

# Installation & Technical Data Sheet for CSO 05000 RS-485 Modbus Serial Communication Adapter

## ABB Serial Communication Adapters

A serial communication adapter (SCA) enables serial data communication between an electricity meter and an Automatic Meter Reading (AMR) system.

An SCA converts the M-bus protocol from the electricity meter's optical interface for transport over different chosen media, e.g. Twisted Pair (TP), TCP/IP, etc...

To provide full flexibility all ABB SCAs share the following features:

- DIN-rail mounting
- Compact design (2 DIN module design)
- Easy installation
- Easy Add-on to existing electricity meters

## The CSO 05000

The CSO 05000 SCA provides communication using the Modbus protocol over RS-485.

The SCA converts the M-bus protocol from the electricity meter to Modbus entities. This makes it possible to use the data from an M-bus meter in a Modbus network

The SCA is powered by 100-240 VAC between terminals 1 and 4. For communication the adapter can be connected to an AMR system that supports RS-485, or it can be connected directly to a PC via the RS-232 port for configuration.

## Modbus Mapping

The following table lists the total energy accumulators. These registers are all read only..

Quantity	Start Reg (Hexadecimal)	Size	Reso.	Unit	Data type
Active imp	5000	4	0,01	kWh	Unsigned
Active exp	5004	4	0,01	kWh	Unsigned
Reactive imp	500C	4	0,01	kvarh	Unsigned
Reactive exp	5010	4	0,01	kvarh	Unsigned

For more detailed information about the Modbus mapping, please refer to the section about the Modbus protocol in the product documentation for the the CSO 05000.

## Mounting

The SCA is designed for DIN-rail mounting and should be placed on the left side of the ABB meter so the so that the optical interface of the meter faces that of the adapter. It is important that the electricity meter and the adapter are mounted closely together. Make sure that the optical emitters and receivers of the electricity meter and the adapter have free sight.

**Note** - The SCA must be installed after a mains switch

**Warning** - Electrical equipment should only be installed, accessed, serviced and maintained by qualified electrical personnel. Working with high voltage is potentially lethal. Persons

subjected to high voltage may suffer cardiac arrest, burn injuries, or other severe injuries. To avoid such injuries, make sure to disconnect the power supply before you start the installation.

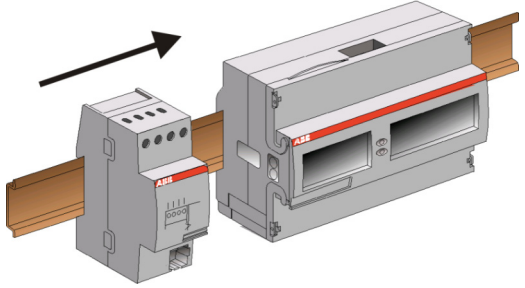
The CSO 05000 is intended for installation in a Restricted Access Location.

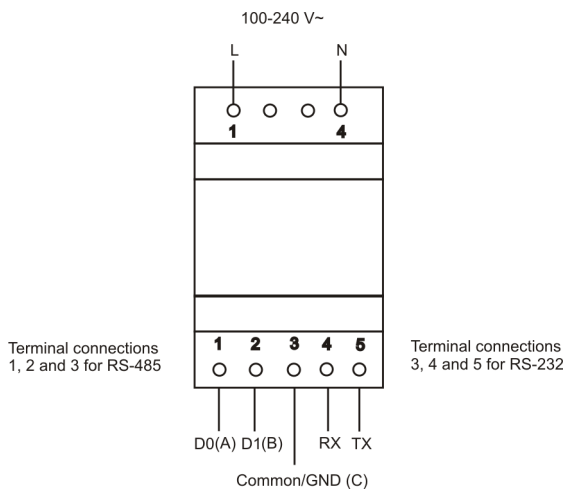
For safety reasons it is recommended that the CSO 05000 is installed in a way that makes it impossible to reach or touch the terminal blocks by accident. The best way to make a safe installation is to install the unit in an enclosure. Further, access to the CSO 05000 should be limited through use of lock and key, controlled by qualified electrical personnel.

**Warning** - For a permanently connected SCA, a readily accessible disconnect device shall be incorporated external to the equipment.

## Installation

Follow the steps in the table below to install the adapter.

1	Disconnect the power supply
2	Place the adapter to the left of the meter and snap it onto the DIN-rail. 
3	Strip the power wires and connect them to terminal 1 and 4 at the top of the adapter. See the wiring diagram below.
4	Strip the communication wires and connect them to the terminals at the bottom of the adapter. See the wiring diagram below.
5	Reconnect the power.
6	Verify that the LED shines with a steady green light.



### Configuration

Connect the SCA to the RS232 port of a pc and use a terminal software to set the configuration parameters of the SCA. ABB recommend that you use either Hyperterminal, or TeraTerm. Both software are available for download from the internet.

Before you can connect to the SCA you have to change the terminal settings according to the following table.

Bits per second/Bit-rate	115200
Data bits	8
Parity	None
Stop bits	1
Flowcontrol	None

Once connected to the SCA, the following parameters can be configured:

- Modbus address
- Bit-rate
- Transmission mode
- Parity

The first time you log on to the SCA, use the default login information in the table below. After you have logged on to the adapter for the first time, you have to choose a new password that should be at least 6 characters long.

Username	admin
Password	123456

Use the command **modbus show** to display the current Modbus settings. The command **modbus set** opens the Modbus parameter setup.

For further information about configuring the adapter, please refer to the product documentation for the CSO 05000.

### Technical Data

<b>Electrical</b>	
Nominal Voltage	100-240 VAC
Voltage range	-20% to +15% of nominal voltage
Frequency	50/60 Hz ± 5%
Terminal wire area	0-2.5 mm <sup>2</sup>
Tightening torque	0.5 Nm
power consumption in standby	0.54 VA, 0.13 W at 230 V AC
power consumption in operation	0.61 VA, 0.17W at 230 V AC
Max. fuse before the SCA	16A
<b>Mechanical</b>	
Casing material	Polyamide
Protection class	IP20
Weight	102 g (without packing) 141 g (with packing)
<b>Environmental</b>	
Operating temperature	-25° to +70°
Storage temperature	-25° to +70°
Humidity	75% yearly average, 95% on 30 days/year
<b>Interface</b>	
Terminal wire area solid	0-2.5 mm <sup>2</sup> (IMQ); 12 AWG (UL)
Terminal wire area stranded	0-1.5 mm <sup>2</sup> (VDE); 12 AWG (UL)
Communication interface	RS-485
Protocol	Modbus RTU/ASCII
Bit-rate	600-115200
Configuration interface	RS-232
<b>Standards</b>	
LVD	2006/95 EEC
EMC	2004/108 EEC IEC 61000-6-2 and IEC 61000-6-3
Protection class	IP 20 according to IEC 60529 with the terminal for Modbus communication attached to the SCA.