SDS Remote Status Monitor

Installation, Operation, And Maintenance Manual

SDS REMOTE STATUS MONITOR

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CHAPTER ONE: GENERAL INFORMATION

1.1   The Manual

This manual has been prepared to provide the operator with information regarding the installation, use, maintenance, and troubleshooting of the Solution Delivery System (SDS) Remote Status Monitor.

CAUTION:	When used as a medical device, Federal law restricts this device to sale by or on the order of a physician. Per 21 CFR 801.109(b)(1).

The manual has been written in narrative form, supplemented with schematics and shop drawings for clarification. Most procedures mentioned in this manual can be performed by the operator. Any exceptions will be clearly identified by a qualifying statement.

1.2   Safety Summary

Words of **ENHANCED CAPITAL** letters are used to identify labels on the device and key safety or qualifying statements. A list of all symbols and abbreviations is located at the end of this chapter.

The SDS remote status monitor is intended to provide continuous monitoring of the SDS system. The SDS remote status monitor is NOT intended to be used as safety or warning device; its primary purpose is to indicate the operating mode of the SDS system. The SDS remote status monitor does not indicate that a hazardous condition does not exist.

This safety summary does not contain all of the safety statements in the manual. Other safety statements are included within the manual text and are enhanced and defined as follows:

NOTE:	"Notes" are statements that provide further clarification.
CAUTION:	A "Caution" statement is used to identify conditions or practices that could result in equipment or other property damage.
WARNING:	A "Warning" statement is used to identify conditions or practices that could result in personal injury or loss of life.

READ THIS MANUAL:
Prior to operating or servicing this device, this manual must be read and understood. If something is not clear, call for assistance before proceeding. Keep this and other associated manuals for future reference and for new operators or qualified service personnel.

USE PROPER POWER CONNECTIONS:
Use proper wiring and connection methods to satisfy hospital electric codes.

DO NOT REMOVE COVERS OR PANELS:
To avoid electrical shock hazard, do not remove covers or panels when power is supplied to the device. Do not operate the device when covers or panels are removed.

DEVICE LABELING:
Do not under any circumstances remove any Caution, Warning, or other descriptive labels from the devices until the conditions warranting the label are eliminated.

DO NOT OPERATE IN FLAMMABLE ATMOSPHERES:
To avoid fire or explosion, do not operate this device in an explosive environment.

1.3   Applications

The SDS remote status monitor is intended to warn dialysis station personnel when a problem with the solution delivery system exists and that appropriate steps should be taken to ensure patient safety. The SDS remote status monitor is a status indicator only and does not include any controls that allow remote operation or adjustment of the SDS system.

1.4   Contraindications

The SDS remote status monitor is not intended to be used outside of the device's specifications or limitations. Also, the system must not be used in an explosive environment.

1.5   Environmental Considerations

Prior to the installation of the SDS remote status monitor, it will be necessary to provide utilities and create an environment suitable for the trouble free operation of the remote status monitor.

POWER:
All SDS remote status monitor components are supplied with 24 VAC. This power is provided by the SDS system. Power fluctuations to the SDS system may affect the SDS remote status monitor adversely.

LOCATION:
The SDS remote status monitor should be located on a wall in full view. It is recommended that it be in a clean, dry location.

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1.6 Theory of Operation

The SDS remote status monitor is a status indicator only and does not include any controls that allow remote operation or adjustment of the SDS system. The SDS remote status monitor is intended to warn dialysis station personnel when a problem with the SDS system exists and that appropriate steps should be taken to ensure patient safety.

WARNING: The SDS remote status monitor is incapable of testing the SDS system for cleaning and disinfection agents; therefore, a system ON light does not indicate that the solutions are safe.

1.6.1 Components of the SDS Remote Status Monitor

System ON:

> The SDS system is configured to send a signal to the remote status monitor when the Main Power switch is in the ON mode. The System On indicator (green) will illuminate in the power ON mode.

Alarm and Mute:

> The SDS system is configured to send a signal to the remote status monitor whenever the SDS system has an alarm condition. The remote status monitor has both a visual indicator (red) and an audible alarm. The remote audible alarm can be temporarily muted at either the SDS unit (5 minutes) or the remote status monitor location (3 minutes).

Mix Pump Switch (Mix/Transfer On/Off):

> Two indicator lights monitor the transfer pump mode. When the Mix Pump Switch is in the TRANSFER position, the green indicator will illuminate. When the Mix Pump is in the MIX or OFF position, the yellow indicator is ON and an audible beep will cycle ON and OFF. The beep will be audible for approximately three seconds every two minutes.

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1.7 Specifications

1.7.1 Electrical Requirements (Provided by the SDS Unit)

Voltage	24 ~
Hertz	60
Phase	1

1.7.2 Physical Characteristics

	Cabinet
Height	8 inches
Depth	5 1/2 inches
Width	8 inches

1.7.3 Environmental Requirements

	Minimum	**Maximum**
Ambient Temperature	4°C (39°F)	32°C (90°F)
Storage Temperature	2°C (35°F)	32°C (90°F)
Altitude		10,000 feet

1.8 Disposal

Disposal of this product or its parts must be carried out according to local disposal codes.

1.9 Electromagnetic Interference

This equipment can generate, uses, and can radiate radio frequency energy and, if not installed and used in accordance with these instructions, may cause harmful interference to other devices in the vicinity. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with other devices, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving device.
- Increase the separation between the equipment.
- Connect the equipment into an outlet on a circuit different from that to which the other device(s) is connected.
- Consult the field service technician or manufacturer for help.

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1.10   Service Assistance

If service assistance is required, take the following steps:

1.   Consult the "Troubleshooting" section of this manual (Chapter Five).   If the problem cannot be identified and corrected by any of the procedures found in that section, then

2.   Contact your Facility Equipment Technician. If the technician is unable to help, then

3.   Call the Support Department at (888) 595-0666. Technicians are available for all calls between 7:00 a.m. and 4:30 p.m. CST, Monday through Friday. Technicians are also available at other times for **emergency calls only.** Product consultants will be on hand to discuss the problem with you and endeavor to rectify it over the phone. If the problem appears to be of a more serious nature, you will be given instructions regarding the action to be taken. Prior to making the pone call, you must be prepared to answer the following question:

What unit do you have; i.e., SDS Monitor?

1.11   Return Goods Authorization (RGA) Procedure

If you wish to return goods for warranty evaluation and/or credit, please have your original sales order, invoice, and device serial number available when you call. Call us at (888) 595-0666 and request Technical Support. A Technical Support representative will provide instructions and a return goods authorization number, **which needs to be clearly written on the outside of the box used to ship your materials**. All equipment must be shipped to us with the freight prepaid by the customer. Call our Customer Service Center with any questions or issues concerning freight claims and a representative will discuss your situations.

All material to be returned must be rendered into a non-hazardous condition prior to shipping.

1.12   Symbols and Abbreviations

~	Volts Alternating Current
Ft.	Foot (feet)
gr	Grains
Lbs.	Pounds
LPM	Liters per Minute
PSI	Pounds per Square Inch
GPD	Gallons Per Day
GPM	Gallons Per Minute
SDS	Solution Delivery System
VAC	Volts AC

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NOTES:

CHAPTER TWO: INSTALLATION/INITIAL SYSTEM START-UP

2.1   Installation Considerations

1.   Select a location for the remote status monitor that can be viewed by station personnel.

2.   Prior to connecting the remote status monitor, make sure the SDS operates correctly.

3.   A 4 conductor, 18 gauge wire cable must be run from the SDS unit to the location of the remote monitor. This cable is not provided.

NOTE: Wiring routed from the SDS unit to the remote monitor must meet local codes for 24 volt installations.

2.2   Installation Connections

1.   Route a 4 conductor, 18 gauge wire cable from the SDS unit to the remote status monitor location.

NOTE: Wiring routed from the SDS unit to the remote status monitor must meet local codes for 24 volt installations. Wire length should not exceed 1,000 feet.

2.   Review instructions and drawings and identify parts before beginning the procedure.

3.   Connect one of the wires from the SDS barrier strip terminal 24N to the remote status monitor barrier strip terminal number 2 (TB-2).

4.   Connect one of the wires from the SDS unit's Sonalert positive terminal to the remote monitor barrier strip terminal number 6 (TB-6).

NOTE: If your SDS system has IDEC switches, refer to Steps 5 through 11 for final installation hookup. If SDS system has General Electric switches, skip to Step 12 to finish your installation.

5.   Remove the dummy switch (blank) half from the back of the power switch (HS-1).

NOTE: The switches are divided into two halves; each half is independent from the other. The switch half can be removed from the switch by loosening the brass screw in the middle of the switch half.

6.   Install the normally open switch half (green indicator) to the power switch from where the dummy switch half was removed.

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7. Install the normally open switch half (green indicator) to the Transfer/OFF/Mix switch on the left side.

NOTE: The switches are divided into two halves; each half is independent from the other. The switch halves can be stacked up on the existing switch halves and fastened using the brass screw in the middle of the switch.

8. Install the dummy switch half (no indicator) to the Transfer/OFF/Mix switch on the right side.

9. Using the provided gray wire, make the following connections:

    a. Connect the power switch (HS-1) Terminal D to Terminal B. See point-to-point connections on installation drawing.

    b. Connect the power switch (HS-1) Terminal B to Transfer/OFF/Mix switch (HS-2) Terminal B. See point-to-point connections on installation drawing.

NOTE: The following wire connections are made with the route 4 conductor, 18 gauge wire cable from the SDS unit to the remote monitor location.

10. Connect one of the wires from the Transfer/OFF/Mix switch (HS-2) Terminal A to the remote monitor barrier strip Terminal Number 8 (TB-8).

11. Connect one of the wires from the power switch (HS-1) Terminal C to the remote status monitor barrier strip Terminal Number 4 (TB-4).

12. Remove the wire gutter cover below the control relays.

13. Install the wiring from the remote monitor. Connect the red wire with the butt splice connector to TB1-4 and the blue wire with the butt splice connector to TB1-8.

14. Install the wire gutter cover.

CHAPTER THREE: SYSTEM OPERATION

3.1   Daily Start-Up

NORMAL START-UP AND OPERATION:

1.   With the SDS unit started and operating normally, check all indicators for status.

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CHAPTER FOUR: ROUTINE MAINTENANCE

The SDS remote status monitor has been designed to operate with a minimum of operator attention.

4.1 Daily Requirements

1.   Observe indicators.

NOTE:	Take corrective action or contact your local dealer if any device fails.

4.2 Semi-Annual Requirements

1.   Verify operation of indicators and alarms compared with actual status of SDS unit.

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CHAPTER FIVE: TROUBLESHOOTING GUIDE

5.1 SDS Remote Status Monitor Fails to Operate

1. SDS unit off.
    a.   Normal.

2. Indicator out.
    a.   Verify operational mode.
    b.   Verify voltage.
    c.   Replace.

3. Loose electrical connections.
    a.   Check all wiring connections to verify solid connection.
    b.   Check relay-to-base connection.

5.2 SDS Remote Status Monitor Operates Intermittently

1. Loose electrical connection.
    a.   Verify that all wiring connections are secure.

5.3 SDS Power On

1. No indicator light.
    a.   Verify operational mode of SDS.
    b.   Check power with voltmeter.
    c.   Check all wiring connections to verify solid connection.
    d.   Indicator light burnt out.

5.4 SDS Alarm ON

1. No indicator light.
    a.   Verify operational mode of SDS.
    b.   Check power with voltmeter.
    c.   Check all wiring connections to verify solid connection.
    d.   Indicator light burned out.

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2. No audible alarm.
    a.   Verify operational mode of SDS.
    b.   Check power with voltmeter.
    c.   Check all wiring connections to verify solid connection.
    d.   Audible alarm muted (3 minutes).
    e.   Check timer relay-to-base connection.
    f.   Sonalert burned out.

3. Intermittent audible beep.
    a.   Verify operational mode of SDS.
    b.   Intermittent beep normal in Transfer OFF mode.

5.5   Mix Pump Transfer Mode

1. No green indicator light.
    a.   Verify mix pump switch <u>is in transfer mode</u> on SDS.
    b.   Check power with voltmeter.
    c.   Check all wiring connections to verify solid connection.
    d.   Check timer relay-to-base connection.
    e.   Indicator light burned out.

2. No red indicator light.
    a.   Verify mix pump switch <u>not in transfer mode</u> on SDS.
    b.   Check power with voltmeter.
    c.   Check all wiring connections to verify solid connection.
    d.   Check timer relay-to-base connection.
    e.   Indicator light burned out.

3. No indicator light.
    a.   Verify operational mode of SDS.
    b.   Check power with voltmeter.
    c.   Check all wiring connections to verify solid connection.
    d.   Indicator light burned out.

Note:	The 24VAC ½" LED indicators are NOT polarity dependent.

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SPARE PARTS LIST

CATALOG NO.	DESCRIPTION
W2T915035	ALARM, SONALERT
W2T919710	BAFFLE, SONALERT
W2T923567	TIMER 24 VAC/VDC IDEC 2 TIME
W2T914184	INDICATORLED, 24VAC, GREEN
W2T914182	INDICATOR,LED, 24VAC, RED
W2T914185	INDICATOR,LED, 24VAC, YELLOW
W2T280636	RELAY BASE, LARGE
W2T915019	RELAY BASE, SMALL
W2T914910	RELAY, 24V, DPDT
W2T919771	SWITCH COVER, BLACK
W2T919772	SWITCH, MUTE, BODY ONLY
W3T578494	TIMER, 24V, 10 MINUTES

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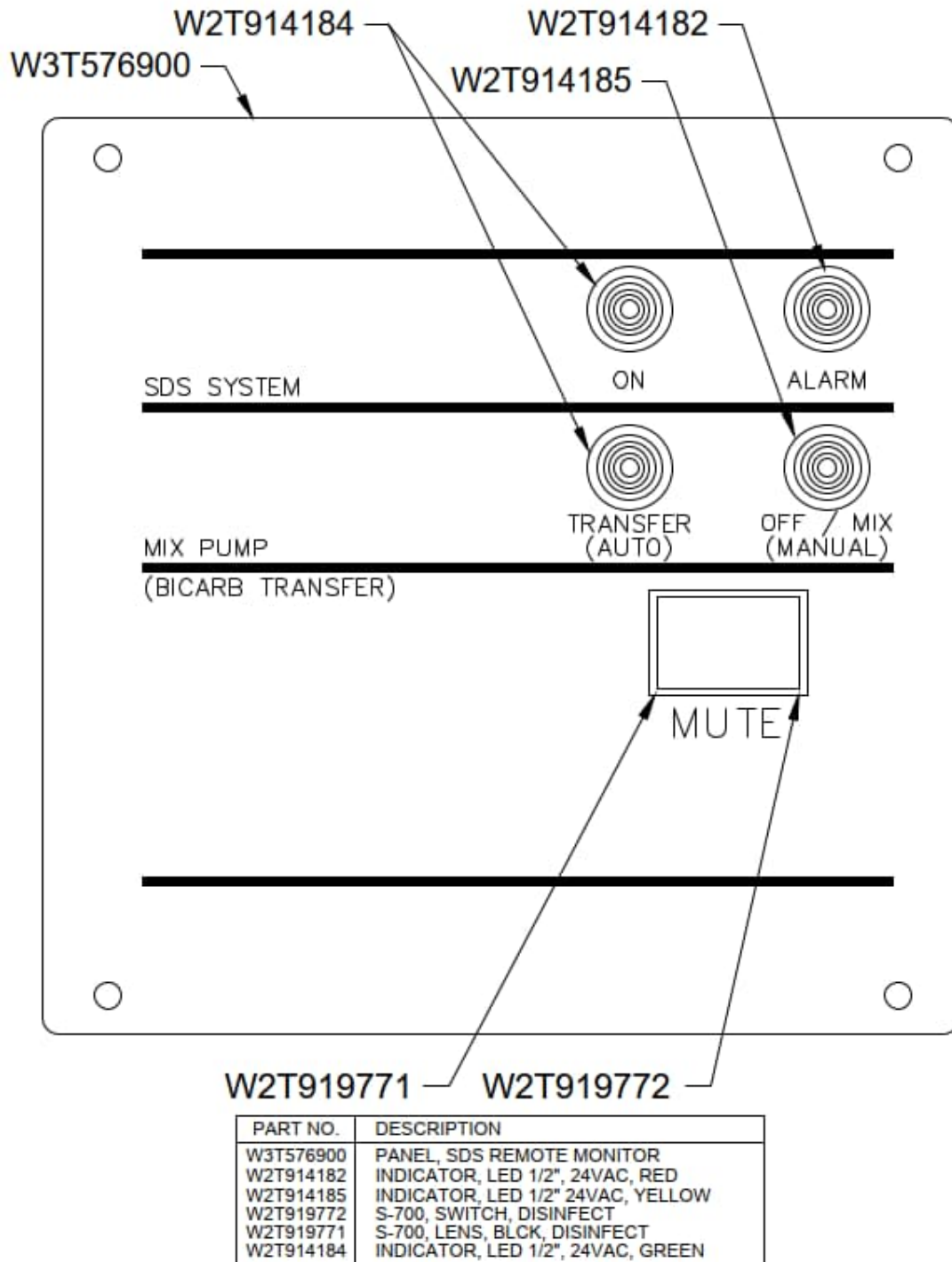
CHAPTER SIX: ILLUSTRATIONS


Figure 1: SDS Remote Status Monitor (Front View)

PART NO.	DESCRIPTION
W3T576900	PANEL, SDS REMOTE MONITOR
W2T914182	INDICATOR, LED 1/2", 24VAC, RED
W2T914185	INDICATOR, LED 1/2" 24VAC, YELLOW
W2T919772	S-700, SWITCH, DISINFECT
W2T919771	S-700, LENS, BLCK, DISINFECT
W2T914184	INDICATOR, LED 1/2", 24VAC, GREEN
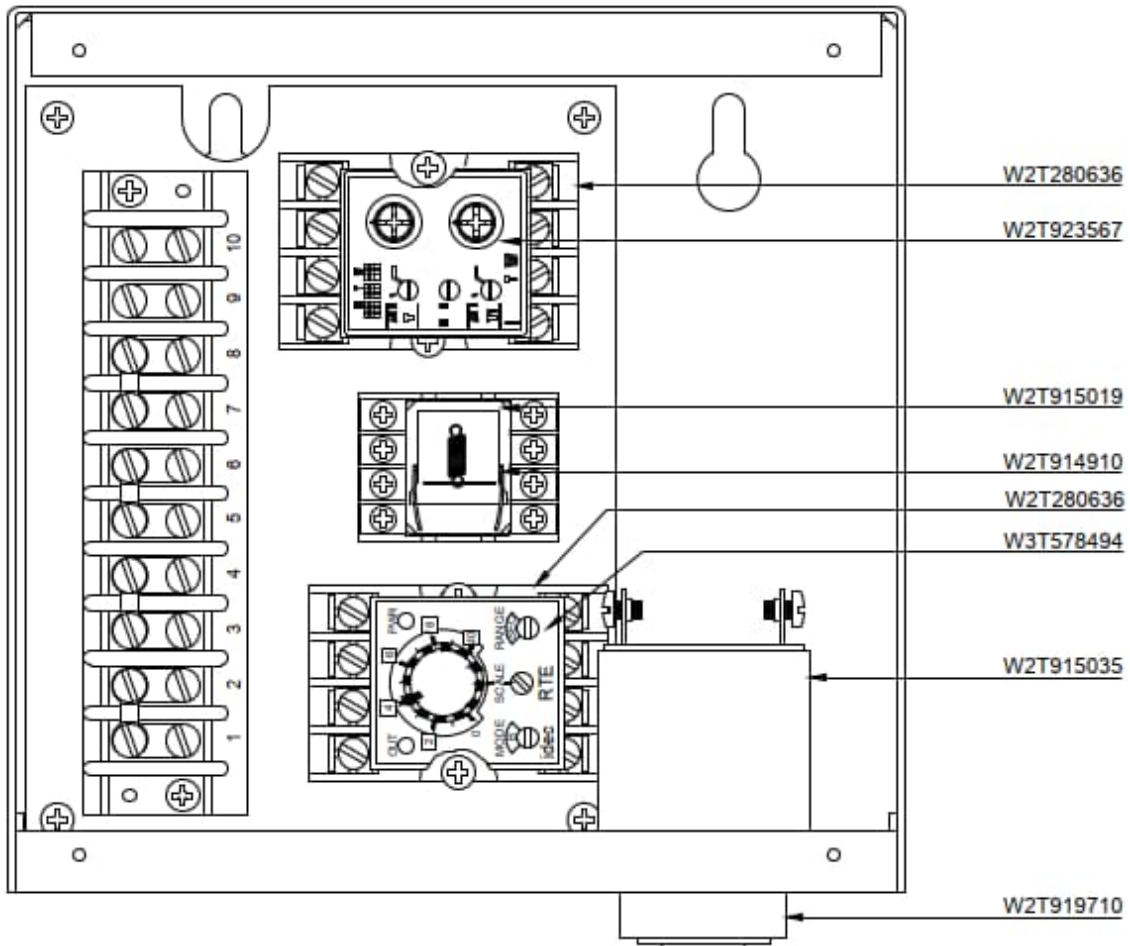
PART NO.	DESCRIPTION
W3T578494	TIMER,PRESET,24V,.1-10MIN
W2T914910	RELAY,24V,DPDT
W2T915035	SONALERT,24V,PNL MNT,PULS
W2T923567	TIMER 24 VAC/VDC IDEC 2 TIME
W2T915019	SOCKET,RELAY,8 PIN,SMALL
W2T280636	SOCKET,RELAY,8 PIN
W2T919710	SONALERT,VOLUME BAFFLE

**Illustration 2: SDS Remote Status Monitor (Front Cover Removed)**

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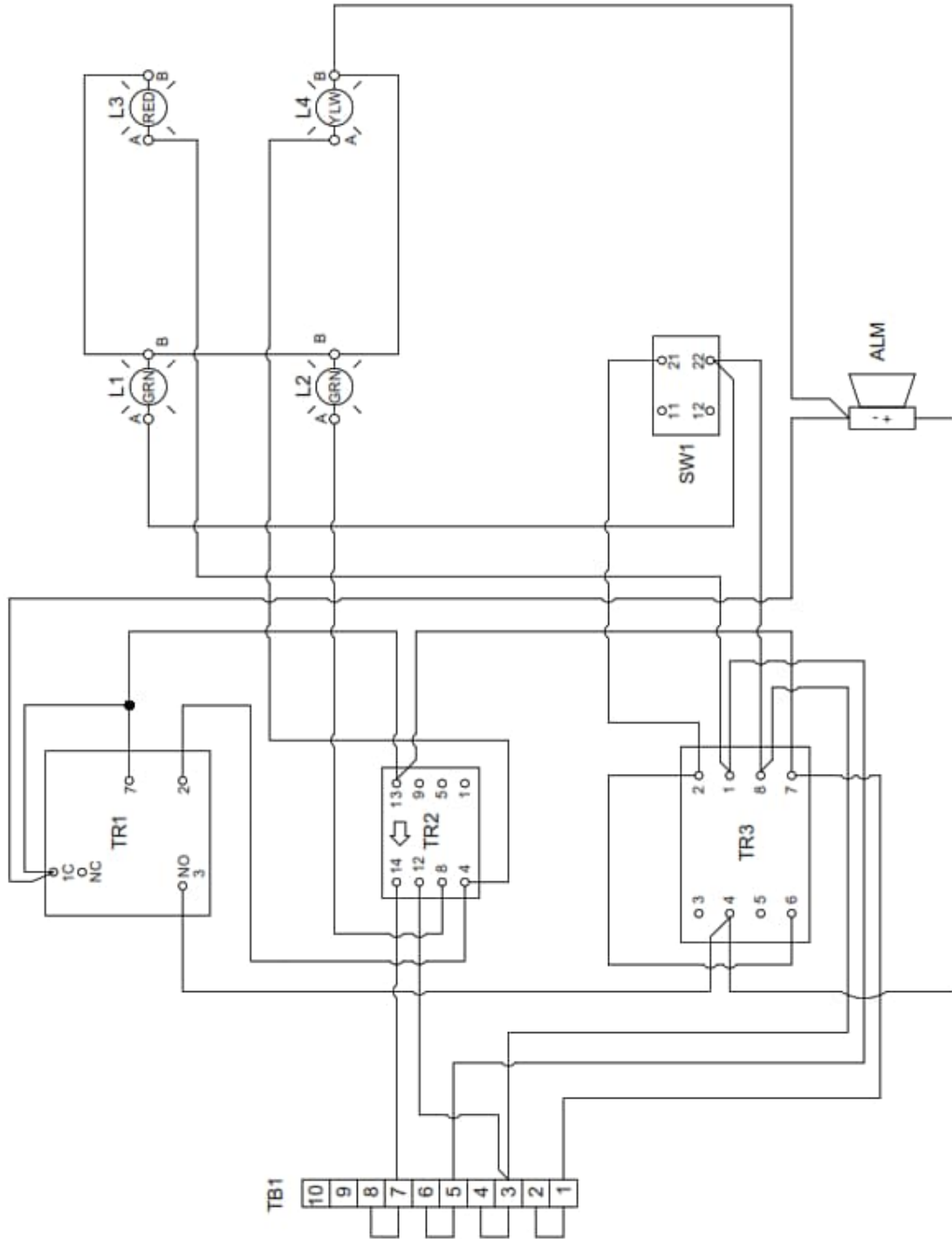
Illustration 3: SDS Remote Status Monitor Electrical Schematic
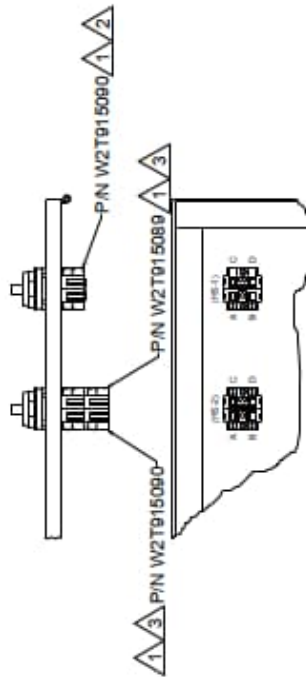
INSTALL INSTRUCTIONS FOR SDS WITH IDEC SWITCHES

1 SEE DRAWING W3T577395 FOR PARTS LIST.

2 REMOVE P/N W2T915089 BEFORE INSTALLING P/N W2T915090.

3 ADD P/NS W2T915090 TO EXISTING SWITCH MODULES.

4) ONLY UPPER RIGHT (INSIDE VIEW) CORNER OF SDS CONTROLLER DOOR SHOWN.

5) REFER TO REMOTE MONITOR SCHEMATIC FOR TERMINAL BARRIER STRIP CONNECTIONS

P/N W2T915090 /1 /2

P/N W2T915089 /1 /3

P/N W2T915090

P/N W2T915090

| POINT TO POINT	
FROM	TO
(HS-1)D	(HS-1)B
(HS-1)B	(HS-2)B
(HS-2)A	TB1-8
(HS-1)C	TB1-4
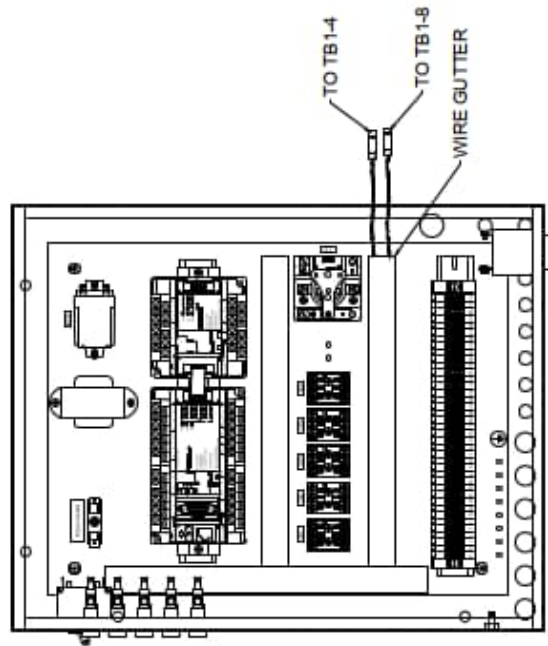
INSTALL INSTRUCTIONS FOR SDS WITH GE SWITCHES

1) REMOVE THE WIRE GUTTER COVER BELOW THE CONTROL RELAY.

2) INSTALL WIRING FROM THE REMOTE MONITOR TO THE SDS CONTROLLER AS FOLLOWS:
    -RED WIRE TO TB1-4
    -BLUE WIRE TO TB1-8

3) PLACE THE EXCESS WIRE BACK INTO THE WIRE GUTTER.

4) REFER TO REMOTE MONITOR SCHEMATIC FOR TERMINAL BARRIER STRIP CONNECTIONS.

TO TB1-4

TO TB1-8

WIRE GUTTER

Illustration 4: SDS Remote Status Monitor Installation Instructions (1 of 2)
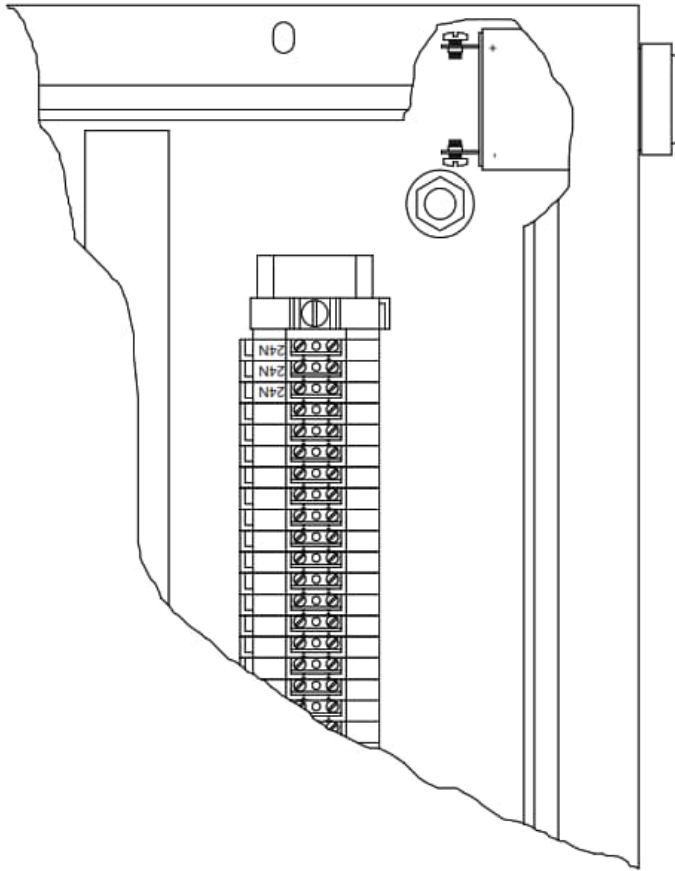
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Illustration 5: SDS Remote Status Monitor Installation Instructions (2 of 2)

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Call **(800) 633-3080** for additional information or visit **www.mcpur.com.**