

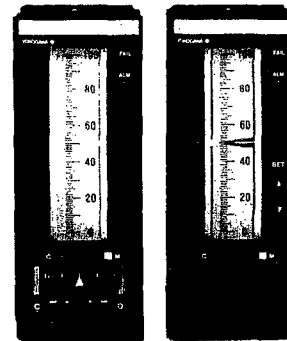
# General Specifications

## Model SMST (Style E) Auto/Manual Station

YEW SERIES 80

The SMST Auto/Manual Station can display a process variable (square root function is available) and provide a remote (e.g. controller) set point (for SMST-111) or manipulated-value output (e.g. to a valve actuator) (for SMST-121). In Auto (Cascade: C) mode, the output corresponds to a cascade input or DDC signal from a supervisory computer; in Manual (M) mode, the output corresponds to a manual set point. Mode may be changed by C/M switches on the front panel, or by a status input signal, and mode output signals are provided.

In manual (M) mode, the output is adjusted using (up/down) press switches on the front panel of the SMST-111, or using a lever on the front panel of the SMST-121.



SMST-121

SMST-111

### STANDARD SPECIFICATIONS

#### Analog Input/Output Signals

**Analog Input:** 1 to 5 V DC, Input resistance 1 M $\Omega$ .

**Cascade Input:** 1 to 5 V DC, Input resistance 1 M $\Omega$ .

**Analog Output:**

	Output	Load resistance	
SMST-111	Setpoint	1 to 5 V DC	At least 2 k $\Omega$
SMST-121	Manipulated value	4 to 20 mA DC	Up to 750 $\Omega$
	Analog output	1 to 5 V DC	At least 2 k $\Omega$

**Contact Input Signals:** One point — for mode transfer.  
Contact or voltage signal.

Input	Input status — ON	Input status — OFF
Contact*	Contact closed — source up to 200 $\Omega$	Contact open — source at least 100 k $\Omega$
Voltage	Low: -0.5 to +1 V	High: +4.5 to 30 V

\* Contact rating at least 5 V DC, 20 mA.

\*\* Minimum pulse width 220 ms.

#### Contact Output Signals:

Designation	No. of points	Description
Instrument mode	1	Transistor contact, rating 30 V DC, 200 mA (resistive load).
Fail	1	

Note: Status I/O signals are isolated from internal circuitry and from each other; analog I/O signals are not — they use a common negative line. Power supply is isolated from internal circuitry.

#### Indicators

**Process Variable and (for SMST-111 only) Set Point**

**Indicators:** Moving coil meter. Vertical scale.

**Index Color:** Process variable — red; Set point (for SMST-111) — blue.

**Indicator Accuracy:**  $\pm 0.5\%$  of span.

**Indication Range:** 0 to 100%.

**Scale:** 100 mm long, interchangeable.

**Scale Marking:** Single scale with units marking. Major divisions are marked.

#### Output Indicator (For SMST-121 only):

**Output Indicator:** Moving coil type, with two memory indexes for limits, and with valve open/close marks. Horizontal scale.

**Scale:** 39-mm scale with 20 equal divisions.

**Indicator Accuracy:**  $\pm 2.5\%$  of span.

#### Set Point/Manipulated Value Output

##### Manual Mode:

**SMST-111 Set Point:** Set by press switches on the front panel. 40 sec./full span change.

**SMST-121 Set Point:** Set by lever on the front panel.

Two speed operation:

Slow — 40 sec./full span change.

Fast — 4 sec./full span change.

**Auto Mode:** Output signal follows "cascade" input signal.

##### Output Limiter (for SMST-121 only):

MH (High limit) adjustable — 6.3% to 106.3%.

ML (Low limit) adjustable — 6.3% to 106.3%.

**Mode Transfer:** Manual (M) or Auto ("Cascade": C) mode selectable by switches on the front panel or by a contact input signal (see above). First cascade (C) mode must be selected manually; then, when status is ON (contact closed) the A/M station remains in cascade mode, and when status is turned OFF (contact open), C lamp flashes and manual mode is selected. (This switch action can be reversed so that status ON (contact closed) results in switching to manual). Contact signals (Manual — OFF, Auto — ON) are output to indicate instrument mode. Lamps inside the switches also indicate instrument mode. C to M mode transfer is bumpless and balanceless. For M to C mode transfer, output ramps from manual setting to input value at rate of 40 sec./full span.

## Signal Processing

**Square Root and Low-Signal Cutoff:** Each user-selectable, for process variable input. For signals below the "cutoff" point, a linear characteristic "Output = Input" applies.

**SMST-111:** Selected by side panel switch. Cutoff applies to signals below 1% of input span.

**SMST-121:** Selected by side panel mode setting. Cutoff point is adjustable between 0.0 and 100.0% of input range.

**Cascade Input Scaling (for SMST-121):** User-selectable. Computation formula  $CMV = CGN (CIN + CBI) + CBO$

Here CMV is computed output, CIN is cascade input, CGN (gain) is set in range -8.000 to 8.000, CBI (input bias) is set in range -106.3 to 106.3%, CBO (output bias) is set in range -800.0 to 800.0%.

**Cascade I/O Transfer Characteristic Accuracy:** For current output,  $\pm 1\%$  of span; for voltage output,  $\pm 0.5\%$  of span.

**Parameter Setting and Data Display:** Side-panel keypad and display of parameter/data name and numerical value (four digits).

## Communication Functions

The SMST can communicate (via LCS card in field control station/unit) with a central YEWPACK/CENTUM CRT-display operator station and supervisory computer. Maximum length of (SCCD) cable to LCS card is 100 m (328 ft).

**For LCS card interface to YEWPACK/CENTUM:**

**Data Transmitted:** Process variable, operation mode\*, communications abnormal, setpoint\* (only SMST-111), manipulated output\* and output limits\* (only SMST-121). \*Remote setting of these parameters (from YEWPACK/CENTUM or supervisory computer) is possible, but can be disabled.

## Power-Fail/Restart Functions

**For a Power Failure of Up to Approx. Two Seconds:** Status prior to power failure retained.

**For a Power Failure Longer than Approx. Two Seconds:** Restart mode can be selected as "HOT" or "COLD" by side panel switch -

**HOT** (Computational data and status prior to power failure preserved).

**COLD** (Status reset to manual mode, 1 to 5 V outputs set to -6.3%, and 4 to 20 mA manipulated variable output (SMST-121) set to -20%).

**Data Memory Backup During Power Failure:** By internal battery.

**Life of Backup Battery** (temperature up to 45°C):  
At least 5 years (normal operation),  
At least 1 year (backup operation).

## Self-Diagnostic Features

**Computation and Control Abnormalities:** "FAIL" lamp lights, "FAIL" contact output opens. (Fail contact is also open during power failure). For SMST-121, manual operation is possible.

**Input/Output Signal Abnormalities** (Input overflow, current output wire open circuit): "ALM" lamp lights.

**Memory Backup Battery Low:** "ALM" lamp flashes.

**Communications Abnormal:** "C" lamp flashes (during communications).

For diagnostic purposes, numeric error codes corresponding to faults can be displayed on side panel display (SMST-121 only).

## Normal Operating Conditions

**Ambient Temperature:** 0 to 50°C (32 to 122°F).

**Ambient Humidity:** 5 to 90% Relative Humidity (non-condensing).

**Power Supply:** Two versions, for "100 V" (standard) or "220 V" (option /A2ER). Both versions may use AC or DC, without change to the instrument:

Version	"100 V"	"220 V"
DC (polarity reversible)	20 to 130V	120 to 340V
AC (47 to 63Hz)	80 to 138V	138 to 264V

## Maximum Power Consumption:

Model	24 V DC	100 V AC	220 V AC
SMST-111	210mA	11.7VA	14.6VA
SMST-121	240mA	12.6VA	15.8VA

## Insulation Resistance:

Between I/O Terminals and Ground: 100 M $\Omega$ /500 V DC.

Between Power and Ground: 100 M $\Omega$ /500 V DC.

## Withstanding Voltage:

Between I/O Terminals and Ground: 500 V AC for 1 minute.

Between Power and Ground:

1000 V AC for 1 minute (100 V version).

1500 V AC for 1 minute (220 V version).

## Wiring:

Signal Wiring to/from the Field: ISO M4 size (4 mm) screws on terminal block.

## Power and Ground Wiring:

100 V Version: JIS C 8303 two-pin plug with earthing contact. (IEC A5-15, UL498).

220 V Version: CEE 7 VII (CENELEC standard) plug.

Power Cable Length: 30 cm (11.8 in).

## Mounting:

Flush panel mounting. Instruments are in housings, and may be mounted individually or side-by-side.

Instrument may be inclined with front up to 75° from vertical (rear of instrument lower than front). (Indicator zero may need readjustment).

**Nameplate:** Size 8 x 65.3 mm, cream semi-gloss finish.

**Lettering:** In black, one or two rows each up to 14 alphanumeric characters long.

**Front Panel Finish:** Dark green (Munsell 2.5GY 3/1).

**Bezel:** Aluminium diecast, black baked-enamel finish.

**Housing:** Open front; connector for SPBD portable manual station.

**Housing Dimensions:** 182.5 (H) x 87 (W) x 480 (D: depth behind panel) (mm) (7.2 x 3.4 x 18.9 in).

## Weight:

Controller less Housing: 3.0 kg (6.6 lb).

Housing: 2 kg (4.4 lb) (excluding mounting kit).

## OPTIONS

**/A2ER:** For "220 V version" power supply.

**/MTS:** Instrument supplied with kit for individual mounting.

For mounting in groups, see GS 1B4F1-E.

**/SCF-G□M:** Mounting kit bezel color change from standard color (black). Choose color from set of optional colors (see GS 22D1F1-E). Specify color code in space □.

**/NHS:** No housing, instrument only. See GS 1B4F1-E to order housing separately.

**/NPE:** With letters\* engraved on front panel nameplate.

\*See GS 22D1C4-E.

## ACCESSORIES

1 A fuse, quantity one.

## MODEL AND SUFFIX CODES

Model	Suffix codes	Style	Option codes	Description
SMST	.....		.....	Auto/Manual Station
With Process Variable Indicator	-1 .....			With Process Variable Indicator
Functions	-1 .....			Push-button set point setting, 1 to 5 V output Manipulated output lever, 4 to 20 mA or 1 to 5 V output
	-2 .....			
C/M transfer		1 .....		With C/M transfer
Style Code		*E .....		Style E
Common Options			/A2ER /MTS /SCF- G□M /NHS /NPE	220V power supply* With mounting kit Bezel color change  Without housing Nameplate engraving

\* When ordering housing separately, specify /A2/NHS.

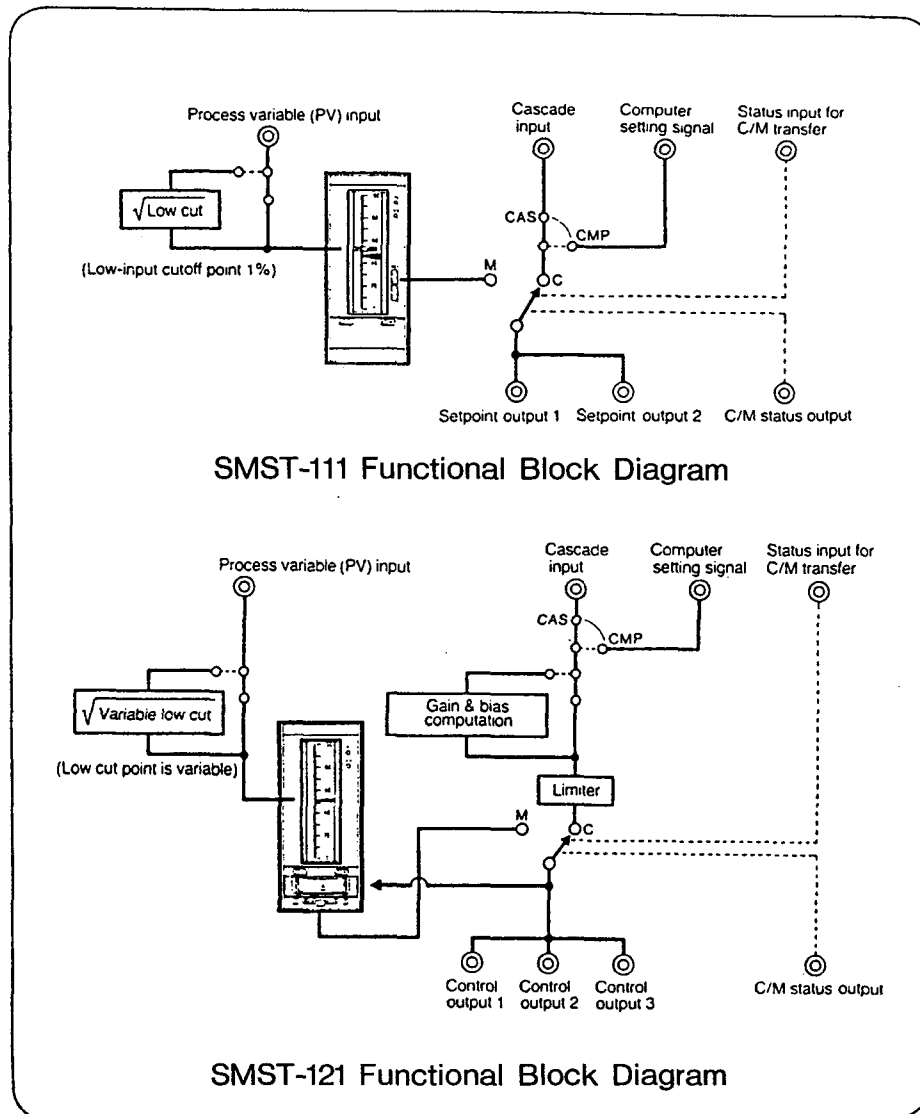
## TERMINAL CONNECTIONS

Terminal Designation	Description	Terminal Designation	Description
1	+ > Process variable input, 1 to 5V DC	17	+ > Communication *1
2	- > Process variable input, 1 to 5V DC	18	- > Communication *1
3	+ > Auto ("cascade") input, 1 to 5V DC	19	
4	- > Auto ("cascade") input, 1 to 5V DC	20	
5		21	- Fail output (- terminal)
6		A	+ > Manipulated output 1, 4 to 20mA DC
7		B	- > Manipulated output 1 (SMST-121 only) *2
8		C	+ > Manipulated output 2 (SMST-121) or
9		D	- > Set point output 1 (SMST-111), 1 to 5V DC
10		F	+ > Manipulated output 3 (SMST-121) or
11	+ > Mode transfer (contact input)	H	- > Set point output 2 (SMST-111), 1 to 5V DC
12	- > Mode transfer (contact input)	J	
13		K	
14		L	
15	+ > Mode (contact output)	M	
16	- > Mode (contact output)	N	+ Fail output (+ terminal)

\*1: Use shielded twisted-pair cable (SCCD, see GS 34B6T1-01E).

\*2: If these terminal are not used, connect them together.

## PRINCIPLES OF OPERATION



### ==== ORDERING INSTRUCTIONS =====

Specify the following when ordering:

1. Model, suffix and option codes.
2. Main scale and engineering units marking (see GS 22D1C1-E).
3. Nameplate marking, if required (option /NPE).
4. Mounting kit (option /MTS), if the instrument is to be mounted individually (see OPTIONS above).

### ==== RELATED EQUIPMENT =====

#### Related Instruments

Model UFCH Field Control Unit ..... GS 34B6G1-01E  
 Model CFCS2 Field Control Station ... GS 34B2G1-01E  
 Model CFCD2 Duplexed Field  
 Control Station ..... GS 34B2H1-01E  
 Model SCCD Cable ..... GS 34B6T1-01E

#### Related Spare Parts

Memory Backup Battery..... Part no. E9711DH