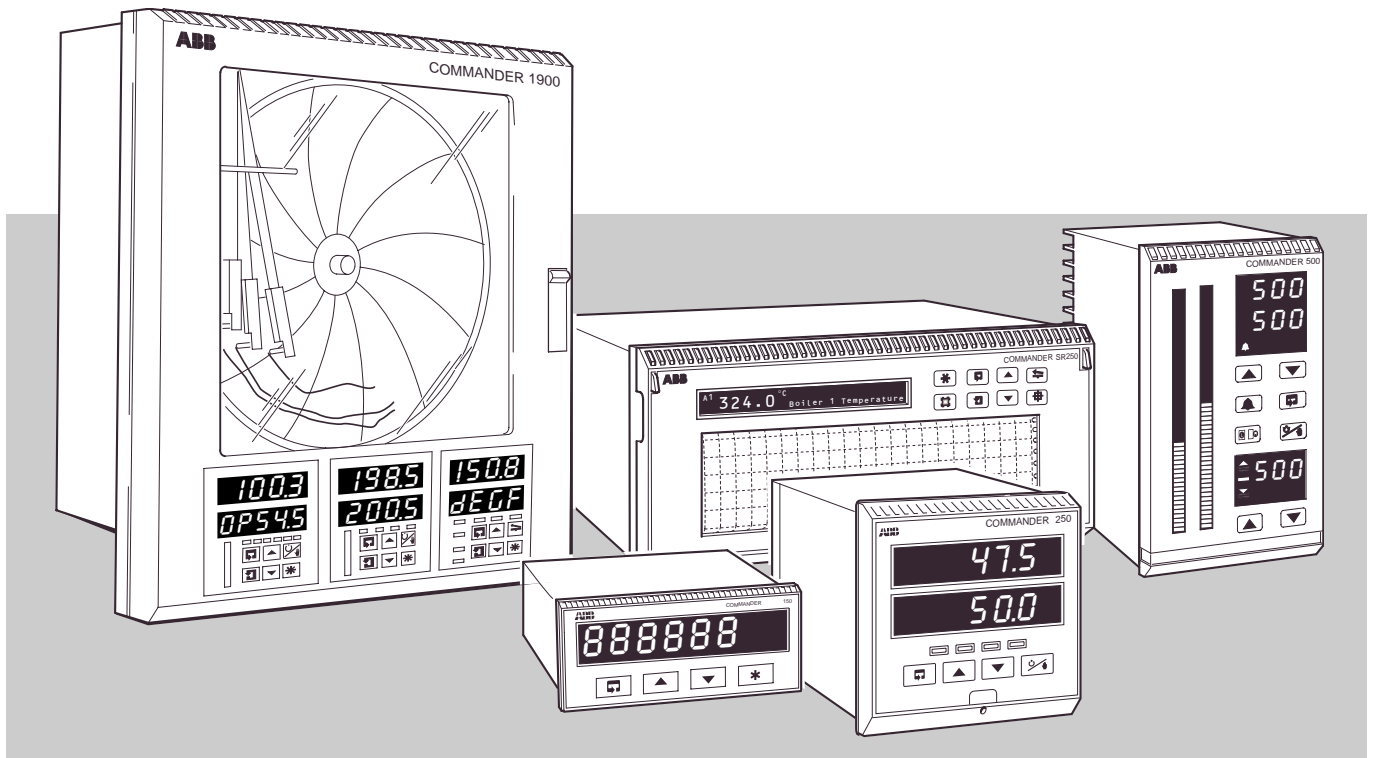# COMMANDER

Digital Indicators, Process Controllers and Chart Recorders

FEATURES AND BENEFITS GUIDE

ABB Instrumentation

Contents

Introduction

COMMANDER is the name behind one of the most comprehensive family of control and recording instrumentation designed, developed and manufactured in the world today.

The range includes Process Controllers, Digital Indicators and both Circular- and Strip-Chart Recorders.

This guide has been created to give you an overview of the range and highlights some of the main features and benefits of the different products.

Product Philosophy

The COMMANDER range of products is designed to be rugged with a minimum of an IP65/NEMA3 front facia and on many products IP66/NEMA4X.

All units come with a universal input and a transmitter power supply; the majority also have an analog, relay and logic output as standard and are PC configurable.
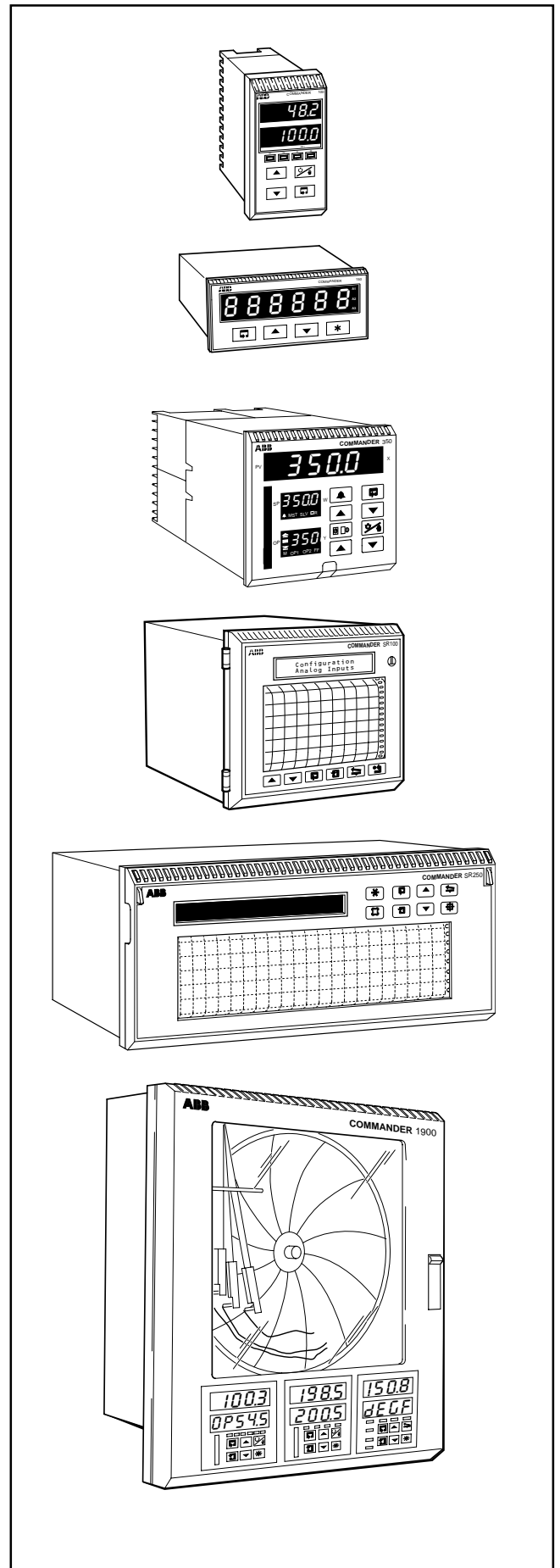
They are suitable for Modbus RS485 serial communications which can be fitted at the factory or the instruments can be upgraded on site.

As you read through this guide you will see that throughout the COMMANDER range, each standard unit has been designed to cover 80% of all applications.
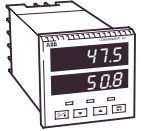
Paul Messenger

Product Support Manager

Features and Benefits

COMMANDER 50

$^1/_{16}$ DIN Compact Controller/Alarm Unit

Our first offering in the $^1/_{16}$ DIN controller market, the COMMANDER 50 is a simple, low cost, compact controller/alarm unit, ideal for basic indication or control applications.

Features	Benefits
Simple Control	A small case, low cost controller for all those simple applications where a full-featured process controller is not needed, the COMMANDER 50 offers either relay or logic output as standard and ON/OFF or PID time proportioning control.
Clear Displays	Two 4-digit LED displays show process variable and set point simultaneously.
Universal I/O	Can accept direct input from all standard thermocouples, RTD, mV, V and mA. Re-ranging is by simple link changing and reprogramming is carried out via the front facia.
Accuracy	0.25% of span.
Power Supply	Switchmode, 90 to 264V a.c.; no links to set up and reduced susceptibility to noisy mains.
Additional Relay	The option to add another alarm relay.
Ramping Set Point	To avoid shock to your process when changing set point, you can set the unit to ramp to the new set point over a period of time.
Front Facia	IP65, suitable for harsh environments.

Features and Benefits
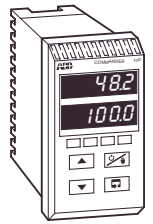
COMMANDER 100

$^1/_8$ DIN Process Controller

A universal controller in $^1/_8$ DIN format, the COMMANDER 100 extends our coverage of the controller market, allowing us to offer a range of controllers which meet the needs of over 80% of end users.

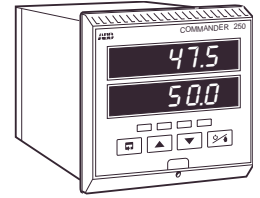| Features	Benefits
3 Outputs as Standard	Analog, relay and logic outputs, any one of which can be assigned for PID control, giving the ability to stock one controller with 3 different control output options.
Types of Control	• On/Off. • PID with Autotune. • Heat/Cool. • Ramp/Soak (4 segment, 1 program). Gives full coverage of all the most popular applications.
Remote Set Point	A 4 to 20mA remote set point board for use in Master/Slave configurations is available as an optional extra.
Universal I/O Without Links	Accepts direct connection to all standard thermocouples, RTD, mA, mV and V input types. To simplify installation no range links are required, just wire into the rear terminals that suit your input type.
Tx Power Supply	A 24V @ 30mA power supply for powering a 2-wire field transmitter fitted as standard.
Simple Configuration	Simplicity itself, configuration is achieved either from the front face or via the Windows-based PC configuration software. This makes set up quick and easy, and saves time during commissioning.
Construction	The front facia is hoseproof and is designed for use in the harshest environments, manufactured from chemical resistant glass-loaded polyester.
Universal I/O Without Links	Accepts direct connection to all standard thermocouples, RTD, mA, mV and V input types. To simplify installation no range links are required. Simple product for all applications.
Serial Communication	The option to fit a serial comms board which gives: • RS422/RS485 2- or 4-wire • 2.4k or 9.6k baud • Modbus RTU slave protocol, allowing access to the most popular system protocol on the market today.
Accuracy	0.25% of reading on all standard ranges, giving measurement integrity and good long term stability.
Set Points	Four set point strategies are available: • Local. • Remote (see above). • Four selectable fixed values (you can use the digital input to scroll around four fixed value set points). • Ramp/Soak profile.

Features and Benefits
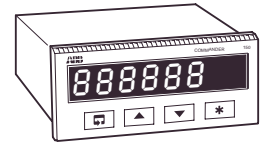
COMMANDER 150

$^1/_8$ DIN Process Indicator

The COMMANDER 150 is a dedicated digital indicator in a horizontal $^1/_8$ DIN format. However, this is more than just a simple display unit, it is capable of many other functions as standard.

Features	Benefits
3 Outputs as Standard	Analog, relay and logic outputs, any one of which can be configured for process variable retransmission and alarms.
Additional Relays	Up to 2 extra relays can be fitted to extend the COMMANDER 150's alarm and control functionality.
Operator Display	A 6-digit LED display with 14mm high characters.
Totalization	Included as standard is flow integration of a 4 to 20mA signal. With the transmitter power supply and inbuilt root extraction linearizer, this unit is ideal for simple flow applications.
Batching Unit	• 6-digit batch counter • Started at either digital input or front face key • End of batch relay output
Max./Min.	• Store max./min. values • Enables operator to ensure limits have not been exceeded
Average	Can be set to average the input signal over a period of time.
High Accuracy	0.1% of reading on all standard ranges, giving measurement integrity and good long term stability.
Universal I/O Without Links	Accepts direct connection to all standard thermocouples, RTD, mA, mV and V input types. To simplify installation, no range links are required. Simple product for all applications.
Tx Power Supply	A 24V @ 30mA power supply for powering a 2-wire field transmitter is fitted as standard.
Simple Configuration	Simplicity itself, configuration is achieved either from the front face or via the Windows-based PC configuration software. This makes set up quick and easy, and saves time during commissioning.
Construction	The front facia is hoseproof and is designed for use in the harshest environments, manufactured from chemical resistant glass-loaded polyester.
Serial Communication	The option to fit a serial comms board which gives: • RS422/RS485 2- or 4-wire • 2.4k or 9.6k baud • Modbus RTU slave protocol, allowing access to the most popular system protocol on the market today

Features and Benefits

COMMANDER 250

$^1/_4$ DIN Process Controller

The COMMANDER 250 is a $^1/_4$ DIN process controller with all the flexibility of the COMMANDER 100 and more. Ideal for simple control loops for users who prefer the $^1/_4$ DIN format.

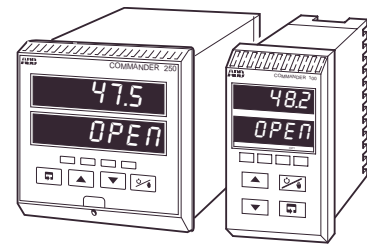| Features	Benefits
3 Outputs	Analog, relay and logic outputs, any one of which can be assigned for PID control, giving the ability to stock one controller with 3 different control output options.
Types of Control	• On/Off • PID with Autotune • Heat/Cool • Ramp/Soak (4 segment, 1 program) Gives full coverage of all the most popular applications.
Retransmission	If the analog output is already being used for control, a second retransmission signal of the set point or process variable can be provided by the addition of an option board.
Remote Set Point	A 4 to 20mA remote set point board for use in Master/Slave configurations is available as an additional input.
Configuration	Configuration is achieved either from the front face or via the Windows-based PC configuration software. This makes set up quick and easy, and saves time during commissioning.
Universal I/O Without Links	Accepts direct connection to all standard thermocouples, RTD, mA, mV and V input types. To simplify installation no range links are required. Simple product for all applications.
Power Supply	85 to 265V a.c. switchmode supply removes the need for links and reduces the risk of transformer burnout due to incorrect supply.
Construction	The front facia meets IP66(NEMA4X) and is designed for use in the harshest environments. • New molded seal to give excellent panel/bezel and bezel/case sealing • Rear terminals color-coded with wiring schematics for ease of installation
Accuracy	0.25% of reading on all standard ranges, giving measurement integrity and good long term stability.
Serial Communications	• RS422/RS485 2- or 4-wire • 2.4k or 9.6k baud • Modbus RTU slave protocol, allowing access to the most popular system protocol on the market today

6

Features and Benefits

COMMANDER V100 AND V250

$^1/_8$ and $^1/_4$ DIN Motorized Valve Controllers

The COMMANDER V100 and V250 are boundless controllers for use with electrical positioners on valves or dampers. They are dedicated units making setup and use very simple.

Features	Benefits
5A Relays	For direct connection to valve or intermediate relays (competition normally offer 2A only).
Valve Travel Time	Adjustable from 10 second to 5000 seconds to suit the fastest or slowest of valves.
Control Deadband	Adjustable between 1 and 9999 in engineering units.
Retransmission	Supplied with 4 to 20mA retransmission of the process variable as standard.
Remote Set Point	A 4 to 20mA remote set point board for use in Master/Slave configurations is available as an optional extra.
Configuration	Configuration is achieved either from the front panel switches or via the Windows-based PC configuration software.
Universal I/O Without Links	Accepts direct connection to all standard thermocouples, RTD, mA, mV and V input types. To simplify installation no range links are required.
Construction	The V100 meets IP65(NEMA3), the V250 front facia meets IP66(NEMA4X). Both are designed for use in the harshest environments.
Accuracy	0.25% of reading on all standard ranges.
Serial Communications	• RS422/RS485 2- or 4-wire • 2.4k or 9.6k baud • Modbus RTU slave protocol

Features and Benefits
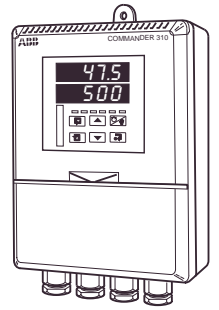
COMMANDER 310
IP66/NEMA4X Wall-Mounted Controller

The COMMANDER 310 has a unique housing and mounting option which enables it to meet a whole range of user demands that no other product can match.

Features	Benefits
IP66/NEMA4X Enclosure	No need for an expensive instrument panel; the C310 can be mounted anywhere in the plant.
Comprehensive I/O: • **Three Analog Inputs** • **Two Analog Outputs** • **Three Relays** • **Two Digital Inputs**	All the I/O you could need included as standard to meet the majority of control needs.
All Control Types in one Unit: • **On/Off** • **Time Prop** • **Analog** • **Boundless** • **Motorized Valve with Feedback**	Stock only one unit to cover all your spares requirements.
Universal Input with Tx Power Supply	Suitable for any input signal you might have without the need for special range cards.
Serial Communications	Modbus RTU, the most common serial communications protocol, can be fitted at the factory or upgraded on site.
Ramp/Soak Profile	9 programs and 30 segments as standard to suit the majority of simple profile applications.
Tx Power Supply	A 24V d.c. supply suitable for powering a 2-wire transmitter is provided as standard.

Features and Benefits
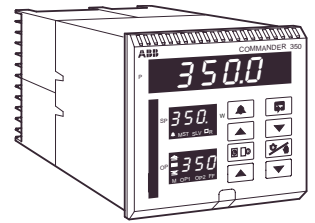
COMMANDER 350
$^1/_4$ DIN Advanced Process Controller

The COMMANDER 350 is a universal $^1/_4$ DIN process controller in both basic and advanced formats i.e. Single Loop, Feedforward, and Cascade with inbuilt templates to make set up a simple and easy operation. A PC configuration port is also included as standard.

| Features	Benefits
Extensive I/O Capabilities • Three Inputs; Two Universal, One THC* mA,mV • One Analog/Logic Output • One Analog Output • Two Relays • Two Digital Inputs • 2-wire Tx Power Supply (60mA) * *If Universal Input is Programmed for THC.*	Sufficient I/O as standard to cover **80%** of all applications.
Options • Two Relays • Two Digital Inputs • Modbus RS485	Plus the option to add **more** when needed.
Application Templates COMMANDER 351 • Single Loop Controller with Local Set Point • Single Loop Controller with Remote Set Point • Auto/Manual Station (Low Signal Detection) • Auto/Manual Station (Digital Signal Detection) • Analog Backup Station (Low Signal Detection) • Analog Backup Station (Digital Signal Detection) • Single Indicator/Manual Loader Station • Dual Indicator/Manual Loader Station	Strategies built in for **ease of use**.
COMMANDER 355 All the above plus: • 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	Simple and complex settings **made simple**.
No Input Links	No need to access the internal components – simply wire to the clearly labelled terminals that **match your inputs**.
Four Sets of Independent PI Terms (Gain Scheduling)	Selectable by digital input or internal alarms allowing you to change settings to match the process conditions and **adapt controller responses**.
2-wire Tx Power Supply (60mA)	Ability to power all three inputs from the standard controller without the need for external **power supply**.
Alarm Logic 6 Equations with up to 15 Elements	To allow for comprehensive alarm strategies, reducing the need for **external devices**.
Math Blocks 4 Math Blocks; Addition, Subtraction, Multiplication and Division. Also High/Low Select, Median, Average, Maximum and Minimum.	Making it possible for a single unit to provide **more than just control**.
Internal Soft Wiring	Results of math blocks or logic equations can be **routed internally** to inputs or alarm relays without the need for external hard wiring.
Three Color Displays	**Clear indication** of process variable (red), set point (green) and output (yellow).
Configuration	The COMMANDER 350 can be configured from the front face using the built-in templates and switches or via our **Windows-based configuration software**.
Construction IP66/NEMA4X Front Face. Short Case, Less than 125mm.	Designed for use in the **harshest environments**. Enabling installation in existing or new panels.
Accuracy – (0.1%) of Reading on Standard Ranges.	Giving **high process accuracy** and repeatability.
Serial Communications	RS485 Modbus RTU protocol – the **most common** industry-standard open protocol, allowing for integration into your plant.

Features and Benefits
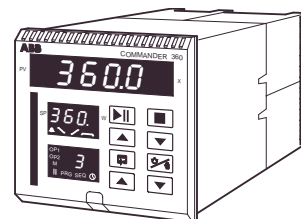
COMMANDER 360

$^1/_4$ DIN Profile Controller

The COMMANDER 360 is a Ramp/Soak profile controller with a dedicated operator front face for easy operation and inbuilt functionality e.g. self seeking set point, Guaranteed Ramp/Soak, digital control and much more.

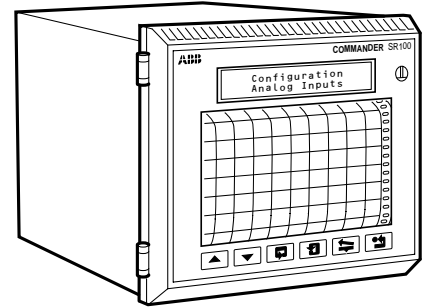| Features	Benefits
Extensive I/O Capabilities • Three Inputs; Two universal, One THC* mA, mV • One Analog/Logic Output • One Analog Output • Two Relays • Two Digital Inputs • 2-wire Tx Power Supply (60mA) * *If Universal Input is Programmed for THC*	Sufficient I/O as standard to cover **80% of all applications**.
Options • Two Relays • Two Digital Inputs • Modbus RS485	Plus the option to **add more when needed**.
Application Templates • Single Loop Control or Cascade	Strategies built in for **ease of use**.
Control Actions • Analog/Logic • On/Off • Time Proportioning • Motorized Valve • Heat/Cool • Gain Scheduling	Simple and complex settings **made simple**.
No Input Links	No need to access the internal components – simply wire to the clearly labelled terminals that **match your inputs**.
Four Sets of Independent PI Terms (Gain Scheduling)	Selectable by digital input or internal alarms allowing you to change settings to match the process conditions and **adapt controller responses**.
Two-wire Tx Power Supply (60mA)	Ability to power all three inputs from the standard controller **without the need for an external power supply**.
Alarm Logic 6 Equations with up to 15 Elements	To allow for comprehensive alarm strategies, reducing the need for **external devices**.
Maths Blocks 4 Math Blocks; Addition, Subtraction, Multiplication and Division. Also High/Low Select, Median, Average, Maximum and Minimum.	Making it possible for a single unit to provide **more than just control**.
Internal Soft Wiring	Results of maths blocks or logic equations can be **routed internally** to inputs or alarm relays without the need for external hard wiring.
Three Color Displays	**Clear indication** of process variable (red), set point (green) and output/profile status (yellow).
Simple Operator Control • Run/Hold. • Stop. • Raise/Lower. • Skip.	Providing you with **direct control of the profile**.
Configuration	The **COMMANDER 360** can be configured either from the front face, using the built-in templates and switches, or via our **Windows-based configuration software**.
Construction IP66/NEMA-4X Front Face. Short Case, less than 125mm.	Designed for use in the **harshest environments**. Enabling installation in existing or new panels.
Accuracy – 0.1% of Reading on Standard Ranges.	Providing **high process accuracy** and repeatability.
Serial Communications RS485 Modbus RTU.	Modbus protocol – the **most common industry-standard** open protocol, allowing for integration into your plant.
Guaranteed Ramp/Soak Two hysteresis values – one for Ramp and one for Soak. Selectable as above, below, or above **and** below set point. May also be disabled.	Ensuring that the product gets the **correct treatment**.
Self-seeking Set Point Start the profile at the current ambient temperature, not the profile start temperature.	**Increases** the speed of the process. **Saves** time and energy.
Retort Function If the process loses heat, the **COMMANDER 360** holds the profile and continues to monitor the process. When heat is restored, the **COMMANDER 360** ramps the set point back up at the rate at which the last ramp segment set point was ramped.	**Protecting your process** and ensuring the product is not subject to unstable conditions.

Features and Benefits
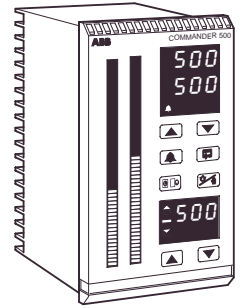
COMMANDER 500
3 x 6 Bargraph Indicating Controller

The COMMANDER 500 is our first 3 x 6 bargraph controller in the COMMANDER range.
It has both basic and advanced formats i.e. Single Loop, Feedforward and Cascade and can be set up easily from either the front fascia or via a PC. It incorporates simple to set up, inbuilt templates.

Features	Benefits
Extensive I/O Capabilities	**Standard** • 1 Universal input, 1 fixed input (mA, mV), THC* • 1 Analog or logic output • 2 Relays • 2 Digital inputs **Optional** • 1 Universal input • 1 Analog or logic output • 2 Relays • 2 Digital inputs Exceptional range of available inputs/outputs. * *If universal input is programmed for THC.*
Application Templates	Strategies built-in for ease of use: **COMMANDER 501** • Single loop control • Motorized valve with or without feedback • Heat/Cool • Indicator/Manual loader **COMMANDER 505** As for the COMMANDER 501 plus: • Cascade • Feedforward • Ratio • Auto/Manual station • Analog backup stations
No Input Links	No need to open the case – simply wire the terminals that match your input.
Four Sets of PID Terms	Selectable by digital signals to suit changing process conditions.
2-wire Tx Power Supply	24V d.c. @ 45mA suitable for powering up to two loops plus a 24V d.c. @ 23mA supply on the option board.
Alarm Logic	6 equations with up to 15 elements to allow for comprehensive alarm strategies.
Math Blocks	4 math blocks; addition, subtraction, multiplication and division. Also, high/low select, median, average, maximum and minimum.
Delay Timers	2 delay timers are available for damping alarm signals.
Configuration	The COMMANDER 500 can be configured from the front face using the in-built templates and switches or via our Windows-based PC configuration software.
Construction	IP66 (NEMA4X) front face designed for use in the harshest environments.
Accuracy	0.1% of reading on standard ranges.
Serial Communication	RS485 Modbus RTU communications protocol.

Features and Benefits

COMMANDER SR100B
100mm Strip Chart Recorder

ABB Instrumentation's offering in the basic 100mm strip-chart process
recorder market, the COMMANDER SR100B is designed to put lines on paper accurately and reliably at a competitive price.

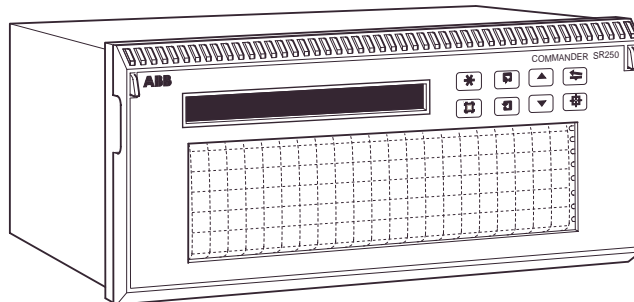| Features	Benefits
Universal Process Inputs	Direct input from all standard thermocouples, Pt100, mA, mV and Volts
Linearization	All standard themocouples, Pt100, Sq. root and 20-breakpoint linearizers.
Piezo-electric Printhead	Reliable and clear traces using specially designed printhead and high quality 'Bible' paper.
2-wire Tx Power Supply	70mA to power up to 3 loops as standard.
High Accuracy	• mV – ±0.1% of reading • mA, V – ±0.2% of reading • THC – ±0.1% of reading
Low Long-term Drift	Less than 0.01% of reading or ±5µV annually make the SR100B a very stable and reliable recorder.
Universal Power Supply	The SR100B may be supplied with anything from 85V to 265V a.c. as standard without the need to change any links. 24V a.c. or d.c. is also available.
Alarms	6 user-defined, high/low process alarms.
Relays	6 (5A) relays can be fitted to the SR100B. They can be allocated to individual channels or act as common alarms for multiple channels using alarm logic.
IP65 Front Fascia	Extremely rugged construction for use in harsh industrial environments.
PC Configuration	Simple configuration tool allowing for rapid set up, storage and copying of settings for identical instruments.
Basic Chart Annotation	Alarm indication, time and date, trace identifiers and scales make the SR100B chart a very clear record of the process conditions.

Features and Benefits
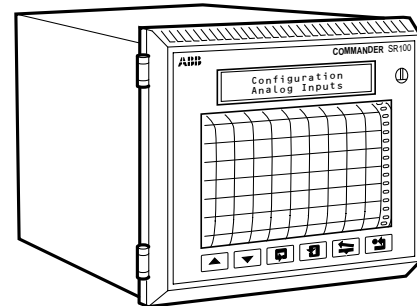
COMMANDER SR100A
100mm Advanced Strip Chart Recorder

ABB Instrumentation's offering in the advanced 100mm strip-chart recorder
market, the COMMANDER SR100A includes up to 6 pens, math, logic, flow totalizers and chart text printing
as standard.

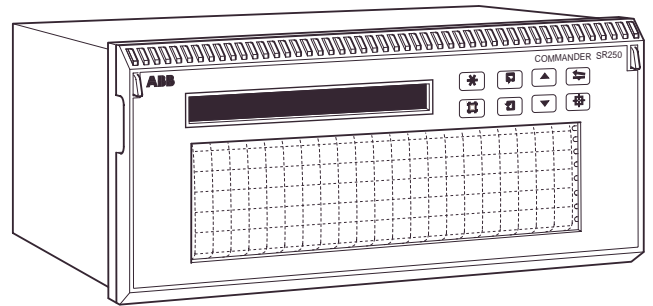| Features	Benefits
Universal Process Inputs	Direct input from all standard thermocouples, Pt100, mA, mV and Volts.
Linearization	All standard themocouples, Pt100, Sq. root and 20-breakpoint linearizers.
Piezo-electric Printhead	Reliable and clear traces using specially designed printhead and high quality 'Bible' paper.
2-wire Tx Power Supply	70mA as standard to power up to 3 loops.
High Accuracy	• mV ±0.1% of reading • mA, V ±0.2% of reading • THC ±0.1% of reading
Low Long-term Drift	Less than 0.01% of reading or ±5µV annually make the SR100A a very stable and reliable recorder.
Universal Power Supply	The SR100A can be supplied with anything from 85V to 265V a.c. as standard without the need to change any links. 24V a.c. or d.c. is also available.
Alarms	12 user-defined, high/low process alarms and 2 real-time alarms, all of which can be printed on the chart or used to print a message.
Relays	12 (5A) relays can be fitted to the SR100A. They can be allocated to individual channels or act as common alarms for multiple channels using alarm logic.
Serial Communications	RS485 Modbus RTU option board available to provide simple connection to the majority of SCADA packages.
Totalizers	Up to 6 totalizers available as standard, each comprising a running, resettable totalizer and a secure totalizer.
Math and Logic Functions	The SR100A is more than a chart recorder. It includes as standard four math blocks for arithmetic functions as well as mass flow and %RH. The logic software provides 10 logic equations wilth the ability to AND/OR input signals together.
Printing on Chart	Clear text annotation on chart of: • Time • Date • Selected messages • Batch message • 12 alarm messages • 12 channel tags • 6 totalizer results • 4 math results making the chart a complete document of process conditions for the future.
IP65 Front Fascia	Extremely rugged construction for use in harsh industrial environments.

Features and Benefits

COMMANDER SR250B

250mm Strip Chart Recorder

The COMMANDER SR250B is a lightweight, 250mm, up
to 12 channel strip chart recorder, requiring less panel space than the equivalent 180mm competition.

| Feature	Benefit
Universal Process Input on All Channels	Direct input from all standard thermocouples, Pt100, mA, mV and Volts.
Unique Z-trace	Using our patented Z-trace system, all 12 channels plot a unique color trace, making each channel easily identifiable.
Tx Power Supply	The SR250B can power two loops as standard, with the option to fit 3 extra boards to power a further 12 loops.
High Accuracy	• mV – ±0.1% of reading • mA, Volts and Resistance – ±0.2% of reading • Thermocouples J, K, L, N, T, E & RTD – ±0.5°C • Thermocouples R and S – ±1°C
Low Long-term Drift	Less than 0.01% of reading or ±5μV annually make the SR250B a very stable and reliable recorder.
Graphic LCD Display	200 segment x 16 character easy-to-read, high clarity display, showing at-a-glance: process value, units of measure, channel identity and tag.
Universal Power Supply	The SR250B may be supplied with anything from 85V to 265V a.c. as standard, without the need to change any links. 24V d.c. is available as an option.
Alarms	24 user-defined, high/low process alarms and 4 real-time events, all of which can be printed on the chart.
Relays	Twelve (5A) relays can be fitted to the SR250B. They can be allocated to individual channels or act as common alarms for multiple channels.
Serial Communication	RS485 Modbus RTU option board provides a real-time link to SCADA systems or PCs.
Printing on Chart	Clear text annotation on the chart of time, date, scales, alarms and batch messages, making the chart easier to read and to refer to in the future.
Removable Chart Cassette	The SR250B has a removable chart cassette. With the unique chart rewind facility, this makes changing a chart a quick and simple operation.
Small Panel Space	The SR250B has been designed to reduce the amount of panel space needed. The front facia is 144 x 326mm (5.8 x 12.9in.) with a behind panel depth of only 230mm (9in.).
Lightweight Construction	The complete unit weighs less than 6kg (13.2 lbs.), enabling it to be fitted to standard panels without requiring extra support.
IP65/NEMA4X Front Facia	The SR250B is designed for use in harsh environments where dust or water is present.
Cue & Review	Allows the operator to review the data by rewinding the chart without removing it from the recorder.
PC Configuration	Create, store and print configurations offline using Windows-based configuration software.

Features and Benefits

COMMANDER SR250A
250mm Advanced Strip-Chart Recorder

The COMMANDER SR250A is an advanced 250mm strip-chart process recorder with up to 24 channels and math, flow totalizers, alarm logic and text printing included as standard.

Features	Benefits
Universal Process Input on All Channels	Direct input from all standard thermocouples, Pt100, mA, mV and volts.
Linearization	All standard thermocouples, Pt100, Sq. Root and two 20-breakpoint custom linearizers.
Unique Z-trace	Using our patented Z-trace system, all 24 channels can be configured to plot a unique color trace, making each channel easily identifiable.
Tx Power Supply	The SR250A can power two loops as standard, with the option to fit 3 extra boards to power a further 12 loops.
High Accuracy	• mV – ±0.1% of reading • mA, Volts and Resistance – ±0.2% of reading • Thermocouples J, K, L, N, T, E & RTD – ±0.5°C • Thermocouples R and S – ±1°C
Low Long-term Drift	Less than 0.01% of reading or ±5µV annually make the SR250A a very stable and reliable recorder.
Graphic LCD Display	200 segment x 16 character easy-to-read, high clarity display, showing at-a-glance: process value, units of measure, channel identity and tag.
Universal Power Supply	The SR250A may be supplied with anything from 85V to 265V a.c. as standard, without the need to change any links. 24V d.c. is available as an option.
Alarms	24 user-defined, high/low process alarms and 4 real-time events, all of which can be printed on the chart.
Relays	Eighteen (5A) relays can be fitted to the SR250A. They can be allocated to individual channels or act as common alarms for multiple channels.
Serial Communication	RS485 Modbus RTU option board available to provide a real-time link to SCADA systems or PCs.
Totalizers	Up to 12 totalizers available as standard.
Math and Logic Functions	The SR250A can be more than just a chart recorder; included as standard are math and logic functions. It incorporates 8 configurable math blocks for arithmetic functions as well as mass flow and %RH. The logic software provides 10 logic equations with up to 9 elements allowing complex expressions to be created.
Printing on Chart	Clear text annotation on chart of: • Time • Date • Selected messages • Batch messages • 24 alarm messages • 24 channel tags • 12 totalizer results • 8 math results making the chart easier to read and refer to in the future.
Removable Chart Cassette	The SR250A has a removable chart cassette which, with the unique chart rewind facility, makes changing a chart a quick and simple operation.
Fast Trace Response	All 24 channels are scanned and traced every 3 seconds.
Small Panel Space	The SR250A has been designed to reduce the amount of panel space needed. The front facia is 144 x 326mm (5.8 x 12.9ins.) with a space behind the panel requirement of only 230mm (9 in.).
Lightweight Construction	The complete unit weighs less than 6kg (13.2 lbs.) enabling it to be fitted to standard panels without requiring extra support.
IP65 Front Facia	The SR250A is designed for use in harsh environments where dust or water is present.
Cue & Review	Allows operators to rewind the chart while still fitted to the recorder, enabling them to review the data. Also holds the last ten alarm buffers and automatically rewinds to each one on request.
Portable Case	The SR250A can be mounted into a rugged case for use as a portable survey instrument.
PC Configuration	Create, store and print configurations offline using Windows based configuration software.

Features and Benefits
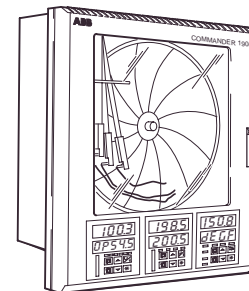
COMMANDER 1900
Circular Chart Recorder

The COMMANDER 1900 is a complete range of circular-chart recorders from a basic
single pen recorder up to an advanced 4 pen recorder controller. Also available are dedicated units for Ramp/Soak profiles and Pasteurizer control and recording.

Features	Benefits
Dedicated Displays	All process variables visible without scrolling.
Universal Input	Direct connection to THC, PT100, mA, mV and V with no need for external shunts.
Standard I/O	Each channel has a standard a universal input, transmitter power supply, analog output, one relay and two digital inputs; extras included as standard.
High Accuracy	0.1% of reading for mV and V inputs giving precise measurement of your process.
NEMA4X Case	Suitable for mounting in the harshest of industrial environments.
Panel-, Wall- or Pipe-mounting	A mounting method to suit any application.
Math Block	As an option you can add a math function for summation of flows or for pressure/temperature correction.
Logic Equations	To increase the power of the C1900 you can use the logic equations for interlocks on autoclaves or for simple alarm strategies.
PID Control	Up to two controllers are available with dedicated controller displays to make the operation as direct as using a $1/4$ DIN controller.
Control Types	PID, ON/OFF, Motorized Valve and Time Proportioning are all included as standard to make the C1900 a flexible unit to stock and easy to sell.
Ramp/Soak	The C1960 is available which has been especially designed for the Food and Tire industries and comes equipped with a dedicated Ramp/Soak front fascia.
Different Chart Formats Available	The C1900 has been designed to use Kent Charts, Taylor Charts and Chessell Charts by simply ordering the correct version.
Modbus Option	Option to fit an option board for Modbus RTU RS485 either when ordering the unit or as a field upgrade.
Variable Chart Speed	Chart speeds are selectable from 1hr to 167hrs, 7 days or 32 days to cover any application without the need to change the chart motor.
Polycarbonate Window	The C1900 has a polycarbonate window as standard making it ideal for use in hygenic food areas.

Selection Guide

Controllers

Model	Process Controllers								Motorized Valve Controllers	
	C50	C100	C250	C351	C355	C360	C501	C505	V100	V250
Control Types										
On/Off	✔	✔	✔	✔	✔	✔	✔	✔		
Time Proportioning	✔	✔	✔	✔	✔	✔	✔	✔		
Analog PID		✔	✔	✔	✔	✔	✔	✔		
Boundless Control				✔	✔	✔	✔	✔	✔	✔
Motorized Valve with Feedback				✔	✔	✔	✔	✔		
Control Capabilities										
Single Loop	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Feedforward					✔			✔		
Cascade					✔	✔		✔		
Heat/Cool		✔	✔	✔	✔	✔	✔	✔		
Ratio/Bias		✔ optional	✔ optional	✔	✔	✔	✔	✔	✔ optional	✔ optional
Auto/Manual Station		✔ *	✔ *	✔	✔		✔	✔		
Back-up Station				✔	✔		✔	✔		
Indicator	✔			✔	✔		✔	✔		
Ramp/Soak Programs / Segments		1 / 4	1 / 4			20 / 99			1 / 4	1 / 4
Auto-tune		✔	✔	✔	✔	✔	✔	✔		
Inputs										
Universal	1 standard	1 standard	1 standard	2 standard	2 standard	2 standard	1 standard 1 optional	1 standard 1 optional	1 standard	1 standard
Fixed		1 optional	1 optional	1 standard	1 standard	1 standard	1 standard	1 standard	1 optional	1 optional
Digital		1 optional	1 optional	2 standard 2 optional	2 standard 2 optional	2 standard 2 optional	2 standard 2 optional	2 standard 2 optional	1 optional	1 optional
2-wire Tx Power Supply		✔	✔	✔	✔	✔	✔	✔	✔	✔
Outputs										
Analog Control		✔	✔	✔	✔	✔	✔	✔		
Relay Control	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Logic Control	✔	✔	✔	✔	✔	✔	✔	✔		
Retransmission		✔***	✔ optional	✔	✔	✔	✔ optional	✔ optional	✔ optional	✔ optional
Alarm Relays	1 optional	2 optional	2 optional	2 standard 2 optional	2 standard 2 optional	2 standard 2 optional	2 standard 2 optional	2 standard 2 optional	1 optional	1 optional
Advanced Features										
Math				✔	✔	✔	✔	✔		
Alarm Logic				✔	✔	✔	✔	✔		
Custom Linearizers				2 standard	2 standard	2 standard	2 standard	2 standard		
Real-time Alarms				✔	✔	✔	✔	✔		
Serial Communications										
Modbus RTU		✔ optional	✔ optional	✔ optional	✔ optional	✔ optional	✔ optional	✔ optional	✔ optional	✔ optional
PC Configuration		✔	✔	✔	✔	✔	✔	✔	✔	✔
Physical										
Size	$1/_{16}$ DIN	$1/_8$ DIN	$1/_4$ DIN	$1/_4$ DIN	$1/_4$ DIN	$1/_4$ DIN	3 x 6	3 x 6	$1/_8$ DIN	$1/_4$ DIN
Size in Millimetres (mm)	48 x 48	48 x 96	96 x 96	96 x 96	96 x 96	96 x 96	76 x 148	76 x 148	48 x 96	96 x 96
Depth (mm)	110	119	122.5	122.5	122.5	122.5	125	125	119	122.5
Display	2 x 4 LED	2 x 4 LED	2 x 4 LED	2 x 4 LED 1 x 3 LED	2 x 4 LED 1 x 3 LED	2 x 4 LED 1 x 3 LED	2 x Bargraph 2 x 4 LED 1 x 3 LED	2 x Bargraph 2 x 4 LED 1 x 3 LED	2 x 4 LED	2 x 4 LED
Dust/Water Protection	IP65 NEMA3	IP65 NEMA3	IP66 NEMA4X	IP66 NEMA4X	IP66 NEMA4X	IP66 NEMA4X	IP66 NEMA4X	IP66 NEMA4X	IP65 NEMA3	IP66 NEMA4X
Supply	90 to 264V a.c.	85-264V a.c. 24V d.c.	85-264V a.c. 24V d.c.	85-264V a.c. 24V d.c.	85-264V a.c. 24V d.c.	85-264V a.c. 24V d.c.	85-264V a.c. 24V d.c.	85-264V a.c. 24V d.c.	85-264V a.c. 24V d.c.	85-264V a.c. 24V d.c.

* By configuration ** All inputs *** If analog output not used for control

Selection Guide

Strip-Chart Recorders

Model	Strip Chart Recorders			
	SR100B	**SR100A**	**SR250B**	**SR250A**
Recording Function				
Number of Traces	1, 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	250mm Strip or Roll	250mm Strip or Roll
Text Printing	✔ (limited)	✔	✔ (limited)	✔
Chart Speed	0 to 1500mm/hr	0 to 1500mm/hr	0 to 1500mm/hr	0 to 1500mm/hr
Cue and Review		✔	✔ (Basic)	✔
Programmable Chart Range	✔	✔	✔	✔
Chart Zoning				✔
Value Printing		✔		✔
Event Pen Function		✔		✔
Process Connections				
Universal Inputs	1, 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
Tx Power Supply	3 standard	3 standard	2 standard 12 optional	2 standard 12 optional
Alarm Relays	6 optional	12 optional	12 optional	18 optional
Digital I/O	1 standard	1 standard 12 optional	1 standard	1 standard 22 optional
Analog Outputs		6 optional		6 optional
RS485 Modbus		✔ optional	✔ optional	✔ optional
Advanced Processing				
Totalizers		✔		✔
Math Block		✔		✔
Logic Equations		✔		✔
PCMCIA Memory Card Port		✔ optional		✔ optional
General				
Size (mm)	144 x 144 x 230	144 x 144 x 230	147 x 327 x 230	147 x 327 x 230
Cut Out (mm)	138 x 138	138 x 138	138 x 302	138 x 302
Weight	3.3 kg	3.3 kg	6 kg	6 kg
IP Rating	IP65/NEMA3	IP65/NEMA3	IP65/NEMA3	IP65/NEMA3
Mounting	Panel/Portable	Panel/Portable	Panel/Portable	Panel/Portable
Supply	85 to 265V a.c. 24V d.c.	85 to 265V a.c. 24V d.c.	85 to 265V a.c. 24V d.c.	85 to 265V a.c. 24V d.c.

Selection Guide

Circular-Chart Recorders

	Circular-Chart Recorders		
Model	**C1900** **Recorder/Controller**	**C1950** **Pasteurizer Recorder/Controller**	**C1960** **Profile Recorder/Controller**
Recording Function			
Number of Traces	1, 2, 3 or 4	1, 2 or 3	1, 2 or 3
Chart Type	Circular	Circular	Circular
Chart Speed	1 hr to 32 days	1 hr to 32 days	1 hr to 32 days
Event Pen Function	✔ optional	✔	
True time Event	✔ optional	✔	
Process Connections			
Universal Inputs	✔	✔	✔
Tx Power Supply	1 standard per channel	1 standard per channel	1 standard per channel
Alarm Relays	1 standard 8 optional	1 standard 8 optional	1 standard 8 optional
Digital I/O	2 standard 8 optional	2 standard 8 optional	2 standard 8 optional
Analog Outputs	1 standard per channel	1 standard per channel	1 standard per channel
RS485 Modbus	✔ optional	✔ optional	✔ optional
Advanced Processing			
Totalizers	✔ optional		
Math Block	✔	✔	✔
Logic Equations	✔ optional		
Number of Control Loops	Up to 2 optional	Up to 2 optional	1 standard 1 optional
Ramp/Soak Profile	✔ optional		✔
General			
Size (mm)	382 x 387	382 x 387	382 x 387
Cut Out (mm)	101	101	101
Display	1 x 6 LED	1 x 6 LED	1 x 6 LED
IP Rating	IP66 NEMA 4X	IP66 NEMA 4X	IP66 NEMA 4X
Mounting	Panel/Wall/Pipe	Panel/Wall/Pipe	Panel/Wall/Pipe
Supply	115 to 230V a.c.	115 to 230V a.c.	115 to 230V a.c.

Reference List

Company	Country
APV	USA
APV	UK
APV	GERMANY
APV	FRANCE
BEECHNUT	USA
BP	ZIMBABWE
BRITISH STEEL	UK
DELMONTE	PHILLIPINES
DUPONT	GERMANY
ELECTRICITE DE METZ	FRANCE
FLIGHT REFUELLING	UK
GENERAL MOTORS	CANADA
GLAXO WELLCOME	UK
GOODYEAR	PHILLIPINES
GOODYEAR	CANADA
GUMMI FUILDA	GERMANY
INVERSEK PAPER	UK
ISLE OF MAN WATER	UK
KRAFT	USA
L T MCNEIL	INDIA
LEVER BROS	ZIMBABWE
MESSIER DOWTY	UK
MOLSON BREWERIES	CANADA
NATIONAL ALUMINIUM CO	INDIA
NESTLE PHILLIPINES	PHILLIPINES
NORTH EAST WATER	UK
ORLANDO POWER STATION	SOUTH AFRICA
PIRRELLI	USA
PIRRELLI	BRAZIL
POWERGEN	UK
ROCHE PRODUCTS	UK
ROSSI + CATELLI	ITALY
ROUSSEL UCLAF	FRANCE
SCOTTISH BLOOD TRAN. SERVICE	UK
SEVERN-TRENT WATER	UK
SHELL	ZIMBABWE
SMITHKLINE BEECHAM	SINGAPORE
SP TYRES	UK
UNILEVER	PHILLIPINES
VAUXHALL MOTORS	UK
YOKOHAMA	USA
ZENECA	UK

ABB

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