



## HVDO - FEATURES

- Optical Integrated VDS - Voltage detecting system in accordance with IEC 61243-5 where applicable
- Optical fiber insulation between medium voltage area and front panel indication
- The device supplies continuously :
  - a synchronous optical signal which can be used either for local voltage indication or as phase signal to be analysed by phase comparator (PD)
  - LED life time guaranteed - min. 30 years
  - Surge arresters does not applied because only optical signals are available on the front of panel

This VDS is based on the sharing of voltage between capacitor C1 (high voltage) and capacitor C2 (low voltage) ; the signal at C2 terminals is transformed in an optical signal, which separately points out voltage and phase of the line involved.

Thanks to this new system the signals of voltage get to the operator through a galvanic (optical) insulation, which never transfers voltage, even in case of failure of capacitor C1.

The IEC Standard 61243-5 1997-06 is applicable to our Voltage indicator. At page 11 point 1.2, the standard concerns VDS "based on fundamentally different principles (for examples optical systems, ...)"; they "should meet the requirements of this standard where applicable."

The very small size allows to reduce space in your panel and in the meanwhile maximizes the ratio quality/cost.

The indication to operator is brought directly by optical fibers and proper lens are used to get necessary perceptibility.

The safety innovation is guaranteed by complete insulation of optical fibers used to transmit signals from medium voltage compartment to instrument cell.

A fast and reliable choice of correct coupling between device and primary capacitance is guaranteed by five dip-switches.

## Technical features

Standard applicable:.....EN/IEC 61243-5  
High voltage :..... 3 - 170 KV  
Primary Capacitance\* :.....3 - 300 pF  
Power supply :.....no auxiliary power requested  
Power consumption :.....< 1mW  
Led :.....10000mcd/20mA  
Dielectric strength :.....275KV  
Surge Strength :.....650KV  
IP degree protection :.....IP64

\*Versions with customized features can be provided.

## Material

Box :.....plastic housing filled by epoxy resin  
Connection input:.....faston 6.3X0.8 (IP30)  
Connection output :.....POF optical fiber 1mm core

Electrical cable :.....0,5mm<sup>2</sup> approved  
VDE(NYSLYCYö-J)  
SEV(CH-NO5VC4V5-F)  
UL(AWM Style 2587)  
CSA(AWM I A/B II A/B) (\*)



## HVDO – COUPLING TABLE

- HVDO I s able to work with rated voltage from 3.6kV to 36kV and primary capacitance from 3-300pF
- 5 Dip-switches allow to configurate correct coupling with any kind of insulator, cable or current transformer all over the medium voltage range
- IEC 61243-5 standard requires the device is off for medium voltage across the capacitance below 10% and on up 45%.

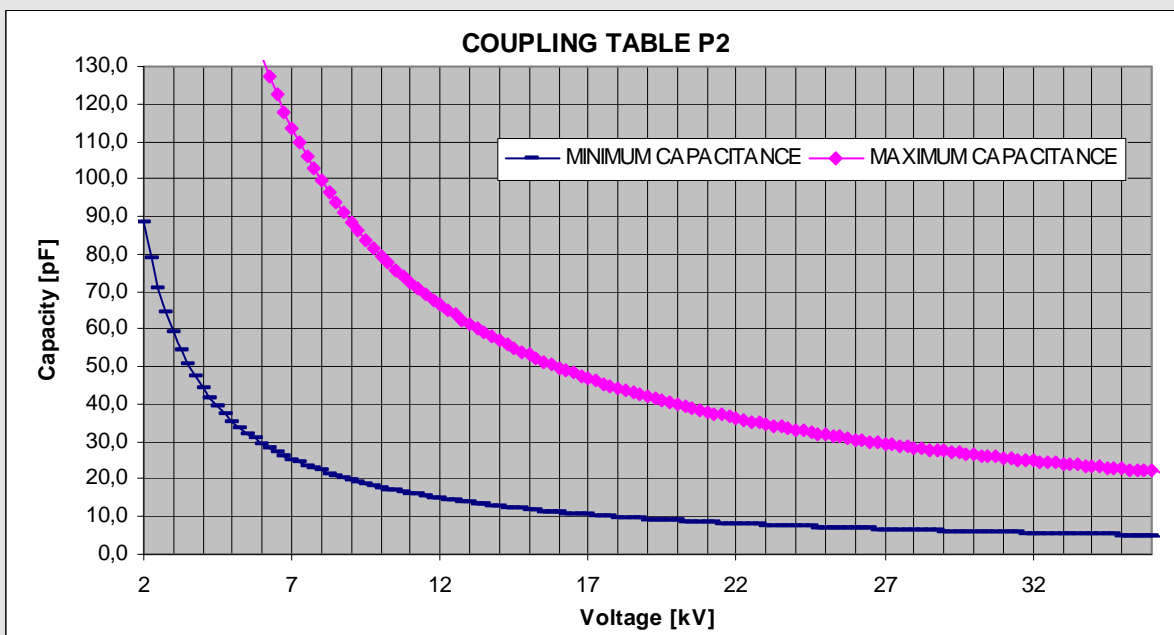
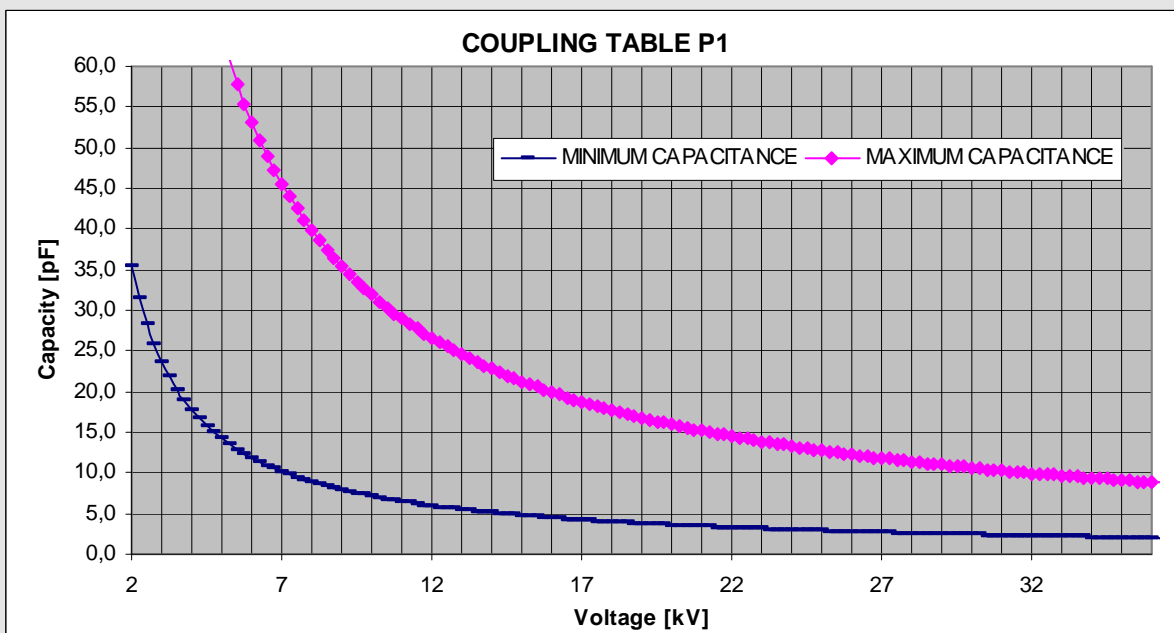
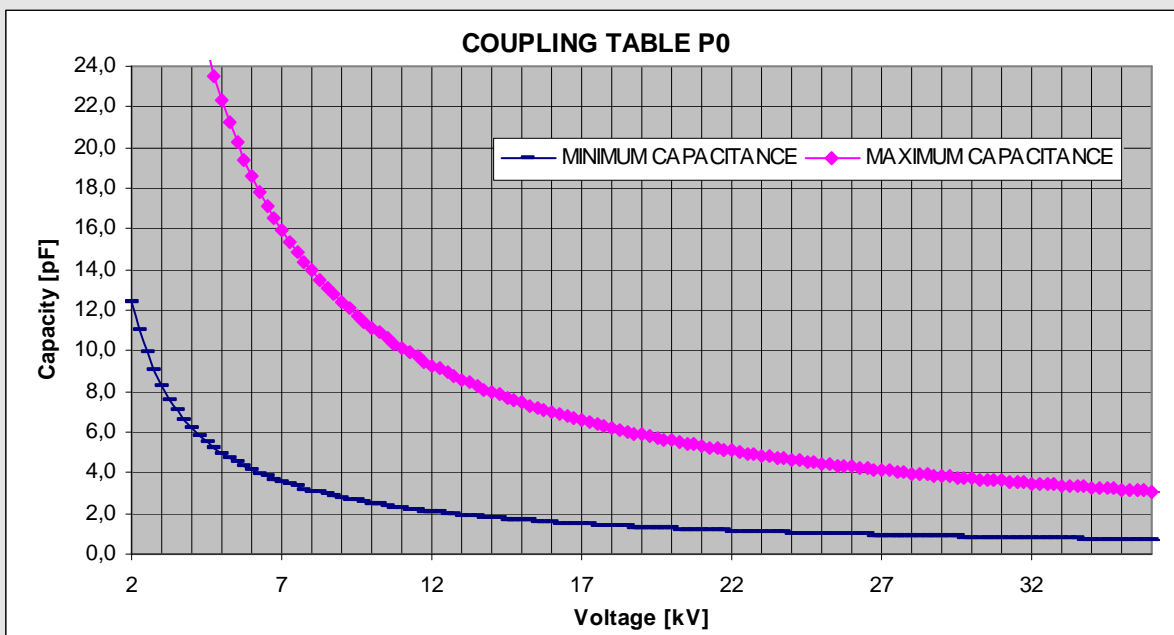
TABLE

SETTING	DIP SWITCHES					INPUT CURRENT [uA]	
	SW1	SW2	SW3	SW4	SW5	I MIN	IMAX
P0	0	0	0	0	0	3,5	16
P1	1	0	0	0	0	10	45
P2	0	1	0	0	0	25	112
P3	0	0	1	0	0	50	225
P4	0	0	0	1	0	100	450
P5	0	0	0	0	1	200	900

NOTE:

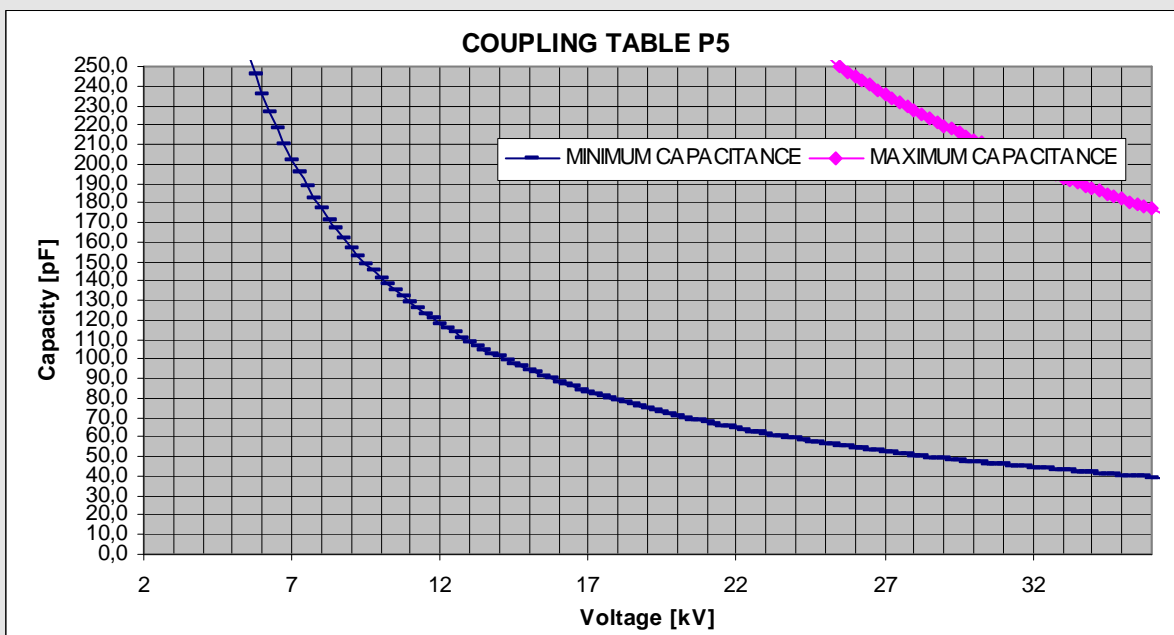
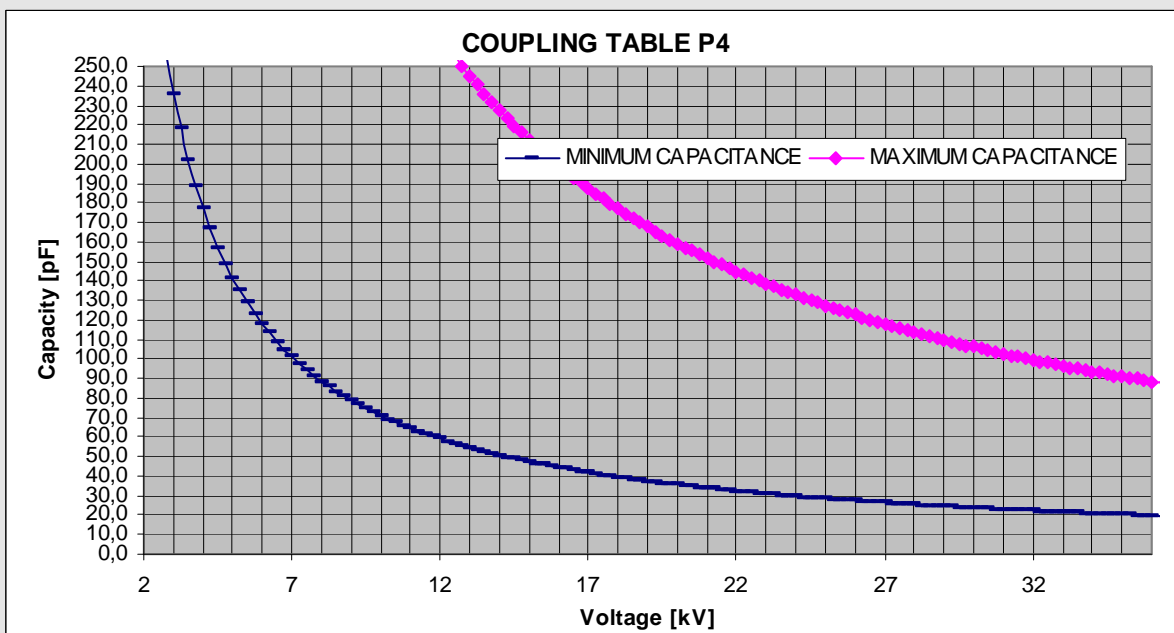
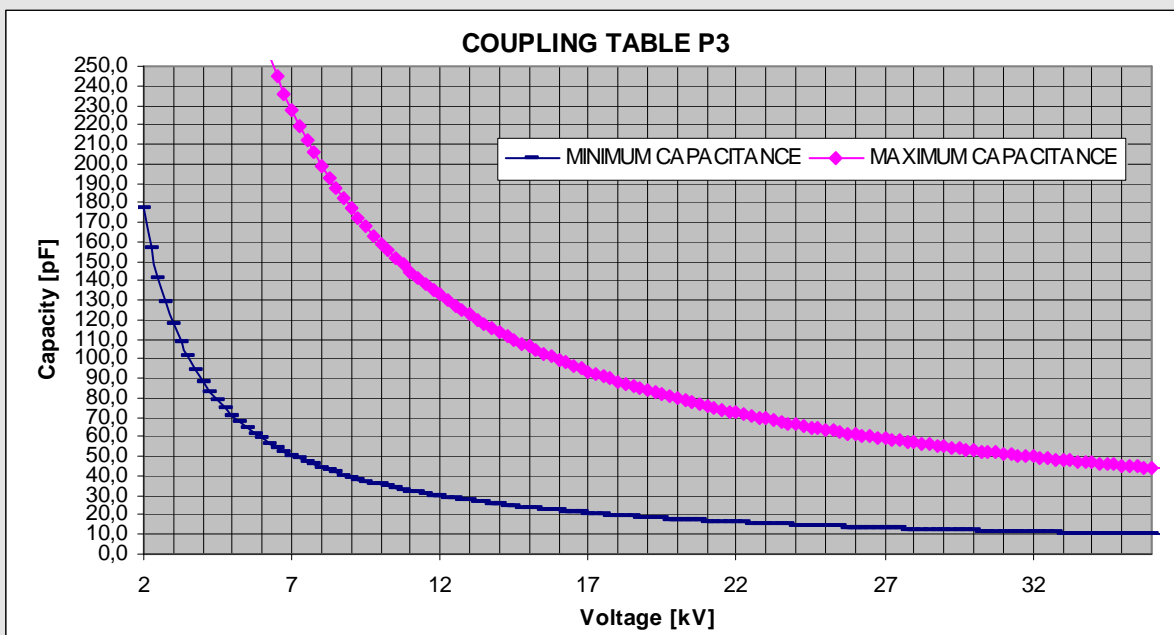
0 DIP SWITCH OFF

1 DIP SWITCH ON



# VOLTAGE DETECTING SYSTEMS

13/05/08



# VOLTAGE DETECTING SYSTEMS

13/05/08

Rev./Mod A	Data 12.03.2008	Rev./Mod B	Data 08.04.2008	Rev./Mod	Data	Rev./Mod	Data	Rev./Mod	Data
Descrizione: MODIFICHE GENERALI		Descrizione: MODIFICATO LED		Descrizione:		Descrizione:		Descrizione:	

**NOTE :**

- Rated voltage from 3.3 kV to 36 kV
- Capacitance from 5pF to 300pF
- Correct capacitive coupling can be chosen by Dip-Switches in order to satisfy IEC requirements with any divider insulator.
- Completely fullfills IEC 61243-5 standard

**ORDERING CODE:**  
Description : High voltage detector  
Code : HVDO/DIP

**NOTE :**

- Rated voltage from 3.3 kV to 36 kV
- Capacitance from 5pF to 300pF
- Correct capacitive coupling can be chosen by Dip-Switches in order to satisfy IEC requirements with any divider insulator.
- Completely fullfills IEC 61243-5 standard

**ORDERING CODE:**  
Description : High voltage detector  
Code : HVDO/DIP

Electrical phase inputs

Optical fiber connection outputs

**COUPLING TABLE**

SETTING	DIP SWITCHES					INPUT CURRENT [uA]	
	SW1	SW2	SW3	SW4	SW5	I MIN	I MAX
P0	0	0	0	0	0	3,5	16
P1	1	0	0	0	0	10	45
P2	0	1	0	0	0	25	112
P3	0	0	1	0	0	50	225
P4	0	0	0	1	0	100	450
P5	0	0	0	0	1	200	900

Fig.	Material/Materiale			N° Series / Serie	Finishing / Finitura
Filing Room	General tolerance for machining / Tolleranze generali per lavorazioni meccaniche:				
Archivio	Thread quality tolerance Tolleranza filett. quarto 5g-8s UNI 5541-85	Coord.Punching N.C. mach. Coord. punzon. a C.N.	JS11	Quality for linear dimension Qualità per quote lineari	JS12 JS13 JS15
Prep. G. FORLANI	App. P. GUZZETTI	Resp. Dep. Uff. Tecnico	Uff. Resp.	Title HIGH VOLTAGE DETECTOR HVDO/DIP -DIMENSION AND FEATURES-	Scale 1:1 S/N. No. 1/1
Rev./Mod.	[0]13.11.2007 : Emissione nuovo disegno			Apparecchio	43911943

ELECTRONSYSTEM MD S.r.l.

# VOLTAGE DETECTING SYSTEMS

13/05/08

Rev./Mod	Data	Rev./Mod	Data	Rev./Mod	Data	Rev./Mod	Data	Rev./Mod	Data																																																																																								
Descrizione:		Descrizione:		Descrizione:		Descrizione:		Descrizione:																																																																																									
<p>Plano di Compionamento (UNI 4842-75)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">LIVELLO</td> <td style="width: 50%;">LOA</td> </tr> <tr> <td style="width: 50%;">L2</td> <td style="width: 50%;">1</td> </tr> </table> <p>                 Ci riserviamo tutti i diritti connessi con il presente documento e con l'oggetto o la materia ivi rappresentati con divieto di riprodurlo, utilizzarlo o renderlo accessibile a terzi in assenza di previa autorizzazione.             </p> <p>                 We reserve all rights in this document and in the information contained therein. Reproductions, use or disclosures to third parties without express authority is strictly forbidden.             </p>										LIVELLO	LOA	L2	1																																																																																				
LIVELLO	LOA																																																																																																
L2	1																																																																																																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Fig. _____</td> <td colspan="2">Material/Materiale</td> <td colspan="2">N° Series / Serie</td> <td colspan="2">Finishing / Finitura</td> </tr> <tr> <td colspan="2">Filling Room</td> <td colspan="2">General tolerance for machining / Tolleranze generali per lavorazioni meccaniche:</td> <td colspan="2">Ester-fine / Fine</td> <td colspan="2">JS12</td> </tr> <tr> <td colspan="2">Archivio</td> <td colspan="2">Thread quality tolerance</td> <td colspan="2">Coord.Punching N.C. mach.</td> <td colspan="2">Medion / Medio</td> </tr> <tr> <td colspan="2"></td> <td colspan="2">Tolleranza filetti qualità</td> <td colspan="2">Coord. punzon. a C.N.I.</td> <td colspan="2">JS13</td> </tr> <tr> <td colspan="2"></td> <td colspan="2">9g-6S UNI 5241-6S</td> <td colspan="2">JS111</td> <td colspan="2">Coarse / Grossolano</td> </tr> <tr> <td colspan="2"></td> <td colspan="2">JS111</td> <td colspan="2"></td> <td colspan="2">JS15</td> </tr> <tr> <td colspan="2">Prep. G. FORLANI</td> <td colspan="2">Resp. Dep. Uff. Tecnico</td> <td colspan="2">Titolo</td> <td colspan="2">PANNELLO PHVDO</td> </tr> <tr> <td colspan="2">App. P. GUZZETTI</td> <td colspan="2">Uff. Resp.</td> <td colspan="2">Apparechio</td> <td colspan="2">43911944</td> </tr> <tr> <td colspan="2">Rev./Mod. 013.11.2007</td> <td colspan="2">Emissione nuovo disegno</td> <td colspan="2">N° Doc.</td> <td colspan="2">1/1</td> </tr> <tr> <td colspan="2">ELECTRONSYSTEM MD S.r.l.</td> <td colspan="2"></td> <td colspan="2">Scale</td> <td colspan="2">1:1</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">Lingua</td> <td colspan="2">1/1</td> </tr> </table>										Fig. _____		Material/Materiale		N° Series / Serie		Finishing / Finitura		Filling Room		General tolerance for machining / Tolleranze generali per lavorazioni meccaniche:		Ester-fine / Fine		JS12		Archivio		Thread quality tolerance		Coord.Punching N.C. mach.		Medion / Medio				Tolleranza filetti qualità		Coord. punzon. a C.N.I.		JS13				9g-6S UNI 5241-6S		JS111		Coarse / Grossolano				JS111				JS15		Prep. G. FORLANI		Resp. Dep. Uff. Tecnico		Titolo		PANNELLO PHVDO		App. P. GUZZETTI		Uff. Resp.		Apparechio		43911944		Rev./Mod. 013.11.2007		Emissione nuovo disegno		N° Doc.		1/1		ELECTRONSYSTEM MD S.r.l.				Scale		1:1						Lingua		1/1	
Fig. _____		Material/Materiale		N° Series / Serie		Finishing / Finitura																																																																																											
Filling Room		General tolerance for machining / Tolleranze generali per lavorazioni meccaniche:		Ester-fine / Fine		JS12																																																																																											
Archivio		Thread quality tolerance		Coord.Punching N.C. mach.		Medion / Medio																																																																																											
		Tolleranza filetti qualità		Coord. punzon. a C.N.I.		JS13																																																																																											
		9g-6S UNI 5241-6S		JS111		Coarse / Grossolano																																																																																											
		JS111				JS15																																																																																											
Prep. G. FORLANI		Resp. Dep. Uff. Tecnico		Titolo		PANNELLO PHVDO																																																																																											
App. P. GUZZETTI		Uff. Resp.		Apparechio		43911944																																																																																											
Rev./Mod. 013.11.2007		Emissione nuovo disegno		N° Doc.		1/1																																																																																											
ELECTRONSYSTEM MD S.r.l.				Scale		1:1																																																																																											
				Lingua		1/1																																																																																											