4 analog inputs, and 4 RTD 100/1000 Ohm inputs
dedicated for economizer
- 6 = 13 120 VAC annunciation inputs, 4 analog inputs, and 4 100/1000 Ohm RTD inputs
dedicated for economizer
- 7 = 13 120 VAC annunciations, 4 RTD 100/1000 Ohm RTD, and 4 RTD 100/1000 Ohm inputs
dedicated for economizer
- 8 = 13 120 VAC annunciation inputs, 4 analog inputs, 4 RTD 100/1000 Ohm RTD, and 4 RTD
  100/1000 Ohm inputs dedicated for economizer

#### Building Management Interface (BMS)
- S = Standard, Modbus TCP/IP
- B = BACnet / IP,
- M = BACnet MS/TP, Modbus RTU, Metasys N3
- L = LonWorks
- N = Profinet
- P = Profibus

#### Enclosure Option
- X = No - din rail kit on plate to be mounted into enclosure (Mounted by others)
- 1 = NEMA 1
- 2 = NEMA 12, includes cover over touchscreen and AZL/RWF (if applicable)
- 4 = NEMA 4X (indoor), includes cover over AZL/RWF (if applicable)
- A = NEMA 1 with cooling fan
- B = NEMA 12 with cooling fan, includes cover over touchscreen and AZL/RWF and fan (if applicable)
- C = NEMA 4X with cooling fan, includes cover over touchscreen and AZL/RWF and fan (if applicable)

#### AZL (Option only with enclosure)
- X = No AZL included (Must be selected with din rail kit on plate)
- 3 = AZL23.00A9 mounted to front of enclosure
- 5 = AZL52.40B1 mounted to front of enclosure

#### RWF (Option only with enclosure)
- X = No RWF included
- L = RWF55.50A9 for external load control
- W = RWF55.50A9 for water level control with transformer
- 2 = (2) RWF55.50A9 for external load control and water level control - includes 1 transformer
## Specifications

<table>
<thead>
<tr>
<th>Physical characteristics</th>
<th>6” TS kit</th>
<th>10” TS kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main power</td>
<td>110-240 VAC</td>
<td>110-240 VAC</td>
</tr>
<tr>
<td>Frequency</td>
<td>60-50 Hz</td>
<td>60-50 Hz</td>
</tr>
<tr>
<td>Touchscreen power</td>
<td>24 VDC</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Power consumption</td>
<td>≤ 205 W</td>
<td>≤ 205 W</td>
</tr>
<tr>
<td>Power consumption with PLC annunciation</td>
<td>≤ 460 W</td>
<td>≤ 460 W</td>
</tr>
<tr>
<td>Dry contacts</td>
<td>2 Amps</td>
<td>2 Amps</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating environment</th>
<th>6” TS kit</th>
<th>10” TS kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>32 to 122 °F [0 to 50 °C]</td>
<td>32 to 131 °F [0 to 55 °C]</td>
</tr>
<tr>
<td>Humidity</td>
<td>Max. 80% with no condensation</td>
<td>Max. 85% with no condensation</td>
</tr>
<tr>
<td>NEMA rating</td>
<td>4X (indoor use)</td>
<td>4X (indoor use)</td>
</tr>
<tr>
<td>Enclosure option</td>
<td>NEMA 1</td>
<td>NEMA 1</td>
</tr>
<tr>
<td></td>
<td>NEMA 12 (Optional)</td>
<td>NEMA 12 (Optional)</td>
</tr>
<tr>
<td></td>
<td>NEMA 4X (Optional)</td>
<td>NEMA 4X (Optional)</td>
</tr>
</tbody>
</table>
Connections

6” Touchscreen kit with LMV5 and optional RWF55 for water level control:
Connections (continued)

6” Touchscreen kit with LMV5 and optional RWF55 water level control: This diagram is to be used when the touchscreen is mounted more than 15ft away from the AZL.
Connections (continued)

6” Touchscreen kit with LMV3, RWF55 for load control, and optional RWF55 for water level control:
Connections (continued)

6” Touchscreen kit with LMV3, RWF10 for load control, and optional RWF55 for water level control:

**BOILER KIT POWER CONNECTIONS**

- **CB1**
  - **H1**
    - **KIT**
      - **100-240VAC/50-60Hz/1PH MIN 3A**
        - Connect to LINE SIDE OF CB1
  - **N1**
    - **KIT**
      - **NEUTRAL**
        - Connect to WHITE TERMINAL “N1”
  - **GND**
    - **KIT**
      - **EARTH GROUND COMMON TO BURNER GROUND CIRCUIT**

**NOTE:**
- **ALL MODBUS ADDRESSES:** (SEE OM MANUAL)
- **BAUD RATE:** 19,200
- **DATA BIT:** 8
- **STOP BIT:** 1
- **PARITY:** 0
- **RWF10 MUST HAVE MODBUS OPTION INSTALLED.**

**BRANCH CIRCUIT PROTECTION BY OTHERS.**

**IT IS RECOMMENDED THAT THE BURNER “KIT” POWER BE SUPPLIED FROM THE SAME CONTROL CIRCUIT THAT POWERS THE BURNER CONTROLS.**

**TERMINALS ON PLATE KIT**

- **OCI412**
  - **MODBUS COM**
    - **20.5 + VS**
    - **20.4 GND**
    - **20.2 DATA+**
    - **20.1 GND**
  - **RS485+**
  - **RS485-**
  - **SHLD**
  - **SG**
  - **SG**
  - **RX**
  - **TX**

- **BACK OF 6” TS**
  - **COM1**
  - **BLACK CAT5E CABLE PROVIDED**

**OC412 MODBUS COM**

- **RS485 COM**
  - **25**
  - **12**
  - **11**
  - **10**
  - **9**
  - **8**
  - **7**
  - **6**
  - **5**
  - **4**
  - **3**
  - **2**
  - **1**

**LMV3 MODBUS COM**

- **PREMADE CABLE INCLUDED WITH OCI**
- **DC5V**
- **WHITE**
- **YELLOW**
- **BROWN**
- **GND**
- **RS4D**
- **TA4**

**BCI**

- **X56**
- **TDC207**
  - **= = = = =**
  - **TDC48R**
  - **= = = = =**

**TDCCOMBO (INCLUDES TDC207 AND TDC48R)**
Connections (continued)

10” Touchscreen kit with LMV5 and optional RWF55 for water level control:

BOILER KIT POWER CONNECTIONS

NOTE:
ALL MODBUS ADDRESSES:
(SEE OM MANUAL)
BAUD RATE: 19,200
DATA BIT : 8
STOP BIT : 1
PARITY : 0

PLEASE RUN ALL CATS CABLES SEPARATELY FROM POWER WIRES. ALL CATS CABLES ARE STRAIGHT CONNECTION.

TERMINALS ON PLATE KIT

BACK OF 10” TS GTU

RING SLEEVING CABLE PROVIDED

COM1

COM2

RS485+

RS485-

SG

RX

TX

LMV5 CANBUS

CAN

COM1

CAN

S10.2

S10.3

12VAC

12VAC

SG

C10.5

C10.6

SG

C10.1

C10.2

C10.3

C10.4

DS10.0

DS10.1

DS10.2

DS10.3

24VDC−

24VDC−

24VDC−

24VDC−

24VDC+

24VDC+

24VDC+

24VDC+

SHLD

SHLD

SHLD

SHLD

SHLD

SHLD

SHLD

SHLD

SHLD

SHLD

SHLD

SHLD

SHLD

SHLD

SHLD

SHLD

SHLD

SHLD
Connections (continued)

10’ Touchscreen kit with LMV5 and optional RWF55 for water level control. This diagram is to be used when the touchscreen is mounted more than 15ft away from the AZL.
Connections (continued)

10” Touchscreen kit with LMV3, RWF55 for load control, and optional RWF55 for water level control:

**BOILER KIT POWER CONNECTIONS**

- CB1
  - 100-240VAC/50-60HZ/1PH MIN 3A
  - Connect to Line Side of CB1

- NT1
  - Neutral
  - Connect to White Terminal “NT”

- GND
  - Earth Ground Common to Burner Ground Circuit

**TERMlNAS ON PLATE KIT**

- COM2
  - RS485+, RS485-
  - SG
  - SG
  - RX
  - TX

- WHITE CAT5E Cable Provided

**NOTE:**

- All MODBUS addresses:
  - (See OM Manual)
  - Baud Rate: 19,200
  - Data Bit: 8
  - Stop Bit: 1
  - Parity: 0

**PLEASE RUN ALL CATS CABLES SEPARATELY FROM POWER WIRES. ALL CATS CABLES ARE STRAIGHT CONNECTION.**
Connections (continued)

10” Touchscreen kit with LMV3, RWF10 for load control, and optional RWF55 for water level control:

**BOILER KIT POWER CONNECTIONS**

- **H1 Kit**: 100-240VAC/50-60Hz/1PH MIN 3A
- **N1 Kit**: Neutral
- **Ground**: Connect to white terminal “N1”

**BRANCH CIRCUIT PROTECTION BY OTHERS.**

**NOTE:**

- **ALL MODBUS ADDRESSES:** (see OM Manual)
- **BAUD RATE:** 19.200
- **DATA BIT:** 8
- **STOP BIT:** 1
- **PARITY:** 0
- **RWF10 MUST HAVE MODBUS OPTION INSTALLED.**
- **PLEASE RUN ALL CAT5 CABLES SEPARATELY FROM POWER WIRES. ALL CAT5 CABLES ARE STRAIGHT CONNECTION.**

**TERMINALS ON PLATE KIT**

<table>
<thead>
<tr>
<th>24VDC-</th>
<th>24VDC-</th>
<th>24VDC+</th>
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<tbody>
<tr>
<td>24VDC-</td>
<td>24VDC+</td>
<td>24VDC+</td>
</tr>
<tr>
<td>SHLD</td>
<td>RS485+</td>
<td>RS485-</td>
</tr>
<tr>
<td>SG</td>
<td>SG</td>
<td>RX</td>
</tr>
<tr>
<td>TX</td>
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**TERMINALS ON PLATE KIT**

<table>
<thead>
<tr>
<th>PVC4112 MODBUS COM</th>
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<tbody>
<tr>
<td>20.2</td>
</tr>
<tr>
<td>DATA+</td>
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</table>

**RWF10 LC RS485 COM**

<table>
<thead>
<tr>
<th>12</th>
<th>13</th>
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<tbody>
<tr>
<td>485+</td>
<td>485-</td>
</tr>
<tr>
<td>YEL</td>
<td>WH</td>
</tr>
<tr>
<td>GRN</td>
<td>BW</td>
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</table>

**RWF55 WL RS485 IF APPLICABLE**

<table>
<thead>
<tr>
<th>10.1</th>
<th>10.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>GND</td>
<td>BROWN</td>
</tr>
</tbody>
</table>

**PREMADE CABLE INCLUDED WITH PVC1**

**PLC SERIAL 2 RS485 COM**

<table>
<thead>
<tr>
<th>TO RWF55 LOOP CONTROL RS485 COM</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG</td>
</tr>
<tr>
<td>SHLD</td>
</tr>
</tbody>
</table>

**RS485 connection for additional RWF55 for loop control (If applicable)**
Connections (continued)

Standard annunciation thirteenn 120VAC inputs:
Connections (continued)

Standard annunciation thirteen 120VAC inputs with draft control:

![Diagram showing 120VAC neutral common connections with annunciations and feedback options.](image-url)
Connections (continued)

Circulating pump proven input terminals (Hot water systems only)

Outputs relay terminals

- **RELAY CR405A**
  - 11
  - 14
  - Circulating pump start
  - Dry contact rating: 120VAC/3A or 30VDC/6A

- **RELAY CR411A**
  - 11
  - 14
  - Monitored value 3
  - Dry contact rating: 120VAC/3A or 30VDC/6A

- **RELAY CR412A**
  - 11
  - 14
  - Monitored value 4
  - Dry contact rating: 120VAC/3A or 30VDC/6A

- **RELAY CR414A**
  - 11
  - 14
  - EA alarm
  - Dry contact rating: 120VAC/3A or 30VDC/6A

- **RELAY CR418A**
  - 11
  - 14
  - PLC normal operation
  - Dry contact rating: 120VAC/3A or 30VDC/6A
Connections (continued)

Analog input terminals: (no draft control)

Connections (continued)

Analog output terminals:

NOTE: FOR 0-10V VOLTAGE INPUTS, REMOVE JUMPERS BETWEEN TERMINALS MV1-I AND MV1-V, MV2-I AND MV2-V.
Connections (continued)

Analog input terminals: (with draft control)

NOTE: FOR 0-10V VOLTAGE INPUTS, REMOVE JUMPERS BETWEEN TERMINALS AI1-V AND AI1-I, AI2-V AND AI2-I, AI3-V AND AI3-I, AI4-V AND AI4-I.
Connections (continued)

RTD 100/1000 Ohm input terminals: (no draft control)

Connections (continued)

RTD 100/1000 Ohm input terminals: (with draft control)

Connections (continued)

RTD 100/1000 Ohm input terminals for economizer:

Connections (continued)

Draft Control:

[Diagram of connections and control inputs]
Connections (continued)

1) RWF55 Water level
2) RWF55 Load Control with LMV3x
Connections (continued)

RWF55 Load Control with LMV51.040

![Diagram of RWF55 Load Controller Terminals]

- **RWF55 LOAD CONTROLLER TERMINALS**
- **ANALOG INPUT 1**
- **ANALOG INPUT 2**
- **ANALOG INPUT 3**
- **SHLD**
- **MULTI-FUNCTION RELAY CAN USE FOR LOW FIRE HOLD**
- **LOW FIRE HOLD (OPTIONAL)**
- **DECREASE FIRING RATE**
- **INCREASE FIRING RATE**
- **FUSED HOT 120VAC**
- **BURNER SWITCH**

- **RWF**
  - 1
  - 2
  - 3
  - 4
  - 5
  - 6
  - 7
  - 8
  - 9
  - 10
  - 11
  - 12
  - 13
  - 14
  - 15
  - 16
  - 17
  - 18

- **LMV51.041**
  - **DECREASE**
    - X5-03.2
  - **INCREASE**
    - X5-03.3
    - X5-03.4
    - X5-03.1
Connections (continued)

BMS Connections

Standard Modbus TCP/IP:

![Diagram of BMS Connections - Standard Modbus TCP/IP](image)

Standard Modbus TCP/IP with PLC annunciation:

![Diagram of BMS Connections - Standard Modbus TCP/IP with PLC annunciation](image)

BACnet / IP:

![Diagram of BMS Connections - BACnet/IP](image)
Connections (continued)

LonWorks:

N2 Johnson Metasys, BACnet MS/TP or Modbus RTU:
Parts Descriptions
### Parts Descriptions (continued)

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>BMS Communication BACnet/LON/N2/RTU BMS communication other than Modbus TCP/IP</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>Solid State Relays (Draft Control Option) Draft damper open and close relays</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>DPDT Relays (Draft Control Option Only) Draft control ignition permissive Draft control damper drive open on failure Draft control alarm</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>24 VDC Terminals 24 VDC connections</td>
</tr>
<tr>
<td><strong>E</strong></td>
<td>24 VDC Power Supply 24VDC source</td>
</tr>
<tr>
<td><strong>F</strong></td>
<td>Field Terminals (Yellow) Field outputs and control terminals</td>
</tr>
<tr>
<td><strong>G</strong></td>
<td>3 Amps Circuit Breaker 120 VAC power isolation</td>
</tr>
<tr>
<td><strong>H</strong></td>
<td>16 Amp None Fused Disconnect 120 VAC disconnect, only when installed in SCC enclosure</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td>120 VAC SPDT Relays Burner / Boiler alarms annunciation relays, first in first out</td>
</tr>
<tr>
<td><strong>J</strong></td>
<td>Modbus RS232 and RS485 Terminals Field Modbus connections to LMV5/LMV3/RWF55/ RWF10</td>
</tr>
<tr>
<td><strong>K</strong></td>
<td>Circulating Pump Proven Circulating pump proven field terminals</td>
</tr>
<tr>
<td><strong>L</strong></td>
<td>Ethernet Switch Ethernet connection to touchscreen, and master panel, and/or BMS</td>
</tr>
<tr>
<td><strong>M</strong></td>
<td>RTD Inputs Terminals Field wiring, general purpose temperature monitoring</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>PLC Microprocessor based logic controller</td>
</tr>
<tr>
<td><strong>O</strong></td>
<td>RTD Inputs Terminals Economizer temperature monitoring field terminals</td>
</tr>
<tr>
<td><strong>P</strong></td>
<td>Analog Inputs Module 0-10V/4-20ma flow, pressure, temperature, DP pressure monitoring, and high and low signal alarms</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Q</strong></td>
<td>RTD Input Module Designated for general purpose temperature monitoring of high and low signal alarms</td>
</tr>
<tr>
<td><strong>R</strong></td>
<td>RTD Input Module Economizer temperature monitoring water in, water out, stack in, and stack out</td>
</tr>
<tr>
<td><strong>S</strong></td>
<td>Analog Inputs Terminals field wiring terminals for flow, pressure, temperature, DP pressure, 4-20mA, or 0-10 Volt inputs.</td>
</tr>
<tr>
<td><strong>T</strong></td>
<td>Draft Mod Motor Field Terminals Ignition permissive Damper drive open Alarm actuator interconnecting terminals</td>
</tr>
<tr>
<td><strong>U</strong></td>
<td>Analog Output Terminals Monitored value via 4-20 mA signal</td>
</tr>
<tr>
<td><strong>V</strong></td>
<td>SPDT Relays Hot water only circulating pump control General alarm Monitored status digital output 1 Monitored status digital output 2 PLC health always on</td>
</tr>
<tr>
<td><strong>W</strong></td>
<td>1 Amp Circuit Breaker Draft control 120 VAC power isolation</td>
</tr>
<tr>
<td><strong>X</strong></td>
<td>120VAC Power Terminals SQM5 actuator 120VAC power terminals</td>
</tr>
<tr>
<td><strong>Y</strong></td>
<td>Off Delay Timer Draft control, high pressure boiler shutoff, delay timer</td>
</tr>
<tr>
<td><strong>Z</strong></td>
<td>Draft Control Terminals LMV interconnect safety loop and high pressure switch terminals</td>
</tr>
<tr>
<td><strong>AA</strong></td>
<td>RWF55 Load Controller Terminals External load controller for LMV5 or LMV3 systems 4-20mA and 0-10V inputs and outputs</td>
</tr>
<tr>
<td><strong>AB</strong></td>
<td>RWF55 Load Controller Feedwater Terminals Feedwater controller 4-20mA and 0-10V inputs and outputs</td>
</tr>
<tr>
<td><strong>AC</strong></td>
<td>24VAC TRANSFORMER Control power for SKB/C or D feedwater actuators</td>
</tr>
<tr>
<td><strong>AE</strong></td>
<td>2 Amps Circuit Breaker 120 VAC power isolation for feedwater</td>
</tr>
<tr>
<td><strong>AF</strong></td>
<td>RS232 TO RS485 Converter Communication converter used for distances greater than 15ft</td>
</tr>
</tbody>
</table>
### Touchscreen Dimensions and Cut-outs

Dimensions in inches; millimeters in brackets

**6” Touchscreen**  
TS-6xxx-xxx

**Installation:**  
Cutout required as shown below

![Diagram of 6” Touchscreen Cutout](image1)

**10” Touchscreen**  
TS-0xxx-xxx

**Installation:**  
Cutout required as shown below

![Diagram of 10” Touchscreen Cutout](image2)
Kits Dimensions

**TS-xXXS-xxx**

**Kit In Enclosure**

<table>
<thead>
<tr>
<th><strong>TS-xXXx-1xX</strong></th>
<th>RWF55 Load Control Terminals (AA)</th>
<th>RWF55 Feed Water Terminals (AB)</th>
<th>24VAC Transformer for Feed Water (AC)</th>
<th>2 Amp Circuit Breaker (AE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TS-xXXx-1xL</strong></td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
</tr>
<tr>
<td><strong>TS-xXXx-1xW</strong></td>
<td></td>
<td>y</td>
<td>y</td>
<td>y</td>
</tr>
<tr>
<td><strong>TS-xXXx-1x2</strong></td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
</tr>
</tbody>
</table>

Note **:** Small “x” in the part number above denotes: Any selection
Large “X” denotes: No selection is available
“y” denotes: Yes for the table option

Note: Terminal Letters correspond with page 29 descriptions
Kits Dimensions (continued)

** Kit In Enclosure  |  RWF55 Load Control Terminals (AA) |  RWF55 Feed Water Terminals (AB) |  24VAC Transformer for Feed Water (AC) |  2 Amp Circuit Breaker (AE) **
--- | --- | --- | --- | ---
TS-JXXx-1xX |  |  |  |  |
TS-JXXx-1xL |  |  |  | y |
TS-JXXx-1xW |  | y | y | y |
TS-JXXx-1x2 | y | y | y | y |

Note: (AF) RS232 to RS485 converter used only in TS-Jxxx-xxx

Note: Terminal Letters correspond with page 29 descriptions
** Kit In Enclosure |
| ** TS-xX1x-1xx |
| ** TS-xX1x-1xL |
| ** TS-xX1x-1xW |
| ** TS-xX1x-1x2 |

<table>
<thead>
<tr>
<th>** Kit In Enclosure</th>
<th>RWFS5 Load Control Terminals (AA)</th>
<th>RWFS5 Feed Water Terminals (AB)</th>
<th>24VAC Transformer for Feed Water (AC)</th>
<th>2 Amp Circuit Breaker (AE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-xX1S-XXX</td>
<td></td>
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<td></td>
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<tr>
<td>TS-xX1x-1x2</td>
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<tr>
<td>TS-xX1L-XXX</td>
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<tr>
<td>TS-xX1W-XXX</td>
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</tbody>
</table>

Note: (AF) RS232 to RS485 converter used only with TS-Jxxx-xxx

Note: Terminal Letters correspond with page 29 descriptions
Kits Dimensions (continued)
TS-xX2x-xxx

** Kit In Enclosure | RWFFS Load Control Terminals (AA) | RWFFS Feed Water Terminals (AB) | 24VAC Transformer for Feed Water (AC) | 2 Amp Circuit Breaker (AE)
--- | --- | --- | --- | ---
TS-xX2X-1xX |  | y |  | y
TS-xX2X-1xL |  |  |  | y
TS-xX2X-1xW |  | y |  | y
TS-xX2X-1x2 | y | y |  | y

Note: (AF) RS232 to RS485 converter used only with TS-Jxxx-xxx
Note: Terminal Letters correspond with page 29 descriptions
Kits Dimensions (continued)

** Kit In Enclosure | RWFS5 Load Control Terminals (AA) | RWFS5 Feed Water Terminals (AB) | 24VAC Transformer for Feed Water (AC) | 2 Amp Circuit Breaker (AE) \\
--- | --- | --- | --- | --- \\
TS-xX3X-1xX | y | | | \\
TS-xX3X-1xL | | | | y \\
TS-xX3X-1xW | | y | y | \\
TS-xX3X-1x2 | y | y | y | \\

Note: (AF) RS232 to RS485 converter used only with TS-Jxxx-xxx

Note: Terminal Letters correspond with page 29 descriptions
** Kit In Enclosure

<table>
<thead>
<tr>
<th></th>
<th>RWF55 Load Control Terminals (AA)</th>
<th>RWF55 Feed Water Terminals (AB)</th>
<th>24VAC Transformer for Feed Water (AC)</th>
<th>2 Amp Circuit Breaker (AE)</th>
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</thead>
<tbody>
<tr>
<td>TS-xX4X-1xX</td>
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<td>TS-xX4X-1xL</td>
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<td>y</td>
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<tr>
<td>TS-xX4X-1xW</td>
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<td>TS-xX4X-1x2</td>
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</table>

Note: (AF) RS232 to RS485 converter used only with TS-Jxxx-xxx
Note: Terminal Letters correspond with page 29 descriptions
Kits Dimensions (continued)

** Kit In Enclosure **

<table>
<thead>
<tr>
<th>** Kit In Enclosure**</th>
<th>RWF5S Load Control Terminals (AA)</th>
<th>RWF5S Feed Water Terminals (AB)</th>
<th>24VAC Transformer for Feed Water (AC)</th>
<th>2 Amp Circuit Breaker (AE)</th>
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</thead>
<tbody>
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<td>TS-&lt;X5x-1xX</td>
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<tr>
<td>TS-&lt;X5x-1xL</td>
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<td>y</td>
</tr>
<tr>
<td>TS-&lt;X5x-1xW</td>
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<td>y</td>
<td>y</td>
</tr>
<tr>
<td>TS-&lt;X5x-1X2</td>
<td>y</td>
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</tbody>
</table>

Note: (AF) RS232 to RS485 converter used only with TS-Jxxx-xxx
Note: Terminal Letters correspond with page 29 descriptions
Kits Dimensions (continued)

** Kit In Enclosure | RWFS5 Load Control Terminals (AA) | RWFS5 Feed Water Terminals (AB) | 24VAC Transformer for Feed Water (AC) | 2 Amp Circuit Breaker (AE)
---|---|---|---|---
TS-xX6-1xX |  |  |  |  
TS-xX6-1xL | y |  |  | y 
TS-xX6-1xW |  | y | y | y 
TS-xX6-1x2 | y | y | y | y 

Note: (AF) RS232 to RS485 converter used only with TS-Jxx-xxx
Note: Terminal Letters correspond with page 29 descriptions
**Kits Dimensions (continued)**

**TS-xX7x-xxx**

<table>
<thead>
<tr>
<th><strong>Kit In Enclosure</strong></th>
<th>RWFS5 Load Control Terminals (AA)</th>
<th>RWFS5 Feed Water Terminals (AB)</th>
<th>24VAC Transformer for Feed Water (AC)</th>
<th>2 Amp Circuit Breaker (AE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-xX7X-1xX</td>
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<tr>
<td>TS-xX7X-1xL</td>
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<td>y</td>
</tr>
<tr>
<td>TS-xX7X-1xW</td>
<td></td>
<td></td>
<td>y</td>
<td>y</td>
</tr>
<tr>
<td>TS-xX7X-1x2</td>
<td>y</td>
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</tbody>
</table>

Note: (AF) RS232 to RS485 converter used only in TS-Jxxx-xxx

Note: Terminal Letters correspond with page 29 descriptions
Kits Dimensions (continued)

**TS-xX8x-xxx**

<table>
<thead>
<tr>
<th><strong>Kit In Enclosure</strong></th>
<th>RWFSS Load Control Terminals (AA)</th>
<th>RWFSS Feed Water Terminals (AB)</th>
<th>24VAC Transformer for Feed Water (AC)</th>
<th>2 Amp Circuit Breaker (AE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-xX8X-1xX</td>
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<tr>
<td>TS-xX8X-1xL</td>
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<tr>
<td>TS-xX8X-1xW</td>
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<td>y</td>
<td>y</td>
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<tr>
<td>TS-xX8X-1x2</td>
<td>y</td>
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Note: (AF) RS232 to RS485 converter used only in TS-Jxxx-xxx
Note: Terminal Letters correspond with page 29 descriptions
Kits Dimensions (continued)

** Kit In Enclosure | RWF55 Load Control Terminals (AA) | RWF55 Feed Water Terminals (AB) | 24VAC Transformer for Feed Water (AC) | 2 Amp Circuit Breaker (AE)
---|---|---|---|---
TS-xD5X-1xX | | | | |
TS-xD5X-1xL | y | | y | y
TS-xD5X-1xW | | y | y | y
TS-xD5X-1x2 | y | y | y | y

Note: (AF) RS232 to RS485 converter used only in TS-Jxxx-xxx
Note: Terminal Letters correspond with page 29 descriptions
Kits Dimensions (continued)

** Kit In Enclosure **

<table>
<thead>
<tr>
<th>** Kit**</th>
<th>RWF55 Load Control Terminals (AA)</th>
<th>RWF55 Feed Water Terminals (AB)</th>
<th>24VAC Transformer for Feed Water (AC)</th>
<th>2 Amp Circuit Breaker (AE)</th>
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</thead>
<tbody>
<tr>
<td>TS-xE8X-1xX</td>
<td>y</td>
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<tr>
<td>TS-xE8X-1xW</td>
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<td>y</td>
<td></td>
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<tr>
<td>TS-xE8X-1x2</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
</tr>
</tbody>
</table>

Note: (AF) RS232 to RS485 converter used only in TS-Jxxx-xxx
Note: Terminal Letters correspond with page 29 descriptions
24”X 24” X 10” Enclosure Dimensions

Dimensions in inches; millimeters in brackets

TS-xx5x-252 - TS-xx5x-452
TS-xx6x-252 - TS-xx6x-452
TS-xx7x-252 - TS-xx7x-452
TS-xx8x-252 - TS-xx8x-452

TS-xx5x-232 - TS-xx5x-432
TS-xx6x-232 - TS-xx6x-432
TS-xx7x-232 - TS-xx7x-432
TS-xx8x-232 - TS-xx8x-432

TS-xx5x-xxx
TS-xx6x-xxx
TS-xx7x-xxx
TS-xx8x-xxx
16” X 16” X 8” Enclosure Dimensions
For TS-xXXx-1xx and for xXXB-1xx
Dimensions in inches; millimeters in brackets
20”X 20” X 10” Enclosure Dimensions
For TS-xXXX-1xx and for xXXB-1xx
Dimensions in inches; millimeters in brackets

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