Your measurement solutions

Sefram

BK PRECISION

BCS series

Battery charger/simulator and DC Power Supply

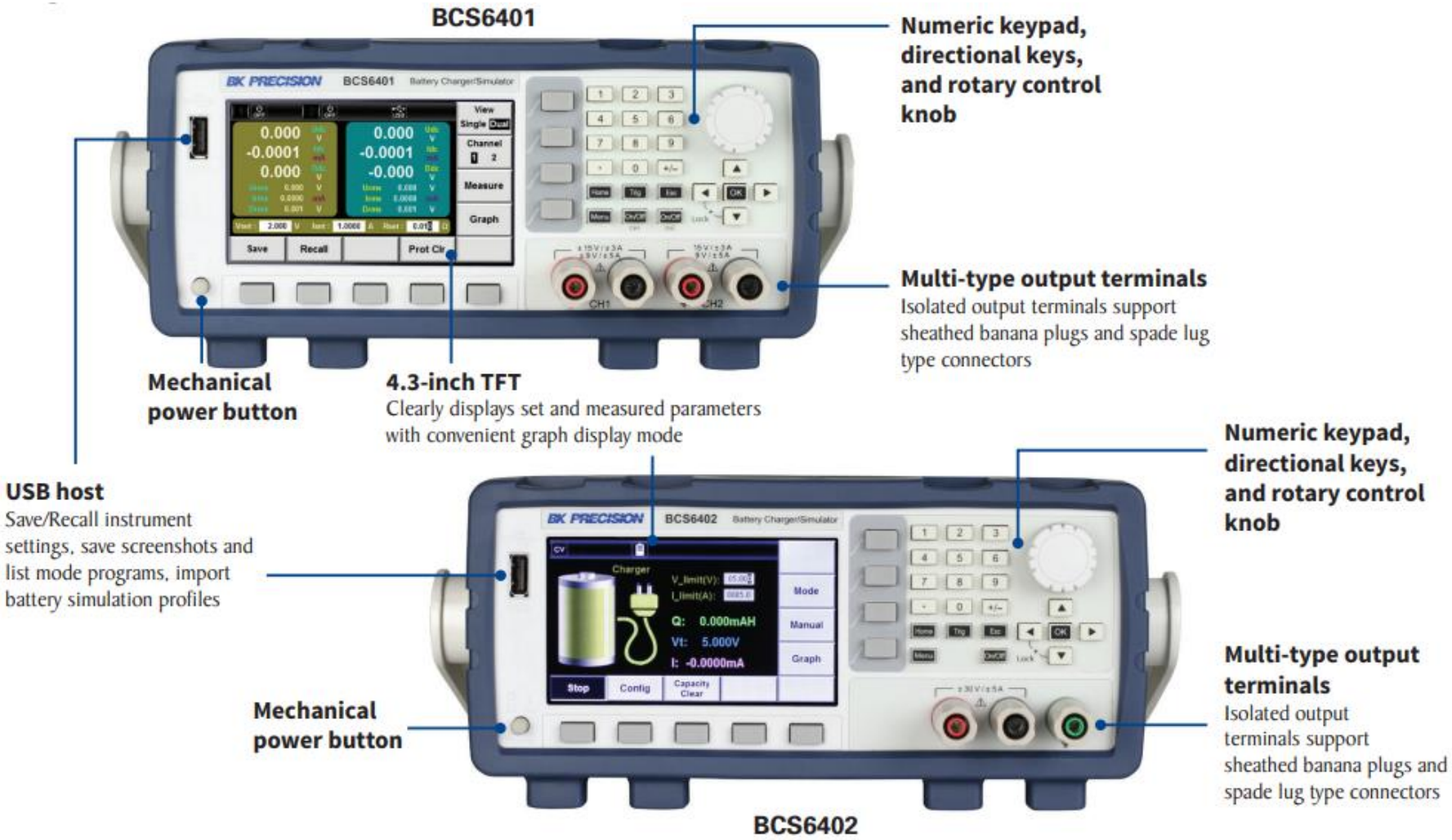
Choice guide

Model	BCS6401			BCS6402
Channels	2			1
Voltage		CH1	CH2	± 30 V
	High	± 15 V	0 to 15 V	
	Low	± 9 V	0 to 9 V	
Current (Source/Sink)	High	3 A		5A
	Low	5 A		
Power	Low	45 W per channel		150 W

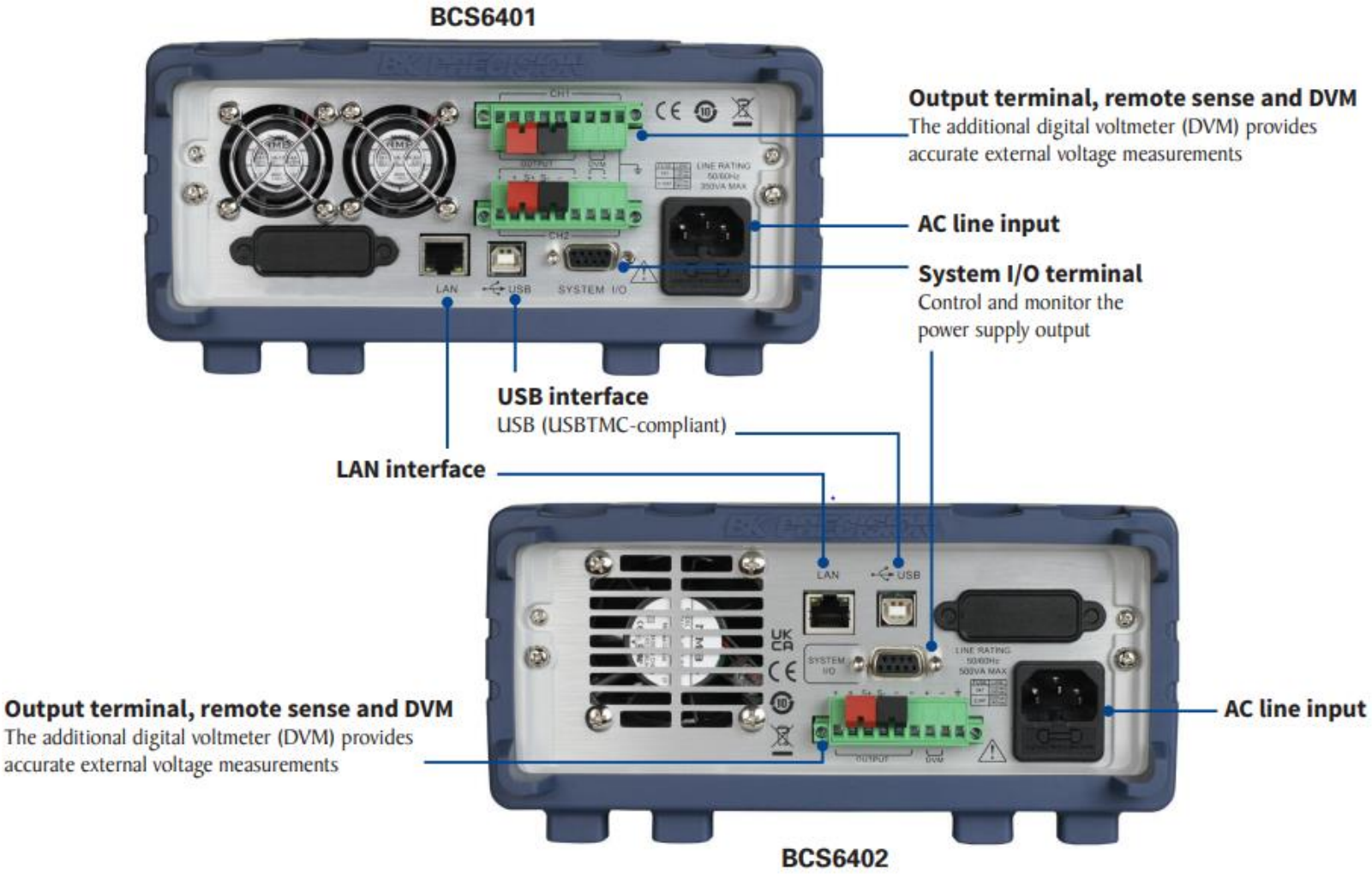
Overview

- Source or sink up to 150 W with 2-Quadrant operation
- Dual channel and dual range operation (BCS6401 only)
- Perform battery charge, discharge, cycling, and simulation tests
- Bidirectional capabilities in battery mode to simulate a rechargeable battery
- Sink current up to 5 A
- Bipolar output
- Fast load recovery time < 30 µs to minimize overshoot
- Linear regulation with low noise < 3 mVpp
- High 100 nA current readback resolution
- List programming
- Internal storage for 20 user-configurable battery charge
- USB (USBTMC-compliant) and LAN interfaces supporting SCPI commands
- Overvoltage (OVP), overcurrent (OCP), overtemperature (OTP) protection, and key-lock function

Front panel


BCS6401
Numeric keypad, directional keys, and rotary control knob
Multi-type output terminals
Isolated output terminals support sheathed banana plugs and spade lug type connectors
Mechanical power button
4.3-inch TFT
Clearly displays set and measured parameters with convenient graph display mode
USB host
Save/Recall instrument settings, save screenshots and list mode programs, import battery simulation profiles
Numeric keypad, directional keys, and rotary control knob
Multi-type output terminals
Isolated output terminals support sheathed banana plugs and spade lug type connectors
Mechanical power button
BCS6402

Rear panel

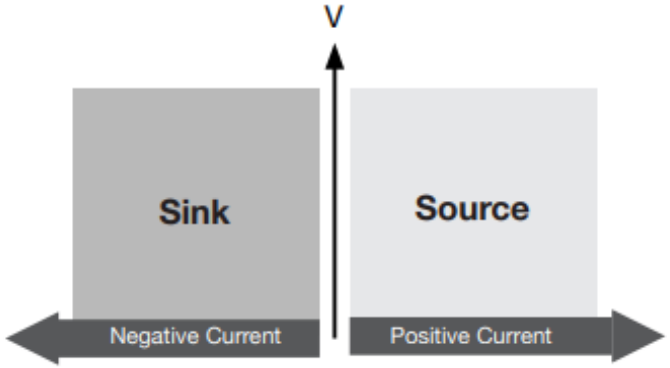

BCS6401
Output terminal, remote sense and DVM
The additional digital voltmeter (DVM) provides accurate external voltage measurements
AC line input
System I/O terminal
Control and monitor the power supply output
USB interface
USB (USBTMC-compliant)
LAN interface
LAN
USB
SYSTEM I/O
Output terminal, remote sense and DVM
The additional digital voltmeter (DVM) provides accurate external voltage measurements
AC line input
BCS6402

Operation highlights

Battery simulation

Rather than having to rely on the uncertainty and variables of a physical battery, the BCS Series can simulate the output of a physical battery where internal resistance (IR) can be adjusted from 0 Ω to 1 Ω with 1 mΩ resolution. This feature is especially useful for testing battery powered devices at various combinations of battery charge states, voltages, and internal resistance levels. Having control over these battery parameters offers repeatable results and allows users to jump directly to different battery charge states and conditions.

- Capacity in percent %(Soc)
- Capacity in mAh (Q)
- Battery internal resistance (Res)
- Open-circuit voltage (Voc)
- Terminal voltage (Vt)
- Charge / discharge current (I)



Both models are capable of sourcing power or sinking power in battery simulation mode.

Sink up to 5 A of current continuously and power up to 45 W per channel using the BCS6401 or up to 150 W with the BCS6402.

Operation highlights

Battery simulation profiles

Battery simulation is based on a set of user-defined battery characteristic steps including capacity (mAh), voltage (V), and resistance (Ω).

- Create and edit simulation profiles from the front panel
- Save/recall a maximum of 20 battery simulation profiles with up to 40 steps each)

Alternatively, battery test profiles can be created on a PC in spreadsheet format.

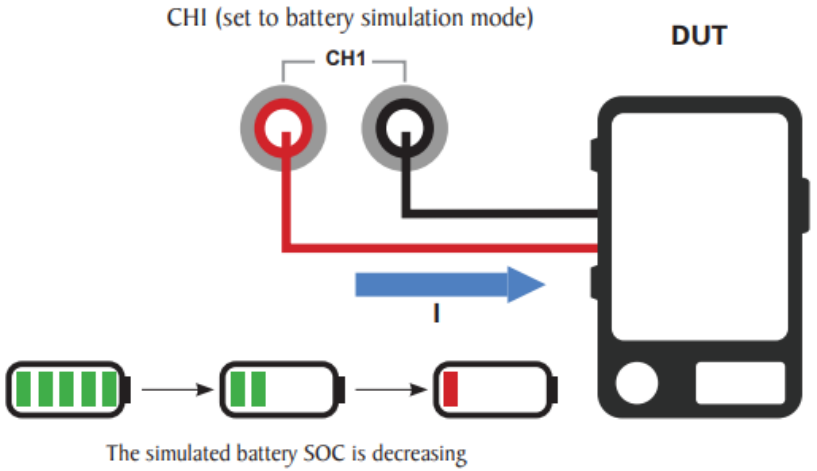
	A	B	C
1	Capacity	Voltage	Resistance
2	1200	4.2	0.05
3	1000	4.1	0.1
4	500	3.8	0.2
5	250	3.75	0.25
6	100	3.7	0.3

Save battery profiles as .CSV fil for import

Applications

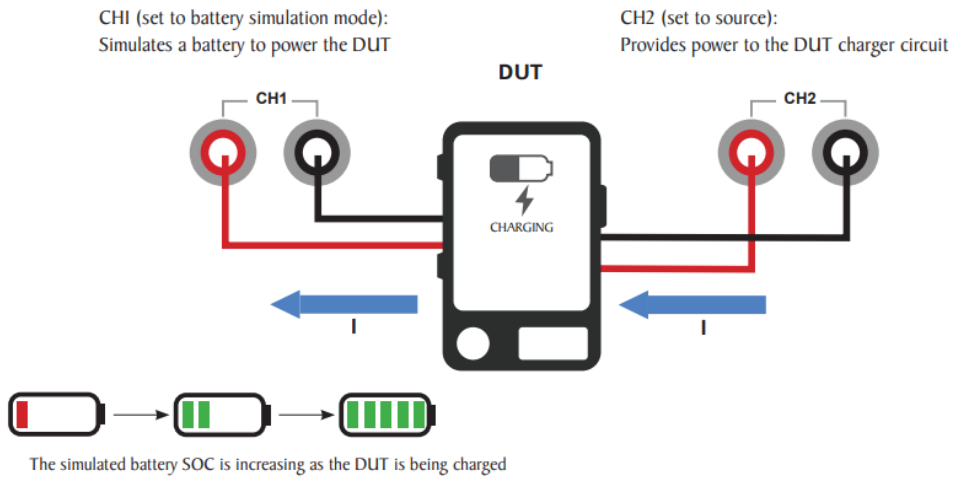
Battery simulation application

Evaluate your device under test (DUT) in its different operating conditions by monitoring both the device and simulated battery under various charge states. For example, monitor small current changes when the device is active or in sleep mode with 100 nA resolution.



Charge circuit testing application

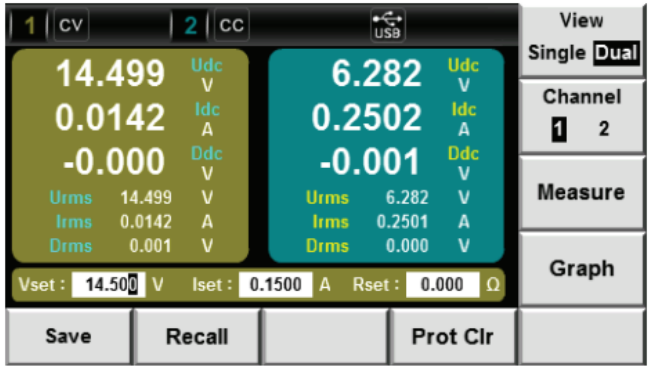
Bidirectional capabilities in battery simulation mode allow the BCS Series to absorb power and simulate a rechargeable battery. This is useful for verifying the DUT's charger circuit performance.

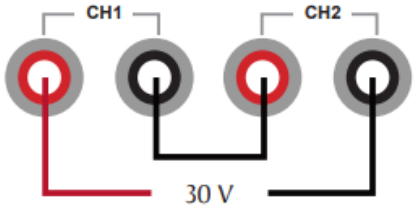


Additional features

Fully equipped DC power supply

Using the Source function, the BCS Series operates as a precision single-channel or dual-channel DC power supply with low noise characteristics and adjustable 0 Ω to 1 Ω output impedance. Display and monitor up to 12 parameters simultaneously including current at up to 100 nA resolution and secondary voltage measurements using the rear panel DVM.

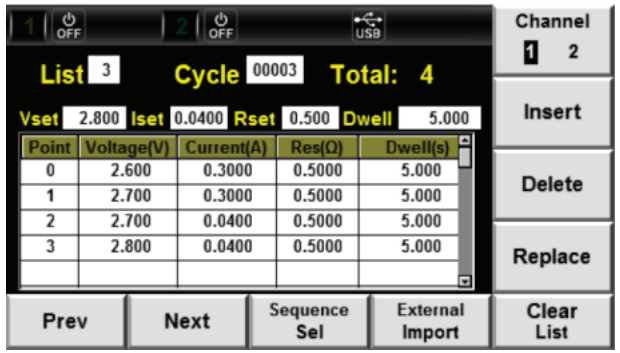




Combine both channels of the BCS6401 in series to increase the output voltage to 30 V and rated power output to 90 W.

List programming

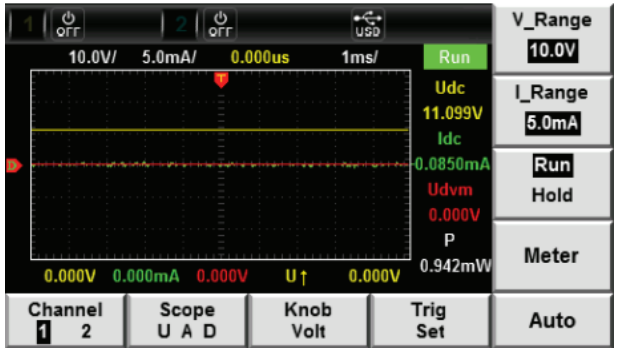
Set up and execute complex test sequences from the front panel with programmable voltage, current, output resistance, and dwell time.



- Save up to 20 user-defined list mode programs to internal memory with up to 30 steps each.
- Set a list program to repeat up to 65,535 times.
- Run multiple user-defined list programs in sequence.

Graph display mode

Visually monitor voltage, current, and power measurements with the graph display mode. Oscilloscope-like triggering capabilities include configurable trigger slope, level, and delays.



Data logging

- Voltage and current measurements stored in the buffer can be exported to a USB flash drive in .txt format.
- Configurable buffer size up to 1,024 measurements.
- Buffer statistics including min, max, mean.

Comparison guide

Company	B&K Precision		Keithley		Rohde & Schwarz
Model	**BCS6401**	**BCS6402**	**2308**	**2281S**	**NGM201 / NGM202**
					
Base Price	**4 150 €**	**4 300 €**	**5 050 €**	**3 530 €**	**3 665 € (1 CH) / 5 250 € (2 CH)**
Battery Simulator	✓		✓	✓	**820 €**
Rear Panel Digital I/O	✓		✓	✓	**125 €**
Rear Panel DVM	✓		✓	✓	**242 €**
Front Panel Terminals	✓		x	✓	✓
Configured Price	**4 150 €**	**4 300 €**	**5 050 €**	**3 480 €**	**5 185 € /6 770 €**
Cost Per Watt	46,11 €	28,66 €	101 €	29 €	86,42 € / 56,42 €
Output Characteristics					
Number of Outputs	2	1	2	1	1 / 2
Ranging	Dual	Single	Single	Single	Dual
Bipolar Output Programmable	✓		x	x	x
Maximum Output Power	45 W per CH (up to 90 W total)	150 W	50 W	120 W	60 W / 60 W per CH (up to 120 W total)
Rated Voltage	CH1: ±15 V / ±9 V CH2: 0 to 15 V / 0 to 9 V	±30 V	0 V to 15 V	0 V to 20 V	0 V to 20 V
Rated Current	Hi range: 3 A, Low range: 5 A	5 A	5 A	6 A	≤ 6 V output current: 6 A
Maximum Sink Current	Hi range: 3 A, Low range: 5 A	5 A	3 A	1 A	3 A
Max. Current Readback Resolution	100 nA		100 nA	10 nA	10 nA
Transient Response Time	≤ 50 µs (within 50 mV)	≤ 30 µs (within 50 mV)	CH1: < 35 µs, CH2: < 50 µs (within 20 mV)	< 50 µs (within 15 mV)	≤ 30 µs (within 20 mV)
Variable Output Impedance Range	0 to 1 Ω		0 to 1 Ω	0 to 10 Ω	-50 mΩ to 100 Ω
Load Regulation	≤ 0.01% + 2 mV		0.01% + 2 mV	0.01% + 2 mV	< 0.01% + 1 mV
Ripple and Noise (20 Hz to 20 MHz)	≤ 3 mVpp / 1 mVrms ≤ 1 mArms	≤ 4 mVpp / 1 mVrms ≤ 1 mArms	-	< 6 mVpp / 1 mVrms < 3 mArms	2 mVpp / < 0.05 mVrms < 1 mArms
General					
Standard I/O Interfaces	USB (USBTMC-compliant) and LAN		GPIB only	USBTMC, LAN (LXI), GPIB	USBTMC, LAN, GPIB-opt (333€)
Warranty	3 years		3 years	3 years	3 years

SEFRAM
32, rue E. Martel – BP55
F42009 – Saint-Etienne Cedex 2
France

Phone : **0033 4 77 59 01 01**

Site web : www.sefram.com

E-mail : sales@sefram.com

Our LinkedIn page

Our YouTube channel