

eliwell

by Schneider Electric

EMPlus 600



EN

Electronic digital indicator

USER INTERFACE



EMPlus 600

KEYS



UP

Press and release

Scroll menu items
Increases values



STAND-BY (ESC)

Press and release

Returns to the previous menu level
Confirms parameter value
Press for at least 5 sec
Activates the Standby function (OFF)



DOWN

Press and release

Scroll menu items
Decrease values



SET (ENTER)

Press and release

Displays alarms (if active)
Opens Machine Status menu
Confirm commands
Press for at least 5 sec
Opens Programming menu

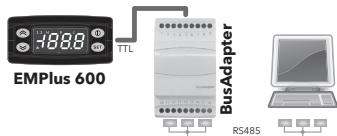
ICONS

| | |
|---|--|
| <p>● Decimal Point Permanently on: decimal point Off: otherwise</p> | <p>° Temperature Permanently on: displays a temperature Off: otherwise</p> |
| <p>P Pressure Permanently on: displays a pressure Off: otherwise</p> | <p>H Humidity Permanently on: displays a humidity Off: otherwise</p> |
| <p>1 Not Used</p> | <p>2 Not Used</p> |
| <p>⚠ Alarm Permanently on: alarm active Flashing: alarm acknowledged Off: otherwise</p> | <p>NOTE: When switched on, the device performs a Lamp Test; the display and LEDs will flash for several seconds to check that they all function correctly.</p> |

TELEVIS SYSTEM

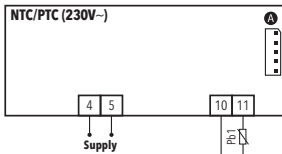
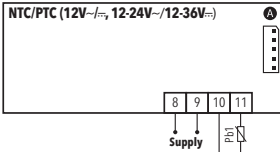
The Televis remote control systems can be connected using the TTL serial port (TTL-RS485 **BusAdapter** 130 or 150 interface module must be used).

To configure the instrument to do this, you need to access the **Add** folder and use the **dEA** and **FAA** parameters.



NTC/PTC MODEL

CONNECTIONS



INPUT/OUTPUT CHARACTERISTICS

| | |
|-------------------|--|
| Display range | NTC: -50...110°C (-58...230°F) PTC: -50...140°C (-58...302°F) on display with 3½ digits + sign |
| Analogue input | 1 NTC or 1 PTC (selectable by parameter H00) |
| Serial | TTL for connection to Copy Card or Televis/Modbus remote control systems |
| Measurement range | -50 ... 140°C (-58 ... 284°F) |
| Accuracy | better than 0.5% of end of scale +1 digit |
| Resolution | 0.1°C (0.1°F up to +199.9°F; 1°F over) |

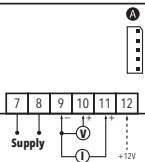
TERMINALS

| | | | |
|-------------|--|---------------------------|-----------------|
| *4-5 | Power supply 230V~. | 10-11 | Probe Pb1 Input |
| *8-9 | Power supply 12V~/~ and 12-24V~/12-36V~. | | |
| A | TTL input for Copy Card and TelevisSystem connection | * depends on model | |

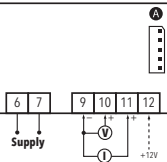
V/I MODEL

CONNECTIONS

V/I (12V~/~)



V/I (230V~)



INPUT/OUTPUT CHARACTERISTICS

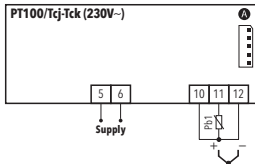
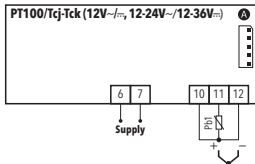
| | |
|-------------------|---|
| Display range | -199...199 (ndt = n) -199.9...199.9 (ndt = y) -1999...1999 (ndt = int) on display with 3½ digits + sign |
| Analogue input | 1 V/I (0-1V, 0-5V, 0-10V, 0...20mA, 4...20mA) (selectable by parameter H00) Maximum load: - current = 100 Ω - voltage = 20 kΩ |
| Serial | TTL for connection to Copy Card or Televi/Modbus remote control systems |
| Measurement range | -1999 ... 1999 |
| Accuracy | Depends on model: 0-1V : better than 1% of e.o.s. + 1 digit other : better than 0.5% of e.o.s. + 1 digit |
| Resolution | 1 or 0.1 digit according to settings |

TERMINALS

| | | | |
|-------------|---|-----------------|--|
| *6-7 | Power supply 230V~. | *9-10-12 | Voltage input (9 =GND; 10 ="+"; 12 =12V) |
| *7-8 | Power supply 12V~/~. | *9-11-12 | Current input (9 =GND; 11 ="+"; 12 =12V) |
| A | TTL input for Copy Card and TeleviSystem connection | | * depends on model |

PT100/Tcj-Tck MODEL

CONNECTIONS



INPUT/OUTPUT CHARACTERISTICS

| | |
|-------------------|---|
| Display range | PT100: -150...650°C TcJ: -40...750°C TcK: -40...1350°C on display with 3½ digits + sign |
| Analogue input | 1 PT100 or 1 TcJ / Tck (selectable by parameter H00) |
| Serial | TTL for connection to Copy Card or Televis/Modbus remote control systems |
| Measurement range | -150 ... 1350°C (-238 ... 2462°F) |
| Accuracy | see 'Pt100/TcJ/TcK models' table |
| Resolution | see 'Pt100/TcJ/TcK models' table |

TERMINALS

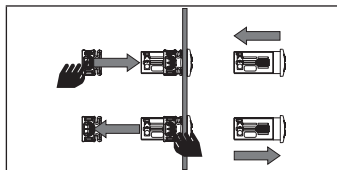
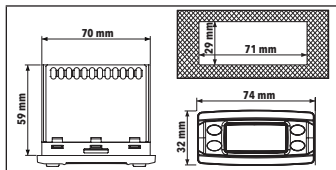
| | | | |
|-------------|--|------------------|--|
| *5-6 | Power supply 230V~. | *10-11-12 | Probe PT100 input - 3 wires (Pb1) |
| *6-7 | Power supply 12V~/ and 12-24V~/12-36V~. | *11-12 | TcJ/TcK input |
| A | TTL input for Copy Card and TelevisSystem connection | | * depends on model |

PT100/Tcj-Tck MODELS

| | | |
|---------------|-------------|---|
| PT100: | ACCURACY: | 0.5% for whole scale + 1 digit 0.2% from -150 to 300°C |
| | RESOLUTION: | 0.1°C (0.1°F) from -199.9°C up to 199.9°C; 1°C (1°F) beyond |
| Tcj: | ACCURACY: | 0.4% for whole scale + 1 digit |
| | RESOLUTION: | 0.1°C (0.1°F) from -199.9°C up to 199.9°C; 1°C (1°F) beyond |
| Tck: | ACCURACY: | 0.5% for whole scale + 1 digit 0.3% from -40 to 800°C |
| | RESOLUTION: | 0.1°C (0,1°F) from -199.9°C up to 199.9°C; 1°C (1°F) beyond |

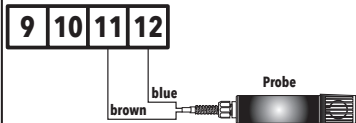
MOUNTING - DIMENSIONS

The device is designed for panel mounting. Drill a 29x71 mm hole and insert the instrument; secure it with the special brackets provided. Do not install the instrument in damp and/or dirty places; in fact, it is suitable for use in places with ordinary or normal levels of pollution. Keep the area around the instrument cooling slots adequately ventilated.

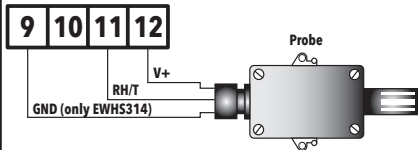


EWPA-EWHS PROBE CONFIGURATION

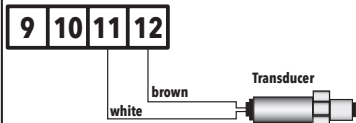
● EWHS 284 2 wires



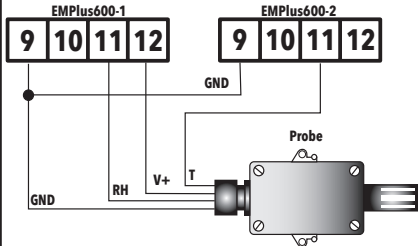
● EWHS 304/314 3 wires



● EWPA 007/030 2 wires / Transducer





● EWHS 314 4 wires (V-I model)




USING THE COPY CARD

The Copy Card is connected to the serial port (TTL) and allows rapid programming of the instrument parameters. Access **Installer** parameters by entering 'PA2', scroll through the folders using  and  until folder **FPr** appears. Select it using , scroll through the parameters using  and , then select the function using  (eg. **UL**).

- **Upload (UL):** select **UL** and press . This function uploads the programming parameters from the instrument to the card. If the procedure is a success, 'y' will appear on the display, otherwise 'n' will appear.
- **Format (Fr):** select **Fr** and press . This function is used to format the copy card (recommended when using the card for the first time).

Important: the **Fr** parameter deletes all data present. This operation cannot be cancelled.

- **Download (dL):**
 - select **dL** and press . This function downloads the programming parameters from the card to the instrument. If the procedure is a success, 'y' will appear on the display, otherwise 'n' will appear.
 - Connect the Copy Card when the instrument is switched off. At power-on, data is downloaded from the copy card to the instrument automatically. At the end of the lamp test, the display will show '**dLy**' if the operation was successful and '**dLn**' if not.



NOTE: After downloading, the instrument works with the settings of the new map just downloaded.

ACCESSING AND USING THE MENUS

The resources are organized into 2 menus which are accessed as follows:

- 'Machine Status' menu: press and release the **SET** key.
- 'Programming' menu: hold down the **SET** key for 5 seconds.

Either do not press any keys for 15 seconds (timeout) or press the **ⓘ** key once, to confirm the last value displayed and return to the previous screen.

PASSWORD

Password 'PA1': used to access **User** parameters. The password is not enabled by default (**PS1=0**).

To enable it (**PS1≠0**): press and hold **SET** for longer than 5 seconds, scroll through the parameters using **⏪** and **⏩** until you see the label **PS1**, press **SET** to display the value, modify it using **⏪** and **⏩**, then save it by pressing **SET** or **ⓘ**. If enabled, it will be required in order to access the User parameters.

Password 'PA2': used to access **Installer** parameters. The password is enabled by default (**PS2=15**).

To modify it (**PS2≠15**): press and hold **SET** for longer than 5 seconds, scroll through the parameters using **⏪** and **⏩** until you see the label **PA2**, press **SET**, set the value to '15' using **⏪** and **⏩**, then confirm using **SET**. Scroll through the folders until you find the label **diS** and press **SET** to enter. Scroll through the parameters using **⏪** and **⏩** until you see the label **PS2**, press **SET** to display the value, modify it using **⏪** and **⏩**, then save it by pressing **SET** or **ⓘ**.

The visibility of **'PA2'** is as follows:

- 1) **PA1** and **PA2 ≠ 0**: Press and hold **SET** for longer than 5 seconds to display **PA1** and **PA2**. It will then be possible to decide whether to access the 'User' parameters (**PA1**) or the 'Installer' parameters (**PA2**).
- 2) **Otherwise**: The password **PA2** is amongst the level1 parameters. If enabled, it will be required when accessing the Installer parameters; to enter it, proceed as instructed for password **PA1**.

If the value entered is incorrect, the label **PA1/PA2** will be displayed again and the procedure will need to be repeated.

MACHINE STATUS MENU

Access the Machine Status menu by pressing **SET** and releasing the key. Use the keys **⏪** and **⏩** to scroll through all the folders in the menu:



- **AL**: alarms folder (only visible if an alarm is active);

- **Pb1**: probe 1 - Pb1 folder;

Displaying probes: when label Pb1 is present, press the **SET** key to view the value measured by the corresponding probe (**NOTE**: the value cannot be modified).

PROGRAMMING MENU

To access the 'Programming' menu, press the **SET** key for more than 5 seconds. If specified, an access PASSWORD will be requested: 'PA1' for User parameters and 'PA2' for Installer parameters (see 'PASSWORD' paragraph).

User Parameter: When accessed, the display will show the first parameter (e.g. 'HAL').

Press **⏪** and **⏩** to scroll through all the parameters on the current level. Select the desired parameter by pressing **SET**. Press **⏪** and **⏩** to modify it and **SET** to save the changes.

Installer Parameter: When accessed, the display will show the first folder (e.g. 'AL').

Press **⏪** and **⏩** to scroll through the folders on the current level. Select the desired folder using **SET**. Press **⏪** and **⏩** to scroll through the parameters in the current folder and select the parameter using **SET**. Press **⏪** and **⏩** to modify it and **SET** to save the changes.

NOTE: Switch the instrument off and on again each time the parameter configuration is changed.

DIAGNOSTICS

Alarms are always indicated by the alarm icon .

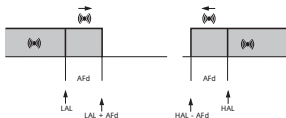
To switch off the alarm, press and release any key; the corresponding icon will continue to flash.

NOTE: If alarm exclusion times have been set (see 'AL' folder in the parameters table) the alarm will not be signalled.

ALARMS

| Label | Fault | Description | Effects | Remedy |
|------------|----------------------------|--|--|--|
| E1 | Probe1 faulty | <ul style="list-style-type: none"> measured values are outside operating range Probe faulty/short-circuited/open | <ul style="list-style-type: none"> Display label E1 Alarm icon permanently on Disable max/min alarm controller | <ul style="list-style-type: none"> check probe type (H00) check probe wiring replace probe |
| AH1 | Alarm for HIGH value (Pb1) | value read by Pb1 \geq HAL after time of tAO . (see "MAX/MIN TEMPERATURE ALARMS") | <ul style="list-style-type: none"> Recording of label AH1 in folder AL Alarm icon permanently on | Wait until value read by Pb1 returns below HAL-AFd . |
| AL1 | Alarm for LOW value (Pb1) | value read by Pb1 \leq LAL after time of tAO . (see "MAX/MIN TEMPERATURE ALARMS") | <ul style="list-style-type: none"> Recording of label AL1 in folder AL Alarm icon permanently on | Wait until value read by Pb1 returns above LAL+AFd . |

MAX/MIN TEMPERATURE ALARM



- Minimum temperature alarm: Temp. \leq **LAL** (LAL with sign)
- Maximum temperature alarm: Temp. \geq **HAL** (HAL with sign)
- Returning from min temp. alarm: Temp. \geq **LAL + AFd**
- Returning from max temp. alarm: Temp. \leq **HAL - AFd**

TECHNICAL DATA (EN 60730-2-9)

| | |
|---------------------------|---|
| Classification: | operation (not safety) device for incorporation |
| Mounting: | panel mounting with 71x29 mm (+0.2/-0.1 mm) drilling template |
| Type of action: | 1.B |
| Pollution class: | 2 |
| Material class: | IIIa |
| Overvoltage category: | II |
| Rated impulse voltage: | 2500V |
| Temperature: | Operating: -5 ... +55 °C - Storage: -30 ... +85 °C |
| Power supply: | <ul style="list-style-type: none">• 12V~/∞ (±10%)• 12-24V~/12-36V∞ ±10% (dedicated power supply not grounded or earth connected)• 230V~ ±10% 50/60 Hz |
| Consumption: | <ul style="list-style-type: none">• 1.5 VA max (model 12V~/∞)• 3 W max (models: 24V~, 12-24V~/12-36V∞, 115V~ and 230V~) |
| Fire resistance category: | D |
| Software class: | A |

NOTE: check the power supply specified on the instrument label.

FURTHER INFORMATION

Input/Output Characteristics

See 'Connections' section

Mechanical Characteristics

| | |
|-------------|---|
| Casing: | PC+ABS UL94 V-0 resin casing, polycarbonate window, thermoplastic resin keys |
| Dimensions: | front panel 74x32 mm, depth 59 mm (without terminals) |
| Terminals: | screw/disconnectable terminals for cables with a diameter of 2,5mm ² |
| Connectors: | TTL for connection of Unicard/Copy Card |
| Humidity: | Operating / Storage: 10...90 % RH (non-condensing) |

Regulations

Food Safety:

The device complies with standard EN13485 as follows:

- suitable for storage
- application: air
- climate range A
- measurement class 1 in the range from -25°C to 15°C (*)


(* exclusively using Eliwell probes)

NOTE: The technical specifications given in this document regarding measurement (range, accuracy, resolution, etc.) refer to the instrument and not to any accessories provided, such as the probes. This means, for example, that the error introduced by the probe must be added to the typical error of the instrument.

PARAMETERS TABLE

| PAR. | DESCRIPTION | MODEL | RANGE | VALUE | U.M. | LEVEL |
|------------------------------|--|-----------------|-------------------|--------|-------|-----------|
| ALARMS (folder 'AL') | | | | | | |
| HAL | Maximum temperature alarm. | NTC/PTC | LAL...150.0 | 50.0 | °C/°F | User/Inst |
| | | PT100-Tc | LAL...1999 | 1200 | °C/°F | |
| | | V/I | LAL...150 | 150 | num | |
| LAL | Minimum temperature alarm. | NTC/PTC | -150.0...HAL | -50.0 | °C/°F | User/Inst |
| | | PT100-Tc | -328...HAL | -199,9 | °C/°F | |
| | | V/I | -150...HAL | -150 | num | |
| AFd | Alarm differential. | NTC/PTC | 1.0...50.0 | 2.0 | °C/°F | Inst |
| | | PT100-Tc | 1.0...50.0 | 2.0 | °C/°F | |
| | | V/I | 1...50 | 2 | num | |
| PAO | Alarm exclusion time after device is switched on following a power failure. | ALL | 0...10 | 0 | hours | Inst |
| tAO | Delay preceding temperature alarm signal. | ALL | 0...250 | 1 | min | Inst |
| tP | Enable all keys to acknowledge an alarm. n (0) = no; y (1) = yes. | ALL | n/y | y | flag | Inst |
| COMMUNICATION (folder 'Add') | | | | | | |
| PtS | Selection of communication protocol. t = Teles; d = Modbus. | ALL | t/d | t | flag | Inst |
| dEA | Index of the device within the family (valid values from 0 to 14). | ALL | 0...14 | 0 | num | Inst |
| FAA | Device family (valid values from 0 to 14). | ALL | 0...14 | 0 | num | Inst |
| Adr | Modbus protocol controller address. | ALL | 1...255 | 1 | num | Inst |
| bAU | Baudrate selection. 48 (0) = 4800; 96 (1) = 9600; 192 (2) = 19200; 384 (3) = 38400. | ALL | 48/96/ 192/384 | 96 | num | Inst |
| Pty | Modbus parity bit. n (0) = none; E (1) = even; o (2) = odd. | ALL | n/E/o | E | num | Inst |
| StP | Modbus stop bit. 1b (0) = 1 bit; 2b (1) = 2 bit. | ALL | 1b/2b | 1b | flag | Inst |

| PAR. | DESCRIPTION | MODEL | RANGE | VALUE | U.M. | LEVEL |
|------------------------|---|-----------------|--------------|--------|-------|-----------|
| DISPLAY (folder 'diS') | | | | | | |
| LOC | LOCK. Setpoint edit lock. The parameter programming menu can still be accessed, and the settings changed, which means also that the status of this parameter can be changed so as to unlock the keypad. n (0) = no; y (1) = yes. | ALL | n/y | n | flag | User/Inst |
| PS1 | Password 1. When enabled (PS1 ≠ 0) it is the password to the User parameters (User). | ALL | 0...250 | 0 | num | User/Inst |
| PS2 | Password 2. When enabled (PS2 ≠ 0) it is the password to the Installer parameters (Inst). | ALL | 0...250 | 15 | num | Inst |
| ndt | Display values with decimal point. n (0) = no (without decimal point); y (1) = yes (with decimal point); int (2) = integer (V/I models only). | ALL | n/y/int | n | num | User/Inst |
| CA1 | Calibration 1. Positive or negative value added to the value read by Pb1 . | NTC/PTC | -30.0...30.0 | 0.0 | °C/°F | User/Inst |
| | | PT100-Tc | -30.0...30.0 | 0.0 | °C/°F | |
| | | V/I | -30...30 | 0 | num | |
| LdL | Minimum value that can be displayed by the device. | NTC/PTC | -199.9...HdL | -50.0 | °C/°F | Inst |
| | | PT100-Tc | -328...HdL | -199.9 | °C/°F | |
| | | V/I | -199...HdL | -199 | num | |
| HdL | Maximum value that can be displayed by the device. | NTC/PTC | LdL...199.9 | 140.0 | °C/°F | Inst |
| | | PT100-Tc | LdL...1350 | 1350 | °C/°F | |
| | | V/I | LdL...199 | 199 | num | |
| dro | Select the unit of measurement of probe 1. • NTC/PTC and PT100-Tc : C (0) = °C, F (1) = °F • V/I : n (0) = no unit of measure selected, t (1) = temperature, P (2) = pressure, H (3) = humidity | NTC/PTC | C/F | C | flag | Inst |
| | | PT100-Tc | C/F | C | flag | |
| | | V/I | n/t/P/H | n | num | |

| PAR. | DESCRIPTION | MODEL | RANGE | VALUE | U.M. | LEVEL |
|--|--|-----------------|------------------------|-------|------|-----------|
| CONFIGURATION (folder 'CnF')  If one or more parameters are changed, the controller MUST be switched off and switched on again. | | | | | | |
| H00 | Probe type selection. <ul style="list-style-type: none"> • NTC/PTC: Ptc (0) = PTC, ntC (1) = NTC • PT100-Tc: Jtc (0) = TcJ, Htc (1) = Tck, Pt1 (2) = PT100. • V/I: 420 (0) = 4...20mA, 020 (1) = 0...20mA, t10 (2) = 0...10V, t05 (3) = 0...5V, t01 (4) = 0...1V. | NTC/PTC | Ptc/ntC | ntc | flag | User/Inst |
| | | PT100-Tc | Jtc/Htc/Pt1 | Jtc | num | |
| | | V/I | 420/020 t10/t05/t01 | 420 | num | |
| H03 | Lower input current/voltage limit. (only present on model V/I) | NTC/PTC | | | | User/Inst |
| | | PT100-Tc | | | | |
| | | V/I | -1999...1999 | 0 | num | |
| H04 | Upper current/voltage limit for input. (only present on model V/I) | NTC/PTC | | | | User/Inst |
| | | PT100-Tc | | | | |
| | | V/I | -1999...1999 | 1000 | num | |
| rEL | firmware version. Device software release: read-only parameter. | ALL | / | / | / | User/Inst |
| tAb | Parameters table. Reserved: read-only parameter. | ALL | / | / | / | User/Inst |
| COPY CARD (folder 'FPr') | | | | | | |
| UL | Upload. Transfer of programming parameters from instrument to Copy Card. | ALL | / | / | / | Inst |
| dL | Download. Transfer of programming parameters from Copy Card to device. | ALL | / | / | / | Inst |
| Fr | Format. Cancels all data entered in the Copy Card. IMPORTANT: If parameter Fr (Copy Card formatting) is used, the data entered in the card will be permanently lost. This operation cannot be reversed. | ALL | / | / | / | Inst |

ELECTRICAL CONNECTIONS

Attention! Make sure the machine is switched off before working on the electrical connections.

The instrument is equipped with screw or disconnectable terminal blocks for connecting electrical cables with a max. diameter of 2,5mm².

Make sure the power supply voltage complies with that required by the instrument.

NTC/PTC/PT100 probes have no connection polarity and can be extended using a normal bipolar cable (Note that extending the probes burdens the behaviour of the instrument in terms of EMC electromagnetic compatibility: specifically, if Pt100 probes with cable longer than 3 mt are used, an extreme care must be taken during wiring operations).

CONDITIONS OF USE

Permitted use

For safety reasons, the instrument must be installed and used according to the instructions supplied and, in particular, parts under dangerous voltages must not be accessible in normal conditions.

The device must be adequately protected from water and dust with regard to its application, and must only be accessible using tools (except for the front panel). The device is suitable for use in household refrigeration appliances and/or similar equipment and has been tested for safety aspects in accordance with the harmonised European reference standards.

Improper use

Any use other than that expressly permitted is prohibited. The relay contacts provided are of a functional type and subject to failure: any protection devices required by product standards, or suggested by common sense for obvious safety requirements, must be installed externally to the instrument.

LIABILITY AND RESIDUAL RISKS

ELIWELL CONTROLS SRL declines any liability for damage due to:

- installation/uses different from those specified and, in particular, not complying with the safety regulations and/or instructions given in this document;
- use on panels that do not provide adequate protection against electric shocks, water or dust when assembled;
- use on panels allowing access to dangerous parts without the use of tools;
- tampering with and/or modifying the product;
- installation/use on panels not complying with current standards and regulations.

DISCLAIMER

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DISPOSAL



The appliance (or the product) must be disposed of separately in compliance with the local standards in force on waste disposal.

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ISO 9001



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