

# DIN EN 13848-4:2012-03 (E)

## Railway applications - Track - Track geometry quality - Part 4: Measuring systems - Manual and lightweight devices

---

Contents	Page
Foreword .....	4
1 Scope .....	5
2 Normative references .....	5
3 Terms and definitions .....	5
4 Symbols and abbreviations .....	7
5 Track geometry measuring system fitted on trolleys or on manually operated devices .....	8
5.1 Introduction .....	8
5.2 General description .....	8
5.2.1 General description: TGMT .....	8
5.2.2 General description: MOD .....	9
5.3 Environmental conditions .....	10
5.3.1 Introduction .....	10
5.3.2 Climatic conditions .....	10
5.3.3 Operating conditions .....	10
5.4 Track features input .....	10
5.4.1 General .....	10
5.4.2 Track features input: TGMT .....	11
5.4.3 Track features input: MOD .....	11
5.5 Data localisation .....	11
5.5.1 Data localisation: TGMT .....	11
5.5.2 Data localisation: MOD .....	11
5.6 Measuring system/device .....	12
5.6.1 Measuring system/device: TGMT .....	12
5.6.2 Measuring system/device: MOD .....	12
5.7 Data processing .....	13
5.7.1 Data processing: TGMT .....	13
5.7.2 Data processing: MOD .....	13
5.8 Data output .....	13
5.8.1 Data output: TGMT .....	13
5.8.2 Data output: MOD .....	14
5.9 Data storage .....	14
5.9.1 Data storage: TGMT .....	14
5.9.2 Data storage: MOD .....	14
6 Testing of track geometry measuring system .....	14
6.1 Testing: TGMT .....	14
6.1.1 General .....	14
6.1.2 Calibration .....	15
6.1.3 Validation tests .....	15
6.1.4 Routine validation .....	17
6.2 Testing: MOD .....	17
6.2.1 Introduction .....	17
6.2.2 Calibration .....	18
6.2.3 Validation tests .....	18
6.2.4 Routine validation .....	18

<b>Annex A (normative) Parameters measured by track geometry measuring trolleys (TGMTs) and manually operated devices (MODs) .....</b>	<b>19</b>
A.1 <b>Introduction .....</b>	<b>19</b>
A.2 <b>Track gauge .....</b>	<b>20</b>
A.3 <b>Longitudinal level .....</b>	<b>21</b>
A.4 <b>Cross level .....</b>	<b>22</b>
A.5 <b>Alignment .....</b>	<b>23</b>
A.6 <b>Twist .....</b>	<b>24</b>
<b>Annex B (informative) Principles of measurement .....</b>	<b>25</b>
B.1 <b>General description .....</b>	<b>25</b>
B.2 <b>Longitudinal level and alignment (TGMT only) .....</b>	<b>25</b>
B.2.1 <b>Chord measuring system .....</b>	<b>25</b>
B.2.2 <b>Inertial measuring system .....</b>	<b>25</b>
B.3 <b>Track gauge .....</b>	<b>26</b>
B.4 <b>Cross level .....</b>	<b>26</b>
B.5 <b>Twist .....</b>	<b>26</b>
<b>Annex C (normative) TGMT / Description of field tests: values to be respected .....</b>	<b>27</b>
C.1 <b>Repeatability - Statistical analysis of parameter data .....</b>	<b>27</b>
C.2 <b>Reproducibility - Statistical analysis of parameter data .....</b>	<b>27</b>
<b>Bibliography .....</b>	<b>29</b>