

Model 691HT



Microprocessor-based field Communicator

- connects to any wiring termination point
- allows the user to configure, calibrate, rerange and troubleshoot the transmitter without going to the device
- provides transmitter-PC standard interfacing for software upgrade and handling of new HART devices

Comprehensive management of HART devices including the following

- 2600T and 600T series pressure transmitters
- TH and 600T series temperature transmitters
- 2000T and AS800 series pressure transmitters
- Deltapi K series pressure and temperature transmitters
- other devices with HART operativity from ABB instrumentation range

Generic communications with any HART compatible instrument

Operates as a HART modem for a PC-based software communication

Features

The field Communicator model 691HT is a battery-powered, hand-held unit designed to configure, calibrate and troubleshoot the smart transmitter either remotely or at the unit. Access to transmitter's data base changes is password-protected. It also contains a permanent memory in which up to 40 configurations can be stored.

Communication Link

The communication link between the 691HT or a Configuration System and the HART transmitter is based on the Bell 202 standard Frequency Shift Keying technique (FSK). Information are transferred using digital signals superimposed on the transmitter power/signal wires. The average energy added to the loop is zero and reading transmitter values does not disturb nor does it interrupt the 4-20 mA signal. Signal loop must have 250 ohms minimum load for communications.

Smart transmitters can be accessed by any Remote Transmitter Interface supporting the HART® open communications protocol. The 691HT software installation and upgrade is now available through a PC based software program, via RS232 serial communication line.

Libraries for ABB Instrumentation devices can be transferred directly from a personal computer to the memories of the 691 HT configurator; a suitable "loading" software package can be requested to ABB Instrumentation, operating under Windows platforms.

Functional specification

The smart electronic transmitter can be configured easily from the Hand-Held Communicator through a bidirectional communication with the smart transmitter.

A configuration consists of three types of data:

- 1 - User descriptive data which are not sent to the transmitter
- 2 - Operational parameters of the transmitter which include upper and lower range values, damping time, linear or square root output and engineering unit selection.
Informational data to allow identification and physical description of the transmitter which include tag, descriptor, message and date.
- 3 - In addition to the configurable parameters and data, the transmitter data base is customized at the factory with specified process flange material, drain/vent, O-ring materials and output meter code option.
The transmitter data base also contains pieces of information which are not user-changeable: transmitter type, range limits, minimum span, fill fluid, process isolating diaphragm material, electronics module serial number and software revision level.

A configuration is either identified by the Tag Name allocated to each transmitter at the factory.

A polling address can also be given to allow the transmitter to work in traditional multidrop mode when its output remains fixed at 4 mA.

The Hand-Held Communicator

The Hand-Held Communicator can interrogate the smart electronic transmitter from any wiring termination point in the loop. It is designed to enable the instrument engineer to configure, calibrate and troubleshoot the smart transmitter either before or after installation.

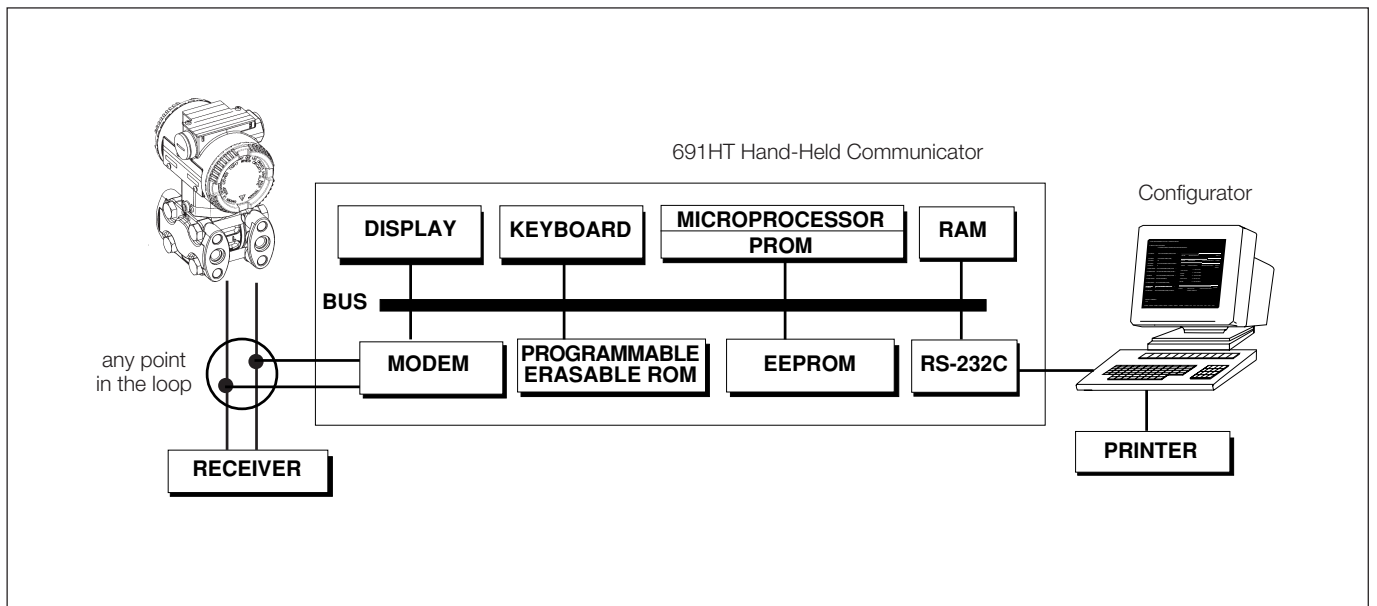
Lock-out feature prevents unauthorized altering of transmitter parameters while allowing monitoring and trouble shooting. Cloning a transmitter data base is also possible by uploading from an existing transmitter, changing information and downloading the new data base to another transmitter.

The Communicator employs a four-line by twenty characters dot-matrix LCD display and a 25-key tactile feedback keyboard with an alphanumeric Keypad allowing flexible and easy communication between the user and the smart transmitter.

Software-defined keys and dedicated keys are used to scroll through menus, select functions and enter alphanumeric characters. Battery life is automatically extended by an automatic shut-off feature. The unit is automatically switched off if there is no keystrokes for a period of eight minutes.

In addition, the Hand-Held Communicator internally converts the transmitter communication data to RS-232 levels through the built-in modem and, alternatively, converts RS 232 levels to signals compatible with the transmitter. This process takes place automatically within the unit and allows a two-way communication between the transmitter and any IBM and compatible personal computer running a HART Configuration Package.

Functional block diagram



Keyboard description

The keyboard is divided in three areas: alphanumeric keys, software function keys and dedicated keys whose functions are:

- A) 12 alphanumeric keys to enter values and strings
- B) 4 software-defined keys (below the display) which can have different functions as stated by the running software and shown on the two lower lines of the display.
- C) 9 dedicated keys for the following functions:

- PV** to read process variable and output
- CONF** to change tag, calibration, damping, to include/delete root extraction and modify other data and parameters
- TRIM** to adjust/read internal trimming values
- REVIEW** to view transmitter data base
- ESCAPE** to return to the previous menu or abort an operation
- SERIAL LINK** to interface the PC and access permanent memory
- ENTER** to enter data
- ON** to switch "on" the communicator
- OFF** to switch "off" the communicator

Display

Examples of information handled by Communicator are:

Read only information

- diagnostics
- transmitter type and model
- descriptor and message
- transmitter range
- static pressure (ΔP only) and transmitter temperature write function disabled

Read/write information

- process variable in engineering units
- zero and span settings
- output signal calibration in % or mA
- linear or square root output and damping time
- digital trim and output trim
- tag name
- loop test
- password security

691HT also performs the management and configuration of any smart HART compatible device, other than ABB instrumentation HART products. Allowed operations comply to standard definition of universal and common practice HART commands, as explained in the following table.

GENERIC OPERATIONS WITH 691HT
PV reading
Analog Output reading
Secondary Variable reading
Change Tag
Change Data
Change PV Unit
Change Range (ranging)
Change Damping
Change Output Transfer Fnc.
Change Polling Address
Loop test
Output Trimming
Zero Alignment (Sensor Trim)
Reranging
Modem action

Functional specification

Memory

The non-volatile memory retains contents when the unit is powered down. An internal back up battery with a useful life of 10 years maintains information even if the rechargeable power pack or batteries fully discharge.

Power Supply

Four type AA 1.5V alkaline batteries (provided).
SUITABLE ONLY FOR UNCLASSIFIED LOCATION

Rechargeable Nickel-Cadmium 4.8V battery sealed pack.
Maximum charging constant current 50 mA for 15 hours max
Continuous run time :
– 30 hours approx. with disposable alkaline batteries
– 10 hours approx. with optional rechargeable power pack

Operative limits

Temperature limits

Ambient (operating): 0 and 50°C (32 and 122°F)
Storage: -20 and +70°C (-4 and +158°F)

Environmental limits

Humidity limits

operates in 0-95% relative humidity under non-condensing conditions below 40°C (104°F) without error.

Hazardous Location Certification:

- INTRINSIC SAFETY/EUROPE
ATEX/CESI approval
EC-Type Examination Certificate no. CESI 03 ATEX 043
II 1 G, Ex ia II C T160° (-20°C ≤Ta ≤+50°C)
- FACTORY MUTUAL
Intrinsically Safe: Class I, Div. 1, Group A,B,C,D
Nonincendive: Class I, Div. 2, Group A,B,C,D
- STANDARDS AUSTRALIA (SAA) : TS approval
Intrinsically Safe Ex ia II C T4

Physical specifications

Display and Keyboard

LCD - 4 rows 20 characters each
25 keys- tactile mobile feedback embossed membrane

Connections

to the transmitter: 1.5m (5ft) leadset with insulated minigrabbers and alligator clips (provided);
to the PC (RS232): 9-pin D type female connector;
to the optional battery charger : 5.5mm. dia. socket; inner pin positive.

Dimensions

101 x 205 x 72mm (4 x 8.1 x 2.8in) (W x D x H)

Material

Case in ABS. Keyboard in Polycarbonate.
Carrying case, with detachable shoulder strap (provided).
Used to accommodate the Communicator, spare battery(ies), connection accessories, ect.

Optional extras

Rechargeable Nickel-Cadmium battery pack
Battery charger
Supply : 220Vac ± 10%
Output Voltage : 12Vdc max.
Output Current : 50mA dc
BATTERY CHARGER ABB CODE AU3134 (ex AF5PA10017)
IS SUPPLIED WITH CIRCUIT PROTECTOR ABB CODE AU3127,
ALLOWING TO USE THE EQUIPMENT IN HAZARDOUS
CLASSIFIED LOCATION
Leadset to the PC : 1.5m (5t) with 25-pin D type female connector and D25 male to D9 female adaptor.

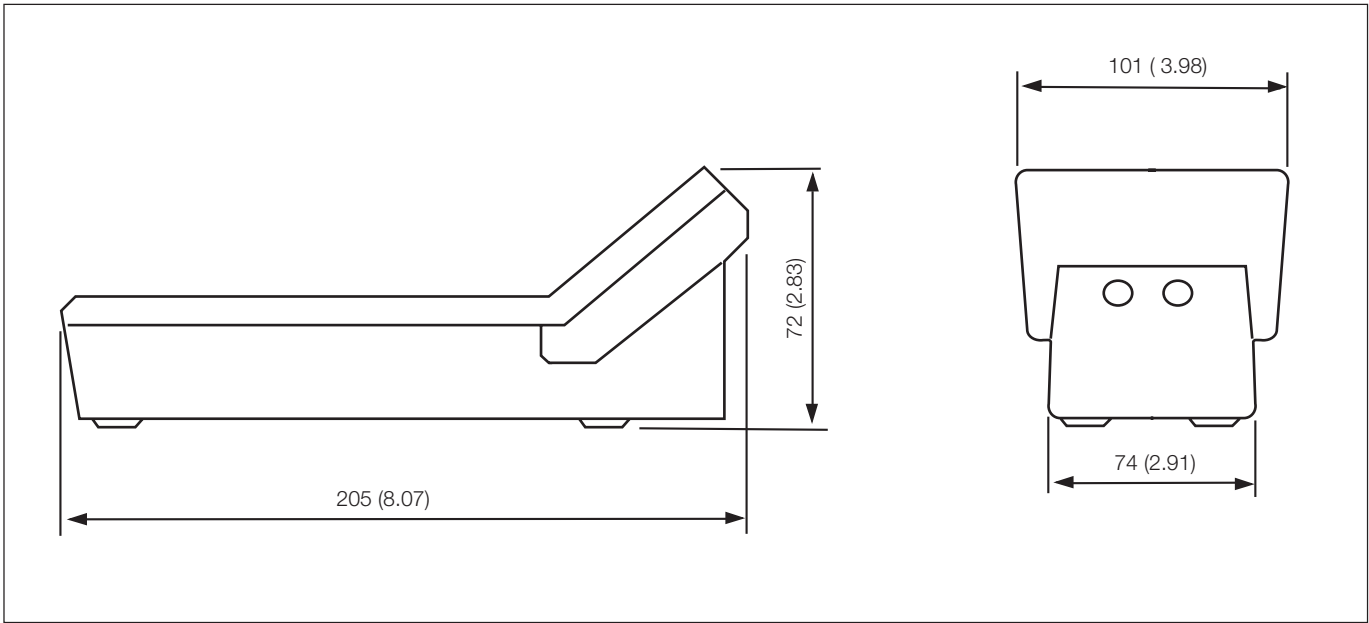
Mass

1.4kg. (3lbs) approx. including accessories

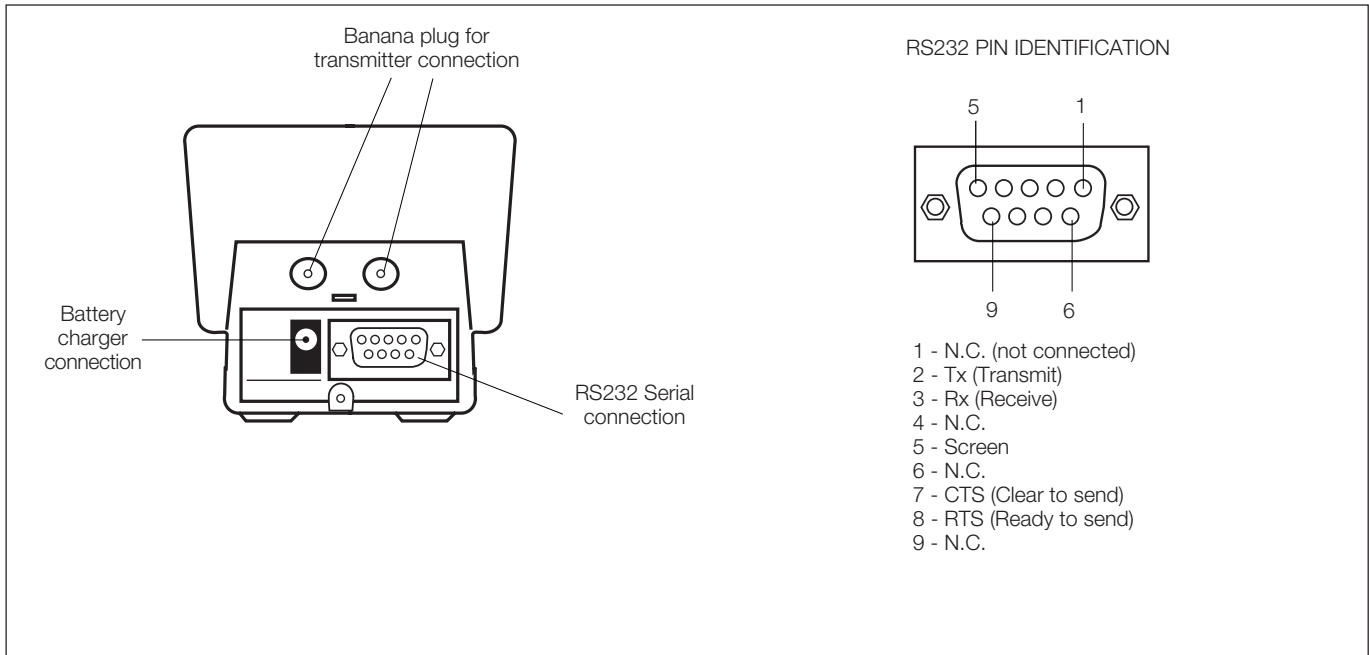
Packing

Carton 30.5 x 16 x 10.7cm approx. (12 x 6.3 x 4.2in).

DIMENSIONS - dimensions in mm (in)



Electrical connections



ORDERING INFORMATION model 691HT Hand-Held Communicator

Select one character or set of characters from each category and specify complete catalog number.

BASE MODEL – 1 st to 5 th characters	6	9	1	H	T	X	X	X	X	X	XXXXX
Hand held communicator											
Certification / Power supply option – 6th character											
General purpose											1
ATEX Group II Category 1 G - Intrinsic Safety Ex ia											2
Factory Mutual (FM) approval											7
Standards Australia (SAA) - Intrinsic Safety Ex ia II C T4											W
GOST (Russia) Ex ia											R
GOST (Kazakhstan) Ex ia											K
Recharger service - Plug type – 7th character											
Not required											1
220/230 Vac - European plug (not available with disposal AA batteries code 1 at position "f")											2
Language – 8th character											
English											E
Software release – 9th character											
Use code											0
Leadset to PC – 10th character											
None											0
Provided											2
11 th to 15 th characters											
Use code											00000

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