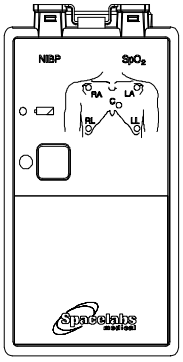
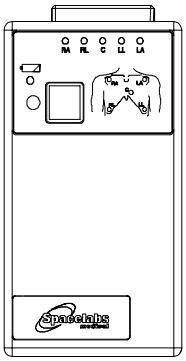
Spacelabs medical
A Division of Instrumentarium

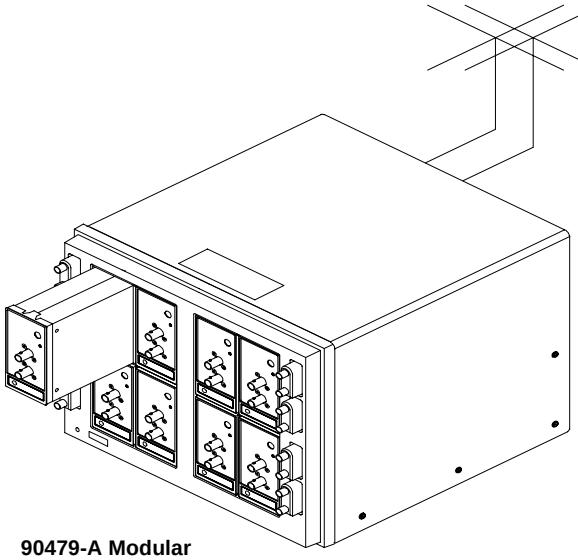
Ultraview® Digital Telemetry 91341, 91343, 91347, 90478, 90479-A



91343 Digital Telemetry Multiparameter Transmitter

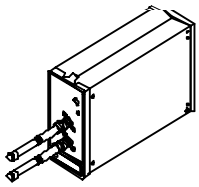


91341/47 Digital Telemetry ECG Transmitters



Diversity Antenna System

90479-A Modular Receiver Housing



90478 Modular Receiver

- Wireless Medical Telemetry Service (WMTS) operation (608-614 MHz,[1] 1395-1400 MHz, 1427-1429.5 MHz).[2]
- Both ECG and multiparameter, patient-worn transmitters.
- Add NIBP (optional) to the multiparameter transmitter.
- Compatible with all Ultraview Care Network™ monitors.
- Lead-fault LEDs on the patient-worn transmitters.
- Lightweight, water resistant.
- Tunable receivers and patient-worn transmitters.
- Diversity antenna system for reliable operation.
- Modular receiver reduces service time.
- Multi-lead ECG with ST segment analysis option
- Patient-worn transmitter communicates directly with portable monitor to extend TM and central surveillance beyond central antenna coverage area.
- Module Configuration Manager enables the hospital to customize the receiver's ECG patient monitoring functions to specific patient populations, clinical protocols, or operating preferences.

1. For operation only in Canada.
2. 1429-1431.5 MHz for use in bandswap areas.

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SPECIFICATIONS

PARAMETER CHARACTERISTICS

ECG

Maximum Input — ±4 mV (±10%)

DC Offset — Up to ±300 mV, with no more than 2% signal amplitude degradation

Overdrive Recovery Time — < 1 second circuit settling time with offset voltage < 500 mV

Noise — < 30 µV p-v, refered to input (rti), at 30 Hz bandwidth

CMRR — > 85 dB (monitor mode)

QRS Detection — Detects QRS complexes with durations of 40 to 120mS and amplitudes of 0.2 to 4.0 mV (adult) or 0.15 to 4.0 mV (neonatal)

Defibrillator Protection — Meets IEC 60601-2-27, AAMI EC-13

Resolution — 2.5 µV per LSB, rti

Input Impedance — > 10 MΩ minimum differential at 10 Hz

Gain Accuracy — ±5%

Pacer Rejection — Baseline shift < 0.2 mV (measured at ECG x 1,000 output)

Pacer Detection — Detects pacer pulses of ±2 mV to ±700 mV with pulse widths of 0.2 to 2 msec and rise times 10% of width not to exceed 100 µsec.

Signal Bandwidth — 0.05 to 30 Hz ±10% (-3 dB)

Sample Rate — 120 samples per second

SpO_2

SpO_2 Sensor Interface —

Red LED drive (max): 175 mA peak at 10% duty cycle

IR LED drive (max): 105 mA peak at 10% duty cycle

SpO_2 Measurement Method — Functional saturation (oxygen saturation of functional hemoglobin).

SpO_2 Measurement Mode — Continuous, episodic (2 minutes, 5 minutes, and 30 minutes) sampling intervals; factory default setting is continuous.

ST Segment Analysis

Resolution — 0.08 mm

Range — ±9 mm (1 mV = 10 mm)

Leads — ST Segment Analysis continously performed on up to seven leads.

Alarms — Single lead or multiple leads; individual leads can be deselected. Alarms for absolute minimum and maximum ST levels; changes in ST level over the last 5 minutes.

Displays — ST values: minimum/maximum/ current ST segment deviation and 5 minute averaged segments for the last 30 minutes.

Measurement Points — Adjustable ST, PR, and J Points

Trends — Up to 24 hours of trend data can be displayed in 1.5-, 3-, 6-, 12-, or 24-hour time tracks.

PATIENT MONITOR DISPLAY CHARACTERISTICS

ECG Display

Heart Rate Range — 30 to 300 bpm; heart rates > 300 bpm are displayed as “+++”.

Heart Rate Alarm Limits — High: 5 to 300 bpm, Low: 0 to 200 bpm; alarms automatically enabled over a range of 40 (adult) or 100 (neonatal) to 300 bpm; heart rates > 300 bpm are displayed as “+++”.

Accuracy — ±1% or ±2 beats per minute (whichever is greater).

Numeric Update Rate — Every 3 seconds or immediately at the onset of an alarm.

Trace Sweep Speeds — 50, 25, 12.5 mm/sec

Display Bandwidth — Two settiings: 0.5 to 30 Hz ±10% (-3 dB) in monitor mode, and 0.05 to 30 Hz ±25% (-3 dB at 50 mm per second) in extended mode.

SpO_2 Display

Measurement Range — 30 to 100% O_2 Saturation

Saturation Accuracy — Sensor Dependent

Saturation Resolution — ±1%

Pulse Rate Range — 30 to 250 bpm

Pulse Rate Resolution — 1 bpm

Alarms — High and low saturation values; factory default limits are: high 100%; low 85%.

High range:	31% – 100%
Low range:	30% – 99%

Numeric Update Rate — Every 2 seconds for continuous SpO_2 readings.

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SPECIFICATIONS

NIBP Display

(Refer to specifications for the 90217 ABP Monitor)

Measurement Range (adult only) —

Systolic:	8.0 – 35.0 kPa (60 – 260 mmHg)
Diastolic:	9.0 – 27.0 kPa (30 – 200 mmHg)
Mean:	5.3 – 31.0 kPa (40 – 230 mmHg)

Pressure Accuracy — ±2% or ±3 mmHg (whichever is greater)

Resolution — 1 mmHg

Time Between Readings — selectable, from 6 to 120 minutes

Alarms — High and low alarms for all measured parameters.

High range:	8.0 – 35.0 kPa (60 – 260 mmHg)
Low range:	4.0 – 27.0 kPa (30 – 200 mmHg)

TRANSMITTERS (91341, 91343, 90347)

ECG Transmission — View 2 of 7 available leads from two vectors (91341) or four vectors (91343, 91347) synchronized RF digital signal.

Electrode Configuration — Individually replaceable DIN standard safety lead wires. Local lead fault indicators for each lead wire.

Multiparameter Transmission (91343) — SpO_2 (saturation, SpO_2 sensor status, pulse rate) and optional NIBP (systolic, diastolic, mean pressure, measurement time, alarm conditions) with the model 90217 ABP monitor.

Additional Data Transmitted — Patient record, low battery indicator, pacer flag, patient ID code, and electrode connection status.

Output Power — 1 mW ERP, typical

Spectral Efficiency — 0.11 bps/Hz

External Indicator — Yellow LED flashes when battery level is low

Battery — 9 V battery; refer to *Table 1* for battery life expectancy

WMTS Frequency Band Option —

-05:	608-614 MHz
-09:	1395-1400 MHz 1427-1429.5 MHz 1429-1431.5 MHz

Transmitter Physical Dimensions

91343 (Multiparameter)

Height:	5.25 in (13.3 cm)
Width:	2.85 in (7.2 cm)
Depth:	1.18 in (2.9 cm)
Weight (w/out battery):	8.5 oz (241.0 gm)

91341/47 (ECG-only)

Height:	5.25 in (13.3 cm)
Width:	2.85 in (7.2 cm)
Depth:	0.98 in (2.5 cm)
Weight (w/out battery):	6.78 oz (192.7 gm)

MODULAR RECEIVER

Module Includes:

Module Configuration Manager capability (refer to the *Module Configuration Manager* chapter of the *Ultraview Care Network Operations Manual* (P/N 070-1001-16) for complete feature specifications).

Trends — (with appropriate mainframe option) 24 hours of trended data can be displayed in 1.5-, 3-, 6-, 12-, or 24-hour segments; data is stored in 1-minute resolution.

High Level Analog Output —

ECG 1:	Used for defibrillator synchronization
Connector:	3-conductor TT phone jack
Dynamic Range:	±5 mV (±10%), rti
Gain:	ECG x 1000 (±5%)
Bandwidth:	0.05 to 30 Hz ±10% (-3 dB)

Module Parameter Count — This module counts as 1 or 2 parameters when computing parameter capacity for monitors.

1 displayed ECG lead = 1 parameter.

2 displayed ECG leads = 2 parameters.

Receiver Sensitivity — Usable ECG signal to -95 dBm

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Receiver Options —

The following system configuration options are available in the 90478.

A — Basic Arrhythmia: High and low heart rate, asystole and ventricular fibrillation (2 leads).

B — Multiview™ I Arrhythmia — Enables users to review trends of abnormals per minute; provides additional alarms for abnormals per minute and abnormals in a row (2 leads).

C — Multiview II Arrhythmia — Enables users to review the dominant morphology as well as episodes or classes of ventricular fibrillation, ventricular tachycardia (runs), couplets, single abnormals, tachycardia, pauses, ventricular and atrio-ventricular pacing; provides additional alarms for abnormals in a row, abnormals per minute, and tachycardia (2 leads).

S — ST segment analysis/review/trend (2 leads).

Q — Band operation, 608 to 614 MHz

T — Band operation, 1395 to 1400 MHz

V — Band operation, 1427 to 1431.5 MHz

Receiver Electrical Requirements

Power Consumption — ≤ 5.0 watts

External Indicators — LED lights when user accesses control.

Receiver Physical Dimensions

Height:	4.46 in (11.32 cm)
Width:	2.24 in (5.68 cm)
Depth:	7.00 in (17.78 cm)
Weight:	2.4 lbs (1.11 kg)

Receiver Housing (90479-a)

Accommodates up to 8 modular receivers.

Housing Physical Dimensions

Height:	12.0 in (30.5 cm)
Width:	13.5 in (34.3 cm)
Depth:	17.5 in (44.5 cm) (includes protective cover)
Weight:	32.0 lbs (14.6 kg) (without modules loaded)

Receiver Housing Power Requirements

100–120 VAC, 50/60 Hz, 2A; 220–240 VAC, 50/60 Hz, 1A

ENVIRONMENTAL REQUIREMENTS

Operating —

Temperature:	50° to 104° F (10° to 40° C)
Humidity:	95% (non-condensing)
Altitude:	0 to 10,000 ft (0 to 3,030.3 m)

Storage —

Temperature:	-40° to 149° F (-40° to 75° C)
Humidity:	100% (non-condensing)
Altitude:	-500 to 40,000 ft (-151.5 to 12,121.2 m)

Water Resistance: Meets EN60529 IPX1

REGULATORY APPROVALS

At time of product release, all models are certified compliant with electrical safety standards: IEC 60601-1, UL2601-1, and CSA C22.2 No. 601.1. Models 90478 and 90479 are ETL-listed. All models are CSA-certified.

Radio equipment is certified for operation by the FCC under CFR 47, Part 95, and by Industry Canada under RSS-210 (608-614 MHz only). Refer to product labels for identification and registration numbers.

ACCESSORIES

Please refer to the Spacelabs Medical Supplies Catalog for availability of ECG lead wires and electrodes, blood pressure cuffs, and SpO_2 sensors.

91341/91343/91347 Transmitter Pouch
Part Number: 015-0500-00

DIN Standard Safety ECG Lead Wire Set (5 wire) 25.2-inch snap
Part Number: 012-0605-00

Receiver Housing Protective Cover
Part Number: 200-0180-00

Whip Antenna (UHF) 608 to 614MHz
Part Number: 117-0040-00

Belt Clip
Part Number: 344-0020-00

SpO_2 Adapter Cable (Nellcor)
Part Number: 700-0014-00

ABP Telemetry Adapter Cable
Part Number: 700-0015-00

ABP Pouch
Part Number: 015-0501-00

ABP Shoulder Strap
Part Number: 016-0262-00

ABP Waist Belt
Part Number: 016-0080-00

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ABP Report Management System
Part Number: 90121ABP Report

Management System Adaptor Cable
Part Number: 012-0097-02

ABP Adult Adapter Assembly
Part Number: 714-0017-00

Nellcor SpO_2 Sensor Accuracy and Sensor Selections

Nellcor Reusable SpO_2 Sensors —

Finger Clip (DS-100A) (P/N 690-0003-00)
70–100%, ±3% absolute saturation

OXIBAND A/N (OXI-A/N) (P/N 690-0004-00)
70–100%, ±3% absolute saturation

OXIBAND P/I (OXI-P/I) (P/N 690-0039-00)
70–100%, ±3% absolute saturation

Nellcor Disposable SpO_2 Sensors —

Adult (N-25) (P/N 690-0006-00)
70–100%, ±2% absolute saturation

Neonatal (N-25) (P/N 690-0006-00)
70–100%, ±3% absolute saturation

Pediatric (D-20) (P/N 690-0007-00)
70–100%, ±2% absolute saturation

Adult (D-25) (P/N 690-0001-00)
50–69%, ±3% absolute saturation
70–100%, ±2% absolute saturation

Nasal (R-15) (P/N 690-0005-00)
80–100%, ±3.5% absolute saturation

Infant (I-20) (P/N 690-0002-00)
50–69%, ±3% absolute saturation
70–100%, ±2% absolute saturation

Table 1: Transmitter Battery Service Life[1] (hours)

Battery Type	**9 Volt Alkaline (ANSI/NEDA 1604A)**					**9 Volt Lithium (ANSI/NEDA 1604LC)**				
Load Conditions[2]	**ECG Only**	**ECG and Continuous SpO_2**	**ECG and 2 minute Episodic SpO_2**	**ECG and 5 minute Episodic SpO_2**	**ECG and 30 minute Episodic SpO_2 and NIBP**	**ECG Only**	**ECG and Continuous SpO_2**	**ECG and 2 minute Episodic SpO_2**	**ECG and 5 minute Episodic SpO_2**	**ECG and 30 minute Episodic SpO_2**
91343	48	24	36	38	40	120	60	100	104	106
91341/47	52	Not Applicable	Not Applicable	Not Applicable	Not Applicable	132	Not Applicable	Not Applicable	Not Applicable	Not Applicable

[1] Operational service life (in hours) assuming a new alkaline battery (minimum 580 mAH capacity) or lithium battery (minimum 1200 mAH capacity) used until the local low battery indicator begins to flash.

[2] NIBP operations from a 90217 ABP Monitor sending readings to the 91343 Multi-parameter telemetry transmitter. The 90217 ABP monitor will inflate a standard size adult cuff at least 240 times with alkaline batteries.

Medical telemetry spectrum allocations may be assigned to frequencies already allotted to other priority users. This means that telemetry operations may be exposed to radio frequency interference that may disrupt or impede telemetry patient monitoring. Additionally, medical telemetry spectrum allocations may be changed by government action and Spacelabs Medical accepts no responsibility for such changes, including the possibility that the product may not operate in the modified permissible spectrum ranges other than those expressly set forth in Spacelabs Medical's published product data sheets. Spacelabs Medical cannot, and does not, guarantee interference-free telemetry operation.

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