

Current sensors CS500 / CS1000
Mounting instructions
Capteurs de courant CS500 / CS1000
Instructions de montage



Mounting CS500/CS1000

01/02/02
Version 1.0

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Introduction:

This document presents, following five mains configurations, the possible effects on the sensor measuring accuracy due to external magnetic fields.

Meaning of the «RADAR»

Introduction :

Ce document présente suivant 5 configurations les effets possibles des champs magnétiques extérieurs sur la précision des capteurs.

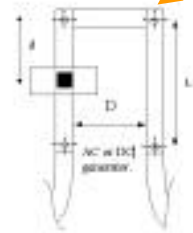
Explication du «RADAR»

General parameters:

$I_{rn} = 450A ; AC (50 Hz)$
 $R_{int} = 5 \Omega$
 Supply Voltage : $\pm 15 V$

PARAMÈTRES GÉNÉRAUX:

$I_{rn} = 450A ; AC (50 Hz)$
 $R_{int} = 5 \Omega$
 Alimentation : $\pm 15 V$



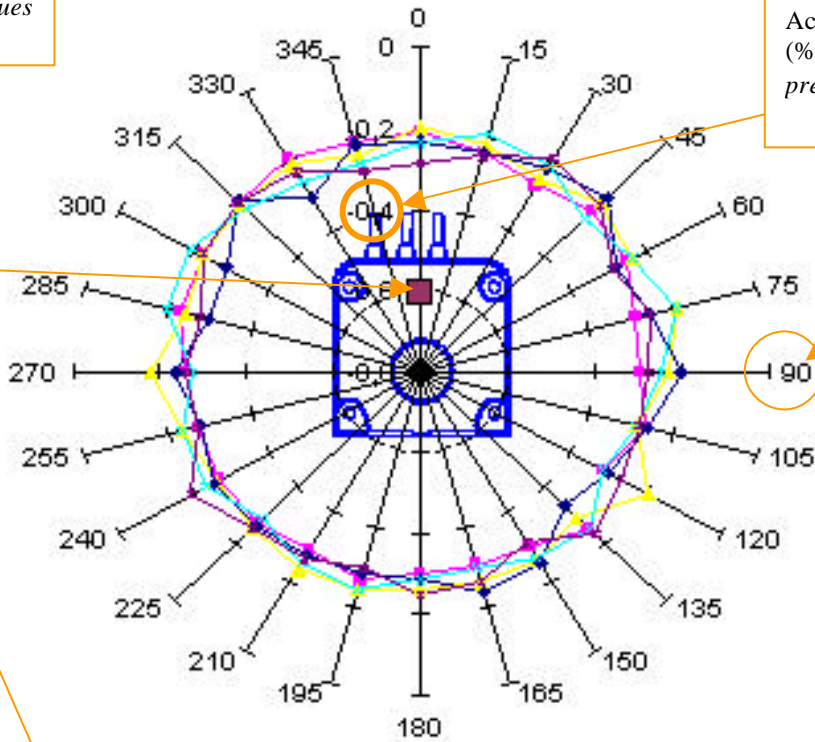
Configuration

Electrical parameters to obtain the radar / paramètres électriques permettant d'obtenir le radar

Accuracy value measured (%) / pourcentage de précision mesurée

Hall probe / sonde de Hall

Angle between the sensor (sensor top = 0°) and the external bar / angle entre le capteur (haut du capteur = 0°) et la barre externe



Distance D between the bar inside the sensor and the external bar / distance D entre la barre du capteur et la barre externe



Nominal current for the test / courant nominal du test



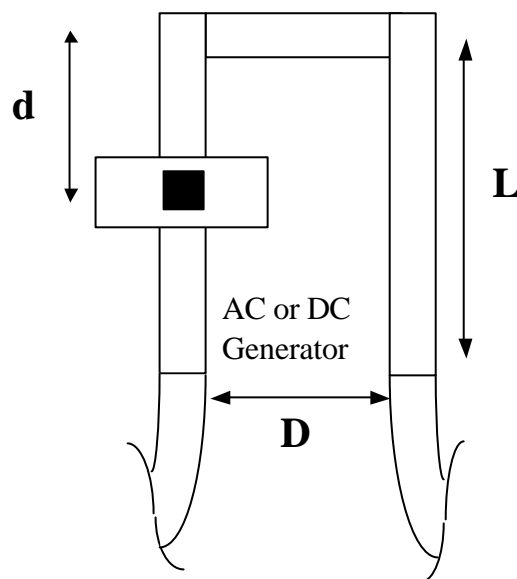
Configurations

Influence of the proximity of a conductor,
on the sensor

*Influence de la proximité d'un conducteur
sur le capteur:*

1 - Parallel bar configuration

1 - Configuration barre parallèle



Parameters / Paramètres:

Sensor	D	L	d	Round bar
CS500 and CS1000	Min=100mm Max=300mm	400mm 400mm	Around 200mm Around 200mm	Diameter=40mm Diameter=40mm

In such a configuration, for each 15° we
measure the accuracy of the sensor. The
result is given in the following pages.

*Dans une telle configuration, tous les 15°
nous mesurons la précision du capteur.
Les résultats sont donnés dans les pages
suivantes.*

CS500: accuracy in parallel bar configuration

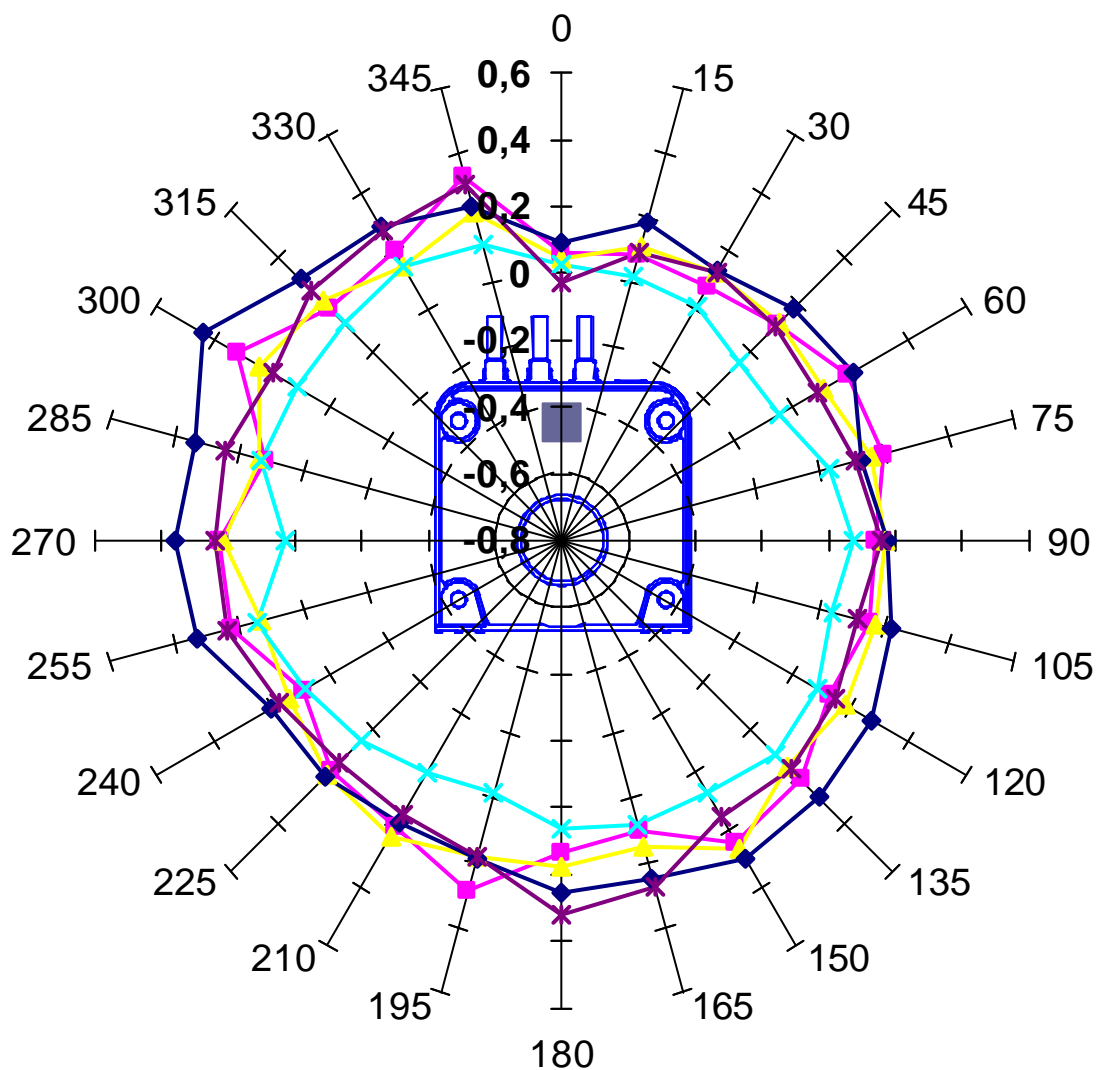
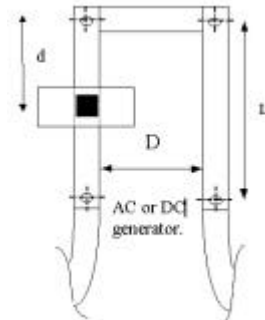
CS500: précision en configuration barre parallèle

General parameters:

$I_{PN} = 500A$; AC (50 Hz)
 $R_M = 10 W$
 Supply Voltage: $\pm 24 V$

Paramètres généraux:

$I_{PN} = 500A$; AC (50 Hz)
 $R_M = 10 W$
 Alimentation : $\pm 24 V$



■ 100mm
 ▲ 150mm
 ◆ 200mm
 ✕ 250mm
 ✱ 300mm

CS500: accuracy in parallel bar configuration

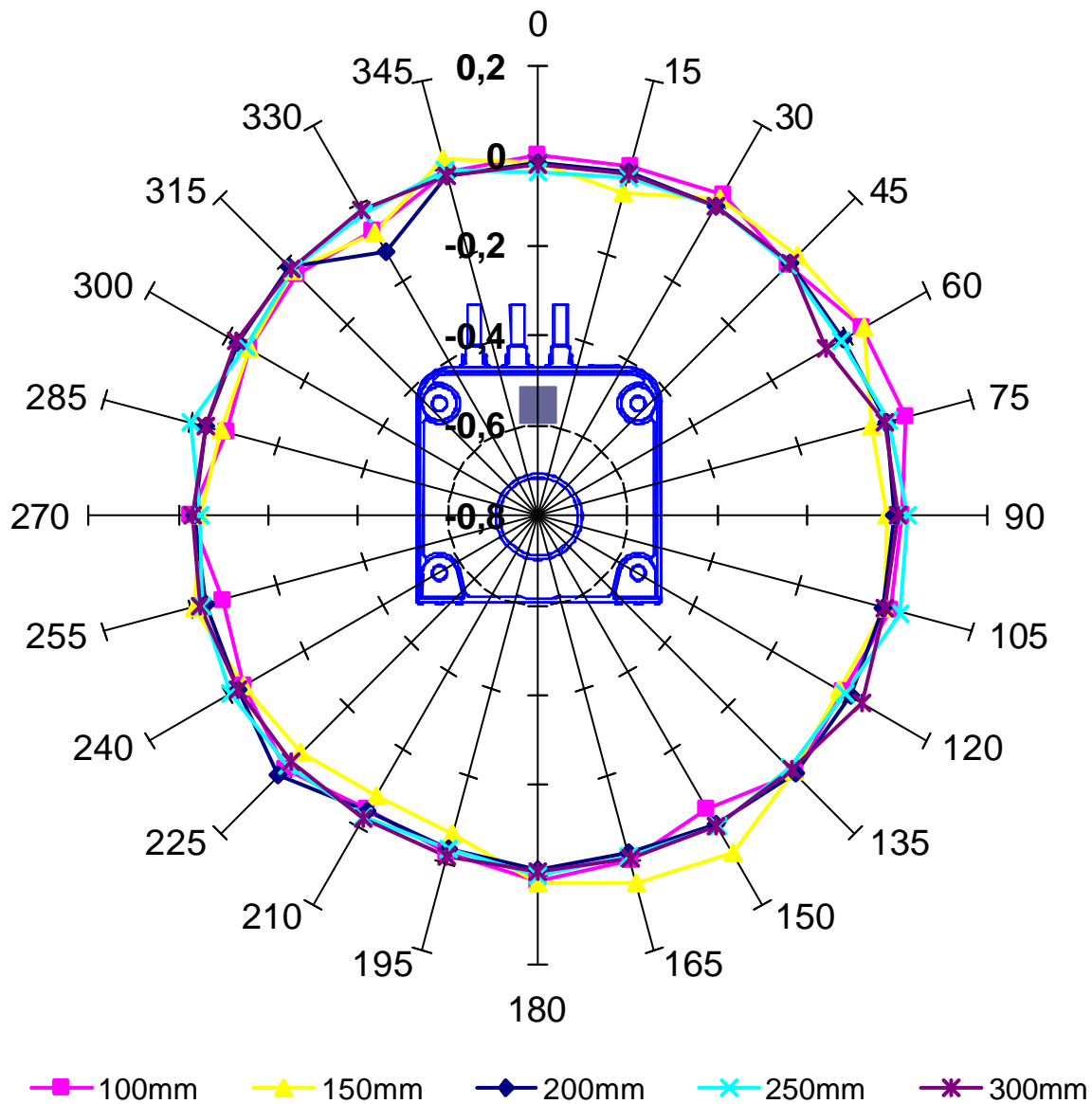
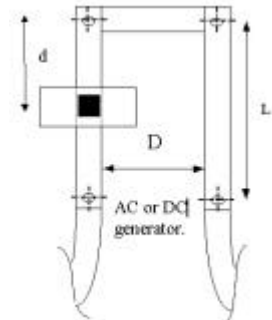
CS500: précision en configuration barre parallèle

General parameters:

$I_{PN} = 750A; AC (50 Hz)$
 $R_M = 10 W$
 Supply Voltage: $\pm 24 V$

Paramètres généraux:

$I_{PN} = 750A; AC (50 Hz)$
 $R_M = 10 W$
 Alimentation : $\pm 24 V$



CS500: accuracy in parallel bar configuration

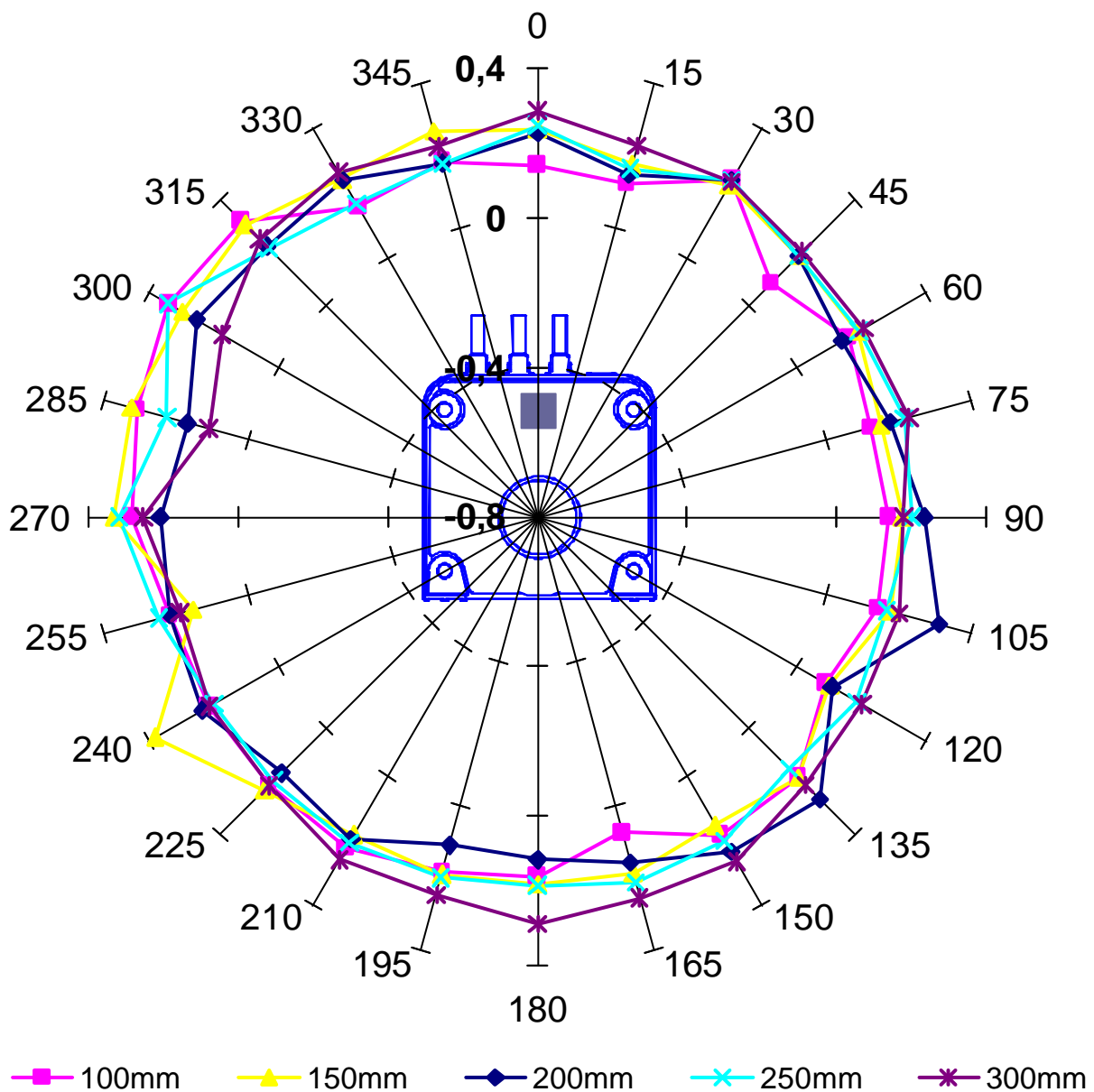
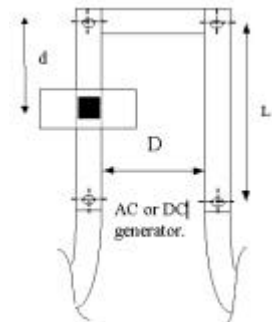
CS500: précision en configuration barre parallèle

General parameters:

$I_{PN} = 500A; DC$
 $R_M = 10 W$
 Supply Voltage: $\pm 24 V$

Paramètres généraux:

$I_{PN} = 500; DC$
 $R_M = 10 W$
 Alimentation : $\pm 24 V$



CS500: accuracy in parallel bar configuration

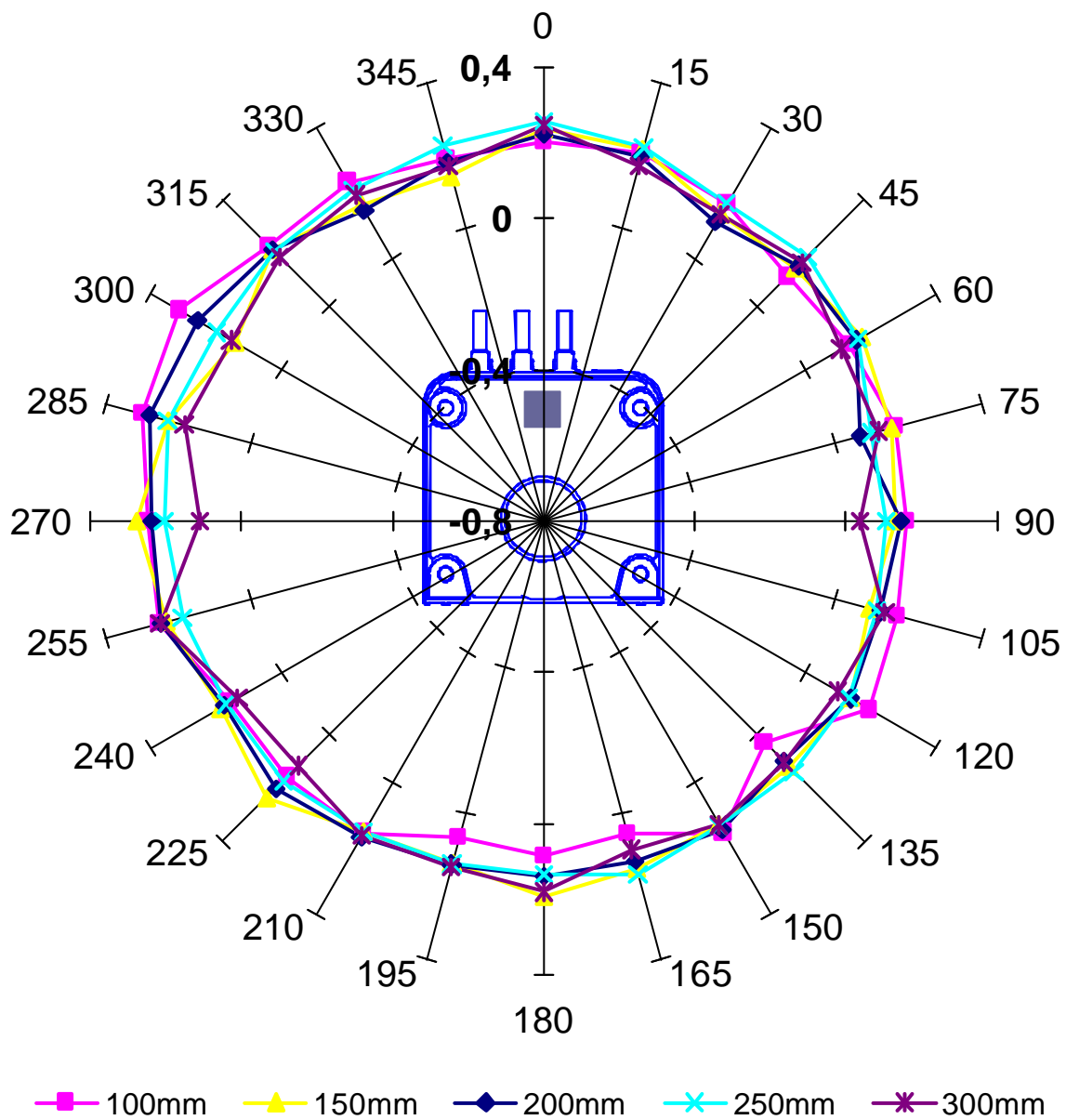
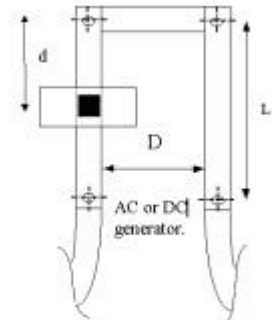
CS500: précision en configuration barre parallèle

General parameters:

$I_{PN} = 750A; DC$
 $R_M = 10 W$
 Supply Voltage: $\pm 24 V$

Paramètres généraux:

$I_{PN} = 750A; DC$
 $R_M = 10 W$
 Alimentation : $\pm 24 V$



CS1000: accuracy in parallel bar configuration

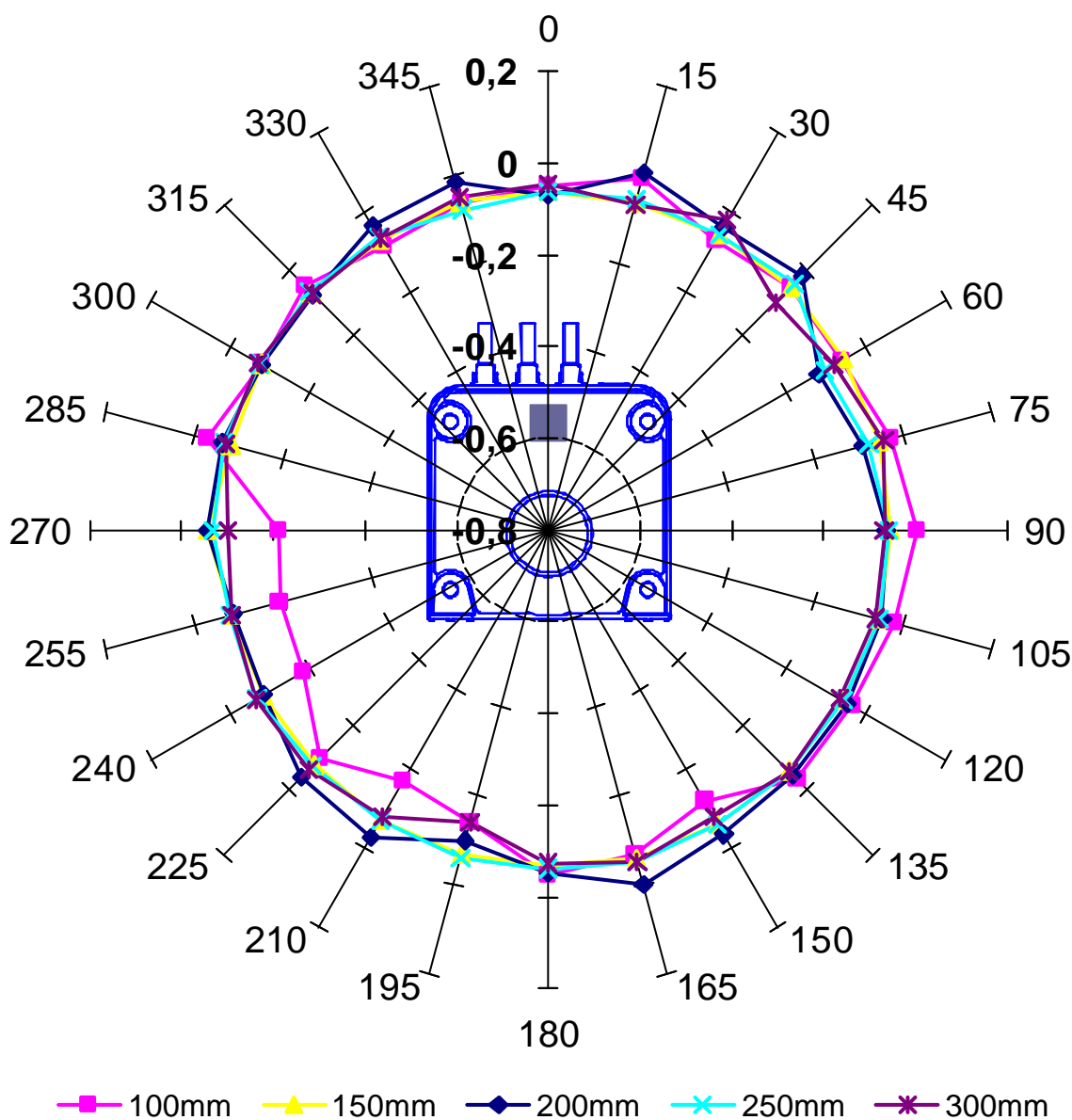
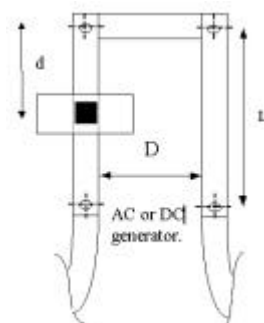
CS1000: précision en configuration barre parallèle

General parameters:

$I_{PN} = 1000A$; AC (50 Hz)
 $R_M = 4 W$
 Supply Voltage: $\pm 24 V$

Paramètres généraux:

$I_{PN} = 1000A$; AC (50 Hz)
 $R_M = 4 W$
 Alimentation : $\pm 24 V$



CS1000: accuracy in parallel bar configuration

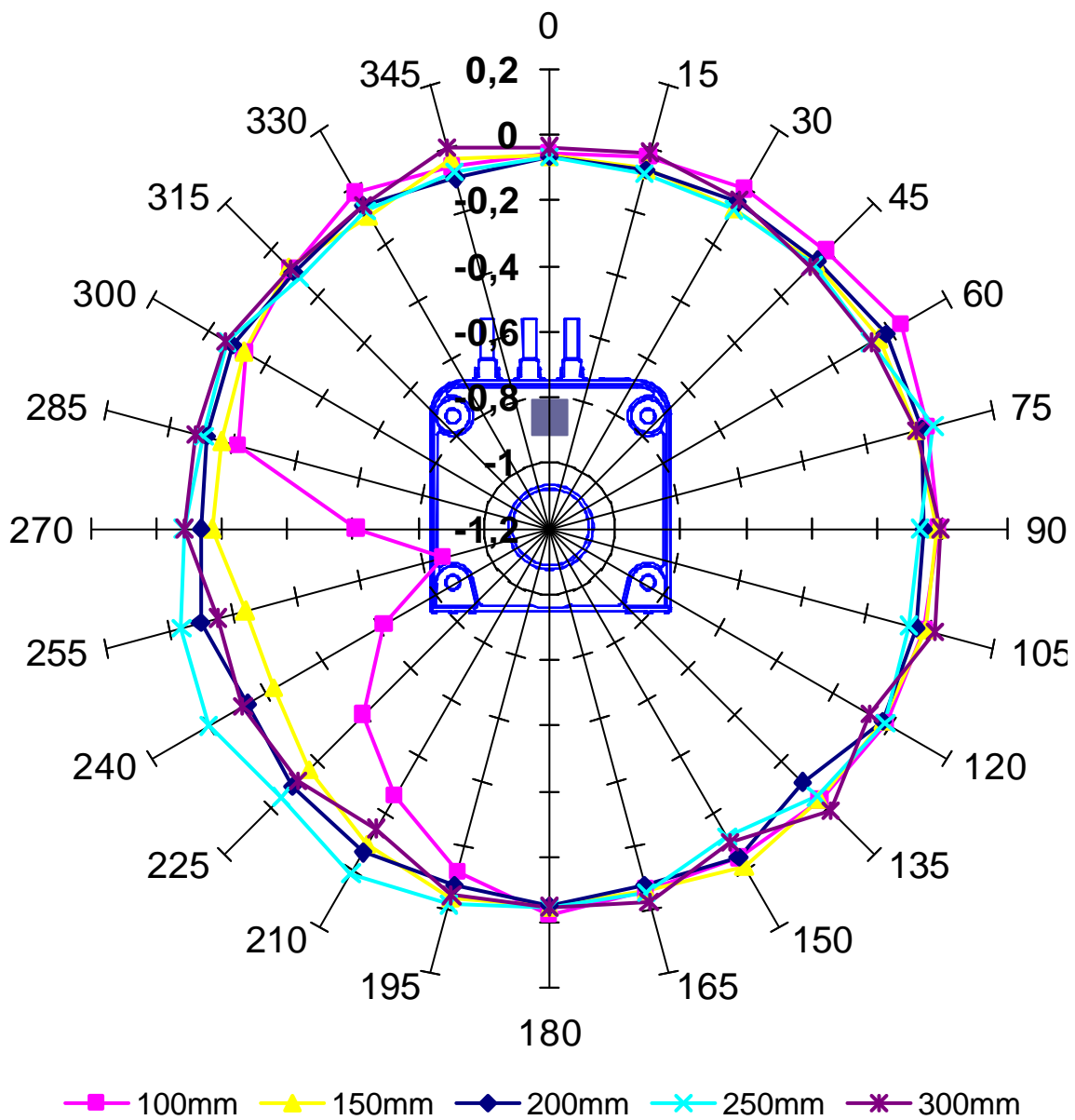
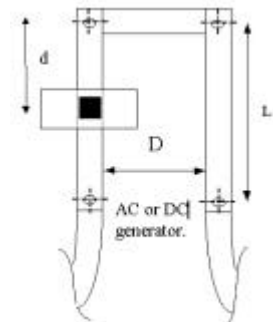
CS1000: précision en configuration barre parallèle

General parameters:

$I_{PN} = 1500A$; AC (50 Hz)
 $R_M = 4 W$
Supply Voltage: $\pm 24 V$

Paramètres généraux:

$I_{PN} = 1500A$; AC (50 Hz)
 $R_M = 4 W$
Alimentation : $\pm 24 V$



CS1000: accuracy in parallel bar configuration

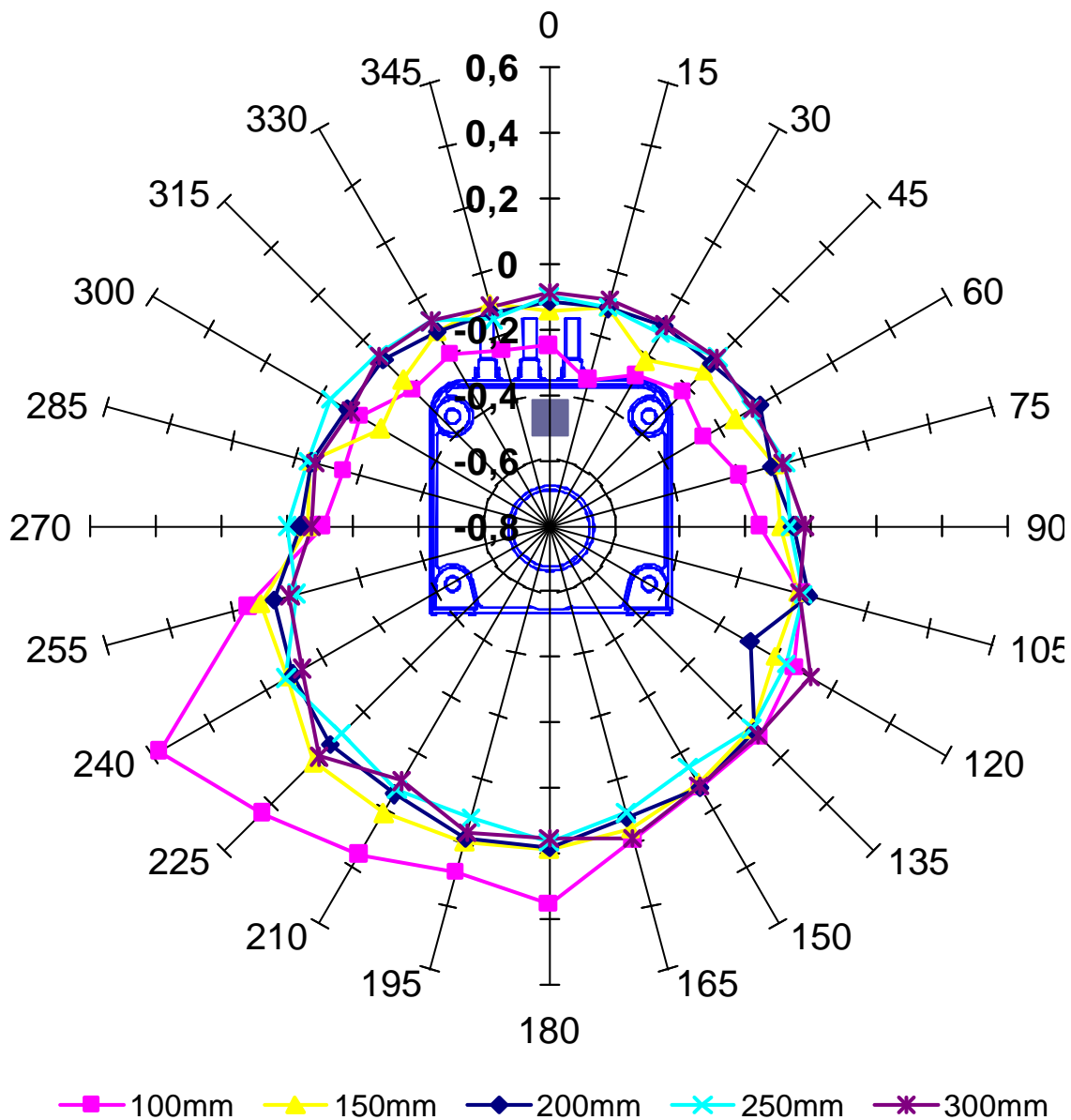
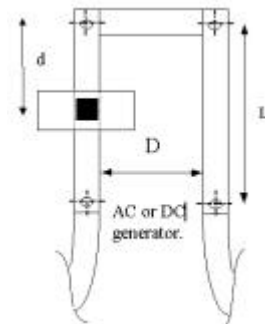
CS1000: précision en configuration barre parallèle

General parameters:

$I_{PN} = 1000A$; DC
 $R_M = 4 W$
Supply Voltage: $\pm 24 V$

Paramètres généraux:

$I_{PN} = 1000A$; DC
 $R_M = 4 W$
Alimentation: $\pm 24 V$



CS1000: accuracy in parallel bar configuration

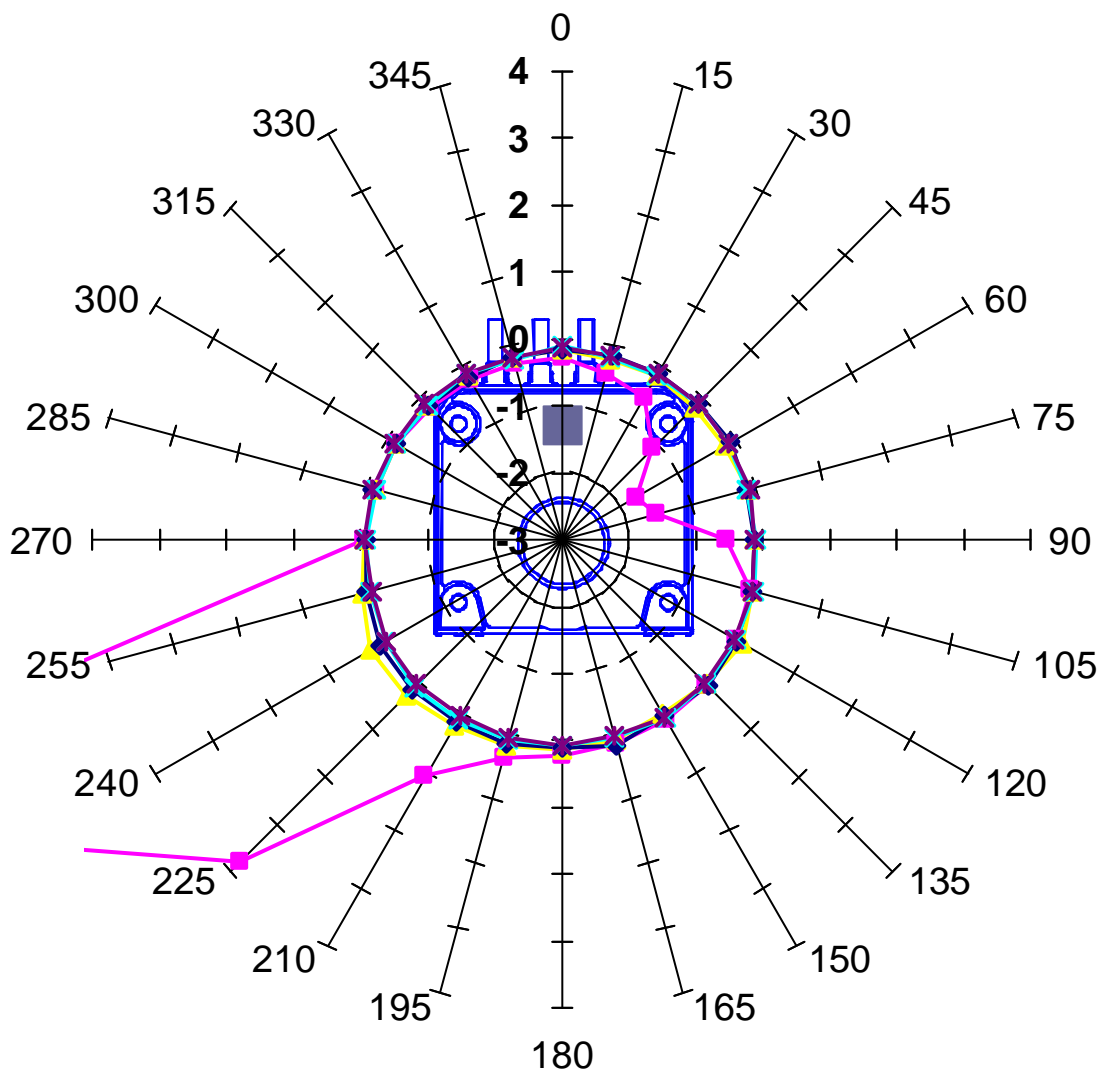
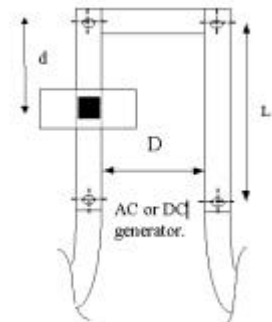
CS1000: précision en configuration barre parallèle

General parameters:

$I_{PN} = 1500A; DC$
 $R_M = 4 W$
 Supply Voltage: $\pm 24 V$

Paramètres généraux:

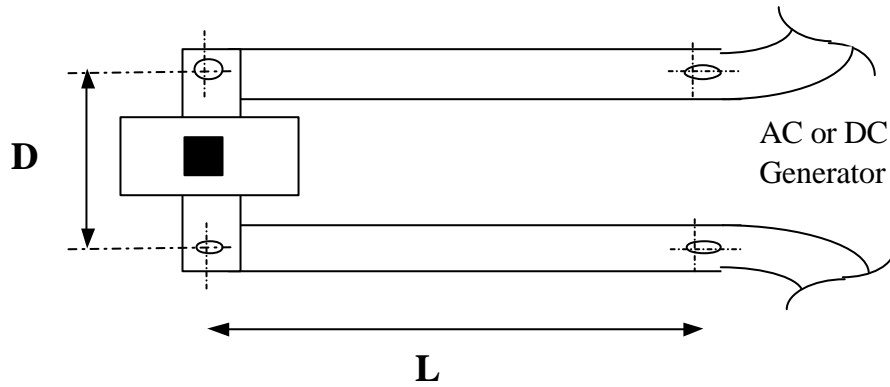
$I_{PN} = 1500A; DC$
 $R_M = 4 W$
 Alimentation: $\pm 24 V$



■ 100mm ▲ 150mm ◆ 200mm ✕ 250mm ✖ 300mm

2- Lateral bars configuration

2- Configuration barres latérales



Parameters / Paramètres

Sensor	E	L	Round Bar
CS500 and CS1000	D1=130mm D2=160mm	400mm 400mm	Diameter=40mm Diameter=40mm

In such a configuration, for each 15° we measure the accuracy of the sensor. The result is given in the following pages.

Dans une telle configuration, tous les 15° nous mesurons la précision du capteur. Les résultats sont donnés dans les pages suivantes.

CS500: accuracy in lateral bars configuration

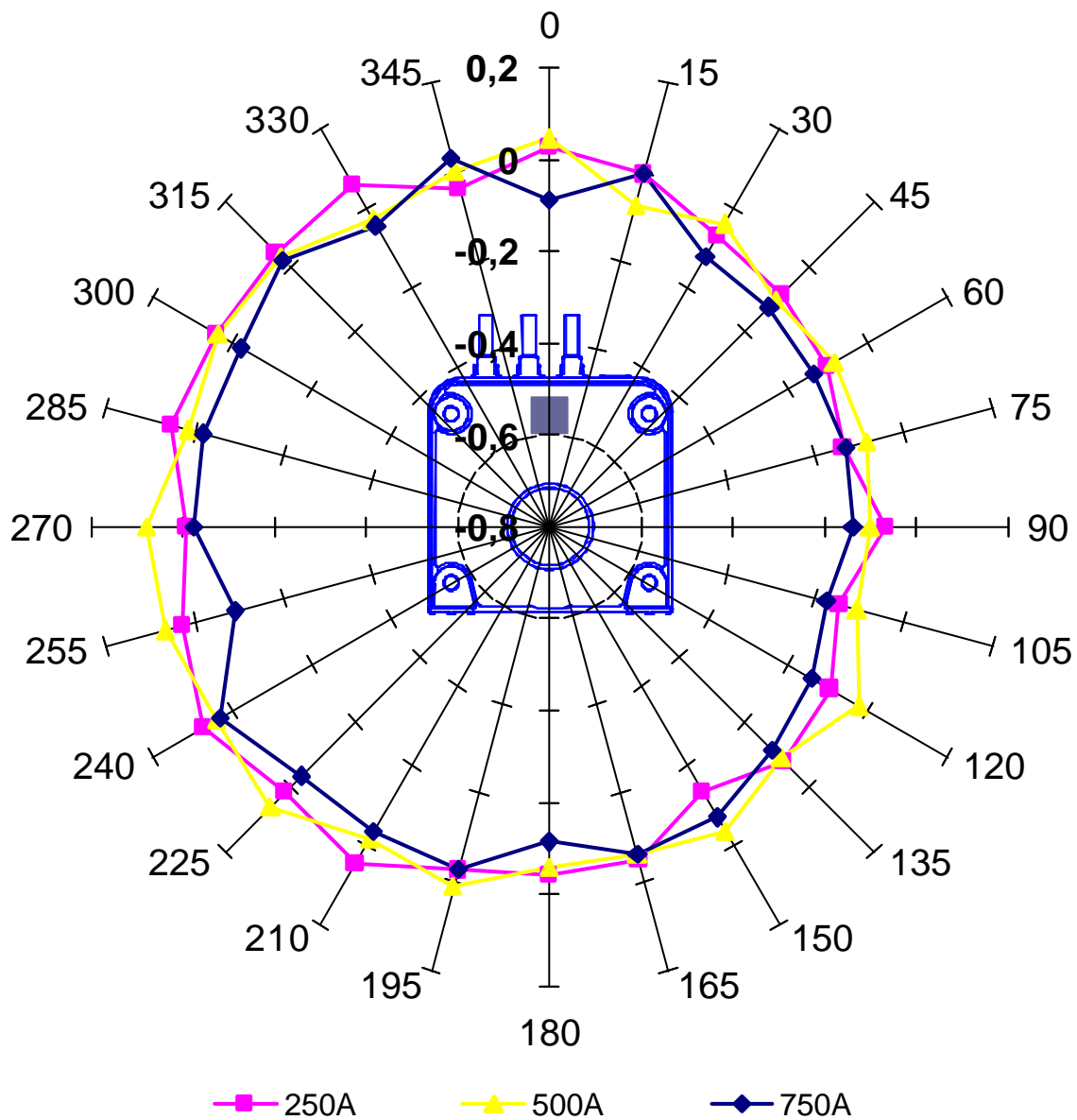
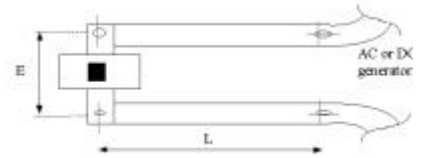
CS500: précision en configuration barres latérales

General parameters:

$I_{PN} = 250, 500, 750A; AC (50 Hz)$
 $R_M = 10 W$
 Supply Voltage: $\pm 24 V$

Paramètres généraux:

$I_{PN} = 250, 500, 750A; AC (50 Hz)$
 $R_M = 10 W$
 Alimentation: $\pm 24 V$



CS500: accuracy in lateral bars configuration

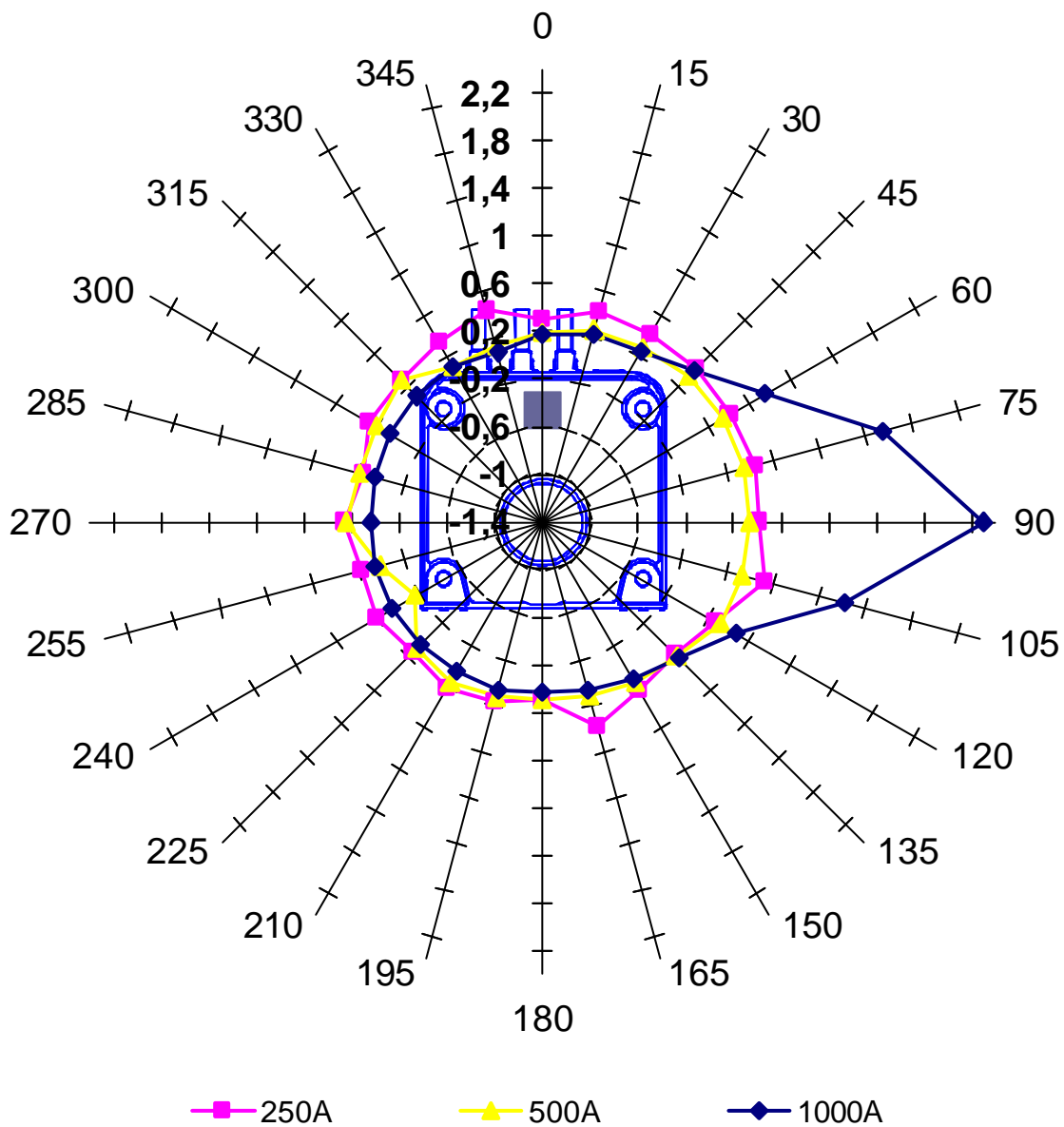
CS500: précision en configuration barres latérales

General parameters:

$I_{PN} = 250, 500, 1000A; DC$
 $R_M = 10 W$
 Supply Voltage: $\pm 24 V$

Paramètres généraux:

$I_{PN} = 250, 500, 1000A; DC$
 $R_M = 10 W$
 Alimentation: $\pm 24 V$



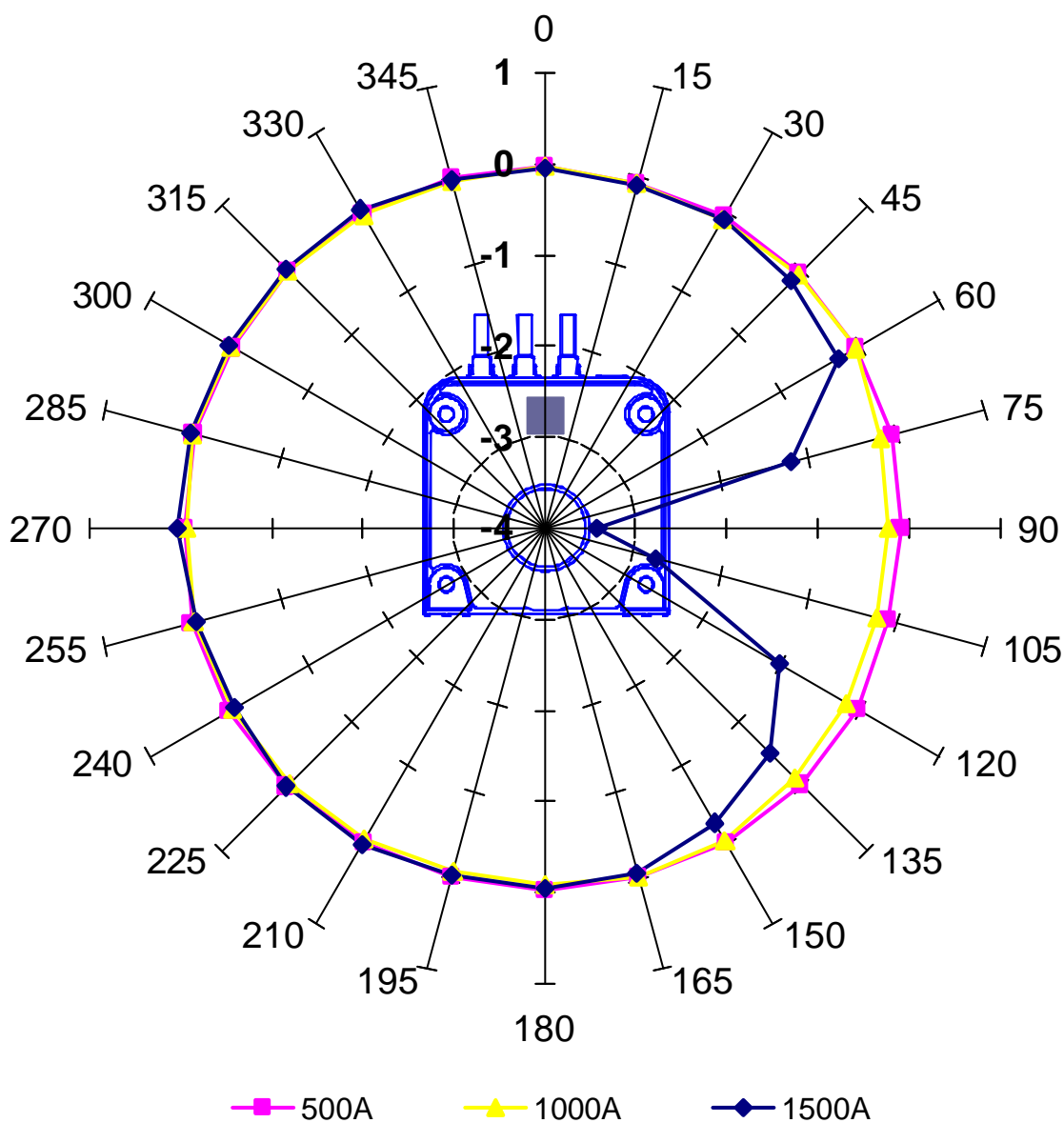
CS1000: accuracy in lateral bars configuration *CS1000: précision en configuration barres latérales*

General parameters:

$I_{PN} = 500, 1000, 1500A;$
AC (50 Hz)
 $R_M = 4 W$
Supply Voltage : $\pm 24 V$

Paramètres généraux:

$I_{PN} = 500, 1000, 1500A;$
AC (50 Hz)
 $R_M = 4 W$
Alimentation: $\pm 24 V$



CS1000: accuracy in laterals bars configuration

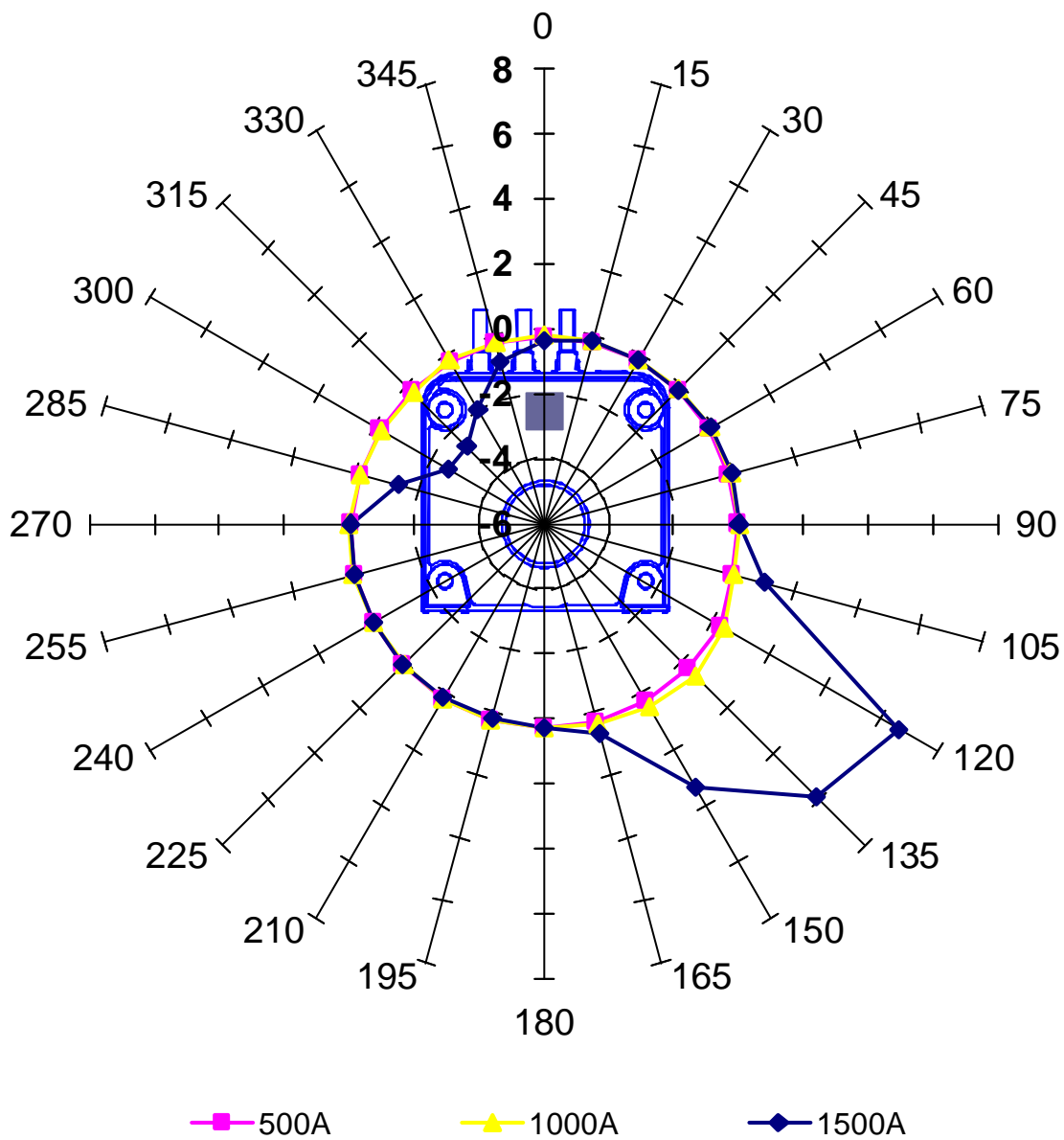
CS1000: précision en configuration barres latérales

General parameters:

$I_{PN} = 500, 1000, 1500A; DC$
 $R_M = 4 W$
 Supply Voltage: $\pm 24 V$

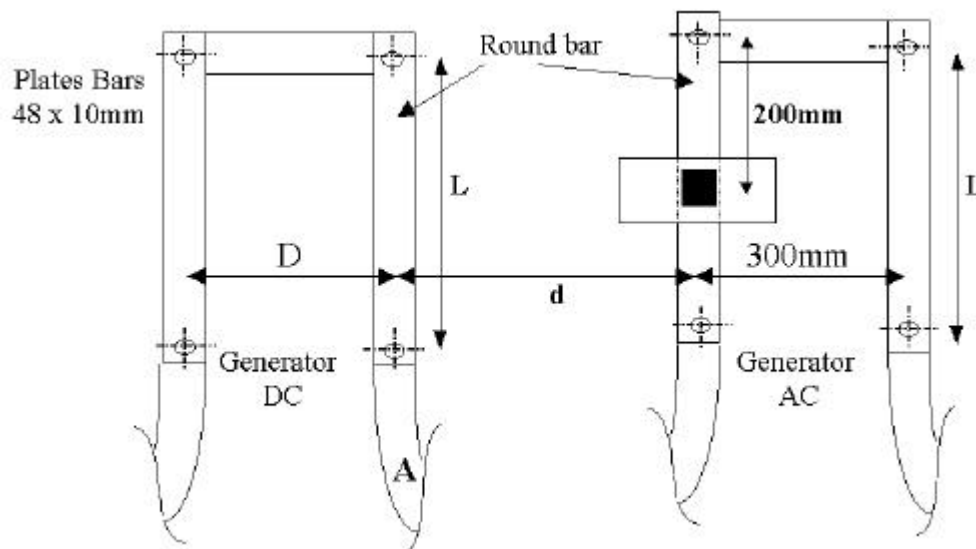
Paramètres généraux:

$I_{PN} = 500, 1000, 1500A;$
 DC
 $R_M = 4 W$
 Alimentation : $\pm 24 V$



3 - External bars configuration

3 – Configuration barres externes



Parameters / Paramètres

Sensor	D	d	Rectangular Bar	Round Bar
CS500 and CS1000	160mm	100mm	L=400mm	Diameter=40mm
	160mm	100mm	48 x 8mm	Diameter=40mm

In such a configuration, for each 15° we measure the accuracy of the sensor. The result is given in the following pages.

Dans une telle configuration, tous les 15° nous mesurons la précision du capteur. Les résultats sont donnés dans les pages suivantes.

CS500: accuracy in lateral bars configuration

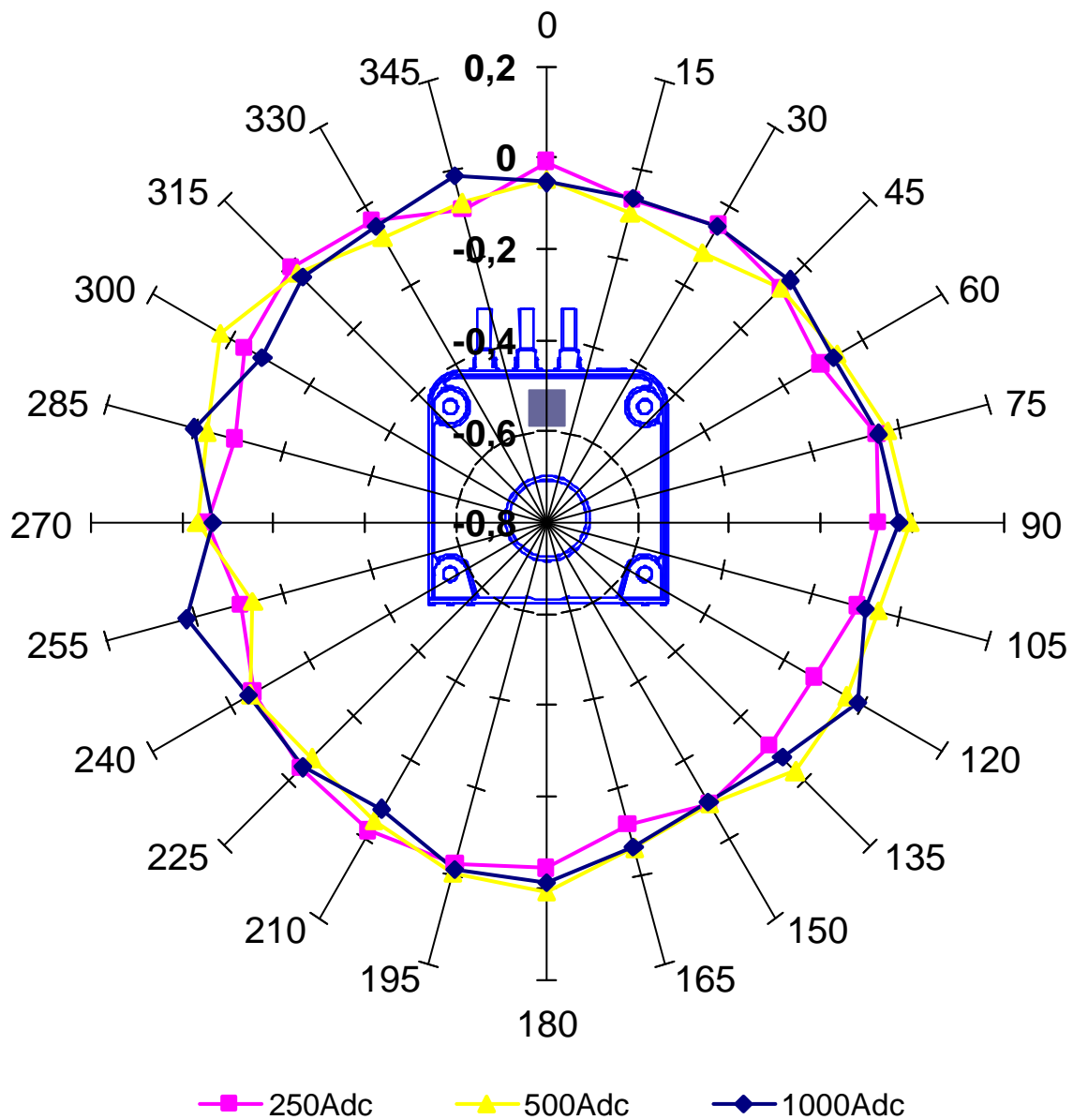
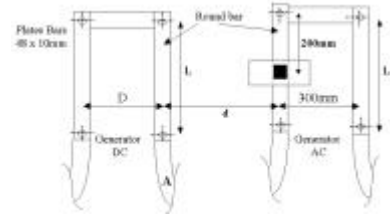
CS500: précision en configuration barres latérales

General parameters:

$I_{PN} = 250, 500, 1000A;$
 AC (50 Hz)
 $R_M = 10 W$
 Supply Voltage : $\pm 24 V$

Paramètres généraux:

$I_{PN} = 250, 500, 1000A; DC$
 AC (50 Hz)
 $R_M = 10 W$
 Alimentation: $\pm 24 V$



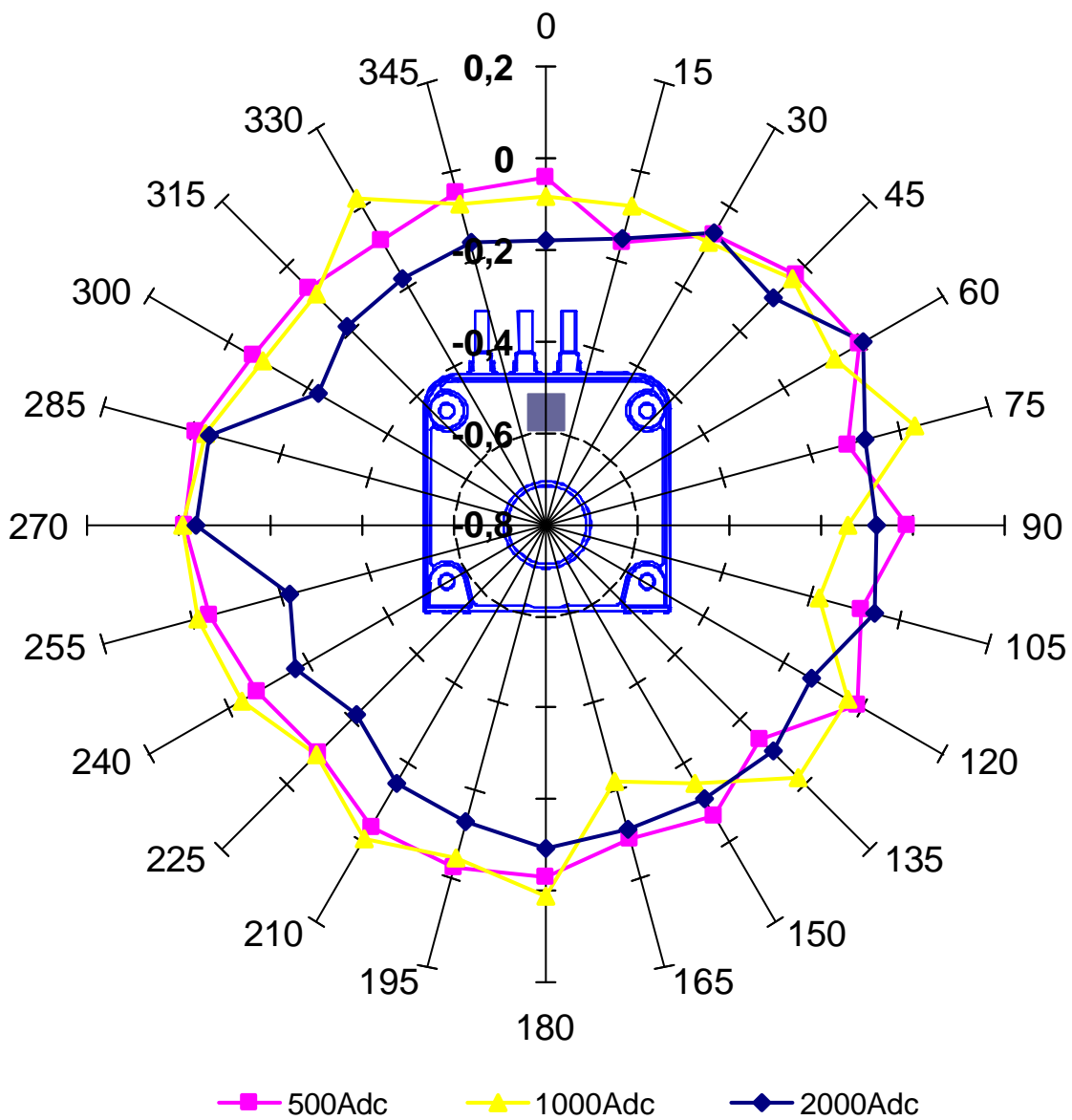
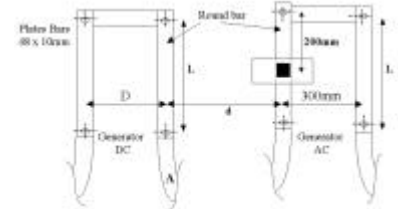
CS1000: accuracy in lateral bars configuration CS1000: précision en configuration barres latérales

General parameters:

$I_{PN} = 500, 1000, 2000A;$
AC (50 Hz)
 $R_M = 4 W$
Supply Voltage : $\pm 24 V$

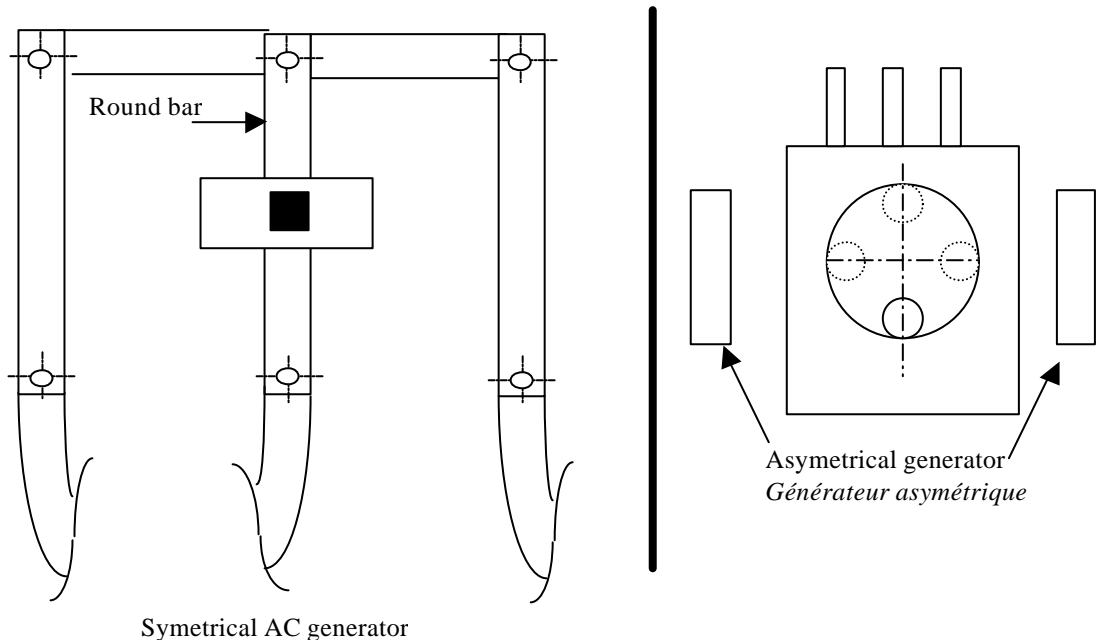
Pamètres généraux:

$I_{PN} = 500, 1000, 2000A; DC$
AC (50 Hz)
 $R_M = 4 W$
Alimentation: $\pm 24 V$



4 – Configuration couplage barre primaire ronde

4 – Configuration couplage barre primaire ronde



Parameters / Paramètres

Sensor	Round bar
CS500 and CS1000	Diameter = 25mm

In such a configuration, we determinate the influence on the accuracy of the sensor of the position of the round bar inside the primary hole of the sensor.

Dans cette configuration, on détermine l'influence de la position de la barre ronde dans le trou primaire sur la précision du capteur.

CS500: accuracy in external bars configuration

CS500: précision en configuration couplage barre primaire ronde

General parameters:

$I_{PN} = 500A$; AC (50 Hz)

$R_M = 10 W$

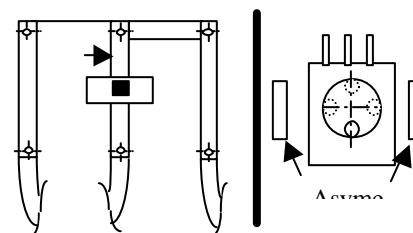
Supply Voltage: $\pm 24 V$

Paramètres généraux:

$I_{PN} = 500A$; AC (50 Hz)

$R_M = 10 W$

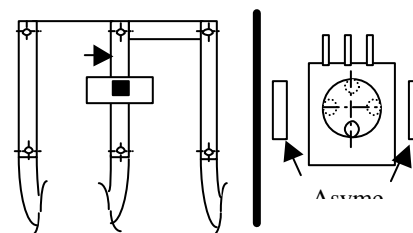
Alimentation: $\pm 24 V$



Position of the round bar	I_p moy A	I_s moy A	Accuracy moy %
Top	510	0,102	0,023
Bottom	511	0,102	-0,006
- Side	518	0,104	-0,004
+ side	498	0,099	-0,017

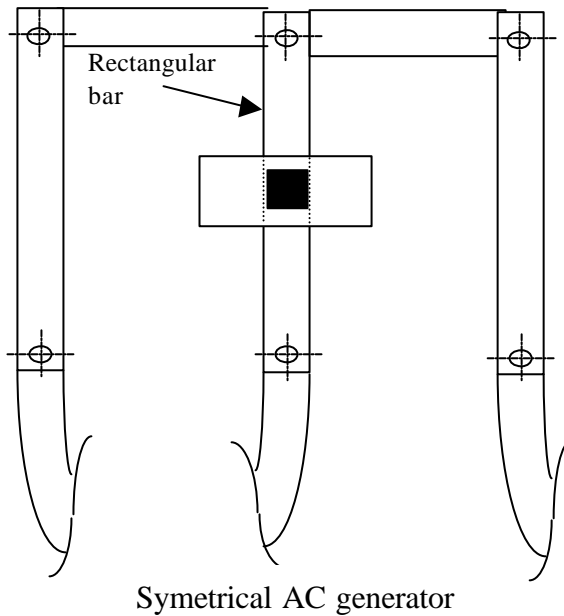
CS1000: accuracy in external bars configuration

CS1000: précision en configuration couplage barre primaire ronde

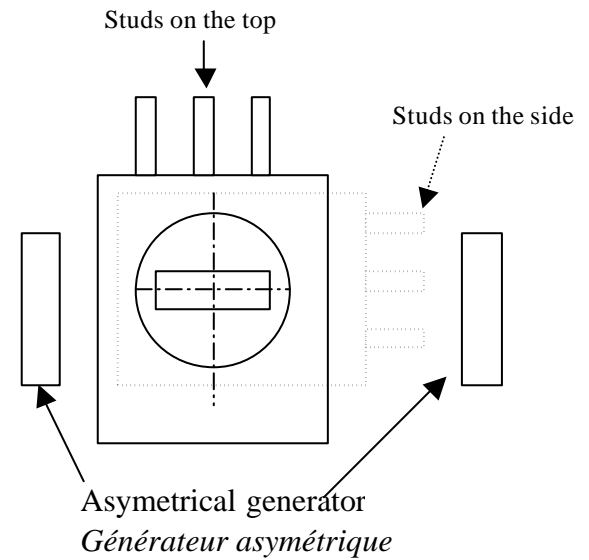
General parameters: **$I_{PN} = 1000A$; AC (50 Hz)** **$R_M = 4 W$** **Supply Voltage: $\pm 24 V$** *Paramètres généraux:* *$I_{PN} = 1000A$; AC (50 Hz)* *$R_M = 4 W$* *Alimentation: $\pm 24 V$* 

Position of the round bar	I_p moy A	I_s moy A	Accuracy moy %
Top	1004	0,201	0,037
Bottom	1005	0,201	0,019
- Side	1016	0,203	0,007
+ side	1013	0,203	0,002

5 – Configuration rectangular primary bar coupling



5 – Configuration couplage barre primaire rectangulaire



Parameters / Paramètres

Sensor	Rectangular bar
CS500 and CS1000	40 x 12mm

In such a configuration, we determine the influence of the position of the round bar inside the primary hole on the sensor accuracy.

Dans cette configuration, on détermine l'influence de la position de la barre rectangulaire dans le trou primaire sur la précision du capteur.

CS500: accuracy in rectangular primary bar coupling configuration

CS500: précision en configuration couplage barre primaire rectangulaire

General parameters:

$I_{PN} = 500A$; AC (50 Hz)

$R_M = 10 W$

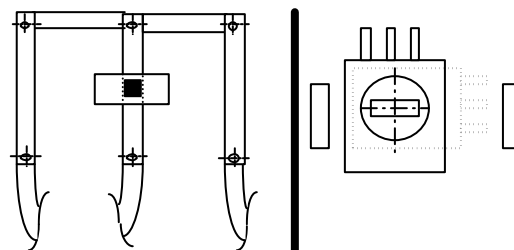
Supply Voltage: $\pm 24 V$

Paramètres généraux:

$I_{PN} = 500A$; AC (50 Hz)

$R_M = 10 W$

Alimentation: $\pm 24 V$



Position of the sensor	Is moy	Ip moy	Accuracy moy %
studs on the top	0,099	496,94	-0,021
studs on the side	0,099	497,35	-0,011

CS1000: accuracy in rectangular primary bar coupling configuration

CS1000: précision en configuration couplage barre primaire rectangulaire

General parameters:

$I_{PN} = 1000A$; AC (50 Hz)

$R_M = 4 W$

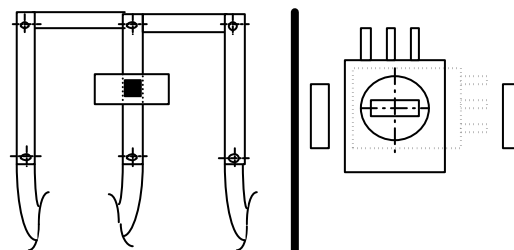
Supply Voltage: $\pm 24 V$

Paramètres généraux:

$I_{PN} = 1000A$; AC (50 Hz)

$R_M = 4 W$

Alimentation: $\pm 24 V$



Position of the sensor	I_s moy	I_p moy	Accuracy moy %
studs on the top	0,2	1002,77	-0,008
studs on the side	0,201	1004,53	0,014