

General Specifications

GS 61A YPC-01E-A

Model YPC4000 Portable Modular Calibrator with HART® Communications

YPC4000 is a combination Calibrator / HART Communicator that reduces the time spent on field calibrations and the number of test instruments that have to be carried into the field. The YPC4000 Series delivers the versatility of a modular calibrator and the convenience of HART communications in one handheld unit. Users can view up to four measurements simultaneously on the high resolution LCD or compare HART PV and AO values to corresponding values measured. Available sensor modules include a variety of differential, gauge, vacuum and absolute pressure as well as voltage, current and temperature. A voltage and current meter is integral to the base unit. All HART field devices can be configured, polled, and trimmed using HARTcommunications. Device Specific commands for more than 200 supported devices, including EJA/EJX pressure transmitters, YTA Temperature Transmitters, and Yewflo are available.

FEATURES & ADVANTAGES

USER INTERFACE – 2.6" x 2.6" display, four soft keys (definitions change with mode requirements) and eight hard keys provide user interface. Display is configurable for 1 to 4 simultaneous measurements.

MODULES – select from a variety of positive-lock measurement modules for excellent versatility. All modules can be "hot swapped" to remove or install sensor modules at any time (restrictions apply for Intrinsically Safe units).

FIELD RECERTIFICATION – sensor modules and integral V / I can be recalibrated for zero, span, & linearity through the base unit.

MEASUREMENT UNITS – customary English and Metric System units are selectable.

USER CONVENIENCE – Auto shut off, Damping, Min/Max value capture, display Hold, sensor Zero, direct Contrast adjustment

SECURITY LOCKOUT – YPC4000 settings can be locked out entirely or by specific feature.

DIAGNOSTICS – YPC4000 self-tests upon power up and upon installation of sensor modules. Advisories are posted on the display.

FIELD UPDATES – uses Internet downloads to update and add capability / HART support.

DEDICATED DOF MEMORY – Memory for 600 HART profiles

ALL-IN-ONE TOOL – takes the place of multiple handheld instruments, simplifies workload and improves productivity. Documenting memory and firmware for use with DMS software. Stores up to 200 HART configuration files and over 100 calibration results (as-found & as-left data [up to 21 points each], time/date info, tag). Communicate with PC via DB-9 connector. Class I, Div I areas per CSA 22.2 & UL 913 certified by MET Laboratories - (ATEX 100a and FM are pending).

OPTIONAL DMS SOFTWARE – The Device Management System software is a full feature software tool for calibration and configuration management of smart and conventional



field devices. DMS provides user-friendly navigation and organization of field devices, scheduling of calibration procedures, and storage of smart field device configuration data. The calibration management features are extended to the Calibration / Configuration equipment as well. Calibration and configuration change reporting, certificates, and device history are standard features in DMS.

SPECIFICATIONS

BASE UNIT: 9.00"L x 4.70"W x 3.58"D ABS plastic case with shock absorbing boot, 28 ozs, three bays for measurement modules.

DISPLAY: 128 x 128 pixel graphic display, 2.6" x 2.6" viewable area, 5-digit resolution. **POWER:** 6 AA alkaline or NiMH batteries; 100 – 240 Vac power adapter.

TEMPERATURE RANGE: Storage: -40°F to 140°F (-40°C to 60°C) Operating: 23°F to 122 F (-5°C to 50°C)

CONNECTIONS: Pressure: 1/8" FNPT, 316ss. Electrical: Std. banana jacks (3/4" center) for ±50 mA/Volts, HART & Loop leads. Data transfer: DB-9 for RS-232C.

NIST TRACEABLE ACCURACY: Pressure: ± 0.025% to ± 0.10% of F.S including all effects of linearity, repeatability, hysteresis and temperature within the range 23° F to 122° F. Current / Voltage: ± 0.025% of F.S. ± 0.001% of Span per ° F (ref. temp. 70° F).

PRESSURE MODULE LIMITS / MEDIAS: GI / AI modules: 2X range / 316ss compatible DN modules: 2X range when pressurized on high side only, 150 PSI when applied simultaneously to high and low sides / dry gases only **MODULES:** 2.3"L x 1.3"W x 2.6"D, 8.3 ozs or less. Positive-lock with spring latch. Depress latch to release. Electrical connections are PC board contacts to spring loaded receivers on base unit. Dummy modules protect any empty bay(s).

YPC 4000 Multifunction Tester

YPC BASE UNIT MODEL NUMBERS (Includes Plastic Carrying Case, Test Lead Kit, Batteries, Universal Power Adapter, RS-232 Serial Cable, Paper User's Manual)	
YPC 4000	Calibrator - Base unit with three modular sensor bays - See available Sensor / Simulation Modules on Page 3. Note: VMA0055 is Required For 24Vdc Loop Power Source
YPC 4010	Calibrator/HART Communicator - (Includes HART leads Kit). See Sensor / Simulation Modules on Page 3. Note: VMA0055 is Required For 24Vdc Loop Power Source
Code	Reserved
-01	Always -01
Code	Documenting Options
-1	Standard documenting (as-found & as-left documenting; separate DMS database software recommended for electronic procedure / result transfer)
-2	21CFR Part 11 documenting for FDA electronic signature compliance (as-found & as left, DMS database software recommended for downloading data to PC sold separately)
Code	Certification Options
-00	CE Mark (Standard on all units)
-01	CE Mark, Intrinsically Safe Unit (see Note 1)
Code	Carrying Case And Strap Options
-0	Rear Hand Strap (Standard on all units)
-1	Fitted Use in Place Soft Carrying Case
-2	YPC Hanging/Shoulder Strap
Code	User's Manual Language Options
-01	English language
-02	German language (Pending)
-03	French language (Pending)
-04	Spanish language (Pending)
-05	Chinese (Mandarin) language (Pending)
-06	Italian language (Pending)
-07	Japanese (Pending)
Code	Download Subscription (DLS) Fee Options
-0	No Download Site (DLS)
-1	Standard 3-year DOF Download Subscription (YPC4010 only)

Example Part Number

YPC 4010	-01	-1	-01	-0	-01	-1	Full Model ID: YPC 4010-01-1-01-0-01-1
Calibrator & HART Communicator	Always	Standard Documenting	Intrinsic Safety	Rear Hand Strap	English Manual	Standard 3 Year DLS	Note: Only YPC 4010-01-1-01 portion of the model number is tracked by DPC Manager and DMS Software

Note 1 – Unit is tested and certified by MET Laboratories. MET Laboratories is a Nationally Recognized Testing Lab (NRTL). This unit is certified by MET Laboratories to comply with standards CSA C22.2 No. 1010.1-92, C22.2 No. 157, and UL913, Fifth Edition Rev. 2/21/97 for Class I, Div I, Groups A, B, C & D

Note 2 - NIST Traceability Certificate is standard for modules & base unit.

Sensor Modules for YPC 4000 Series Portable Modular Calibrator

SENSOR MODULE MODEL NUMBER, RANGE & ACCURACY		
Modules are Intrinsically Safe when used in accordance with Control Document		
FDN0010-01-1	1 - 10" H ₂ O dp	± 0.1% FS from 23° F to 122° F (± 0.009" H ₂ O)
FDN0020-01-1	0 - 20" H ₂ O dp	± 0.1% FS from 23° F to 122° F (± 0.02" H ₂ O)
DDN0100-01-1	0 - 100" H ₂ O dp	± 0.025% FS from 23° F to 122° F (± 0.025" H ₂ O)
DDN0200-01-1	0 - 200" H ₂ O dp	± 0.025% FS from 23° F to 122° F (± 0.05" H ₂ O)
DDN0400-01-1	0 - 400" H ₂ O dp	± 0.025% FS from 23° F to 122° F (± 0.10" H ₂ O)
DDN2000-01-1	0 - 2000" H ₂ O dp	± 0.025% FS from 23° F to 122° F (± 0.50" H ₂ O)
DGI0020-01-1	0 - 20 PSIG	± 0.025% FS from 23° F to 122° F (± 0.005 PSIG)
DGI0200-01-1	0 - 200 PSIG	± 0.025% FS from 23° F to 122° F (± 0.05 PSIG)
DGI0500-01-1	0 - 500 PSIG	± 0.025% FS from 23° F to 122° F (± 0.125 PSIG)
DGI1000-01-1	0 - 1000 PSIG	± 0.025% FS from 23° F to 122° F (± 0.25 PSIG)
DGI1500-01-1	0 - 1500 PSIG	± 0.025% FS from 23° F to 122° F (± 0.375 PSIG)
DGI2000-01-1	0 - 2000 PSIG	± 0.025% FS from 23° F to 122° F (± 0.500 PSIG)
GGI3000-01-1	0 - 3000 PSIG	± 0.05% FS from 23° F to 122° F (± 1.50 PSIG)
DAI0900-01-1	0 - 900mm Hg Abs	± 0.025% FS from 23° F to 122° F (± 0.225 mm Hg Abs)
DAI2000-01-1	0 - 2000mm Hg Abs	± 0.025% FS from 23° F to 122° F (± 0.50 mm Hg Abs)
DAI5200-01-1	0 - 5200mm Hg Abs	± 0.025% FS from 23° F to 122° F (± 13.00 mm Hg Abs)
TIO0110-01-1	T/C meas & sim with test lead kit	T/C measure and simulate module supports types B,C,E,J,K,N,R,S,T,M,P. Includes Standard T/C Connector/Wire Kit (P/N A37062)
VMA0055-01-1	V/mA meas & sim with test lead kit	V/I: meas ±55 Vdc, source 0-28Vdc; mA: meas ±100 mA dc, source 0-100 mA dc, Loop power source. Includes VMA Test Lead Kit (P/N A900529-00015)
RIO4000-01-1	RTD meas & sim with test lead kit	RTD measure and simulate module supports 22 different RTDs. Includes Special Module Connectors Kit (P/N A37063)

Example order:

PART NUMBER	DESCRIPTION
YPC 4010-01-1-01-0-01-1	Calibrator/HART Communicator with Plastic Carrying Case, Standard Documenting, Intrinsic Safety, Rear Hand Strap, English Users Manual, 3 year DOF Download Subscription, HART Lead Kit, Test Lead Kit, Batteries, Universal Power Adapter, RS-232 Serial Cable
VMA0055-01-1	V/mA meas & sim with test lead kit. Supplies Loop Power or can be used as a Voltage/Current Standard
DGI0020-01-1	0 - 20 PSIG Pressure Module
DGI2000-01-1	0 - 2000 PSIG Pressure Module
A37127	Standard kit with pressure pump (B34686) and low pressure connection kit (P/N A34386).

Note: NIST Traceability Certificate standard for all modules

Note: All modules have CE Mark and are Intrinsically Safe Certified by MET Laboratories
 MET Laboratories is a Nationally Recognized Test Lab (NRTL). These modules are certified by MET Laboratories to comply with standards CSA C22.2 No. 1010.1-92, C22.2 No. 157, and UL913, Fifth Edition Rev 2/21/97 for Class I, Div I, Groups A, B, C, and D

Note: General specifications of modules are listed below
 Pressure - GS61A YPC PSM - 01E - A
 Thermocouple - GS61A YPC TIO - 01E - A
 RTD - GS61A YPC RIO - 01E - A
 VMA - GS61A YPC VMA - 01E - A

Accessories for YPC 4000 Series Portable Modular Calibrator

KIT OPTIONS	
Standard kit includes: Pressure (B34686) or vacuum (B34700) pump, low pressure connection kit (P/N A34386).	
A37127	B34686 pressure pump with A34386 low pressure connection kit
A37128	B34700 vacuum pump with A34386 low pressure connection kit

CARRYING CASES / HANGING STRAP	
A36749	Soft case w/ shoulder strap for carrying one YPC and installed modules, additional modules, test lead kit, hand pump & fittings.
A36750	ABS plastic carrying case with handle & foam insert for YPC base unit & installed modules, additional modules, test lead kit, hand pump, RTD temperature probe, fittings & tubing
A36936	YPC Hanging/Shoulder Strap, includes factory mounted D-Rings to YPC case, adjustable strap, spring-loaded swivel snaps

PRESSURE SOURCES	
B34686	961P pressure pump with integral variator, bleed valve, 1/8" FNPT connection, 0 - 145 PSIG
B34700	961V vacuum pump with integral variator, bleed valve, 1/8" FNPT connection, -650 mm Hg
A34744-1	Repair parts kit for pressure pump B34686 (961P)
A34744-2	Repair parts kit for vacuum pump B34700 (961V)

FITTING KITS & ACCESSORIES	
A34386	Low Pressure Connector Kit (not for use above 250 PSIG) includes: 1/8" OD tubing (18 ft), 1/8" OD "T" fittings (2), 1/8" OD tube by 1/8" MNPT adapters (6), 3/16" barb to 1/8" FNPT (1) fitting and 1/4" MNPT to 1/8" FNPT reducers (2)
A34102	1/8" O.D. tubing to 1/8" MNPT connector (not for use above 250 PSIG)
A34112	1/8" O.D. tubing union tee (not for use above 250 PSIG)
A34099-1	1/4" MNPT X 1/8" FNPT reducer bushing, brass
A34103-2	10 ft of 1/8" O.D. nylon tubing (not for use above 250 PSIG)
A36853	Push to read equalizing manifold for DP modules, brass, 1/8" FNPT connections
A900020-90502	High Pressure Connection Kit (not for use above 9,000 PSIG) includes: 3' HP Hose with 1pc 1/8" MNPT & 1pc 1/4" MNPT x HP Quick Connect fitting
A900020-90503	High Pressure Connection Kit (not for use above 9,000 PSIG) includes: 1' HP Hose with 1pc 1/8" MNPT and 1pc 1/4" MNPT x HP Quick Connect fitting
A900020-90501	5 pcs 1/4" MNPT x HP Quick Connect Fitting (not for use above 9,000 PSIG)
A900436-00001	1 pcs 1/8" MNPT HP Quick Connect fitting (not for use above 9,000 PSIG)

ELECTRICAL / COMMUNICATIONS AND POWER ACCESSORIES	
A900529-00014	HART Test Lead Kit - std banana plugs, mini-grabbers, 250 ohm resistor (inc'd w/ YPC 401X)
A900529-00011	Standard Test Lead Kit - std banana plugs with assorted connectors (inc'd w/ YPC 402X)
A36821	Std size 250 ohm shunt resistor req'd for HART low resistance loops (inc'd w/ YPC 401X)
A900529-00015	VMA Test Lead Kit - banana plugs on 9" breakouts both ends, assorted connectors
A900441-00014	Adapter, standard banana jack (F) to mini-banana jack (M)
A900447-00052	DB-9 cable, Male x Female, 6 ft length
A36800	6-pack of AA Alkaline Batteries
A36843	6-pack of AA 1.2V NiMH Batteries
A36844	NiMH battery charger, holds up to 8 individual AA cells, 8 hours, 120 VAC 60 Hz
A36742	Power adapter, 100 Vac to 240 Vac, 50-60 Hz
A36755	Universal plug adapter kit for A36742 power adapter
A900447-00135	24Vdc Power Supply, input: 120Vac 60 Hz, output: 24Vdc 350 mA

TEMPERATURE ACCESSORIES	
A37062	Starter Kit for TIO0110 module t/c meas. & sim. – Includes A36857 t/c wire Kit 1 for E, J, K, N, T; mini-t/c conn., 1 m cable, A36858 t/c wire Kit 1 for B, K, R/S; mini-t/c conn., 1 m cable, A36881 mV meas. / sim. cable assembly; mini-t/c conn., 1 m cable
A37063	Starter Kit for RIO4000 module RTD meas. & sim. – Includes A900028-90500 User cable; module connector w/four (4) alligator clips, A900028-90200 RTD mating connector (for customer's RTD)
A900028-90201	Pt 100 RTD, DIN Class "A", 0.00385 alpha, 4 lead, 1/4" O.D. 300 Series SS probe, 10" length, 3.5" handle and 5 ft coiled cable with connector for RTD1000 temperature module
A900028-90200	Mating connector for RTD temperature modules facilitates use of customer's RTD
A900028-90500	User cable for RTD temp module, 5 ft cable, 4 lead wires, alligator clip terminations User cable for RTD temp module, 5 ft cable, 4 lead wires, alligator clip terminations
A36857	T/C wire Kit 1 for types E, J, K, N, T; mini t/c connector, 1 m cable
A36858	T/C wire Kit 2 for types B, K, R/S; mini t/c connector, 1 m cable
A36881	mV measure/simulate cable assembly; mini t/c connector, 3.5 ft. copper cable, alligator clips

OPEN BAY PROTECTION MODULE (included with base YPC as required)	
A36741	Dummy module protects unused (open) sensor module bays in YPC

DMS - Device Management System & Expansion Options

Device Management System Software			
Part Number	Product Description	UOM	
DMS Client/Server	Device Management System (DMS) Software, DMS Server and Clients Version 1.X, 1 Year Software Maintenance & Technical Support Included, Device Model Library, Minor Releases. Option DMSDPC01-ALL-0 below required for full communications to YPC4000 (Note 1 on page 7)		
		Floating Client License; Ext. Price = 1 x License Group	
	DMSBAS01-01-0	1 Client	License
	DMSBAS05-01-0	5 Client	License
	DMSBAS10-01-0	10 Client	License
	DMSBAS10-01-0	15 Client	License
	>15 Client	License	
OPTIONS			
DPC Interface	Documenting Process Calibrator/Communicator (DPC) Interface to DMS		
		Hand Helds by Yokogawa	
	DMSDPC01-CAL-0	YPC - Calibration Data Only (Note 2 on page 7)	System
	DMSDPC01-CFG-0	YPC/YHC – Configuration Data Only (Note 3 on page 7)	System
	DMSDPC01-ALL-0	YPC/YHC -Calibration & Config. Data (required for YPC4000 documenting) (Note 4 on page 7)	System
		Hand Helds by Other Manufacturers	
DMSDPC02	Add Non-Yokogawa DPC's (Fluke 743/744) (Note 5 on page 7)	System	
Hart Modem Interface	Single Point Access (SPA) (Note 6 on page 7)		
		Floating Client License; Ext. Price = # of Clients x Price	
	DMSSPA01	1 to 4 Clients	Client
	DMSSPA05	5 to 9 Clients	Client
	DMSSPA10	10 to 14 Clients	Client
	DMSSPA15	15 to 20 Clients	Client
	>20 Clients	Client	
Modem	MacTek HART Modems		
	DMSHMS-01	RS-232 Serial	Each
	DMSHMU-01	USB	Each

DMS - Device Management System & Expansion Options For 21CFR Part II Documenting

21 CFR Part 11 Enabling Device Management System Software			
Part Number	Product Description	UOM	
DMS Client/Server	D21 CFR Part 11 Enabling Device Management System (DMS) Software, DMS Server and Clients Version 1.X, 1 Year Software Maintenance & Technical Support Included, Device Model Library, Minor Releases. Option DMSDPC01-ALL-1 below required for full communications to YPC4000 (Note 1 on page 7)		
		Floating Client License; Ext. Price = 1 x License Group	
	DMSBAS01-01-1	1 Client	License
	DMSBAS05-01-1	5 Client	License
	DMSBAS10-01-1	10 Client	License
	DMSBAS15-01-1	15 Client	License
		>15 Client	License
OPTIONS			
DPC Interface	Documenting Process Calibrator/Communicator (DPC) Interface to DMS		
		Hand Helds by Yokogawa	
	DMSDPC01-CAL-1	YPC - Calibration Data Only (Note 2 on page 7)	System
	DMSDPC01-CFG-1	YPC/YHC – Configuration Data Only (Note 3 on page 7)	System
	DMSDPC01-ALL-1	YPC/YHC-Calibration & Config. Data (required for YPC4000 documenting) (Note 4 on page 7)	System
		Hand Helds by Other Manufacturers	
	Add Non-Yokogawa DPC's (Fluke 743/744) (Note 5 on page 7)	NA	
Hart Modem Interface	Single Point Access (SPA) (Note 6 on page 7)		
		Floating Client License; Ext. Price = # of Clients x Price	
	DMSSPA01	1 to 4 Clients	Client
	DMSSPA05	5 to 9 Clients	Client
	DMSSPA10	10 to 14 Clients	Client
	DMSSPA15	15 to 20 Clients	Client
	>20 Clients	Client	
Modem	MacTek HART Modems		
	DMSHMS-01	RS-232 Serial	Each
	DMSHMU-01	USB	Each

DMS Software Notes:

Note 1 One copy of DMS Server is included. DMS Server must be installed for DMS Client to work. DMS Server can be installed on a network SQL server or on a stand alone host machine. The DMS Server must be running for DMS Client(s) to operate. For network applications, DMS Client can be installed on multiple machines but the number of concurrent users is limited to the number of client licenses purchased. For stand alone applications, the DMS Server and DMS Client are installed on the same host machine.

Note 2 “Calibration Data Only” DPC Interface to DMS: The YPC / DMS interface handles the download of calibration procedures from DMS to YPC memory as well as the upload of calibration results from YPC memory to DMS. The interface is based on the Field Calibrator Interface Specification (FCINTF) from ISA for documenting process calibrators. **DO NOT CONFUSE THIS WITH HART CONFIGURATION DOCUMENTING** (see note below for configuration documenting).

Note 3 “Configuration Data Only” DPC Interface to DMS: The YPC 4010 / YHC to DMS interface handles the transfer of HART configuration files. An as found HART configuration can be saved on YPC 4010 or YHC products, changes can be made to the connected HART device's configuration, and the as left configuration can be saved as well. Both configurations can be uploaded to DMS for documentation of the as found HART configuration and the change(s) made. In addition, configuration changes can be made to a HART config file within DMS, downloaded to a YPC 4010 or YHC, and then sent to a HART device in the field. **DO NOT CONFUSE THIS WITH HART CALIBRATION DOCUMENTING** (see note above for calibration documenting).

Note 4 “Calibration & Configuration Data” DPC Interface to DMS: This option covers all data transfer between documenting YPC 4010 or YHC products and DMS including calibration procedures and results as well as HART configurations.

Note 5 NO HART CONFIGURATION DATA CAN BE TRANSFERRED BETWEEN DMS AND “HAND HELDS BY OTHER MANUFACTURERS”. Other manufacturers of HART calibrators do not pass HART configurations to any database management system. Only calibration procedures and results can be transferred between DMS and listed Hand Helds by Other Manufacturers.

Note 6 Allows HART Communications between the PC and a single HART Device through the DMS software using a HART Modem.

DOF Subscriptions for YPC 401X Multi-Function Tester with HART Communications

HART communication support for the YPC/YHC products (YPC 4010 and YHC 4100) and HART smart field devices takes two forms. One is a Generic Device Object File (DOF) shipped with every YPC/YHC unit. The Generic DOF enables Universal and Common Practice HART commands to poll, write and execute analog trim and loop test functions on any **HART** device. Device Specific Commands are supported by device specific DOFs. All device specific DOFs available at the time are included with each YPC/YHC shipment. New device specific HART DOFs are added at a rate of 5 to 8 per month and posted on our Download Site at www.us.yokogawa.com/mi/ypcyhc.com.

A Subscription to the Download Site provides the user with access to YPC/YHC firmware updates and all posted DOFs for a period of 3 years after YPC/YHC shipment. Users will gain access to the Download Site by logging in with a User Name (YPC/YHC serial number, example 950680-S01 including hyphen) and Password (initially assigned by supplier but user can enter his own after first log in).

Why subscribe: 2 reasons

1. Products remain current. With the release of HART 6.0 specifications, new devices and new device revisions of older products will be released. This subscription will enable you to download DOF's for new devices and new revisions for older devices. Additionally, the exclusive Field Device Revision Independence (FDRI) allows YHC and YPC to automatically map configurations from older devices to newer devices by the same manufacturer in the event of field replacement. This feature saves you valuable downtime, and is exclusive to the YPC/YHC HART products.
2. Firmware updates. Periodically, enhancements, improvements, and or features are made available. You may also decide to add new options (Documentation capability for example). The firmware is flashable (i.e. field upgradeable) so that the unit never leaves the customer's facility for an update – the result is no down time.

Trademarks

HART are registered trademark of the Hart Corporation.