Industrial-Automation

System *HIMatrix*

Data Sheet

Z 7303
Z 7307

Filter for ESPE

HIMA Paul Hildebrandt GmbH
Industrial Automation

HI 800 219 CEA

Important Notes

All HIMA products mentioned in this manual are protected under the HIMA trademark. Unless not explicitly noted, this may apply for other referenced manufacturers and their respective products.

All technical statements and data in this manual have been written with great care and effective quality measures have been taken to ensure their validity; however this manual may contain flaws or typesetting errors.
For this reason, HIMA does not offer any warranties nor assume legal responsibility nor any liability for possible consequences of any errors in this manual. HIMA appreciates any correspondence noting potential errors.

Technical modifications reserved.

For more information see the documentation on CD-ROM and on our web site www.hima.com.

More information can be requested from:

HIMA Paul Hildebrandt GmbH
Postfach 1261
68777 Brühl

Tel: +49(6202)709 0
Fax: +49(6202)709 107

e-mail: info@hima.com

Z 7303/07

Contents

1 General

In certain cases, when connecting electro-sensitive protective equipment (ESPE), the digital inputs of the HIMatrix controllers must be provided, with a Z 7303 or Z 7307 filter (see chapter 1.4) to eliminate blanking pulses of the ESPE.

For monitoring ESPE in accordance with IEC 61508 up to SIL 3 and EN 954-1 up to category 4 it is strongly recommended to use the TÜV certified function block CFB 60 of HIMA.

The Z 7303 and Z 7307 filters are designed as plugs that can be plugged into the digital inputs of the controllers and remote IOs. The following table specifies the filters and part number for the controllers and remote IOs:

Controllers / Remote IOs	Filter	Part no.
F20, F30, F31 F1 DI 16 01 F3 DIO 20/8 02 F3 DIO 8/8 01	Z 7303	98 2220077
F3 DIO 16/8 01	Z 7307	98 2220127

Table 1: Filters for ESPE

1.1 Z 7303

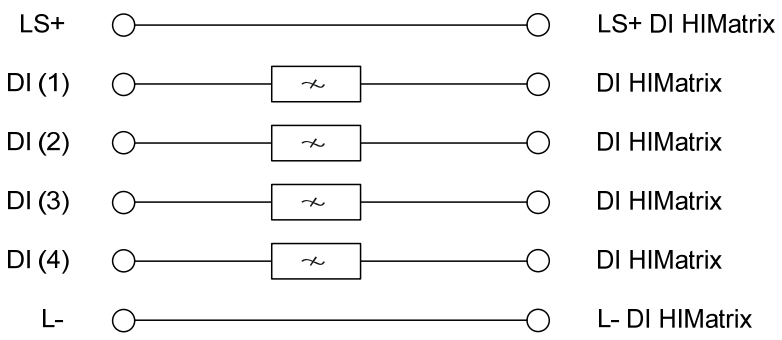

Figure 1: Terminal Connectors of Z 7303

1.2 Z 7307

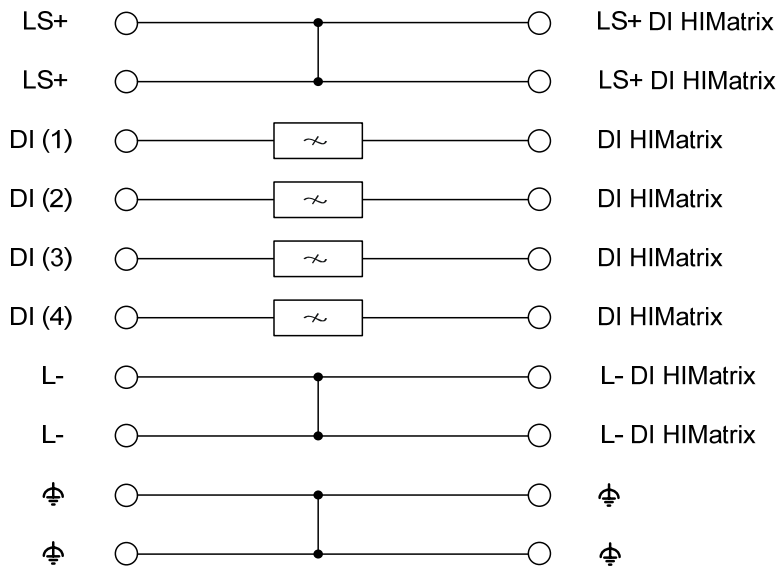

Figure 2: Terminal Connectors of Z 7307

1.3 Using the Z 7303 and Z 7307 Filters

The filters must be used in following situations:

- with HIMatrix remote IOs.
- with HIMatrix controllers with a cycle time > 50 ms.

If the ESPE has its own line control function, the Line Control must be deactivated for the HIMatrix controller's digital inputs connected to the ESPE.

Digital inputs that must be monitored with Line Control (e.g. EMERGENCY STOP) the pulse delay must be set to the maximum value of 2 ms.

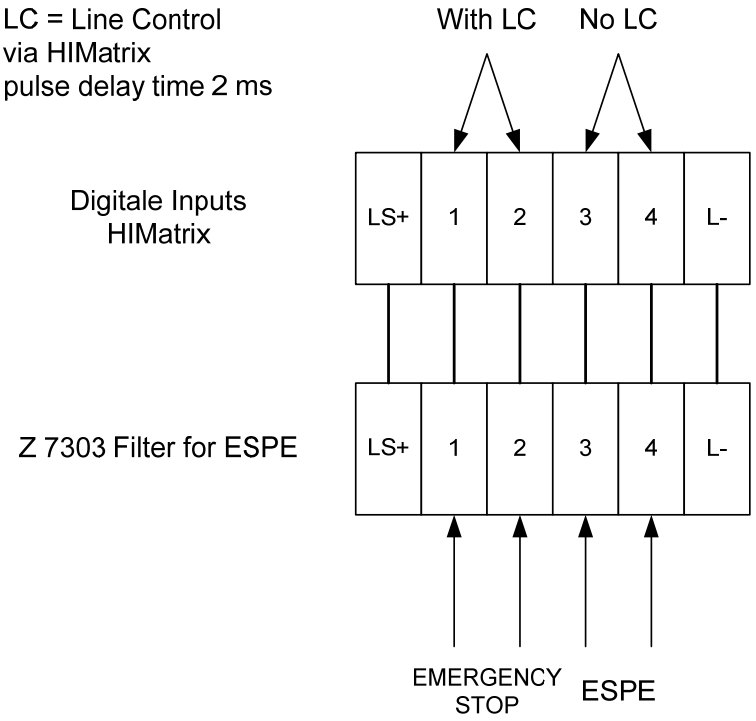

Figure 3: Connection of EMERGENCY STOP and ESPE to Digital Inputs via Z 7303

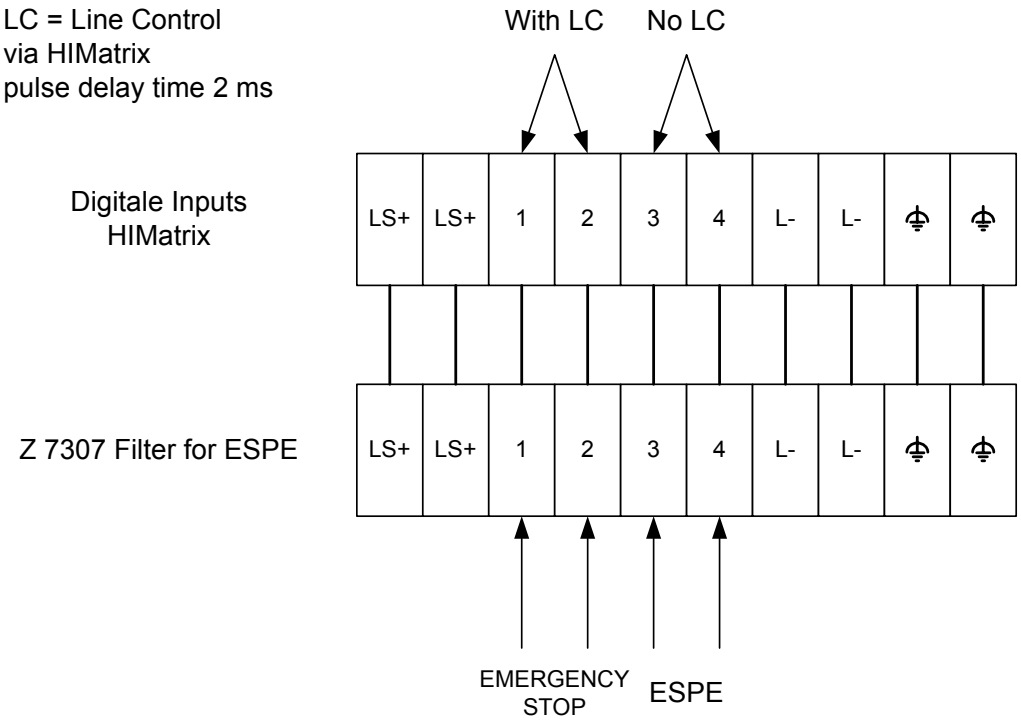

Figure 4: Connection of EMERGENCY STOP and ESPE to Digital Inputs via Z 7307

1.4 Applications Using the Filters Z 7303 and Z 7307

The filters can be used with following ESPE systems:

- SICK safety laser scanner S 3000,
- SICK safety light curtain C 4000.

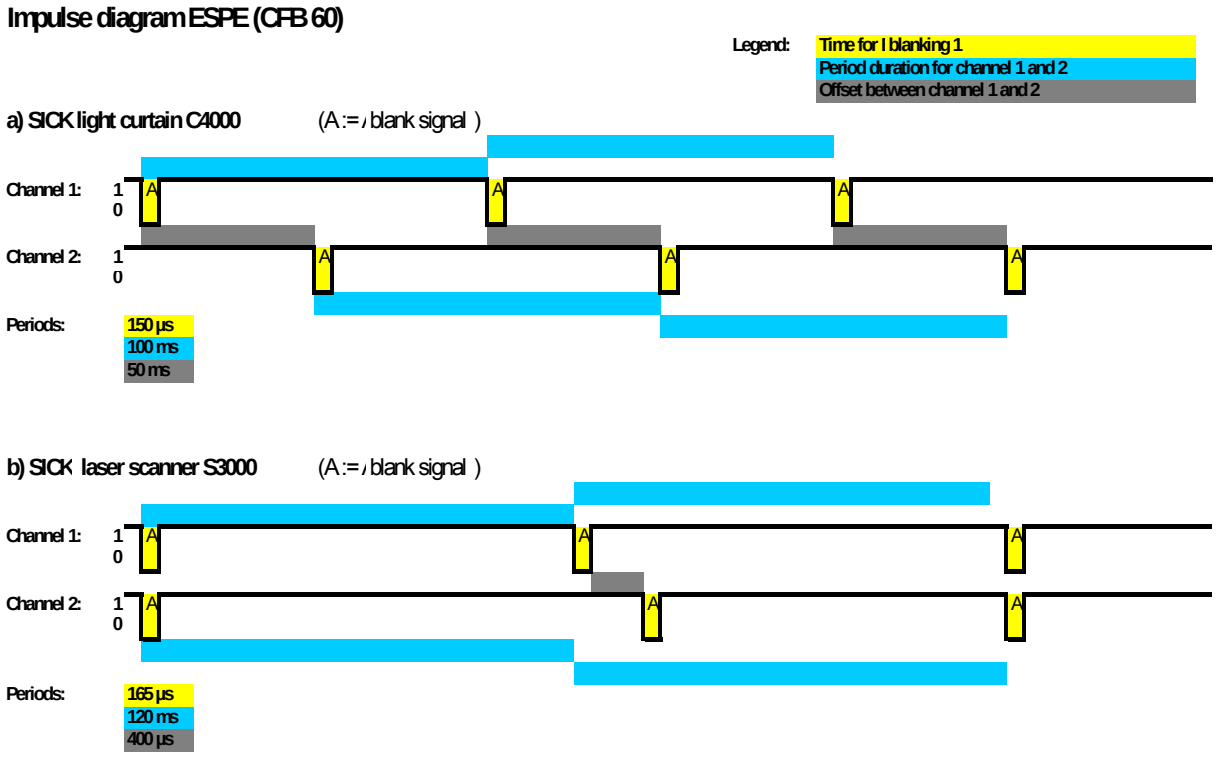

Figure 5: Impulse Diagrams for ESPE in CFB 60

Using of the F 7303 or F 7307 filter allows the CFB 60 to ensure a device-independent shut-down within a maximum of two PES cycles.

Note:	When the CFB 60 is used without the Z 7303 or Z 7307 filter, the C4000 and S3000 shut down after a maximum of three PES cycles. (see impulse diagram). This time must be taken into account when planning the safe distance!

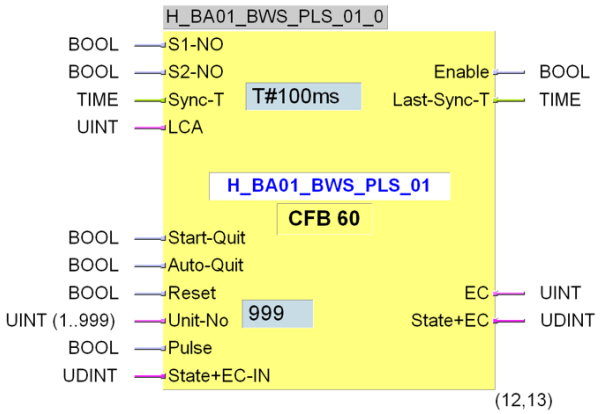

Figure 6: Function Block Layout for CFB 60

The ESPE generates blanking signals for line control. Depending on the model, different period durations are used (see Figure 5). The controller's cycle time must be less than half of the duration of the ESPE's output signal period. In this case, the signal is blanked correctly and the CFB 60 module's function is ensured.

In all other cases, the Z 7303 and Z 7307 filters eliminate the blanking signal from the signal.

If ESPE systems are used with the Z 7303 or Z 7307 the CFB 60 parameter "LCA" must be set to 0.
A FALSE signal on the HIMatrix controller's digital inputs (S1-NO or S2-NO in CFB 60) results in an immediate shutdown (state FALSE) of the Enable output of the CFB 60 function block.

The following table describes the input signals and the LCA parameters:

Input	Type	Default	Range of Values	Description
S1-NO, S2-NO	BOOL	FALSE	FALSE/ TRUE	"S1-NO" and "S2-NO" are the inputs of the safety-related controller from which the statuses for the contacts of the ESPE/PLS are read. If the protection area to be monitored by the ESPE/PLS is vacant, the ESPE/PLS did not trigger and the inputs S1-NO and S2-NO are TRUE.
LCA	UINT	0	0, 1, 2	**0 FALSE on S1-NO or S2-NO results in an immediate shutdown (Enable = FALSE)** 1 Bridging of the sensor's line control blanking (LCA) is taken into account. Blanking the line control signal for either "S1-NO" or "S2-NO" for only one PES cycle does not cause the Enable output to be shut down. 2 Bridging of the sensor's line control blanking (LCA) is taken into account. Neither the simultaneous blanking of both inputs nor the blanking of only one input for a maximum of one PES cycle causes a shutdown. The Enable output is shut down immediately if the PES detects a FALSE signal on one of the two inputs for two consecutive PES cycles. **Note:** If LCA = 1 and LCA = 2 the shutdown is delayed for one PES cycle. This time must be taken into account when planning safe distance!

Table 2: Input Signal and LCA Parameters of the CFB 60

Please refer to the online help of the function block for the complete description of the CFB 60 inputs and outputs.

HIMA
...the safe decision.

HIMA Paul Hildebrandt GmbH
Industrial Automation
Postfach 1261 • D - 68777 Bruehl
Phone: (+49) 6202 709-0 • Fax: (+49) 6202 709-107
E-mail: info@hima.com • Internet: www.hima.com

(0741)