Recorders, Controllers and Indicators

One range. Unlimited possibilities

ABB Instrumentation

ABB

Talk to ABB first

ABB has more expertise in recorders and controllers applications globally than any other supplier. Based on this experience, we have refined and developed the performance of our portfolio of intelligent instrumentation products to ensure you get a solution that meets your precise requirements every time.

Getting the best levels of efficiency from your plant and processes calls for reliable, accurate instrumentation. Equally important is being able to count on access to an intelligent, informed support network that can assist you throughout all stages of your process, regardless of your location.

A heritage to be proud of

ABB Instrumentation's ability to satisfy customers' needs has never been greater, being built upon the leading names and brands in the automation world:

Bailey, Bush Beach Engineering, Fischer & Porter, Hartmann & Braun, Kent, Schoppe & Faeser, Sensycon, Taylor, TBI-Bailey.

Industrial IT - Optimizing your instrumentation assets

To help you improve the efficiency of your entire business and production process, ABB is committed globally to Industrial IT. It involves the development of systems and products guaranteed to inter-operate and communicate using the same information standard within a single digital architecture.
Industrial IT and Asset Optimization with ABB instruments provide features and benefits across the full scope of our offering. Intelligent field instruments not only provide highly accurate process measurement data, but process information is available at the click of a mouse for predictive maintenance, advanced trouble shooting, optimized spares handling, hence increased product availability and process security.

A range of fieldbus opportunities

ABB is actively involved in the development of fieldbus policy direction and technical standards and supports the major process automation protocols in widespread use throughout industry. With our wide experience and expertise, we can cater to a broad spectrum of fieldbus options, enabling us to meet your exact requirements. The current generation of ABB fieldbus devices and systems lets you choose both the most suitable devices available and the most appropriate system for your application, including PROFIBUS, FOUNDATION Fieldbus and HART.

www.abb.com/industrialit

Instrumentation Services

Our broad scope of services lay the foundation for end-to-end support for your enterprise. ABB Instrumentation Services delivers the knowledge and global experience required to keep your assets operating at peak reliability and accuracy. ABB provides a full scope of services from start-up and commissioning through lifecycle support.

- Installation and Commissioning
- Preventative Services
- Calibration Services
- Maintenance
- Consulting
- Training
- Migration/Upgrades
- Parts and Repair

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Recorders and Controllers

COMMANDER and ScreenMaster are the names behind a comprehensive range of recording and control instrumentation from ABB that meet the demanding requirements of a broad range of industries. The range includes Process Controllers, Digital Indicators, Chart Recorders and Videographic Recorders all of which share the same high standards of reliability and flexibility and are capable of withstanding the harshest of process environments.

Process Protection & Full Functionality

All of ABB's recording and control instruments have a high degree of dust and water protection, many to NEMA 4X & IP66 as standard. Bright and clear displays mean process status can be seen at a glance. A high specification of I/O connections such as universal inputs and transmitter power supplies are provided within the standard instrument build.

Totalizers, math functions and logic equations are available on many instruments for advanced application functionality. MODBUS RS485 communications facilities are available for linking instruments to SCADA and PLC systems. Ethernet communications provide easy remote supervision functionality and email notification of critical process events.

Configuration made Easy

Many of the products within ABB's recording and control range can be configured using either the Commander PC configuration software or the ScreenMaster PC emulation software. Both packages provide a fast and simple method of setting up an instrument for even the most demanding of applications.

PC Configuration

Simple-to-use Windows™ based PC configuration software enables the rapid configuration of instruments.

New configurations can be created and downloaded to an instrument. Alternatively, an instrument's existing configuration can be uploaded, modified and then copied to another instrument or saved for future use.

When configuring a Commander controller or chart recorder via a PC, the full potential of the device is unlocked. Extra math, logic and advanced features, not accessible from the front panel, become available. Detailed reports of a device's configuration can also be generated.

Once configured, the operation of a ScreenMaster videographic recorder can be simulated using a PC. This provides a quick and easy way for the configuration to be tested. Configuration files can also be sent via Ethernet to a ScreenMaster installed in a remote location.

This icon indicates that PC configuration of this instrument is possible.

Off-line Configuration

There is no requirement to be connected to an instrument to use the PC configuration software. All aspects' of an instruments configuration can be set up off-line and then downloaded into a unit at a later date.

- Quick and easy to set up
- Store configurations
- Download and upload settings
- Simulation of a device's configuration
- Customized configuration of instrument
- Configuration print out

As standard, the following ABB products can be configured via a PC:

C100	V100	SR100B
C250	V250	SR100A
C351	C150	SR250B
C355	C160	SR250A
C360	L150	SM1000
C501	L160	SM2000
C505	CR100	SM3000

Tough, reliable, flexible, upgradeable, comprehensive

The COMMANDER range of process controllers gives you more control choice - from simple single loop to more advanced control requirements with an array of standard features and options to match any application.

Ease of installation is matched by operational simplicity, particularly if full advantage is taken of the unique COMMANDER PC Configurator. All COMMANDER controllers (with the exception of the C50) have an in-built 2 wire transmitter power supply. In addition, all variants can be linked to a central PLC or SCADA system utilizing the MODBUS protocol.

COMMANDER 50
1⁄16 DIN Controller/Alarm Unit

A 1⁄16 DIN unit, ideal for basic PID control offering on/off or time-proportioning control with a one-off, self-tune facility in a small compact package. The COMMANDER 50 can also act as an independent alarm, for example, as an over-temperature cut out unit for ovens or furnaces.

The NEMA 3/IP65 front panel makes it suitable for a wide range of applications.

- **PID Control -** The relay or logic output can provide a time proportioning PID output for control of contactors and solid-state relays (SSR).

- **Override Alarm -** By configuring the relay output as an overrange alarm, it can act as an independent alarm unit, providing protection for your process.

- **Ramping Set Point -** To reduce shock to the process when changing set point, it can be configured to ramp up to the new set point over a preset period of time.

COMMANDER 250
1⁄4 DIN Process Controller

A 1⁄4 DIN instrument that can be operational within minutes. Incorporating all the capabilities of the COMMANDER 100, this compact unit has a NEMA 4X/IP66 front face plus the option of PV/SP retransmission.

- **Reliability in the harshest environments -** The COMMANDER 250 has NEMA 4X/IP66 protection and full noise and EC immunity.

- **Reduced installation and panel costs -** The case depth of less than 125mm behind the panel reduces installation and panel costs.

COMMANDER 100
⅛ DIN Process Controller

A single-loop controller with universal inputs for such process variables as temperature, pressure, flow and level. Analog, relay and logic outputs, ramp/soak profiles and PID control all come as standard. One model for all applications can be easily set up using configurator or front panel codes.

- **PID Control -** Simple PID control is available using any of the unit's built-in and optional outputs.

  - 4 - 20mA analog
  - Logic 18V time proportioning (to drive solid state relays)
  - 5A relay for time proportioning or On/Off control
  - Additional alarm outputs - two relays are available as an option

- **Heat /Cool -** Heat/Cool control strategies may be implemented using a combination of the analog, logic and relay outputs.

- **Ramp/Soak Set Point Profiles -** The ramp/soak facility provides for a single program, four-segment profile. This facility also includes guaranteed ramp/soak, repeat program, skip and reset.

- **Master/Slave and Cascade -** Two or more COMMANDER 100s can be used in master/slave – or cascade, configuration with the addition of the remote set point option to the basic unit.

- **RS485/MODBUS -** Fitted with an optional RS485 serial communications board, the COMMANDER 100 can communicate with PLCs AND SCADA systems using the MODBUS protocol.

- **Dedicated Valve Control -** A range of dedicated ⅛ DIN (V100) and ¼ DIN (V250) panel mount controllers are available for Boundless Control of motorized valves. Each offers identical functionality, with the V250 offering the additional advantage of a shorter panel depth with the attendant lower wiring and installation costs.

  The COMMANDER V100 and V250 Valve Position Controllers are dedicated, single loop controllers designed for direct control of motorized valves. Universal input and integral power supplies ensure that each has the capabilities to measure a wide range of process signals such as temperature, pressure, flow and level.

- **PID Control -** Boundless Control of an electrically positioned valve with a travel time between 10 to 5000s using the built-in 5A relays. The V100 and V250 give pulsed outputs to the valve which are based on the difference in the process variable and the set point. They signal the direction and time of travel of the valve and do not require information on the absolute regulator position but use the PV inputs as feedback. The dead band setting prevents the valve from hunting.
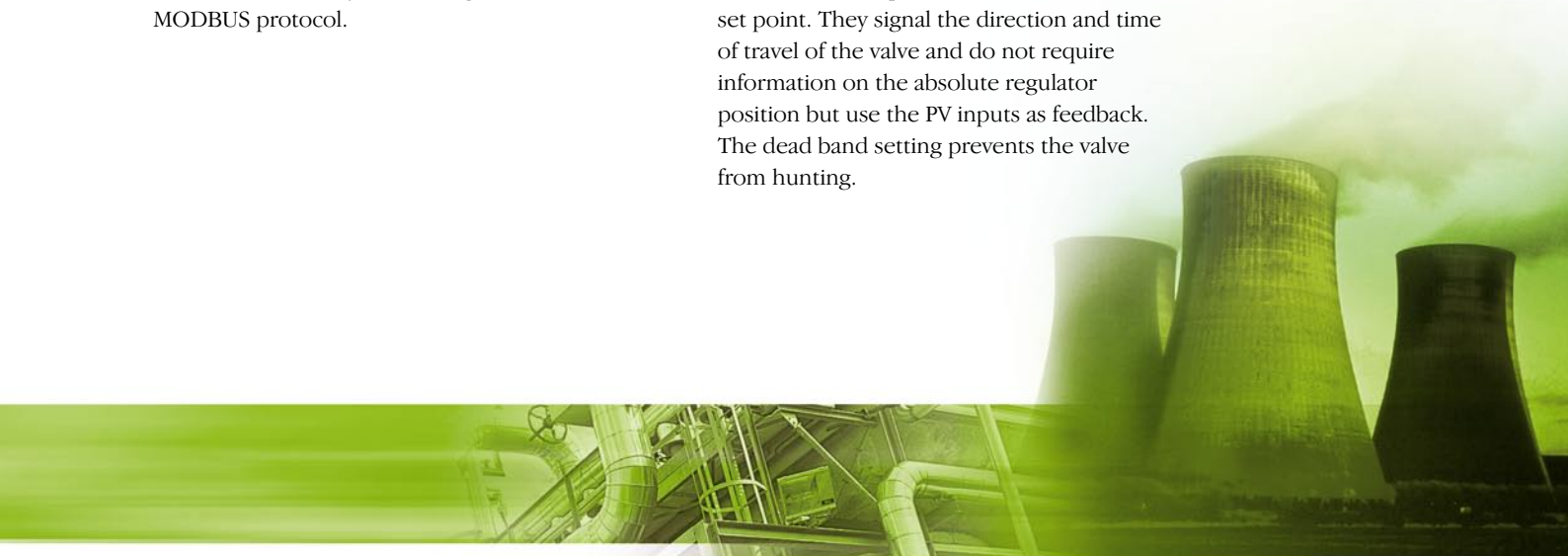
COMMANDER 351
¼ DIN Process Controller

For those applications requiring additional I/O functionality and power, this ¼ DIN unit with three analog inputs, three digital displays and a deviation bargraph is ideal. It also features a unique Control Efficiency Monitor (CEM) facility for maximizing PID response and efficiency plus additional features - math, logic and timers. Utilizing its in-built library of application templates plus the advanced autotune facility, it is ready to run in minutes. NEMA 4X/IP66 front panel protection makes an extremely robust instrument – suitable for use in the harshest environments.

Process Stability and Security - Intelligent diagnostics and responses can be used for process safety, to initiate an action or to indicate a fault and initiate safety shutdown strategies.

Math and Soft Wiring - Four individual math blocks provide functions such as average, maximum and minimum calculations. Square root, relative humidity and arithmetic functions are also included as standard. Digital signals allow inputs to be selected or switched in and out of calculations – allowing both simple and advanced calculations to be processed. These can be soft-wired to control functions.

Control Efficiency Monitor (CEM) - CEM measurements are designed to help you fine-tune your process manually. Six key-performance parameters are measured and displayed, allowing you to vary your PID settings to match the process needs and to measure the results of your investment.

Process Alarms - Eight internal process alarms – soft-wired to control strategies, logic equations and output relays. Each alarm can have a separate hysteresis value programmable in engineering units or time and can be configured as annunciators, so the alarm can be disabled once acknowledged.

Custom Linearizer - Two separate 15-breakpoint linearizers can be programmed via the PC Configurator and applied to either inputs or outputs. These can be used for non-standard thermocouples, nonlinear tank levels or any nonlinear output. The output linearizer accommodates any nonlinear control elements.

Application Templates - These make the basic configuration for a particular application as simple as possible and when selected, the COMMANDER 351 assumes the preset form for that template – reducing configuration time by up to 90%.

The following templates are standard:
• Single loop controller with local set point
• Single loop controller with remote set point
• Auto/manual station (low signal selection)
• Auto/manual station (digital signal selection)
• Analog backup station (low signal selection)
• Analog backup station (digital signal selection)
• Single indicator/manual loader station
• Dual indicator/manual loader station

Gain Scheduling - To optimize control of your process and the response of the COMMANDER 351, four independent PI terms are available. This eliminates the need to manipulate variables as a result of process conditions and loads.

Sequencing and Logic Control - To complement its advanced analog control features the instrument offers comprehensive sequencing – with six logic equations (AND, OR, NOR, NAND, XOR and NOT functions) and up to 15 elements per equation. When combined with delay timers, real-time alarms, program and segment events, they make it a powerful sequence controller.

Retransmission - As standard, each has a 4-20mA retransmission of the process variable for connection to a chart recorder, datalogger or PLC.

COMMANDER 355
¼ DIN Advanced Process Controller

A multi-role unit embracing all the functionality of the COMMANDER 351 plus the capability to handle feed forward, cascade, ratio and ramp/soak control making it suitable for the more complex applications.

■ **Additional Customized Application Templates -** In addition to the eight customized application templates available with the COMMANDER 351, the unit includes the following additional templates:

- Single loop with feedforward
- Single loop with feedforward and remote set point
- Cascade
- Cascade with remote set point
- Cascade with feedforward
- Ratio controller
- Ratio controller with external ratio
- Ratio station
- Ratio station with external ratio

■ **Ramp/Soak Set Point Profiles -** The ramp/soak facility provides 30 segments freely assignable amongst 9 programs. This facility includes guaranteed ramp/soak, repeat program, skip and reset. Plus event states and self-seeking set point – see C360 for more details.

In addition, the COMMANDER 350 and COMMANDER 500 can also be configured for valve feedback control for the more complex applications.

COMMANDER 360
¼ DIN Multi-Recipe Process Controller

The C360 shares the C350's powerful features including math, soft wiring, gain scheduling, custom linearization and logic capabilities, but is specifically engineered for all ramp/soak applications. 99 segments split over 20 profiles, combined with a dedicated display and custom-designed front panel, mean that the C360 is a powerful profile controller.

Dedicated Ramp/Soak Display - Status LEDs give a clear indication of the profile progress, showing whether a ramp/soak is being performed. A dedicated display indicates the segment that is currently running and time remaining, together with the standard controller display that shows the current set point and actual process value.

Guaranteed Ramp/Soak - To make operations as flexible as possible, there are two hysteresis settings – one applicable to soak segments, the other to ramp. The guaranteed hysteresis value can be applied to individual segments above or below set point. This gives the user the option to hold a cycle, only if it falls outside a preset value, e.g. where regulations state a minimum or maximum temperature.

Configuration and Start-up Made Easy - Available with two standard templates – single loop or cascade – once you select the one that suits your application, only the settings for that application are shown – making configuration and start-up quick and easy.

Event States - Four event states are provided for easy control of external devices. Relays can be driven by event states, allowing fans or valves to be switched at specific times during a profile. Once set up, a device controlled by an event status can be used in multiple profile programs.

Self-seeking Set Point - To reduce process time, there is a self-seeking set point setting that enables a profile to start from the current process temperature. This eliminates the wasted time normally taken to drive a process temperature down to the actual start temperature for the profile.

COMMANDER 310
Wall/Pipe-mounted Universal Process Controller

A highly versatile, universal single-loop controller in a robust NEMA 4X/IP66 field-mounting enclosure, eliminates the need to fit expensive panels or enclosures and can be mounted right next to your process – no matter how harsh the environment.

The instrument has extensive control and i/o capabilities fitted as standard, allowing it to be configured rapidly for almost any application.

- **PID Control -** The isolated analog output provides the standard control output to i/p converters, etc. Alternatively, built-in relays can be used to generate a time-proportioning control output.

- **Solid State Relay (SSR) -** A 12V time-proportioning logic output can be used to drive solid-state relays (SSRs).

- **Valve Position -** It is fitted with twin relays and a valve position input for closed-loop control of a motorized valve. Boundless Control (without position feedback) is also available in the standard unit.

- **Heat/Cool -** Heat/cool control strategies may be implemented on the standard unit using a combination of the analog outputs and relays.

- **Ramp/Soak Set Point Profiles -** The standard ramp/soak facility provides 30 segments, freely assignable amongst 9 programs.

  A segment event function enables relays to be switched on or off at predetermined points within the program.

COMMANDER 501
Process Controller

This 3" x 6" unit provides the functionality normally found only in advanced multi-loop controllers for a considerably smaller investment. Eight pre-configured templates, supplied as standard, simplify the basic configuration for an application, and with two analog inputs, one analog output, two relays and two digital inputs as standard the controller covers the needs of most users.

This unit's outstanding power is enhanced by the built-in CEM facility for maximizing PID efficiency. MODBUS serial communications are available for integration with factory automation systems and the NEMA 4X/IP 66 front face protections make the unit suitable for use in a wide variety of industrial environments.

Process Visibility and Operation - Three high-visibility colored digital displays – 40 segment bargraph – color-coded function keys – eight individual tactile front panel keys – 'secret-until-lit' indicators – all ensure that the controller is operator friendly and no specific training is required for operational use.

Process Security and Self-diagnostics - For stability and security, it has intelligent diagnostics and responses that can be used for process safety, to initiate an action or to indicate a fault. A processor watchdog monitors the processor continuously – a unique loop-break alarm detects analog output failure and there is an open circuit detector on the input. From these signals, safety strategies can be initiated.

Control Efficiency Monitor (CEM) - CEM measurements are designed to help you fine-tune your process manually. Six key performance parameters are measured and displayed, allowing you to vary your PID settings to match the process needs and to measure the results of your investment.

Custom Linearizer - Two separate 15-break-point linearizers can be programmed via the PC Configurator and applied to either inputs or outputs. These can be used for non-standard thermocouples, non-linear tank levels and any non-linear input. On outputs, the linearizer accommodates any non linear control elements.

Math and Soft-wiring - Four individual math blocks provide functions such as average, maximum and minimum calculations – square root, relative humidity and arithmetic functions are also included as standard – simple and advanced calculations can be processed and soft-wired to control functions.

Sequencing and Logic Control - To complement its advanced analog control features the COMMANDER 501 offers comprehensive sequencing – with six logic equations (AND, OR, NOR, NAND, XOR and NOT functions) and up to 15 elements per equation. When combined with delay timers, real-time alarms, program and segment events, they make it a powerful sequence controller.

Out-of-the-Box and Installed in Minutes - Using application templates, you will only ever enter values that relate to your process, thereby minimizing your configuration and commissioning costs.

Customized Application Templates - These make the basic configuration for a particular application as simple as possible and when selected, assume the preset form for that template – reducing configuration time by up to 90%.

Templates include:

• Single loop controller with local set point
• Single loop controller with remote set point
• Auto manual station (low signal selection)
• Auto manual station (digital signal selection)
• Analog backup station (low signal selection)
• Analog backup station (digital signal selection)
• Single indicator/manual loader station
• Dual indicator/manual loader station

Process Alarms - Eight internal process alarms can be soft-wired to control strategies, logic equations and output relays.

Gain Scheduling - To optimize control of your process and response, four independent PI terms are available. This eliminates the need to manipulate variables as a result of process conditions and loads.

COMMANDER 505
Advanced Process Controller

Outright power for advanced control strategies, embracing all the functionality of the COMMANDER 501 plus nine additional templates. Featuring parameters such as feedforward, cascade and ratio control - which can all be configured via the front face or ABB's PC configuration software.

In addition to the eight templates that come as standard with the COMMANDER 501, the COMMANDER 505 offers the following:

• Single loop with feedforward
• Single loop with feedforward and remote set point
• Cascade
• Cascade with remote set point
• Cascade with feedforward
• Ratio controller
• Ratio controller with external ratio
• Ratio station
• Ratio station with external ratio

Recorders for all applications

Within the COMMANDER family are specifically-designed control solution variants for industries such as water and waste water, food, chemical & pharmaceutical and heat treatment.
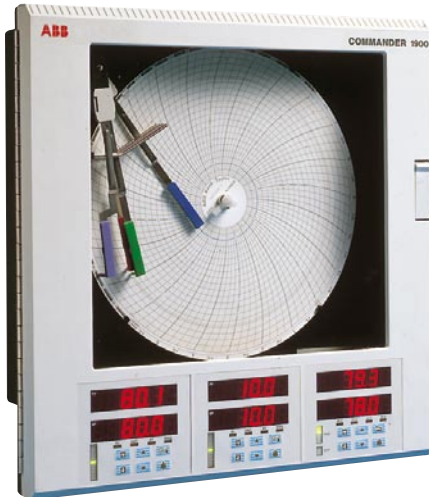
COMMANDER 1900
Circular Chart Recorder

The COMMANDER 1900 is a fully programmable circular chart recorder for up to 4 process signals. Straightforward operator controls and robust construction make it suitable for a number of industrial environments. Advanced functionality is complemented by a powerful range of options that give it the flexibility to match your application needs.

NEMA 4X/IP66 protection means that the recorder will thrive in the harshest industrial environments.

Status at a Glance - High visibility, 6-digit displays provide a clear indication of up to four process values simultaneously and active alarms are signalled by flashing LEDs below the main display.

The clearly labelled tactile keypad gives direct access for operator adjustments and configuration programming without the door being opened. A password protected system prevents unauthorized access to configuration menus.

Recording Versatility - The chart is easy to set up. Pen ranges are individually set to give the best resolution for each signal and the time per revolution can be selected from between one hour and thirty-two days. A true time event pen facility allows one pen to be set up as a three-position event marker on the same time line as pen one.

Math and Logic - User configurable math functions, mass flow calculations, totalizers and RH tables are all fully supported. The logic capability allows interlocking and the integration of discrete and continuous functions to solve a wide range of process problems.

Timers and Clock - Two real-time events, triggered by the recorder's clock can be configured to operate relays, start/stop the chart or enable other actions within the recorder.

Built to Meet Your Needs - Modular architecture gives you a wide choice of hardware configuration with up to five input/output modules that can be added to the basic instrument.

The standard i/o module supplied with every pen comes complete with a fully isolated analog input, a relay output, transmitter power supply, isolated analog retransmission and two digital inputs. Further i/o capability is provided by a range of plug-in modules:

- Analog input and relay – for use with math function
- Four relays – channel alarm outputs
- Eight digital inputs – linked using logic equations
- Eight digital outputs – TTL level alarm outputs
- MODBUS RS 485 communications – interfaces with PCs and PLCs

The COMMANDER 1900 can be quickly upgraded to meet your changing process requirements.

Additional recording channels, math capability or input and output can be retro-fitted on site using plug-in cards and easily fitted pen arms. Input calibration data is stored on each card, allowing quick changes to input cards without the need for recalibration.

Changes to input sensors or recording procedures are accommodated by reconfiguration using the main keypad.

Advanced EMC shielding maintains accuracy in noisy industrial environments; the power supply gives excellent protection from power spikes and brownouts and all configuration and status information is held on non-volatile memory.

MODBUS RS485 Communications - Communication with PCs or PLCs is achieved via the RS485 serial communications link, enabling the COMMANDER 1900 to serve as the front end of plant-wide data acquisition systems. Using the MODBUS RTU protocol all process inputs and other variables can be continuously read by a host PC running on a wide variety of standard SCADA packages.

The unit can be wall/pipe or panel mounted anywhere in the plant and with a rating of NEMA 4X/IP66 can be subjected to rigorous cleaning with complete confidence.
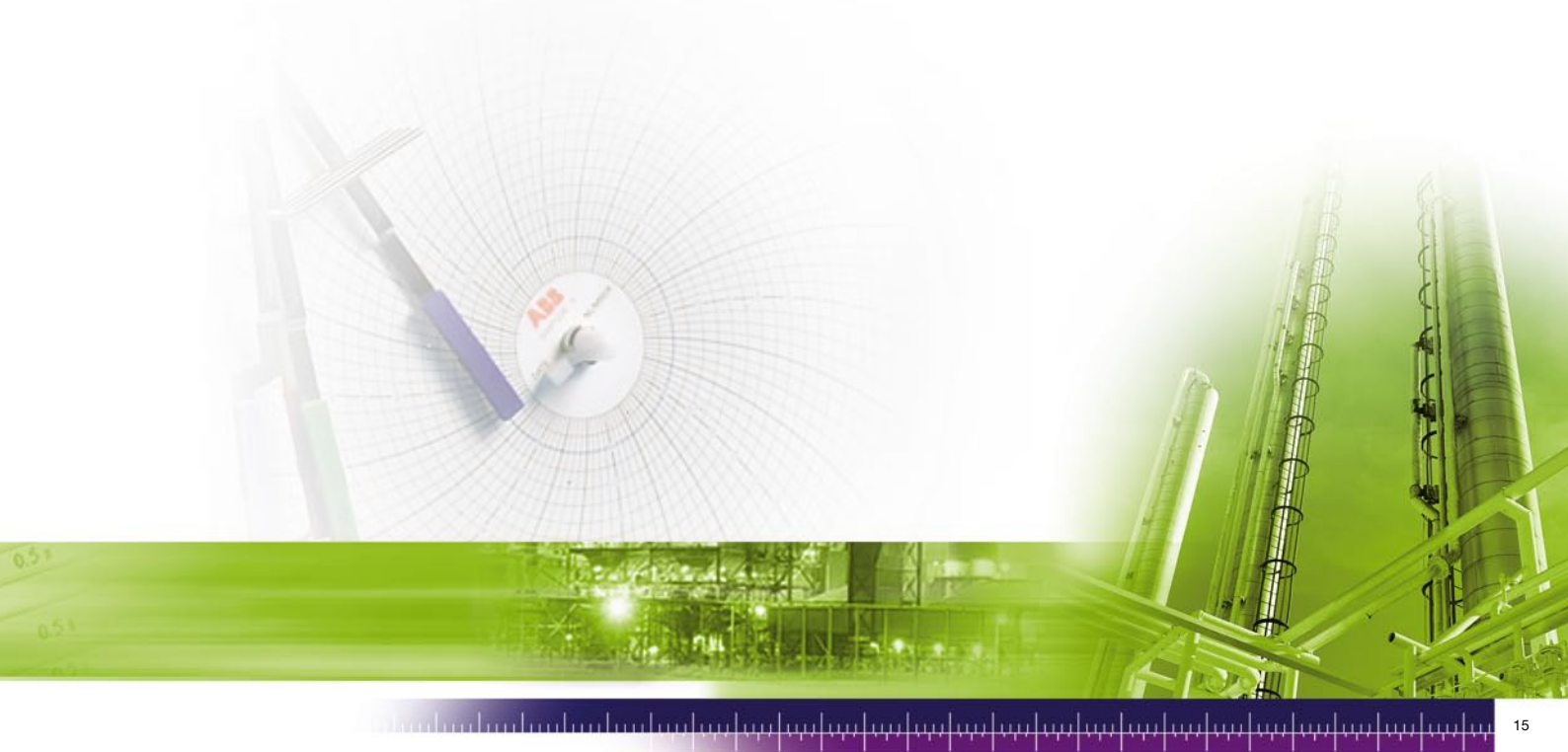
COMMANDER 1900
Recorder/Controller

A fully programmable, circular chart recorder with integral capability for single or dual loop PID control. Analog, heat/cool, time proportioning or on/off control can all be selected as standard - motorized valve operation, with or without feedback, is available as an option. The instrument offers seamless integration of loop functionality to solve process problems, eliminating the need for auxiliary devices.

Specific applications can be fully met by using the full range of options available, including one to four-pen recording; flow totalization; process alarms; ramp/soak profile - giving outstanding flexibility in just one instrument.
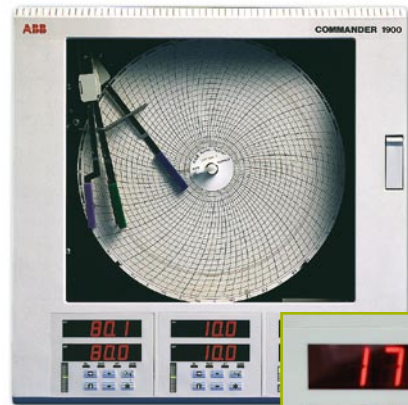
COMMANDER 1950
Pasteurizer Recorder/Controller

Three separate models give outstanding coverage of pasteurizer applications. From a simple recording device to the top of the range Hot/Cold product controller/ recorder, all versions are fitted with a 4-position, true-time event pen which indicates forward flow, divert, CIP and secondary divert.

- The COMMANDER 1951 records the hot product temperature and either divert set point or cold product temperature.

- The COMMANDER 1952 is a recorder/controller, recording hot product and either divert set point or cold product temperature and controlling hot water.

- The COMMANDER 1953 is the top of the range recorder/controller, combining all the capabilities of the C1952 with cold product temperature control from the cold product temperature probe.

COMMANDER 1960
Multi-Recipe Profile Recorder/
Controller

For applications where advanced ramp/soak profiling
control and the recording of multiple process
parameters is all-important.

It is designed as a totally self-contained unit with
20 profiles/99 segments and features such as
guaranteed ramp/soak, a dedicated operator display
and time events to assign relays/outputs to individual
or multiple segments.

C1300 Advanced
Circular Chart Recorder

ABB's C1300 advanced circular chart recorder combines established paper chart recording technology with the latest advances in electronic data collection, giving you more power than ever before to use your recorded data to its full potential.

Building on ABB's successful COMMANDER recorder range, and based on customer feedback, the C1300 features a host of new developments to provide a powerful and flexible data recorder for many industrial applications, but particularly water and waste water treatment.

Eliminate Complexity

With the C1300, the time and complexity needed for setting up and operating traditional recorders is greatly reduced. Push button controls and commands displayed in full English on the unit's LCD panels help reduce set-up time and eliminates the need for specialist knowledge.

A configuration back-up port enables the C1300 to be configured simply by plugging it into a PC. Using this facility, configuration files can be copied between different recorders - ideal wherever multiple units are installed.

For totalization applications, the C1300 can also automatically program itself to calculate relationships between different volumetric and instantaneous flow values. The totalizer can also be programmed to reset at specific times to automatically gather daily, weekly or monthly totals.

See Things More Clearly

Collecting and reviewing data is also very easy. LCD panels display multi-digit totalization figures along with channel tag and engineering unit values.

Get the Most From Your Data

The C1300 lets you do more with your data. By incorporating data logging technology from our successful SM series videographic recorder range, the C1300 allows data to be viewed exactly when you want it. Totalizer data can be automatically collected on a daily, weekly or monthly basis and can be viewed on the unit's LCD display panels.

Flexibility to Meet Your Needs

As your plant needs grow, so can the C1300. Upgrading the unit is very easy - plug-in modules allow extra recording channels, relay outputs, math capabilities and totalizers to be added without having to remove the unit.
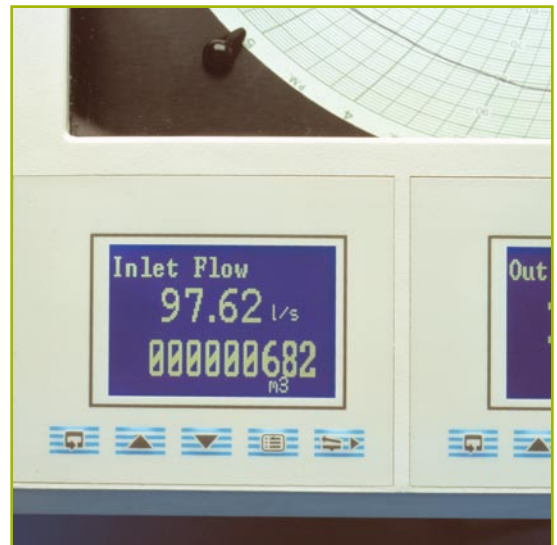
Install Anywhere

Wherever it is installed, the C1300 is the ideal choice. Full NEMA 4X/IP66 protection makes it suitable for use in the wettest or dustiest locations. The unit's backlit, transflective display also presents the data clearly in any lighting conditions. Wiring up is simple - detachable terminal blocks allow easy connection of input and output wiring.

Strip Chart Recorders

Versatility, choice, precision

A range of strip chart recorders that meet any process needs - from 100mm up to 250mm, in either advanced or basic versions, all with in-built flexibility to match any process application.

COMMANDER CR100
Process Indicator Recorder

The COMMANDER CR100 is a combination of a high-resolution process indicator and a compact one or two pen continuous line 100mm strip chart recorder.

■ **Standard features:**
- Two alarm relays
- Isolated analog retransmission
- Two digital inputs
- Transmitter power supply

These in-built features make the CR100 an extremely versatile chart recorder.

It has a bright 5 digit LED display that gives clear indication of the process. Configuration using the front keys is simple and the instrument can also be configured using the COMMANDER PC configuration software which increases flexibility and reduces setup time.

With a NEMA 3/IP 65 front fascia, the CR100 is suitable for use in harsh industrial environments.

■ **Our extras are standard -** To meet the majority of process needs, two relays are included as standard. Further flexibility is provided by an analog retransmission signal and two digital inputs.
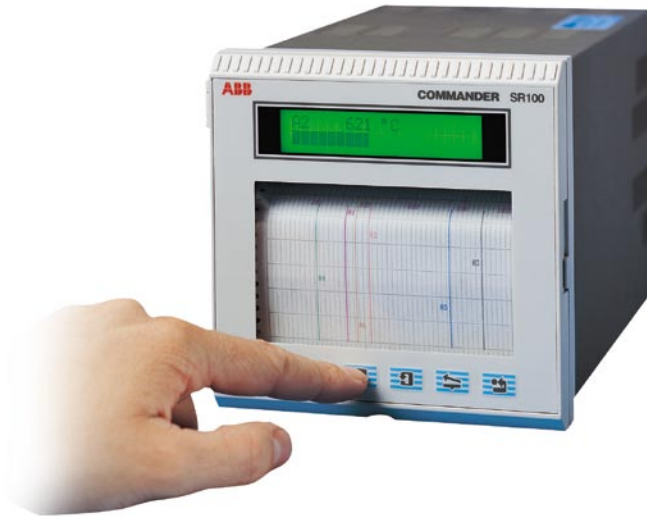
COMMANDER SR100B
100mm Process Recorder

The SR100B provides simple, reliable and cost-effective recording of up to six process variables for everyday use but comes with features normally only found in top-of-the-range models.

A clear view of process status is provided by the LCD display. Chart annotation and recent recording can be quickly examined using our unique 'Easy-View' facility. With ease-of-use firmly in mind, the SR100 can be supplied preconfigured for the signal types and ranges you specify when ordering.

Recording - The high-speed multi-point printing system updates all 6 traces in 800ms. This system produces continuous lines on the chart for speeds of up to 500mm/hr.

The SR100B supports text printing to provide annotation on the chart. In addition to the time, date channel identity and chart speed, the recorder can print scales for each channel and alarm identification. The 'Easy-View' facility enables the user to see the latest recordings at the push of a button.

Option Modules - All recorders are complete with 3 or 6 universal inputs for analog process signals plus a transmitter power supply for up to three 4-20mA devices plus a digital input. The capabilities of your recorder can be extended further by the addition of relay option modules for 3 or 6 relays.

COMMANDER SR100A
100mm Advanced Process Recorder

The definitive recorder for paper recording, combining all the attributes of the SR100B plus exciting features that help solve the process problems of the real world – including a range of advanced processing capabilities, such as flow totalization, math blocks, logic equations, configurable displays and full message printing – all of which can be configured via the front panel fascia or PC Configuration software.

Cue & Review - a unique function, standard on this instrument, allows the user to rapidly search any part of the chart roll, process events or alarm occurrence - enabling rapid analysis of process records. The 'Easy-View' facility enables the user to see the latest recordings at the push of a button.

When fitted with the optional PCMCIA memory card data storage, RS485 MODBUS communication and up to 12 alarm relays, the recorder becomes a very powerful signal processing tool.
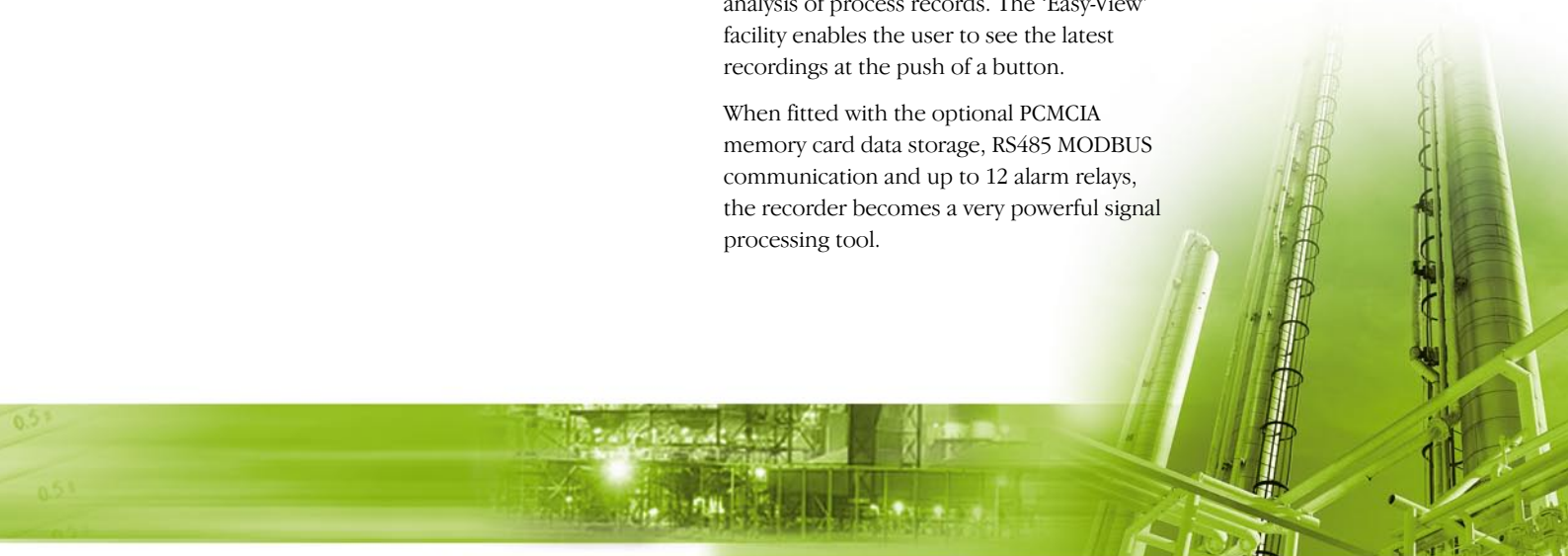
COMMANDER SR250B
250mm Multipoint Recorder

Offers full 250mm chart recording capability of up to 12 channels requiring less panel area than a 180mm instrument. A patented 'Z-trace' ensures each individual channel is easily distinguishable and access to recent and historical data is instantly available through the unique 'Easy-View' and 'Cue & Review' functions.

Recording - A high-speed multi-point printing system updates all 12 traces in 2.2 seconds. This system produces continuous lines on the chart at speeds of up to 500mm/hr.

The SR250B supports full text printing to provide detailed annotation to the chart. In addition to the time, data, channel identity and chart speed, the recorder can print scales for each channel, alarm messages and an operator-entered batch name.

The 'Cue & Review' facility allows the user to rapidly search any part of the roll chart for process events or alarm occurrence – enabling rapid and accurate analysis of process records. The 'Easy-View' facility enables the user to see the latest recordings at the push of a button.

Option Modules - All recorders are fitted with at least one universal input module for analog process signals plus a transmitter power supply for up to two 2-wire transmitters.

The capabilities of your recorder can be extended by the addition of further option modules. Each recorder can support up to 2 input modules plus 3 option modules.

COMMANDER SR250A
250mm Advanced Process Recorder

With a host of powerful data management facilities, the SR250A provides a complete process monitoring solution. In addition to the features found in the SR250, this model has as standard:

- Up to 24 traces
- Configurable chart zoning
- Event recording
- Value printing

It also has a range of advanced processing capabilities that can be configured via the front panel fascia or PC Configuration software:

- Flow totalization
- Math blocks
- Logic equations
- Configurable displays
- Full message printing

'Cue & Review', a unique function, standard on this instrument, allows the user to rapidly search any part of the chart roll, process events or alarm occurrence - enabling rapid analysis of process records. The 'Easy-View' facility enables the user to see the latest recordings at the push of a button.

When fitted with the optional PCMCIA memory card data storage, RS485 MODBUS communication and up to 18 alarm relays, the recorder becomes a very powerful signal processing tool.

Raising the standards of data storage

The SM Series of Videographic Recorders provide solutions for electronic data recording and analysis. State-of-the-art features include a fully solid state design, clear operator displays and an intuitive user interface. Ethernet communications allow wide access to process information and historical data while high specification security features ensure the security of data at all times.

SM500F Field Mountable Videographic Recorder

The world's first field mountable videographic recorder can be used anywhere, anyhow and by anyone. The SM500F is a four-channel recorder that can be installed even in the most hostile environments. It takes recording out of the control room and offers local access to operational data.

A choice of mounting options means that the SM500F can be installed in virtually any location – from panel to wall and pipe mounting.

The SM500F helps users protect their operation critical activities, while providing reduced costs of ownership compared to paper chart recorders. To reduce cost even further, the SM500F is also available in a monochrome version.

"Innovative, simple, reliable recording"

World First

SM1000 Videographic Recorder

The SM1000 features the state-of-the-art technology featured across the SM Series whilst ensuring maximum simplicity of use. The solid state Compact Flash and SmartMedia memory card options provide storage capability far greater than that typically found on a recorder of this price level. The SM1000's ability to record up to 12 process signals also means that it can do the work of two similarly priced recorders.

SM2000
Advanced Videographic Recorder

The SM2000 Advanced Videographic Recorder provides advanced functionality recording and high specification hardware features, making it suitable for almost any recording application.

The Windows™ style operator interface is simplified further by the SM2000's touch sensitive display, effortlessly guiding the operator through the configuration and rapidly entering text information using an on-screen keyboard. The high clarity of the TFT display featured by the SM2000 ensures maximum visibility of process information.

A high capacity 8Mb internal memory provides the operator with the ability to review large amounts of process data history on-screen. Optional math and logic capabilities and advanced configuration mode enable the SM2000 to tackle demanding applications with ease.

SM3000
Multi-point Videographic Recorder

Multipoint process monitoring or monitoring of multiple processes is made simple by the SM3000. Up to 36 channels can be recorded - each channel features 4 process alarms and 2 flow totalizers. 6 process groups are provided, allowing channels to be grouped together and individual displays created for different processes.

The large 31cm (12.1in), bright and clear display of the SM3000 maximizes visibility of process data. Full use can be made of the large display using the wide variety display formats that include a circular chart display and an overview of all 6 process groups.

Secure, Precise, Reliable Recording

- **Intuitive User Interface -** All operation of the SM Series is done via Windows™ style menus and dialogs that effortlessly guide the operator through the functions they require. A channel-by-channel approach to the configuration layout ensures simple and fast setup.

- **Thriving in Real Process Conditions -** Uniquely for a product of this type, the SM Series has a protection rating of NEMA 4X & IP66. This enables it to be installed, without additional protection, in applications that require frequent hose-down.

- **A Clear View of Your Process -** Multiple display formats, including strip and circular charts, bargraph, digital indictor and process displays, provide a clear view of process information.

Guaranteed Data Security - The recorder's internal flash memory used to store process data and configuration details is not reliant on battery backup to retain data during power failures.

Multiple users can be configured, each with individual user name, password and access rights. A comprehensive audit log records configuration changes, calibration changes, system events and many other items key to data security. Where applicable, all entries are detailed with operator identification.

A media door lock is provided as standard to ensure the security of the memory card.

The SM Series standard compliment of compressive security features ensures that it is fully compliant to the requirements of 21 CFR Part 11.

Industrial Standard, High Capacity, Robust Archive Storage - Either Compact Flash or SmartMedia memory card options are available for storage of process data. The solid-state nature of these devices provide maximum reliability, whilst their large storage capacity ensure minimum operator intervention to retrieve process data.

The graph below shows the time that a memory card will last when recording 6 channels at a sample rate of 10 seconds.
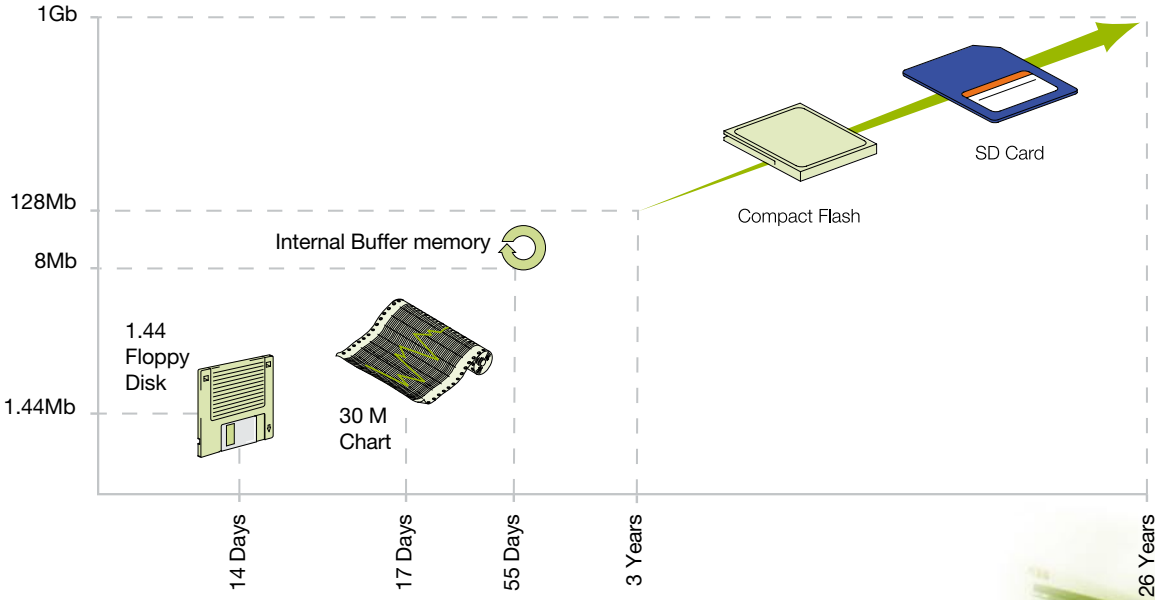
Ethernet Communication

It is very simple to connect an SM Series Recorder into existing plant networks via Ethernet communications. Once connected, remote process monitoring, access to archived data and email facilities become instantly available. Via the use of modem router or GSM technologies the SM Series' labour saving Ethernet features can still be used when a recorder is in a remote location.

- **Remote Process Monitoring -** Remote access to an SM Series is possible via the use of any standard web browser. Detailed real-time information is available for current alarm and totalizer conditions, memory card status and many other key process details. **For an on-line demonstration of this feature enter, http://217.33.207.105 in the address bar of your web browser.**

- **Email Notification -** Any Ethernet equipped SM Series Recorder is capable of sending email notification of important events. Emails can be triggered from process alarms or other key events and can be sent to multiple recipients. Detailed process reports can also be emailed at scheduled times.
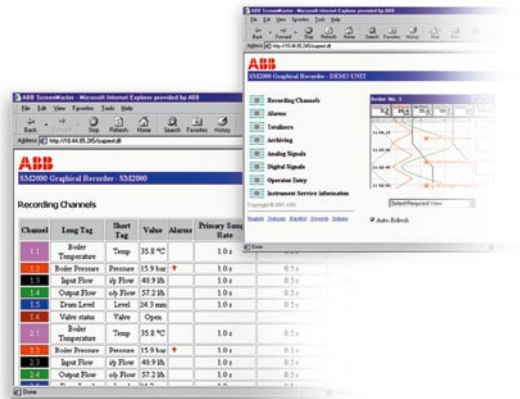
- **Automatic Data File Collection -** All process data files created by an SM Series Recorder can be remotely accessed via its Ethernet connection. Using ABB's File Transfer Scheduler software, automatic collection of data files from any number of recorders is possible.

- **DataManager -** Analysis of process data archived by an SM Series Recorder can easily be performed using DataManager advanced analysis software. In addition to charting of process data and validation of file security, DataManager provides database management of all data files and historical logs archived by any number of recorders. This enables secure long-term storage and simple retrieval of process data.
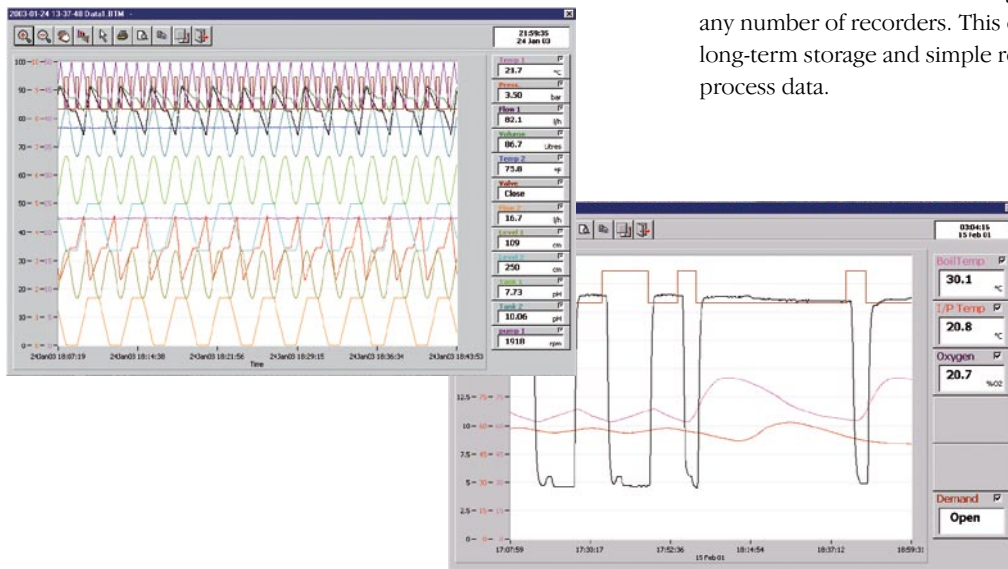
Versatility, choice, precision

A range of process indicators that can be wall or panel mounted to suit most applications.

COMMANDER 150
Universal Process Indicator

A 1⁄8 DIN Indicator - for measuring temperature, pressure, flow, level and other process variables, complete with built-in flow totalizer and max. min. and average value hold. Retransmission output and an alarm relay are fitted as standard with the option to add additional alarm relays and digital input.

As an integral part of the COMMANDER family, ABB's range of Indicators possess the same outstanding qualities and fitness-for-purpose as its controllers and recorders. Versatility, choice and precision, along with the provision of extensive standard features synonymous with COMMANDER.

COMMANDER 160
Wall/Post-mounted Universal Indicator

Housed in a NEMA 4X/IP66, weatherproof enclosure, the COMMANDER 160 is a robust and adaptable indicator for temperature, pressure, flow, level and other process variables under the harshest of process conditions. It can be mounted local to the measurement point.

Level (Indication)
Datum L150/160

The DATUM range of Level Indicators includes both an NEMA 4X/IP66 wall-mounted version (L160) and a 1⁄8 DIN panel mount unit (L150). Both these units are based on the COMMANDER 150 and 160 with the same basic functionality. Key product features such as built-in SG correction, with the ability to display either actual level or corrected volume, and a 20-point custom linearizer also makes DATUM ideal for non-linear tanks and vessels.

Selection Guide

Controllers

Model	C50	C100	C250	C351	C355	C360
Control Types						
	Process Controllers					
On/Off	✓	✓	✓	✓	✓	✓
Time proportioning	✓	✓	✓	✓	✓	✓
Analog PID		✓	✓	✓	✓	✓
Boundless valve control				✓	✓	✓
Motorized valve with feedback				✓	✓	✓
Control Capabilities						
Single-loop	✓	✓	✓	✓	✓	✓
Feedforward					✓	
Cascade						✓
Heat/Cool		✓	✓	✓	✓	✓
Remote Setpoint		●	●	✓	✓	
Auto/Manual station		✓ *	✓ *	✓	✓	
Back-up station				✓	✓	
Indicator	✓			✓	✓	
Ramp/Soak		1 prog/4 seg	1 prog/4 seg		9 prog/30 seg	20 prog/99 seg
Autotune	✓	✓	✓	✓	✓	✓
Inputs						
mV V mA THC RTD	1 std	1 std	1 std	2 std	2 std	2 std
mV mA THC				1 std	1 std	1 std
4/20 mA only		1 opt	1 opt			
Digital		1 opt	1 opt	2 std, 2 opt	2 std, 2 opt	2 std, 2 opt
Tx power supply		✓	✓	✓	✓	✓
Outputs						
Analog control		✓	✓	✓	✓	✓
Relay control	✓	✓	✓	✓	✓	✓
Logic control	✓	✓	✓	✓	✓	✓
Retransmission		✓ **	●	✓	✓	✓
Relays	1 std, 1 opt	1 std, 2 opt	1 std, 2 opt	2 std, 2 opt	2 std, 2 opt	2 std, 2 opt

Controllers

Model	C501	C505	C310	V100	V250
Control Types					
	Process Controllers			Motorized Valve Controllers	
On/Off	✓	✓	✓		
Time proportioning	✓	✓	✓		
Analog PID	✓	✓	✓		
Boundless valve control	✓	✓	✓	✓	✓
Motorized valve with feedback	✓	✓	✓		
Control Capabilities					
Single-loop	✓	✓	✓	✓	✓
Feedforward		✓			
Cascade		✓			
Heat/Cool	✓	✓	✓		
Remote Setpoint	✓	✓	✓	●	●
Auto/Manual station	✓	✓	✓*		
Back-up station	✓	✓			
Indicator	✓	✓	✓		
Ramp/Soak			9 prog/30 seg	1 prog/4 seg	1 prog/4 seg
Autotune	✓	✓	✓		
Inputs					
mV V mA THC RTD	1 std, 1 opt	1 std, 1 opt	3 std	1 std	1 std
mV mA THC	1 std	1 std			
4/20 mA only				1 opt	1 opt
Digital	2 std, 2 opt	2 std, 2 opt	2 std	1 opt	1 opt
Tx power supply	✓	✓	✓	✓	✓
Outputs					
Analog control	✓	✓	✓		
Relay control	✓	✓	✓	✓	✓
Logic control	✓	✓	✓		
Retransmission	●	●	✓	✓	✓
Relays	2 std, 2 opt	2 std, 2 opt	3 std	2 std, 1 opt	2 std, 1 opt

Controllers

Model	C50	C100	C250	C351	C355	C360
Advanced Features						
	Process Controllers					
Maths				✓	✓	✓
Alarm Logic				✓	✓	✓
Custom linearizers				✓ x2	✓ x2	✓ x2
Real time alarms+delay timers				✓ x2	✓ x2	✓ x2

Serial Comms						
MODBUS® RTU		●	●	●	●	●

PC Configuration						
		✓	✓	✓	✓	✓

Model	C50	C100	C250	C351	C355	C360
General						
	Process Controllers					
Size	⅟₁₆ DIN 48 x 48mm 1.89 x 1.89in	⅛ DIN 48 x 96mm 1.89 x 3.78in	¼ DIN 96 x 96mm 3.78 x 3.78in	¼ DIN 96 x 96mm 3.78 x 3.78in	¼ DIN 96 x 96mm 3.78 x 3.78in	¼ DIN 96 x 96mm 3.78 x 3.78in
Depth	110mm 4.33in	119mm 4.68in	122.5mm 4.82in	122.5mm 4.82in	122.5mm 4.82in	122.5mm 4.82in
Display	4 Digit LED x2	4 Digit LED x2	4 Digit LED x2	4 Digit LED x2	4 Digit LED x2 / 3 Digit LED x1 Bargraph	4 Digit LED x2 / 3 Digit LED x1 Bargraph
Dust/Water protection	NEMA 3 /IP65	NEMA 3 /IP65	NEMA 4X /IP66	NEMA 4X /IP66	NEMA 4X /IP66	NEMA 4X /IP66
Supply voltage option	90-264v ac	85-265v ac 24v dc	85-265v ac 24v dc	85-265v ac 24v dc	85-265v ac 24v dc	85-265v ac 24v dc

✓ Fitted as standard   ● Option   ★ by configuration   ★★ if analog output not used for control   † if first I/P, set to thermocouple

Selection Guide

Controllers

Model	C501	C505	C310	V100	V250
Advanced Features					
	Process Controllers			Motorized Valve Controllers	
Maths	✓	✓			
Alarm Logic	✓	✓	✓		
Custom linearizers	✓ x2	✓ x2			
Real time alarms+delay timers	✓ x2	✓ x2			

Serial Comms					
MODBUS® RTU	●	●	●	●	●

PC Configuration					
	✓	✓		✓	✓

Model	C501	C505	C310	V100	V250
General					
	Process Controllers			Motorized Valve Controllers	
Size	3 x 6 DIN 76 x 148mm 2.99 x 5.83in	3 x 6 DIN 76 x 148mm 2.99 x 5.83in	Wall mount 160 x 250mm 6.3 x 9.84in	⅛ DIN 48 x 96mm 1.89 x 3.78in	¼ DIN 96 x 96mm 3.78 x 3.78in
Depth	149.5mm 5.87in	149.5mm 5.87in	68mm 2.68in	119mm 4.68in	122.5mm 4.82in
Display	4 Digit LED x2 3 Digit LED x1 Bargraph x 2	4 Digit LED x2 3 Digit LED x1 Bargraph x 2	6 Digit LED x2 Bargraph	4 Digit LED x2	4 Digit LED x2
Dust/Water protection	NEMA 4X /IP66	NEMA 4X /IP66	NEMA 4X /IP66	NEMA 3 /IP65	NEMA 4X /IP66
Supply voltage option	85-265v ac 24v dc	85-265v ac 24v dc	115, 230v ac ± 15%	85-265v ac 24v dc	85-265v ac 24v dc

✓ Fitted as standard ● Option ★ by configuration ★★ if analog output not used for control † if first I/P, set to thermocouple

Selection Guide

Strip Recorders

Model	CR100	SR100B	SR100A	SR250B	SR250A
Recording Function					
	Recorders and Indicators				
Traces	1 or 2	3 or 6	1, 2, 3, 4, 5 or 6	3, 6, 9 or 12	3, 6, 9, 12, 15, 18, 21 or 24
Chart type	100mm Strip Roll or Fanfold	100mm Strip Roll or Fanfold	100mm Strip Roll or Fanfold	250mm Strip Roll	250mm Strip Roll
Text printing		✓ limited	✓	✓ limited	✓
Chart speed	0-1500mm/hr	0-1500mm/hr	0-1500mm/hr	0-1500mm/hr	0-1500mm/hr
Cue and Review			✓	✓	✓
Programmable scale-printing		✓	✓	✓	✓
Chart zoning					✓
Value printing			✓		✓
Event pen function			✓		✓
Process Connections					
Universal inputs	✓	✓	✓	✓	✓
Transmitter power supply	1 std/input	3 std	3 std	2 std, 12 opt	2 std, 12 opt
Alarm relays	2 std	6 opt	12 opt	12 opt	18 opt
Digital I/O	2 std	1 std	1 std, 12 opt	1 std	1 std, 18 opt
Analog outputs	1 std		6 opt		6 opt
MODBUS® RS 485			●	●	●
Advanced Processing					
Totalizers			✓		✓
Maths block			✓		✓
Logic equations			✓		✓
PCMCIA memory card port			●		●
PC Configuration					
	✓	✓	✓	✓	✓
General					
Size	144 x 144 x230mm 5.67 x 5.67 x 9.00in	144 x 144 x230mm 5.67 x 5.67 x 9.00in	144 x 144 x230mm 5.67 x 5.67 x 9.00in	147 x 327 x230mm 5.83 x 12.87 x 9.00in	147 x 327 x230mm 5.83 x 12.87 x 9.00in
Cut out	138 x 138 5.43 x 5.43in	138 x 138 5.43 x 5.43in	138 x 138 5.43 x 5.43in	138 x 302 5.43 x 11.92in	138 x 302 5.43 x 11.92in
Weight	3.3kg (7.25lbs)	3.3kg (7.25lbs)	3.3kg (7.25lbs)	6kg (13lbs)	6kg (13lbs)
IP rating	NEMA 3/IP65	NEMA 3/IP65	NEMA 3/IP65	NEMA 3/IP65	NEMA 3/IP65
Mounting	Panel/portable	Panel/portable	Panel/portable	Panel/portable	Panel/portable
Supply	85-265v ac	85-265v ac 10-30 vdc 24v ac	85-265v ac 10-30 vdc 24v ac	85-265v ac 24v dc	85-265v ac 24v dc

Circular Recorders/Controllers

Model	C1300	C1900	C1950	C1960
Recording Function				
	Recorders and Indicators			
Traces	1, 2, 3 or 4	1, 2, 3 or 4	1, 2 or 3	1, 2 or 3
Chart type	Circular	Circular	Circular	Circular
Event pen function	✓	✓	✓	✓
Truetime event	✓	●	✓	●
Chart speed	1hr-32 days	1hr-32 days	1hr-32 days	1hr-32 days
Process Connections				
Universal inputs	✓	✓	✓	✓
Tx power supply	1 std per channel	1 std per channel***	1 std per channel	1 std per channel
Alarm relays	1 std per channel, 8 opt	1 std per channel, 8 opt***	1 std per channel, 8 opt	1 std per channel, 8 opt
Digital I/O	2 std per channel, 24 opt	2 std per channel, 24 opt***	2 std per channel, 24 opt***	2 std per channel, 24 opt***
Analog outputs	1 std per channel	1 std per channel***	1 std per channel	1 std per channel
MODBUS® RS 485	●	***	●	●
Advanced Processing				
Totalizers	●	●		
Maths block	●	●		
Logic equations	8		8	8
Control loops	N/A	up to 2 opt	up to 2 opt	1 std, 1 opt
Ramp/Soak profile	N/A	●		20 profiles, 99 segments
General				
Size	382 x 386mm 15.04 x 15.23	382 x 386mm 15.04 x 15.23	382 x 386mm 15.04 x 15.23	382 x 386mm 15.04 x 15.23
Depth	101mm 3.98in	101mm 3.98in	101mm 3.98in	101mm 3.98in
Display	128x 64 Dot Matrix	6 Digit LED	6 Digit LED	6 Digit LED
IP rating	NEMA 3/IP54, NEMA 4X/IP66 opt	NEMA 4X/IP66	NEMA 4X/IP66	NEMA 4X/IP66
Mounting	Panel/wall/pipe	Panel/wall/pipe	Panel/wall/pipe	Panel/wall/pipe
Supply	85-265v ac	85-265v ac	85-265v ac	85-265v ac

✓ Fitted as standard   ● Option   *** not available on 1901

Selection Guide

Videographic Recorders

Model	SM500F	SM1000	SM2000	SM3000
General Features				
Display	120mm (4.7 in) Mono STN or 140mm (5.7 in) TFT	125mm (5 in) STN	140mm (5.7in) TFT	310mm (12.1in) TFT
Operator Interface	Tactile Keys	Tactile Keys	Touchscreen	Tactile Keys
Internal Memory	8Mb Flash	1Mb Flash	8Mb Flash	8Mb Flash
Memory Card	SD	Compact Flash or SmartMedia	Compact Flash or SmartMedia	Compact Flash or SmartMedia
Number of Software Recording Channels	8	12	12	36
Process Groups	2	2	2	6
Input				
Universal Analog/Digital Inputs		6 or 12	6 or 12	up to 36
High Specification Analog/Digital Inputs	1 to 4	●	●	●
2 Wire Transmitter Power Supply	2 loops optional	8 Loops optional	2 loops standard, 8 optional	2 loops standard, 8 optional
Additional I/O				
Relays	1 standard, 2 optional	18 optional	18 optional	24 optional
Digital Inputs		18 optional	18 optional	24 optional
Digital Outputs		18 optional	18 optional	24 optional
Analog Outputs		6 optional	6 optional	8 optional
MODBUS RS485		●	✓	●
10BaseT Ethernet	●	●	●	✓
Advanced Processing				
Alarms	32	24	24	144
Totalizers	16 optional	12 optional	12 standard	72 standard
Advanced Math/Logic	●		●	●
PC Configuration	Free of Charge	Free of Charge	Free of Charge	Free of Charge
Data Security	21 CFR Part 11 Compliant	21 CFR Part 11 Compliant	21 CFR Part 11 Compliant	21 CFR Part 11 Compliant
Physical Attributes				
IP Rating	NEMA 4X & IP66	NEMA 4X & IP66	NEMA 4X & IP66	NEMA 4X & IP66
Panel Cut Out	138x138mm (5.43x5.43in)	138x138mm (5.43x5.43in)	138x138mm (5.43x5.43in)	281x281mm 11.06x11.06in)
Power Supply	85-265V ac or 10-36V dc	85-265V ac or 24V dc	85-265V ac or 24V dc	85-265V ac or 24V dc
Overall Size	144x144x79mm (5.67x5.67x3.1in)	144x144x239mm (5.67x5.67x9.4in)	144x144x239mm (5.67x5.67x9.4in)	288x288x245mm (11.34x11.34x10in)
Mounting Options	Panel, Wall or Pipe	Panel	Panel	Panel

✓ = Fitted as standard   ● = Optional

Indicators

Model	C150	C160	L150	L160
Functions				
	Process Indicators		Level Indicators	
On/Off control	✓	✓	✓	✓
Totalizer	✓	✓		
Max/Min/Average	✓	✓	✓	✓
Custom Linearizer		✓	✓	✓
SG Correction			✓	✓
Inputs				
Universal	✓	✓		
Fixed			✓	✓
Digital	1 opt	✓	1 opt	✓
TX power supply	✓	✓	✓	✓
Outputs				
Alarm relays	1 std, 2 opt	2 std	1 std, 2 opt	2 std, 1 opt
Logic	✓	✓	✓	✓
Retransmission	✓	✓	✓	✓
Serial Comms				
MODBUS® RTU	●	●	●	●
PC Configuration				
	✓	✓	✓	✓
General				
Size	1/8 DIN 96 x 48mm 3.78 x 1.89in	Wall mount 160 x 250 mm 6.3 x 9.84in	1/8 DIN 96 x 48mm 3.78 x 1.89in	Wall mount 160 x 250 mm 6.3 x 9.84in
Depth	122.5m 4.82in	68mm 2.68in	122.5m 4.82in	68mm 2.68in
Display	6 Digit LED	6 Digit LED	6 Digit LED	6 Digit LED
Dust/Water Protection	NEMA 3/IP66	NEMA 4X/IP66	NEMA 3/IP66	NEMA 4X/IP66
Supply Voltage Option	85-265v ac 24v dc	85-265v ac 24v dc	85-265v ac 24v dc	85-265v ac 24v dc

ABB is a leader in power and automation technologies that enable utility and industry customers to improve performance while lowering environmental impact. The ABB Group of companies operates in around 100 countries and employs about 111,000 people.

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