



ifak
technology+service GmbH

ifak technology+service GmbH
Ludwig-Erhard-Allee 10, 76131 Karlsruhe

Managing Director:
Dr. Matthias Riedl

Ludwig-Erhard-Allee 10
76131 Karlsruhe

Phone: +49 (0)721-5099-8735
<https://www.ifak-ts.com>

Our reference:
Direct line: -
File: ifak-ts_sample_contract
VAD ID.: DE309983005

Karlsruhe, <will be updated>

Offer Nb.: <will be replaced>

Dear Mr. ,
Dear Mrs. ,

Thank you very much for your interest about a HART device test. Attached you will find the requested offer.

Please cite the offer number if you order the device test.

Do not hesitate to contact us if you have further questions.

Best regards

Dr. Matthias Riedl
Managing Director

Offer Nb: <will be replaced>

This offer is valid up to <will be updated>.

1 Background information

ifak-ts operates a test laboratory audited by FieldComm Group™ for HART device tests. In this position ifak-ts offers tests of field devices. The successful passing of these tests is a prerequisite to apply for registration at FieldComm Group™.

2 Subject of the quotation

The subject of this offer is the HART device test (Test Campaign) of the field device "XXX" from the manufacturer "YYY" (Contracting Body – CB) according to the current version of the “Product Registration Policy” by FieldComm Group™. The device implements a HART communication interface.

3 Preconditions

In order to test the device as mentioned in section 2 the CB has to provide the information as defined in FSK Physical Layer Test, section “APPENDIX C: Test Data Sheets”, information as required in section 3.2 of this document and all additional documentation and materials which are named in this test application.

The following preconditions apply to profiles, submissions, and must be fulfilled before any Test Campaign.

3.1 Physical Layer - Hardware

The Contracting Body must verify the electrical characteristics of the product by completing the appropriate Physical Layer Test with a verdict of PASS. The Contracting Body submits evidence of this test to the ifak-ts HART test lab. These test results will be verified during the conformance test process.

Each device submitted for a Test Campaign must have a unique physical layer test report with all supporting documentation.

Products which can operate with more than one physical layer profile/type are required to completely test the physical layer of the product in each supported mode. This includes devices, which may only change their physical layer type via the manufacturer (for example, at the factory). Examples include: AC powered and DC powered modes, 2-wire and 3-wire configurations or different quiescent current draw levels.

3.2 Additional necessary documents, hardware and information from the CB

For all device types mandatory:

A measurement with device RTS signal is required for testing Carrier Start/Stop/Decay. The CB has the option to execute the test with the RTS-Signal by own or the test lab must have access to the device’s RTS signal for testing.

For Transmitter devices mandatory:

For testing the Analog Rate of Change a maximum rate of change of analog current must be possible in the test lab. This is possible by means of the use of a sensor simulator or by

modified device test software. One of these methods is required for the verification in the test lab.

For Actuator devices mandatory and for Transmitter devices optional

The Waveform characteristics for the 1200 and 2200 Hz HART signaling must be checked. One of the following methods shall be provided:

- a) Description and access for measurement points on device hardware for RTS, VSS (Ground), TXD and VDD (Power). This is necessary to stimulate the frequencies.
- b) A special DUT software is necessary to activate a permanent signal with frequency 1200 Hz and 2200 Hz.

For all device types optional:

Access to the carrier detect signal from DUT.

3.3 Test System Files

The list of files required for a Test Campaign submission are unique to each technology (protocol) tested. The HART Test Specifications will provide more detailed requirements. The Contracting Body must supply all defined test system files and logs produced by the test systems as required. The specific logs and supporting files are required for any Test Campaign of HART device tests.

Additional test time and fees will apply, if the required test system files and supporting files provided by the Contracting Body are not consistent with the device under test. Examples of test system files may include but not limited to *.qa.log files for HART devices or .OUT files for any HART product, SDC logs for EDDs. Examples of supporting files may include but not limited to *.FM8, *.fdix.

3.4 Electronic Device Descriptions or FDI Device Packages

EDDs or FDI Device Packages are required for device registration. This device integrations files are not in the scope of HART device test, but would be forwarded to FieldComm Group™ for device integration tests.

3.5 Test case Failures during Test Campaign

FAIL results for any test case in any required Test Campaign must be resolved by the Contracting Body or their development partners prior to the shipment of the device sample for test. For any issues that are found during an official Test Campaign, it is critical that the submitter of the product checks the support portal (and may need to be available via email and/or phone) to resolve open items quickly during the reserved test period.

4 Preparing for Testing

In order to minimize the expenses related to the Test Campaign, all clarification requests for the specifications and/or test cases must be submitted to the ifak-ts test lab no later than 60 days prior to the scheduling of a Test Campaign. While some issues may be resolved quickly, others may require confirmation from FieldComm Group™ maintenance teams. This process can take several weeks.

The FieldComm Group™ tracks these requests through various change tracking systems. For HART products, use the HART Change Request Tracker at <http://www.hcftracker.net>

If Contracting Body is submitting an action request/change request that pertains to a device in an upcoming Test Campaign, the Contracting Body must also contact the test administrator at ifak-ts HART test lab so that such requests can be escalated through the resolution process. Simply filing an action request or change request does not guarantee that any action will be taken prior to a Test Campaign.

Failure to contact the test administrator at ifak-ts HART test lab or failing to file a request at least 60 days before scheduled test start date will result in delays during testing, and may also result in the Test Campaign being rescheduled at the discretion of the test administrator.

5 Reporting

The report of the current status of the project will be performed on a 1-week basis via e-mail in an informal way, initiated by the HART test lab personnel.

6 Time schedule

Since test lab resources are limited, test time at ifak-ts HART test lab is scheduled to accommodate the needs of all customers in the most efficient manner possible. Test time can be requested by filling out and submitting forms available on the support portal of FieldComm Group™ at <https://support.fieldcommgroup.org>. The test administrator at ifak-ts HART test lab will schedule test time as close as possible to the dates requested by the Contracting Body, but to be fair to all members and customers of the ifak-ts HART test lab, test time is granted on a first-come, first-served basis.

The offered test Campaign is scheduled to start in week **Z/20zz** in the case the order is duly placed and all required devices and documentations are available two weeks before.

It is the expectation of ifak-ts HART test lab that all devices submitted for a Test Campaign have been thoroughly tested by the Contracting Body and that no significant problems will be found.

Four calendar weeks are reserved for your HART device that is submitted for test. Under all circumstances, this should be sufficient time for us to perform a complete test of the device; to verify the FSK Physical Layer, Token-Passing Data Link Layer, Universal Application Layer, and Common Practice Application Layer of the device; work with the Contracting Body to resolve any minor configuration issues that are found, and still do the necessary administrative work to provide the test report.

If the Test Campaign is open beyond the estimated completion time but waiting on further updates to a device, will be closed at the discretion of the test administrator at ifak-ts HART test lab.

If the Test Campaign is closed by the test administrator, it will result in a return of the hardware at Contracting Body's expense and a bill for all test time used during the Test Campaign. The Contracting Body must begin a new Test Campaign if it wishes to test the device.

7 Fees

7.1 Overview

This quotation for the test execution specified in section 2 results in a total price of:

Pos.	Pcs.	Topic	Price [€]
1	1	HART device test Requires all pre-test results on current released test system. Additional test time may apply for additional services not included in testing. Testing fee will be re-assessed on each attempt	1,750.00
2	1	HART device test ifak-ts HART test lab will run all tests to generate necessary logs and scope traces. Pre-test results are not required	8,000.00
3	1	Additional testing, Auditing services, Flashing device firmware, costs per hour; see section 7.2 Minimum of 4 hours per day for device testing.	130.00
4	1	Personnel of CB will participate at the test, costs per day, see section 7.3	800.00

All prices are understood as net prices, legally required VAT is added.

The price is valid for an undisturbed test procedure. In case of unexpected, increased effort for testing, which can occur in case of test repetitions because of detected problems and their correction, an additional agreement about the additional amount of effort and fees based on the conditions of this quotation shall be found.

7.2 Fees for Additional Test Time

A device which requires extra or unusual services and lab resources beyond what is expected for a typical Test Campaign, through no fault of ifak-ts test lab, will require fees for additional test time.

Additional test time is purchased in 4-hour blocks, with a minimum of 4-hours each calendar day that the test administrator is required to work with the device sample to continue testing. The hourly rate for additional test time is mentioned above.

Fees for additional test time may be required for any of the following reasons:

1. Effort creating device initialization files for a test system either because one was not provided by the manufacturer, or because the one provided was not sufficient to allow proper testing of the DUT.
2. Continued effort executing test cases that were previously verified to have failed due to a device problem, or a device configuration problem, and reporting of these failures to the Contracting Body. This includes executing tests after the initial Test Campaign results were reported to the Contracting Body.
3. Effort providing screen captures, supplemental test case logs, excerpts from specifications, etc. to provide further proof of a device problem after it has been previously reported to the Contracting Body.
4. Executing multiple passes through test cases or through an entire test suite because the device is designed in such a way that it cannot be tested in a single pass.
5. Effort spent manually running test cases that are normally automated, either because of missing wiring or due to limitations in the design of the DUT.

6. Creating and executing device-specific test cases for allowed, but unusual manufacturer-specific write checks that are rejected by a device and cause the released test case to fail.
7. Executing multiple Test Campaigns that are required for special circumstances, such as testing a HART device in multiple physical layer and sensor configurations.
8. Flashing of firmware or replacement of parts¹

This price excludes travel costs for ifak-ts's participation in meetings or other necessary business trips. These will be charged to the contracting body separately according to the Federal Travelling Expenses Act "Bundesreisekostengesetz."

After this contract comes into effect, the Contracting Body will pay ifak-ts after receiving the test results.

7.3 Witnessed Testing Fee

At any given time, devices from different manufacturers may be under test in the ifak-ts HART test lab, along with other special projects, consulting services, meetings, and internal product development activities. For these reasons, and reasons of existing non-disclosure agreements between ifak-ts and each customer prevent us from allowing unauthorized personnel in our test lab for more than just a brief tour on a visit to our offices. Therefore, it is not possible for us to allow customers to visit our main lab and witness an ongoing test of their product.

Contracting Body wishing to be present in the ifak-ts HART test lab to observe a Test Campaign on one of their devices are required to provide a Witnessed Testing Fee each day they wish to observe an ongoing test.

The Contracting Body paying for Witnessed Testing will be provided with a dedicated test system, maybe in a location outside of our main lab, so that they can witness the ongoing test of the DUT. The test administrator will be available on an occasional basis to meet the Contracting Body, start a test, verify a test is running normally, and to discuss or demonstrate failures to the Contracting Body. When tests can be automated, the test administrator may need to perform other duties or return to the test lab to continue testing other devices. A Witnessed Testing Fee does not provide a dedicated test administrator for the device under test being witnessed.

Detailed discussions of specifications, product training, or other forms of consultation are not included as part of the Witnessed Testing Fee.

Witnessed Testing Fees are in addition to the normal fees associated with a Test Campaign. Customers wishing to witness a test must notify ifak-ts test lab at the time they schedule a Test Campaign. Due to limited resources and staff or other scheduled activities in our offices,

¹¹ Removing and replacing parts in a device sample and flashing of device firmware are not part of the normal services provided by ifak-ts HART test lab, either before, or during a Test Campaign. The test administrator may, at their discretion, suspend a Test Campaign and return a device to the Contracting Body if such services are requested or required. The Contracting Body may provide the necessary tools and instructions to perform part swaps or firmware updates, but any damage to a device sample arising from attempts by ifak-ts HART test lab to provide these services are the sole responsibility of the Contracting Body. In all cases, the attempt to flash firmware or replace parts in a device sample will automatically result in one extra four-hour block of additional testing fees, whether the attempt is successful or not, even if the official Test Campaign has not yet started. Device samples which are modified during an ongoing Test Campaign, either by the replacement of integral parts, or by the flashing of firmware, will always require a restart to the Test Campaign.

requesting a witnessed test may result in additional wait time for a test that could otherwise be scheduled at an earlier date if it were not to be witnessed.

Fees for a day of witnessed testing are mentioned above, and must always be included on the purchase order when the test time is requested. A Contracting Body who arrives to witness a test without prior notification and reservation of the special test time will not be allowed to witness a test in our offices under any circumstances.

7.4 Payment agreement

- 10 days after accounting, no discounts.

8 Proviso

This quotation is created under the provision that all relevant information is made available and the preconditions are established by the contracting body.

9 Applicable Law and Jurisdiction

This license agreement is subject to German law. The place of fulfillment and the place of venue is Karlsruhe.