## TDX - Quad QAM backend modules DVB-C in FTA or with 2 x CI slots

The TDX quad QAM backend module is an output module that enables you to create up to 4 mux combinations of services/TV programs which are available from the TDX pool. The services are distributed in a QAM data stream.

The services can be combined so that the bandwidth of each output mux is used in an optimal way. Both the web configurator and the mux bandwidth monitor function in the TDX service tool ensure that you don't overload the bandwidth and cause problems with the transmission.

The QAM output modules can be delivered in a free-to-air version or with 2 CI slots for decryption.

#### **Features:**

- Quad QAM DVB-C output module for FTA or for decoding content/ services
- NIT and stuffing
- Global and local NIT support
- NIT actual network & NIT other network
- SDT actual transport stream & SDT other transport stream
- Easy set-up
- Hot swap service in TDX system.
- All services will be transferred to the TDX pool.
- Supports decoding via CA (492056)
  - Module adds stuffing bits
- Combine your QAM muxes as you want





Quad QAM backend module - FTA



Quad QAM backend module - with 2 x CI slots



# TDX - Quad QAM backend modules

### DVB-C in FTA or with 2 x CI slots







## Technical data

Art. No.       492055       492056         Modulator       Output frequency range       MHz       50-858       50-858         Channel raster       MHz       7/8/8.5       7/8/8.5         Frequency step       kHz       250       250         Carrier to spurious ratio (module only)       dB       > 60       > 60         Output mode       QAM       16, 32, 64, 128, 256       16, 32, 64, 128, 256         Output spectrum       Normal       Normal       Normal         Output spectrum       dB       + 3 17       + 3 17         Output spectrum       dB       + 3 17       + 3 17         Output spectrum       dB       + 3 17       + 3 17         Output spectrum       dB       + 3 17       + 3 17         Output level adjustment       dB       + 3 17       + 3 17         Output level adjustment       dB       + 3 17       + 3 17         Output level adjustment adjustment       dB       + 3 17       + 3 17         Output spectrum       Mbaud       3.15 - 7.2       3.15 - 7.2       3.15 - 7.2         Symbol rate       Mbaud       3.15 - 7.2       3.15 - 7.2       3.15 - 7.2         Return l	Product		Quad QAM backend module FTA	Quad QAM backend module CI
Output frequency range         MHz         50-858         50-858           Channel raster         MHz         7 / 8 / 8.5         7 / 8 / 8.5           Frequency step         kHz         250         250           Carrier to spurious ratio (module only)         dB         > 60         > 60           Output mode         QAM         16, 32, 64, 128, 256         16, 32, 64, 128, 256           Output spectrum         Normal         Normal           Output level adjustment         dB         + 3 17         + 3 17           Output level nominel in TDX system         dBµV         92.0         92.0           Output impedance         Ohm         75         75           Symbol rate         Mbaud         3.15 - 7.2         3.15 - 7.2           Roll of factor         0.15         0.15           Return loss output         dB         > 10         > 10           Modulation error ratio (MER) 16 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 64 QAM         dB         ≥ 38.0         ≥ 38.0           CI slots         pcs.         0         2           General           Supply voltage         V         12.0 ±1         12.0 ±1	Art. No.		492055	492056
Channel raster         MHz         7 / 8 / 8 . 5         7 / 8 / 8 . 5           Frequency step         kHz         250         250           Carrier to spurious ratio (module only)         dB         > 60         > 60           Output mode         QAM         16, 32, 64, 128, 256         16, 32, 64, 128, 256           Output spectrum         Normal         Normal           Output level adjustment         dB         + 3 17         + 3 17           Output level nominel in TDX system         dBµV         92.0         92.0           Output impedance         Ohm         75         75           Symbol rate         Mbaud         3.15 - 7.2         3.15 - 7.2           Roll of factor         0.15         0.15           Return loss output         dB         > 10         > 10           Modulation error ratio (MER) 16 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 64 QAM         dB         ≥ 38.0         ≥ 38.0           CI slots         pcs.         0         2           General         Supply voltage         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9           Mec	Modulator			
Frequency step         kHz         250         250           Carrier to spurious ratio (module only)         dB         > 60         > 60           Output mode         QAM         16, 32, 64, 128, 256         16, 32, 64, 128, 256           Output spectrum         Normal         Normal           Output level adjustment         dB         + 3 17         + 3 17           Output level nominel in TDX system         dBµV         92.0         92.0           Output impedance         Ohm         75         75           Symbol rate         Mbaud         3.15 - 7.2         3.15 - 7.2           Roll of factor         0.15         0.15           Return loss output         dB         > 10         > 10           Modulation error ratio (MER) 16 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 64 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 256 QAM         dB         ≥ 38.0         ≥ 38.0           CI slots         pcs.         0         2           General           Supply voltage         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9 <td>Output frequency range</td> <td>MHz</td> <td>50-858</td> <td>50-858</td>	Output frequency range	MHz	50-858	50-858
Carrier to spurious ratio (module only)         dB         > 60         > 60           Output mode         QAM         16, 32, 64, 128, 256         16, 32, 64, 128, 256           Output spectrum         Normal         Normal           Output level adjustment         dB         + 3 17         + 3 17           Output level nominel in TDX system         dBµV         92.0         92.0           Output impedance         Ohm         75         75           Symbol rate         Mbaud         3.15 - 7.2         3.15 - 7.2           Roll of factor         0.15         0.15           Return loss output         dB         > 10         > 10           Modulation error ratio (MER) 16 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 64 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 256 QAM         dB         ≥ 38.0         ≥ 38.0           CI slots         pcs.         0         2           General           Supply voltage         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9           Mechanical data         F-connector         F-connector	Channel raster	MHz	7 / 8 / 8.5	7 / 8 / 8.5
Output mode         QAM         16, 32, 64, 128, 256         16, 32, 64, 128, 256           Output spectrum         Normal         Normal           Output level adjustment         dB         + 3 17         + 3 17           Output level nominel in TDX system         dBµV         92.0         92.0           Output impedance         Ohm         75         75           Symbol rate         Mbaud         3.15 - 7.2         3.15 - 7.2           Roll of factor         0.15         0.15           Return loss output         dB         > 10         > 10           Modulation error ratio (MER) 16 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 64 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 256 QAM         dB         ≥ 38.0         ≥ 38.0           CI slots         pcs.         0         2           General           Supply voltage         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9           Mechanical data         F-connector         F-connector         F-connector           Power supply/control connector         FCI Express Edge connector 36P	Frequency step	kHz	250	250
Output spectrum         Normal         Normal           Output level adjustment         dB         + 3 17         + 3 17           Output level nominel in TDX system         dBµV         92.0         92.0           Output impedance         Ohm         75         75           Symbol rate         Mbaud         3.15 - 7.2         3.15 - 7.2           Roll of factor         0.15         0.15           Return loss output         dB         > 10         > 10           Modulation error ratio (MER) 16 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 64 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 256 QAM         dB         ≥ 38.0         ≥ 38.0           CI slots         pcs.         0         2           General         Supply voltage         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9           Mechanical data         F-connector         F-connector           Power supply/control connector         mm         PCI Express Edge connector 36P         PCI Express Edge connector 36P	Carrier to spurious ratio (module only)	dB	> 60	> 60
Output level adjustment         dB         + 3 17         + 3 17           Output level nominel in TDX system         dBμV         92.0         92.0           Output impedance         Ohm         75         75           Symbol rate         Mbaud         3.15 - 7.2         3.15 - 7.2           Roll of factor         0.15         0.15           Return loss output         dB         > 10         > 10           Modulation error ratio (MER) 16 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 64 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 256 QAM         dB         ≥ 38.0         ≥ 38.0           CI slots         pcs.         0         2           General           Supply voltage         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9           Mechanical data           RF connector         F-connector         F-connector           Power supply/control connector         PCI Express Edge connector 36P         PCI Express Edge connector 36P	Output mode	QAM	16, 32, 64, 128, 256	16, 32, 64, 128, 256
Output level nominel in TDX system         dBμV         92.0         92.0           Output impedance         Ohm         75         75           Symbol rate         Mbaud         3.15 - 7.2         3.15 - 7.2           Roll of factor         0.15         0.15           Return loss output         dB         > 10         > 10           Modulation error ratio (MER) 16 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 64 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 256 QAM         dB         ≥ 38.0         ≥ 38.0           CI slots         pcs.         0         2           General           Supply voltage         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9           Mechanical data           RF connector         F-connector         F-connector           Power supply/control connector         mm         PCI Express Edge connector 36P         PCI Express Edge connector 36P	Output spectrum		Normal	Normal
Output impedance         Ohm         75         75           Symbol rate         Mbaud         3.15 - 7.2         3.15 - 7.2           Roll of factor         0.15         0.15           Return loss output         dB         > 10         > 10           Modulation error ratio (MER) 16 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 64 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 256 QAM         dB         ≥ 38.0         ≥ 38.0           CI slots         pcs.         0         2           General         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9           Mechanical data           RF connector         F-connector         F-connector           Power supply/control connector         mm         PCI Express Edge connector 36P         PCI Express Edge connector 36P	Output level adjustment	dB	+ 3 17	+ 3 17
Symbol rate         Mbaud         3.15 - 7.2         3.15 - 7.2           Roll of factor         0.15         0.15           Return loss output         dB         > 10         > 10           Modulation error ratio (MER) 16 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 64 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 256 QAM         dB         ≥ 38.0         ≥ 38.0           CI slots         pcs.         0         2           General           Supply voltage         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9           Mechanical data         F-connector         F-connector         F-connector           Power supply/control connector         mm         PCI Express Edge connector 36P         PCI Express Edge connector 36P	Output level nominel in TDX system	dΒμV	92.0	92.0
Roll of factor         0.15         0.15           Return loss output         dB         > 10         > 10           Modulation error ratio (MER) 16 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 64 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 256 QAM         dB         ≥ 38.0         ≥ 38.0           CI slots         pcs.         0         2           General           Supply voltage         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9           Mechanical data           RF connector         F-connector         F-connector           Power supply/control connector         mm         PCI Express Edge connector 36P         PCI Express Edge connector 36P	Output impedance	Ohm	75	75
Return loss output         dB         > 10         > 10           Modulation error ratio (MER) 16 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 64 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 256 QAM         dB         ≥ 38.0         ≥ 38.0           CI slots         pcs.         0         2           General         Supply voltage         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9           Mechanical data         F-connector           RF connector         F-connector         F-connector           Power supply/control connector         mm         PCI Express Edge connector 36P         PCI Express Edge connector 36P	Symbol rate	Mbaud	3.15 - 7.2	3.15 - 7.2
Modulation error ratio (MER) 16 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 64 QAM         dB         ≥ 38.0         ≥ 38.0           Modulation error ratio (MER) 256 QAM         dB         ≥ 38.0         ≥ 38.0           CI slots         pcs.         0         2           General         Supply voltage         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9           Mechanical data         F-connector         F-connector         F-connector           Power supply/control connector         mm         PCI Express Edge connector 36P         PCI Express Edge connector 36P	Roll of factor		0.15	0.15
Modulation error ratio (MER) 64 QAMdB $\geq 38.0$ $\geq 38.0$ Modulation error ratio (MER) 256 QAMdB $\geq 38.0$ $\geq 38.0$ CI slotspcs.02GeneralSupply voltageV $12.0 \pm 1$ $12.0 \pm 1$ Max. supply current (FTA / CI)A0.70.9Mechanical dataRF connectorF-connectorF-connectorPower supply/control connectorPCI Express Edge connector 36PPCI Express Edge connector 36P	Return loss output	dB	> 10	> 10
Modulation error ratio (MER) 256 QAMdB≥ 38.0≥ 38.0CI slotspcs.02GeneralSupply voltageV $12.0 \pm 1$ $12.0 \pm 1$ Max. supply current (FTA / CI)A0.70.9Mechanical dataRF connectorF-connectorF-connectorPower supply/control connectorPCI Express Edge connector 36PPCI Express Edge connector 36P	Modulation error ratio (MER) 16 QAM	dB	≥ 38.0	≥ 38.0
CI slots         pcs.         0         2           General         Supply voltage         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9           Mechanical data         F-connector         F-connector           Power supply/control connector         mm         PCI Express Edge connector 36P         PCI Express Edge connector 36P	Modulation error ratio (MER) 64 QAM	dB	≥ 38.0	≥ 38.0
General           Supply voltage         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9           Mechanical data           RF connector         F-connector         F-connector           Power supply/control connector         mm         PCI Express Edge connector 36P         PCI Express Edge connector 36P	Modulation error ratio (MER) 256 QAM	dB	≥ 38.0	≥ 38.0
Supply voltage         V         12.0 ±1         12.0 ±1           Max. supply current (FTA / CI)         A         0.7         0.9           Mechanical data           RF connector         F-connector         F-connector           Power supply/control connector         mm         PCI Express Edge connector 36P         PCI Express Edge connector 36P	CI slots	pcs.	0	2
Max. supply current (FTA / CI)  Mechanical data  RF connector  F-connector  F-connector  F-connector  Power supply/control connector  PCI Express Edge connector 36P  PCI Express Edge connector 36P	General			
Mechanical data  RF connector  F-connector  F-connector  Power supply/control connector  PCI Express Edge connector 36P  PCI Express Edge connector 36P	Supply voltage	V	12.0 ±1	12.0 ±1
RF connector  Power supply/control connector  Power supply/control connector  PCI Express Edge connector 36P  PCI Express Edge connector 36P	Max. supply current (FTA / CI)	А	0.7	0.9
Power supply/control connector mm PCI Express Edge connector 36P PCI Express Edge connector 36	Mechanical data			
	RF connector		F-connector	F-connector
Weight kg 0.410 0.440	Power supply/control connector	mm	PCI Express Edge connector 36P	PCI Express Edge connector 36P
	Weight	kg	0.410	0.440
Dimension (HxDxW) mm 12 x 162 x 180 21 x 162 x 180	Dimension (HxDxW)	mm	12 x 162 x 180	21 x 162 x 180

#### Recycling

This product is manufactured in compliance with current EU environmental and recycling requirements and standards (WEEE, RoHS, etc.). Please observe your local implementation and requirements when recycling.

