Instruction Manual MSI Smart-BCI

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1. Hints and General Function

1. 1 Hints

Any use of a MSI 150 with MSI SmartBCI, requires a full understanding and strict adherence to the instructions of this manual and the manuals of the Burner (Controller) and the used MSI 150.

The MSI-Pro2 or MSI-EURO with MSI SmartBCI are able to read out the digital burner controllers of Siemens (Landis & Staefa) and Satronic.

The data, which are given by the digital burner controllers, differ depending of the manufacturer and of the fuel type. Therefore the description of the data transfer in this manual is separated for each type of burner controller.

The MSI Smart BC recognizes the type of the different digital burner controller itself and the MSI 150 Pro2 or the MSI 150 Euro will carry out automatically all adjustments which are needed for the data transfer between MSI SmartBCI and MSI 150 Pro2 or MSI 150 Euro.

Because the MSI Euro possesses a display with only 4 it will differ slightly from the display screens of the MSI Pro2 which are shown in this manual.

All shown displayed data are only examples.

1.2 General Function

The SmartBCI is a processor controlled device, designed to read out digital burner controllers of Siemens (Landis & Staefa) and Satronic. The power supply is done by the MSI 150 Pro2 or the MSI 150 Euro.

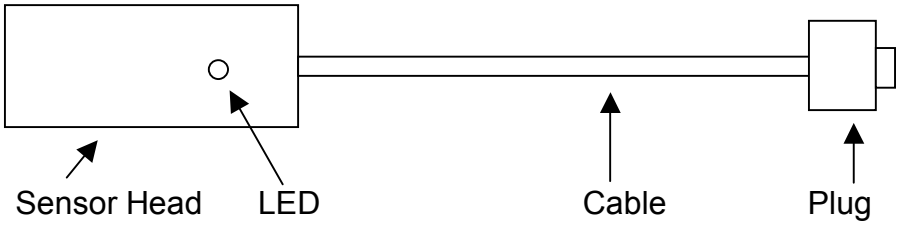
The SmartBCI contents 2 sensors, one for visible light and the other for infra red light, which receive the signals emitted by the digital burner controllers. The signals will be decoded, formatted and stored by the microprocessor integrated in the SmartBCI.

The principles of the operations of the SmartBCI are registered at the German patent office by patent Nr. 10313079 "Auslesevorrichtung für Brennersteuerungen".

Analyzer and SmartBCI interact and transfer the data from the SmartBCI to the MSI-Pro2 or MSI-Euro. The analyzer displays the data as text in clear.

2. Start Function of the MSI SmartBCI

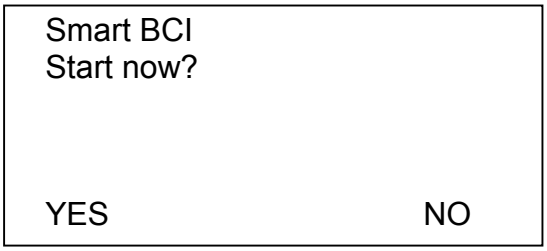
Schematic Illustration of the SmartBCI:



Switch on the analyzer MSI-Pro2 or MSI-Euro and choose the menu "Fuel Selection" (See Manual of the MSI-Pro2 or MSI-Euro). Connect the SmartBCI with the PC interface of the MSI-Pro2 or MSI-Euro.

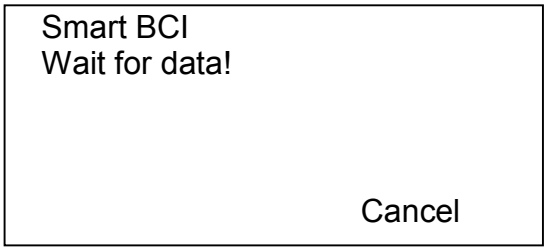
If the red LED in the sensor head of the SmartBCI flashes in short intervals, the SmartBCI is ready for use. The MSI-Pro2 or MSI-Euro recognizes automatically, that a SmartBCI has been connected.

Now the display reads:



After pushing "!" (No) the menu fuel type selection is shown again.

After pushing "F" (Yes) the display reads:



With pushing "!" (Cancel) the function may be cancelled and the former display screen is shown.

Depending on the type of controller act like it is written in chapter 3. "Data Transfer from Digital Oil- and Gas-Burner Controllers of Satronic" or chapter 4. "Data Transfer from Digital Burner Controllers of Siemens".

3. Data Transfer from Digital Oil- and Gas-Burner Controllers of Satronic

The digital burner controllers of Satronic are always sending data, which can be received by the MSI SmartBCI. It does not matter if the burner is working normal, if he is starting or if he has stopped, because an error occurred.

Put the sensor head over the lighted switch of the burner controller. The SmartBCI will recognize the controller immediately.The flashing of the red LED will become slower and when the first read out of all data is complete the LED will change to continuous light.

The display of the MSI-Pro2 now may read:

```
DKO 976 Mod.05 230V
SmartBCI 1.1,005
State      :  OK
control.   :  Satronic

Cont.                 Cancel
```

In the first line the type of the burner controller is displayed. DKO means oil burner controller and DKG means gas burner controller.

With pushing the key "!" (Cancel) the function may be stopped and the Start Function of the Smart BCI is called again (See 2.).

With pushing "F" (Cont.) the menu "Status Information" (see 3.1) my be called.

3.1 Status Information

If the menu "Status Information" has been called the display reads:

```
DKO  976  MOD.05  230 V
Fan.  ■     Ignit.
MV1   ■     FT          ■
MV2   ■     Flame       ■

Cont.                 Cancel
```

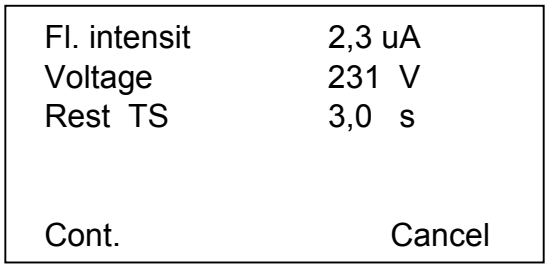
The rectangles mean that the function is active. The data will be continuously refreshed .

The displayed functions are: Fan. = Ventilation on, Ignit. = Ignition on, FT = Air Flow ok, MV1 = magnetic valve 1 on, MV2 = magnetic valve 2 on, Flame = Flame on

With "!" (Cancel) you may cancel the function and call the start function again (See 2.).

With "F" (Cont.) you call further status information.

After pushing "F" (Cont) the display shows:



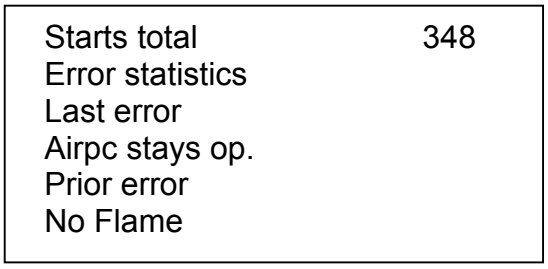
If an error occurs you see, instead of the measured values, bars.

With pushing "!" (Cancel) the function may be cancelled and the start function of the SmartBCI is called (See 2.).

With " F " (Cont.) you change to error statistics (see 3.2).

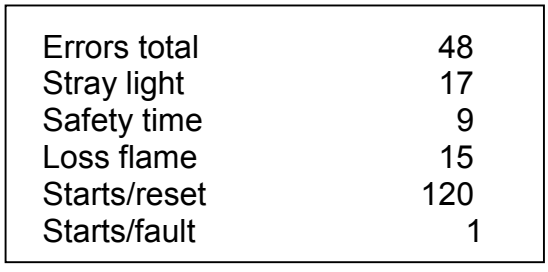
3.2 Error Statistics

If you have chosen error statistics the display reads:



With "▲" you may scroll the displayed values and new elements will be shown.

The display then reads for instance:



With "!" you may cancel the function and call the start function again (See 2.).

By pushing the button "F" you may call the menu "Printing" (see 5.).

Following errors may be displayed:

No Flame	=	no flame signal after ignition
Straylight	=	flame signal before ignition
Airpc stays op.	=	air guard open after ventilator start
Airpc open	=	air guard open before ventilator start
AF closed	=	air guard close after fan stop
Fl. signal	=	flame signal after operation stop
Loss Flame	=	no flame signal during operation
Manual stop	=	manual reset of the burner controller
System Error	=	electronic error
Unknown error	=	unknown error

4. Data Transfer from Digital Burner Controllers of Siemens

4.1 Siemens Oil Burner Controller

Before data can be transferred, the burner controller has to be set to interface diagnosis mode (see user manual burner / burner controller).

If the burner is shut off (the light in the burner controller switch is off) you may set the burner controller to interface diagnosis mode by pressing the burner controller button for more than 3 seconds. The red light in the switch is now flickering.

Shows the burner controller an error (the light in the burner controller is red), you may set the burner controller to visual diagnosis mode by pressing the burner controller button for more than 3 seconds. The red light in the switch is now blinking red. Now press the button for more than 3 seconds again. This will set the burner controller into interface diagnosis mode, the red light in the switch is now flickering.

Put the sensor head over the lighted switch of the burner controller. The SmartBCI will recognize the controller, the flashing of the red LED will become slower and the display reads:

```
State          1
SmartBCI 1.1,005
State  :       Waiting
control.       L&S

                          Cancel
```

With pushing the key "!" (Cancel) the " Start Function" of the Smart BCI" is called (See 2.).

When the first read out of all data is complete the LED will change to continuous light and the display reads:

```
LMO84.110A2B
SmartBCI 1.1,005
State  :       OK
control.       L&S

Cont.                     Cancel
```

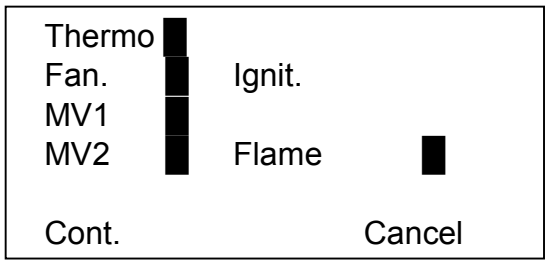
In the first line the type of the burner controller is displayed.

With "!" (Cancel) you may stop this function and the Start Function is called again (See 2.).

With "F" (Cont.) you call the menu "Status Information" (see 4.1.1).

4.1.1 Status Information

If the menu "Status Information" has been called the display reads:



The rectangles mean that the function is active. The data will be continuously refreshed .

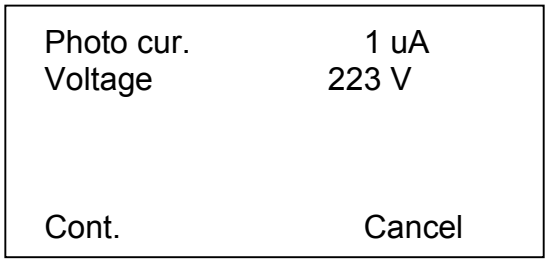
The displayed functions may be:

Thermo	=	startfunction on
Fan.	=	ventilation on
Ignit.	=	ignition on
MV1	=	magnetic valve 1 on
MV2	=	valve 2 on
Flame	=	flame on

With "!" (Cancel) you may cancel the function and call the start function again (See 2.).

With "F" (Cont.) you may call further status information.

The display then reads:



The displayed measuring value Fotocurr. means the current of the photo sensor.

With "!" (Cancel) you may cancel the function and call the start function again (See 2.).

With " F " (Cont.) you change to error statistics (see 4.1.2).

4.1.2 Error Statistics

If you have chosen error statistics the display reads:

```
Current error
No flame
Start counter              81
Error history
-------------------------------------------
Stray light                76
```

With pushing the button "F" you may call the menu "Printing" (see 5.).

With "▲" you may scroll the displayed values and new elements will be shown.

Following errors may be displayed:

No flame	=	no flame signal after ignition
Fault air press	=	fault air pressure
Stray light	=	flame signal before ignition
CPI open	=	CPI open
Fault Servo	=	fault servo
Loss flame	=	no flame signal during operation
Timeout Heater	=	oil heater timeout error
Unkn. error	=	unknown error

4.2 Siemens Gas Burner Controller

Before data can be transferred, the burner controller has to be set to interface diagnosis mode (see user manual burner / burner controller).

Shows the burner controller an error (the light in the burner controller is red), you may set the burner controller to visual diagnosis mode by pressing the burner controller button for more than 3 seconds.

Put the sensor head over the lighted switch of the burner controller. The SmartBCI will recognize the controller immediately, the flashing of the red LED will become slower and the display reads:

```
State          1
SmartBCI 1.1,005
State  :       Waiting
control.       L&S

                          Cancel
```

With pushing the key "!" (Cancel) the function may be stopped and the Start Function of the Smart BCI is called again (See 2.).

When the first read out of all data is complete the LED will change to continuous light

The display then reads:

```
LMG 21.230
SmartBCI 1.1,005
State  :       OK
control.       L&S

Cont.                     Cancel
```

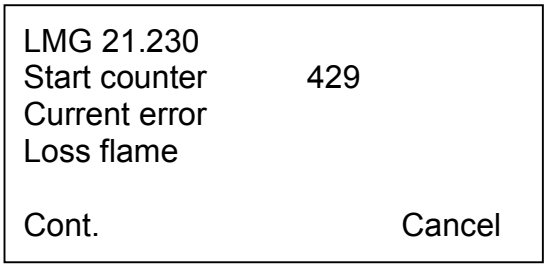
In the first line the type of the burner controller is displayed.

With "!" (Cancel) you may stop this function and the Start Function is called again (See 2.).

After pushing "F" (Cont.) the "Status Information" is called (see 4.2.1)

4.2.1 Status Information

If the "Status Information" has been called the display reads:



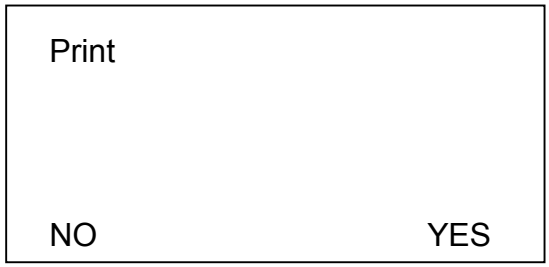
In the 4. line the actual error is displayed. Following errors may be displayed:

[1] Straylight, [2] No flame, [3] Loss flame, [4] 4 * No flame, [5] LP not closed (air guard), [6] LP opened , [7] Starting inhibit, [8] No diagnostic, [9] old software and General error.

By pushing the button "F" (Cont.) you call the menu "Printing" (see 5.).

5. Printing

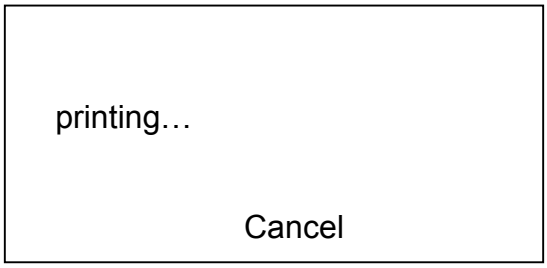
If the menu "Printing" has been called the display reads:



With pushing "!" (YES) the print out may be started.

With "F" (NO) you may skip back to the menu "Status Information"

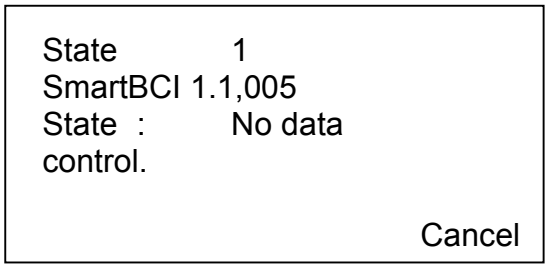
During the printing the display will read:



During the beginning of the printout you may stop printing by pushing "▲" (Cancel).
If the print out is finished or cancelled the function "Status Information" is shown.

6. Data Transfer Error

If the connection between burner controller and MSI SmartBCI is disturbed, the display will read:



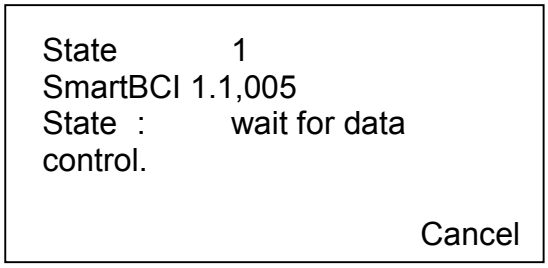
If the connection may be repaired (new mounting of the sensor head for example) the data transfer is repeated is automatically.

By pushing the key "!" (Cancel) the function is cancelled and the "Start Function of the Smart BCI" is called again (see 2.).

If the connection between SmartBCI and MSI 150 is disturbed the display will read

With "!" (Cancel) you may call the "Start Function of the Smart BCI" (see 2.)

After a short while the display reads:



After a few seconds, the data transfer is cancelled automatically and the "Fuel Selection Menu" is shown (see instruction manual of the Pro2 or Euro).