Appendix 1

INTRODUCTION

The 289H Loop Surveillance System (LSS) monitors provide a level of simplicity, versatility, and monitoring capability that is unavailable in most cable pressurization monitoring equipment. Because the 289H monitors have been designed to work with the PressureMAP™ software and utilize the MAP System™ database, they do not require expensive on-board memory and processing equipment. The result: a simpler machine with less components to break down and no need for programming or backups.

The Loop Surveillance System monitors are available in two models to provide versatility for your specific monitoring application. The 289H LSS™ is a full size central office monitor that accepts a combination of dedicated, subscriber and Sparton Dedicated Replacement Cards (16 maximum) to accommodate the most demanding monitoring needs. A smaller version of this monitor, the 298H-M (Mini) LSS™, is a self-contained, small office monitoring unit that is shipped with a controller card, a utility card and one relay card.

Relay card options include a 50 point dedicated card, a 25-point subscriber card, or a 36-point Sparton Dedicated Replacement Card (SPDR). Additionally, either model can be ordered with a tone utility card or a standard non-tone utility card, plus your choice of either LAN or modem communications. Because of the various card options, both 289H models are available in multiple configurations. The larger 289H LSS comes in four versions, and the 289H-M monitor is available in 10 versions. These model variations and their corresponding part numbers are described in the following pages.

For customers wishing for an even smaller office monitor, one that can be used either in "stand-alone" mode or in conjunction with PressureMAP/PressureWEB™, the uM260 Micro Monitor™ is the way to go. This unit is available in two versions: one for modem communications, one for LAN communications. The uM260 monitors up to four binary devices, 16 resistive or milliampere transducers, and one contact control relay. It is also the ideal monitor to use with System Studies' telephone cable theft monitoring application: CopperWATCH™.

PRODUCT DESCRIPTIONS

The information in the following pages describes the monitoring system products and components available from System Studies, including the various configurations of the 289H LSS Monitor. It also lists the part number for each item, provides a brief description, and includes specifications and helpful ordering information where applicable.

Similar and more frequently updated Product Catalog information is available on the System Studies website, www.airtalk.com, under the *Reference* section.

Office Monitors

9800-6302   LSS, 289H Monitor

The 289H LSS monitor represents the second generation of Loop Surveillance System monitors available from System Studies Incorporated. It offers enhanced reading capabilities and improved pair diagnostics, as well as alarm condition alerting. The 289H LSS reads both resistive and loop current transducers on both dedicated and subscriber device circuits.

Part No. 9800-6302 specifies a 289H monitor equipped with a standard Controller Card and Utility Card, plus the hardware needed to mount the unit for mounting in a 23-inch equipment rack. Please note that relay cards, cables, and connector blocks must be ordered separately.

9800-6302L   LSS, 289H Monitor, LAN Capability

This full-sized 289H LSS chassis is supplied with a LAN Controller Card and a standard Utility Card. As the name implies, the LAN Controller Card makes it possible to access the 289H via a local area network, rather than via dial-up modem. In all other respects, it is identical in function to the 9800-6302 monitor described above. Please note that the "L" designation in the part number for this and other 289H/289H-M equipment identifies the LAN Controller Card versus the Controller Card.

9800-6302T   LSS, 289H Monitor, Tone Capability

For customers wishing to take advantage of the tone generation capabilities of the 289H LSS, a full-sized chassis supplied with a Tone Utility Card is available. Please note that the "T" designation in this part number indicates that a Tone Utility Card is supplied rather than a standard Utility Card.

With the Tone Utility Card it is possible to place a pseudo-data tone on all device pairs and a locator tone on individually selected device pairs. (Please note that tone generation capabilities vary slightly depending upon the type of relay cards being used. Contact System Studies for additional information.) As with other full-sized 289H LSS equipment, relay cards must be ordered separately.

9800-6302LT   LSS, 289H Monitor, LAN and Tone Capability

This 289H LSS chassis is supplied with both a LAN Controller Card and a Tone Utility Card. As one of four 289H LSS ordering options, it provides the most feature-rich combination of innovative components for large-scale office monitoring. Please note that relay cards, cables, and connector blocks must be ordered separately.

9800-6302MS-25   **LSS, 289H-M Monitor, Subscriber, 25-Pair**

This 289H-M LSS monitor provides the capability of monitoring up to 25 devices on subscriber pairs. It is a self-contained unit consisting of a standard Controller Card, a Utility Card and one subscriber relay card (no LAN access or tone generation capabilities).

Like the other 289H monitors, it does not include a connector block or cables. (These items must be ordered separately.) However, it is shipped with a mounting kit (including brackets for installing the unit in either a 19-inch or 23-inch equipment rack) and an Installation/Operations manual.

9800-6302MLS-25   **LSS, 289H-M Monitor, Subscriber, 25-Pair, LAN Capability**

This version of the 289H-M is equipped with a LAN Controller Card rather than a standard Controller Card and a 25-point subscriber relay card. The LAN Controller makes it possible for two-way communications between the 289H-M and remote systems/users over a local area network. The monitor also contains a standard Utility Card (no tone generation capability).

9800-6302MTS-25   **LSS, 289H-M Monitor, Subscriber, 25-Pair, Tone Capability**

Similar in function to the 9800-6302S-25 described at the top of the page, this 289H mini includes a Tone Utility Card rather than a standard Utility Card. With the tone card and the 25-point subscriber relay card, it is possible to place a locator tone on selected subscriber device pairs (no pseudo-data tone capability is available with subscriber pairs). The locator tone helps to save valuable time when searching for assigned pairs during transducer installation and/or general troubleshooting.

9800-6302MLTS-25   **LSS, 289H-M Monitor, Subscriber, 25-Pair, LAN/Tone Capability**

The latest card components in this 289H-M make it a popular choice for anyone who needs LAN access to their monitoring system and desires the added capability of placing locator tone on selected subscriber pairs. The monitor is equipped with a LAN Controller Card, a Tone Utility Card and a 25-point subscriber relay card.

9800-6302MD-50   **LSS, 289H-M Monitor, Dedicated, 50-Pair**

This 289H mini monitor contains the necessary components for monitoring a maximum of 50 devices on dedicated pairs. It is equipped with a 50-point dedicated relay card, a standard Controller Card and a Utility Card (no LAN or tone generation capability).

9800-6302MLD-50   LSS, 289H-M Monitor, Dedicated, 50-Pair, LAN Capability

Monitor is equipped with a LAN Controller Card, a standard Utility Card, and a 50-point dedicated relay card. The LAN access capability distinguishes this model from the 9800-6302MD-50 described above.

9800-6302MTD-50   LSS, 289H-M Monitor, Dedicated, 50-Pair, Tone Capability

This version of the 289H mini is supplied with a standard Controller Card, a Tone Utility Card, and a 50-point dedicated relay card. When used in combination with the dedicated relay card, the Tone Utility Card offers both locator tone and pseudo-data tone capabilities. Locator tone assists in finding assigned device pairs, while the pseudo-data tone helps to prevent working device pairs from being stolen for other purposes.

9800-6302MLTD-50   LSS, 289H-M Monitor, Dedicated, 50-Pair, LAN/Tone Capability

Monitor comes with a LAN Controller Card, a Tone Utility Card, and a 50-point dedicated relay card. Mounting brackets for both 19-inch and 23-inch equipment racks are also supplied.

9800-6302MD-36   LSS, 289H-M Monitor, Dedicated, SPDR, 36-Pair

This 289H mini monitor is equipped with a 36-point Sparton Dedicated Replacement Card (SPDR), standard Controller Card (no LAN capability) and standard Utility Card (no tone generation capability). The SPDR card contains relays for up to 36 dedicated Sparton pairs, and connects directly to an existing Sparton dedicated block. The SPDR simplifies cutover to the 289H-M by eliminating the need to rewire device pairs and run new jumpers to the 289H-M equipment.

9800-6302MlD-36   LSS, 289H-M Monitor, Dedicated, SPDR, 36-Pair, LAN Capability

This 289H mini provides the same simplified cutover capability as described above, but it includes a LAN Controller Card in place of the standard Controller Card. It is also equipped with a standard Utility Card (no tone capability).

9800-6260L   LSS, uM260 Micro Monitor™, LAN Version

This –48V DC powered stand-alone Micro Monitor provides scanning and alarming capabilities for up to 16 resistive or current loop monitoring devices, four binary contactors, and one contact control output. The 9800-6260L provides remote communications via a Local Area Network(LAN) and a HTML/Javascript web browser user interface.

This LAN version of the uM260 accommodates one alarm center and up to three email alarm notification addresses. It can be operated as a simple stand-alone monitor to provide threshold alarming and alarm distribution, or as a data collection device for PressureMAP.

9800-6260L   LSS, uM260 Micro Monitor™, LAN Version

The modem version of the uM260 Micro Monitor provides the same monitoring capabilities as the LAN version described above, except that it is equipped with an on-board 33600 baud modem instead of a TCP/IP Ethernet port. The user interface for this version is a text menu system, with both remote dial-up modem access and direct access via laptop or personal computer (DB-9 connection). The modem version of the Micro Monitor provides for two alarm centers.

289H LSS SPECIFICATIONS

Model #	Name	Components/Features	Material Specs
9800-6302	289H LSS	Supplied with: • Standard Utility Card • Standard Controller Card • Accepts subscriber, dedicated and SPDR relay cards (up to 16 maximum) • Works with all CO switches • Accessed directly by PressureMAP • No programming required • No backups or restorals • Self calibrating • Open pair detection • Reads monitoring devices on subscriber & dedicated pairs • Provides PMAP alerting capability • Offers Device pair diagnostics capabilities • Can be easily upgraded	21.5 in (54.6 cm) x 12.5 in (31.8 cm) x 12 in (30.5 cm) (width) Cover: Aluminum Chassis: CF10-18, Cold Finished Steel Ship Weight: 39 lbs (17.67 kg) Chassis Only
9800-6302L	289H LSS w/ LAN Capability	Supplied with: • LAN Controller Card for two way communications with PressureMAP via company LAN • Standard Utility Card Features same for all models (see above)	Same for all models (see above)
9800-6302T	289H LSS w/ Tone Capability	Supplied with: • Standard Controller Card • Tone Utility Card (depending upon type of relay cards used, can provide pseudo-data tone and/or locator tone) Features same for all models (see above)	Same for all models (see above)
9800-6302LT	289H LSS w/ both LAN and Tone Capability	Supplied with: • LAN Controller Card for two way communications with PressureMAP via company LAN • Tone Utility Card (depending upon type of relay cards used, can provide pseudo-data tone and/or locator tone) Features same for all models (see above)	Same for all models (see above)

289H-M LSS SPECIFICATIONS

Model #	Name	Components/Features	Material Specs
9800-6302MS-25	289H-M LSS w/ Subscriber Card	Supplied with: ▪ Standard Controller Card ▪ Standard Utility Card ▪ 25-point Subscriber Relay Card ▪ No programming or data input ▪ No backups or restorals ▪ Easy installation ▪ PMAP alerting capability ▪ Device pair diagnostics capabilities	3.5 in (8.9 cm) x 15 in (38.1 cm) x 11.5 in (30.5 cm) Cold rolled steel, chassis and cover Ship Weight: 14 lbs (6.3 kg)
9800-6302MLS-25	289H-M LSS w/ Subscriber Card & LAN Controller Card	Supplied with: ▪ LAN Controller Card for two way communications with PressureMAP via company LAN ▪ Standard Utility Card (no Tone capability) ▪ 25-point Subscriber Relay Card Features same for all models (see above)	Same for all models (see above)
9800-6302MTS-25	289H-M LSS w/ Subscriber Card, and Tone Utility Card	Supplied with: ▪ Standard Controller Card ▪ Tone Utility Card for generating locator tone on selected device pairs ▪ 25-point Subscriber Relay Card Features same for all models (see above)	Same for all models (see above)
9800-6302MLTS-25	289H-M LSS w/ Subscriber Card, LAN Controller Card, and Tone Utility Card	Supplied with: ▪ LAN Controller Card for two way communications with PressureMAP via company LAN ▪ Tone Utility Card for generating locator tone on selected device pairs ▪ 25-point Subscriber Relay Card Features same for all models (see above)	Same for all models (see above)
9800-6302MD-50	289H-M LSS w/ 50-point Dedicated Card	Supplied with: ▪ Standard Controller Card ▪ Standard Utility Card ▪ 50-point Dedicated Relay Card Features same for all models (see above)	Same for all models (see above)

Model #	Name	Components/Features	Material Specs
9800-6302MLD-50	289H-M LSS w/ 50-point Dedicated Card, and LAN Controller Card	Supplied with: ■ LAN Controller Card for two way communications with PressureMAP via company LAN ■ Standard Utility Card ■ 50-point Dedicated Relay Card ■ No programming or data input ■ No backups or restorals ■ Easy installation ■ PMAP alerting capability Device pair diagnostics capabilities	3.5 in (8.9 cm) x 15 in (38.1 cm) x 11.5 in (30.5 cm) Cold rolled steel, chassis and cover Ship Weight: 14 lbs (6.3 kg)
9800-6302MTD-50	289H-M LSS w/ 50-point Dedicated Card, and Tone Utility Card	Supplied with: ■ Standard Controller Card ■ Tone Utility Card for generating locator tone on selected device pairs ■ 50-point Dedicated Relay Features same for all models (see above)	Same for all models (see above)
9800-6302MLTD-50	289H-M LSS w/ 50-point Dedicated Card, LAN Controller Card, and Tone Utility Card	Supplied with: ■ LAN Controller Card for two way communications with PressureMAP via company LAN ■ Tone Utility Card for generating both locator tone and pseudo-data tone on selected device pairs ■ 50-point Dedicated Relay Card Features same for all models (see above)	Same for all models (see above)
9800-6302MD-36	289H-M LSS w/ 36-point SPDR Card	■ Standard Controller Card ■ Standard Utility Card ■ 36-point Sparton Dedicated Replacement Card Features same for all models (see above)	Same for all models (see above)
9800-6302MLD-36	289H-M LSS w/ 36-point SPDR Card and LAN Controller Card	■ LAN Controller Card for two way communications with PressureMAP via company LAN ■ Standard Utility Card ■ 36-point Sparton Dedicated Features same for all models (see above)	Same for all models (see above)

uM260 Micro Monitor Specifications

Model #	Name	Components/Features	Material Specs
9800-6260L	uM260 Micro Monitor (LAN Version)	▪ Power: -48V DC, LED power-on indicator ▪ Device connection: 25-pair female Amphenol ▪ Ports: One (1) DB-9 serial connection for PC or laptop ▪ Communications: RJ-45 10/100 Ethernet TCP/IP, port number 1001 ▪ On-board RAM: 1kb ▪ Fuse Protection: 100mA ▪ User Interface: HTML/Javascript, or text menu ▪ Monitoring capacity: 20 devices (4 binary; 16 resistive or current loop TDs) ▪ Controls: One (1) monitored contact control relay (alarm activated) ▪ Scanning: Continuous ▪ Alarming: One (1) per device ▪ Alarm centers: One (1), with up to 3 email addresses	3.5 in (8.9 cm) x 15 in (38.1 cm) x 11.5 in (30.5 cm) Cold rolled steel, chassis and cover 14 lbs (6.3 kg)
9800-6260M	uM260 Micro Monitor (Modem Version)	▪ Power: -48V DC, LED power-on indicator ▪ Device connection: 25-pair female amphenol ▪ Ports: One (1) DB-9 serial connection for PC or laptop ▪ Communications: 9600 2400 baud (default baudrate: 9600) ▪ Connector: RJ-11 ▪ On-board RAM: 1kb ▪ Fuse Protection: 100mA ▪ User Interface: Text menus ▪ Monitoring capacity: 20 devices (4 binary; 16 resistive or current loop TDs) ▪ Controls: One (1) monitored contact control relay (alarm activated) ▪ Scanning: Continuous ▪ Alarming: One (1) per device ▪ Alarm centers: Two (2), modem delivery ▪ Mounting: Rack, vertical or horizontal	Same for both models (see above)

289H LSS Ordering Options / Card Compatibility
(for New System Purchases)

289H MODEL	PART NUMBER	RELAY CARDS (16 max per chassis)	Part Number	Locator Tone	Data Tone
Standard Configuration	9800-6302				
289H Chassis Includes:		25 Pair Subscriber Card	9800-6100	No	No
Controller Card	9010-0010	50 Pair Dedicated Card	9800-6110	No	No
Utility Card	9010-0004	Sparton Dedicated Replacement Card	9800-6116	No	No
LAN Configuration	9800-6302L				
289H Chassis Includes:		25 Pair Subscriber Card	9800-6100	No	No
LAN Controller Card	9800-0030	50 Pair Dedicated Card	9800-6110	No	No
Utility Card	9010-0004	Sparton Dedicated Replacement Card	9800-6116	No	No
Tone Capability	9800-6302T				
289H Chassis Includes:		25 Pair Subscriber Card	9800-6100	Yes	No
Controller Card	9010-0010	50 Pair Dedicated Card (Rev C and above)	9800-6110	Yes	Yes
Tone Utility Card	9010-0016	Sparton Dedicated Replacement Card	9800-6116	No	No
LAN & Tone Capability	9800-6302LT				
289H Chassis Includes:		25 Pair Subscriber Card	9800-6100	Yes	No
LAN Controller Card	9800-0030	50 Pair Dedicated Card (Rev C and above)	9800-6110	Yes	Yes
Tone Utility Card	9010-0016	Sparton Dedicated Replacement Card	9800-6116	No	No

(Columns grouped under **TONE CAPABILITY**: Locator Tone, Data Tone)

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NOTES PERTAINING TO TONE-CAPABLE 289H MONITORS:

❖ Data Tone and Locator Tone are NOT available for any Sparton Dedicated Replacement Cards.

❖ When upgrading an existing 289H LSS monitor for tone capability, certain PressureMAP software and hardware EPROM requirements must be addressed. Please contact System Studies' Technical Support Department for more information (800-247-8255 or 831-477-8945).

289H-M LSS Ordering Options
(for New System Purchases*)

CATALOG PRODUCT NAME	PART NUMBER	TONE CAPABILITY		MODEL DESCRIPTION
		Locater Tone	Data Tone	
LSS, 289H-M, Subscriber, 25 Pair	9800-6302MS-25	N/A	N/A	25 point, standard subscriber card
LSS, 289H-MT, Subscriber, Tone, 25 Pair	9800-6302MTS-25	Yes	No	25 point, subscriber card with Locater Tone capability only
LSS, 289H-ML, Subscriber, LAN, 25 Pair	9800-6302MLS-25	N/A	N/A	25 point, subscriber card with LAN capability (no tone functionality)
LSS, 289H-MLT, Subscriber, LAN / Tone, 25 Pair	9800-6302MLTS25	Yes	No	25 point, subscriber card with LAN and Locator Tone capability only
LSS, 289H-M, Dedicated, 36 Pair	9800-6302MD-36	N/A	N/A	36 point, Sparton dedicated replacement card
LSS, 289H-ML, Dedicated, LAN, 36 Pair	9800-6302MLD-36	N/A	N/A	36 point, Sparton dedicated replacement card with LAN capability
LSS, 289H-M, Dedicated, 50 Pair	9800-6302MD-50	N/A	N/A	50 point, standard dedicated card
LSS, 289H-MT, Dedicated, Tone, 50 Pair	9800-6302MTD-50	Yes	Yes	50 point, dedicated card with full tone generation capability
LSS, 289H-ML, Dedicated, LAN, 50 Pair	9800-6302MLD-50	N/A	N/A	50 point, dedicated card with LAN capability (no tone functionality)
LSS, 289H-MLT, Dedicated, LAN / Tone, 50 Pair	9800-6302MLTD50	Yes	Yes	50 point, dedicated card with LAN and full tone generation capability

Note: When upgrading an existing 289H-M monitor for tone and/or LAN capability, certain PressureMAP software and hardware EPROM requirements must be addressed. Please contact the System Studies Technical Support Department for more information (800-247-8255 or 831-477-8945).

System Studies Incorporated (161SA-7)

289H LSS Components & Connector Blocks

There are different combinations of integrated circuit boards and connector blocks that can be used with the 289H LSS™ and 289H-M LSS™ monitors. This section of Appendix 1 describes these important components, as well as some of the mounting hardware. Please note that in addition to these items, a number of special application and miscellaneous accessories have been included.

9800-6100   **LSS, Subscriber Relay Card**
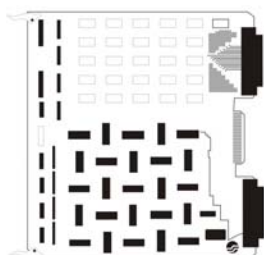
The subscriber relay card is the Loop Surveillance System's internal termination point for transducers installed on subscriber device circuits. Because of its architecture and relay configuration, it is also possible to use dedicated circuits with this card. The card accommodates a maximum of 25 devices.

ECI: 684835 CLEI: SUIUBBO1AA CPR/OFC: A70907

9800-6110   **LSS, Dedicated Relay Card**
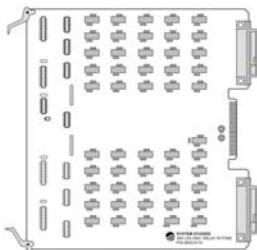
This dedicated relay card is used by the 289H/H-M monitors to read data from transducers installed on dedicated circuits. The 9800-6110 will accommodate up to 50 devices, which must be installed on dedicated conductor pairs.

ECI: 684836 CLEI: SUIUAAO1AA CPR/OFC: A70908

9800-6116   **LSS, Sparton Dedicated Replacement Card (SPDR)™**
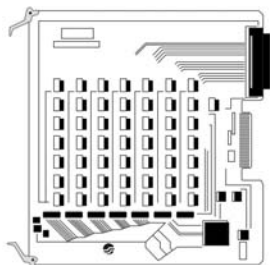
The Sparton Dedicated Replacement Card (SPDR) streamlines the process of cutting over from a Sparton monitor to the 289H or 289H-M LSS. SPDR Cards can be configured to accept the Sparton dedicated block's A, B or C cables. No additional adapters or connectors are required.

ECI: 177235 CLEI: SUCUAB3KAA

9010-0004   **LSS, Utility Card**
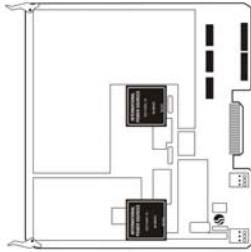
The utility card contains a 48 volt DC power supply, a micro-processor which contains the I/O circuitry for the 289H chassis, a power switch, and an alarm enable/disable switch. This card is supplied with the 289H and 289H-M monitors. It is also required when an expansion chassis is used with the 289H LSS. It provides the interface to the main chassis. The card is available here as a replacement card.

ECI: 684841 CLEI: SUPQAABAAA CPR/OFC: A70910

9010-0016   **LSS, Tone Utility Card**
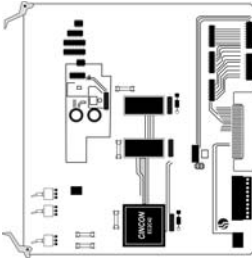
This version of the 289H Utility Card makes it possible to transmit a pseudo-data tone or a selected tone frequency (locator tone) on the monitoring device pairs wired to the 289H monitor. It works in either capacity with all dedicated relay cards manufactured after December, 1998 (Rev. C and above). Locator tone capability only is available for subscriber cards.

ECI: 177236 CLEI: SUCUAB1KAA

9010-0010   **LSS, Controller Card**
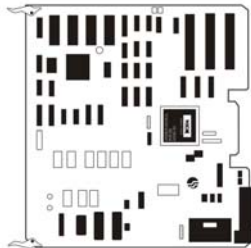
The controller card performs most of the tasks that direct the operation of the 289H and its interaction with the PressureMAP™ software. It is available here as a replacement card.

ECI: 684840 CLEI: SUPQAAAAAA CPR/OFC: A70909

9800-0030   **LSS, LAN Controller Card**
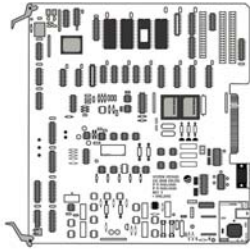
The controller card performs most of the tasks that direct the operation of the 289H and its interaction with the PressureMAP software. The latest version of the card includes an onboard local area network (LAN) adapter and over-voltage protection for the 289H's measurement circuit. The LAN adapter replaces the modem circuitry on earlier Controller Cards with a TCP/IP protocol, making two way communications between PressureMAP and the 289H LSS equipment possible over the network. The LAN Controller Card is available here as a replacement card. It is supplied with P/N 9800-6002 standard DB9 straight-through serial cable to connect card to PC for setup configuration.

ECI: 177237 CLEI: SUCUAB2KAA

9800-6055   **LSS, Connector Block, Wire Wrap, Dedicated**
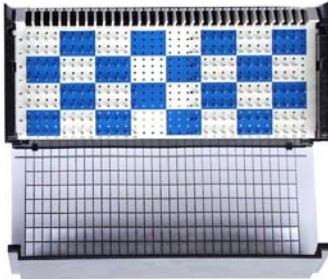
The dedicated connector block provides the means of connecting a maximum of 100 monitoring devices on dedicated pairs. Wire wrap termination pins are divided into two groups—each to accommodate 50 devices on dedicated circuits. The block is supplied with four female connectors to accommodated four 25-pair, male-to-male, cables.

ECI: 418938 CLEI: SUAYAAEAAA CPR/OFC: 106308

9800-6055-C   **LSS, Connector Block, Wire Wrap, Dedicated, Male/Female Connectors**
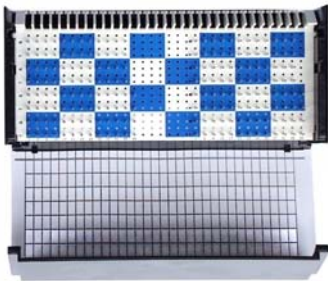

This version of our basic 100 pair dedicated connector block is supplied with four, pre-wired 25 pair, male connectors for use with 25 pair male/female cables.

9800-6056   **LSS, Connector Block, Wire Wrap, Subscriber**

The subscriber connector block is used to terminate field monitoring device pairs on subscriber circuits. It routes incoming jumpers from the vertical frame to the subscriber card in the 289H/H-M monitor and to the central office equipment. Wire wrap termination pins are divided into two groups—each to accommodate 25 devices on subscriber circuits.

Please note that two cables are required for each subscriber card used with the block: one P/N 9800-6016 male/female cable and one P/N 9800-6017 male/male cable. Additionally, the bock provides four auxiliary connectors which can be used with short lengths of male-to-male cable to bypass the 289H equipment during installation, troubleshooting and/or repair.

ECI: 418939 CLEI: SUAYAAFAAA CPR/OFC: 106309

9800-6062   **LSS, Connector Block, Circuit Protection**
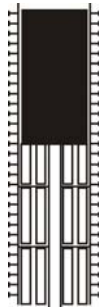
This connector block is used in conjunction with the 9800-6060 and 9800-3063 blocks when circuit protection is required for incoming device pairs. A typical application for this block is to terminate devices from a specially designated monitoring cable—one that bypasses the normal central office protection. This block accommodates 25 incoming device pairs. An individual solid-state protector module (P/N 9800-6067) must be ordered for each terminated device pair.

9800-6067   **LSS, Connector Block 5-Pin Protector Module**

Designed to be used with the P/N 9800-6062 connector block, these circuit protector modules provide electrical protection to central office equipment from high voltages on incoming device pairs. The blocks and protector modules are recommended for use with monitoring cables or any incoming field facilities that are not terminated on protected central office equipment. One P/N 9800-6067 protector modules is required for each device pair.

9800-6060   **LSS, Connector Block (Krone Disconnect), Female Connectors**
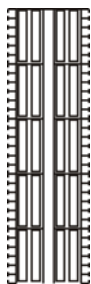
This Krone Disconnect Block is a pre-wired block that provides the ability to connect incoming device pairs from protected terminal blocks (P/N 9800-6062) via a 100 pair Type 66 block (P/N 9800-6063) to the 289H/H-M dedicated relay card. The block is also used for direct wiring of central office panel transducer circuits to the 289H monitor.

Unlike the Type 66 blocks, the Krone Disconnect block provides the ability to isolate individual device pairs and test either the outside (facility) conductor or the inside (equipment) conductor. It is equipped with two female 25 pair connectors, located on the back of the block, to accommodate a maximum of 50 devices.


9800-6063   **LSS, Connector Block, Type 66, No Connectors**

This connector block provides the means of connecting a maximum of 100 monitoring devices to the 289H/H-M using punch-down, standard clips. The block is typically used between protected blocks (P/N 9800-6062) and one of the 9800-6076, 9800-6077 or 9800-6078 connectorized Type 66 blocks described in this catalog.

Note: Although not normally supplied with connectors, it can be specially ordered with connectors if desired for special applications.

9800-6076-L   **LSS, Connector Block, Type 66, Top Entry, Left Male Connectors**
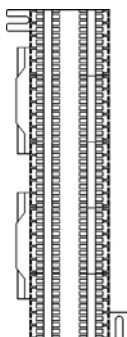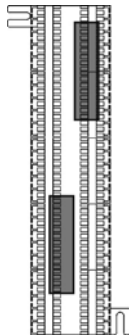
The 9800-6076-L Type 66 block accommodates 50 device pairs. It is equipped with standard punch-down, 66 clips and two 25 pair male connectors. The "L" designation indicates the position of the connectors on the left side of the block, one above the other. What designates this connector block model from the 9800-6077 and 9800-6078 blocks is the direction of the incoming cable: top cable entry.

9800-6076-R   **LSS, Connector Block, Type 66, Top Entry, Right Male Connectors**
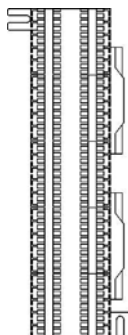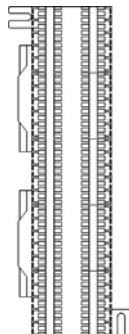
The P/N 6076-R Type 66 block accommodates 50 device pairs. It is equipped with standard punch-down, 66 clips and two 25 pair male connectors. The "R" designation indicates the position of the connectors on the right side of the block, one above the other. What designates this model from the P/N 6077 and P/N 6078 blocks is the direction of the incoming cable: top cable entry**.**

9800-6076-S   **LSS, Connector Block, Type 66, Top Entry, Side Male Connectors**
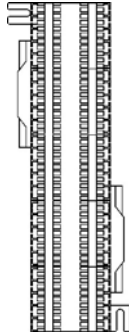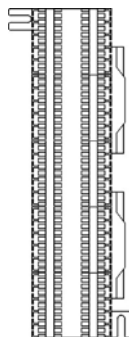
The P/N 6076-S Type 66 block accommodates 50 device pairs. It is equipped with standard punch-down, 66 clips and two 25 pair male connectors, one on each side of the block. What designates this model from the P/N 6077 and P/N 6078 blocks is the direction of the incoming cable: top cable entry.

9800-6076-B   **LSS, Connector Block, Type 66, Top Entry, Back Male Connectors**

The P/N 6076-B Type 66 block accommodates 50 device pairs. It is equipped with standard punch-down, 66 clips and two 25 pair male connectors, mounted one above the other on the back side of the block. This block is set up to accept the incoming cable from the top. Please note that this is the recommended configuration when mounting multiple blocks to a mounting apparatus, such as the Type 66 Mounting Bar (P/N 9800-6065). Connectors must be located on the back of the block in order to place six blocks in a row.

9800-6077-L   **LSS, Connector Block, Type 66, Bottom Entry, Left Female Connectors**
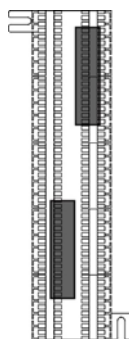
The 9800-6077-L Type 66 block accommodates 50 device pairs. It is equipped with standard punch-down, 66 clips and two 25 pair female connectors. The "L" designation indicates the position of the connectors on the left side of the block, one above the other. What designates this model from the 9800-6076 and 9800-6078 blocks is the direction of the incoming cable: bottom cable entry.

9800-6077-R   **LSS, Connector Block, Type 66, Bottom Entry, Right Female Connectors**
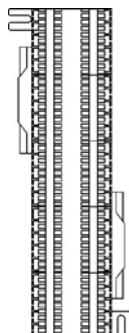
The 9800-6077-R Type 66 block accommodates 50 device pairs. It is equipped with standard punch-down, 66 clips and two 25 pair female connectors. The "R" designation indicates the position of the connectors on the right side of the block, one above the other. What designates this model from the 9800-6076 and 9800-6078 blocks is the direction of the incoming cable: bottom cable entry.

**9800-6077-S**   **LSS, Connector Block, Type 66, Bottom Entry, Side Female Connectors**

The 9800-6077-S Type 66 block accommodates 50 device pairs. It is equipped with standard punch-down, 66 clips and two 25 pair female connectors, one on each side of the block. What designates this model from the 9800-6076 and 9800-6078 blocks is the direction of the incoming cable: bottom cable entry.

9800-6077-B   **LSS, Connector Block, Type 66, Bottom Entry, Back Female Connectors**

The 9800-6077-B Type 66 block accommodates 50 device pairs. It is equipped with standard punch-down, 66 clips and two 25 pair female connectors, mounted one above the other on the back side of the block. This block is set up to accept the incoming cable from the bottom. Please note that this is the recommended configuration when mounting multiple blocks to a mounting apparatus, such as the Type 66 Mounting Bar (P/N 9800-6065). Connectors must be located on the back of the block in order to place six blocks in a row.

9800-6078   **LSS, Connector Block, Type 66, Bottom/Top Entry, Side Male/Female Connectors**

The 9800-6078 Type 66 block accommodates 50 device pairs. It is equipped with standard punch-down, 66 clips and both a 25 pair male and 25 pair female connector. The connectors are located on opposite sides of the block (male: top left, female: lower right). The incoming cable to the male connector is from the top; it is routed from the bottom for the female connector.

**9800-6090**   **LSS, Connector Block Mounting Bar**
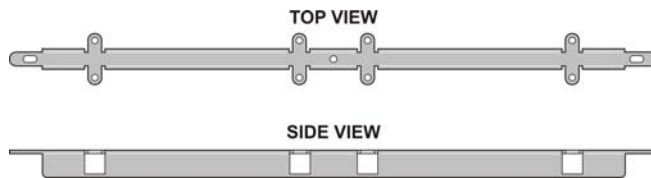
This mounting bar is designed to be used with the 9800-6055 and 9800-6056 connector blocks. The mounting device is designed to easily install on a standard 23-inch wide central office rack. One mounting bar holds two cross connect blocks.

9800-6065   **LSS, Connector Block Mounting Bar, Type 66**


Two 9800-6065 mounting bars provide the capability of mounting up to six, Type 66 (Krone) connector blocks. The blocks recommended for use with this mounting equipment are the 9800-6076-B and 9800-6077-B blocks (each has cable connectors located on the back of the block). Connector blocks are placed vertically on the mounting bars.

9800-6066   **LSS, Connector Block Standoff Bracket, For Type 66**

This plastic standoff bracket is designed to be used with Type 66 Connector Blocks (Part Nos. 9800-6076 and -6077) to enable the blocks to be flush mounted on equipment racks that are populated with circuit protected blocks or other blocks that extend out farther from the panel's mounting bars. The standoff bracket extends the face of the block an additional one inch (2.5 cm) out from the connector block mounting bar.

9010-0060   **LSS, uM260 Micro Monitor, Termination Adapter, 6-Pair**
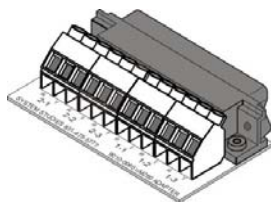
Designed for use with the uM260 Micro Monitor, the 9010-0060 Termination Adapter is equipped with 6 pairs of locking jaw terminals with tightening screws to accommodate three transducers and three binary devices. The designated uM260-compatible device numbers are printed on the circuit board to identify pair termination locations. As viewed from the top of the adapter, numbering starts from left to right, beginning with the transducers (designated as 2-1, 2-1 and 2-3), followed by the binary devices (1-1, 1-2, 1-3).

9010-0062   LSS, uM260 Micro Monitor, Termination Adapter, 21-Pair
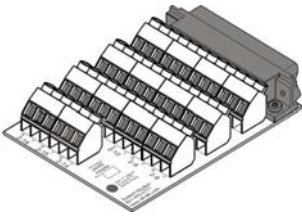
The larger, full-capacity Termination Adapter (Part No. 9010-0062) has 21 pairs of locking jaw terminals for connecting the full complement of transducers, binary devices, and the control relay pair. Once again, device numbers are printed on the circuit board to identify where the designated pairs should be terminated.

Please note that this version of the adapter uses a different wiring order from what is used on the smaller version.

The row closest to the Amphenol connector is used for the control relay, the contact alarm devices, and the first of 16 possible transducers. The remaining rows complete the termination points for the transducers).

289H LSS Connector Cables

System Studies provides a number of cables that can be used to complete the connection between central office connector blocks and the 289H LSS™ and 289H-M LSS™. Most of the cables are equipped with pre-wired connectors on both ends, and can be ordered in varying lengths to accommodate your specific needs. Some of the cables supplied have one raw end (no connector) and one or more connectors on the opposite end.

Please call us at (800) 247-8255 if the type of 289H LSS cable you need is not included in this ordering information section of the manual. It is possible that a custom cable could be provided to meet your requirements.

9800-6016-X   LSS, Cable, 25 Pair, Male/Female Connectors, Customer-Specified Length
9800-6016-5   LSS, Cable, 25 Pair, Male/Female Connectors, 5 Feet
9800-6016-10   LSS, Cable, 25 Pair, Male/Female Connectors, 10 Feet
9800-6016-25   LSS, Cable, 25 Pair, Male/Female Connectors, 25 Feet
9800-6016-100   LSS, Cable, 25 Pair, Male/Female Connectors, 100 Feet
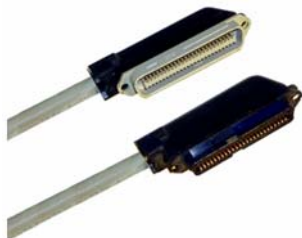
This 25 pair cable is equipped with a male and a female connector. Available in lengths from 5 to 250 feet (152 to 7620 cm), the cable is used for making the connection between a subscriber block—such as a wire wrap 9800-6056 block—and the bottom, male connector of the 289H subscriber relay card (P/N 9800-6100).

CPR/OFC: 099999

9800-6017-X	**LSS, Cable, 25 Pair, Male/Male Connectors, Customer-Specified Length**
9800-6017-2	**LSS, Cable, 25 Pair, Male/Male Connectors, 2 Feet**
9800-6017-5	**LSS, Cable, 25 Pair, Male/Male Connectors, 5 Feet**
9800-6017-10	**LSS, Cable, 25 Pair, Male/Male Connectors, 10 Feet**
9800-6017-25	**LSS, Cable, 25 Pair, Male/Male Connectors, 25 Feet**
9800-6017-100	**LSS, Cable, 25 Pair, Male/Male Connectors, 100 Feet**

Similar in look and function to the 9800-6016 cable described above, this cable is used for connecting devices terminated on dedicated blocks to the 289H LSS dedicated relay card. It is equipped with 25 pair male connectors on both ends and can be order in lengths from 2 to 250 feet (152 to 7620 cm).

CPR/OFC: 099999

9800-6034-X   **LSS, Cable, 25 Pair, Single Male/Raw End**

Designed for use with the System Studies Central Office Panel Rack Assemblies, the 9800-6034 cable is used to connect CO and field device circuits from termination blocks to the 289H LSS. The cable has one raw end and is equipped with a 25 pair, male connector on the other end. It can be ordered in virtually any length to accommodate individual rack assembly requirements.

9800-6020   **LSS, Cable, Male/Female, Sparton (A)**

This cable makes it possible to use existing dedicated connector blocks when cutting over from a Sparton monitor to the 289H LSS. It is approximately 5 feet (152 cm) in length and has three 25 pair connectors, two for completing the connection to the 289H dedicated relay card, and one for connecting into the cable that runs from the Sparton connector block to the Sparton chassis. Because Sparton device wiring uses a 36 point feature, which is accomplished with one 25 pair cable, a modification of the standard 289H LSS cabling is required.

Part Number 9800-6020, designated Sparton A Cable, is used to connect pairs 1 through 36. Other specially configured Sparton cables (P/N 9800-6058) and (P/N 9800-6059) provide simplified cutover capabilities for the additional devices wired to a Sparton connector block.


9800-6058   **LSS, Cable, 25 Pair, Male/Female, Sparton (B)**

The Sparton B Cable is used with the 9800-6020 Sparton A Cable described above to connect dedicated device pairs 37 through 72 to the 289H LSS. Please note that the Sparton A, B and C cables (see explanation of P/N 9800-6059 below) can be used in succession for cutovers that require more than three cables.

For example, a second Sparton A Cable can connect device pairs 109 to 145; a second B Cable will connect device pairs 146 to 182, etc. Combined, the three Sparton cables provide true versatility for cutting over dedicated devices from Sparton connector blocks to the 289H LSS.

9800-6059   **LSS, Cable, 25 Pair, Male/Female, Sparton (C)**

The last of the three special Sparton cables (see explanations above), Sparton Cable connects dedicated device pairs 73 through 108 to the 289H LSS. Like the other Sparton cables, a second C cable can be used for cutovers that require more than five cables.

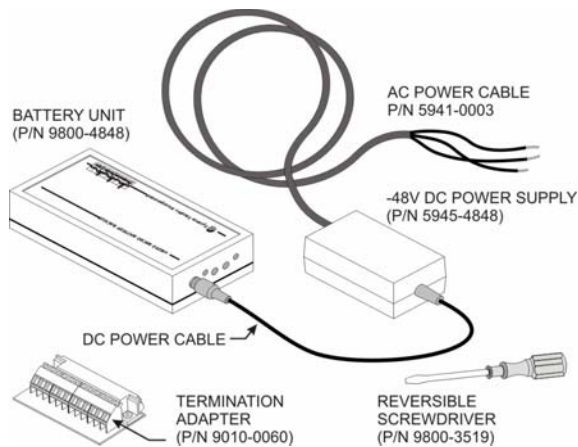**9800-6018**   **LSS, Cable, Gender Bender, Back-to-Back Male, Threaded**
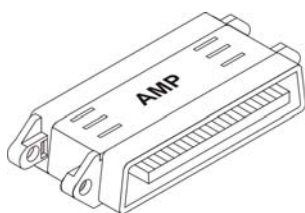
This simple adaptor consists of a pair of internally wired male connectors which make it possible to connect two 25-pair, female cables. The adaptor is equipped with threaded flanges to help secure the adjoined cables.

9800-6019   **LSS, Cable, Gender Bender, Back-to-Back Female, Threaded**
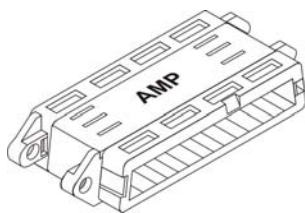
This adaptor is similar in function to the 9800-6018 model described above, except that it is used to connect two male cables. It is recommended that several of both types of Gender Bender are available as standard equipment when cutting over to a 289H LSS monitor. They save valuable time and greatly simplify the installation tasks.

9800-6002   **LSS, Cable, 9-Pin, Male/Female Serial (DB-9), 6-Foot**

This cable is used with the LAN version of the uM260 Micro Monitor (P/N 9800-6260L) to provide the connection between the micro monitor and a PC or laptop when configuring the LAN functionality. It serves the same function when configuring a 289H LAN Controller Card for LAN communications with PressureMAP.

Miscellaneous 289H LSS Accessories

9800-4848BBU LSS, uM260, Backup Battery Kit

BATTERY UNIT
(P/N 9800-4848)

AC POWER CABLE
P/N 5941-0003

-48V DC POWER SUPPLY
(P/N 5945-4848)

DC POWER CABLE

TERMINATION
ADAPTER
(P/N 9010-0060)

REVERSIBLE
SCREWDRIVER
(P/N 9800-3519)

The uM260 Backup Battery Kit makes it possible to install the uM260 monitor at remote air dryer and CEV locations where 115V AC is used to power equipment. It also offers emergency backup power to the uM260 and the ability to detect AC power failures.

Kit Includes:
9800-48489	Battery Backup Unit
5945-4848	Power Supply (115V AC to -48V DC) Supplies with hard-wired DC power cable with plug-in adapter to battery unit
5941-0003	AC power cable
9010-0060	Termination adapter (for 3 transducers and 3 binary devices)
9800-3519	Reversible screwdriver

9900-0260   **LSS, uM260, Rack Mount Panel Kit**

This Rack Mount Panel Kit simplifies the process of mounting the uM260 Micro Monitor in a standard 23-inch wide equipment rack. The Rack Mount Panel Kit includes a 1.75-inch by 23-inch panel/bracket (shown here), and two sizes of mounting screws (10 x 24 and 12 x 24) with trim washers and nuts. The low profile of the Rack Mount Panel makes it possible to accommodate tight equipment rack installation requirements, while providing easy access to the uM260 monitor and cable connector.

9800-4849　　　　**LSS, Remote Dryer Monitoring Kit**

The Remote Dryer Monitoring Kit is a self-contained, encased monitoring assembly designed for installation at a remote air dryer location. It can be installed either inside the dryer cabinet or placed on the pole below it. The kit is comprised of a rugged plastic cast containing the modem version of the uM260 Micro Monitor (Part No. 9800-6260M), our uM260 Backup Battery Kit (see components described above), and a Flow Measurement Assembly. The kit is available in four flow ranges:

0-9.5 SCFH	Part No. 9800-4849-W
0-19 SCFH	Part No. 9800-4849-X
0-47.5 SCFH	Part No. 9800-4849-Y
0-95 SCFH	Part No. 9800-4849-Z

9800-6071　　　　**LSS, Kit, Spare Parts**

The 289H LSS Spare Parts Kit includes a PC board case, spare fuses, cable tags and ties, controller board, utility board, installation and operations manual, static control wrist strap, RJ11 to RJ11 cable (6 feet), and a jack to IDC connector.
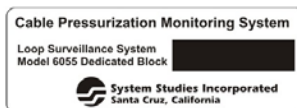

9800-6073　　　　**LSS, Kit, Spare Fuses**

The accessory kit contains replacement fuses for the 289H LSS utility and controller boards. A total of five fuses is supplied:

| **Controller Card**	**Utility Card**
1 AMP SLO	0.5 AMP SLO
1.6 AMP Fast Acting	1.6 AMP SLO
	3.15 AMP Fast Acting

6514-0053　　　　**LSS, Connector Block, Label, Dedicated**

This label is designed to be used with the 9800-6055 wire wrap dedicated block. It includes a space for listing the pin assignments for the dedicated block.

**6514-0054**   **LSS, Connector Block, Label, Subscriber**

This label is used with the 9800-6056 wire wrap subscriber block. Like Part Number 6514-0053 above, it also includes a space for listing pin assignments.

**9010-0003**   **LSS, Backplane Panel**
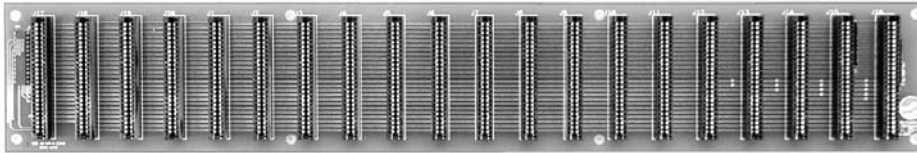
The 289H LSS backplane panel contains 20 female card connector slots to accommodate the various 289H boards. The backplane panel makes it possible to transmit data from the individual relay cards to the 289H LSS controller card. Supplied as standard equipment on all 289H LSS monitors, the backplane panel designated here is used as a replacement part.

010-0110   **LSS, Replacement Chassis**

Unlike the Expansion Chassis, which is an older-style enclosure with larger rear cable cutouts to facilitate the routing of connector cables to the primary chassis, the Part No. 9010-0110 Replacement Chassis is the newest System Studies chassis design. It has been built to comply with more recent central office equipment requirements for fire safety and improved operability. As opposed to the card cage design of the original 289H LSS, this chassis is a more securely sealed card enclosure.

9800-1491   **LSS, Manual, 289H**
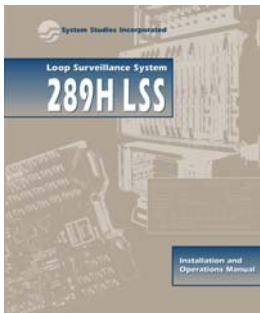
This manual explains the procedure for installing and operating the 289H LSS, covering both new installations and conversions from existing systems. It addresses the components of the 289H, site planning, installation, connector block wiring, start up and card replacement procedures, troubleshooting, expansion chassis installation, alert modem status codes, and ordering information.


9800-1492   **LSS, Manual, 289H-M**
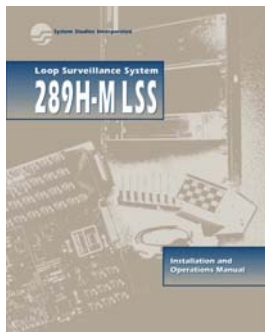
This comprehensive manual explains the procedure for installing and operating the 289H-M LSS. It addresses the components of the 289H-M, site planning, installation, connector block wiring, start up and troubleshooting, and alert modem status codes.

9800-0260   **LSS, Manual, uM260**

The *uM260 Micro Monitor Installation and Operations Manual* describes how to install the monitor and fulfill the device wiring and cabling requirements. It also explains how to program the two types of micro monitors (modem version and LAN version) and set them up for either stand-alone operation or for use with PressureMAP.

9800-6075   **LSS, PC Board Case**

This rugged equipment case is ideal for storing and transporting 289H LSS Utility, Controller and Relay cards. Provided as the storage case with our LSS Spare Parts Kit (Part No. 9800-6071), it can also be purchased as a separate item without contents under this part number. Case is supplied with foam insert for storing up to eight 289H/H-M LSS cards.

9800-6080   **LSS, Static Control Wrist Strap**
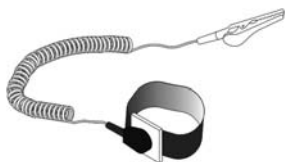
Recommended for all 289H LSS installations, the static control wrist strap prevents electrostatic discharge which can seriously damage electronic components. This wrist strap is also supplied with the LSS Spare Parts Kit (Part No. 9800-6071).

9800-6061   **LSS, Krone Block Cover**

This plastic Krone Connector Block Cover helps protect jumper connections by sealing out dust, dirt, and liquids. It also prevents potential damage from occurring if the block is subjected to physical impact.

9800-6079   **Tool, Insertion, for Krone Block**

The 50 pair, Krone Disconnect Block (Part No. 9800-6060), which is equipped with standard punch-down clips, requires this tool to complete the wiring process. The tool has been optimally designed to simplify wiring and ensure lasting wire connections.

9800-6064   **Tool, Impact, for Type 66 Blocks**

This hand-held impact tool is used to terminate wires on the Type 66 blocks (Part Nos. 9800-6063, 6076, 6077 and 6078). The tool is spring loaded and fully adjustable–features that are helpful when working with wires of varying thickness. It also has a bayonet style mount which allows the blades to be changed easily and quickly. A compartment in the handle contains is used to store an extra blade.

6510-0062   **LSS, 289H-M Mounting Bracket**
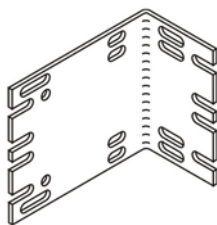
This mounting bracket enables the 289H-M LSS monitor to be installed in standard 19 inch (48.3 cm), 21 inch (53.3 cm), and 23 inch (58.4 cm) equipment racks. Multiple mounting holes are provided to enable offset or flush mounting of the 289H-M in most rack configurations.

9800-3096   **Panel, Power Supply, 117V AC to -48V DC**

This power supply panel provides a means of mounting a 289H LSS™ power source in an equipment rack near the 289H or 289H-M monitor. The panel, which measures 23" (58.4 cm) wide and 7" (17.8 cm) high, can be bolted to most standard equipment racks. Mounted on the back is a 289H LSS -48V DC Power Supply (Part No. 9800-6094), which uses 117V AC input to provide an output of -48V DC at 3 amps. The 9800-3096 Power Supply Panel is also used with a P/N 9800-3196 DC to DC Converter to power our Digital Pipe and Distribution Panels.

9800-5516   LSS, Remote Power Control, RPC-1 MDO1

In the event of a power disruption to your monitoring equipment, the Remote Power Control allows you to turn on, turn off, or reboot connected equipment. The unit has six individual relay-controlled AC power receptacles. It accepts commands sent via terminal, computer, or by modem. These commands include: on, off, configure, reboot and status. If there is a power failure to the unit itself, the RPC-2 retains the most current operational status for each outlet in non-volatile memory.

The words 289H LSS™, 289H-M LSS™, uM260 Micro Monitor™, PressureMAP™ and PressureWEB™ are trademarks of System Studies Incorporated.