



MODEL 355 SIGNALMAN'S METER

(October 19, 2020, Software Ver. 1.24 & Higher)

**Designed By Signalmen For
Signalmen - See "Railroad Focus"
Section For Details**

**All Functions, All Scales Protected
Against Electrical Damage**

Ohms By Thermal Reset

Voltage By Impedance

**Amperes Scales By Two Front-
Accessed Fuses, 10 & 30 Amp**

Greatly Simplified, Auto-Ranging

**Volts, Ohms and Amps Displays All
Provided With Analog Bar Graphs**

**AC (True RMS) And DC Voltages
Displayed Simultaneously**

**True RMS AC+DC Read Directly
(No formulas)**

**Current Clamps & Loop Available
Readings Shown In Amps On
Volts Scale**

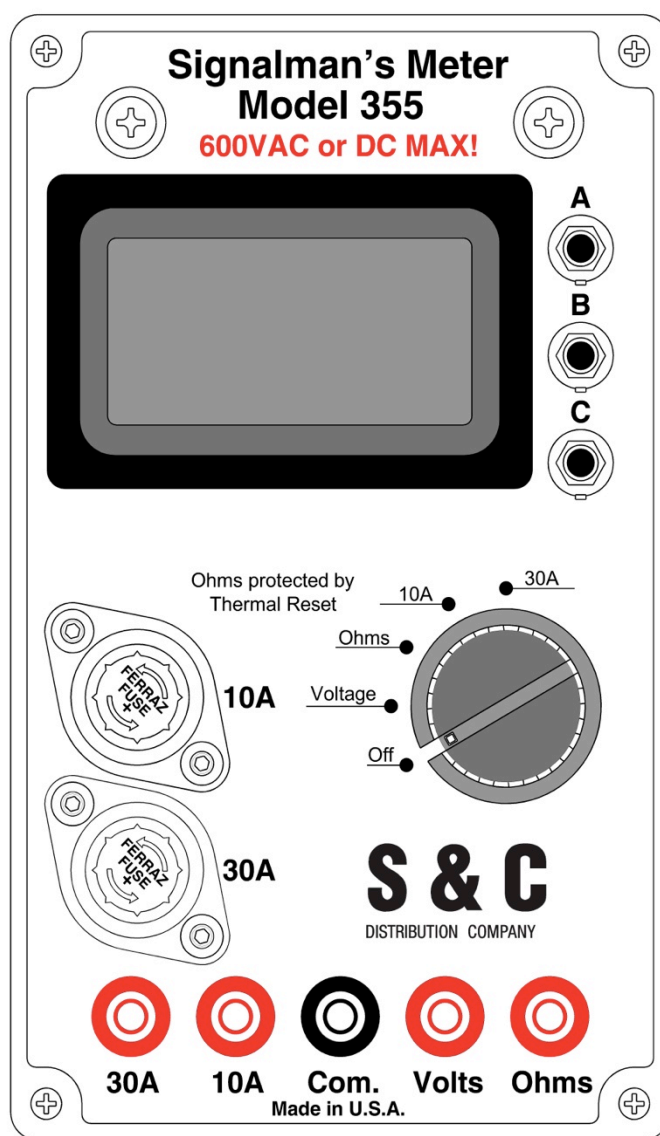
**Peak-Hold w/Reset Available On
All Volts & Amps Display Screens**

All Service Items Accessed From Outside the Meter

GENERAL

Many products have been labeled "living". If ever there was product that embodied the concept of "living product", the 355 Signalman's meter is it. Since it was introduced in 2014, an extensive array of railroad signal-oriented features have been added, all in response to customer requests. A complete listing is found in a special section of this brochure labeled "Railroad Focus".

Another feature that is surely "railroad-focused" is electrical durability. Over 6000 units in service, over six year's time, to the point of this writing (October 19, 2020) and only ten have been returned for repair of user inflicted electrical damage. It is unreasonable to assume that so few of the 6000+



users have, unintentionally, connected the Meter to voltages and currents above specification. The conclusion must be that the 355 Signalman's Meter is exceptionally, electrically durable.

RAILROAD FOCUS

We actively pursue railroad-focused capabilities for this Meter. Additionally, customers in the US and elsewhere in the world, have requested capabilities that have been added to the 355 Signalman's Meter. Beyond the capabilities highlighted on the first page of this brochure, the following features address known railroad signal and telecomm needs.

- A. DC Coded Track Reading in Volts and Amps
 - 1. Displays code rate and percent on simultaneously
 - 2. Range 30 CPM, or greater
- B. AC Code Cab Signaling Reading in Volts and Amps
 - 1. Volts and Amps Functions capabilities
 - 2. Displays code rate, carrier/track circuit frequency, and percent on
 - 3. Toggles any carrier/track circuit frequency from 12hz to 9999hz
 - 4. Rates indicated: Actual, from 50 to 420 cpm, and "No Code"
- C. DRD Simulator For AF Circuits Used in Transit Applications in both Volts and Amps Scales
- D. Reads Peak Pulse Track Circuit (Used In Australia, Brazil and South Africa)
- E. Accommodates 5 different Current Clamp & Loop output ratios, allowing in-current reading on Volts Scale of S&C-furnished current clamps in full scale values of 30, 200, 500, 2,000 and 4,000 Amps. Will work with other current clamps with same output ratios. See Page 4 for more information. Current Amplifier, working with 30A Clamp or Loop provides 1 to 1 ratio that can be read directly on Main Volts screen.
- F. Electro-Code Reader features display "near" and "distant" unit named codes, polarities, volts or amps, along with a graphic representation of the codes being transmitted. Reading can be done on Volts and Current Scales.
- G. Min/Max Reader reads minimum and maximum Volts and Amps peaks.
- H. Electro Scope feature provides a limited oscilloscope in Volts
- J. Flash Rate capability in Volts and Amps automatically determines type of voltage (DC, AC or True RMS AC+DC) and reports voltage, % on and flash rate.
- K. Volts and Amps Spectrum Analyzers are provided. Frequency range in both is: Zero Hertz (DC) through 20,000Hz. Low-end sensitivities are 0.07VAC (-20 dBu when toggled) and 60mA.
- L. AC Volt screens and Volts Spectrum Analyzer can be toggled to read in dBu to -40dBu level on the Volts screen, -20dBu on the Spectrum Analyzer.
- M. FSK signals can be read with either Volts or Amps Spectrum Analyzers, with the Peak Hold feature for the Spectrum Analyzers activated.
- N. Dry Contact feature in Ohms Scale displays DC and AC code rate and % on.
- O. Zippered Meter Case is equipped with a pull-out hanger that permits suspension of Meter while working with it in legacy-type signal cases, at gate mechanisms, etc.
- P. -40 deg F/C display is made visible in bright sunlight with Sun Shields and Sun Visor.
- Q. Accessory devices provide enhanced railroad-related capabilities such as 1000 Ohm/Volt Pad for ground tests; 600 Ohm Pad for comms line termination, 50A & 100A Meter-based Current Ranges; Current Clamps with high-end ranges of 30 to 4,000 Amps, Current Loop with 30A; Thermal Probe for measuring air flow temperatures of switch heaters; and Magnetic Lead Clamp Set. A complete list can be found in Accessory Ordering Information at the end of this brochure.
- R. Multiple-meter kits have been developed, responding to customer requests. See primary, partial list in Ordering Information section of this brochure. Many others, more specialized, are also available.

SPECIFICATIONS**A. Volts Scale:**

1. One Switch Position, One Lead Connection Pair
2. Auto Ranging; 0 to 600 Volts AC (True RMS) and DC (reports polarity of DC). Sub-scale of 0 to 120 Volts DC & AC for better resolution. Bar Graphs on both Volt Meters.
3. Accuracy: +/- 3%
4. Sensitivity: DC 10mV, AC 7mV (-40dBu when toggled to read dBu)
5. Reads and displays AC and DC Volts simultaneously & with Bar Graphs
6. Volts Spectrum Analyzer: 0Hz to 20KHz, Sensitivity: -20dBu (.07V)
7. Amps are displayed in special Volts feature using Current Clamps or Loop (AC). Will read DC and AC Amps simultaneously if both are present.
8. Amps can be displayed, in a 1 to 1 ratio, on the Main Volts screen when using the 355-35 Current Clamp/Loop Amplifier with either our 30A Current Clamp or Loop
9. Is able to do Peak-Hold and Peak Hold Reset of both AC and DC readings from most Volts screens.
10. Meter protected by impedance.
11. Input Impedance 200K Ohms (Plug-in Pad for 1000 Ohm/Vol and accessory 600 Ohm Pad for terminating telecomm line pairs)

B. Ohms Scale:

1. One Switch Position, One Lead Connection Pair
2. Auto-Ranging 0 to 10Meg Ohms, with Bar Graph
3. Accuracy: +/-3%
4. Sensitivity: 1 Ohm
5. Continuity Beeper: Triggers At 65 Ohms and below. Menu selectable
6. Dry Contact feature displays DC and AC code rate and % on
7. Meter protected by Thermal Reset, 500mA, Reset current/time-related

C. Amps Scales:

1. Two Scales (Switch Selectable): 10A and 30A
2. Two Lead Connection Pairs: 10A and 30A
3. Auto-Ranging: 100 uA to 10 Amps, 10mA to 30 Amps, DC or AC, with Bar Graphs
4. Accuracy: +/-3%
5. Sensitivity: 10A Scale: DC - 0.1mA; AC - 1.0mA
30A Scale: DC - 0.01A; AC - 0.01A
6. Is able to do Peak-Hold and Peak Hold Reset of both AC and DC readings from most Amps screens.
7. With accessory Shunt, uses Voltage Scale to read up to 50 Amps
8. Amps Spectrum Analyzer: 0Hz to 20KHz, Sensitivity: 60mA
9. Each Meter scale protected by one (10A, 30A) front-access fuse

D. Power Requirements:

1. Batteries: Four, AA Cells (1.5V, Lithium furnished). Externally accessed.
2. Battery Life: 60 hours of continuous on-time typical with Lithium batteries; lower below 68 degF.

E. Physical/Environmental:

1. Size: 4.75 in.W x 7.9 in.H x 4.3 in.D (not including padded case)
2. Operating Temperature Range: -40 degF/C thru +140 degF (w/Lithium batts)

OPERATION

- A. To facilitate low impedance readings, a Test Pad (1000 ohms per volt) is provided.
- B. Bar graphs provided for all AC, DC Voltage, Ohms and Amps displays.
- C. Low Operating Battery Voltage Indicator: Battery Voltage is displayed continuously on screen when unit is on. Unit advises Low Battery at 4.8V.
- D. Sleep Mode - A "Sleep" feature is provided (can be toggled on & off), with a 30 minute delay that resets with Meter activity such as when Meter functions are switched.
- E. Batteries may be either Alkaline or Lithium. Lithium batteries are furnished and will provide better temperature stability, 50% longer operating life and will not leak.
- F. Leads: 4 feet long, rubber insulated, CAT III, 14ga., 30A with Claw Clips. Accessory leads: 10 feet long, rubber insulated, 18ga., 10A with Probes and Screw-On Alligator Clips.
- G. For outdoor visibility of display & rain resistance, Sun Shields and Sun Visor are incl.

SPECIAL NOTE ON THE USE OF CURRENT CLAMP VOLTS TO AMPS MENU

OPTIONS

While they are identified as having specific applications for S&C products, the volts to amps ratios of the different menu options in our "Volts to Amps" menu, will work with any brand Current Clamp with the same output ratio. We provide those ratios here for the purpose of encouraging the use of Current Clamps you may already have in your inventory. As long as the current clamps you have, have output ratios that match those stated in the following list, and have a connection device, or can be adapted to have a connection device, that matches the dual-banana jack spacing of our 355 Meter "Volts" and "Com" input ports, your clamps should work with our Meter.

355 MENU LISTING	MILLIVOLT TO AMPS RATIO
S&C 30 Amp Clamp	100mV to 1 Amp
S&C 2000 Amp Hi	1mV to 1 Amp
S&C 200 Amp Lo	10mV to 1 Amp
S&C 4000 Amp Hi	0.50mV to 1 Amp
S&C 500 Amp Lo	4.0mV to 1 Amp

Note: S&C 30 Amp Current Loop (AC) output ratio is identical to that of our 30 Amp Current Clamp. Use **S&C 30 Amp Clamp** menu listing with it.

WARRANTY

One year limited warranty on parts and labor by S&C Distribution Company

ORDERING INFORMATION

COMPLETE UNITS

ITEM DESCRIPTION	PART NUMBER
Model 355 Signalman's Meter, Lithium Batts., 30A Clip Leads, 10 Amp Probe Leads, 1000 Ohm/Volt Pad, Sun Shields, Sun Visor, Harness & Padded Case	355-121L
Dual-Meter Kit, above Meter with 355-19 Current Clamp (AC/DC)	355-1019L
Dual-Meter Kit, above Meter with 355-39 Current Loop (AC)	355-1039L
Dual-Meter Kit, above Meter with 360 Ground Finder	355-1360L
Triple-Meter Kit, above Meter w/Current Clamp & Ground Finder	355-13619L