

INTRODUCTION

XSeries devices, from the Totalflow division of ABB provide functionality only possible through the convergence of RTU, PLC and flow computer concepts. Representing a unique milestone in the development of remote, low power measurement and control devices, ABB Totalflow's XSeries products are available in one of two product families;



- Extendable Flow Computers (XFC)
- Extendable Remote Controllers (XRC)

This datasheet focuses on the XRC products, XSeries Remote Controllers (RTUs). Benefits and features of these particular products include:

- Automation, control, alarming and data logging capability
- Base IO targeted at low cost automation projects
- Local display and optional keypad
- Quick, easy installation
- Flexible communications
- Comprehensive custody quality math and data history
- Extendable hardware and software

With low power, accuracy and system integrity built in, these devices are proven daily on thousands of sites. Totalflow products provide users the best opportunity for successful projects – site by site or system by system.

DESCRIPTION

The XRC 6490, XRC 6790 and XRC 6890 are full featured units that are provided without an Integral Multivariable Transducer (XIMV). In their base configuration these units are equipped with standard IO designed to meet the requirements of many, low cost measurement and automation projects. The base IO includes five (5) analog inputs (0-10 volts

DC), 4 digital outputs and 4 digital inputs; two of which can be configured as either status inputs or pulse accumulator inputs.

IO modules can be added to extend the hardware IO capability. The XRC 6490 accommodates up to three (3) TFIO modules. The XRC 6790 accommodates up to six (6) and the XRC 6890 accommodates up to fourteen (14).

XFC and XRC devices are based on the same software environment. Applications available in one are also available in the other, including custody transfer measurement applications. The two significant differences between XFC and XRC devices are hardware.

- XFC devices include an integral multivariable transducer and XRC devices do not.
- There are more base IO points on XRC devices than on XFC devices.

	XFC XSeries Flow Computers	XRC XSeries Remote Controllers
AI	2	5
DI	2 (DI or PI)	4 (up to 2 as PIs)
DO	2	4

Multi-tube capability is included with each unit and is easily invoked with a few configuration changes and interface connection to external transducers, either digital or analog.

Each unit is powered by an internal battery that can be solar charged (or other suitable DC supply) for remote unattended operation. Several charging options are available.

Communications interface cables and equipment can be installed at the factory, ready for quick installation.

Checking and modifying configuration and calibration is accomplished with ABB Totalflow's PCCU32 laptop software running on a 32-bit Windows operating system.

In addition to the local configuration port, two communications ports are supplied with the standard unit. These ports are modular and user selectable for RS232 and/or RS485. An additional port may be added using a TFIO Communications Module.



HARDWARE MODULARITY

Hardware functionality of XSeries devices can be extended in a flexible and simple way by adding modular IO as needed.

Totalflow's TFIO modules are designed to accommodate low power, harsh environments at economical cost. The system recognizes the module types automatically and configures the IO Scanner subsystem accordingly.

Supported TFIO Modules Include:

- Analog In (8 channel)
- Analog Out (4 channel)
- Binary (DI, DO, PI-8 channels, software selectable)
- RTD (4 channel)
- Thermocouple (4 channel)
- Valve Control (digital or analog)
- Communications (software selectable RS232, 485, 422-1 channel)

For more detailed information about TFIO modules request information on datasheets 2101105 through 2101112.

SOFTWARE MODULARITY

A keenly flexible and stable real time environment, this software represents significant modularization through use of object oriented design principles. Totalflow supplied objects (applications) can be instantiated in our factory or by you, one or more times on the same device. It is this framework that allows the support for multi-tube measurement.

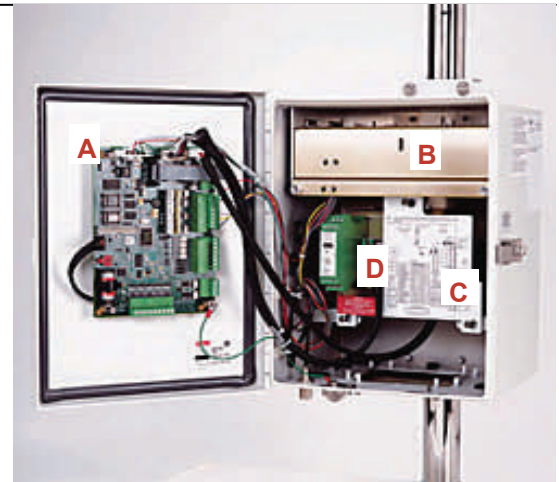
Supported Software applications continually grow, but a sample of standard applications include:

- AGA3 orifice meter run
- ISO 5167 orifice meter run
- VCone meter run
- AGA7 rotary/turbine meter run
- Real-time Data logger (trending)
- Valve Control (Feedback controller)
- RAMS (Alarming, Exception Reporting)
- Operators (simple custom math / logic)
- IEC 61131 (complex math / logic)
- Selectable Units (user selectable engineering units)
- Display / Keypad Handler
- Wedge Meter (water or gas)
- IO subsystem Handler
- Tank Level Application
- Therms master application
- Therms slave application
- Multiple protocols (Totalflow native low power, Modbus slave (binary/ASCII), Modbus master (binary/ASCII), LevelMaster, Btu 8000/8001, Enron Modbus, MotorSaver, ABB 267CS/269CS XMV Multivariable, Altronic and others)

XSERIES REMOTE CONTROLLER FEATURES

- Significant hardening against over-current / transients
 - ◊ Positive Temperature Coefficient, resetting fuses and transient protection on
 - * VBATT and SWVBATT Outputs
 - * Each of the Digital Outputs
 - * Battery Charger Input
 - ◊ EMI/RFI suppression beads on all I/O points
 - ◊ Protection against reverse polarity wiring
 - ◊ Power supply circuit designed to protect XIMV from hot insertion.
- Base IO on RC195 Board
 - ◊ 5 Analog Inputs
 - ◊ 4 Digital Inputs (2 can be used as hi-speed PIs)
 - ◊ 4 Digital Outputs
 - ◊ Battery Voltage
 - ◊ Charger Voltage
- Low power design operating as low as 8 ma (<100 mW)
- Aluminum enclosure, powder coated
- Flexible accommodation of communications hardware
- Cost effective communications kits
- Stable time base (accurate integration)

- Rechargeable, lead acid batteries
- Solar, AC or DC charging options
- Dual level security code data protection
- Custody transfer applications
 - ◊ Monitors user limits for detection, and reporting of abnormal conditions
 - ◊ Defaults to 45 Days of hourly and daily data. User configurable.
 - ◊ Defaults to 200 Events. User configurable.
 - ◊ Complies with API 21.1 standard for custody transfer devices
 - ◊ Flow and energy calculations per AGA3-85, AGA3-92, AGA-7, and AGA-5
 - ◊ Super compressibility calculations per NX-19 or AGA8-92 Gross or Detail
 - ◊ Flow retention during user transducer calibration
 - ◊ Selectable 3 or 5 point user calibration of Analog Ins
 - ◊ Zero flow detection
- Class I, Division 2 Groups C and D, CSA C/US Hazardous Area Classifications (ATEX Zone 2 pending)
- Real time clock that keeps running on lithium battery
- Advanced embedded data logger
- Programmable alarm filtering
- Exception reporting capability
- Multiple protocol options including Totalflow packet protocol, various modbus protocols and others
- User programmable modbus register maps
- User programmable math and logic sequences
- IEC 61131 Capability
- Valve Control and Nominations Capability



A. RC195 Board
 B. Communications Equipment Compartment
 C. Battery Compartment
 D. TFIO Modules

General Specifications		XRC 6490	XRC 6790	XRC 6890
Dimensions	Width	12.756 in. (324.00 mm)	14.920 in. (379.53 mm)	20.090 in. (510.29 mm)
	Height	17.230 in. (437.64 mm)	21.845 in. (554.86 mm)	28.910 in. (734.32 mm)
	Depth	10.269 in. (260.83 mm)	13.710 in. (348.23 mm)	15.520 in. (394.21 mm)
Installed Depth	Pipe Mount	1.584 in. (294.23 mm)	14.56 in. (369.82 mm)	16.82 in. (427.23 mm)
	Wall Mount	11.019 in. (279.88 mm)	14.00 in. (355.60 mm)	16.26 in. (413.00 mm)
Weight (w/o Battery)		Approx. 15 lbs. (6.8 kg)	Approx. 29 lbs. (13.1 kg)	Approx. 45 lbs. (20.6 kg)
Max IO Modules		3	6	14
Max Battery Capacity		26AH	42AH	140AH
Certification		CSA C/US Class 1, Division 2, Groups C & D hazardous area classification. (ATEX Zone 2 pending)		
Mounting		Wall, pipe, or direct		
Operating Temperature (ambient)		-40°F to 140°F (-40°C to 60°C)		
Humidity		0 - 95% non-condensing		
EMC Requirements		EMISSIONS: <i>European Regions:</i> EN55022 Class A Emissions (Radiated & Conducted) <i>North America Regions:</i> CFR 47, Part 15, Subpart B, Class A, FCC Emissions ICES-003 Issue 2, Rev. 1, Class A ITE Emissions		
		IMMUNITY: <i>European Regions:</i> EN50082-1:98 Immunity EN61000-4-2:95, ESD, ± 8 kV Air, ± 4 kV Contact EN61000-4-3:95 RF Immunity, 10 V/m EN61000-4-4:95 EFT, 1 kV EN61000-4-5:95 Surge; 1kV line to line, 2kV line to earth EN61000-4-6:95 Conducted Susceptibility, 3 Vrms EN610004-8:93 Power Frequency Magnetic Field 3 A/m EN610004-11:94 Voltage DIP and interrupt		

RC195 Board	
Power	Nominal 12 VDC battery
Charger	Solar or 16-18 VDC
Memory	<ul style="list-style-type: none"> • Data stored in 512K SRAM. (lithium battery backup) • Applications programs stored in 512K Flash. • Flash loader stored in 512K PROM • Registry and Configuration files stored in 32K E²PROM
Comm Ports	<ul style="list-style-type: none"> • 1 - dedicated – PCCU (Local Configuration Port) • 2 - RS232 or RS485 (via board insertion modules)
LCD Interface	Dedicated interface for 2 X 24 Liquid Crystal Display (LCD)
Keypad Interface	Dedicated interface for optional ABB supplied keypad
IO Expansion	I ² C Bus Interface for TFIO Modules
Security Switch	Dual-Level Security Switch On-Board
Time Base Stability	± 7.5 ppm (parts per million)
IO Scan Rate	1 Time per Second
Analog Inputs	5 single-ended channels, 0-10Vdc
Analog-to-Digital Resolution	18 Bit maximum resolution (0.00038% FS) 16 Bit nominal resolution (.0015%FS)
Digital Inputs	4 inputs configurable as active or passive with optional software de-bounce
Pulse Inputs	2 of the 4 digital inputs can be used as pulse inputs (up to 20KHz)
Digital Outputs	4 open channel FET transistor switches

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